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Volume 5, Chapter 8, 2 of 2




# DAMAGE TOLERANT DESIGN HANDBOOK

D.A. Skinn, J.P. Gallagher, A.P. Berens,
P.D. Huber, J. Smith

University of Dayton Research Institute
300 College Park Dr
Dayton, OH 45469-0120

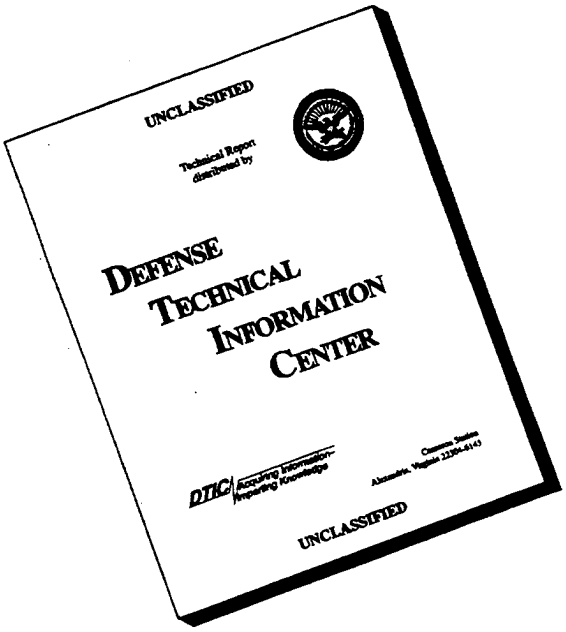
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J. SMITH

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This report presents a compilation of mechanical property data that are useful for damage tolerant design and analyses. The data of this handbook combines the old data that were previously presented in MCIC-HB-OIR (Damage Tolerant Design Handbook, December 1983) and more recent data that were collected from various sources. The fracture toughness, crack growth, R-curve, sustained load and threshold data are for alloy and stainless steels, nickel based super alloys, titanium alloys and aluminum alloys.

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# *Foreword*

This report summarizes the results of a damage tolerant, material property data collection and reporting program conducted under USAF Contract F33615-91-C-5610. The work was sponsored by the Materials Directorate of Wright Laboratory with Mr. Jack Coate of the Systems Support Division serving as the project monitor. The technical effort was conducted between June 1991 and January 1994. The work was performed by the University of Dayton Research Institute under the general supervision of Dr. Joseph P. Gallagher with Dr. Alan P. Berens serving as Principal Investigator.

This final report comprises eight chapters which are presented in five volumes as follows:

| VOLUME | CHAPTER | DESCRIPTION |
|---|---|---|
| 1 | 1 | Handbook organization and content |
| | 2 | Methods of calculation |
| | 3 | Alloy Steels |
| | 4 | Stainless Steels |
| 2 | 5 | Nickel Based Super Alloys |
| | 6 | Titanium Alloys |
| 3 | 7 | Aluminum 2000/6000 Series Alloys |
| 4 & 5 | 8 | Aluminum 7000/8000 Series Alloys |

A detailed listing of the materials represented in the Handbook is contained in the preceding Table of Contents. In the body of the Handbook, the pages are numbered within chapters and the relevant portion of the table of contents is repeated at the beginning of each chapter.

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# ALUMINUM 7000/8000 SERIES ALLOYS SECTIONS

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# TABLE 8.10.1.1

## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 7075 (ALCLAD) AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Plate | T7651 | 28.6 | 2.2 | 3 | 25.2 | 1.9 | 26 | --- | --- | --- |

# TABLE 8.10.1.2



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7075 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6 | SHEET | 0. | 13.3 | | | 7.23 | 73.65 | | |
| | | 0.05 | 30 | | 0.44 | | | | |
| | | 0.2 | 30 | 0.08 | 0.72 | | | | |
| | | 0.33 | 13.3 | | | 13.06 | 285.41 | | |
| | | 0.4 | 30 | 0.17 | | | | | |

# TABLE 8.10.2.1



## ALUMINUM 7075 (ALCLAD) $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7651 | Plate | 0.62 | R.T. | L-T | 66.0 | 2.002 | 0.617 | CT | 1.021 | 0.48 | 29.10 | 28.6 | 2.2 | 1978 | MPC01 |
| | | 0.62 | | | 66.0 | 2.008 | 0.617 | CT | 1.064 | 0.52 | 30.50 | | | 1978 | MPC01 |
| | | 0.62 | | | 67.6 | 2.011 | 0.637 | CT | 1.086 | 0.36 | 26.20 | | | 1978 | MPC01 |
| T7651 | Plate | 0.62 | R.T. | T-L | --- | 2.017 | 0.636 | CT | 1.049 | --- | 23.10 | 25.2 | 1.9 | 1978 | MPC01 |
| | | 0.62 | | | 62.6 | 2.000 | 0.632 | CT | 1.000 | 0.44 | 26.40 | | | 1978 | MPC01 |
| | | 0.62 | | | 62.6 | 1.985 | 0.632 | CT | 1.032 | 0.46 | 27.10 | | | 1978 | MPC01 |
| | | 0.62 | | | 62.6 | 1.996 | 0.632 | CT | 1.018 | 0.46 | 27.10 | | | 1978 | MPC01 |
| | | 0.62 | | | 64.1 | 1.984 | 0.625 | CT | 0.992 | 0.46 | 27.90 | | | 1978 | MPC01 |
| | | 0.62 | | | 64.1 | 1.984 | 0.623 | CT | 0.992 | 0.48 | 28.70 | | | 1978 | MPC01 |
| | | 0.62 | | | 64.1 | 1.998 | 0.624 | CT | 1.039 | 0.46 | 27.80 | | | 1978 | MPC01 |
| | | 0.50 | | | 64.4 | 1.000 | 0.506 | CT | 0.520 | 0.27 | 21.80 | | | 1978 | MPC01 |
| | | 0.50 | | | 64.4 | 1.006 | 0.506 | CT | 0.503 | 0.28 | 22.50 | | | 1978 | MPC01 |
| | | 0.50 | | | 64.8 | 1.012 | 0.502 | CT | 0.516 | 0.28 | 22.20 | | | 1978 | MPC01 |
| | | 0.62 | | | 65.0 | 2.006 | 0.615 | CT | 1.023 | 0.42 | 26.90 | | | 1978 | MPC01 |
| | | 0.62 | | | 65.0 | 2.005 | 0.615 | CT | 1.002 | 0.40 | 26.60 | | | 1978 | MPC01 |
| | | 0.62 | | | 65.0 | 2.000 | 0.617 | CT | 1.000 | 0.42 | 26.90 | | | 1978 | MPC01 |
| | | 0.62 | | | 67.5 | 2.011 | 0.617 | CT | 1.066 | 0.32 | 24.80 | | | 1978 | MPC01 |
| | | 0.62 | | | 67.5 | 1.984 | 0.617 | CT | 1.091 | 0.36 | 26.00 | | | 1978 | MPC01 |
| | | 0.62 | | | 67.5 | 1.990 | 0.617 | CT | 1.015 | 0.32 | 24.50 | | | 1978 | MPC01 |
| | | 0.60 | | | 67.8 | 2.018 | 0.605 | CT | 1.009 | 0.34 | 25.60 | | | 1978 | MPC01 |
| | | 0.62 | | | 67.8 | 2.002 | 0.605 | CT | 1.001 | 0.34 | 25.70 | | | 1978 | MPC01 |
| | | 0.62 | | | 67.8 | 2.002 | 0.605 | CT | 1.001 | 0.34 | 25.20 | | | 1978 | MPC01 |
| | | 0.62 | | | 68.7 | 2.012 | 0.635 | CT | 1.006 | 0.30 | 24.20 | | | 1978 | MPC01 |

# TABLE 8.10.2.1 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ Ksi√in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7651 Cont'd | Plate Cont'd | 0.62 | R.T. Cont'd | T-L Cont'd | 68.7 | 2.006 | 0.635 | CT | 1.023 | 0.27 | 22.70 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 0.62 | | | 69.3 | 2.016 | 0.611 | CT | 1.008 | 0.30 | 24.50 | | | 1978 | MPC01 |
| | | 0.62 | | | 69.3 | 2.018 | 0.609 | CT | 0.989 | 0.28 | 24.20 | | | 1978 | MPC01 |
| | | 0.62 | | | 71.2 | 2.016 | 0.624 | CT | 1.008 | 0.27 | 23.70 | | | 1978 | MPC01 |
| | | 0.62 | | | 71.2 | 2.015 | 0.625 | CT | 1.068 | 0.28 | 24.90 | | | 1978 | MPC01 |
| | | 0.62 | | | 71.2 | 1.984 | 0.625 | CT | 0.992 | 0.27 | 23.70 | | | 1978 | MPC01 |
| T7651 | Plate | 0.50 | 82 | L-T | 62.3 | 1.000 | 0.502 | CT | 0.527 | 0.33 | 22.50 | 23.3 | 0.4 | 1973 | 86213 |
| | | 0.50 | | | 62.3 | 1.000 | 0.502 | CT | 0.531 | 0.36 | 23.60 | | | 1973 | 86213 |
| | | 0.50 | | | 62.3 | 1.000 | 0.502 | CT | 0.516 | 0.36 | 23.60 | | | 1973 | 86213 |
| | | 0.50 | | | 64.5 | 1.000 | 0.503 | CT | 0.516 | 0.33 | 23.40 | | | 1973 | 86213 |
| | | 0.50 | | | 64.5 | 1.000 | 0.503 | CT | 0.517 | 0.33 | 23.50 | | | 1973 | 86213 |
| | | 0.50 | | | 64.5 | 1.000 | 0.503 | CT | 0.515 | 0.33 | 23.40 | | | 1973 | 86213 |
| T7651 | Plate | 0.50 | 82 | T-L | 63.0 | 1.000 | 0.502 | CT | 0.538 | 0.29 | 21.40 | 21.8 | 0.4 | 1973 | 86213 |
| | | 0.50 | | | 64.8 | 1.000 | 0.502 | CT | 0.510 | 0.29 | 22.20 | | | 1973 | 86213 |
| | | 0.50 | | | 64.8 | 1.000 | 0.502 | CT | 0.516 | 0.29 | 22.20 | | | 1973 | 86213 |
| | | 0.50 | | | 64.8 | 1.000 | 0.502 | CT | 0.501 | 0.28 | 21.50 | | | 1973 | 86213 |
| T7651 | Plate | 0.50 | 84 | L-T | 61.0 | 1.000 | 0.494 | CT | 0.514 | 0.40 | 24.50 | 25.9 | 1.1 | 1973 | 86213 |
| | | 0.62 | | | 62.8 | 1.500 | 0.612 | CT | 0.773 | 0.41 | 25.30 | | | 1973 | 86213 |
| | | 0.62 | | | 62.8 | 1.500 | 0.612 | CT | 0.787 | 0.41 | 25.40 | | | 1973 | 86213 |
| | | 0.62 | | | 63.2 | 1.500 | 0.603 | CT | 0.768 | 0.37 | 24.20 | | | 1973 | 86213 |
| | | 0.62 | | | 63.7 | 1.500 | 0.615 | CT | 0.778 | 0.47 | 27.60 | | | 1973 | 86213 |
| | | 0.62 | | | 63.7 | 1.500 | 0.614 | CT | 0.778 | 0.45 | 27.10 | | | 1973 | 86213 |

# TABLE 8.10.2.1 (CONTINUED)



| ALUMINUM 7075 (ALCLAD) $K_{Ic}$ | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ (Ksi√in.)) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
| T7651 Cont'd | Plate Cont'd | 0.50 | 84 Cont'd | L-T Cont'd | 64.0 | 1.000 | 0.505 | CT | 0.532 | 0.43 | 26.50 | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.62 | | | 64.9 | 1.500 | 0.602 | CT | 0.755 | 0.40 | 25.90 | | | 1973 | 86213 |
| | | 0.62 | | | 64.9 | 1.500 | 0.601 | CT | 0.791 | 0.41 | 26.20 | | | 1973 | 86213 |
| T7651 | Plate | 0.50 | 84 | T-L | 61.2 | 1.000 | 0.494 | CT | 0.527 | 0.34 | 22.70 | 23.2 | 1.0 | 1973 | 86213 |
| | | 0.50 | | | 61.2 | 1.000 | 0.494 | CT | 0.518 | 0.34 | 22.50 | | | 1973 | 86213 |
| | | 0.50 | | | 61.2 | 1.000 | 0.494 | CT | 0.517 | 0.33 | 22.30 | | | 1973 | 86213 |
| | | 0.62 | | | 62.4 | 1.500 | 0.603 | CT | 0.771 | 0.33 | 22.50 | | | 1973 | 86213 |
| | | 0.62 | | | 62.4 | 1.500 | 0.603 | CT | 0.767 | 0.33 | 22.70 | | | 1973 | 86213 |
| | | 0.62 | | | 63.0 | 1.500 | 0.612 | CT | 0.779 | 0.40 | 25.30 | | | 1973 | 86213 |
| | | 0.62 | | | 63.0 | 1.500 | 0.615 | CT | 0.827 | 0.40 | 25.20 | | | 1973 | 86213 |
| | | 0.62 | | | 64.0 | 1.500 | 0.602 | CT | 0.771 | 0.35 | 23.80 | | | 1973 | 86213 |
| | | 0.62 | | | 64.0 | 1.500 | 0.601 | CT | 0.755 | 0.32 | 22.90 | | | 1973 | 86213 |
| | | 0.50 | | | 64.4 | 1.000 | 0.506 | CT | 0.503 | 0.33 | 23.50 | | | 1973 | 86213 |
| | | 0.50 | | | 64.4 | 1.000 | 0.506 | CT | 0.520 | 0.31 | 22.60 | | | 1973 | 86213 |
| | | 0.62 | | | 64.6 | 1.500 | 0.612 | CT | 0.764 | 0.31 | 22.60 | | | 1973 | 86213 |
| | | 0.62 | | | 64.6 | 1.500 | 0.612 | CT | 0.797 | 0.33 | 23.30 | | | 1973 | 86213 |
| T7651 | Plate | 0.62 | 86 | L-T | 59.3 | 1.500 | 0.611 | CT | 0.771 | 0.47 | 25.70 | 25.5 | 1.2 | 1973 | 86213 |
| | | 0.62 | | | 59.3 | 1.500 | 0.611 | CT | 0.818 | 0.48 | 25.90 | | | 1973 | 86213 |
| | | 0.50 | | | 59.6 | 1.000 | 0.500 | CT | 0.534 | 0.40 | 23.80 | | | 1973 | 86213 |
| | | 0.50 | | | 59.6 | 1.000 | 0.500 | CT | 0.515 | 0.40 | 23.70 | | | 1973 | 86213 |
| | | 0.50 | | | 59.6 | 1.000 | 0.500 | CT | 0.514 | 0.40 | 23.70 | | | 1973 | 86213 |
| | | 0.62 | | | 62.6 | 1.500 | 0.615 | CT | 0.773 | 0.43 | 26.00 | | | 1973 | 86213 |

# TABLE 8.10.2.1 (CONCLUDED)



## ALUMINUM 7075 (ALCLAD) $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7651 Cont'd | Plate Cont'd | 0.62 | 86 Cont'd | L-T Cont'd | 62.6 | 1.500 | 0.615 | CT | 0.787 | 0.43 | 26.00 | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.62 | | | 63.0 | 1.500 | 0.620 | CT | 0.788 | 0.46 | 27.00 | | | 1973 | 86213 |
| | | 0.62 | | | 63.0 | 1.500 | 0.622 | CT | 0.750 | 0.48 | 27.50 | | | 1973 | 86213 |
| | | 0.62 | | | 64.2 | 1.500 | 0.596 | CT | 0.780 | 0.42 | 26.20 | | | 1973 | 86213 |
| | | 0.62 | | | 65.8 | 1.500 | 0.615 | CT | 0.762 | 0.38 | 25.70 | | | 1973 | 86213 |
| | | 0.62 | | | 65.8 | 1.500 | 0.615 | CT | 0.781 | 0.37 | 25.30 | | | 1973 | 86213 |
| T7651 | Plate | 0.62 | 86 | T-L | 59.2 | 1.500 | 0.615 | CT | 0.768 | 0.40 | 23.80 | 23.1 | 1.1 | 1973 | 86213 |
| | | 0.62 | | | 59.2 | 1.500 | 0.615 | CT | 0.775 | 0.41 | 24.10 | | | 1973 | 86213 |
| | | 0.62 | | | 59.4 | 1.500 | 0.596 | CT | 0.771 | 0.39 | 23.40 | | | 1973 | 86213 |
| | | 0.62 | | | 59.4 | 1.500 | 0.596 | CT | 0.773 | 0.37 | 22.70 | | | 1973 | 86213 |
| | | 0.62 | | | 60.6 | 1.500 | 0.611 | CT | 0.796 | 0.38 | 23.50 | | | 1973 | 86213 |
| | | 0.62 | | | 60.6 | 1.500 | 0.611 | CT | 0.759 | 0.36 | 23.10 | | | 1973 | 86213 |
| | | 0.50 | | | 61.0 | 1.000 | 0.500 | CT | 0.507 | 0.34 | 22.50 | | | 1973 | 86213 |
| | | 0.50 | | | 61.0 | 1.000 | 0.500 | CT | 0.512 | 0.31 | 21.60 | | | 1973 | 86213 |
| | | 0.50 | | | 61.0 | 1.000 | 0.500 | CT | 0.508 | 0.30 | 21.30 | | | 1973 | 86213 |
| | | 0.62 | | | 63.5 | 1.500 | 0.621 | CT | 0.768 | 0.36 | 24.20 | | | 1973 | 86213 |
| | | 0.62 | | | 63.5 | 1.500 | 0.620 | CT | 0.780 | 0.39 | 25.10 | | | 1973 | 86213 |
| | | 0.62 | | | 65.0 | 1.500 | 0.615 | CT | 0.763 | 0.30 | 22.50 | | | 1973 | 86213 |
| | | 0.62 | | | 65.0 | 1.500 | 0.615 | CT | 0.762 | 0.30 | 22.70 | | | 1973 | 86213 |

# TABLE 8.10.2.2



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.08 | R.T. | L-T | 73.1 | 5.900 | 0.079 | 1.580 | 1.970 | --- | 36.70 | 60.51 | 53.5 | 3.2 | 69.39 | 60.1 | 5.1 | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 1.580 | --- | --- | 32.10 | 52.93 | | | --- | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 0.790 | 0.980 | --- | 47.40 | 53.39 | | | 59.83 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 0.390 | --- | --- | 57.00 | 44.73* | | | --- | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 3.150 | --- | --- | 19.60 | 53.32 | | | --- | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 0.790 | 0.980 | 38.80 | 42.80 | 48.21 | | | 54.02 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 0.390 | --- | 51.50 | 58.50 | 45.91* | | | --- | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 0.790 | 0.980 | --- | 46.50 | 52.38 | | | 58.70 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 3.150 | --- | --- | 20.10 | 54.69 | | | --- | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 0.390 | 0.670 | --- | 58.90 | 46.23* | | | 60.91* | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 3.150 | 3.420 | 19.50 | 19.80 | 53.87 | | | 58.60 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 5.900 | 0.079 | 1.580 | 2.010 | --- | 31.40 | 51.78 | | | 60.16 | | | 1965 | 70485 |
| T6 | Sheet | 0.08 | R.T. | L-T | 73.1 | 11.800 | 0.079 | 4.720 | 5.860 | 19.20 | 21.00 | 63.57 | 61.5 | 5.8 | 75.57 | 70.1 | 7.2 | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 2.360 | 2.950 | 30.20 | 32.20 | 63.57 | | | 72.11 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 0.980 | 1.380 | 42.10 | 48.80 | 60.81 | | | 72.46 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 1.770 | 2.130 | 25.50 | 33.30 | 56.31 | | | 62.16 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 0.980 | 1.260 | 41.60 | 46.40 | 57.82 | | | 65.74 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 1.770 | 2.280 | 21.90 | 34.30 | 58.00 | | | 66.45 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 2.360 | 2.600 | 25.90 | 32.30 | 63.77 | | | 67.30 | | | 1965 | 70485 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.08 | R.T. Cont'd | L-T Cont'd | 73.1 | 11.800 | 0.079 | 3.540 | 4.210 | 18.60 | 32.30 | 80.69 | Cont'd | Cont'd | 90.25 | Cont'd | Cont'd | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.079 | 3.540 | 3.940 | 18.00 | 23.00 | 57.46 | | | 61.50 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 0.990 | 1.260 | 36.70 | 45.60 | 57.11 | | | 64.61 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 2.360 | 3.340 | 17.60 | 30.80 | 60.81 | | | 74.25 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 2.360 | 2.800 | 24.20 | 32.20 | 63.57 | | | 69.97 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 2.360 | 3.150 | --- | 33.20 | 65.55 | | | 77.27 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 2.360 | 2.840 | 23.20 | 28.30 | 55.87 | | | 62.00 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 0.990 | 1.320 | 34.30 | 49.20 | 61.62 | | | 71.40 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 0.990 | 1.280 | 35.30 | 46.00 | 57.61 | | | 65.70 | | | 1966 | 65697 |
| | | 0.08 | | | 73.1 | 11.800 | 0.080 | 0.990 | 1.400 | 21.00 | 49.00 | 61.37 | | | 73.30 | | | 1966 | 65697 |
| T6 | Sheet | 0.01 | R.T. | L-T | 67.4 | 15.000 | 0.009 | 7.500 | 9.380 | --- | 17.80 | 72.66 | 74.5 | 2.6 | 91.70 | 88.8 | 4.1 | 1966 | 86734 |
| | | 0.01 | | | 67.4 | 15.000 | 0.009 | 7.500 | 8.480 | --- | 18.70 | 76.33 | | | 85.92 | | | 1966 | 86734 |
| T6 | Sheet | 0.08 | R.T. | L-T | 73.1 | 23.600 | 0.079 | 1.580 | 1.890 | 35.60 | 39.70 | 62.72 | 62.4 | 9.8 | 68.68 | 69.3 | 10.4 | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 0.790 | 1.300 | --- | 45.50 | 50.72 | | | 65.14 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 4.720 | 5.000 | 16.60 | 22.70 | 63.38 | | | 65.44 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 6.300 | 6.700 | 14.20 | 18.90 | 62.21 | | | 64.55 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 0.630 | 0.870 | 46.10 | 48.00 | 47.77 | | | 56.16 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 3.940 | 5.200 | 22.20 | 28.90 | 73.16 | | | 85.16 | | | 1965 | 70485 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.08 | R.T. Cont'd | L-T Cont'd | 73.1 | 23.600 | 0.079 | 1.180 | 1.380 | 38.00 | 45.10 | 61.50 | Cont'd | Cont'd | 66.54 | Cont'd | Cont'd | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 1.180 | 1.380 | 44.30 | 46.50 | 63.41 | | | 68.61 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 4.720 | 5.000 | 17.10 | 20.60 | 57.52 | | | 59.38 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 6.300 | 6.850 | 15.90 | 21.20 | 69.78 | | | 73.39 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 1.580 | 2.240 | --- | 29.90 | 47.23 | | | 56.40 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 1.180 | 1.540 | 38.20 | 45.10 | 61.50 | | | 70.33 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 2.360 | 2.680 | 28.50 | 33.00 | 63.93 | | | 68.25 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 1.580 | 2.560 | 33.80 | 37.20 | 58.77 | | | 75.14 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 2.360 | 2.950 | 24.50 | 32.20 | 62.38 | | | 69.99 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 3.150 | 3.580 | 22.60 | 29.30 | 65.90 | | | 70.48 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 0.790 | 0.990 | --- | 47.50 | 52.95 | | | 59.30 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 3.150 | 3.460 | 24.00 | 29.70 | 66.80 | | | 70.17 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 3.150 | 3.700 | 21.00 | 28.30 | 63.65 | | | 69.28 | | | 1965 | 70485 |
| | | 0.08 | | | 73.1 | 23.600 | 0.079 | 11.80 | 13.220 | 10.00 | 18.10 | 92.67 | | | 103.33 | | | 1965 | 70485 |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.04 | R.T. | L-T | 69.8 | 7.500 | 0.040 | 3.000 | --- | --- | 18.00 | 43.44 | 47.3 | 3.9 | --- | --- | --- | 1966 | 86734 |
| | | 0.04 | | | 69.8 | 7.500 | 0.040 | 3.000 | --- | --- | 21.20 | 51.17 | | | --- | --- | --- | 1966 | 86734 |
| | | 0.04 | | | 69.8 | 7.500 | 0.040 | 3.000 | --- | --- | 19.65 | 47.42 | | | --- | | | 1966 | 86734 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{si}\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_{si}\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | L-T | 69.1 | 7.500 | 0.064 | 3.000 | --- | --- | 34.50 | 83.26* | 52.6 | 3.1 | --- | --- | --- | 1966 | 86734 |
| | | 0.06 | | | 69.1 | 7.500 | 0.064 | 1.500 | --- | --- | 34.80 | 54.77 | | | --- | --- | --- | 1966 | 86734 |
| | | 0.06 | | | 69.2 | 7.500 | 0.064 | 3.000 | --- | --- | 20.90 | 50.44 | | | --- | | | 1966 | 86734 |
| T6 | Sheet | 0.12 | R.T. | L-T | 68.9 | 7.500 | 0.125 | 3.000 | --- | --- | 22.90 | 55.27 | --- | --- | --- | --- | --- | 1966 | 86734 |
| T6 | Sheet | 0.04 | R.T. | L-T | 63.0 | 9.000 | 0.040 | 0.580 | 0.720 | 53.60 | 56.10 | 53.68* | 51.4 | 5.7 | 59.90* | 55.0 | 7.3 | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 0.540 | 0.680 | 52.60 | 55.40 | 51.14* | | | 57.46* | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 5.480 | 5.840 | 6.90 | 11.40 | 44.05 | | | 47.70 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 3.650 | 4.030 | 11.10 | 19.90 | 53.15 | | | 57.33 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 5.460 | 5.740 | 6.90 | 11.60 | 44.63 | | | 47.45 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 5.560 | 5.740 | 10.70 | 11.80 | 46.39 | | | 48.27 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 5.480 | 5.680 | 9.70 | 11.30 | 43.67 | | | 45.61 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 1.800 | 2.030 | 31.90 | 35.10 | 60.52 | | | 64.72 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 1.840 | 1.960 | 15.80 | 28.80 | 50.26 | | | 52.06 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 3.640 | 4.180 | 17.10 | 20.70 | 55.17 | | | 61.43 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 0.290 | 0.600 | 62.90 | 64.20 | 43.36* | | | 62.50* | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 0.260 | 0.580 | 64.00 | 64.90 | 41.50* | | | 62.11* | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 1.790 | 2.350 | 30.60 | 33.80 | 58.10 | | | 67.81 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 3.960 | 4.120 | 19.20 | 20.00 | 56.83 | | | 58.66 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 0.780 | 0.960 | 89.90 | 47.40 | 52.71* | | | 58.62* | | | 1965 | 62311 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.04 | R.T. Cont'd | L-T Cont'd | 63.0 | 9.000 | 0.040 | 3.640 | 4.030 | 10.60 | 19.60 | 52.24 | Cont'd | Cont'd | 56.47 | Cont'd | Cont'd | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 0.790 | 1.130 | 42.20 | 46.70 | 52.27* | | | 62.83* | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 9.000 | 0.040 | 1.860 | 1.940 | 15.80 | 29.30 | 51.44 | | | 52.66 | | | 1965 | 62311 |
| T6 | Sheet | 0.09 | R.T. | L-T | 63.0 | 9.000 | 0.091 | 3.540 | 3.740 | 23.20 | 27.50 | 71.83 | 64.5 | 6.1 | 74.78 | 70.0 | 3.6 | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 3.680 | 3.800 | 25.60 | 26.50 | 71.20 | | | 72.93 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | --- | 1.960 | --- | 38.00 | --- | | | 68.70 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 1.780 | 2.220 | 29.10 | 35.70 | 61.18 | | | 69.28 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 5.360 | 5.540 | 14.00 | 17.20 | 64.79 | | | 67.33 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 5.320 | 5.600 | 16.50 | 16.70 | 62.38 | | | 66.24 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 3.840 | 4.080 | 24.80 | 25.50 | 70.74 | | | 74.20 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 5.320 | 5.440 | 14.00 | 16.70 | 62.38 | | | 63.98 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 1.960 | 2.270 | 36.00 | 36.90 | 66.71 | | | 72.54 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 1.780 | 2.200 | 28.20 | 36.00 | 61.69 | | | 69.50 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 0.750 | 1.080 | 39.50 | 46.50 | 50.69* | | | 61.11* | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 3.500 | 3.960 | 23.20 | 25.90 | 67.10 | | | 73.59 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 0.290 | 0.700 | 59.70 | 61.10 | 41.26* | | | 64.31* | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 0.540 | 0.900 | 47.60 | 51.50 | 47.54* | | | 61.61* | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 0.540 | 0.800 | 48.30 | 51.60 | 47.63* | | | 58.13* | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 0.780 | 1.170 | 39.60 | 44.40 | 49.38 | | | 60.83* | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 9.000 | 0.091 | 5.360 | 5.500 | 15.90 | 17.20 | 64.79 | | | 66.75 | | | 1965 | 62311 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.02 | R.T. | L-T | 70.3 | 15.000 | 0.020 | 7.500 | 8.640 | --- | 17.00 | 69.39 | 68.8 | 0.9 | 79.67 | 82.4 | 3.9 | 1966 | 86734 |
| | | 0.02 | | | 70.3 | 15.000 | 0.020 | 7.500 | 9.300 | --- | 16.70 | 68.17 | | | 85.14 | | | 1966 | 86734 |
| T6 | Sheet | 0.03 | R.T. | L-T | 68.8 | 15.000 | 0.030 | 7.500 | 8.520 | --- | 19.40 | 79.19 | 75.3 | 5.5 | 89.58 | 82.9 | 9.4 | 1966 | 86734 |
| | | 0.03 | | | 68.8 | 15.000 | 0.030 | 7.500 | 8.050 | --- | 17.50 | 71.43 | | | 76.30 | | | 1966 | 86734 |
| T6 | Sheet | 0.04 | R.T. | L-T | 63.0 | 20.000 | 0.040 | --- | 2.470 | --- | 27.50 | --- | --- | --- | 54.68 | 51.9 | 3.1 | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 10.530 | --- | 9.20 | --- | | | 45.47 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 1.960 | --- | 29.60 | --- | | | 52.25 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 6.100 | --- | 16.00 | --- | | | 52.58 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 2.080 | --- | 32.10 | --- | | | 58.41 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 2.420 | --- | 27.20 | --- | | | 53.52 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 2.440 | --- | 26.30 | --- | | | 51.97 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 6.220 | --- | 15.30 | --- | | | 50.89 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 10.530 | --- | 11.10 | --- | | | 53.86 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 3.860 | --- | 20.30 | --- | | | 51.17 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 7.300 | --- | 13.00 | --- | | | 48.03 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 7.300 | --- | 13.20 | --- | | | 48.77 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 2.400 | --- | 26.90 | --- | | | 52.70 | | | 1965 | 62311 |
| | | 0.04 | | | 63.0 | 20.000 | 0.040 | --- | 3.940 | --- | 20.50 | --- | | | 52.26 | | | 1965 | 62311 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.09 | R.T. | L-T | 63.0 | 20.000 | 0.091 | 1.840 | 2.380 | 17.60 | 34.30 | 58.62 | 56.4 | 2.9 | 66.90 | 61.8 | 3.7 | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 3.660 | 4.150 | 15.70 | 24.20 | 59.25 | | | 63.48 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 7.070 | 7.780 | 10.80 | 15.20 | 54.95 | | | 58.71 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 5.400 | 6.070 | 12.10 | 19.00 | 57.96 | | | 62.24 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 5.470 | 6.150 | 12.40 | 18.60 | 57.18 | | | 61.43 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 1.860 | 2.400 | 19.20 | 32.70 | 56.19 | | | 64.06 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 3.650 | 4.280 | 15.40 | 24.60 | 60.14 | | | 65.65 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 10.05 | 11.180 | 6.60 | 11.00 | 52.08 | | | 57.68 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 7.070 | 8.250 | 10.80 | 15.50 | 56.03 | | | 62.49 | | | 1965 | 62311 |
| | | 0.09 | | | 63.0 | 20.000 | 0.091 | 10.07 | 10.850 | 6.90 | 10.80 | 51.22 | | | 54.95 | | | 1965 | 62311 |
| T6 | Sheet | 0.04 | R.T. | L-T | 71.1 | 30.000 | 0.039 | 15.00 | --- | --- | 14.00 | 80.81 | 64.9 | 16.9 | --- | --- | --- | 1966 | 86734 |
| | | 0.04 | | | 71.1 | 30.000 | 0.039 | 15.00 | --- | --- | 13.60 | 78.51 | | | --- | | | 1966 | 86734 |
| | | 0.04 | | | 69.8 | 30.000 | 0.040 | 12.00 | --- | --- | 16.90 | 81.57 | | | --- | | | 1966 | 86734 |
| | | 0.04 | | | 72.7 | 30.000 | 0.040 | 6.000 | --- | --- | 15.64 | 49.23 | | | --- | | | 1966 | 86734 |
| | | 0.04 | | | 72.9 | 30.000 | 0.040 | 12.00 | --- | --- | 10.15 | 48.99 | | | --- | | | 1966 | 86734 |
| | | 0.04 | | | 73.4 | 30.000 | 0.040 | 3.000 | --- | --- | 23.10 | 50.46 | | | --- | | | 1966 | 86734 |
| T6 | Sheet | 0.06 | R.T. | L-T | 71.8 | 30.000 | 0.060 | 15.00 | 19.060 | --- | 12.70 | 73.31 | 73.9 | 0.8 | 94.39 | 90.0 | 6.2 | 1966 | 86734 |
| | | 0.06 | | | 71.8 | 30.000 | 0.060 | 15.00 | 17.300 | --- | 12.90 | 74.46 | | | 85.61 | | | 1966 | 86734 |
| T6 | Sheet | 0.08 | R.T. | L-T | 72.9 | 30.000 | 0.081 | 15.00 | 18.420 | --- | 8.80 | 50.80 | 51.4 | 0.8 | 62.71 | 70.3 | 10.7 | 1966 | 86734 |
| | | 0.08 | | | 72.9 | 30.000 | 0.081 | 15.00 | 21.200 | --- | 9.00 | 51.95 | | | 77.89 | | | 1966 | 86734 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.09 | 82 | L-T | 69.0 | 3.000 | 0.089 | 1.120 | 2.016 | --- | 33.90 | 49.27 | 49.5 | 0.5 | 85.94* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 69.0 | 3.000 | 0.089 | 1.230 | 2.141 | --- | 31.80 | 49.43 | | | 88.38* | | | 1973 | 86213 |
| | | 0.09 | | | 69.0 | 3.000 | 0.089 | 1.170 | 2.140 | --- | 33.60 | 50.36 | | | 93.38* | | | 1973 | 86213 |
| | | 0.09 | | | 69.2 | 3.000 | 0.089 | 1.170 | 2.005 | --- | 32.70 | 49.01 | | | 82.20* | | | 1973 | 86213 |
| | | 0.09 | | | 69.2 | 3.000 | 0.089 | 1.210 | 2.062 | --- | 32.40 | 49.76 | | | 84.91* | | | 1973 | 86213 |
| | | 0.09 | | | 69.2 | 3.000 | 0.089 | 1.230 | 2.162 | --- | 31.70 | 49.27 | | | 89.63* | | | 1973 | 86213 |
| T6 | Sheet | 0.09 | 83 | L-T | 69.0 | 3.000 | 0.089 | 1.210 | 2.058 | --- | 32.50 | 49.91 | 49.5 | 0.6 | 84.92* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 69.0 | 3.000 | 0.089 | 1.220 | 2.115 | --- | 31.80 | 49.13 | | | 86.63* | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | 83 | L-T | 71.0 | 3.000 | 0.125 | 1.210 | 1.947 | --- | 34.00 | 52.21* | --- | --- | 82.10* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 71.0 | 3.000 | 0.126 | 1.190 | 2.100 | --- | 34.60 | 52.49* | | | 93.27* | | | 1973 | 86213 |
| | | 0.12 | | | 71.0 | 3.000 | 0.126 | 1.250 | 2.081 | --- | 33.90 | 53.33* | | | 90.02* | | | 1973 | 86213 |
| | | 0.12 | | | 71.7 | 3.000 | 0.126 | 1.190 | 1.964 | --- | 35.90 | 54.47* | | | 87.76* | | | 1973 | 86213 |
| | | 0.12 | | | 71.7 | 3.000 | 0.126 | 1.230 | 2.059 | --- | 34.40 | 53.47* | | | 89.89* | | | 1973 | 86213 |
| | | 0.12 | | | 71.7 | 3.000 | 0.126 | 1.220 | 2.021 | --- | 34.60 | 53.46* | | | 87.96* | | | 1973 | 86213 |
| T6 | Sheet | 0.09 | 84 | L-T | 69.7 | 3.000 | 0.089 | 1.160 | 2.116 | --- | 33.30 | 49.60 | 49.2 | 0.4 | 90.85* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 69.7 | 3.000 | 0.089 | 1.260 | 2.178 | --- | 30.80 | 48.75 | | | 88.20* | | | 1973 | 86213 |
| | | 0.09 | | | 69.7 | 3.000 | 0.089 | 1.240 | 2.146 | --- | 31.50 | 49.26 | | | 87.95* | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | 84 | L-T | 71.8 | 3.000 | 0.126 | 1.230 | 2.024 | --- | 34.10 | 53.00* | --- | --- | 86.94* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 71.8 | 3.000 | 0.126 | 1.180 | 2.018 | --- | 34.70 | 52.33 | | | 88.09* | | | 1973 | 86213 |
| | | 0.12 | | | 71.8 | 3.000 | 0.126 | 1.370 | 2.227 | --- | 31.60 | 53.40* | | | 94.10* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{si}\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_{si}\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.16 | 84 | L-T | 73.4 | 3.000 | 0.160 | 1.207 | 2.539 | --- | 29.90 | 45.81 | 49.1 | 3.2 | 121.98* | --- | --- | 1973 | 86213 |
| | | 0.16 | | | 73.4 | 3.000 | 0.160 | 1.210 | 1.994 | --- | 30.30 | 46.53 | | | 75.63* | | | 1973 | 86213 |
| | | 0.16 | | | 73.4 | 3.000 | 0.160 | 1.203 | 1.943 | --- | 30.10 | 46.00 | | | 72.48* | | | 1973 | 86213 |
| | | 0.16 | | | 70.4 | 3.000 | 0.164 | 1.157 | 1.726 | --- | 35.90 | 53.35* | | | 75.15* | | | 1973 | 86213 |
| | | 0.16 | | | 70.4 | 3.000 | 0.164 | 1.087 | 1.580 | --- | 36.80 | 52.36* | | | 70.47* | | | 1973 | 86213 |
| | | 0.16 | | | 70.4 | 3.000 | 0.164 | 1.200 | 1.747 | --- | 35.00 | 53.42* | | | 74.19* | | | 1973 | 86213 |
| | | 0.16 | | | 71.2 | 3.000 | 0.164 | 1.230 | 1.647 | --- | 33.50 | 52.07 | | | 66.76* | | | 1973 | 86213 |
| | | 0.16 | | | 71.2 | 3.000 | 0.164 | 1.220 | 1.654 | --- | 33.60 | 51.91 | | | 67.29* | | | 1973 | 86213 |
| | | 0.16 | | | 71.2 | 3.000 | 0.164 | 1.207 | 1.659 | --- | 34.00 | 52.09 | | | 68.25* | | | 1973 | 86213 |
| T6 | Sheet | 0.04 | R.T. | T-L | 65.8 | 7.500 | 0.040 | 3.000 | --- | --- | 19.25 | 46.46 | 45.6 | 1.2 | --- | --- | --- | 1966 | 86734 |
| | | 0.04 | | | 66.2 | 7.500 | 0.040 | 3.000 | --- | --- | 18.54 | 44.75 | | | --- | | | 1966 | 86734 |
| T6 | Sheet | 0.01 | R.T. | T-L | 67.1 | 15.000 | 0.010 | 7.500 | 8.380 | --- | 14.40 | 58.78 | 57.8 | 1.4 | 65.36 | 65.1 | 0.4 | 1966 | 86734 |
| | | 0.01 | | | 67.1 | 15.000 | 0.010 | 7.500 | 8.590 | --- | 13.90 | 56.74 | | | 64.74 | | | 1966 | 86734 |
| T6 | Sheet | 0.02 | R.T. | T-L | 65.8 | 15.000 | 0.020 | 7.500 | 8.560 | --- | 16.50 | 67.35 | 68.8 | 2.0 | 76.57 | 78.4 | 2.6 | 1966 | 86734 |
| | | 0.02 | | | 65.8 | 15.000 | 0.020 | 7.500 | 8.610 | --- | 17.20 | 70.21 | | | 80.31 | | | 1966 | 86734 |
| T6 | Sheet | 0.03 | R.T. | T-L | 69.6 | 15.000 | 0.030 | 7.500 | 9.360 | --- | 17.60 | 71.84 | 72.9 | 1.4 | 90.43 | 90.5 | 0.0 | 1966 | 86734 |
| | | 0.03 | | | 69.6 | 15.000 | 0.030 | 7.500 | 9.150 | --- | 18.10 | 73.88 | | | 90.49 | | | 1966 | 86734 |
| T6 | Sheet | 0.04 | R.T. | T-L | 69.9 | 30.000 | 0.039 | 15.00 | --- | --- | 11.10 | 64.07 | 65.8 | 2.5 | --- | --- | --- | 1966 | 86734 |
| | | 0.04 | | | 69.9 | 30.000 | 0.039 | 15.00 | --- | --- | 11.70 | 67.54 | | | --- | | | 1966 | 86734 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONTINUED)



## ALUMINUM 7075 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | T-L | 69.8 | 30.000 | 0.064 | 15.00 | 16.760 | --- | 11.80 | 68.12 | 68.1 | 0.0 | 75.74 | 75.5 | 0.4 | 1966 | 86734 |
| | | 0.06 | | | 69.8 | 30.000 | 0.064 | 15.00 | 16.640 | --- | 11.80 | 68.12 | | | 75.18 | | | 1966 | 86734 |
| T6 | Sheet | 0.08 | R.T. | T-L | 69.2 | 30.000 | 0.081 | 15.00 | 16.800 | --- | 8.20 | 47.33 | 47.0 | 0.4 | 52.76 | 52.0 | 1.0 | 1966 | 86734 |
| | | 0.08 | | | 69.2 | 30.000 | 0.081 | 15.00 | 16.550 | --- | 8.10 | 46.76 | | | 51.33 | | | 1966 | 86734 |
| T6 | Sheet | 0.09 | 82 | T-L | 67.2 | 3.000 | 0.089 | 1.320 | 2.056 | --- | 27.10 | 44.46 | 44.6 | 0.2 | 70.71* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 67.2 | 3.000 | 0.089 | 1.200 | 1.862 | --- | 29.30 | 44.72 | | | 66.89* | | | 1973 | 86213 |
| | | 0.09 | | | 67.2 | 3.000 | 0.089 | 1.270 | 1.960 | --- | 28.10 | 44.74 | | | 68.50* | | | 1973 | 86213 |
| T6 | Sheet | 0.09 | 83 | T-L | 67.4 | 3.000 | 0.088 | 1.290 | 1.962 | --- | 27.40 | 44.15 | 43.4 | 0.4 | 66.89* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 67.4 | 3.000 | 0.088 | 1.250 | 1.990 | --- | 27.70 | 43.58 | | | 68.95* | | | 1973 | 86213 |
| | | 0.09 | | | 67.4 | 3.000 | 0.088 | 1.240 | 2.025 | --- | 27.60 | 43.16 | | | 70.37* | | | 1973 | 86213 |
| | | 0.09 | | | 67.7 | 3.000 | 0.089 | 1.320 | 1.987 | --- | 26.60 | 43.64 | | | 66.03* | | | 1973 | 86213 |
| | | 0.09 | | | 67.7 | 3.000 | 0.089 | 1.200 | 2.064 | --- | 28.20 | 43.04 | | | 74.01* | | | 1973 | 86213 |
| | | 0.09 | | | 67.7 | 3.000 | 0.089 | 1.280 | 2.065 | --- | 26.90 | 43.09 | | | 70.60* | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | 83 | T-L | 69.4 | 3.000 | 0.125 | 1.330 | 2.026 | --- | 28.90 | 47.69 | 46.9 | 0.8 | 73.79* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 69.4 | 3.000 | 0.125 | 1.250 | 2.052 | --- | 30.40 | 47.82 | | | 79.09* | | | 1973 | 86213 |
| | | 0.12 | | | 69.6 | 3.000 | 0.125 | 1.210 | 1.894 | --- | 29.90 | 45.92 | | | 69.71* | | | 1973 | 86213 |
| | | 0.12 | | | 69.4 | 3.000 | 0.127 | 1.240 | 1.902 | --- | 30.00 | 46.91 | | | 70.32* | | | 1973 | 86213 |
| | | 0.12 | | | 69.6 | 3.000 | 0.127 | 1.170 | 1.821 | --- | 31.40 | 47.06 | | | 69.76* | | | 1973 | 86213 |
| | | 0.12 | | | 69.6 | 3.000 | 0.128 | 1.250 | 1.991 | --- | 29.40 | 46.25 | | | 73.18* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.10.2.2 (CONCLUDED)



| ALUMINUM 7075 (ALCLAD) $K_C$ | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.09 | 84 | T-L | 69.0 | 3.000 | 0.089 | 1.270 | 1.989 | --- | 27.20 | 43.31 | 43.5 | 0.1 | 67.61* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 69.0 | 3.000 | 0.089 | 1.220 | 1.871 | --- | 28.20 | 43.57 | | | 64.72* | | | 1973 | 86213 |
| | | 0.09 | | | 69.0 | 3.000 | 0.089 | 1.230 | 2.003 | --- | 28.00 | 43.52 | | | 70.28* | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | 84 | T-L | 69.1 | 3.000 | 0.125 | 1.250 | 1.932 | --- | 30.60 | 48.14 | 47.3 | 0.8 | 73.19* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 69.1 | 3.000 | 0.126 | 1.300 | 1.925 | --- | 29.10 | 47.17 | | | 69.22* | | | 1973 | 86213 |
| | | 0.12 | | | 69.1 | 3.000 | 0.126 | 1.350 | 2.031 | --- | 27.90 | 46.59 | | | 71.44* | | | 1973 | 86213 |
| T6 | Sheet | 0.16 | 84 | T-L | 70.6 | 3.000 | 0.160 | 1.197 | 1.590 | --- | 27.20 | 41.42 | 44.0 | 2.9 | 52.40* | 49.7 | 0.6 | 1973 | 86213 |
| | | 0.16 | | | 70.6 | 3.000 | 0.160 | 1.280 | 1.683 | --- | 24.60 | 39.40 | | | 50.12 | | | 1973 | 86213 |
| | | 0.16 | | | 70.6 | 3.000 | 0.160 | 1.230 | 1.568 | --- | 25.90 | 40.26 | | | 49.24 | | | 1973 | 86213 |
| | | 0.16 | | | 69.2 | 3.000 | 0.163 | 1.230 | 1.981 | --- | 30.20 | 46.94 | | | 74.65* | | | 1973 | 86213 |
| | | 0.16 | | | 69.2 | 3.000 | 0.163 | 1.200 | 1.991 | --- | 29.80 | 45.49 | | | 74.18* | | | 1973 | 86213 |
| | | 0.16 | | | 69.6 | 3.000 | 0.163 | 1.207 | 1.589 | --- | 29.70 | 45.50 | | | 57.14* | | | 1973 | 86213 |
| | | 0.16 | | | 69.2 | 3.000 | 0.164 | 1.201 | 1.906 | --- | 30.30 | 46.25 | | | 71.21* | | | 1973 | 86213 |
| | | 0.16 | | | 69.6 | 3.000 | 0.164 | 1.057 | 1.470 | --- | 32.30 | 45.10 | | | 57.92* | | | 1973 | 86213 |
| | | 0.16 | | | 69.6 | 3.000 | 0.164 | 1.173 | 1.542 | --- | 30.70 | 46.07 | | | 57.46* | | | 1973 | 86213 |
| T6 | Sheet | 0.09 | 84 | T-L | 69.1 | 16.000 | 0.089 | 4.000 | 5.100 | 16.60 | 22.80 | 59.46 | 59.2 | 0.4 | 68.90 | 67.8 | 1.5 | 1973 | 86213 |
| | | 0.09 | | | 69.1 | 16.000 | 0.090 | 4.000 | 4.920 | 18.10 | 22.60 | 58.94 | | | 66.76 | | | 1973 | 86213 |

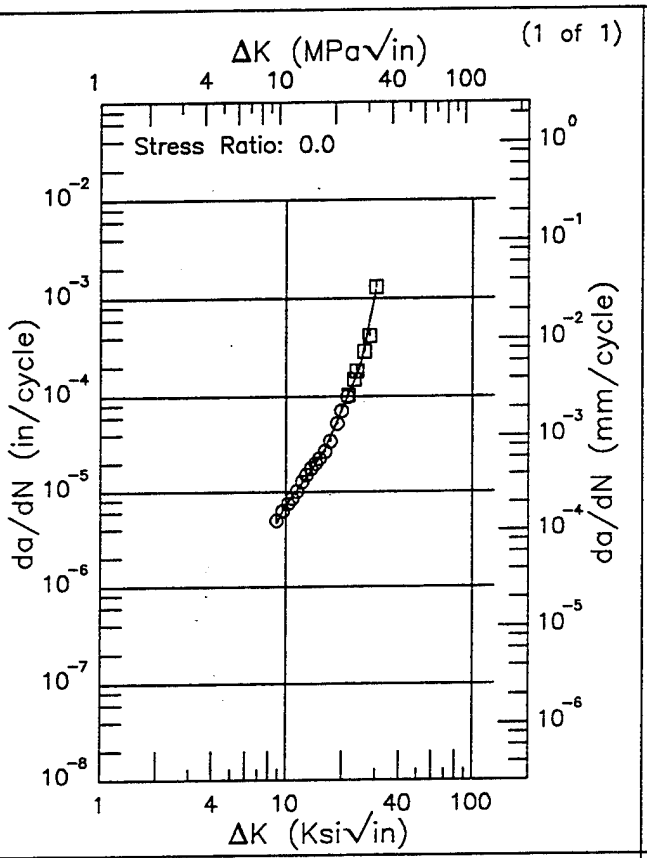
* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

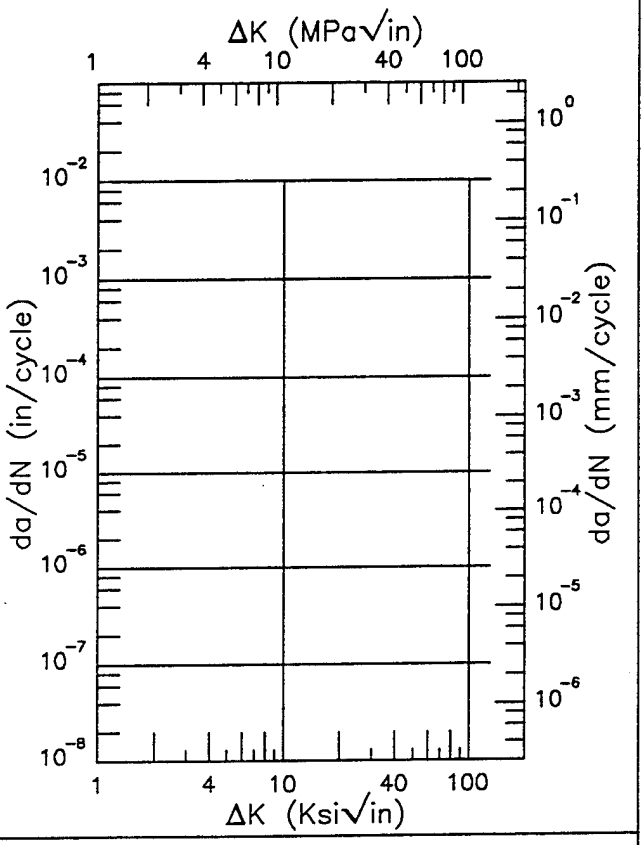
## 7075 (ALCLAD)

R

Condition/Ht: T6
Form: 0.09 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 67.7 ksi
Ult. Strength: 77.8 ksi
Specimen Thk: 0.089 in.
Specimen Width: 4 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 8.86 (min) | 4.61 |
| 9. | 4.92 |
| 10. | 7.23 |
| 13. | 14.5 |
| 16. | 27.1 |
| 20. | 73.6 |
| 25. | 214. |
| 30. | 1152. |
| 30.12 (max) | 1224. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.70 | 0. .5 .8 1.25 2. |

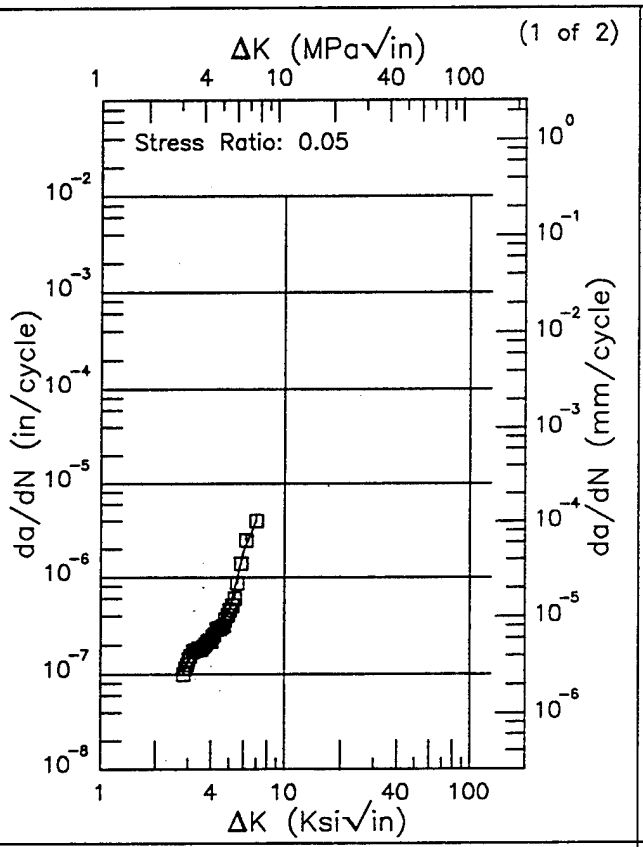
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

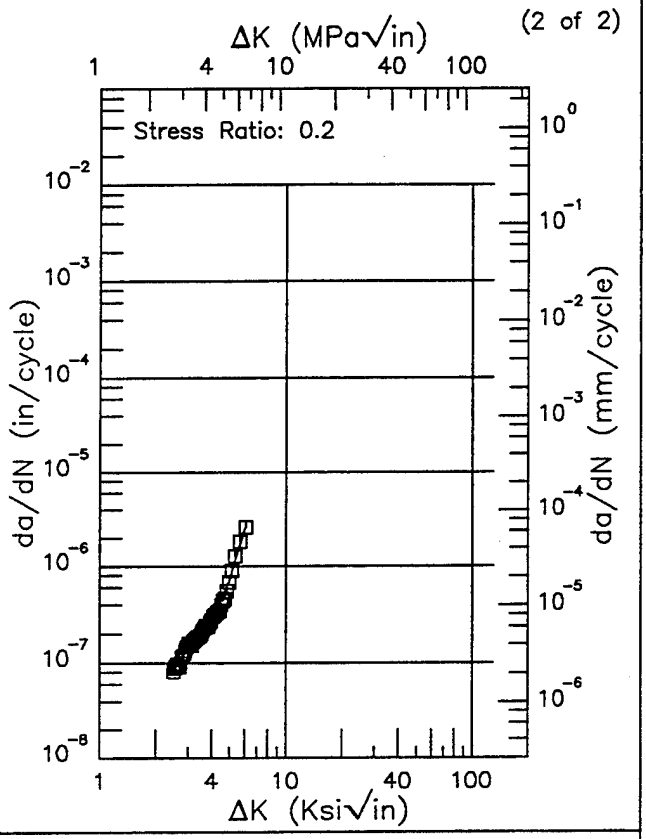
**Figure 8.10.3.1.1**

## 7075 (ALCLAD) R

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: T–L
Frequency: 30 Hz
Environment: LAB AIR; RT

Yield Strength: 47.2 ksi
Ult. Strength: 68.2 ksi
Specimen Thk: 0.09 in.
Specimen Width: 14 in.
Ref: EFM01



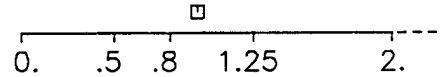




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.83 (min) | 0.107 |
| 3. | 0.133 |
| 3.5 | 0.190 |
| 4. | 0.230 |
| 5. | 0.443 |
| 6. | 1.91 |
| 6.96 (max) | 3.90 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.49 (min) | 0.0807 |
| 2.5 | 0.0818 |
| 3. | 0.143 |
| 3.5 | 0.204 |
| 4. | 0.267 |
| 5. | 0.717 |
| 6. | 2.50 |
| 6.09 (max) | 2.54 |

RMS % Error: 7.34

Life Prediction Ratio Summary




RMS % Error: 6.87

Life Prediction Ratio Summary

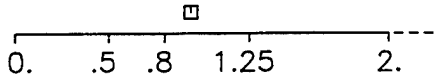



**Figure 8.10.3.1.2**

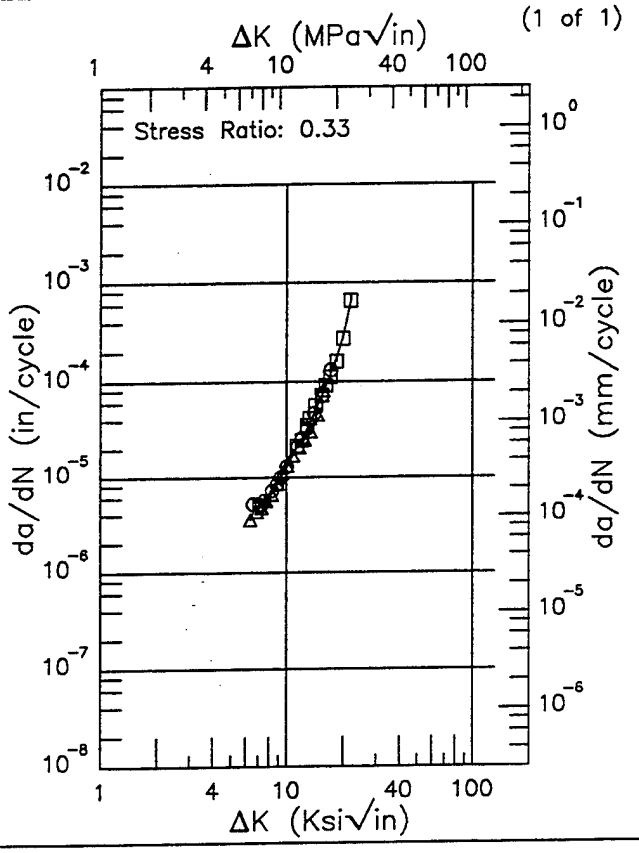
## 7075 (ALCLAD)

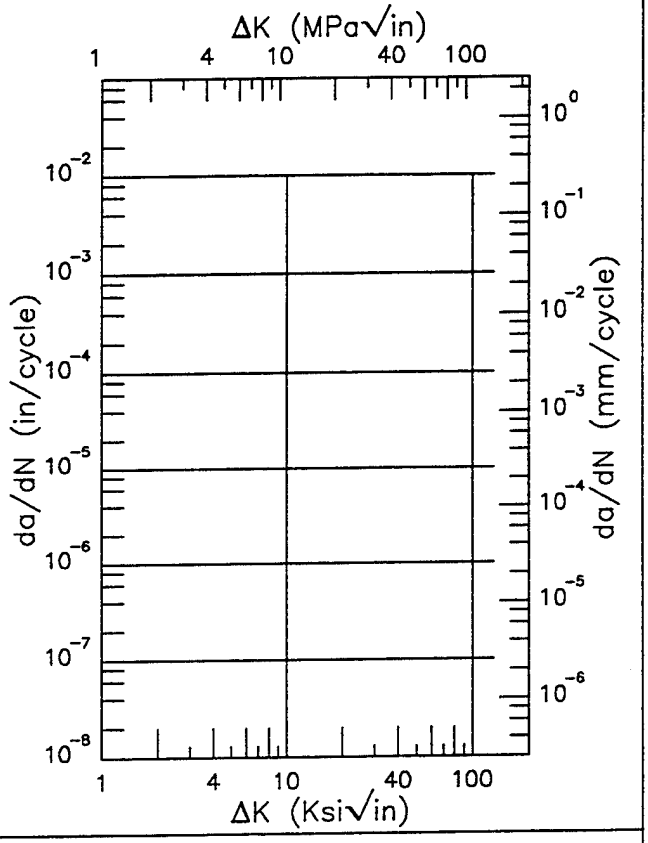
R

Condition/Ht: T6
Form: 0.09 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 67.7 ksi
Ult. Strength: 77.8 ksi
Specimen Thk: 0.089 in.
Specimen Width: 4 in.
Ref: 86213

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.36 (min) | 4.42 |
| 7. | 4.71 |
| 8. | 6.25 |
| 9. | 9.03 |
| 10. | 13.1 |
| 13. | 33.4 |
| 16. | 86.1 |
| 20. | 285. |
| 21.86 (max) | 656. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

RMS % Error
8.01

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

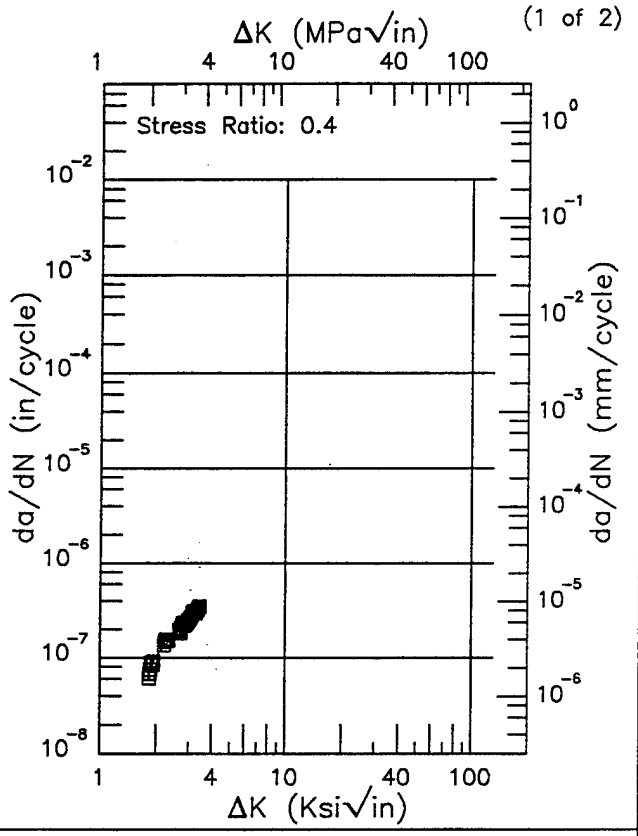
Life Prediction Ratio Summary
0. .5 .8 1.25 2.

**Figure 8.10.3.1.3**

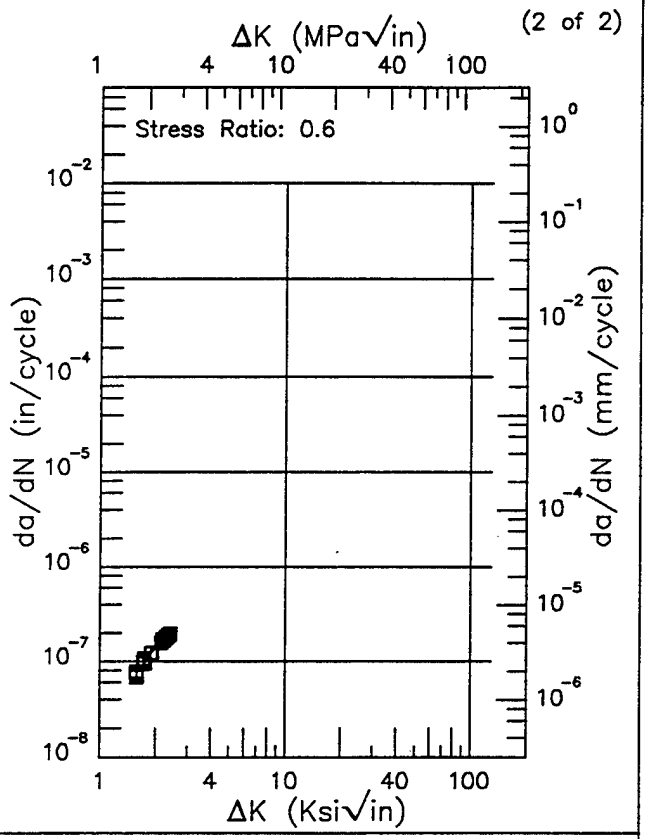
## 7075 (ALCLAD) R

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: T–L
Frequency: 30 Hz
Environment: LAB AIR; RT

Yield Strength: 47.2 ksi
Ult. Strength: 68.2 ksi
Specimen Thk: 0.09 in.
Specimen Width: 14 in.
Ref: EFM01




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.82 (min) | 0.0689 |
| 2. | 0.105 |
| 2.5 | 0.173 |
| 3. | 0.254 |
| 3.40 (max) | 0.330 |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.56 (min) | 0.0672 |
| 1.6 | 0.0767 |
| 2. | 0.138 |
| 2.40 (max) | 0.190 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.95 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.13 | 0. .5 .8 1.25 2. |

**Figure 8.10.3.1.4**

# TABLE 8.11.1.1



## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 7079 AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Plate | T6 | 33. | 2.9 | 8 | --- | --- | --- | --- | --- | --- |
| | T651 | 27.6 | 1.8 | 39 | 23.3 | 2. | 27 | 18.6 | 3.2 | 10 |
| | T851 | 28.6 | 1.6 | 7 | 21.3 | 3.4 | 2 | --- | --- | --- |
| Forging | T652 | 27.8 | 2.2 | 13 | 23.1 | 2.2 | 10 | 18.1 | 0.7 | 12 |

## TABLE 8.11.1.2.1

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: L-S** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 15.47 | | | |

## TABLE 8.11.1.2.2



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 60.0 | 100.0 |
| T6 | SHEET | 0.05 | 2 | | | | 64.8 | | |
| | | 0.5 | 2 | | | | 360.68 | | |
| | BILLET | 0.02 | 1-30 | | | 10.4 | 108.02 | | |
| T651 | SHEET | 0.05 | 2 | | | 16.1 | 93.89 | | |
| T652 | FORGING | 0.33 | 5.17 | | | 22.35 | 144.68 | | |

## TABLE 8.11.1.2.3

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: T-S** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 17.14 | | | |

## TABLE 8.11.1.2.4



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: T-S** **ENVIRONMENT: L.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 8.6 | | | |

## TABLE 8.11.1.2.5

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: T-S** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 10.3 | 60.49 | | |

## TABLE 8.11.1.2.6



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: T-S** **ENVIRONMENT: Salt Fog**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 19.42 | | | |

## TABLE 8.11.1.2.7

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6 | FORGING | 0.05 | 9 | | 1.87 | 15.93 | 72.89 | | |
| | | 0.5 | 9 | 0.27 | 4.02 | | | | |

## TABLE 8.11.1.2.8



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6 | FORGING | 0.05 | 9 | | 0.44 | 7.72 | 42.69 | | |
| | | 0.5 | 9 | 0.19 | 2.15 | 26.8 | | | |
| T652 | FORGING | 0.33 | 5.17 | | | 17.05 | | | |

## TABLE 8.11.1.2.9

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: S-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 18.3 | | | |

## TABLE 8.11.1.2.10



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7079 AT ROOM TEMPERATURE

**ORIENTATION: S-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T652 | FORGING | 0.33 | 5.17 | | | 9.73 | | | |

# TABLE 8.11.2.1



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T6 | Plate | 3.00 | -75 | L-T | 68.6 | 2.550 | 1.000 | CT | 0.881 | 0.55 | 32.30 | --- | --- | 1966 | 76411 |
| T6 | Plate | 3.00 | -40 | L-T | 68.5 | 2.550 | 1.000 | CT | 0.896 | 0.44 | 28.80 | --- | --- | 1966 | 76411 |
| T6 | Plate | 3.00 | 0 | L-T | 69.2 | 2.550 | 1.000 | CT | 1.017 | 0.64 | 35.00 | --- | --- | 1966 | 76411 |
| T6 | Plate | 3.00 | 32 | L-T | 65.7 | 2.550 | 1.000 | CT | 0.918 | 0.60 | 32.20 | --- | --- | 1966 | 76411 |
| T6 | Plate | 3.00 | R.T. | L-T | 65.0 | 2.550 | 1.000 | CT | 0.875 | 0.56 | 30.70 | 33.0 | 2.9 | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 0.958 | 0.52 | 29.50 | | | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 0.932 | 0.66 | 33.50 | | | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 1.080 | 0.71 | 34.50 | | | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 1.058 | 0.87 | 38.50 | | | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 0.966 | 0.70 | 34.30 | | | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 0.911 | 0.54 | 30.40 | | | 1966 | 76411 |
| | | 3.00 | | | 65.0 | 2.550 | 1.000 | CT | 1.107 | 0.64 | 32.80 | | | 1966 | 76411 |
| T6 | Plate | 3.00 | 100 | L-T | 62.0 | 2.550 | 1.000 | CT | 0.977 | 0.73 | 33.40 | --- | --- | 1966 | 76411 |
| T6 | Plate | 3.00 | 150 | L-T | 63.0 | 2.550 | 1.000 | CT | 0.978 | 0.80 | 35.60 | --- | --- | 1966 | 76411 |
| T6 | Forging | 0.89 | R.T. | T-L | 67.7 | 0.500 | 0.249 | NB | 0.258 | 0.23 | 20.60 | --- | --- | 1973 | 86213 |
| T6 | Forging | --- | R.T. | C-L | 67.6 | 1.500 | 0.750 | CT | 0.750 | 0.23 | 20.50 | 20.4 | 0.1 | 1972 | 82879 |
| | | --- | | | 67.6 | 1.500 | 0.750 | CT | 0.750 | 0.22 | 20.30 | | | 1972 | 82879 |
| T6 | Forging | 0.89 | 84 | T-L | 67.6 | 1.500 | 0.750 | CT | 0.814 | 0.21 | 19.40 | --- | --- | 1973 | 86213 |
| T6 | Forged Bar | 4.50 | R.T. | T-L | 67.4 | 0.500 | 0.250 | NB | 0.277 | 0.25 | 21.10 | --- | --- | 1973 | 86213 |
| T651 | Plate | 1.38 | -320 | T-L | 90.6 | 3.000 | 1.380 | NB | 1.450 | 0.20 | 25.90 | 26.7 | 1.3 | 1971 | 84288 |
| | | 1.38 | | | 90.6 | 3.000 | 1.380 | NB | 1.560 | 0.20 | 25.90 | | | 1971 | 84288 |
| | | 1.38 | | | 90.6 | 3.000 | 1.380 | NB | 1.530 | 0.24 | 28.20 | | | 1971 | 84288 |

# TABLE 8.11.2.1 (CONTINUED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 | Plate | 1.38 | -112 | T-L | 81.2 | 3.000 | 1.383 | NB | 1.652 | 0.23 | 27.50 | 26.1 | 2.0 | 1971 | 84288 |
| | | 1.38 | | | 81.2 | 3.000 | 1.385 | NB | 1.695 | 0.19 | 24.70 | | | 1971 | 84288 |
| T651 | Plate | 1.37 | R.T. | L-S | 77.6 | 1.004 | 0.501 | CT | 0.512 | 0.30 | 27.40 | --- | --- | 1978 | MPC01 |
| T651 | Plate | 5.00 | R.T. | L-T | 65.8 | 2.000 | 1.001 | CT | 1.023 | 0.43 | 27.20 | 27.6 | 1.8 | 1973 | 86213 |
| | | 5.00 | | | 65.8 | 2.000 | 1.001 | CT | 1.014 | 0.41 | 26.80 | | | 1973 | 86213 |
| | | 5.00 | | | 66.4 | 2.000 | 1.001 | CT | 1.008 | 0.37 | 25.50 | | | 1973 | 86213 |
| | | 5.00 | | | 66.4 | 2.000 | 1.002 | CT | 1.018 | 0.38 | 25.90 | | | 1973 | 86213 |
| | | 1.37 | | | 75.2 | 3.000 | 1.398 | NB | 1.569 | 0.36 | 28.70 | | | 1973 | 86213 |
| | | 1.37 | | | 75.2 | 3.000 | 1.398 | NB | 1.607 | 0.41 | 30.30 | | | 1973 | 86213 |
| | | 1.37 | | | 75.2 | 3.000 | 1.398 | NB | 1.506 | 0.40 | 30.00 | | | 1973 | 86213 |
| | | 1.37 | | | 75.2 | 3.000 | 1.397 | NB | 1.545 | 0.42 | 30.80 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 1.990 | 1.003 | CT | 0.975 | 0.30 | 26.60 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 2.998 | 1.379 | NB | 1.469 | 0.28 | 25.90 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 3.029 | 1.383 | NB | 1.484 | 0.27 | 25.10 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 3.000 | 1.381 | NB | 1.528 | 0.38 | 29.50 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 1.990 | 1.002 | CT | 1.015 | 0.30 | 26.70 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 2.973 | 1.381 | NB | 1.546 | 0.30 | 26.60 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 3.022 | 1.381 | NB | 1.511 | 0.36 | 28.90 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 2.985 | 1.382 | NB | 1.582 | 0.28 | 26.50 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 3.000 | 1.379 | NB | 1.445 | 0.28 | 25.30 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 3.000 | 1.379 | NB | 1.502 | 0.33 | 27.70 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 3.000 | 1.383 | NB | 1.569 | 0.33 | 27.50 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 3.000 | 1.381 | NB | 1.587 | 0.33 | 27.80 | | | 1973 | 86213 |

# TABLE 8.11.2.1 (CONTINUED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 Cont'd | Plate Cont'd | 1.37 | R.T. Cont'd | L-T Cont'd | 76.0 | 2.000 | 1.001 | CT | 1.002 | 0.32 | 27.40 | Cont'd | Cont'd | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 2.000 | 1.002 | CT | 1.013 | 0.31 | 26.70 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 2.000 | 1.003 | CT | 0.986 | 0.31 | 26.90 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 3.000 | 1.382 | NB | 1.630 | 0.34 | 27.90 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 2.980 | 1.379 | NB | 1.490 | 0.30 | 27.30 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 3.018 | 1.383 | NB | 1.509 | 0.27 | 25.60 | | | 1978 | MPC01 |
| | | 1.37 | | | 76.0 | 3.000 | 1.383 | NB | 1.591 | 0.34 | 28.00 | | | 1973 | 86213 |
| | | 1.37 | | | 76.0 | 2.000 | 1.001 | CT | 1.000 | 0.32 | 27.40 | | | 1978 | MPC01 |
| | | 1.37 | | | 77.6 | 3.000 | 1.381 | NB | 1.510 | 0.35 | 28.90 | | | 1973 | 86213 |
| | | 1.37 | | | 77.6 | 3.002 | 1.384 | NB | 1.501 | 0.30 | 27.50 | | | 1978 | MPC01 |
| | | 1.37 | | | 77.6 | 3.000 | 1.385 | NB | 1.522 | 0.45 | 32.90 | | | 1973 | 86213 |
| | | 1.37 | | | 77.6 | 3.002 | 1.381 | NB | 1.471 | 0.25 | 25.10 | | | 1978 | MPC01 |
| | | 1.37 | | | 77.6 | 3.000 | 1.381 | NB | 1.500 | 0.32 | 28.60 | | | 1978 | MPC01 |
| | | 1.37 | | | 77.6 | 3.002 | 1.385 | NB | 1.501 | 0.42 | 32.20 | | | 1978 | MPC01 |
| | | 1.37 | | | 77.6 | 3.026 | 1.383 | NB | 1.513 | 0.27 | 26.30 | | | 1978 | MPC01 |
| | | 1.37 | | | 77.6 | 3.000 | 1.385 | NB | 1.655 | 0.30 | 27.00 | | | 1973 | 86213 |
| | | 1.37 | | | 77.6 | 3.000 | 1.384 | NB | 1.531 | 0.33 | 28.40 | | | 1973 | 86213 |
| | | 1.00 | | | 79.7 | 1.987 | 0.965 | CT | 1.073 | 0.27 | 26.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 79.7 | 1.989 | 0.966 | CT | 1.074 | 0.28 | 27.40 | | | 1978 | MPC01 |
| T651 | Plate | 1.37 | R.T. | T-S | 74.2 | 1.002 | 0.500 | CT | 0.501 | 0.27 | 24.80 | 24.7 | 0.1 | 1978 | MPC01 |
| | | 1.37 | | | 74.2 | 0.996 | 0.500 | CT | 0.488 | 0.27 | 24.60 | | | 1978 | MPC01 |

# TABLE 8.11.2.1 (CONTINUED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 | Plate | 5.00 | R.T. | T-L | 65.2 | 2.000 | 1.001 | CT | 1.050 | 0.42 | 26.60 | 23.3 | 2.0 | 1973 | 86213 |
| | | 5.00 | | | 65.2 | 2.000 | 1.001 | CT | 1.044 | 0.37 | 25.00 | | | 1973 | 86213 |
| | | 5.00 | | | 66.0 | 2.000 | 1.001 | CT | 1.019 | 0.36 | 25.00 | | | 1973 | 86213 |
| | | 1.38 | | | 72.8 | 1.000 | 0.500 | NB | 0.487 | 0.30 | 25.10 | | | 1972 | 82880 |
| | | 1.37 | | | 72.8 | 2.000 | 1.001 | CT | 1.008 | 0.26 | 23.70 | | | 1973 | 86213 |
| | | 1.37 | | | 72.8 | 1.996 | 1.000 | CT | 0.998 | 0.27 | 24.50 | | | 1978 | MPC01 |
| | | 1.38 | | | 72.8 | 3.000 | 1.380 | NB | 1.628 | 0.28 | 24.30 | | | 1972 | 82880 |
| | | 1.37 | | | 72.8 | 2.000 | 1.000 | CT | 1.003 | 0.29 | 24.70 | | | 1973 | 86213 |
| | | 1.38 | | | 72.8 | 1.000 | 0.500 | NB | 0.486 | 0.23 | 21.90 | | | 1972 | 82880 |
| | | 1.37 | | | 72.8 | 3.002 | 1.382 | NB | 1.471 | 0.25 | 24.00 | | | 1978 | MPC01 |
| | | 1.38 | | | 72.8 | 2.000 | 1.000 | NB | 1.034 | 0.26 | 23.30 | | | 1972 | 82880 |
| | | 1.37 | | | 72.8 | 2.982 | 1.384 | NB | 1.491 | 0.27 | 24.70 | | | 1978 | MPC01 |
| | | 1.37 | | | 72.8 | 2.000 | 1.002 | CT | 1.000 | 0.25 | 23.20 | | | 1973 | 86213 |
| | | 1.38 | | | 72.8 | 1.500 | 0.750 | NB | 0.781 | 0.29 | 24.90 | | | 1972 | 82880 |
| | | 1.38 | | | 72.8 | 2.000 | 1.000 | NB | 1.078 | 0.25 | 22.80 | | | 1972 | 82880 |
| | | 1.37 | | | 72.8 | 2.008 | 1.002 | CT | 0.984 | 0.24 | 22.70 | | | 1978 | MPC01 |
| | | 1.38 | | | 72.8 | 2.000 | 1.000 | NB | 1.128 | 0.16 | 18.60 | | | 1972 | 82880 |
| | | 1.38 | | | 72.8 | 3.000 | 1.380 | NB | 1.677 | 0.26 | 23.60 | | | 1972 | 82880 |
| | | 1.38 | | | 72.8 | 3.000 | 1.380 | NB | 1.617 | 0.23 | 22.30 | | | 1972 | 82880 |
| | | 1.38 | | | 72.8 | 1.500 | 0.750 | NB | 0.757 | 0.26 | 23.50 | | | 1972 | 82880 |
| | | 1.37 | | | 74.2 | 2.984 | 1.385 | NB | 1.462 | 0.25 | 24.30 | | | 1978 | MPC01 |
| | | 1.37 | | | 74.2 | 3.006 | 1.384 | NB | 1.473 | 0.19 | 21.20 | | | 1978 | MPC01 |
| | | 1.37 | | | 74.2 | 3.000 | 1.385 | NB | 1.500 | 0.27 | 24.90 | | | 1978 | MPC01 |

# TABLE 8.11.2.1 (CONTINUED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 Cont'd | Plate Cont'd | 1.37 | R.T. Cont'd | T-L Cont'd | 74.2 | 3.000 | 1.384 | NB | 1.470 | 0.19 | 21.50 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 1.37 | | | 74.2 | 3.000 | 1.384 | NB | 1.560 | 0.26 | 23.70 | | | 1973 | 86213 |
| | | 1.00 | | | 74.8 | 2.006 | 0.968 | CT | 1.063 | 0.14 | 18.20 | | | 1978 | MPC01 |
| | | 1.37 | | | 75.6 | 3.000 | 1.397 | NB | 1.612 | 0.21 | 20.80 | | | 1973 | 86213 |
| T651 | Plate | 5.00 | R.T. | S-L | 60.6 | 2.000 | 1.001 | CT | 0.994 | 0.33 | 21.90 | 18.6 | 3.2 | 1973 | 86213 |
| | | 5.00 | | | 60.6 | 2.000 | 1.001 | CT | 1.002 | 0.37 | 23.40 | | | 1973 | 86213 |
| | | 5.00 | | | 61.6 | 2.000 | 1.001 | CT | 1.024 | 0.31 | 21.80 | | | 1973 | 86213 |
| | | 5.00 | | | 61.6 | 2.000 | 1.001 | CT | 1.015 | 0.30 | 21.50 | | | 1973 | 86213 |
| | | 1.37 | | | 67.3 | 1.000 | 0.501 | CT | 0.485 | 0.14 | 15.90 | | | 1973 | 86213 |
| | | 1.37 | | | 67.3 | 1.000 | 0.501 | CT | 0.480 | 0.15 | 16.90 | | | 1978 | MPC01 |
| | | 1.37 | | | 67.3 | 1.011 | 0.501 | CT | 0.465 | 0.13 | 15.70 | | | 1978 | MPC01 |
| | | 1.37 | | | 67.3 | 1.000 | 0.500 | CT | 0.473 | 0.15 | 16.50 | | | 1973 | 86213 |
| | | 1.37 | | | 67.3 | 1.008 | 0.501 | CT | 0.484 | 0.13 | 15.80 | | | 1978 | MPC01 |
| | | 1.37 | | | 67.3 | 1.000 | 0.500 | CT | 0.472 | 0.14 | 16.10 | | | 1973 | 86213 |
| T651 | Plate | 1.37 | 82 | L-T | 77.6 | 2.000 | 1.001 | CT | 1.007 | 0.29 | 26.40 | 26.6 | 0.3 | 1973 | 86213 |
| | | 1.37 | | | 77.6 | 2.000 | 1.001 | CT | 1.010 | 0.30 | 26.80 | | | 1973 | 86213 |
| T651 | Plate | 1.37 | 82 | T-L | 74.2 | 2.000 | 1.001 | CT | 1.017 | 0.21 | 21.50 | 21.7 | 0.3 | 1973 | 86213 |
| | | 1.37 | | | 74.2 | 2.000 | 1.000 | CT | 1.012 | 0.22 | 22.10 | | | 1973 | 86213 |
| | | 1.37 | | | 74.2 | 2.000 | 1.001 | CT | 1.007 | 0.21 | 21.60 | | | 1973 | 86213 |
| T651 | Plate | 1.37 | 86 | S-L | 69.1 | 1.000 | 0.500 | CT | 0.505 | 0.17 | 17.90 | 17.1 | 1.0 | 1973 | 86213 |
| | | 1.37 | | | 69.1 | 1.000 | 0.500 | CT | 0.490 | 0.16 | 17.40 | | | 1973 | 86213 |
| | | 1.37 | | | 69.1 | 1.000 | 0.500 | CT | 0.507 | 0.13 | 16.00 | | | 1973 | 86213 |

# TABLE 8.11.2.1 (CONTINUED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 | Plate | 1.37 | 88 | L-S | 77.6 | 1.000 | 0.500 | CT | 0.504 | 0.35 | 28.90 | --- | --- | 1973 | 86213 |
| T651 | Plate | 5.00 | 88 | L-T | 66.9 | 2.000 | 1.001 | CT | 1.014 | 0.38 | 26.20 | 26.0 | 0.4 | 1973 | 86213 |
| | | 5.00 | | | 66.9 | 2.000 | 1.002 | CT | 1.035 | 0.37 | 25.70 | | | 1973 | 86213 |
| T651 | Plate | 1.37 | 88 | T-S | 74.2 | 1.000 | 0.500 | CT | 0.488 | 0.27 | 24.50 | 25.3 | 1.1 | 1973 | 86213 |
| | | 1.37 | | | 74.2 | 1.000 | 0.500 | CT | 0.501 | 0.31 | 26.00 | | | 1973 | 86213 |
| T651 | Plate | 5.00 | 88 | T-L | 65.5 | 2.000 | 1.002 | CT | 1.047 | 0.36 | 25.00 | 24.9 | 0.2 | 1973 | 86213 |
| | | 5.00 | | | 65.5 | 2.000 | 1.001 | CT | 1.019 | 0.36 | 24.70 | | | 1973 | 86213 |
| T651 | Plate | 1.37 | 88 | S-T | 69.1 | 1.000 | 0.500 | CT | 0.523 | 0.15 | 17.20 | 17.0 | 0.4 | 1973 | 86213 |
| | | 1.37 | | | 69.1 | 1.000 | 0.500 | CT | 0.483 | 0.15 | 16.70 | | | 1973 | 86213 |
| T651 | Plate | 5.00 | 88 | S-L | 60.5 | 2.000 | 1.001 | CT | 1.016 | 0.31 | 21.30 | 22.0 | 0.5 | 1973 | 86213 |
| | | 5.00 | | | 60.5 | 2.000 | 1.001 | CT | 1.022 | 0.33 | 22.00 | | | 1973 | 86213 |
| | | 5.00 | | | 61.8 | 2.000 | 1.002 | CT | 1.030 | 0.33 | 22.60 | | | 1973 | 86213 |
| | | 5.00 | | | 61.8 | 2.000 | 1.001 | CT | 1.024 | 0.32 | 22.10 | | | 1973 | 86213 |
| T652 | Forging | 6.00 | R.T. | L-T | 63.9 | 4.000 | 2.001 | NB | 1.990 | 0.67 | 33.10 | 27.8 | 2.2 | 1970 | 77720 |
| | | 6.00 | | | 63.9 | 4.000 | 2.001 | NB | 2.055 | 0.51 | 28.80 | | | 1970 | 77720 |
| | | 6.00 | | | 63.9 | 4.000 | 2.001 | NB | 1.942 | 0.50 | 28.50 | | | 1970 | 77720 |
| | | 5.00 | | | 65.6 | 3.000 | 1.502 | NB | 1.495 | 0.37 | 25.10 | | | 1970 | 77720 |
| | | 5.00 | | | 65.6 | 3.000 | 1.500 | NB | 1.593 | 0.43 | 27.10 | | | 1970 | 77720 |
| | | 4.00 | | | 68.0 | 3.000 | 1.500 | NB | 1.587 | 0.40 | 27.10 | | | 1970 | 77720 |
| | | 4.00 | | | 68.0 | 3.000 | 1.500 | NB | 1.573 | 0.37 | 26.20 | | | 1970 | 77720 |

# TABLE 8.11.2.1 (CONTINUED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ Ksi√in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T652 Cont'd | Forging Cont'd | 4.00 | R.T. Cont'd | L-T Cont'd | 68.0 | 3.000 | 1.500 | NB | 1.570 | 0.38 | 26.40 | Cont'd | Cont'd | 1970 | 77720 |
| | | 3.00 | | | 68.7 | 2.000 | 1.000 | NB | 1.022 | 0.39 | 27.10 | | | 1970 | 77720 |
| | | 3.00 | | | 68.7 | 2.000 | 0.999 | NB | 1.015 | 0.40 | 27.70 | | | 1970 | 77720 |
| | | 2.00 | | | 71.0 | 1.490 | 0.753 | NB | 0.753 | 0.38 | 27.70 | | | 1970 | 77720 |
| | | 2.00 | | | 71.0 | 1.490 | 0.751 | NB | 0.845 | 0.47 | 30.80 | | | 1970 | 77720 |
| | | 2.00 | | | 71.0 | 1.500 | 0.750 | NB | 0.733 | 0.32 | 25.40 | | | 1970 | 77720 |
| T652 | Forging | 6.00 | R.T. | T-S | 59.1 | 4.000 | 2.002 | CT | 2.167 | 0.38 | 22.90 | --- | --- | 1973 | 86213 |
| T652 | Forging | 6.00 | R.T. | T-L | 57.5 | 4.000 | 2.001 | NB | 2.170 | 0.44 | 24.10 | 23.1 | 2.2 | 1970 | 77720 |
| | | 6.00 | | | 57.5 | 4.000 | 2.001 | NB | 2.035 | 0.38 | 22.40 | | | 1970 | 77720 |
| | | 6.00 | | | 57.5 | 4.000 | 2.001 | NB | 2.092 | 0.46 | 24.60 | | | 1970 | 77720 |
| | | 5.00 | | | 61.4 | 3.000 | 1.500 | NB | 1.527 | 0.44 | 25.60 | | | 1970 | 77720 |
| | | 5.00 | | | 61.4 | 3.000 | 1.500 | NB | 1.578 | 0.34 | 22.50 | | | 1970 | 77720 |
| | | 4.00 | | | 63.0 | 3.000 | 1.500 | NB | 1.602 | 0.24 | 19.50 | | | 1970 | 77720 |
| | | 2.00 | | | 64.9 | 1.500 | 0.751 | NB | 0.797 | 0.36 | 24.70 | | | 1970 | 77720 |
| | | 3.00 | | | 65.7 | 2.000 | 1.000 | NB | 1.032 | 0.39 | 26.00 | | | 1970 | 77720 |
| | | 3.00 | | | 65.7 | 2.000 | 0.998 | NB | 0.990 | 0.24 | 20.50 | | | 1970 | 77720 |
| | | 3.00 | | | 65.7 | 2.000 | 0.998 | NB | 0.963 | 0.26 | 21.10 | | | 1970 | 77720 |

# TABLE 8.11.2.1 (CONCLUDED)



## ALUMINUM 7079 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T652 | Forging | 6.00 | R.T. | S-L | 58.1 | 1.000 | 0.500 | NB | 0.495 | 0.23 | 17.60 | 18.1 | 0.7 | 1970 | 77720 |
| | | 6.00 | | | 58.1 | 1.000 | 0.500 | NB | 0.493 | 0.26 | 18.70 | | | 1970 | 77720 |
| | | 6.00 | | | 58.1 | 1.000 | 0.499 | NB | 0.482 | 0.24 | 18.00 | | | 1970 | 77720 |
| | | 5.00 | | | 58.3 | 1.000 | 0.500 | NB | 0.485 | 0.22 | 18.30 | | | 1970 | 77720 |
| | | 5.00 | | | 58.3 | 1.000 | 0.500 | NB | 0.517 | 0.22 | 18.10 | | | 1970 | 77720 |
| | | 5.00 | | | 58.3 | 1.000 | 0.500 | NB | 0.487 | 0.22 | 18.30 | | | 1970 | 77720 |
| | | 6.00 | | | 58.5 | 2.000 | 1.000 | CT | 0.978 | 0.23 | 17.60 | | | 1973 | 86213 |
| | | 6.00 | | | 58.5 | 2.000 | 1.000 | CT | 0.981 | 0.23 | 17.70 | | | 1973 | 86213 |
| | | 6.00 | | | 58.5 | 2.000 | 1.000 | CT | 0.996 | 0.25 | 18.60 | | | 1973 | 86213 |
| | | 4.00 | | | 62.9 | 0.500 | 0.250 | NB | 0.257 | 0.19 | 17.20 | | | 1970 | 77720 |
| | | 4.00 | | | 62.9 | 0.500 | 0.250 | NB | 0.263 | 0.18 | 17.10 | | | 1970 | 77720 |
| | | 4.00 | | | 62.9 | 0.500 | 0.250 | NB | 0.282 | 0.24 | 19.70 | | | 1970 | 77720 |
| T851 | Plate | 1.37 | R.T. | L-T | 75.2 | 2.982 | 1.397 | NB | 1.640 | 0.28 | 25.90 | 28.6 | 1.6 | 1978 | MPC01 |
| | | 1.37 | | | 75.2 | 2.994 | 1.398 | NB | 1.557 | 0.36 | 28.70 | | | 1978 | MPC01 |
| | | 1.37 | | | 75.2 | 2.984 | 1.398 | NB | 1.522 | 0.32 | 27.20 | | | 1978 | MPC01 |
| | | 1.37 | | | 75.2 | 3.020 | 1.397 | NB | 1.540 | 0.40 | 30.60 | | | 1978 | MPC01 |
| | | 1.37 | | | 75.2 | 3.010 | 1.398 | NB | 1.505 | 0.38 | 29.90 | | | 1978 | MPC01 |
| | | 1.50 | | | 76.8 | 2.016 | 1.002 | CT | 1.109 | 0.36 | 29.70 | | | 1978 | MPC01 |
| | | 1.50 | | | 76.8 | 2.006 | 1.002 | CT | 1.083 | 0.32 | 28.40 | | | 1978 | MPC01 |
| T851 | Plate | 1.37 | R.T. | T-L | 72.6 | 2.988 | 1.397 | NB | 1.524 | 0.16 | 18.90 | 21.3 | 3.4 | 1978 | MPC01 |
| | | 1.50 | | | 74.4 | 2.006 | 1.001 | CT | 1.063 | 0.24 | 23.70 | | | 1978 | MPC01 |

# TABLE 8.11.2.2



## ALUMINUM 7079 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | L-T | 70.2 | 2.000 | 0.061 | 0.625 | 1.270 | --- | 42.40 | 44.69* | --- | --- | 81.31* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 70.2 | 2.000 | 0.061 | 0.625 | 1.220 | --- | 42.60 | 44.90* | | | 77.77* | | | 1973 | 86213 |
| | | 0.06 | | | 64.0 | 2.000 | 0.062 | 0.624 | 0.820 | --- | 42.30 | 44.58* | | | 53.68* | | | 1973 | 86213 |
| | | 0.06 | | | 64.0 | 2.000 | 0.062 | 0.622 | 0.870 | --- | 42.90 | 45.13* | | | 56.95* | | | 1973 | 86213 |
| | | 0.06 | | | 64.0 | 2.000 | 0.062 | 0.623 | 0.750 | --- | 43.20 | 45.44* | | | 51.42* | | | 1973 | 86213 |
| | | 0.06 | | | 70.2 | 2.000 | 0.063 | 0.625 | 1.120 | --- | 43.60 | 45.95* | | | 72.43* | | | 1973 | 86213 |
| | | 0.06 | | | 70.2 | 2.000 | 0.063 | 0.625 | 1.150 | --- | 43.20 | 45.53* | | | 73.79* | | | 1973 | 86213 |
| | | 0.06 | | | 70.2 | 2.000 | 0.063 | 0.625 | 1.150 | --- | 43.20 | 45.53* | | | 73.79* | | | 1973 | 86213 |
| T6 | Sheet | 0.10 | R.T. | L-T | 75.6 | 3.000 | 0.112 | 1.000 | 1.410 | --- | 39.70 | 53.47 | 53.8 | 0.5 | 68.70* | --- | --- | 1973 | 86213 |
| | | 0.10 | | | 75.6 | 3.000 | 0.112 | 1.000 | --- | --- | 40.50 | 54.54* | | | --- | | | 1973 | 86213 |
| | | 0.10 | | | 75.6 | 3.000 | 0.112 | 1.000 | 1.370 | --- | 40.60 | 54.68* | | | 68.61* | | | 1973 | 86213 |
| | | 0.10 | | | 75.6 | 3.000 | 0.112 | 1.000 | 1.480 | --- | 40.20 | 54.14 | | | 72.51* | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | R.T. | L-T | 72.0 | 3.000 | 0.119 | 0.995 | 1.320 | --- | 42.40 | 56.88* | --- | --- | 69.55* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 72.0 | 3.000 | 0.119 | 0.997 | 1.320 | --- | 42.40 | 56.95* | | | 69.55* | | | 1973 | 86213 |
| | | 0.12 | | | 72.0 | 2.990 | 0.120 | 0.991 | 1.300 | --- | 42.00 | 56.22* | | | 68.14* | | | 1973 | 86213 |
| | | 0.12 | | | 72.0 | 2.990 | 0.120 | 0.995 | 1.210 | --- | 42.30 | 56.77* | | | 65.01* | | | 1973 | 86213 |
| T6 | Sheet | 0.14 | R.T. | L-T | 74.2 | 3.000 | 0.128 | 1.143 | 1.949 | --- | 36.00 | 53.04 | 53.1 | 0.1 | 87.04* | --- | --- | 1973 | 86213 |
| | | 0.14 | | | 74.2 | 3.000 | 0.128 | 1.180 | 1.951 | --- | 35.30 | 53.23 | | | 85.47* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.11.2.2 (CONTINUED)



## ALUMINUM 7079 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.14 | R.T. | L-T | 75.7 | 3.000 | 0.136 | 1.133 | 1.873 | --- | 35.70 | 52.27 | 52.2 | 0.1 | 82.04* | --- | --- | 1973 | 86213 |
| | | 0.14 | | | 75.7 | 3.000 | 0.136 | 1.107 | 1.951 | --- | 36.20 | 52.15 | | | 87.65* | | | 1973 | 86213 |
| T6 | Sheet | 0.10 | 82 | L-T | 72.5 | 3.000 | 0.099 | 1.110 | 2.010 | --- | 37.10 | 53.59* | --- | --- | 93.65* | --- | --- | 1973 | 86213 |
| | | 0.10 | | | 72.5 | 3.000 | 0.099 | 1.150 | 2.032 | --- | 35.50 | 52.56 | | | 91.03* | | | 1973 | 86213 |
| T6 | Sheet | 0.10 | 84 | L-T | 71.6 | 3.000 | 0.099 | 1.150 | 2.145 | --- | 35.50 | 52.56* | --- | --- | 98.96* | --- | --- | 1973 | 86213 |
| | | 0.10 | | | 71.6 | 3.000 | 0.099 | 1.130 | 2.041 | --- | 35.50 | 51.91 | | | 91.56* | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | T-L | 62.4 | 2.000 | 0.061 | 0.624 | 0.850 | --- | 41.00 | 43.21* | --- | --- | 53.46* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 62.4 | 2.000 | 0.062 | 0.623 | 0.800 | --- | 40.90 | 43.02* | | | 50.97* | | | 1973 | 86213 |
| | | 0.06 | | | 62.4 | 2.000 | 0.062 | 0.622 | 0.830 | --- | 41.80 | 43.97* | | | 53.53* | | | 1973 | 86213 |
| | | 0.06 | | | 67.3 | 2.000 | 0.062 | 0.625 | 1.040 | --- | 40.30 | 42.48* | | | 62.26* | | | 1973 | 86213 |
| | | 0.06 | | | 67.3 | 2.000 | 0.062 | 0.625 | 1.180 | --- | 41.10 | 43.32* | | | 72.21* | | | 1973 | 86213 |
| | | 0.06 | | | 67.3 | 2.000 | 0.062 | 0.625 | 1.260 | --- | 41.10 | 43.32* | | | 78.04* | | | 1973 | 86213 |
| | | 0.06 | | | 67.3 | 2.000 | 0.062 | 0.625 | 1.110 | --- | 39.80 | 41.95* | | | 65.52* | | | 1973 | 86213 |
| | | 0.06 | | | 67.3 | 2.000 | 0.062 | 0.625 | 1.060 | --- | 41.30 | 43.53* | | | 64.96* | | | 1973 | 86213 |
| T6 | Sheet | 0.10 | R.T. | T-L | 68.3 | 3.000 | 0.099 | 1.150 | 2.035 | --- | 33.80 | 50.04* | --- | --- | 86.80* | --- | --- | 1973 | 86213 |
| | | 0.10 | | | 68.3 | 3.000 | 0.099 | 1.160 | 2.005 | --- | 33.60 | 50.05* | | | 84.46* | | | 1973 | 86213 |
| T6 | Sheet | 0.10 | R.T. | T-L | 73.8 | 3.000 | 0.112 | 1.000 | 1.320 | --- | 36.60 | 49.29 | 49.1 | 0.8 | 60.04* | --- | --- | 1973 | 86213 |
| | | 0.10 | | | 73.8 | 3.000 | 0.112 | 1.000 | 1.520 | --- | 36.30 | 48.89 | | | 67.06* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.11.2.2 (CONTINUED)



| ALUMINUM 7079 $K_C$ | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.10 | R.T. Cont'd | T-L Cont'd | 73.8 | 3.000 | 0.112 | 1.000 | 1.430 | --- | 35.70 | 48.08 | Cont'd | Cont'd | 62.51* | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.10 | | | 73.8 | 3.000 | 0.112 | 1.000 | --- | --- | 37.10 | 49.97 | | | --- | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | R.T. | T-L | 69.6 | 2.990 | 0.119 | 0.995 | 1.300 | --- | 39.20 | 52.61* | --- | --- | 63.60* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 69.6 | 2.990 | 0.119 | 0.992 | 1.350 | --- | 38.10 | 51.07* | | | 63.69* | | | 1973 | 86213 |
| | | 0.12 | | | 69.6 | 2.990 | 0.119 | 0.992 | 1.350 | --- | 37.30 | 50.00* | | | 62.35* | | | 1973 | 86213 |
| T6 | Sheet | 0.14 | R.T. | T-L | 71.3 | 3.000 | 0.128 | 1.180 | 1.964 | --- | 31.80 | 47.95 | 47.6 | 0.5 | 77.74* | --- | --- | 1973 | 86213 |
| | | 0.14 | | | 71.3 | 3.000 | 0.129 | 1.240 | 1.962 | --- | 30.20 | 47.23 | | | 73.72* | | | 1973 | 86213 |
| T6 | Sheet | 0.14 | R.T. | T-L | 73.7 | 3.000 | 0.137 | 1.160 | 1.902 | --- | 29.10 | 43.35 | 43.8 | 0.6 | 68.21* | --- | --- | 1973 | 86213 |
| | | 0.14 | | | 73.7 | 3.000 | 0.137 | 1.160 | 1.911 | --- | 29.70 | 44.24 | | | 69.99* | | | 1973 | 86213 |
| T6 | Sheet | 0.10 | 84 | T-L | 69.1 | 3.000 | 0.099 | 1.170 | 1.993 | --- | 31.00 | 46.46 | 46.1 | 0.5 | 77.27* | --- | --- | 1973 | 86213 |
| | | 0.10 | | | 69.1 | 3.000 | 0.100 | 1.110 | 2.047 | --- | 31.70 | 45.79 | | | 82.11* | | | 1973 | 86213 |
| T651 | Sheet | 0.12 | R.T. | L-T | 74.9 | 3.000 | 0.124 | 1.000 | 1.360 | 23.10 | 37.10 | 49.97 | 50.7 | 1.2 | 62.32* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 74.3 | 3.000 | 0.125 | 1.000 | 1.300 | 20.70 | 38.10 | 51.31 | | | 61.76* | | | 1973 | 86213 |
| | | 0.12 | | | 74.9 | 3.000 | 0.125 | 1.000 | 1.510 | 23.60 | 37.50 | 50.50 | | | 68.86* | | | 1973 | 86213 |
| | | 0.12 | | | 74.9 | 3.000 | 0.125 | 1.090 | 1.430 | 19.40 | 35.00 | 49.92 | | | 61.29* | | | 1973 | 86213 |
| | | 0.12 | | | 76.1 | 3.000 | 0.125 | 1.000 | 1.460 | 22.30 | 37.90 | 51.04 | | | 67.56* | | | 1973 | 86213 |
| | | 0.12 | | | 74.3 | 3.000 | 0.126 | 1.100 | 1.390 | 20.50 | 35.30 | 50.67 | | | 60.37* | | | 1973 | 86213 |
| | | 0.12 | | | 74.3 | 3.000 | 0.126 | 1.130 | 1.530 | 18.70 | 33.90 | 49.57 | | | 63.00* | | | 1973 | 86213 |
| | | 0.12 | | | 74.3 | 3.000 | 0.126 | 1.000 | 1.540 | 21.20 | 36.00 | 48.48 | | | 67.30* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.11.2.2 (CONTINUED)



## ALUMINUM 7079 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T651 Cont'd | Sheet Cont'd | 0.12 | R.T. Cont'd | L-T Cont'd | 74.9 | 3.000 | 0.126 | 1.090 | 1.530 | 21.10 | 35.90 | 51.21 | Cont'd | Cont'd | 66.71* | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.12 | | | 76.1 | 3.000 | 0.126 | 1.110 | 1.500 | 17.30 | 36.00 | 52.00 | | | 65.71* | | | 1973 | 86213 |
| | | 0.12 | | | 76.1 | 3.000 | 0.126 | 1.000 | 1.320 | 19.90 | 37.60 | 50.64 | | | 61.68* | | | 1973 | 86213 |
| | | 0.12 | | | 76.1 | 3.000 | 0.126 | 1.120 | 1.560 | 18.90 | 36.60 | 53.19 | | | 69.25* | | | 1973 | 86213 |
| T651 | Plate | 0.25 | R.T. | L-T | 74.7 | 3.000 | 0.250 | 1.230 | 1.630 | --- | 26.70 | 41.50 | 40.2 | 1.1 | 52.69 | 51.6 | 1.8 | 1973 | 86213 |
| | | 0.25 | | | 74.7 | 3.000 | 0.251 | 1.160 | 1.630 | --- | 26.60 | 39.62 | | | 52.50 | | | 1973 | 86213 |
| | | 0.25 | | | 74.7 | 3.000 | 0.251 | 1.000 | 1.370 | --- | 29.30 | 39.46 | | | 49.51 | | | 1973 | 86213 |
| T651 | Plate | 1.00 | R.T. | L-T | 74.3 | 20.000 | 1.000 | 7.000 | 10.370 | --- | 13.30 | 47.76 | 49.0 | 5.1 | 64.80 | 64.9 | 7.6 | 1973 | 86213 |
| | | 1.00 | | | 74.3 | 20.000 | 1.000 | 7.000 | 9.330 | --- | 12.80 | 45.97 | | | 56.84 | | | 1973 | 86213 |
| | | 1.00 | | | 74.3 | 20.000 | 1.000 | 7.000 | 9.750 | --- | 12.90 | 46.32 | | | 59.46 | | | 1973 | 86213 |
| | | 1.00 | | | 74.3 | 20.000 | 1.000 | 7.000 | 10.260 | --- | 12.70 | 45.61 | | | 61.27 | | | 1973 | 86213 |
| | | 1.00 | | | 74.9 | 20.000 | 1.000 | 7.000 | 10.660 | --- | 12.50 | 44.89 | | | 62.51 | | | 1973 | 86213 |
| | | 1.00 | | | 74.9 | 20.000 | 1.000 | 7.000 | 10.340 | --- | 13.00 | 46.68 | | | 63.17 | | | 1973 | 86213 |
| | | 1.00 | | | 74.9 | 20.000 | 1.000 | 7.000 | 9.980 | --- | 12.50 | 44.89 | | | 58.81 | | | 1973 | 86213 |
| | | 1.00 | | | 74.9 | 20.000 | 1.000 | 7.000 | 9.880 | --- | 12.40 | 44.53 | | | 57.82 | | | 1973 | 86213 |
| | | 1.00 | | | 76.1 | 20.000 | 1.000 | 7.000 | 10.100 | --- | 15.50 | 55.66 | | | 73.71 | | | 1973 | 86213 |
| | | 1.00 | | | 76.1 | 20.000 | 1.000 | 7.000 | 9.770 | --- | 14.00 | 50.28 | | | 64.65 | | | 1973 | 86213 |
| | | 1.00 | | | 76.1 | 20.000 | 1.000 | 7.000 | 10.650 | --- | 16.20 | 58.18 | | | 80.94 | | | 1973 | 86213 |
| | | 1.00 | | | 76.1 | 20.000 | 1.000 | 7.000 | 9.850 | --- | 16.00 | 57.46 | | | 74.41 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.11.2.2 (CONTINUED)



| ALUMINUM 7079 $K_C$ | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | CRACK LENGTH | | GROSS STRESS | | $K_{app}$ | | | $K_C$ | | | DATE | REFER |
| | FORM | THICK (In.) | | | | WIDTH (in.) W | THICK (in.) B | INIT (in.) $2a_o$ | FINAL (in.) $2a_f$ | ONSET (Ksi) $\sigma_o$ | MAX (Ksi) $\sigma_{max}$ | $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | STAN DEV | $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | STAN DEV | | |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T651 | Sheet | 0.12 | R.T. | T-L | 72.6 | 3.000 | 0.125 | 1.000 | 1.390 | 21.30 | 34.30 | 46.19 | 44.3 | 1.8 | 58.66* | 51.7 | 0.6 | 1973 | 86213 |
| | | 0.12 | | | 72.6 | 3.000 | 0.125 | 1.100 | 1.360 | 18.90 | 32.00 | 45.93 | | | 53.76* | | | 1973 | 86213 |
| | | 0.12 | | | 71.4 | 3.000 | 0.126 | 1.000 | 1.260 | 22.80 | 33.80 | 45.52 | | | 53.49* | | | 1973 | 86213 |
| | | 0.12 | | | 71.4 | 3.000 | 0.126 | 1.000 | 1.480 | 21.40 | 31.30 | 42.15 | | | 56.46* | | | 1973 | 86213 |
| | | 0.12 | | | 71.4 | 3.000 | 0.126 | 1.080 | 1.430 | 17.00 | 29.20 | 41.39 | | | 51.13 | | | 1973 | 86213 |
| | | 0.12 | | | 71.4 | 3.000 | 0.126 | 1.160 | 1.500 | 15.10 | 29.00 | 43.20 | | | 52.94* | | | 1973 | 86213 |
| | | 0.12 | | | 72.2 | 3.000 | 0.126 | 1.000 | 1.250 | 20.20 | 33.30 | 44.85 | | | 52.39 | | | 1973 | 86213 |
| | | 0.12 | | | 72.2 | 3.000 | 0.126 | 1.090 | 1.590 | 16.90 | 29.80 | 42.51 | | | 57.41* | | | 1973 | 86213 |
| | | 0.12 | | | 72.2 | 3.000 | 0.126 | 1.100 | 1.380 | 18.50 | 30.40 | 43.63 | | | 51.68 | | | 1973 | 86213 |
| | | 0.12 | | | 72.6 | 3.000 | 0.126 | 1.000 | 1.250 | 20.00 | 34.40 | 46.33 | | | 54.12* | | | 1973 | 86213 |
| | | 0.12 | | | 72.6 | 3.000 | 0.126 | 1.180 | 1.490 | 17.50 | 30.40 | 45.84 | | | 55.16* | | | 1973 | 86213 |
| T651 | Plate | 0.25 | R.T. | T-L | 72.6 | 3.000 | 0.250 | 1.180 | 1.530 | --- | 20.80 | 31.37 | 31.0 | 0.5 | 38.65 | 40.5 | 2.6 | 1973 | 86213 |
| | | 0.25 | | | 72.6 | 3.000 | 0.251 | 1.000 | 1.530 | --- | 22.80 | 30.71 | | | 42.37 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.11.2.2 (CONCLUDED)



## ALUMINUM 7079 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T651 | Plate | 1.00 | R.T. | T-L | 71.3 | 20.000 | 1.000 | 7.000 | 8.880 | --- | 8.50 | 30.52 | 31.2 | 0.9 | 36.26 | 38.1 | 1.2 | 1973 | 86213 |
| | | 1.00 | | | 71.3 | 20.000 | 1.000 | 7.000 | 8.900 | --- | 8.70 | 31.24 | | | 37.18 | | | 1973 | 86213 |
| | | 1.00 | | | 71.3 | 20.000 | 1.000 | 7.000 | 9.620 | --- | 8.60 | 30.88 | | | 39.18 | | | 1973 | 86213 |
| | | 1.00 | | | 71.3 | 20.000 | 1.000 | 7.000 | 9.260 | --- | 8.80 | 31.60 | | | 38.83 | | | 1973 | 86213 |
| | | 1.00 | | | 72.2 | 20.000 | 1.000 | 7.000 | 9.410 | --- | 8.50 | 30.52 | | | 38.01 | | | 1973 | 86213 |
| | | 1.00 | | | 72.2 | 20.000 | 1.000 | 7.000 | 9.030 | --- | 8.60 | 30.88 | | | 37.18 | | | 1973 | 86213 |
| | | 1.00 | | | 72.2 | 20.000 | 1.000 | 7.000 | 8.950 | --- | 8.30 | 29.81 | | | 35.63 | | | 1973 | 86213 |
| | | 1.00 | | | 72.2 | 20.000 | 1.000 | 7.000 | 9.800 | --- | 8.40 | 30.17 | | | 38.89 | | | 1973 | 86213 |
| | | 1.00 | | | 72.6 | 20.000 | 1.000 | 7.000 | 8.980 | --- | 8.90 | 31.96 | | | 38.31 | | | 1973 | 86213 |
| | | 1.00 | | | 72.6 | 20.000 | 1.000 | 7.000 | 9.000 | --- | 9.00 | 32.32 | | | 38.81 | | | 1973 | 86213 |
| | | 1.00 | | | 72.6 | 20.000 | 1.000 | 7.000 | 8.910 | --- | 9.10 | 32.68 | | | 38.92 | | | 1973 | 86213 |
| | | 1.00 | | | 72.6 | 20.000 | 1.000 | 7.000 | 9.230 | --- | 9.00 | 32.32 | | | 39.61 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

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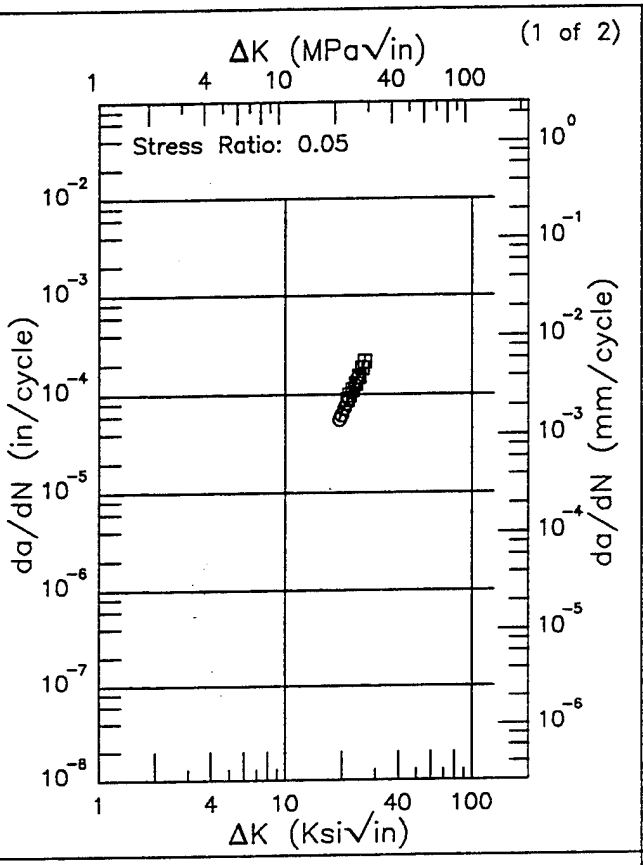
7079

R

Condition/Ht: T6
Form: 0.17 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: LAB AIR; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.17 in.
Specimen Width: 15 in.
Ref: 86734

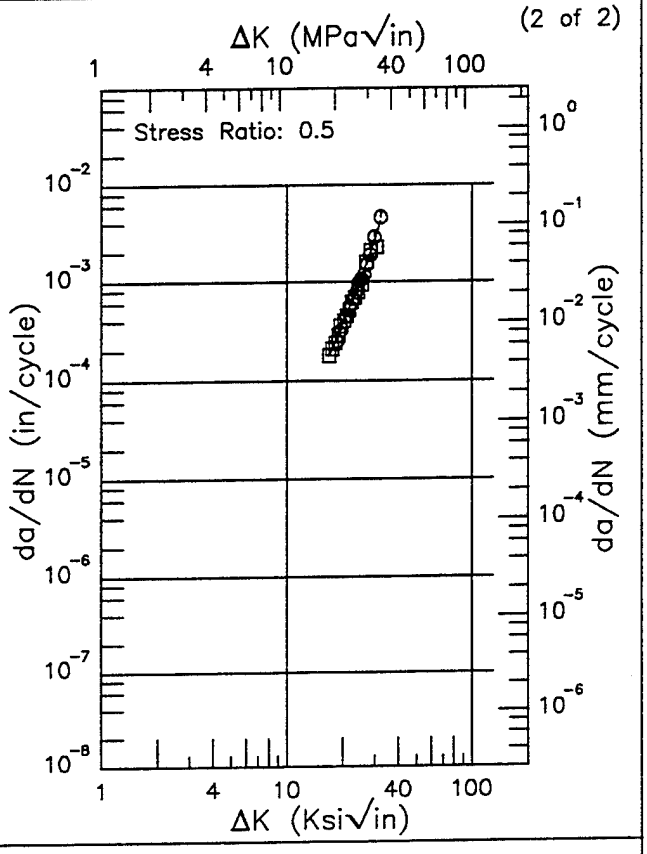
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 19.31 (min) | 55.4 |
| 20. | 64.8 |
| 25. | 167. |
| 26.41 (max) | 218. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.14 | 0. .5 .8 1.25 2. |

(2 of 2)



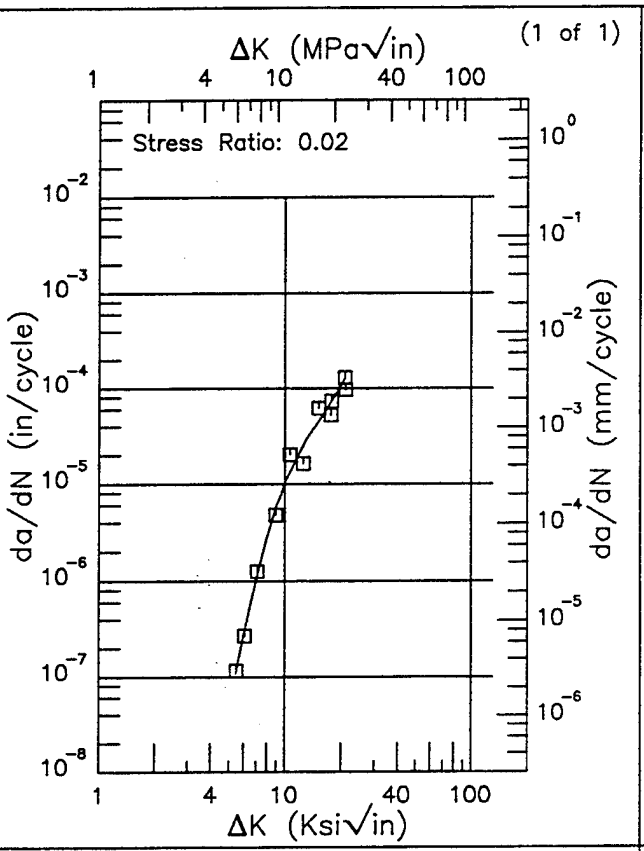

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 16.89 (min) | 175. |
| 20. | 361. |
| 25. | 998. |
| 30. | 2653. |
| 31.99 (max) | 4165. |

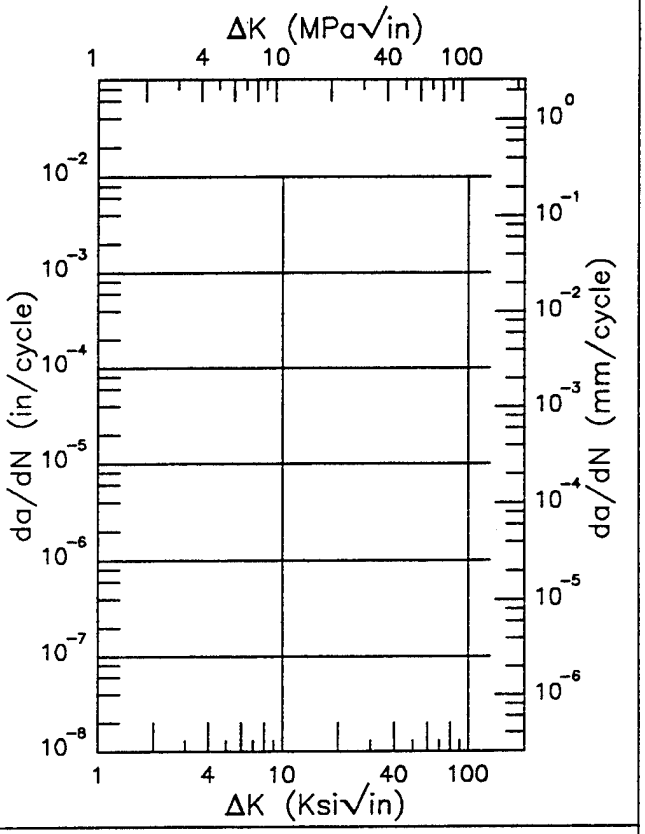
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.44 | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.1**

Condition/Ht: T6
Form: 1.7 in. Billet
Specimen Type: WOL
Orientation: L–T
Frequency: 1 – 30 Hz
Environment: LAB AIR; RT

Yield Strength: 79 ksi
Ult. Strength: 86 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA011




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.46 (min) | 0.107 |
| 6. | 0.270 |
| 7. | 1.03 |
| 8. | 2.79 |
| 9. | 5.90 |
| 10. | 10.4 |
| 13. | 28.9 |
| 16. | 52.9 |
| 20. | 108. |
| 20.96 (max) | 130. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.18 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.2**

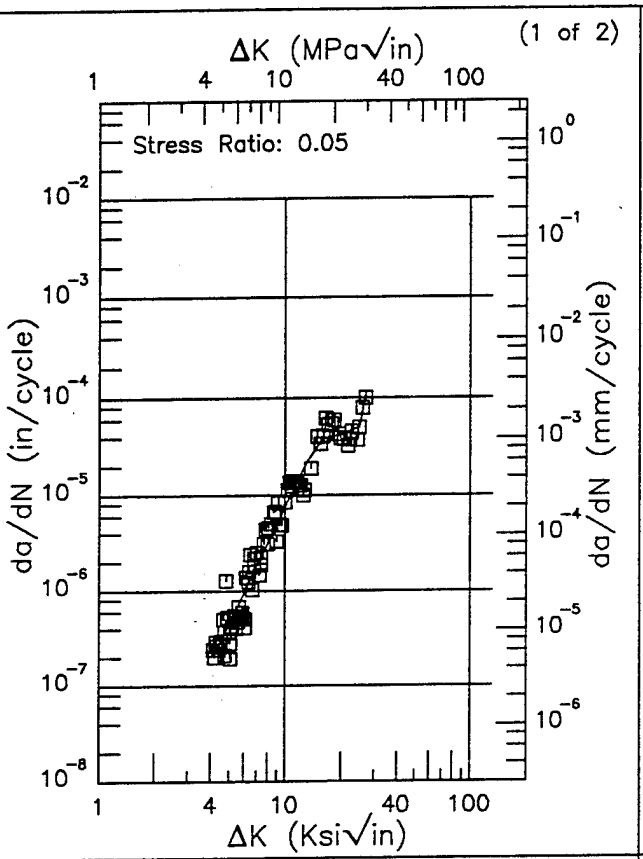
7079

R

Condition/Ht: T6
Form: Forging
Specimen Type: CT
Orientation: T–L
Frequency: 9 Hz
Environment: LAB AIR; RT

Yield Strength: 72.6 ksi
Ult. Strength: 83.4 ksi
Specimen Thk: 0.4 in.
Specimen Width:
Ref: BW001

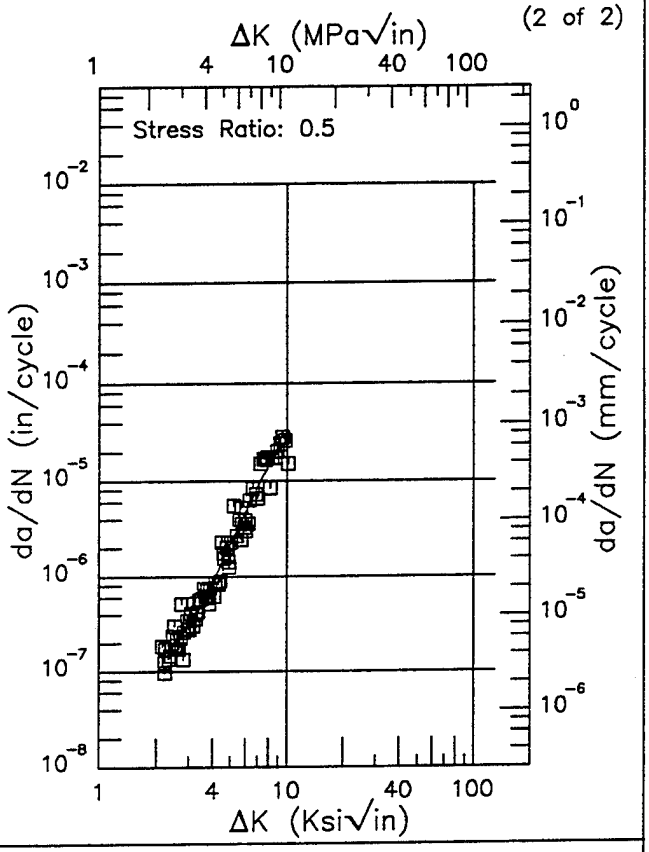
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.14 (min) | 0.205 |
| 5. | 0.441 |
| 6. | 0.939 |
| 7. | 1.78 |
| 8. | 3.10 |
| 9. | 5.03 |
| 10. | 7.72 |
| 13. | 21.5 |
| 16. | 39.5 |
| 20. | 42.7 |
| 25. | 51.4 |
| 27.05 (max) | 109. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 40.40 | 0. .5 .8 1.25 2. |

(2 of 2)



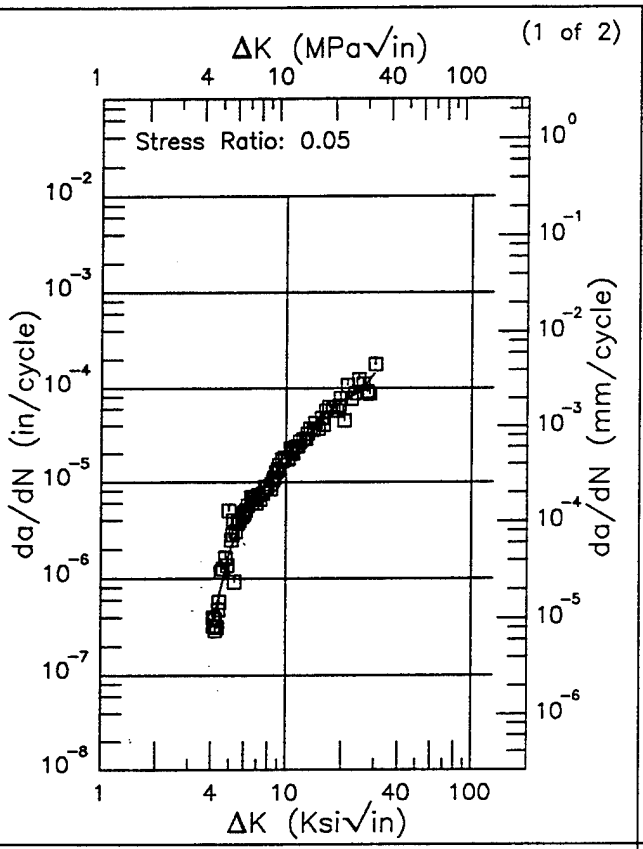

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.16 (min) | 0.152 |
| 2.5 | 0.190 |
| 3. | 0.303 |
| 3.5 | 0.508 |
| 4. | 0.848 |
| 5. | 2.15 |
| 6. | 4.67 |
| 7. | 8.67 |
| 8. | 14.1 |
| 9. | 20.4 |
| 10. | 26.8 |
| 10.09 (max) | 27.4 |

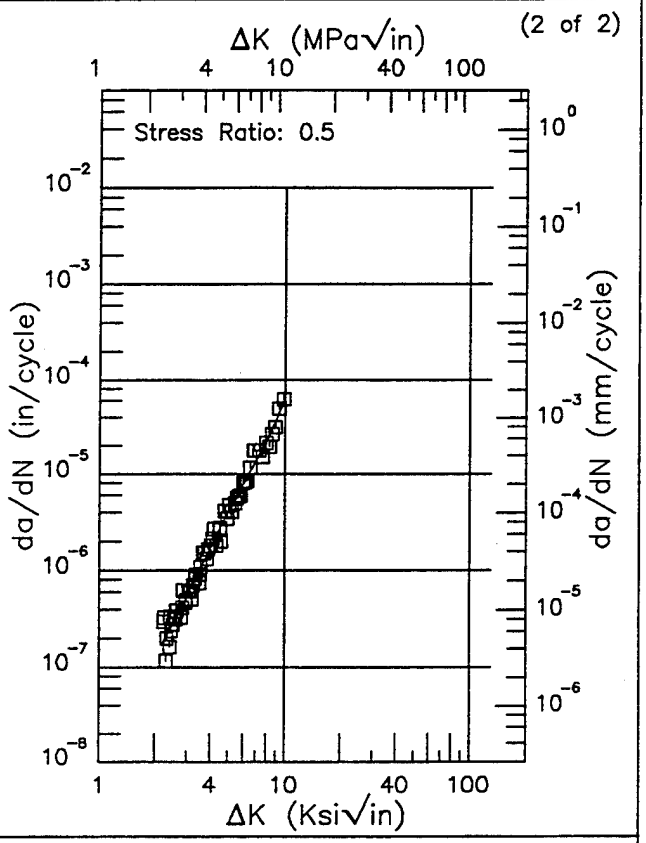
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 31.65 | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.3**

Condition/Ht: T6
Form: Forging
Specimen Type: CT
Orientation: T–L
Frequency: 9 Hz
Environment: H.H.A.; RT

Yield Strength: 68.8 ksi
Ult. Strength: 78.7 ksi
Specimen Thk: 0.4 in.
Specimen Width: 4.5 in.
Ref: BW001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.09 (min) | 0.350 |
| 5. | 1.87 |
| 6. | 4.77 |
| 7. | 7.83 |
| 8. | 10.5 |
| 9. | 13.1 |
| 10. | 15.9 |
| 13. | 30.5 |
| 16. | 51.7 |
| 20. | 72.9 |
| 25. | 92.3 |
| 29.94 (max) | 145. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.22 (min) | 0.182 |
| 2.5 | 0.273 |
| 3. | 0.537 |
| 3.5 | 0.983 |
| 4. | 1.67 |
| 5. | 4.02 |
| 6. | 7.84 |
| 7. | 13.3 |
| 8. | 21.8 |
| 9. | 36.9 |
| 9.83 (max) | 59.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 29.46 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 21.27 | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.4**

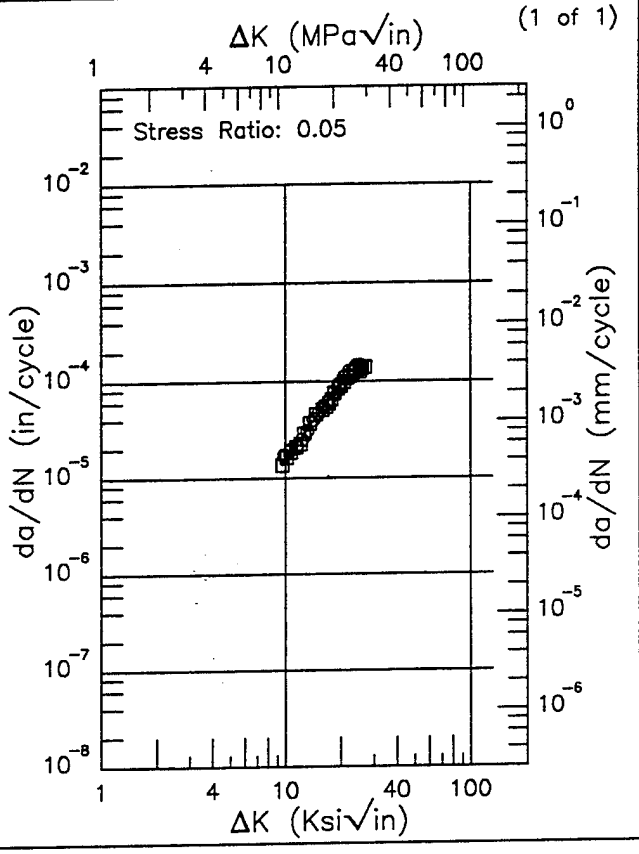
7079

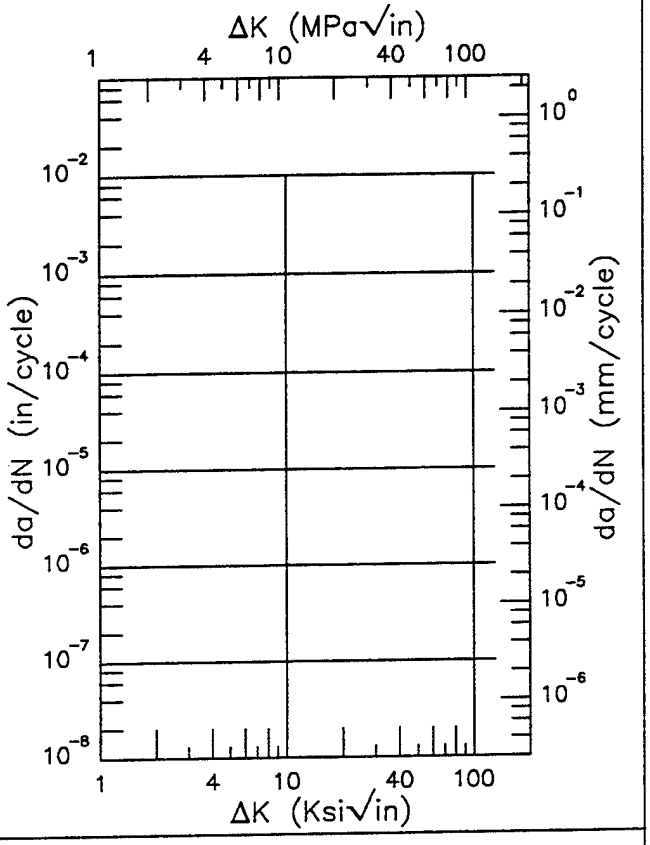
R

Condition/Ht: T651
Form: 0.16 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: LAB AIR; RT

Yield Strength: 72.6 ksi
Ult. Strength: 79.1 ksi
Specimen Thk: 0.16 in.
Specimen Width: 14 – 14.01 in.
Ref: 86734

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 9.57 (min) | 14.7 |
| 10. | 16.1 |
| 13. | 30.4 |
| 16. | 53.0 |
| 20. | 93.9 |
| 25. | 135. |
| 26.66 (max) | 137. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.87 | 0. .5 .8 1.25 2. |

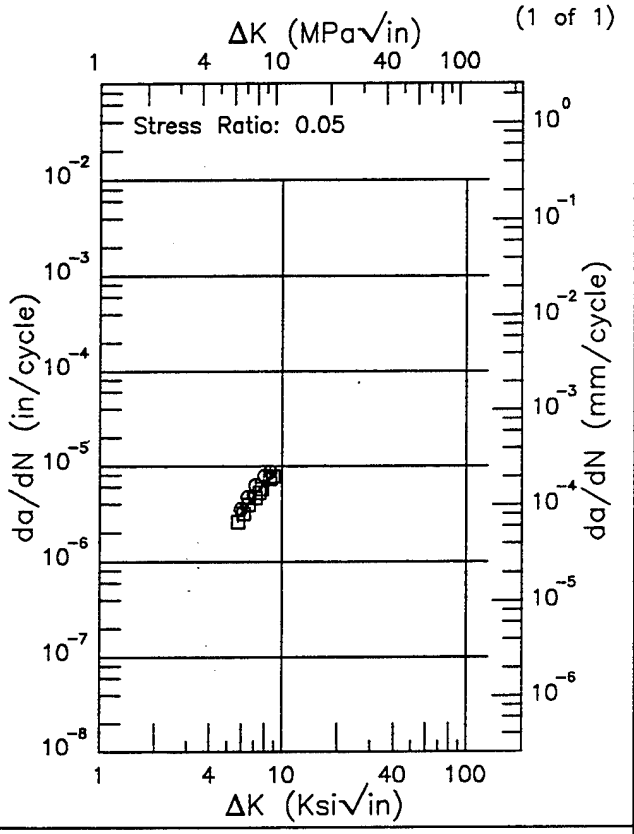
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

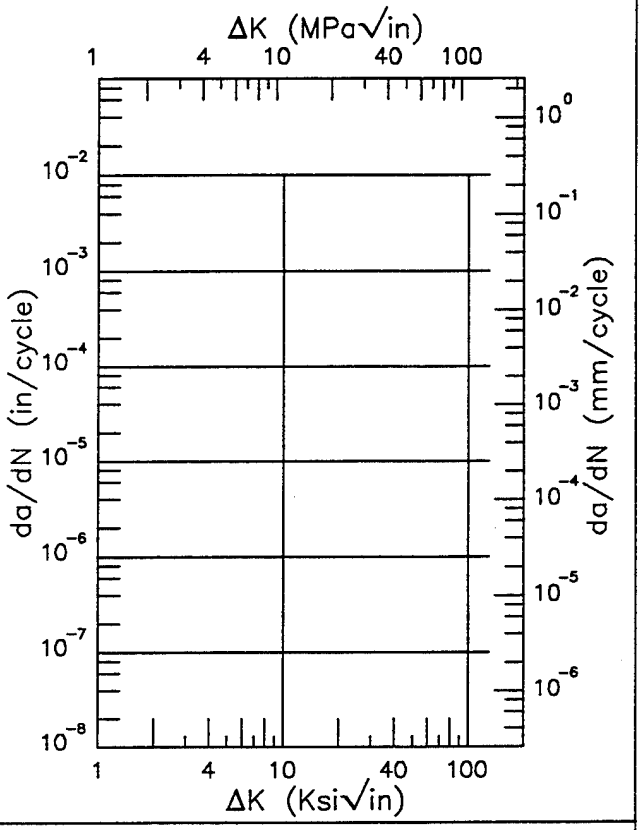
**Figure 8.11.3.1.5**

Condition/Ht: T651
Form: 0.16 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength: 79.1 ksi
Specimen Thk: 0.16 – 0.161 in.
Specimen Width: 3 in.
Ref: 86734

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.75 (min) | 2.88 |
| 6. | 3.20 |
| 7. | 4.87 |
| 8. | 6.81 |
| 8.92 (max) | 8.25 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.23 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.6**

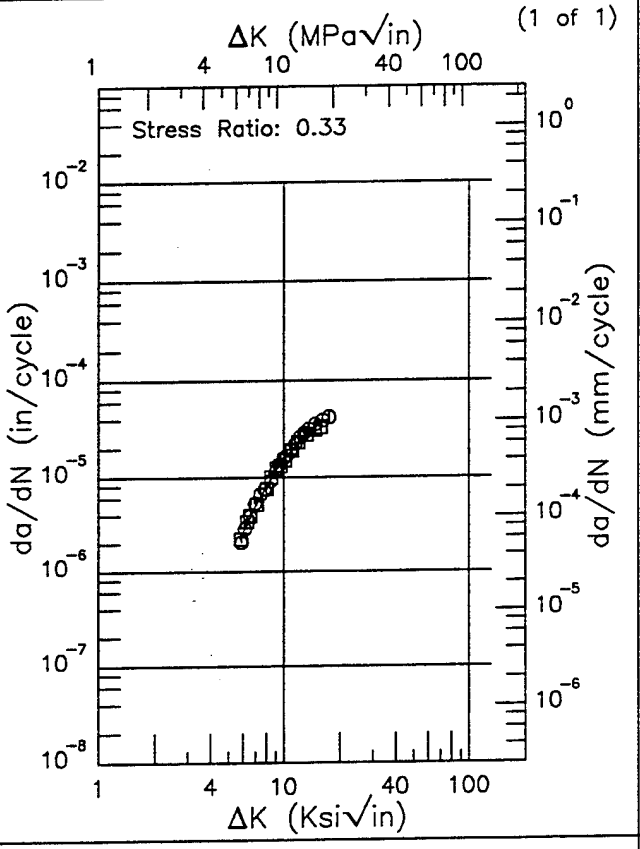
7079

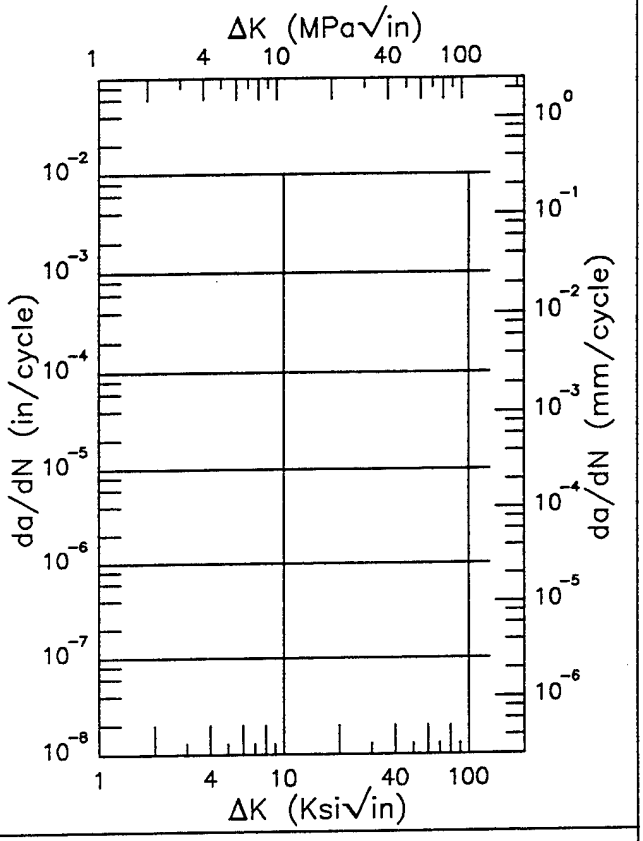
R

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: L–S
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.82 (min) | 2.24 |
| 6. | 2.58 |
| 7. | 4.98 |
| 8. | 8.05 |
| 9. | 11.6 |
| 10. | 15.5 |
| 13. | 27.7 |
| 16. | 37.4 |
| 17.35 (max) | 39.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.31 | 0. .5 .8 1.25 2. |

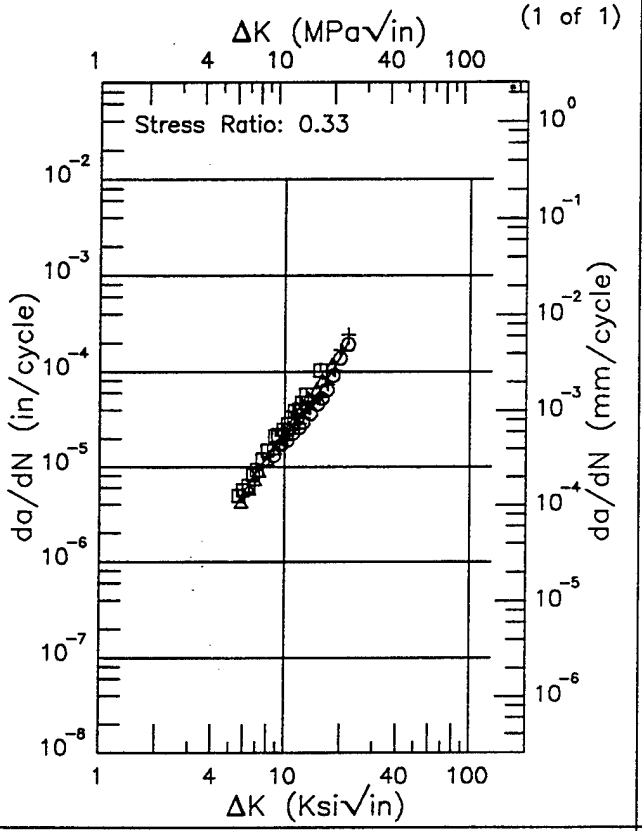
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

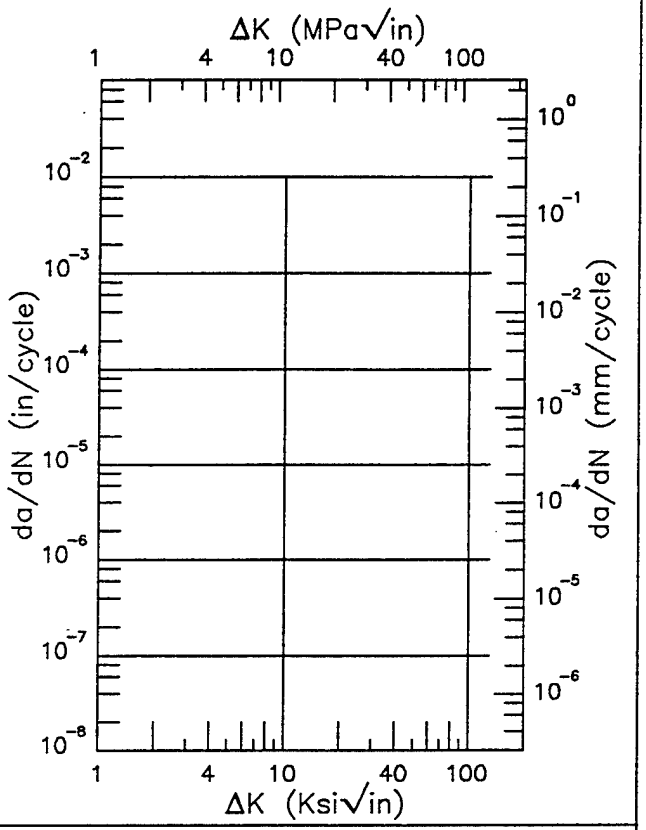
**Figure 8.11.3.1.7**

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.59 (min) | 4.25 |
| 6. | 5.40 |
| 7. | 8.71 |
| 8. | 12.7 |
| 9. | 17.2 |
| 10. | 22.4 |
| 13. | 41.8 |
| 16. | 69.9 |
| 20. | 145. |
| 21.86 (max) | 213. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.41 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.8**

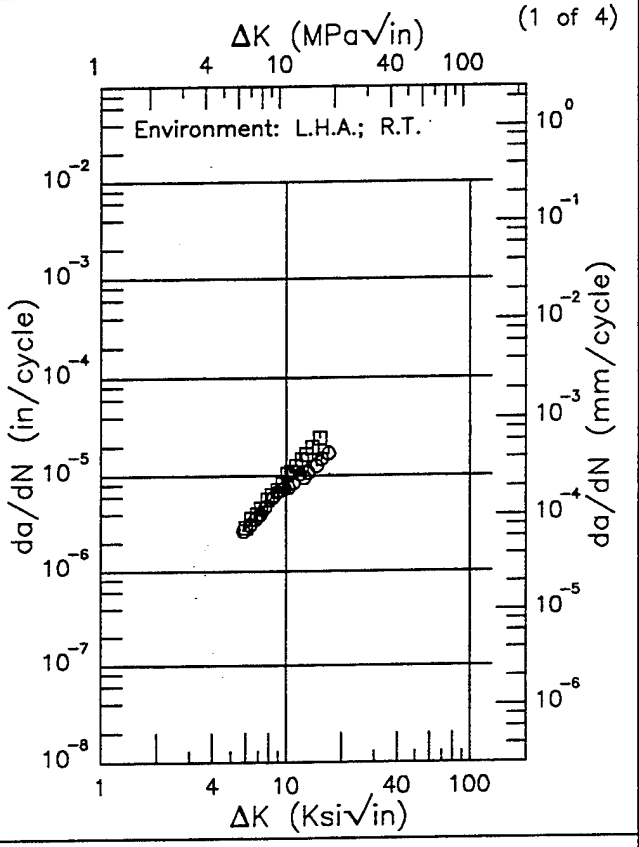
7079

E

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: T–S
Stress Ratio: 0.33
Frequency: 5.2 Hz

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720

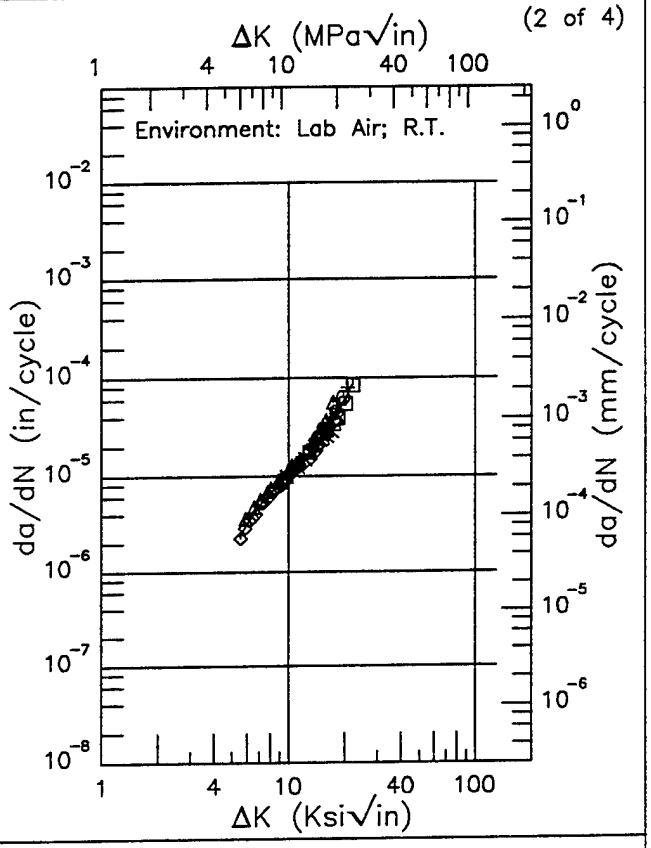
(1 of 4)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.83 (min) | 2.69 |
| 6. | 2.84 |
| 7. | 3.99 |
| 8. | 5.47 |
| 9. | 7.07 |
| 10. | 8.60 |
| 13. | 13.5 |
| 16. | 17.1 |
| 16.92 (max) | 16.7 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.33 | 0. .5 .8 1.25 2. |

(2 of 4)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.53 (min) | 2.40 |
| 6. | 3.19 |
| 7. | 4.94 |
| 8. | 6.69 |
| 9. | 8.44 |
| 10. | 10.3 |
| 13. | 17.8 |
| 16. | 30.1 |
| 20. | 60.5 |
| 22.12 (max) | 90.1 |

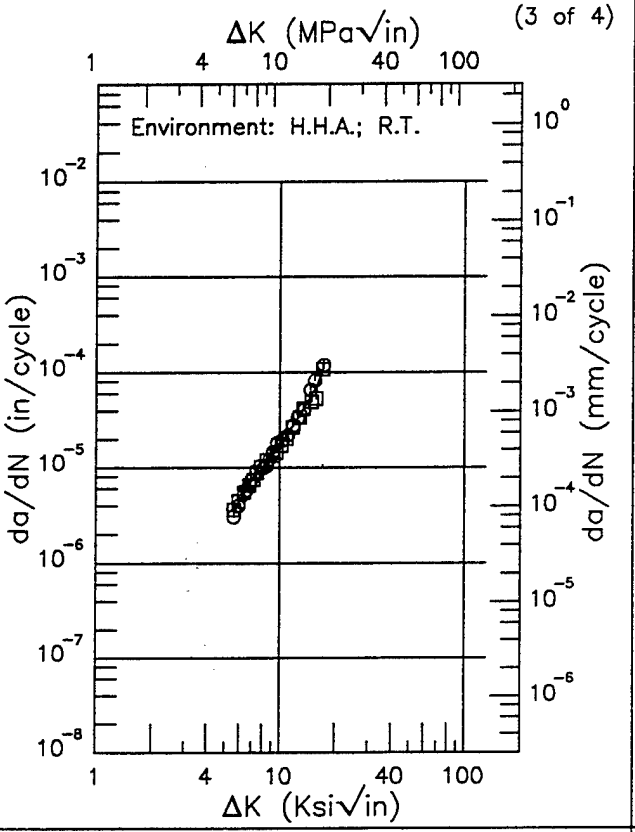
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.47 | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.9**

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: T–S
Stress Ratio: 0.33
Frequency: 5.2 Hz

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720

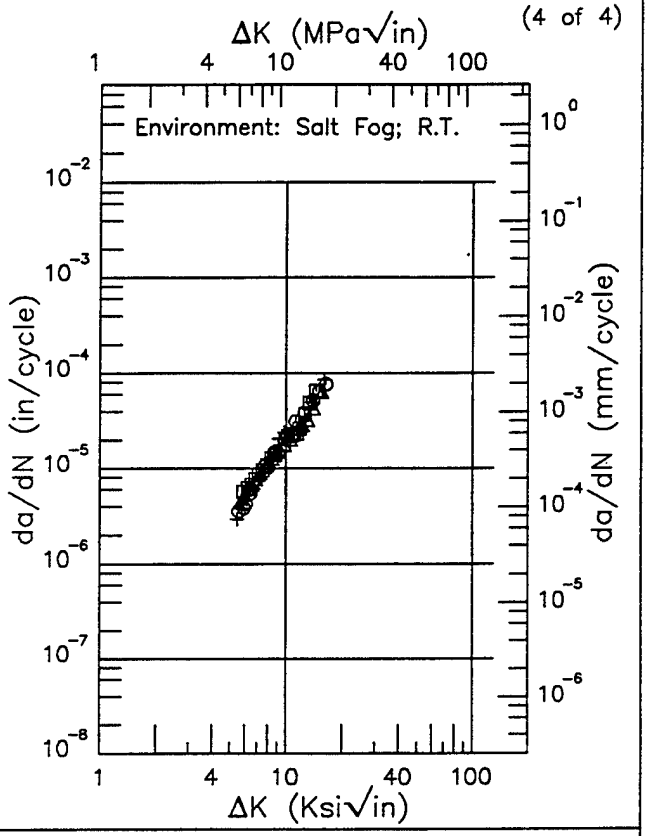
(3 of 4)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.59 (min) | 3.40 |
| 6. | 4.49 |
| 7. | 7.23 |
| 8. | 10.0 |
| 9. | 13.2 |
| 10. | 17.1 |
| 13. | 36.8 |
| 16. | 74.8 |
| 17.28 (max) | 113. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.40 | 0. .5 .8 1.25 2. |

(4 of 4)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.46 (min) | 3.35 |
| 6. | 4.69 |
| 7. | 7.88 |
| 8. | 11.7 |
| 9. | 15.7 |
| 10. | 19.4 |
| 13. | 37.9 |
| 16. | 77.1 |
| 16.26 (max) | 79.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.67 | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.9 (Concluded)**

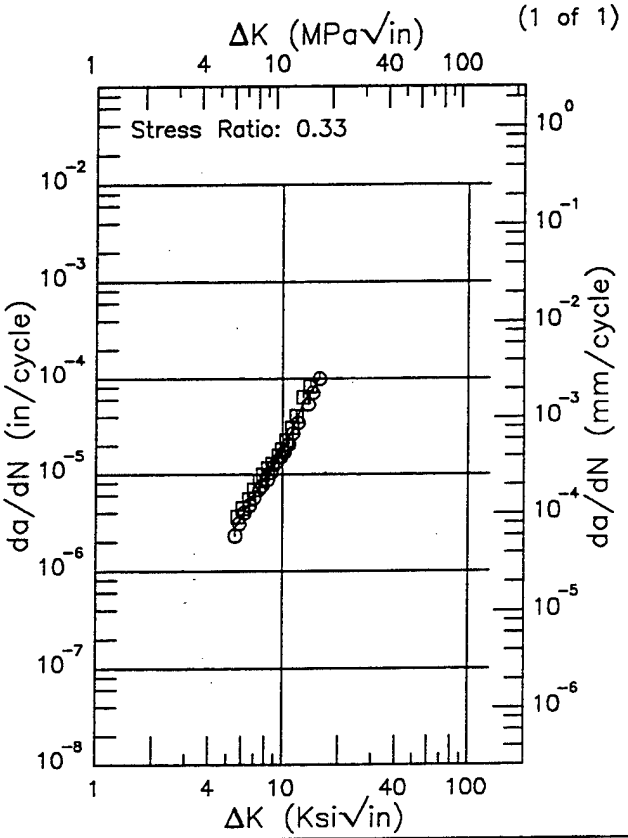
7079

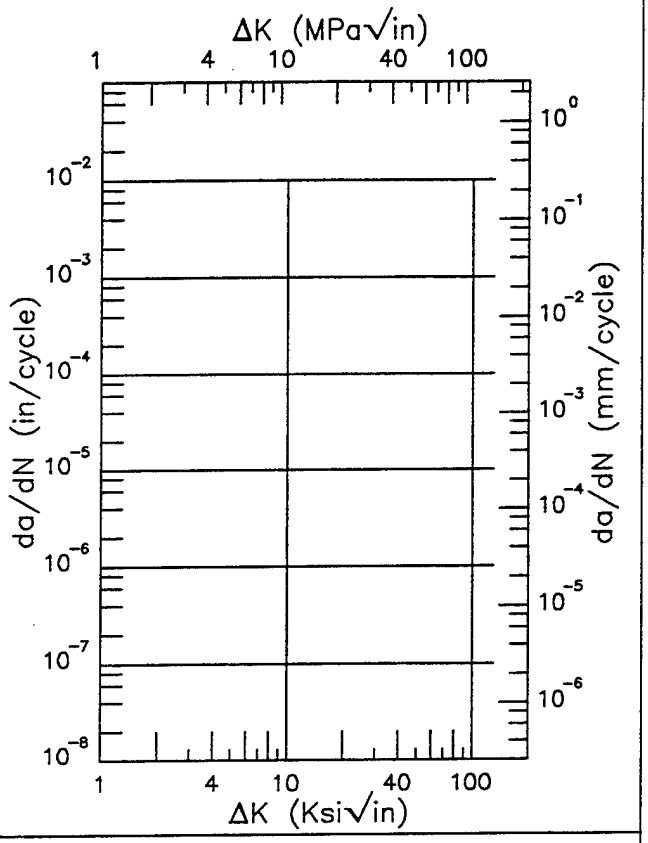
R

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.52 (min) | 2.73 |
| 6. | 3.70 |
| 7. | 6.24 |
| 8. | 9.22 |
| 9. | 12.4 |
| 10. | 17.1 |
| 13. | 56.0 |
| 15.68 (max) | 98.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

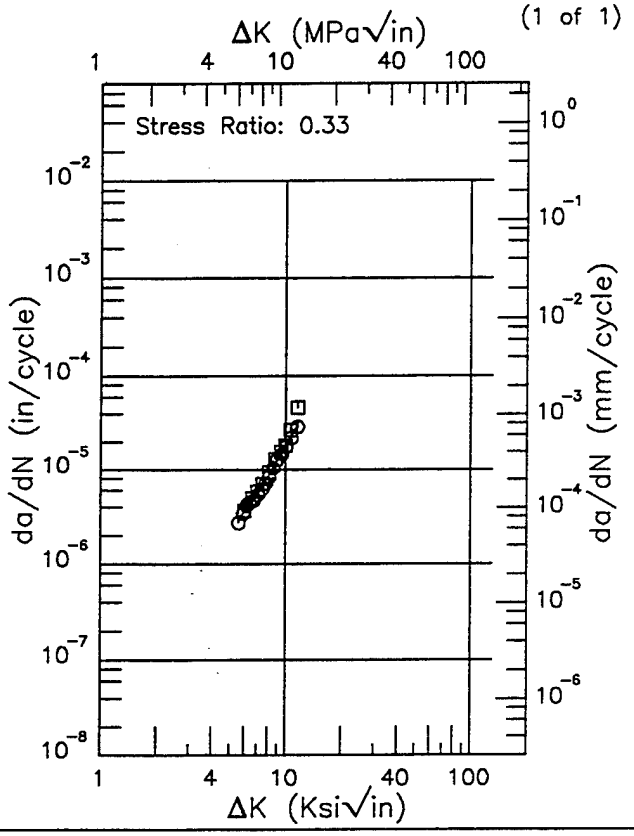
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.14 | 0. .5 .8 1.25 2. |

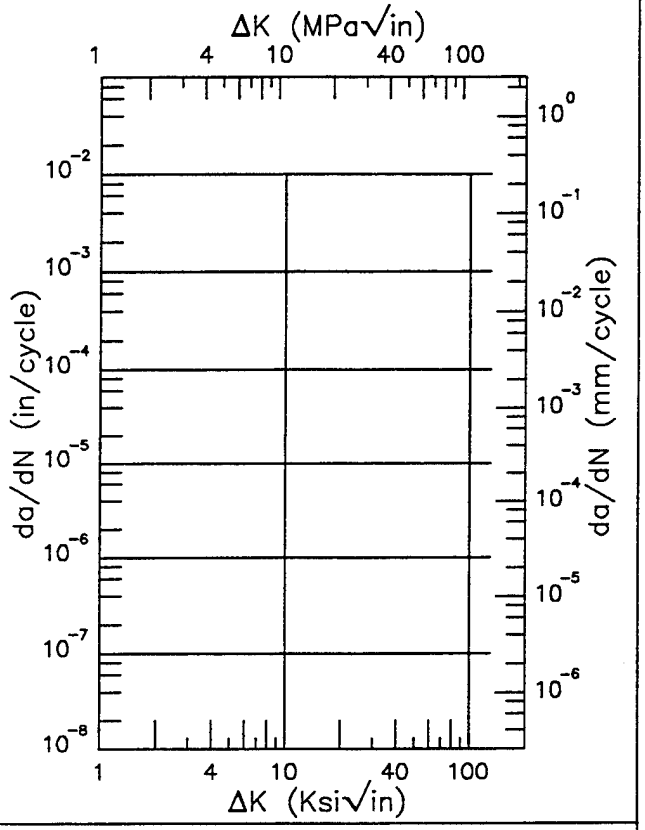
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.10**

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: S–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.58 (min) | 2.93 |
| 6. | 3.50 |
| 7. | 5.44 |
| 8. | 8.40 |
| 9. | 12.6 |
| 10. | 18.3 |
| 11.52 (max) | 29.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.33 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.11**

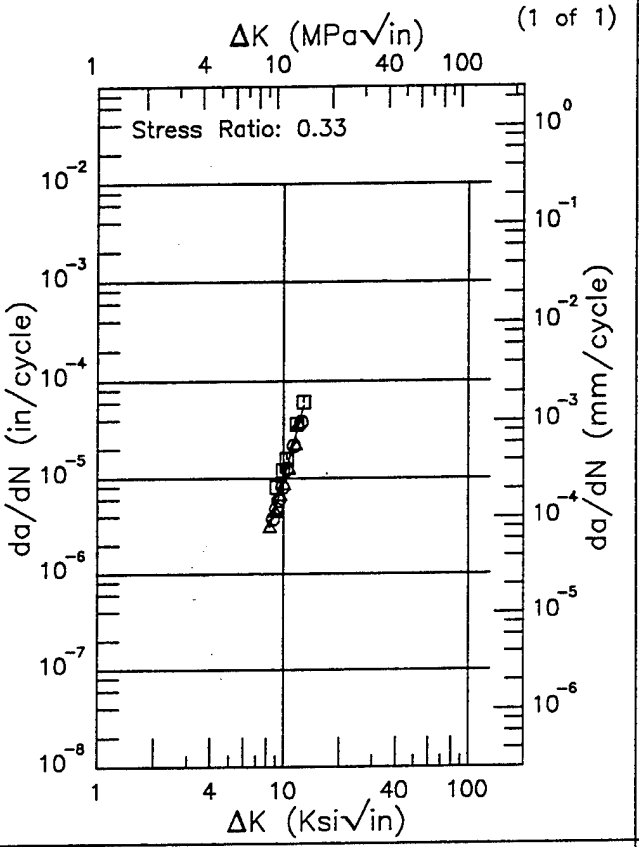
7079

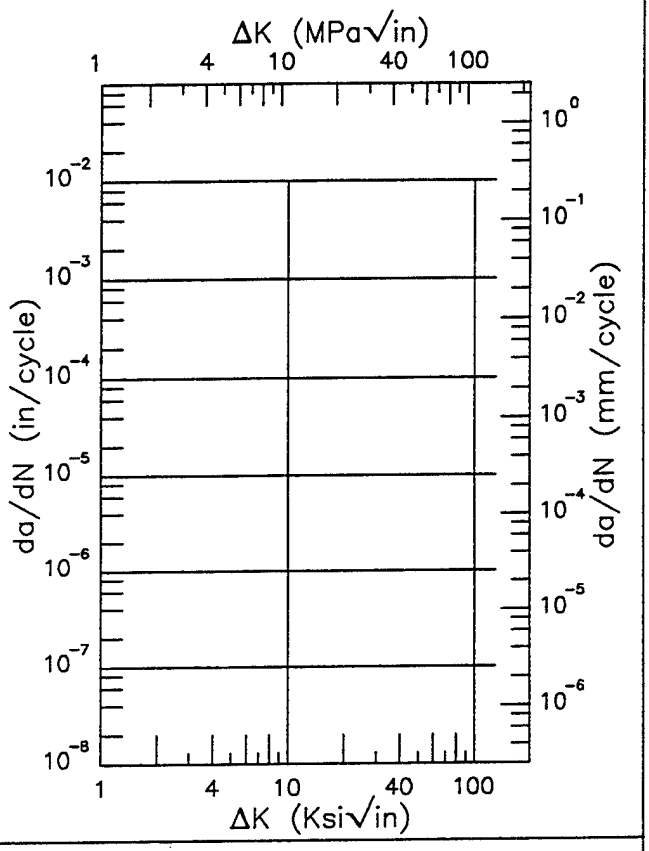
R

Condition/Ht: T652
Form: 6 in. Forging
Specimen Type: CCP (max load specified)
Orientation: S-L
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3 in.
Ref: 77720

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.37 (min) | 3.13 |
| 9. | 4.98 |
| 10. | 9.73 |
| 12.82 (max) | 56.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.76 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.11.3.1.12**

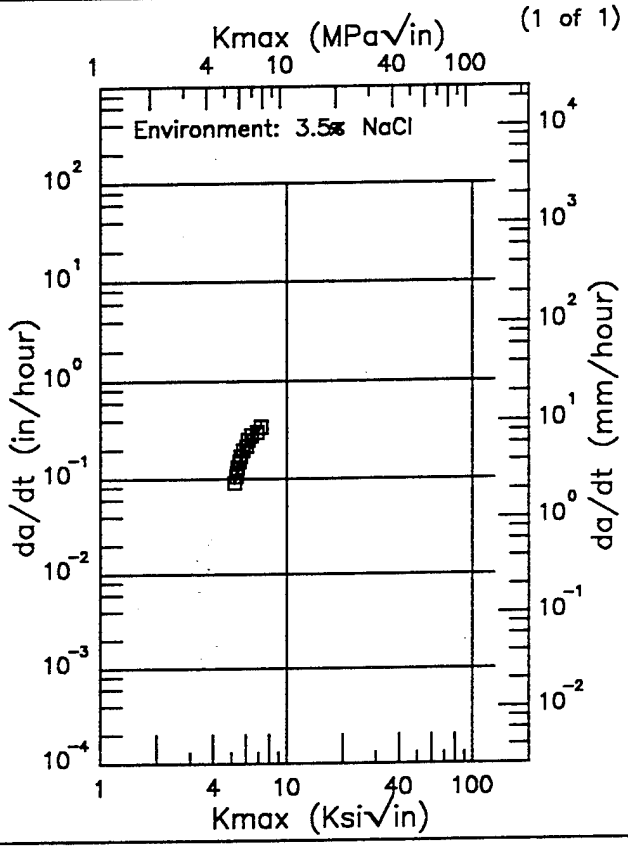
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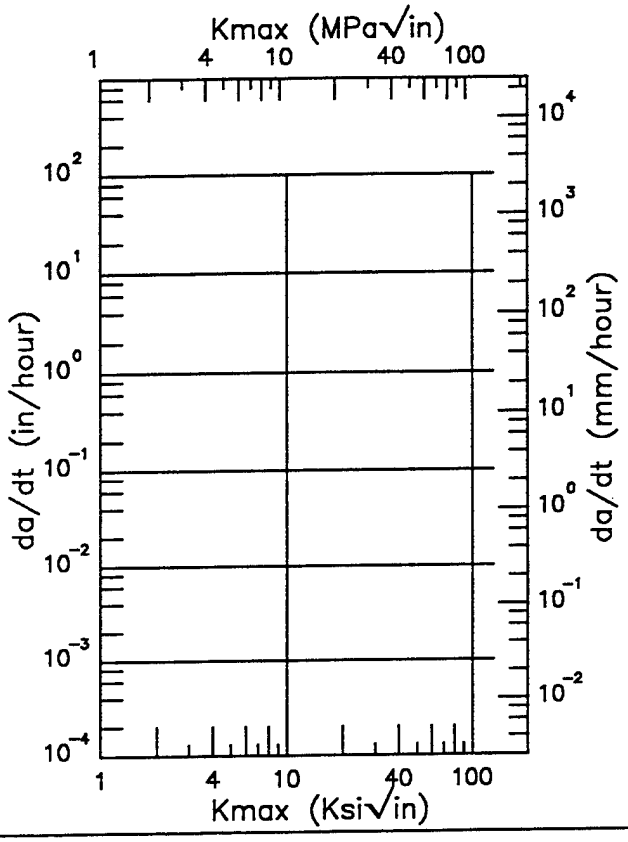
## 7079

Condition/Ht: T6
Form: 1 in. Plate
Specimen Type: DCB
Orientation:
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 3.5 in.
$A_o$:
$K_{Iscc}$: 4.3 ksi
Ref: 84330

(1 of 1)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.20 (min) | 90.0 |
| 6. | 230. |
| 7. | 313. |
| 7.20 (max) | 336. |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

RMS % Error
8.38

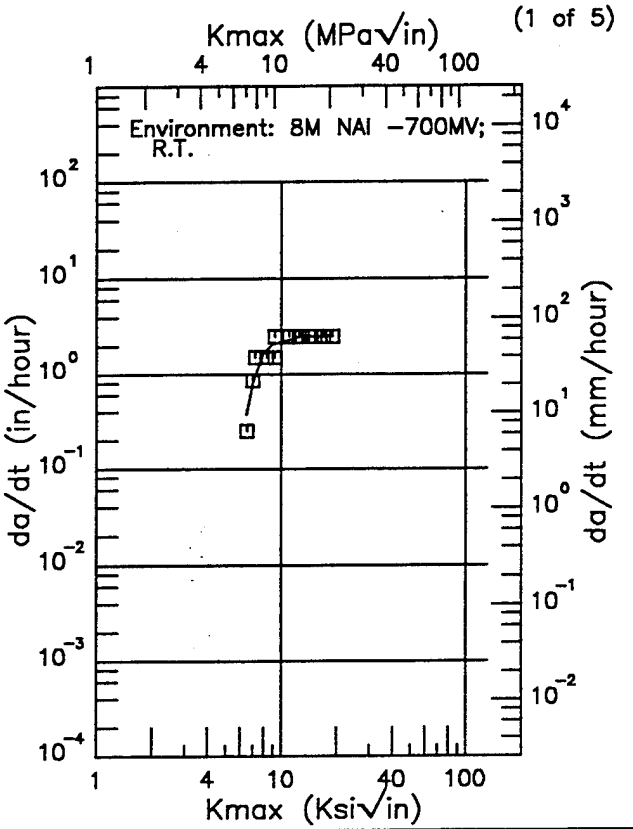
RMS % Error

**Figure 8.11.3.2.1**

Condition/Ht: T651
Form:
Specimen Type: DCB
Orientation: S–L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
$A_o$:
$K_{Iscc}$:
Ref: 76442;78313

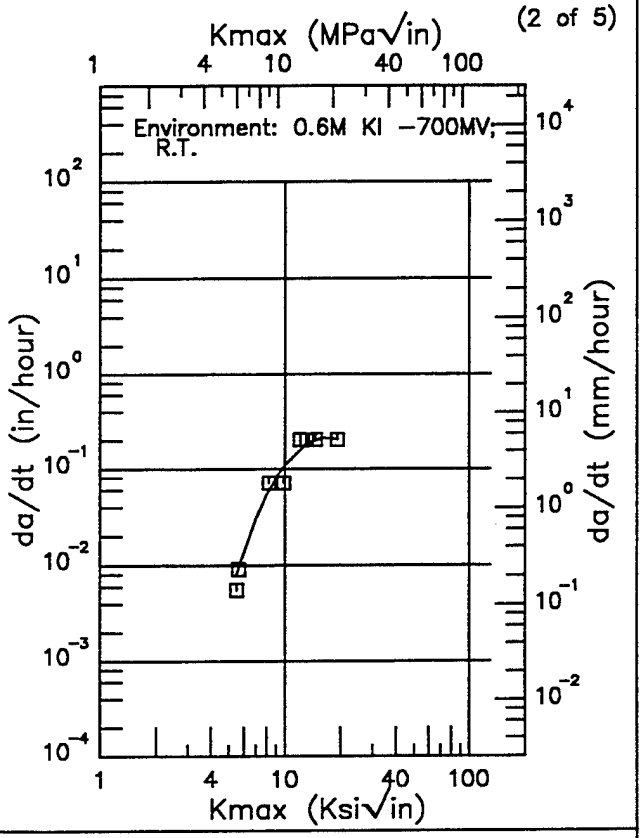
(1 of 5)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 6.50 (min) | 377. |
| 7. | 804. |
| 8. | 1708. |
| 9. | 2131. |
| 10. | 2194. |
| 13. | 2549. |
| 16. | 2512. |
| 19.00 (max) | 2532. |

RMS % Error
22.8

(2 of 5)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.50 (min) | 8.11 |
| 6. | 13.6 |
| 7. | 30.3 |
| 8. | 53.7 |
| 9. | 81.4 |
| 10. | 110. |
| 13. | 182. |
| 16. | 211. |
| 19.20 (max) | 205. |

RMS % Error
20.6

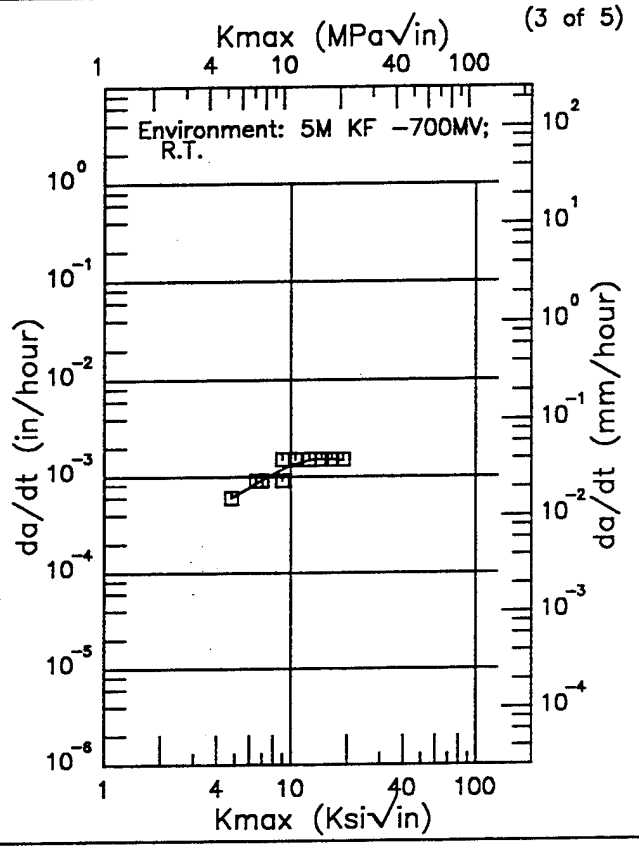
**Figure 8.11.3.2.2**

## 7079

Condition/Ht: T651
Form:
Specimen Type: DCB
Orientation: S-L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
$A_o$:
$K_{Iscc}$:
Ref: 76442;78313

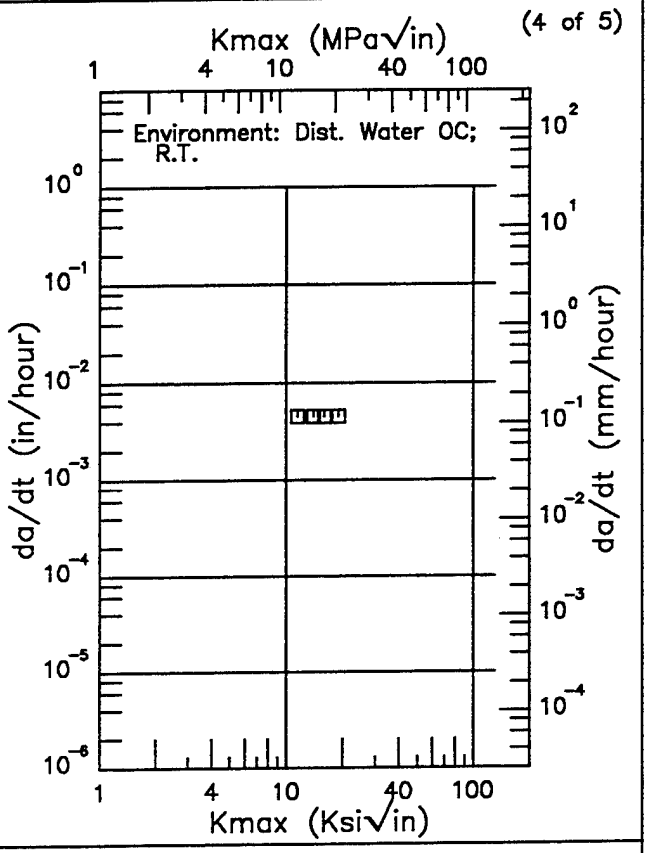
(3 of 5)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 4.80 (min) | 0.608 |
| 5. | 0.634 |
| 6. | 0.773 |
| 7. | 0.922 |
| 8. | 1.07 |
| 9. | 1.20 |
| 10. | 1.32 |
| 13. | 1.50 |
| 16. | 1.52 |
| 19.00 (max) | 1.49 |

RMS % Error
11.93

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Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

RMS % Error

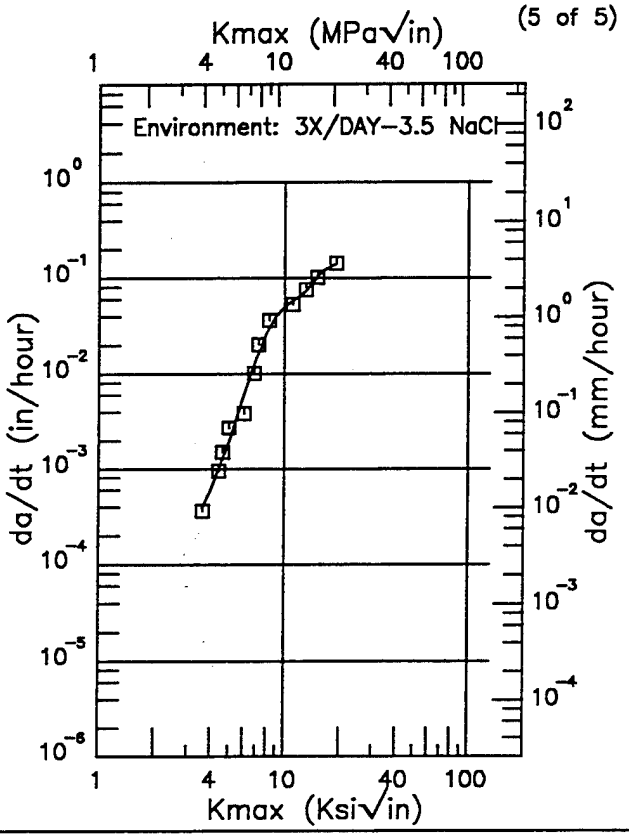
**Figure 8.11.3.2.2 (Continued)**

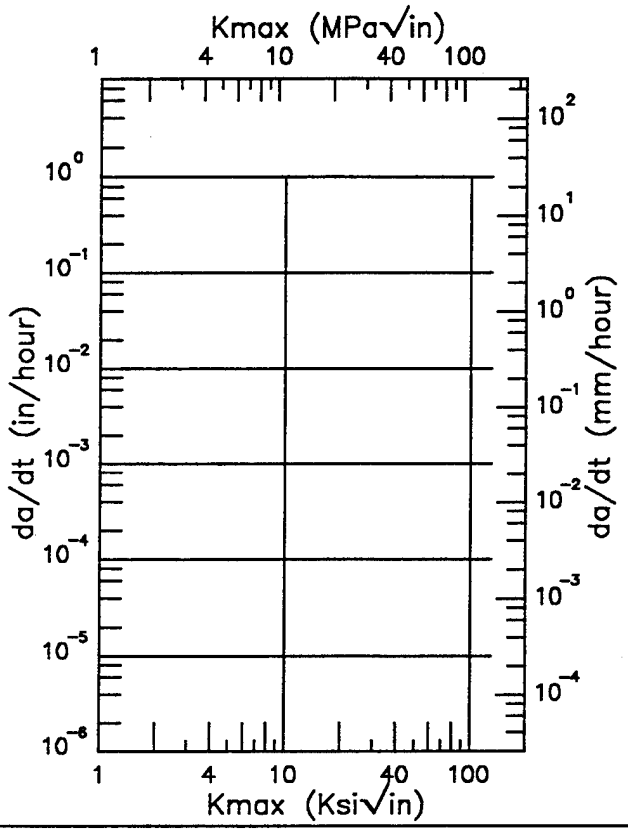
7079

Condition/Ht: T651
Form:
Specimen Type: DCB
Orientation: S-L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
$A_O$:
$K_{Iscc}$:
Ref: 76442;78313

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| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 3.60 (min) | 0.395 |
| 4. | 0.599 |
| 5. | 1.98 |
| 6. | 5.97 |
| 7. | 14.4 |
| 8. | 27.0 |
| 9. | 40.2 |
| 10. | 50.1 |
| 13. | 72.2 |
| 16. | 119. |
| 19.00 (max) | 140. |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| RMS % Error | |
|---|---|
| 19.31 | |

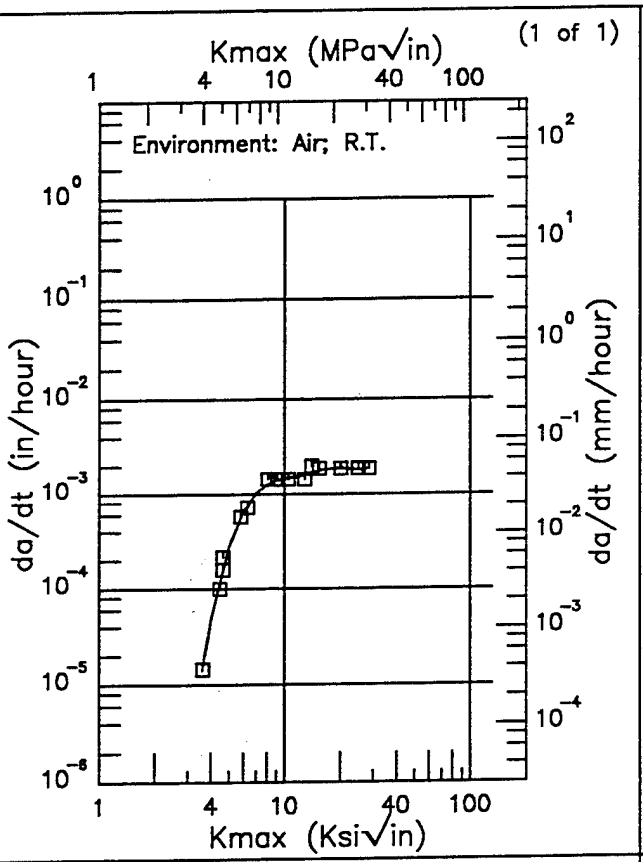
| RMS % Error | |
|---|---|
| | |

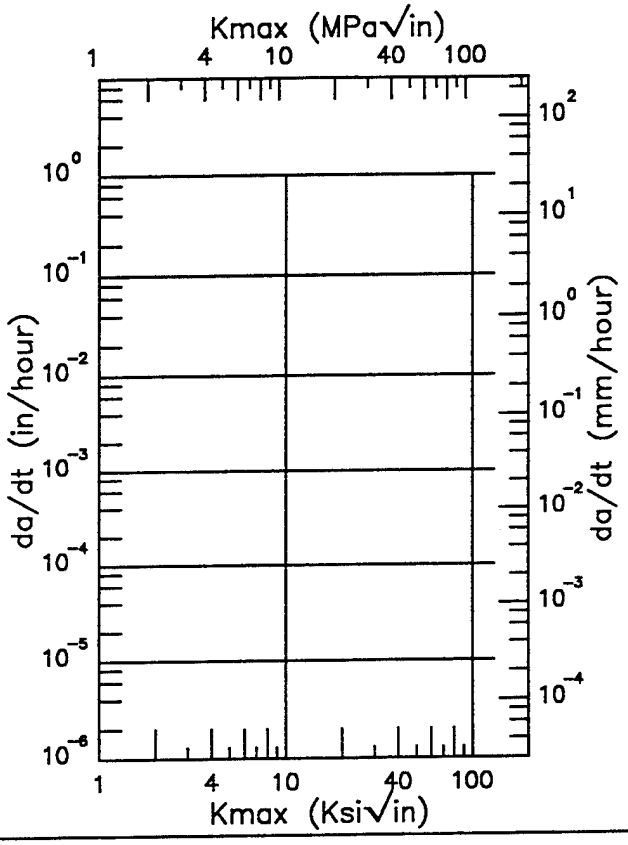
**Figure 8.11.3.2.2 (Concluded)**

## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength: 65 ksi
Ult. Strength:

Specimen Thk:
Specimen Width: 11.8 in.
$A_o$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 3.60 (min) | 0.0140 |
| 4. | 0.0451 |
| 5. | 0.269 |
| 6. | 0.654 |
| 7. | 1.02 |
| 8. | 1.27 |
| 9. | 1.40 |
| 10. | 1.47 |
| 13. | 1.62 |
| 16. | 1.81 |
| 20. | 1.91 |
| 25. | 1.81 |
| 28.50 (max) | 1.87 |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| RMS % Error | |
|---|---|
| 12.77 | |

| RMS % Error | |
|---|---|
| | |

**Figure 8.11.3.2.3**

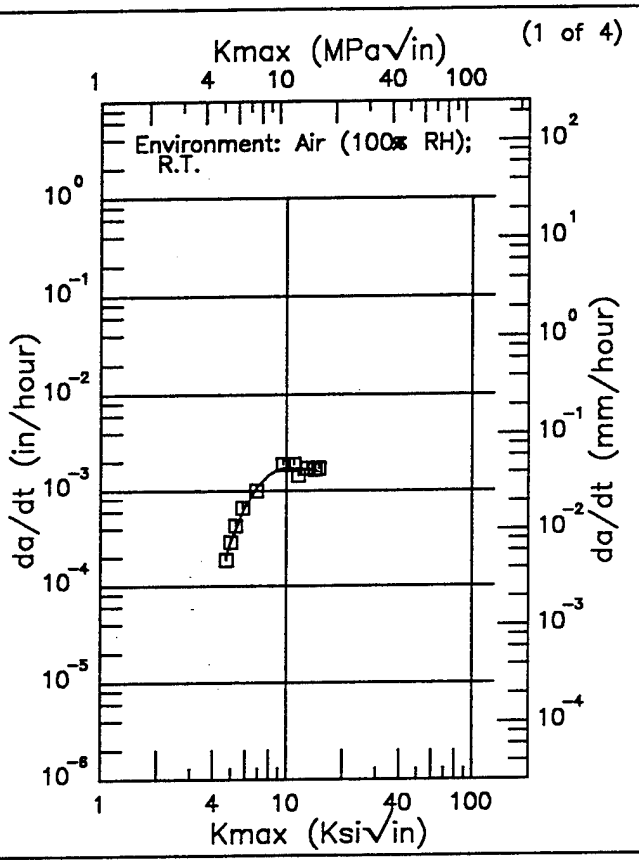
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## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength: 65 ksi
Ult. Strength:

Specimen Thk:
Specimen Width: 11.8 in.
$A_o$:
$K_{Iscc}$:
Ref: 85543

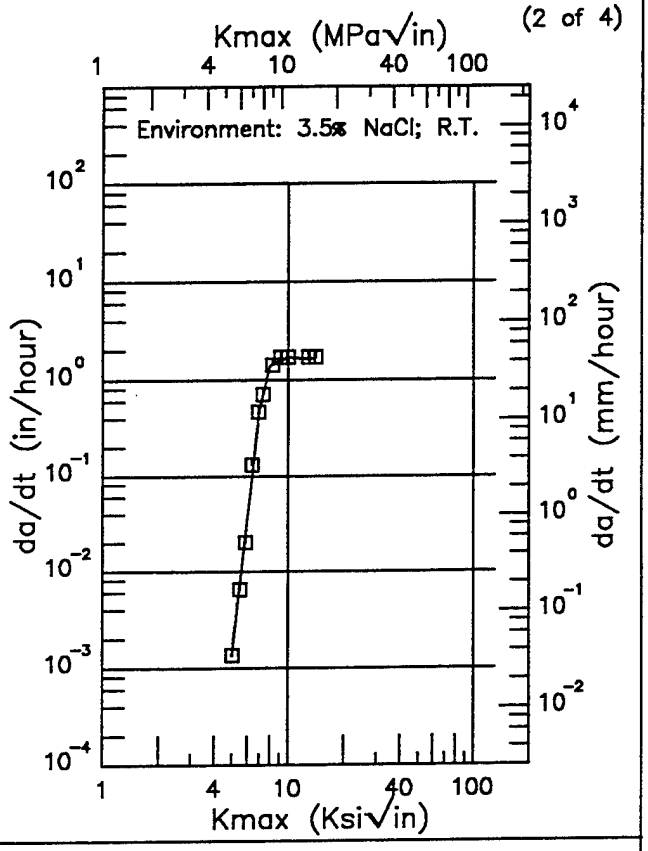
(1 of 4)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 4.70 (min) | 0.200 |
| 5. | 0.292 |
| 6. | 0.694 |
| 7. | 1.12 |
| 8. | 1.45 |
| 9. | 1.65 |
| 10. | 1.75 |
| 13. | 1.68 |
| 14.80 (max) | 1.58 |

RMS % Error
8.41

(2 of 4)



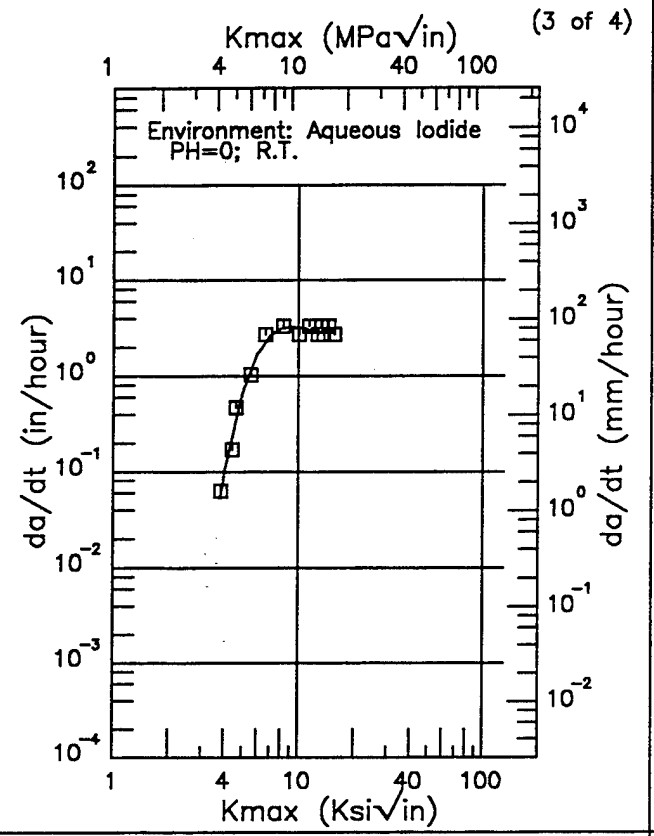

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.00 (min) | 1.34 |
| 6. | 33.1 |
| 7. | 490. |
| 8. | 1392. |
| 9. | 1574. |
| 10. | 1724. |
| 13. | 1639. |
| 14.10 (max) | 1700. |

RMS % Error
12.88

**Figure 8.11.3.2.4**

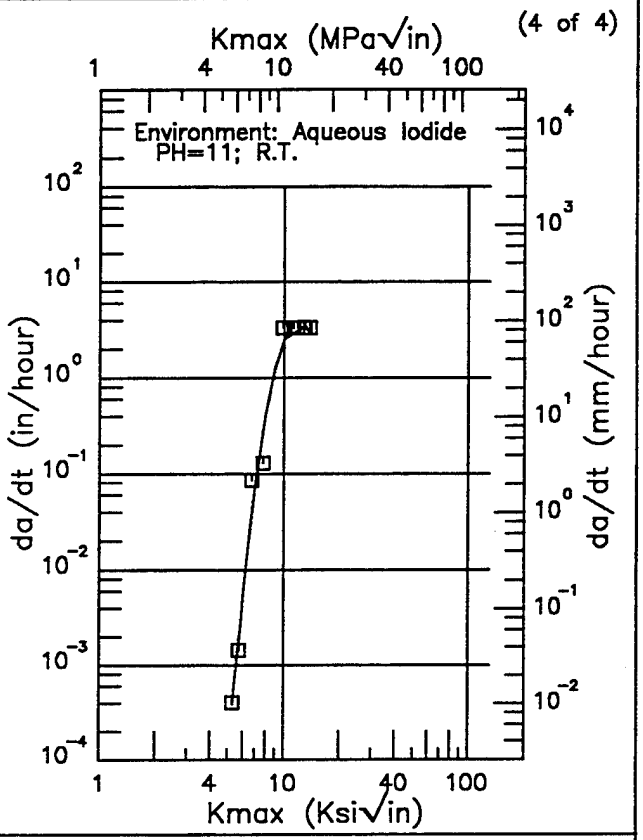
Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength: 65 ksi
Ult. Strength:

Specimen Thk:
Specimen Width: 11.8 in.
$A_o$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 3.80 (min) | 53.2 |
| 4. | 96.6 |
| 5. | 676. |
| 6. | 1713. |
| 7. | 2630. |
| 8. | 3125. |
| 9. | 3263. |
| 10. | 3205. |
| 13. | 2889. |
| 15.50 (max) | 2994. |

RMS % Error
17.85




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.30 (min) | 0.385 |
| 6. | 5.26 |
| 7. | 73.5 |
| 8. | 419. |
| 9. | 1283. |
| 10. | 2511. |
| 13. | 3487. |
| 13.70 (max) | 2963. |

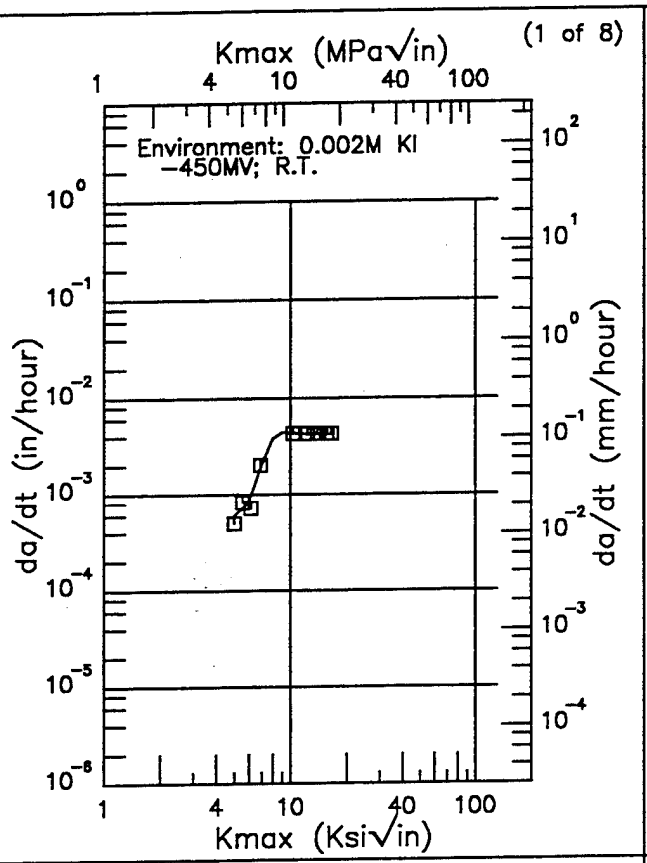
RMS % Error
54.44

**Figure 8.11.3.2.4 (Concluded)**

## 7079

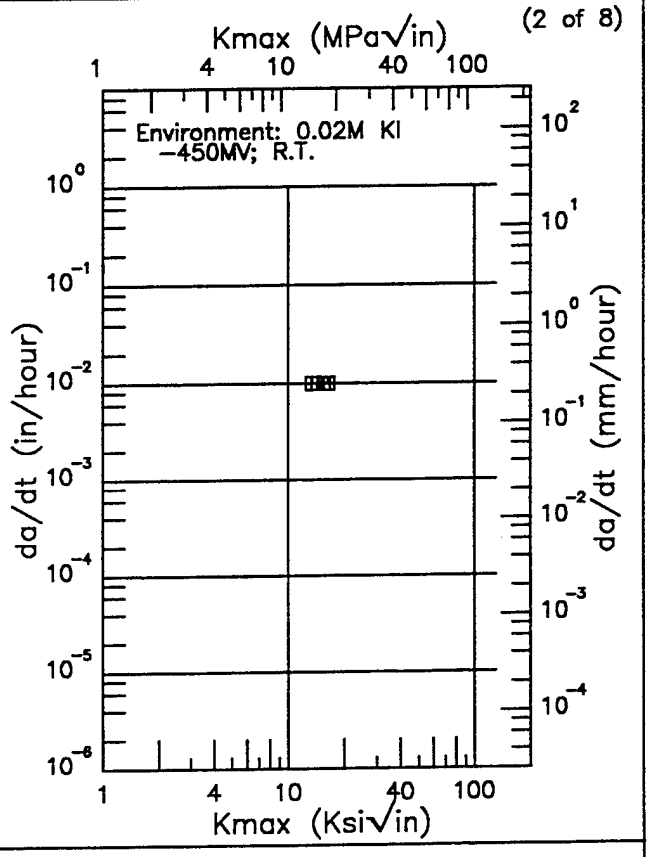
Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.00 (min) | 0.599 |
| 6. | 0.860 |
| 7. | 2.07 |
| 8. | 3.80 |
| 9. | 4.47 |
| 10. | 4.34 |
| 13. | 4.27 |
| 16. | 4.24 |
| 16.40 (max) | 4.27 |

RMS % Error
11.03




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

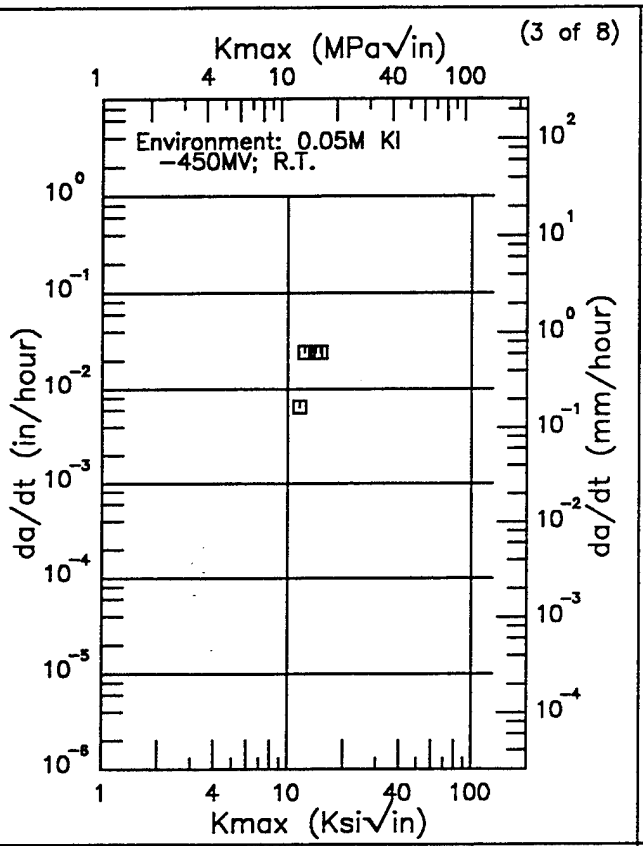
RMS % Error

**Figure 8.11.3.2.5**

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

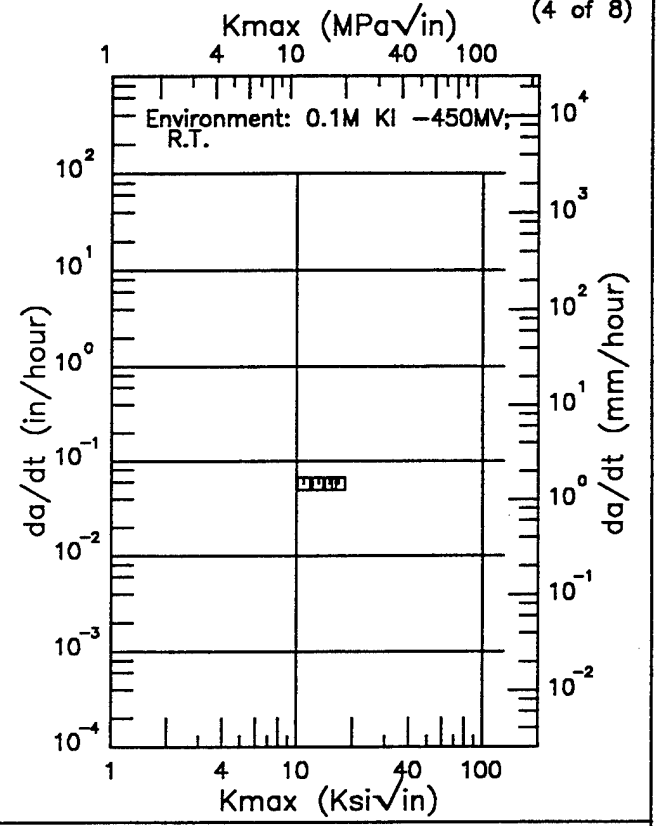
(3 of 8)




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

| RMS % Error | |
|---|---|

(4 of 8)




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

| RMS % Error | |
|---|---|

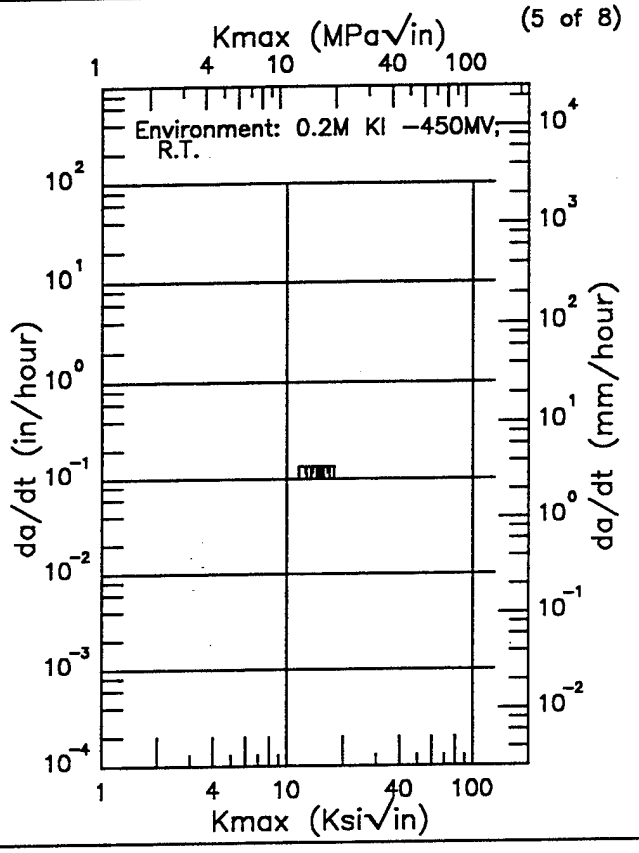
**Figure 8.11.3.2.5 (Continued)**

## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
Ao:
KIscc:
Ref: 85543

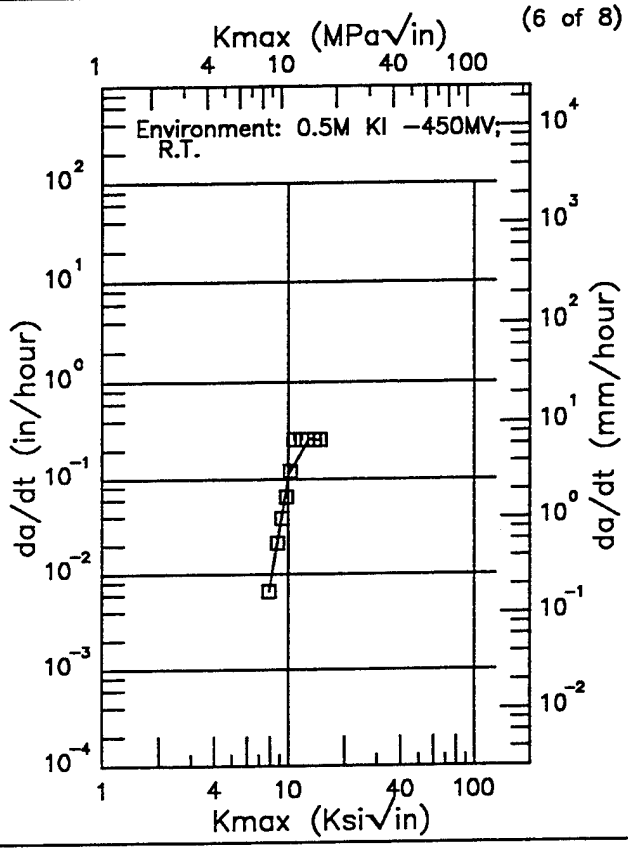
(5 of 8)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| RMS % Error | |
|---|---|

(6 of 8)



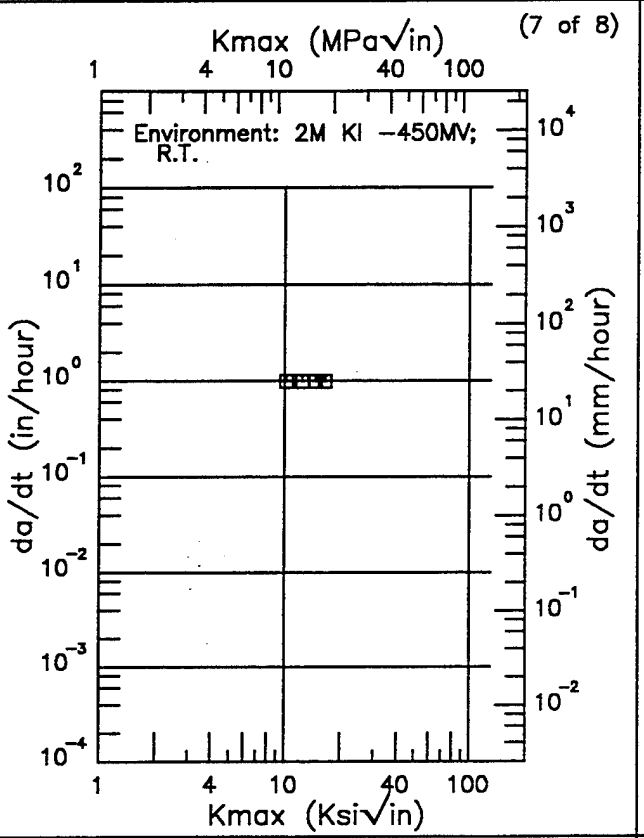

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 7.90 (min) | 6.74 |
| 8. | 7.45 |
| 9. | 29.6 |
| 10. | 111. |
| 13. | 267. |
| 14.80 (max) | 256. |

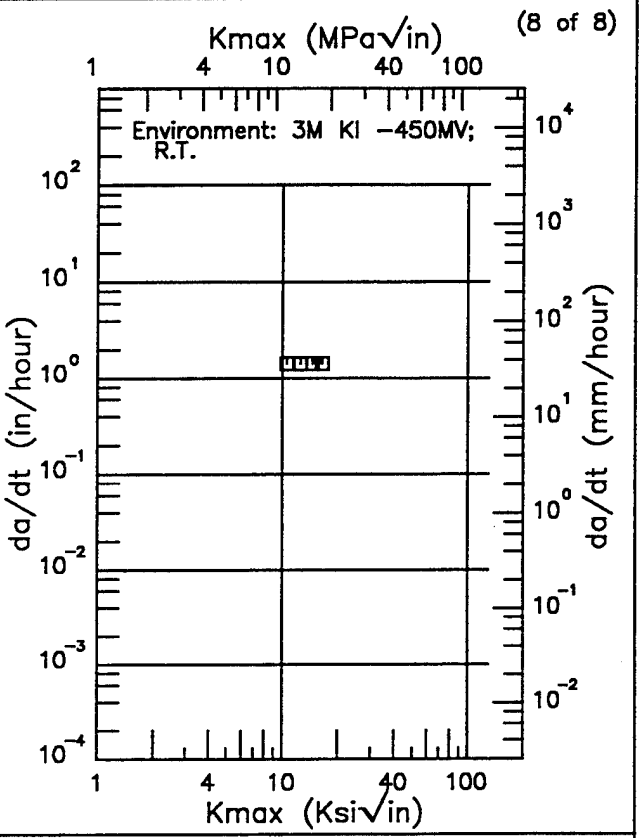
| RMS % Error | |
|---|---|
| 30.14 | |

**Figure 8.11.3.2.5 (Continued)**

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

| RMS % Error | | RMS % Error | |
|---|---|---|---|

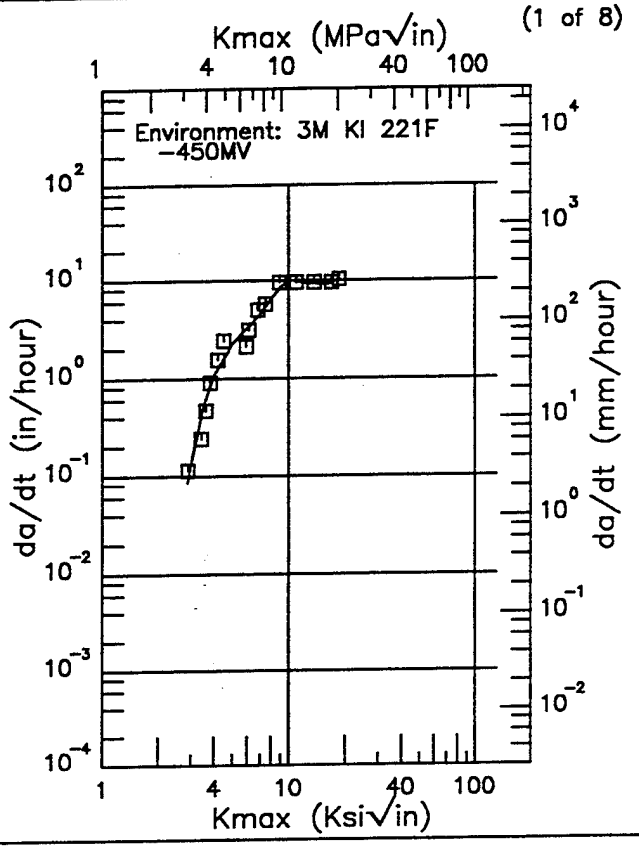
**Figure 8.11.3.2.5 (Concluded)**

## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

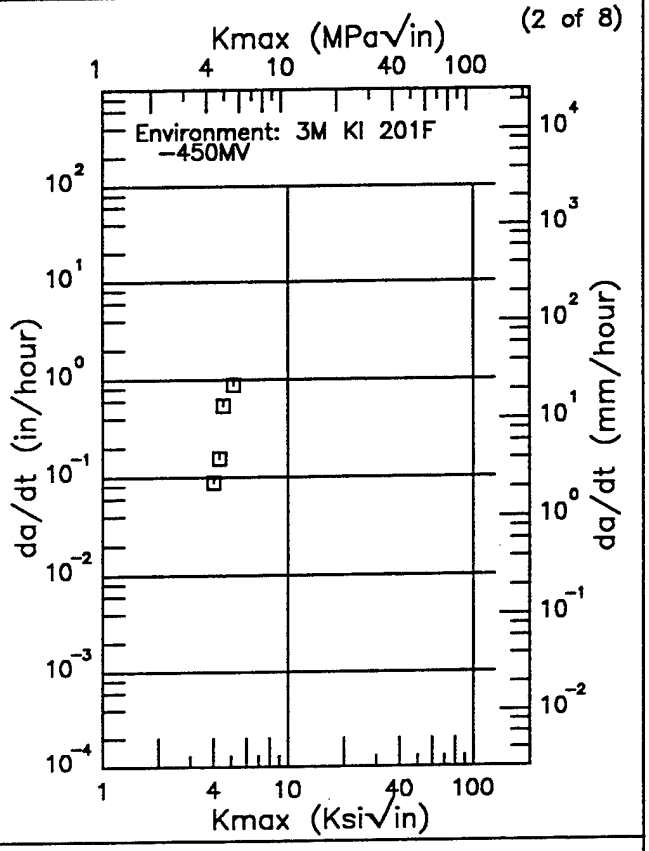
(1 of 8)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 2.90 (min) | 86.2 |
| 3. | 125. |
| 4. | 485. |
| 4. | 1060. |
| 5. | 2264. |
| 6. | 3275. |
| 7. | 4529. |
| 8. | 6407. |
| 9. | 8513. |
| 10. | 10122. |
| 13. | 9290. |
| 16. | 9156. |
| 18.50 (max) | 10087. |

RMS % Error
22.9

(2 of 8)



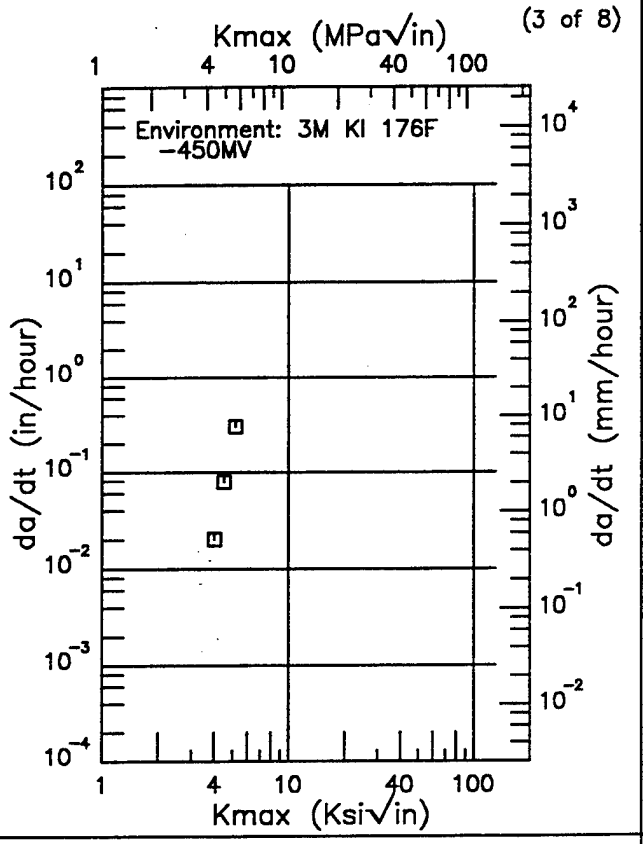

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

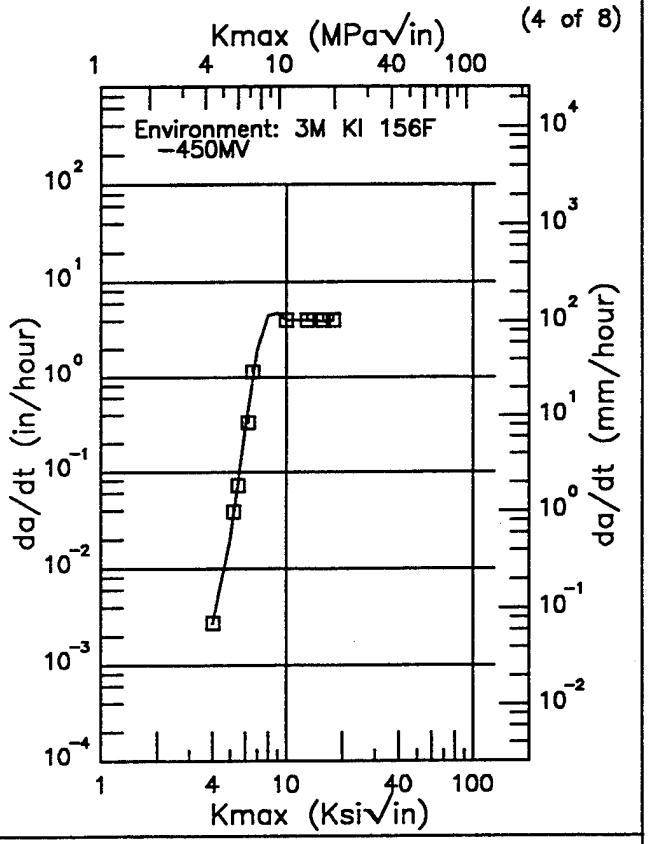
RMS % Error

**Figure 8.11.3.2.6**

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_O$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 4.00 (min) | 2.73 |
| 5. | 20.0 |
| 6. | 284. |
| 7. | 1974. |
| 8. | 4531. |
| 9. | 4812. |
| 10. | 4015. |
| 13. | 4033. |
| 16. | 3922. |
| 17.90 (max) | 4000. |

| RMS % Error | |
|---|---|

| RMS % Error | |
|---|---|
| 11.38 | |

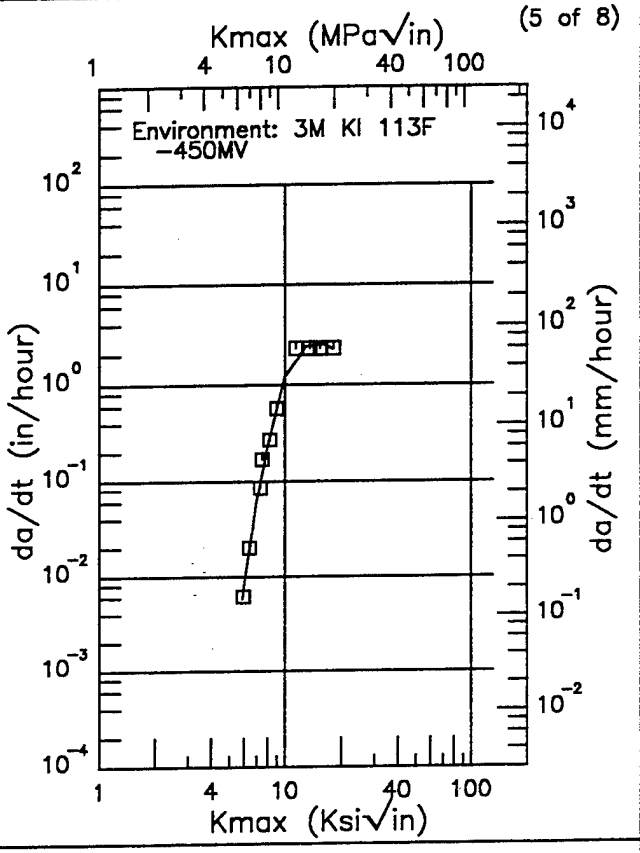
**Figure 8.11.3.2.6 (Continued)**

## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

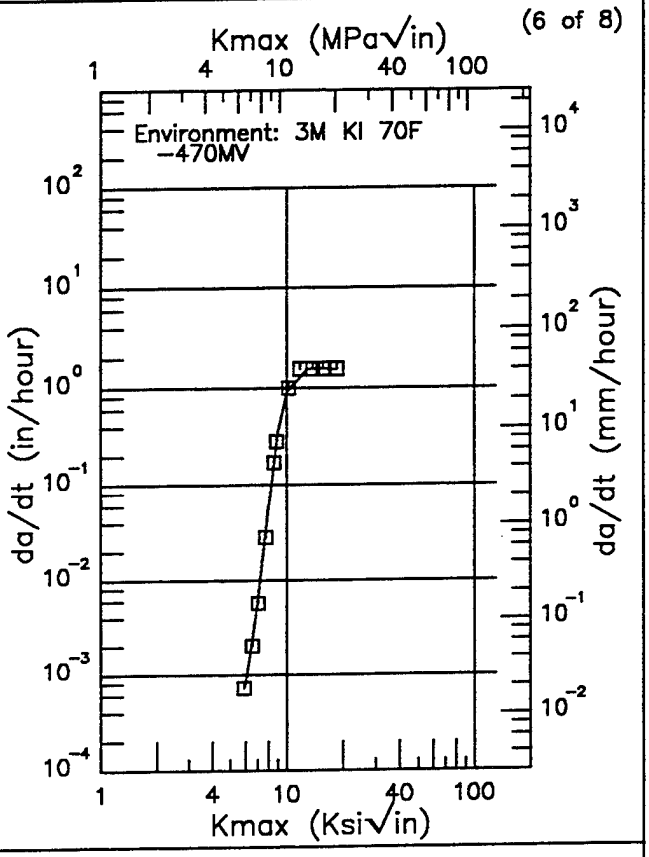
(5 of 8)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.90 (min) | 5.87 |
| 6. | 7.77 |
| 7. | 62.7 |
| 8. | 227. |
| 9. | 577. |
| 10. | 1220. |
| 13. | 2425. |
| 16. | 2553. |
| 18.00 (max) | 2300. |

RMS % Error
17.26

(6 of 8)



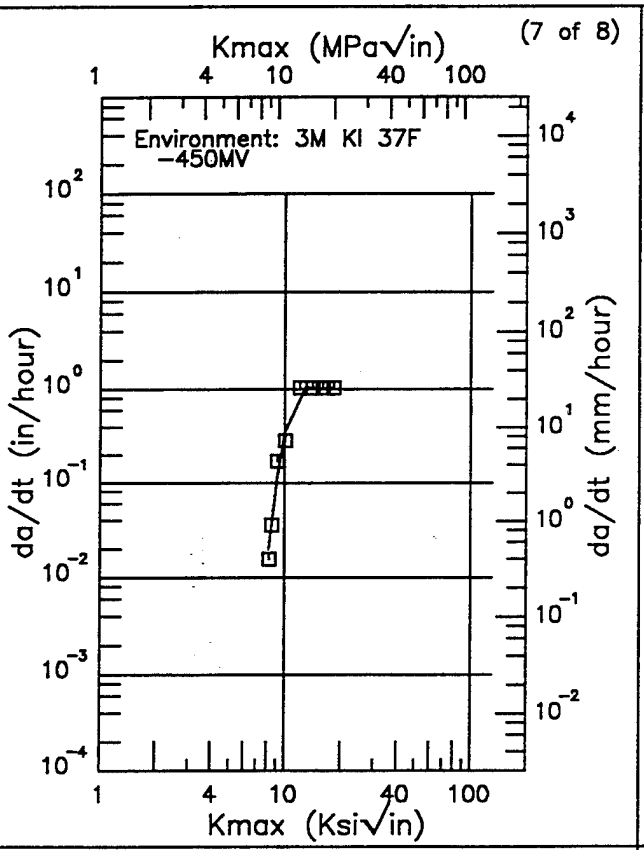

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.90 (min) | 0.735 |
| 6. | 0.820 |
| 7. | 5.76 |
| 8. | 59.3 |
| 9. | 355. |
| 10. | 918. |
| 13. | 1569. |
| 16. | 1561. |
| 18.50 (max) | 1550. |

RMS % Error
9.3

**Figure 8.11.3.2.6 (Continued)**

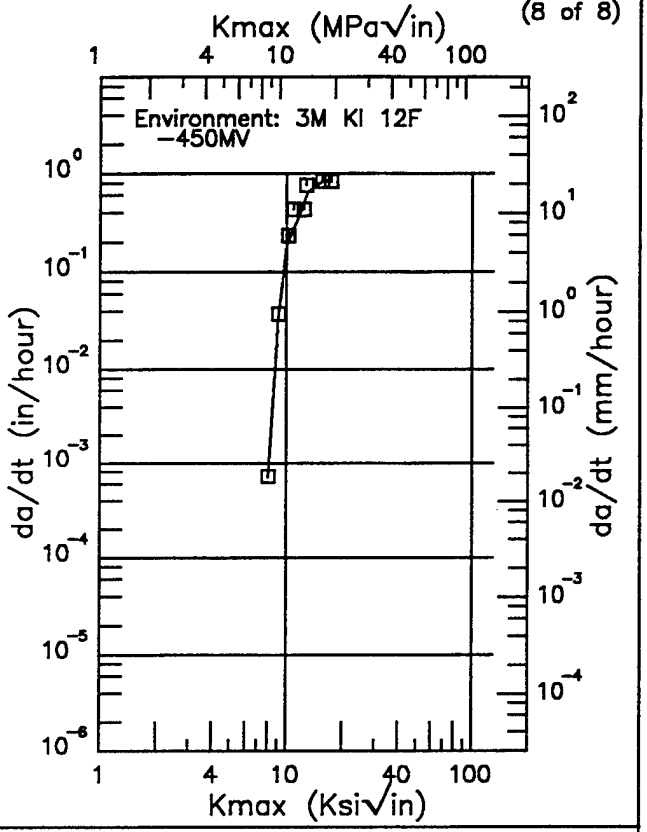
Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 8.20 (min) | 19.7 |
| 9. | 100. |
| 10. | 346. |
| 13. | 1059. |
| 16. | 998. |
| 18.20 (max) | 1027. |

RMS % Error
23.64




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 8.00 (min) | 0.705 |
| 9. | 29.3 |
| 10. | 183. |
| 13. | 641. |
| 16. | 859. |
| 17.30 (max) | 819. |

RMS % Error
23.03

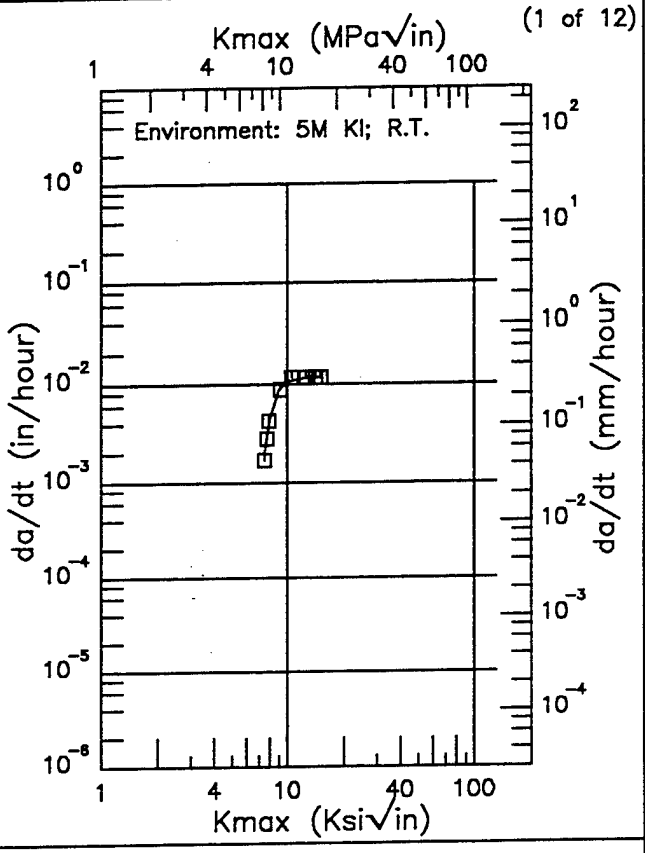
**Figure 8.11.3.2.6 (Concluded)**

## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_O$:
$K_{Iscc}$:
Ref: 85543

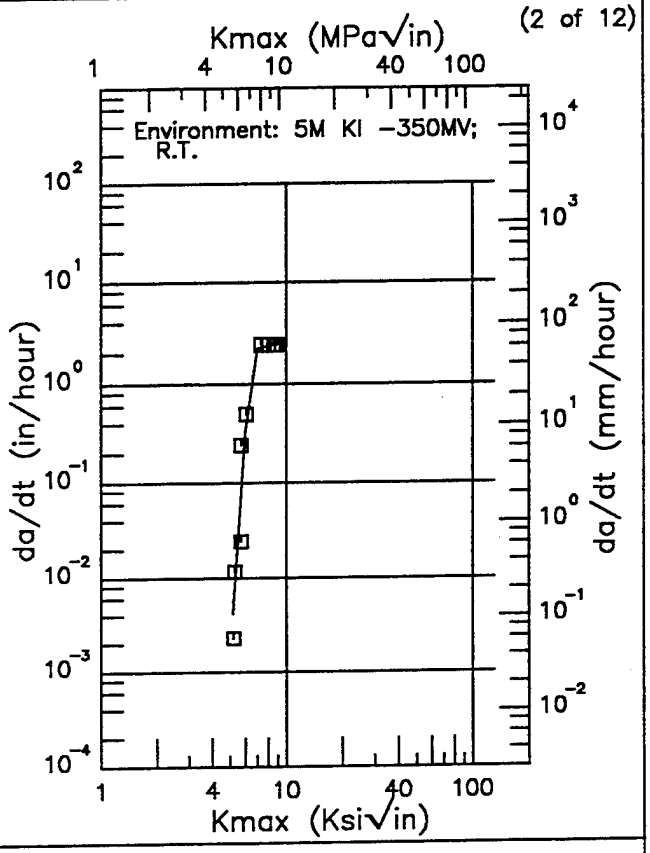
(1 of 12)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 7.50 (min) | 2.06 |
| 8. | 4.44 |
| 9. | 8.89 |
| 10. | 10.7 |
| 13. | 11.6 |
| 15.00 (max) | 11.6 |

RMS % Error
7.75

(2 of 12)



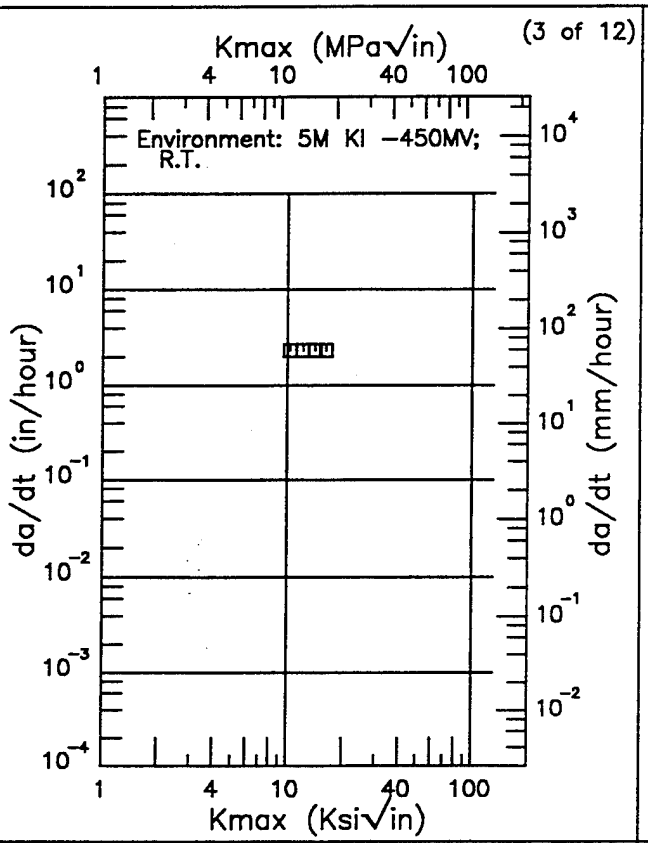

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.20 (min) | 4.19 |
| 6. | 322. |
| 7. | 2214. |
| 8. | 2365. |
| 8.90 (max) | 2554. |

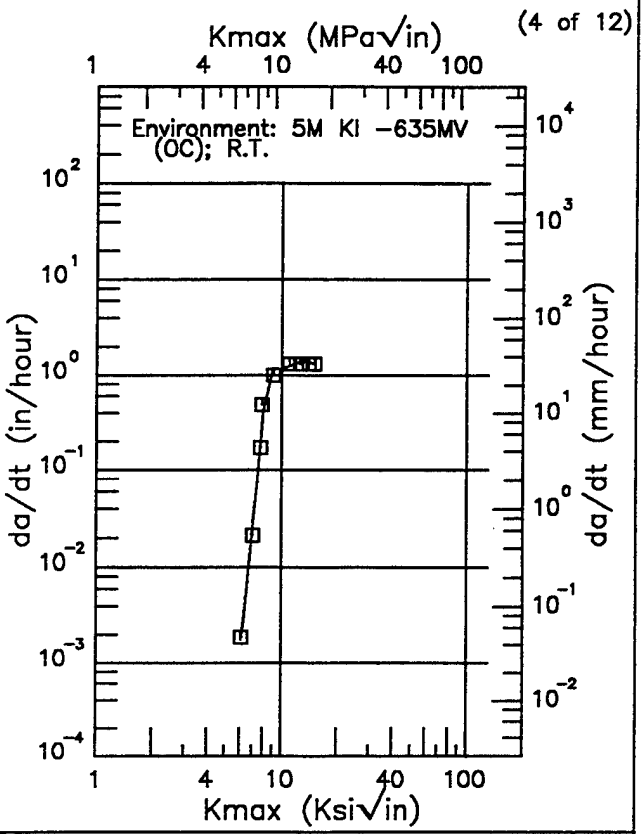
RMS % Error
90.84

**Figure 8.11.3.2.7**

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_O$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 6.10 (min) | 1.77 |
| 7. | 24.9 |
| 8. | 411. |
| 9. | 1189. |
| 10. | 1160. |
| 13. | 1420. |
| 15.00 (max) | 1330. |

| RMS % Error | | RMS % Error 34.08 | |
|---|---|---|---|

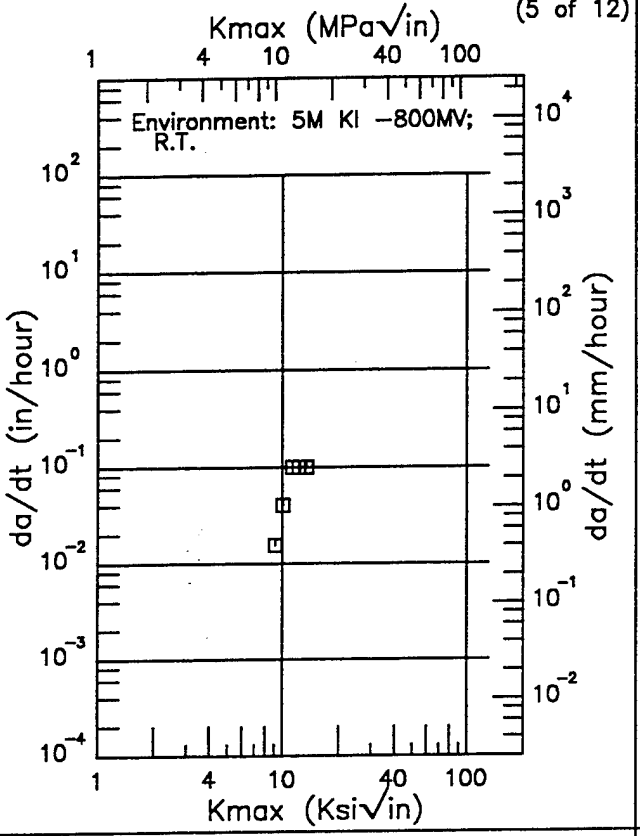
**Figure 8.11.3.2.7 (Continued)**

## 7079

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

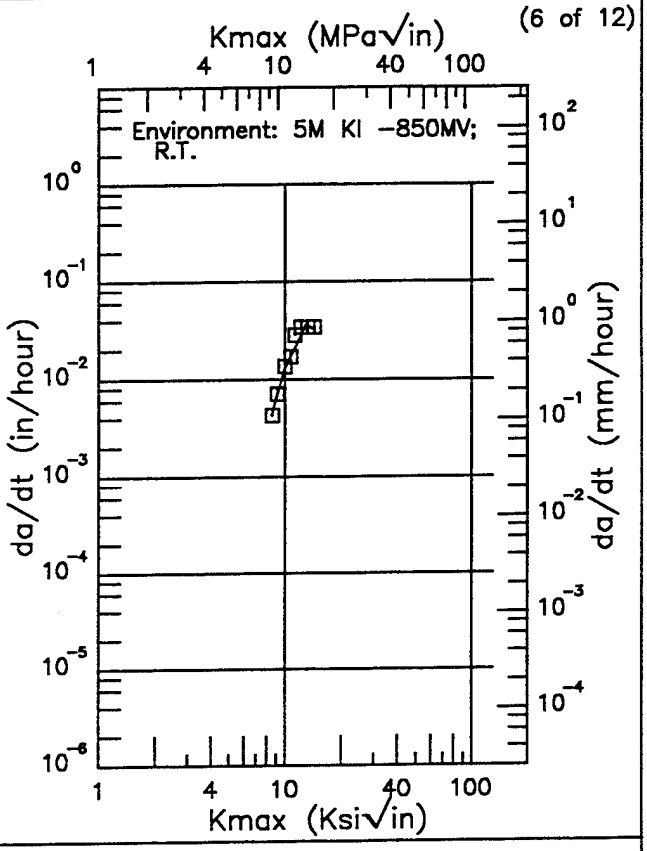
(5 of 12)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| RMS % Error | |
|---|---|

(6 of 12)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 8.50 (min) | 4.30 |
| 9. | 6.48 |
| 10. | 13.2 |
| 13. | 36.1 |
| 14.30 (max) | 32.6 |

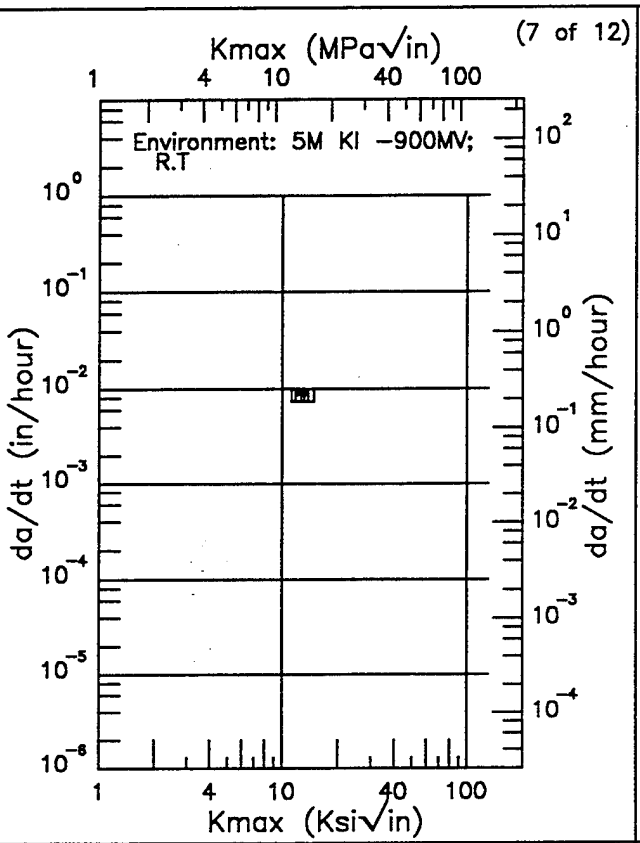
| RMS % Error | |
|---|---|
| 14.47 | |

**Figure 8.11.3.2.7 (Continued)**

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T-L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

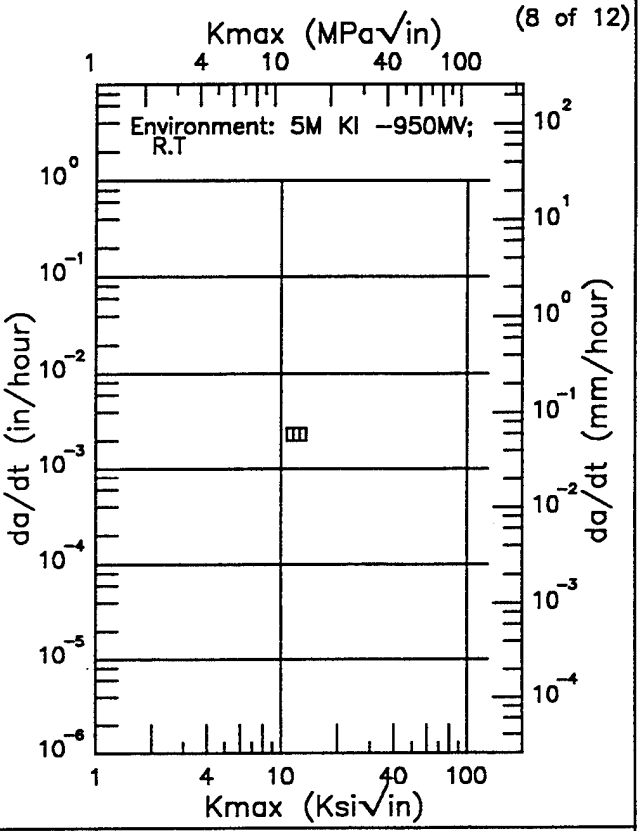
(7 of 12)




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

RMS % Error

(8 of 12)




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

RMS % Error

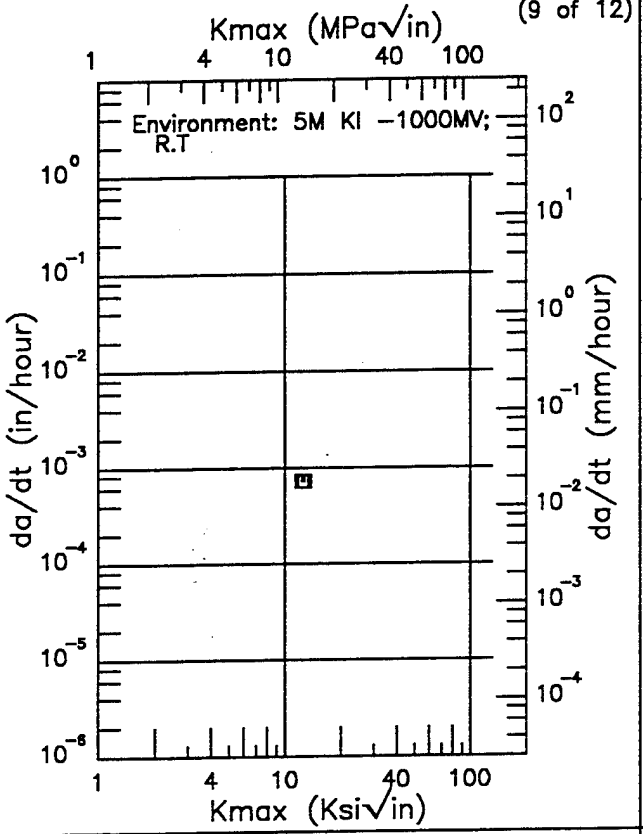
**Figure 8.11.3.2.7 (Continued)**

7079

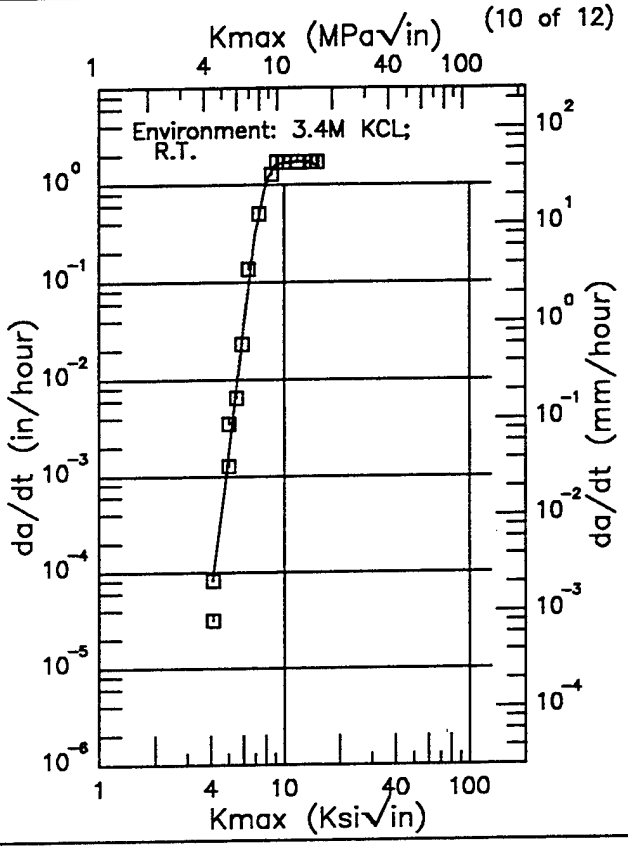
Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

(9 of 12)




(10 of 12)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 4.10 (min) | 0.0813 |
| 5. | 1.63 |
| 6. | 35.8 |
| 7. | 327. |
| 8. | 1082. |
| 9. | 1614. |
| 10. | 1688. |
| 13. | 1775. |
| 15.00 (max) | 1586. |

| RMS % Error | |
|---|---|

| RMS % Error | |
|---|---|
| 38.53 | |

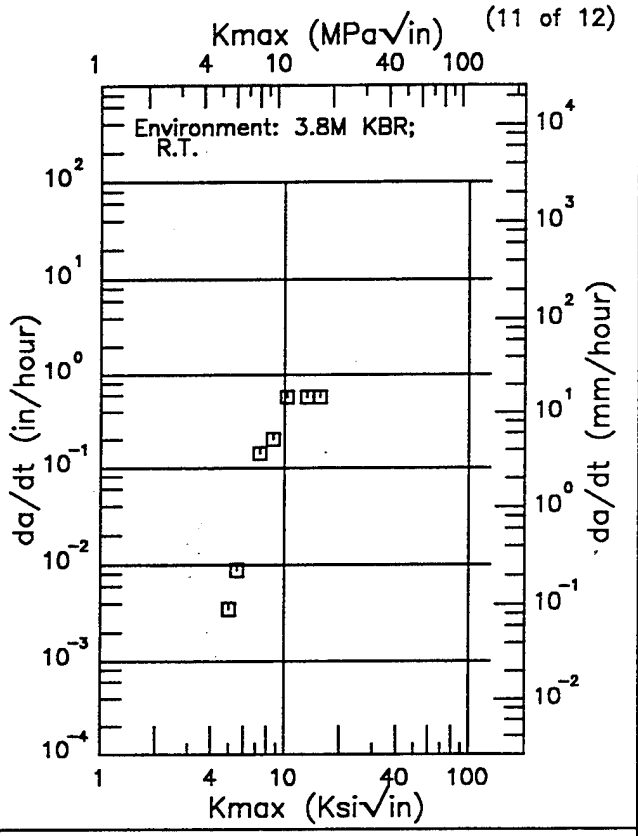
**Figure 8.11.3.2.7 (Continued)**

7079

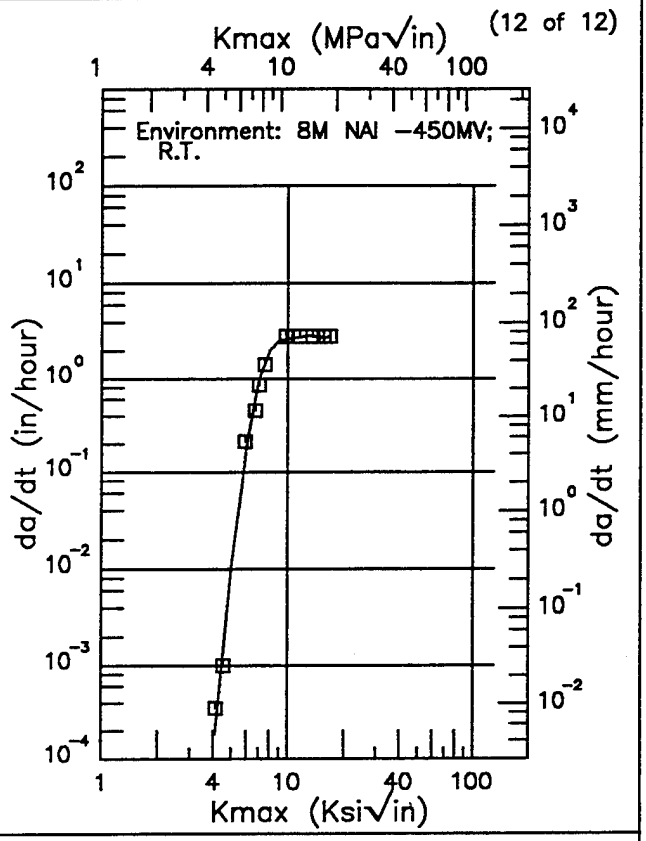
Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

(11 of 12)




(12 of 12)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 4.10 (min) | 0.185 |
| 5. | 10.4 |
| 6. | 186. |
| 7. | 960. |
| 8. | 2009. |
| 9. | 2556. |
| 10. | 2686. |
| 13. | 2869. |
| 16. | 2766. |
| 16.70 (max) | 2832. |

| RMS % Error | |
|---|---|

| RMS % Error | |
|---|---|
| 32.19 | |

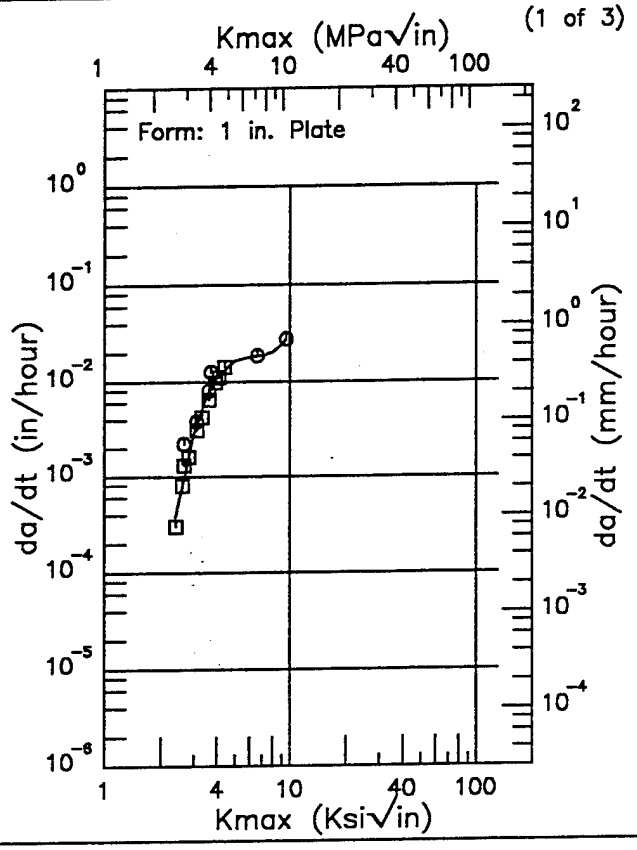
**Figure 8.11.3.2.7 (Concluded)**

## 7079

Condition/Ht: T651
Environment: 3.5% NACL
Specimen Type: DCB
Orientation: S–L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 3.5 – 5 in.
$A_o$:
$K_{Iscc}$:
Ref: 84284;78313

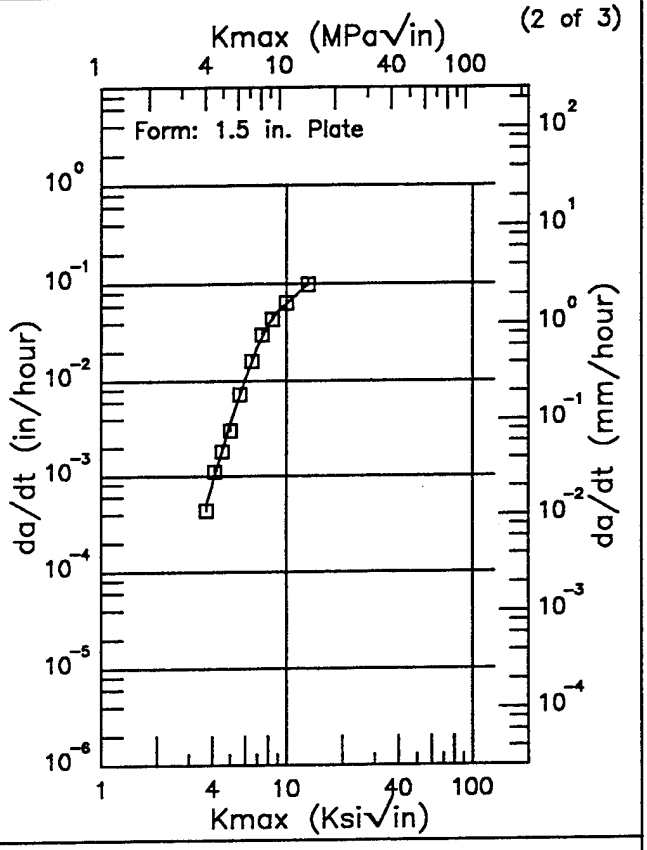
(1 of 3)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 2.40 (min) | 0.371 |
| 3. | 0.579 |
| 3. | 2.79 |
| 4. | 6.71 |
| 4. | 11.0 |
| 5. | 16.5 |
| 6. | 18.2 |
| 7. | 18.8 |
| 8. | 20.3 |
| 9. | 24.2 |
| 9.50 (max) | 27.5 |

RMS % Error
37.03

(2 of 3)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 3.70 (min) | 0.491 |
| 4. | 0.813 |
| 5. | 3.47 |
| 6. | 10.4 |
| 7. | 22.7 |
| 8. | 38.2 |
| 9. | 52.2 |
| 10. | 62.8 |
| 13.00 (max) | 98.0 |

RMS % Error
8.08

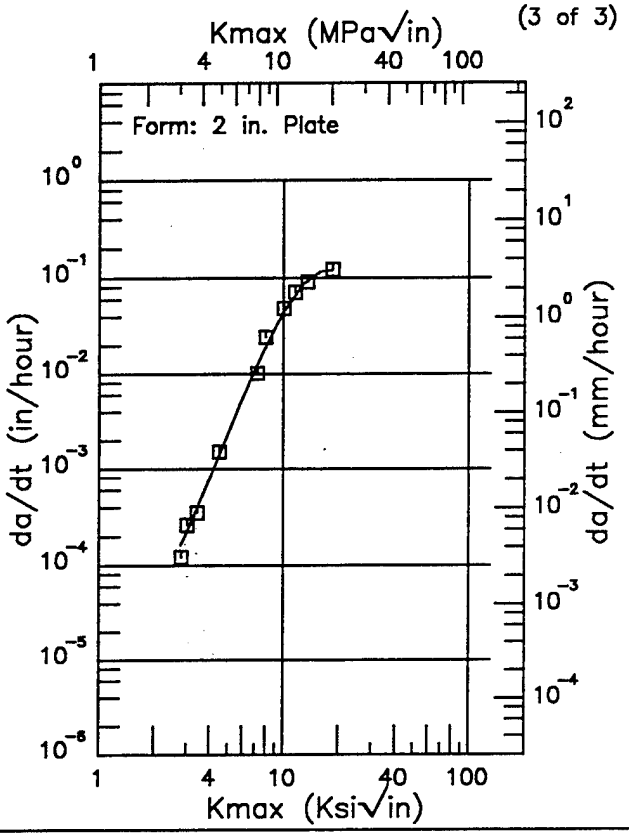
**Figure 8.11.3.2.8**

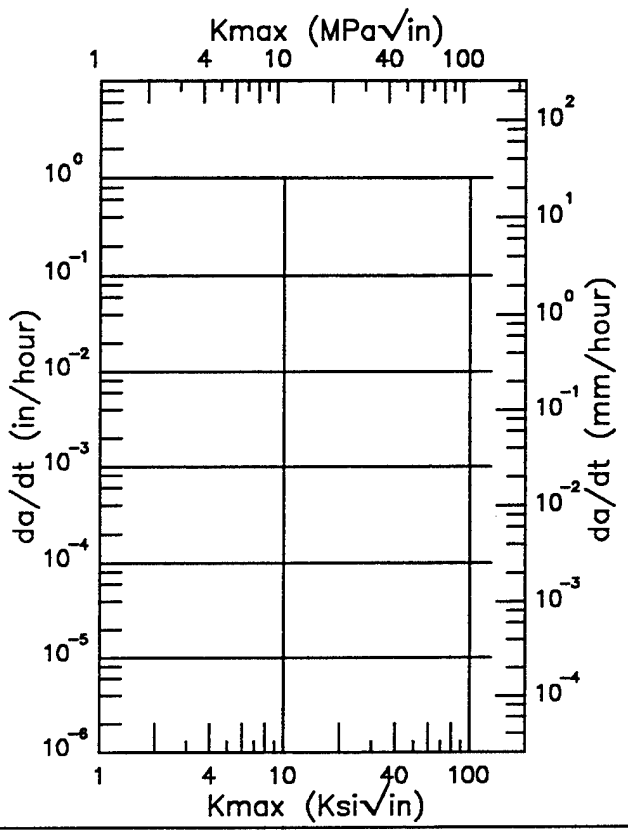
7079

Condition/Ht: T651
Environment: 3.5% NACL
Specimen Type: DCB
Orientation: S–L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 3.5 – 5 in.
$A_O$:
$K_{Iscc}$:
Ref: 84284;78313

(3 of 3)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 2.80 (min) | 0.164 |
| 3. | 0.218 |
| 4. | 0.430 |
| 4. | 0.799 |
| 5. | 2.32 |
| 6. | 5.51 |
| 7. | 11.1 |
| 8. | 19.4 |
| 9. | 30.6 |
| 10. | 44.0 |
| 13. | 88.1 |
| 16. | 117. |
| 18.50 (max) | 120. |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

RMS % Error
15.26

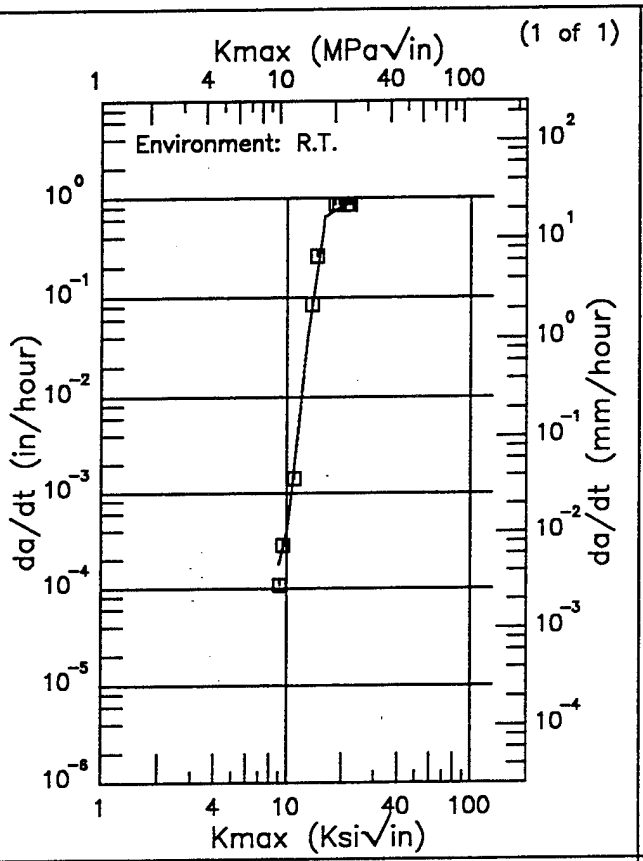
RMS % Error

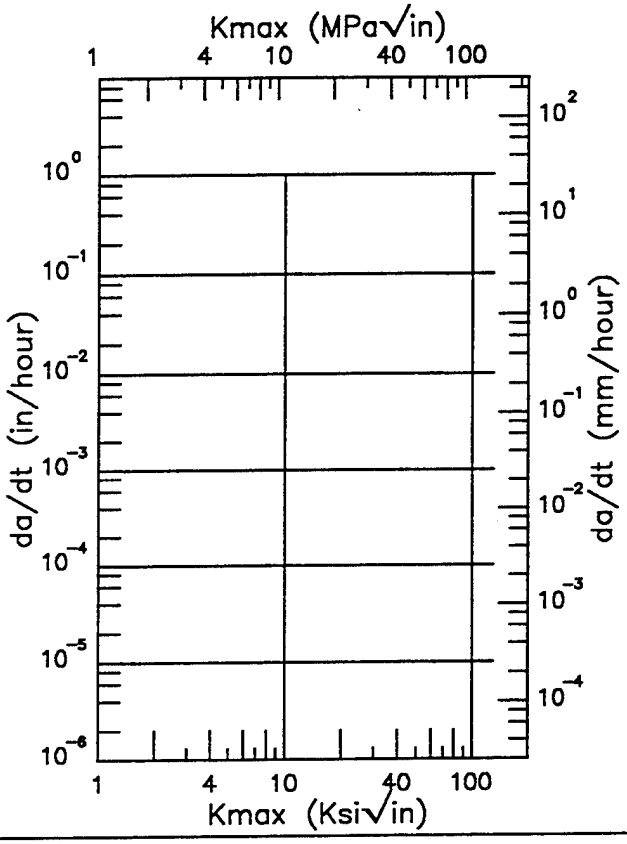
**Figure 8.11.3.2.8 (Concluded)**

## 7079

Condition/Ht: T651+ 50HR AT 320F
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
Ao:
KIscc:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 9.10 (min) | 0.177 |
| 10. | 0.398 |
| 13. | 39.7 |
| 16. | 647. |
| 20. | 815. |
| 22.00 (max) | 902. |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

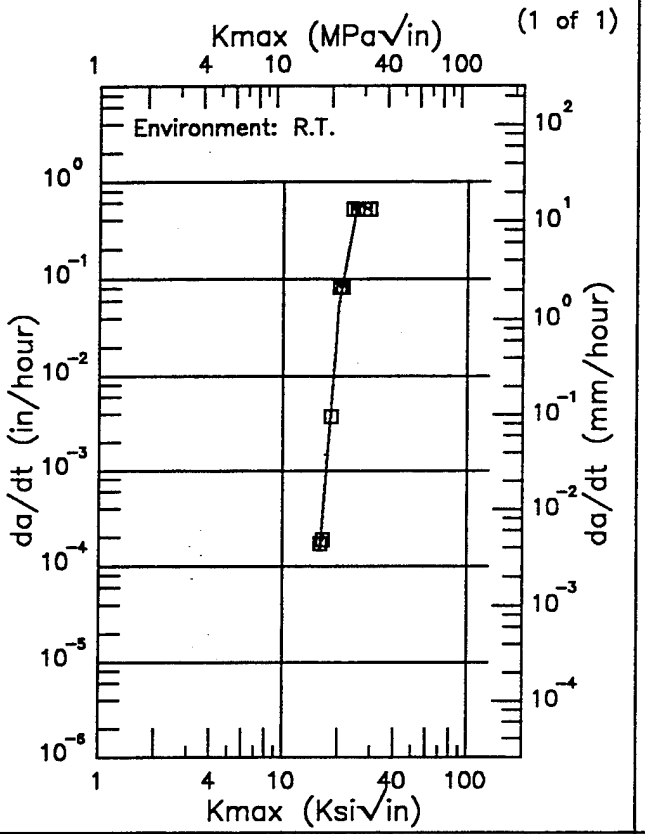
| RMS % Error | |
|---|---|
| 23.91 | |

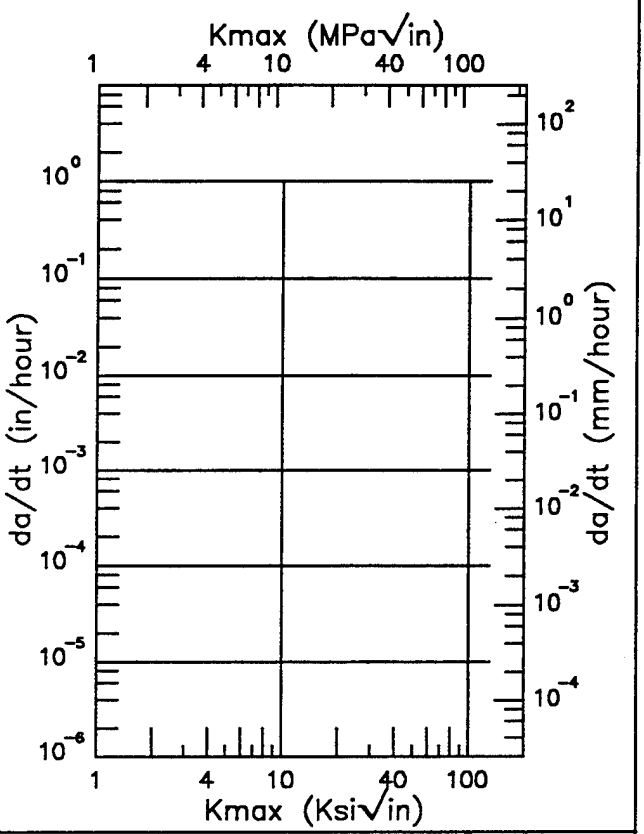
| RMS % Error | |
|---|---|
| | |

**Figure 8.11.3.2.9**

Condition/Ht: T651+500HR AT 320F
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T-L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 15.90 (min) | 0.149 |
| 16. | 0.152 |
| 20. | 52.8 |
| 25. | 600. |
| 29.30 (max) | 514. |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| RMS % Error |
|---|
| 26.67 |

| RMS % Error |
|---|

**Figure 8.11.3.2.10**

# TABLE 8.11.3.3



## $K_{Iscc}$ SUMMARY FOR ALUMINUM ALLOY 7079

| Condition/ Heat Treat | Prod Form | Test Temp (°F) | Spec Or. | Yield Str (Ksi) | Envir. | Specimen | | | Prod Thk (in) | Crack (in) | $K_Q$ (Ksi√in) | $K_{Iscc}$ (Ksi√in) | Test Time (min) | Test Date | Refer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Design | Width (in) | Thick (in) | | | | | | | |
| T6 | P | R.T. | S-L | --- | 3.5% NaCl | DCB | 4 | 1 | 1 | --- | 16.2 | 7.8 | --- | 1967 | 84329 |
| | | | | | | DCB | 3.5 | 1 | 1 | --- | --- | 4.3 | --- | 1968 | 84330 |
| | | | | | | DCB | 4 | 1 | 1 | --- | 15.6 | 7.2 | --- | 1967 | 84329 |
| | | | | | Dist Water | DCB | 4 | 1 | 1 | --- | --- | 9.2 | --- | 1967 | 84329 |
| | | | | 76 | 3.5% NaCl | DCB | 4 | 1 | 1 | --- | 16 | 7 | --- | 1968 | 84331 |
| T651 | P | R.T. | S-L | 64 | 3.5% NaCl | DCB | 5 | 1 | 1 | 0.7 | 30 | 3 | --- | 1969 | 78313 |
| | | | | 66.6 | Industrial Atm | CT | 2 | 1 | 2.5 | --- | 19.2 | 9 | --- | 1973 | 86688 |
| | | | | | Salt-Dichromate-Acetate | CT | 2 | 1 | 2.5 | --- | 19.2 | 6 | --- | 1973 | 86688 |
| | | | | | Seacoast Atm | CT | 2 | 1 | 2.5 | --- | 19.2 | 9 | --- | 1973 | 86688 |

# TABLE 8.12.2.2



## ALUMINUM 7079 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | L-T | 61.2 | 2.000 | 0.062 | 0.625 | 1.200 | --- | 39.10 | 41.21* | --- | --- | 70.02* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 61.2 | 2.000 | 0.062 | 0.625 | 1.180 | --- | 39.60 | 41.74* | | | 69.58* | | | 1973 | 86213 |
| | | 0.06 | | | 61.2 | 2.000 | 0.062 | 0.625 | 1.280 | --- | 38.20 | 40.26* | | | 74.00* | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | L-T | 71.2 | 2.000 | 0.069 | 0.614 | 1.040 | --- | 41.80 | 43.61* | --- | --- | 64.57* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 71.2 | 2.000 | 0.069 | 0.612 | 1.020 | --- | 42.60 | 44.36* | | | 64.64* | | | 1973 | 86213 |
| | | 0.06 | | | 71.2 | 2.000 | 0.069 | 0.613 | 1.090 | --- | 41.60 | 43.32* | | | 67.24* | | | 1973 | 86213 |
| | | 0.06 | | | 71.2 | 2.000 | 0.069 | 0.616 | 1.100 | --- | 42.20 | 44.12* | | | 68.83* | | | 1973 | 86213 |
| T6 | Sheet | 0.11 | R.T. | L-T | 73.1 | 3.000 | 0.109 | 1.150 | 2.024 | --- | 38.00 | 56.26* | --- | --- | 96.89* | --- | --- | 1973 | 86213 |
| | | 0.11 | | | 73.1 | 3.000 | 0.109 | 1.180 | 2.085 | --- | 37.40 | 56.40* | | | 99.61* | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | 84 | L-T | 69.9 | 3.000 | 0.058 | 1.230 | 2.353 | --- | 34.50 | 53.63* | --- | --- | 114.95* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 69.9 | 3.000 | 0.058 | 1.200 | 2.088 | --- | 34.40 | 52.51* | | | 91.90* | | | 1973 | 86213 |
| T6 | Sheet | 0.09 | 84 | L-T | 72.1 | 3.000 | 0.087 | 1.230 | 2.264 | --- | 36.30 | 56.42* | --- | --- | 111.65* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 72.1 | 3.000 | 0.088 | 1.190 | 2.281 | --- | 37.60 | 57.05* | | | 117.28* | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | T-L | 58.7 | 2.000 | 0.062 | 0.625 | 1.080 | --- | 37.00 | 39.00* | --- | --- | 59.26* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 58.7 | 2.000 | 0.062 | 0.625 | 1.150 | --- | 36.40 | 38.37* | | | 62.18* | | | 1973 | 86213 |
| | | 0.06 | | | 58.7 | 2.000 | 0.062 | 0.625 | 1.120 | --- | 36.50 | 38.47* | | | 60.64* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.12.2.2 (CONTINUED)



## ALUMINUM 7079 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | T-L | 68.7 | 2.000 | 0.069 | 0.616 | 0.975 | --- | 39.70 | 41.51* | --- | --- | 57.82* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 68.7 | 2.000 | 0.069 | 0.617 | 0.930 | --- | 39.80 | 41.61* | | | 55.74* | | | 1973 | 86213 |
| | | 0.06 | | | 68.7 | 2.000 | 0.069 | 0.614 | 0.990 | --- | 39.60 | 41.32* | | | 58.50* | | | 1973 | 86213 |
| | | 0.06 | | | 68.7 | 2.000 | 0.069 | 0.618 | 0.910 | --- | 39.80 | 41.70* | | | 54.75* | | | 1973 | 86213 |
| T6 | Sheet | 0.04 | R.T. | T-L | 63.2 | 3.000 | 0.037 | 1.163 | 1.954 | --- | 33.70 | 50.26* | --- | --- | 81.82* | --- | --- | 1973 | 86213 |
| | | 0.04 | | | 63.2 | 3.000 | 0.037 | 1.142 | 2.184 | --- | 32.30 | 47.59* | | | 92.94* | | | 1973 | 86213 |
| | | 0.04 | | | 63.2 | 3.000 | 0.037 | 1.125 | 1.883 | --- | 34.00 | 49.54* | | | 78.65* | | | 1973 | 86213 |
| T6 | Sheet | 0.05 | R.T. | T-L | 67.0 | 3.000 | 0.050 | 1.152 | 2.087 | --- | 34.40 | 50.99* | --- | --- | 91.76* | --- | --- | 1973 | 86213 |
| | | 0.05 | | | 67.0 | 3.000 | 0.050 | 1.155 | 2.084 | --- | 34.70 | 51.50* | | | 92.42* | | | 1973 | 86213 |
| | | 0.05 | | | 67.0 | 3.000 | 0.050 | 1.153 | 2.091 | --- | 34.60 | 51.29* | | | 92.57* | | | 1973 | 86213 |
| T6 | Sheet | 0.11 | R.T. | T-L | 69.5 | 3.000 | 0.109 | 1.590 | 2.421 | --- | 25.70 | 49.51 | 50.2 | 1.0 | 91.63* | --- | --- | 1973 | 86213 |
| | | 0.11 | | | 69.5 | 3.000 | 0.110 | 1.280 | 2.066 | --- | 31.80 | 50.94 | | | 83.58* | | | 1973 | 86213 |
| T6 | Sheet | 0.05 | 84 | T-L | 64.3 | 3.000 | 0.049 | 1.190 | 2.305 | --- | 32.70 | 49.61* | --- | --- | 104.20* | --- | --- | 1973 | 86213 |
| | | 0.05 | | | 64.3 | 3.000 | 0.049 | 1.030 | 2.156 | --- | 35.00 | 48.06* | | | 98.49* | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | 84 | T-L | 68.2 | 3.000 | 0.058 | 1.130 | 1.952 | --- | 33.00 | 48.26 | 48.5 | 0.3 | 80.01* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 68.2 | 3.000 | 0.058 | 1.200 | 2.126 | --- | 31.90 | 48.69 | | | 87.70* | | | 1973 | 86213 |
| | | 0.06 | | | 67.2 | 3.000 | 0.062 | 1.160 | 2.267 | --- | 35.80 | 53.33* | | | 110.31* | | | 1973 | 86213 |
| | | 0.06 | | | 67.2 | 3.000 | 0.062 | 1.230 | 2.273 | --- | 34.90 | 54.25* | | | 108.10* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.12.2.2 (CONCLUDED)



| ALUMINUM 7079 (ALCLAD) $K_C$ | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.09 | 84 | T-L | 66.1 | 3.000 | 0.087 | 1.230 | 2.347 | --- | 32.70 | 50.83* | 48.2 | 0.8 | 108.33* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 66.1 | 3.000 | 0.087 | 1.250 | 2.124 | --- | 32.30 | 50.81* | | | 88.67* | | | 1973 | 86213 |
| | | 0.09 | | | 68.3 | 3.000 | 0.088 | 1.170 | 2.096 | --- | 31.80 | 47.66 | | | 85.46* | | | 1973 | 86213 |
| | | 0.09 | | | 69.3 | 3.000 | 0.088 | 1.220 | 2.086 | --- | 33.10 | 51.14* | | | 88.29* | | | 1973 | 86213 |
| | | 0.09 | | | 68.3 | 3.000 | 0.089 | 1.230 | 2.129 | --- | 31.40 | 48.81 | | | 86.46* | | | 1973 | 86213 |
| | | 0.09 | | | 69.3 | 3.000 | 0.089 | 1.200 | 2.166 | --- | 33.80 | 51.59* | | | 95.87* | | | 1973 | 86213 |
| T6 | Sheet | 0.19 | 84 | T-L | 66.4 | 3.000 | 0.194 | 1.160 | 2.162 | --- | 32.60 | 48.56 | 48.4 | 0.3 | 92.17* | --- | --- | 1973 | 86213 |
| | | 0.19 | | | 66.4 | 3.000 | 0.194 | 1.177 | 2.192 | --- | 32.00 | 48.14 | | | 92.67* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.13.2.1





## ALUMINUM 7080 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 • ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi • $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7 | Forging | --- | R.T. | C-L | 62.2 | 1.500 | 0.750 | CT | 0.750 | 0.21 | 18.10 | 18.7 | 0.8 | 1972 | 82879 |
| | | --- | | | 62.2 | 1.500 | 0.750 | CT | 0.750 | 0.24 | 19.20 | | | 1972 | 82879 |
| T7 | Forged Bar | 4.50 | 82 | T-L | 51.0 | 1.500 | 0.748 | CT | 0.715 | 0.44 | 21.40 | 21.9 | 0.7 | 1973 | 86213 |
| | | 4.50 | | | 51.0 | 1.500 | 0.749 | CT | 0.758 | 0.48 | 22.40 | | | 1973 | 86213 |
| T7 | Forged Bar | 4.50 | 86 | T-L | 51.0 | 1.500 | 0.753 | CT | 0.822 | 0.51 | 23.10 | 23.2 | 0.1 | 1973 | 86213 |
| | | 4.50 | | | 51.0 | 1.500 | 0.752 | CT | 0.754 | 0.52 | 23.20 | | | 1973 | 86213 |

# TABLE 8.14.1.1

## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 7149 AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Extrusion | T73511 | 31.5 | 0.8 | 3 | 24.2 | 0.3 | 3 | --- | --- | --- |

## TABLE 8.14.1.2.1



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7149 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73511 | EXTRUSION | 0.1 | 2-10 | | 1.61 | 8.05 | 54.43 | | |
| | | 0.1 | 1-20 | | 1.65 | | | | |

## TABLE 8.14.1.2.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7149 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: S.S.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73511 | EXTRUSION | 0.1 | 1-10 | | 1.68 | 24.26 | 158.16 | | |

## TABLE 8.14.1.2.3



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7149 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) *ΔK Level (Ksi/in)* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73511 | EXTRUSION | 0.1 | 10 | | | 12.55 | 167.45 | | |
| | | 0.1 | 10-13 | | | 12.39 | 94.91 | | |
| | | 0.1 | 10-20 | | 1.91 | 8.89 | | | |

## TABLE 8.14.1.2.4

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7149 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: S.S.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73511 | EXTRUSION | 0.1 | 1-10 | | 2.77 | 29.27 | 211.54 | | |

# TABLE 8.14.2.1





## ALUMINUM 7149 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * $(K_{Ic}/TYS)^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T73511 | Extrusion | 3.00 | R.T. | L-T | 66.3 | 2.001 | 1.007 | CT | 1.038 | 0.59 | 32.32 | 31.5 | 0.8 | 1976 | NC001 |
| | | 3.00 | | | 66.3 | 2.002 | 1.007 | CT | 1.032 | 0.54 | 30.82 | | | 1976 | NC001 |
| | | 3.00 | | | 66.3 | 2.002 | 1.007 | CT | 1.025 | 0.56 | 31.42 | | | 1976 | NC001 |
| T73511 | Extrusion | 3.00 | R.T. | T-L | 63.7 | 2.002 | 1.007 | CT | 1.028 | 0.37 | 24.55 | 24.2 | 0.3 | 1976 | NC001 |
| | | 3.00 | | | 63.7 | 2.001 | 1.007 | CT | 1.033 | 0.35 | 24.08 | | | 1976 | NC001 |
| | | 3.00 | | | 63.7 | 2.001 | 1.007 | CT | 1.001 | 0.35 | 24.07 | | | 1976 | NC001 |

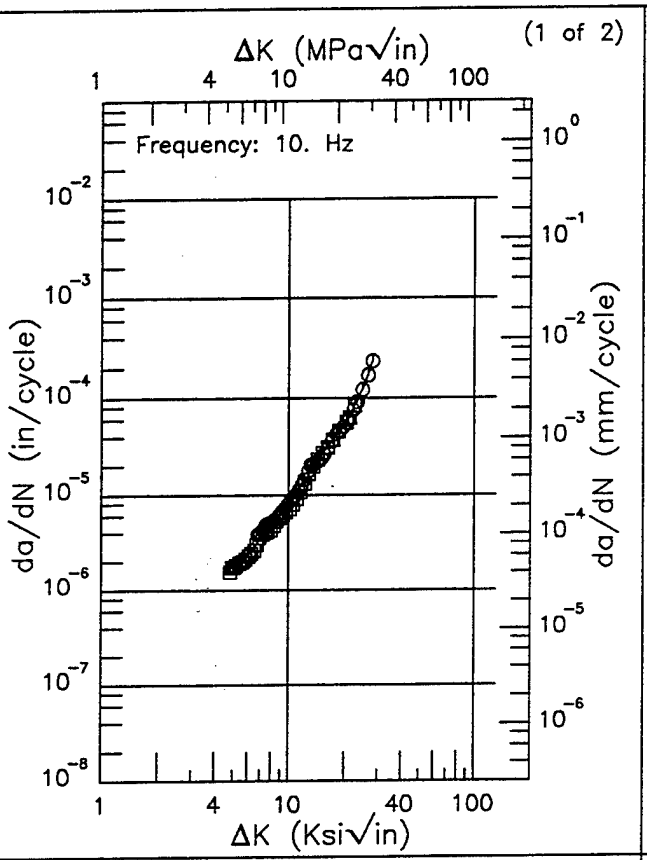
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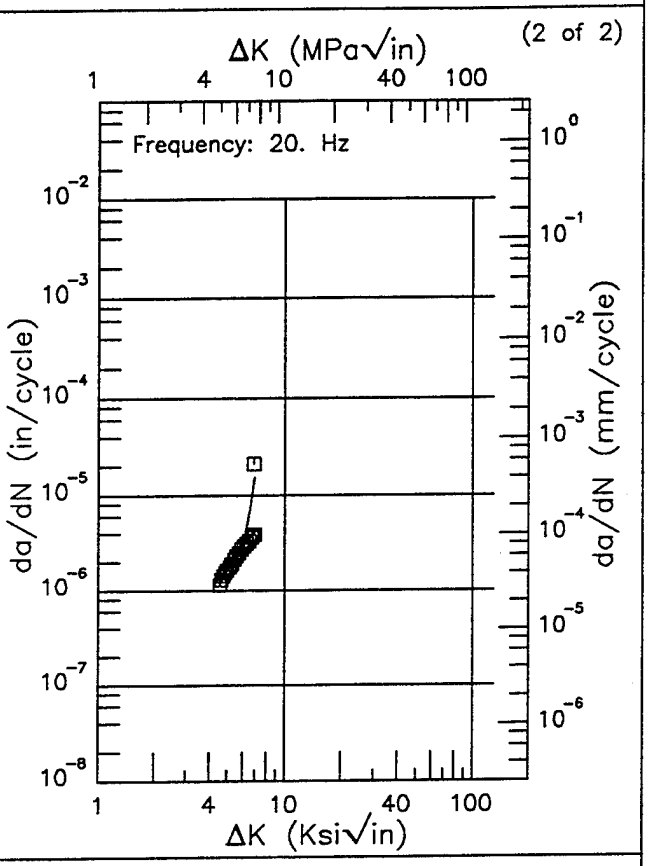
7149

F

Condition/Ht: T73511
Form: 3 in. Extrusion
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 66.3 ksi
Ult. Strength: 76.4 ksi
Specimen Thk: 1.003 – 1.004 in.
Specimen Width: 4.5 in.
Ref: NC002




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.82 (min) | 1.48 |
| 5. | 1.61 |
| 6. | 2.43 |
| 7. | 3.42 |
| 8. | 4.63 |
| 9. | 6.15 |
| 10. | 8.05 |
| 13. | 17.0 |
| 16. | 30.7 |
| 20. | 54.4 |
| 25. | 126. |
| 27.96 (max) | 231. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.54 (min) | 1.14 |
| 5. | 1.65 |
| 6. | 2.82 |
| 6.92 (max) | 15.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.09 | 0. .5 .8 1.25 2. |

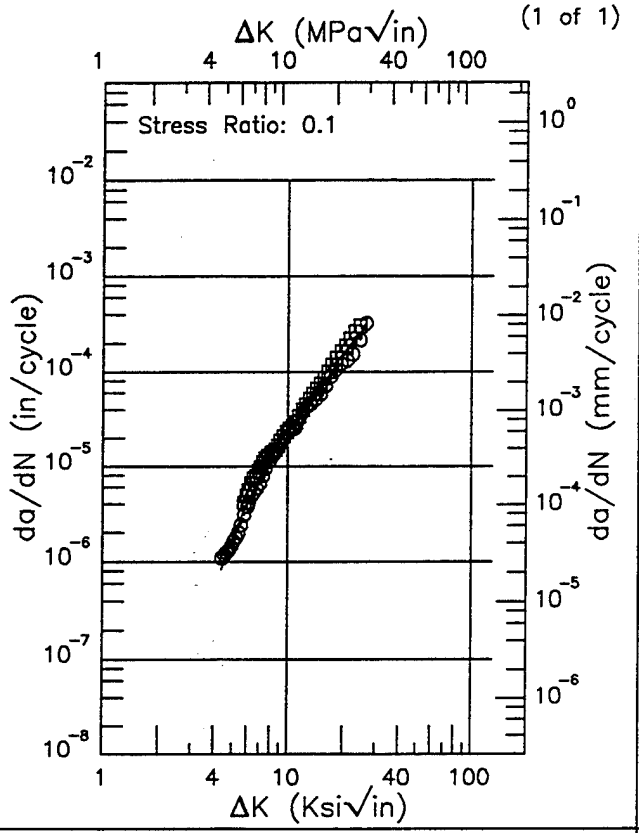
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 31.83 | 0. .5 .8 1.25 2. |

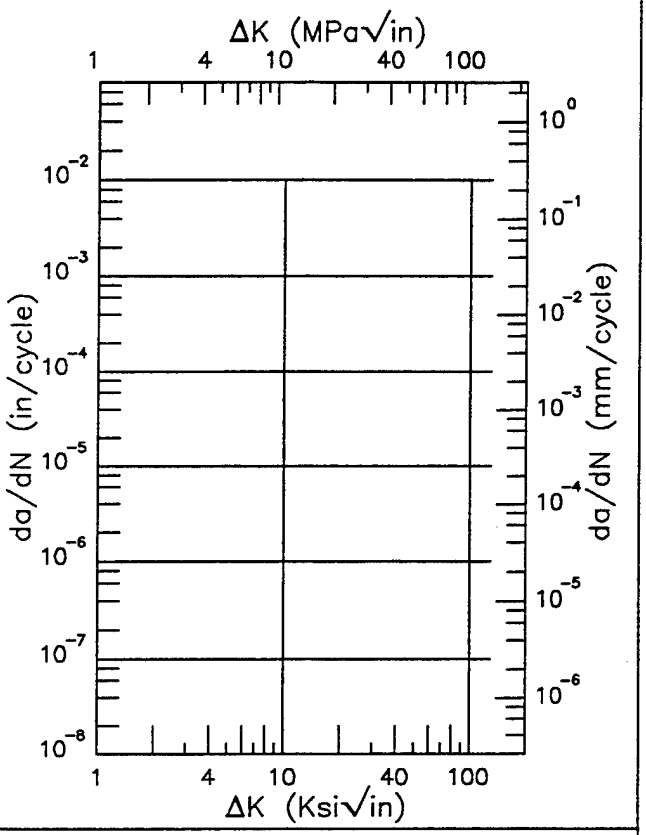
**Figure 8.14.3.1.1**

7149 R

Condition/Ht: T73511
Form: 3 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 1 – 10 Hz
Environment: S.S.W.; RT

Yield Strength: 66.3 ksi
Ult. Strength: 76.4 ksi
Specimen Thk: 1.004 in.
Specimen Width: 4.5 in.
Ref: NC002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.39 (min) | 0.835 |
| 5. | 1.68 |
| 6. | 4.00 |
| 7. | 7.57 |
| 8. | 12.3 |
| 9. | 17.9 |
| 10. | 24.3 |
| 13. | 46.8 |
| 16. | 81.9 |
| 20. | 158. |
| 25. | 265. |
| 26.48 (max) | 319. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.40 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

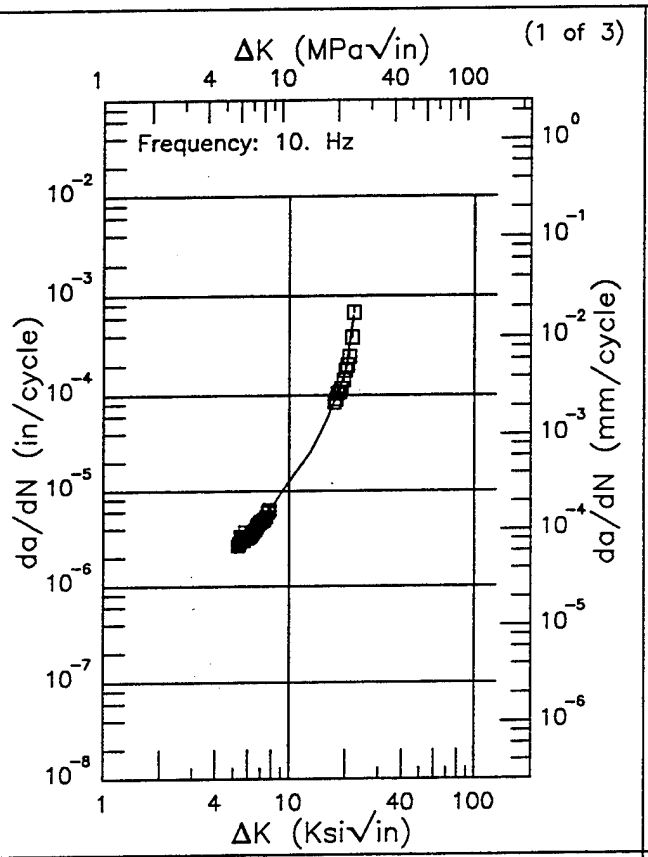
**Figure 8.14.3.1.2**

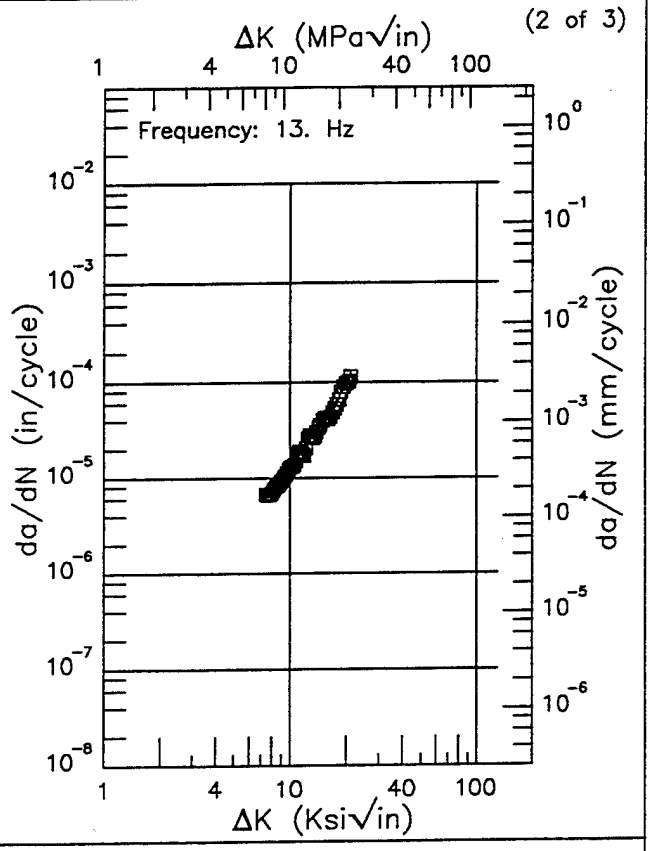
7149

F

Condition/Ht: T73511
Form: 3 in. Extrusion
Specimen Type: CT
Orientation: T-L
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 63.7 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 1.002 - 1.004 in.
Specimen Width: 7.4 in.
Ref: NC002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.28 (min) | 2.91 |
| 6. | 3.30 |
| 7. | 4.60 |
| 8. | 6.70 |
| 9. | 9.46 |
| 10. | 12.6 |
| 13. | 25.5 |
| 16. | 58.9 |
| 20. | 167. |
| 22.13 (max) | 628. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.40 (min) | 6.51 |
| 8. | 7.16 |
| 9. | 9.23 |
| 10. | 12.4 |
| 13. | 26.0 |
| 16. | 43.8 |
| 20. | 94.9 |
| 21.07 (max) | 117. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.57 | 0. .5 .8 1.25 2. |

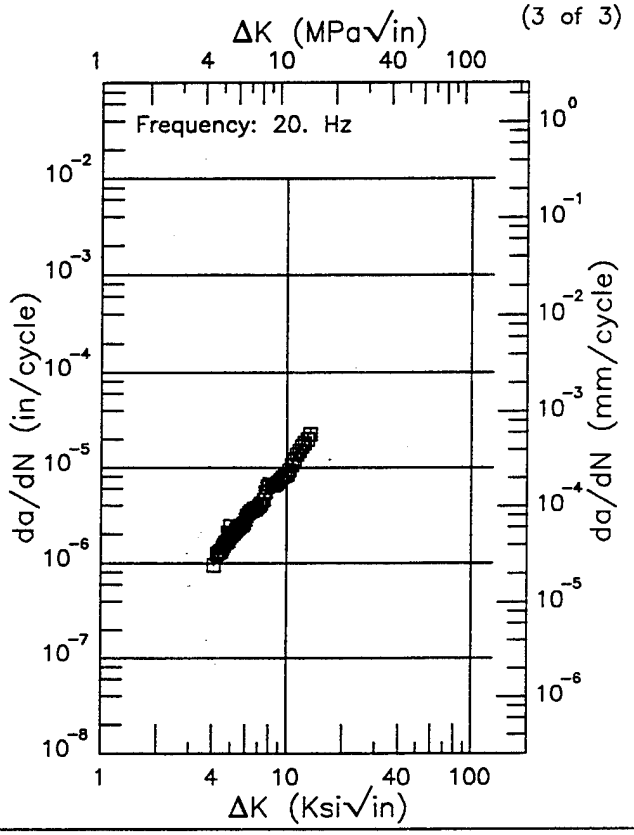
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.01 | 0. .5 .8 1.25 2. |

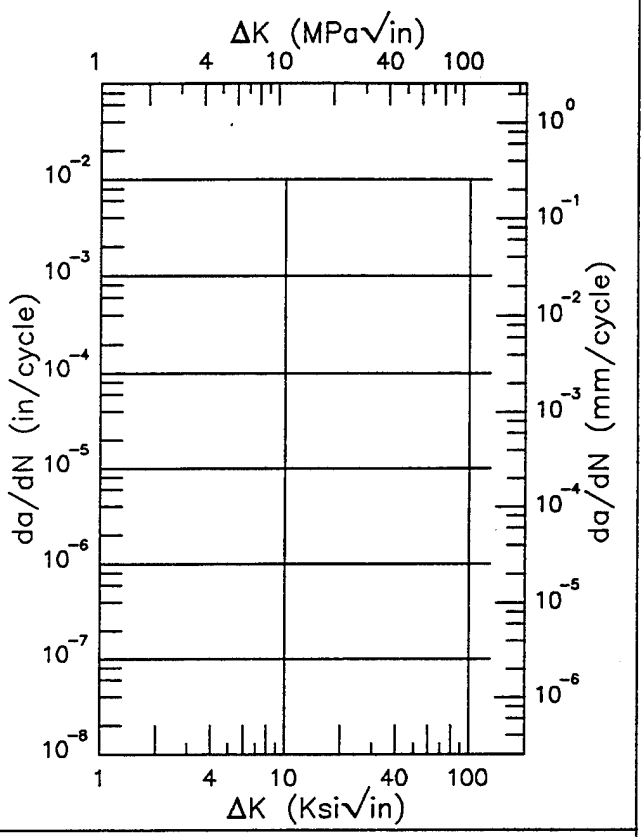
**Figure 8.14.3.1.3**

7149 F

Condition/Ht: T73511
Form: 3 in. Extrusion
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 63.7 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 1.002 – 1.004 in.
Specimen Width: 7.4 in.
Ref: NC002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.06 (min) | 0.987 |
| 5. | 1.91 |
| 6. | 2.79 |
| 7. | 4.06 |
| 8. | 5.77 |
| 9. | 7.38 |
| 10. | 8.89 |
| 13. | 20.9 |
| 13.33 (max) | 20.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.72 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.14.3.1.3 (Concluded)**

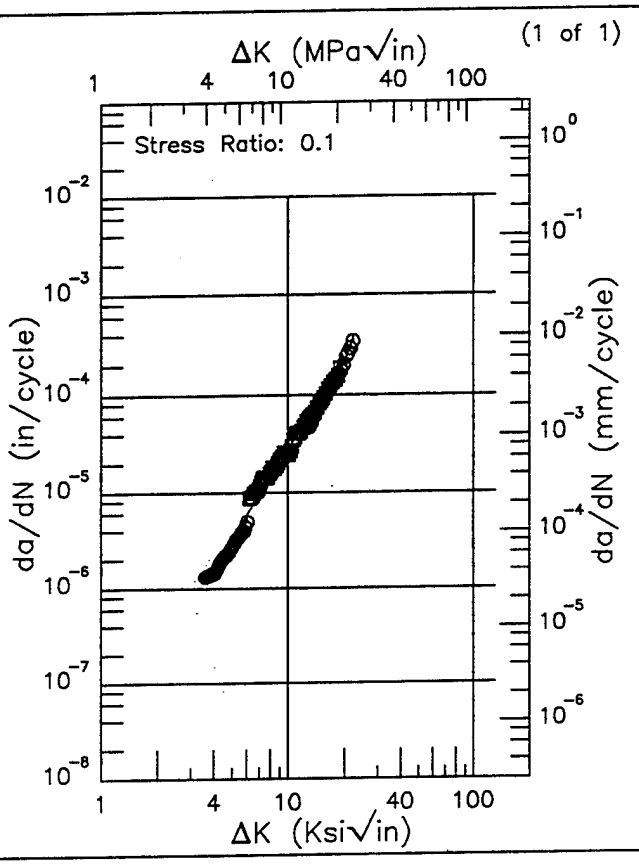
7149

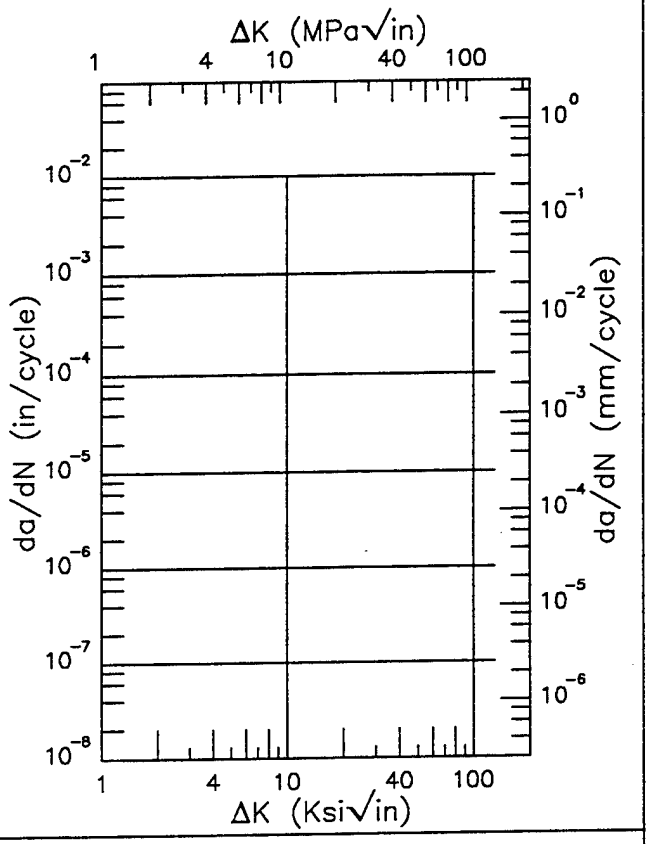
R

Condition/Ht: T73511
Form: 3 in. Extrusion
Specimen Type: CT
Orientation: T-L
Frequency: 1 - 10 Hz
Environment: S.S.W.; RT

Yield Strength: 63.7 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 1.002 - 1.004 in.
Specimen Width: 7.4 in.
Ref: NC002

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.59 (min) | 1.29 |
| 4. | 1.48 |
| 5. | 2.77 |
| 6. | 5.61 |
| 7. | 10.4 |
| 8. | 16.6 |
| 9. | 23.0 |
| 10. | 29.3 |
| 13. | 54.9 |
| 16. | 109. |
| 20. | 212. |
| 22.13 (max) | 357. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error
8.63

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

**Figure 8.14.3.1.4**

## TABLE 8.15.1.2.1

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7150 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | PLATE | 0.33 | 25 | 0.11 | 3.64 | 24.77 | 199.35 | | |

## TABLE 8.15.1.2.2



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7150 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7751 | PLATE | 0.1 | 3 | | 0.52 | 7.76 | | | |
| | | 0.1 | 5 | 0.08 | 0.71 | 7.54 | | | |
| | | 0.1 | 10 | 0.09 | 0.49 | 7.31 | | | |
| | | 0.4 | 5 | 0.14 | 2.11 | 14.37 | | | |
| | | 0.4 | 10 | 0.14 | 1.87 | 14.89 | | | |
| | | 0.4 | 15 | 0.15 | 1.6 | 11.49 | | | |
| | | 0.8 | 10 | 0.5 | 6.53 | | | | |
| T77511 | EXTRUSION | 0.1 | 20 | 0.16 | 2.61 | 9.15 | 60.08 | | |
| | | 0.1 | 25 | 0.34 | 3.46 | 8.07 | | | |
| | | 0.4 | 20 | 0.87 | 2.07 | 4.02 | | | |
| | | 0.8 | 20 | 0.78 | 6.45 | | | | |

# RESISTANCE CURVE

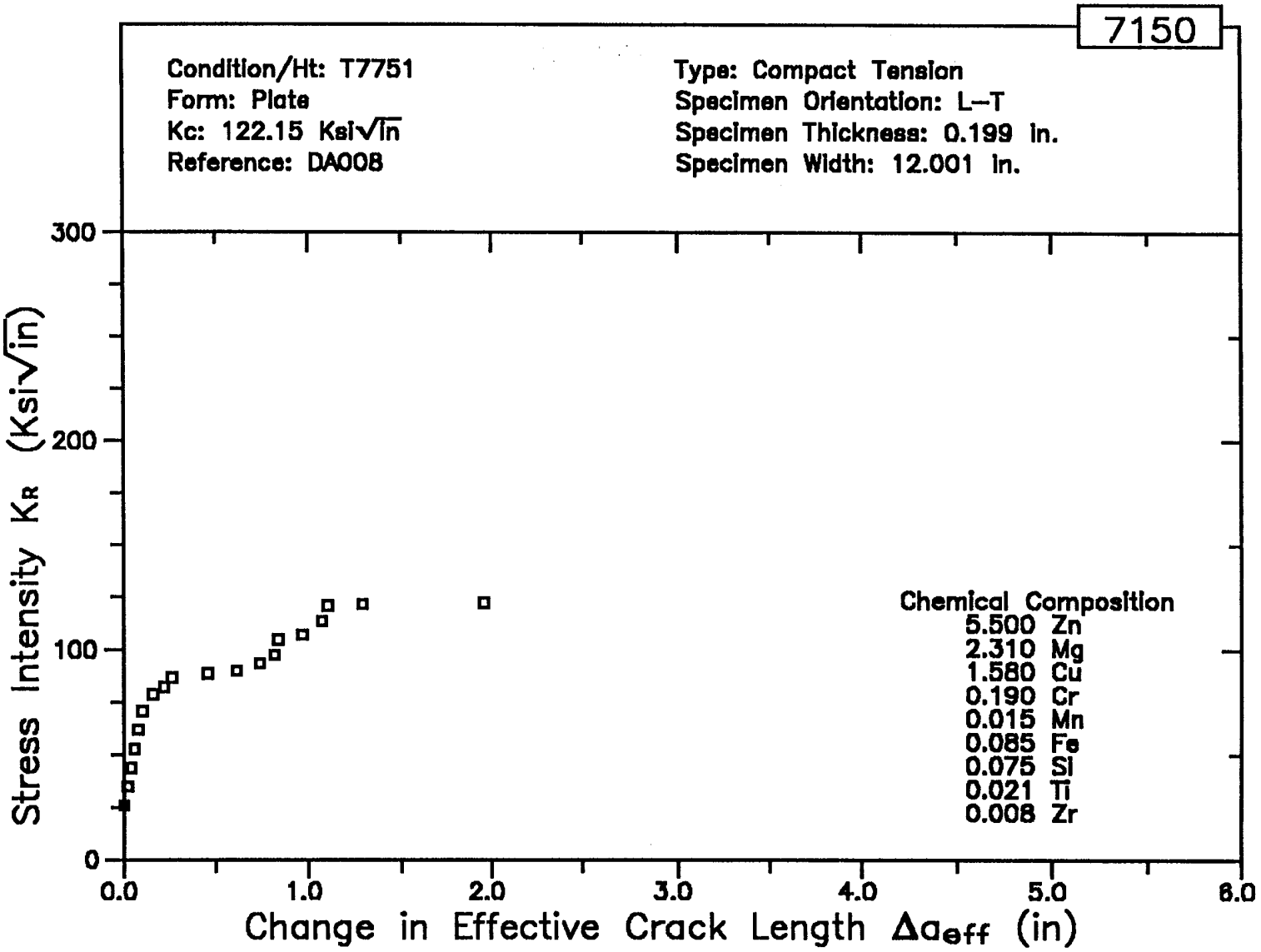



Figure 8.15.2.3.1

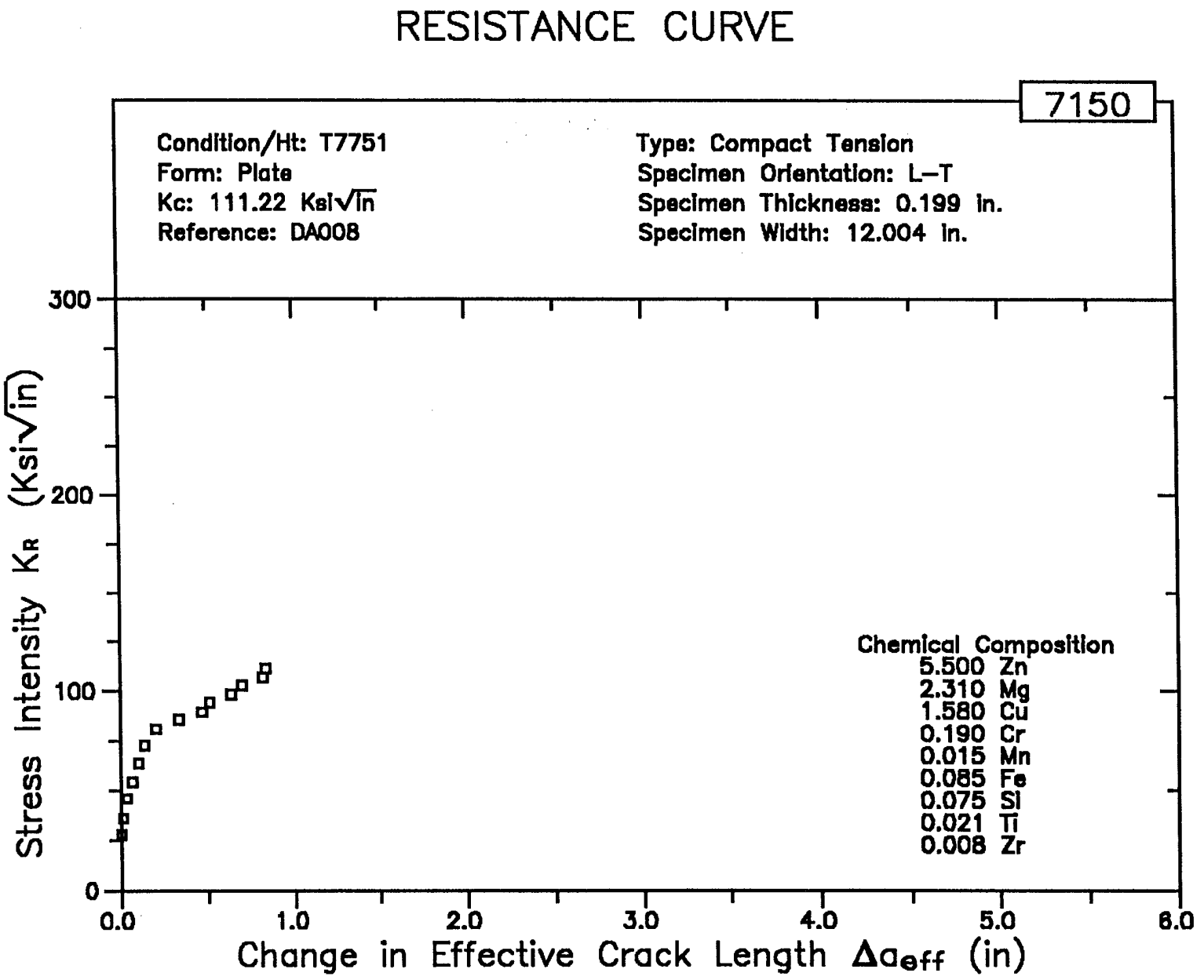



Figure 8.15.2.3.2

# RESISTANCE CURVE

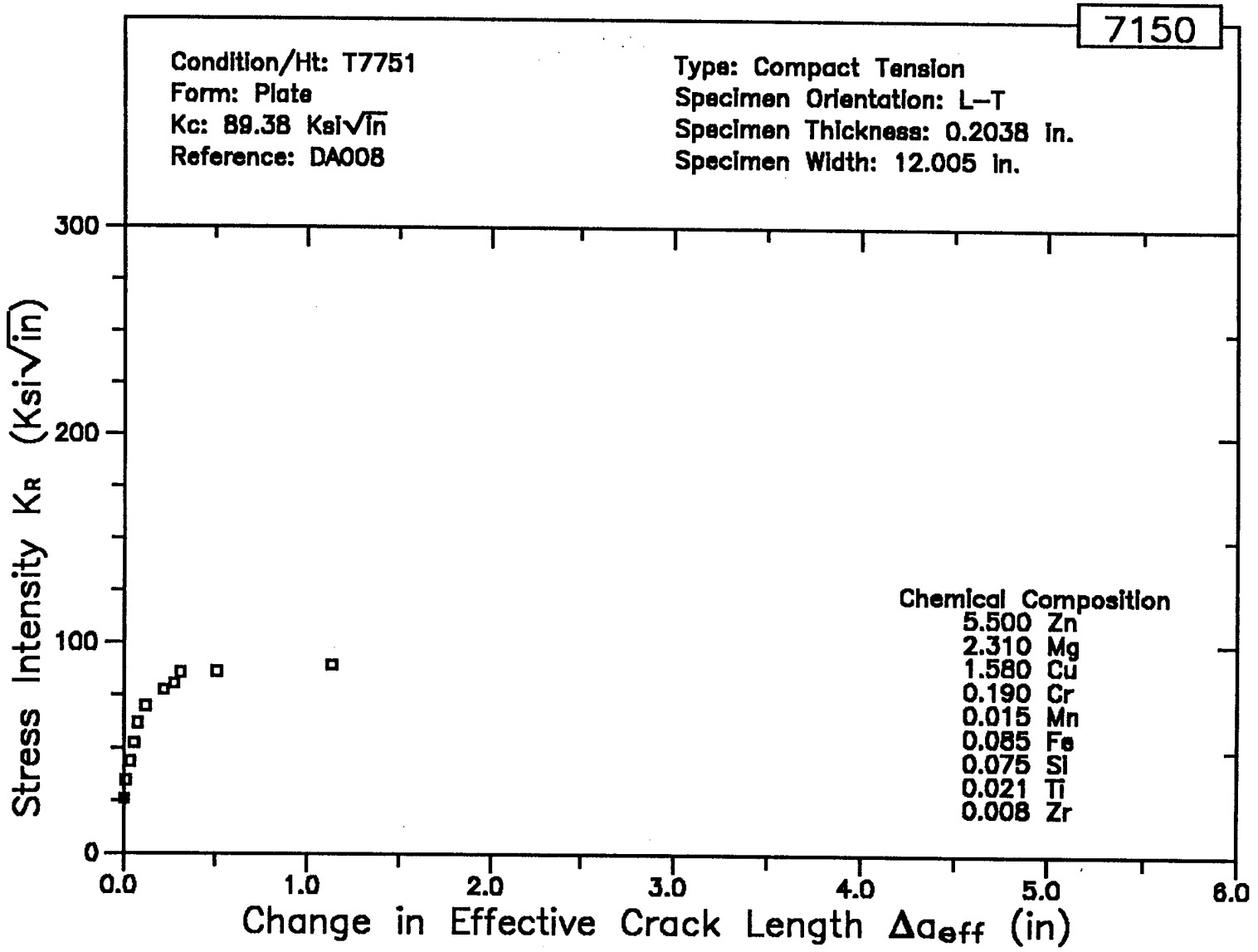



Figure 8.15.2.3.3

# RESISTANCE CURVE

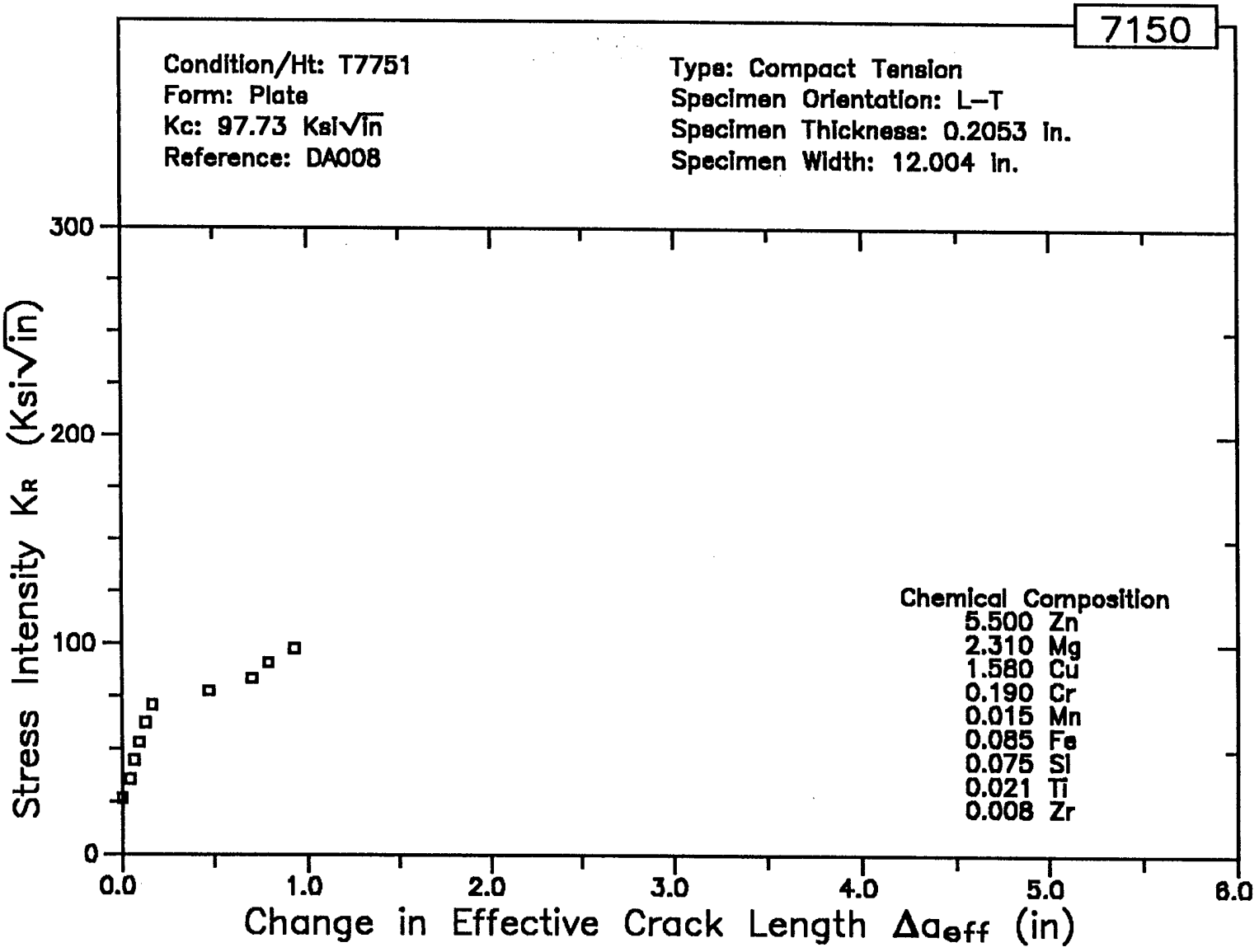



Figure 8.15.2.3.4

# RESISTANCE CURVE

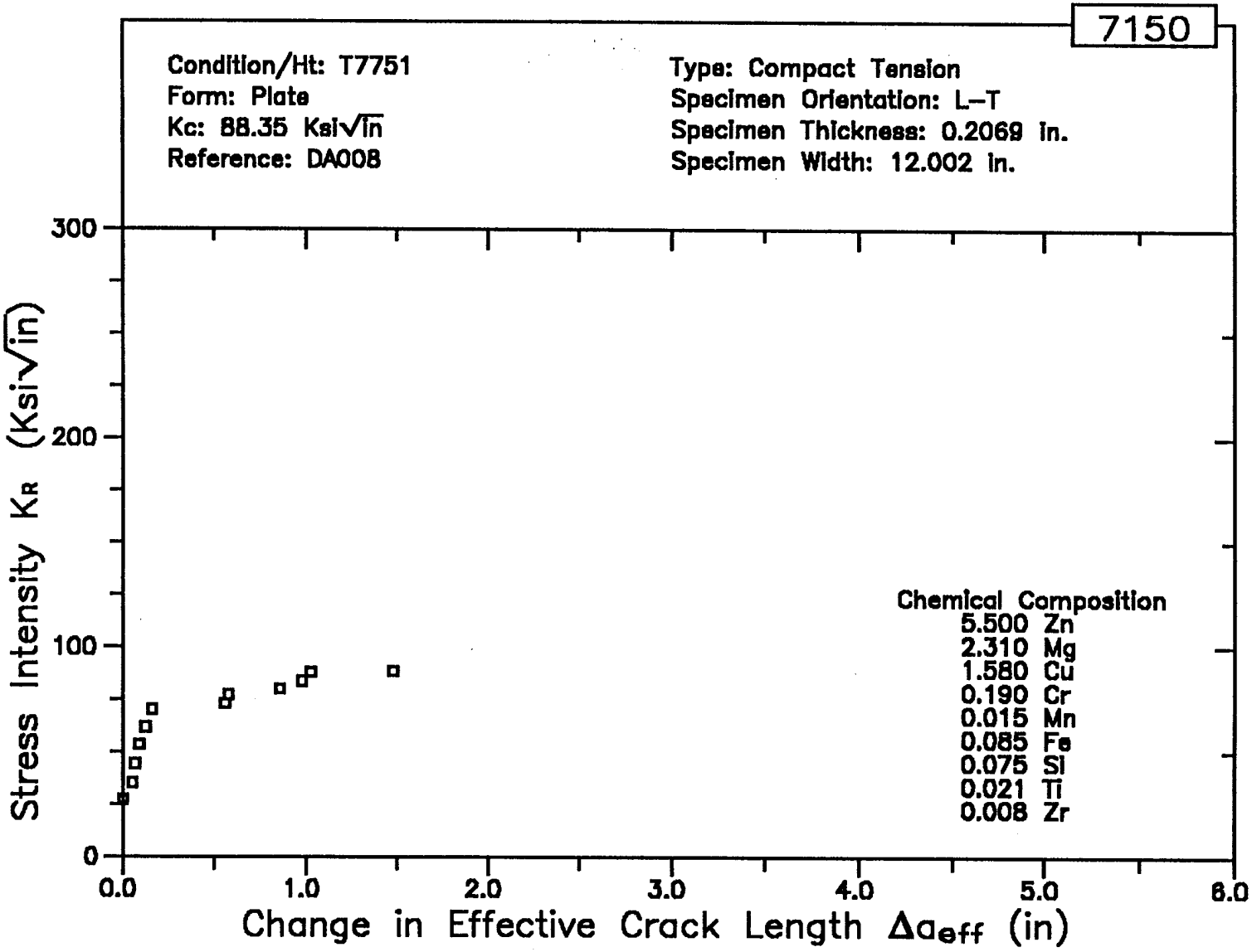



Figure 8.15.2.3.5

# RESISTANCE CURVE

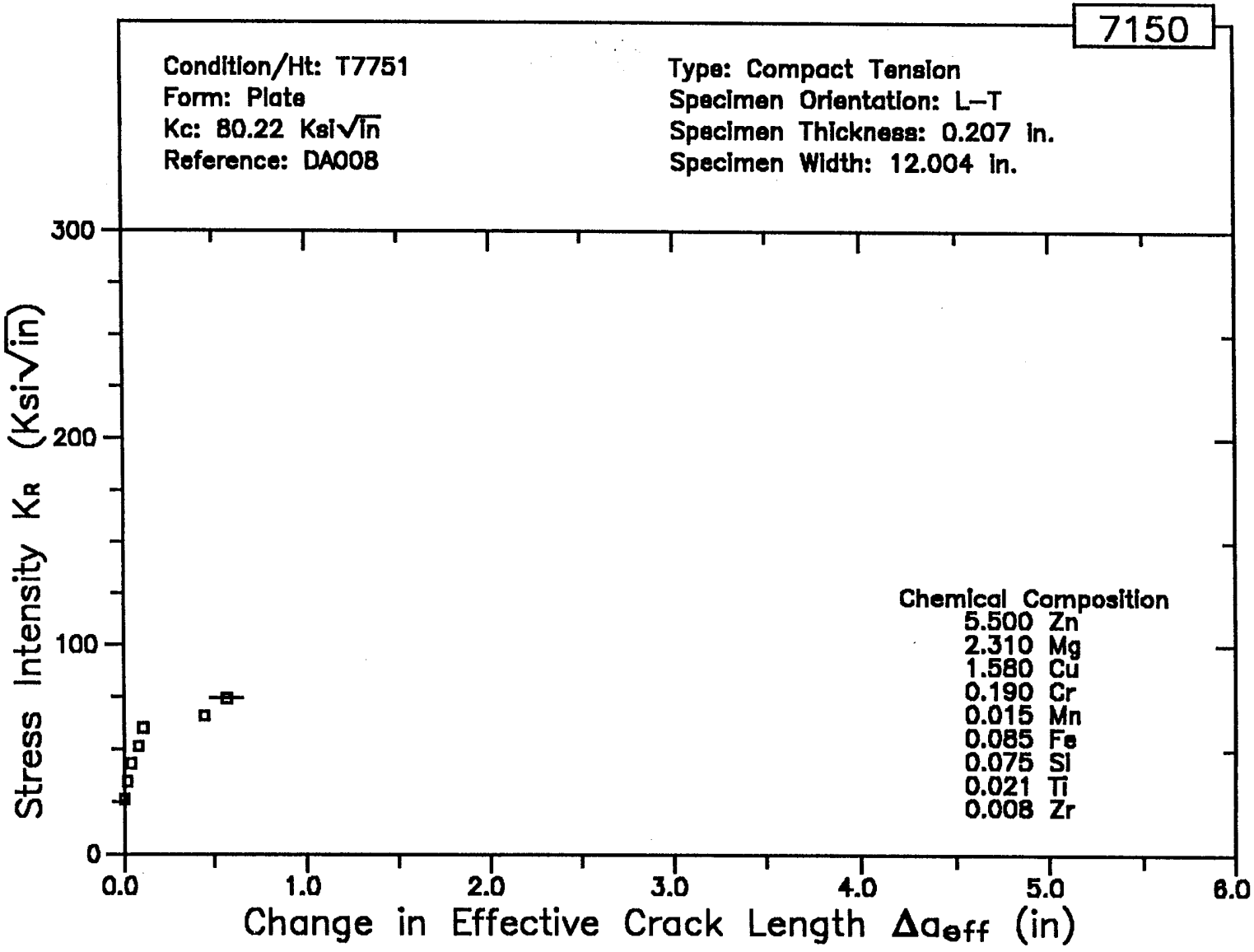



Figure 8.15.2.3.6

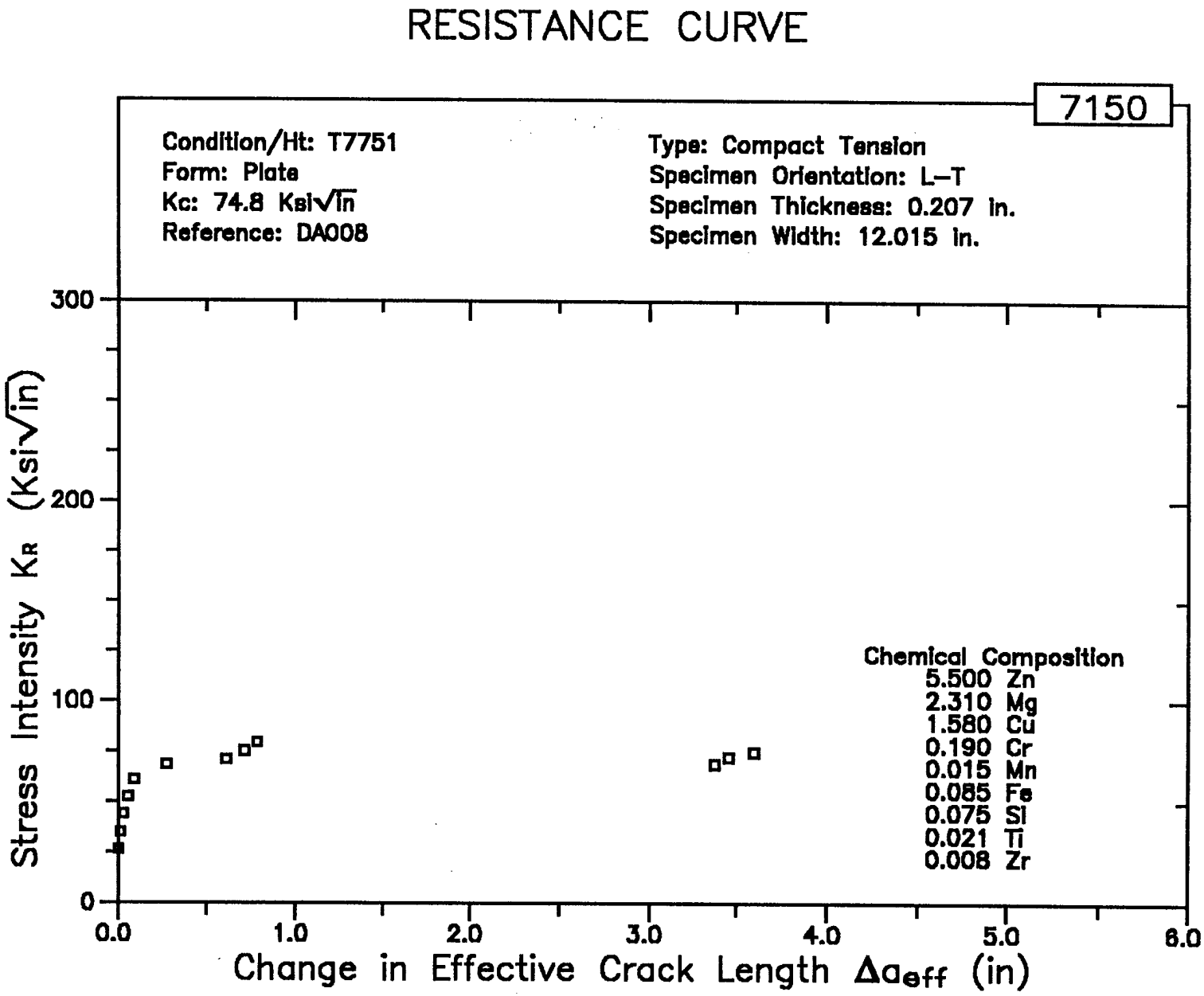



Figure 8.15.2.3.7

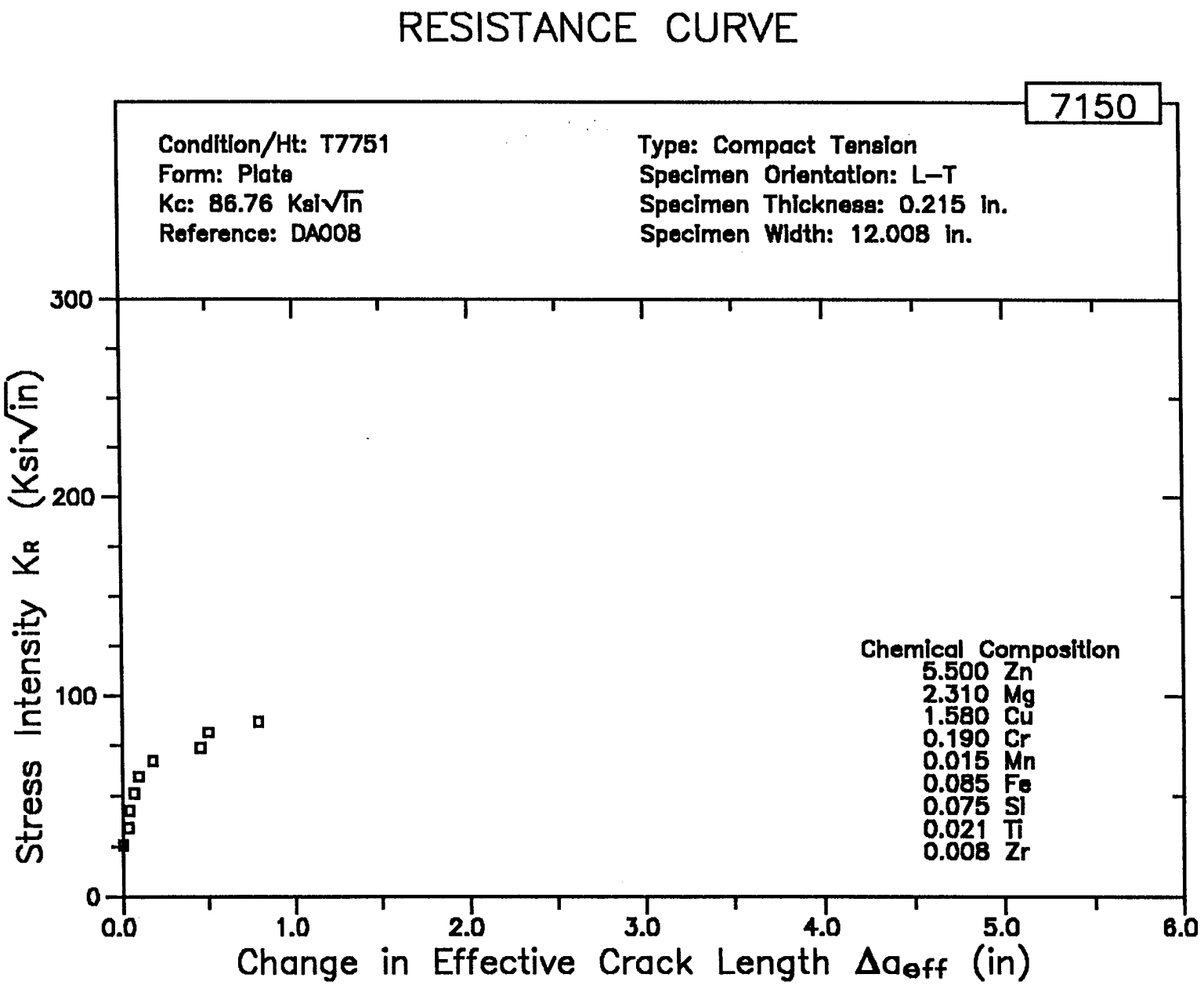



Figure 8.15.2.3.8

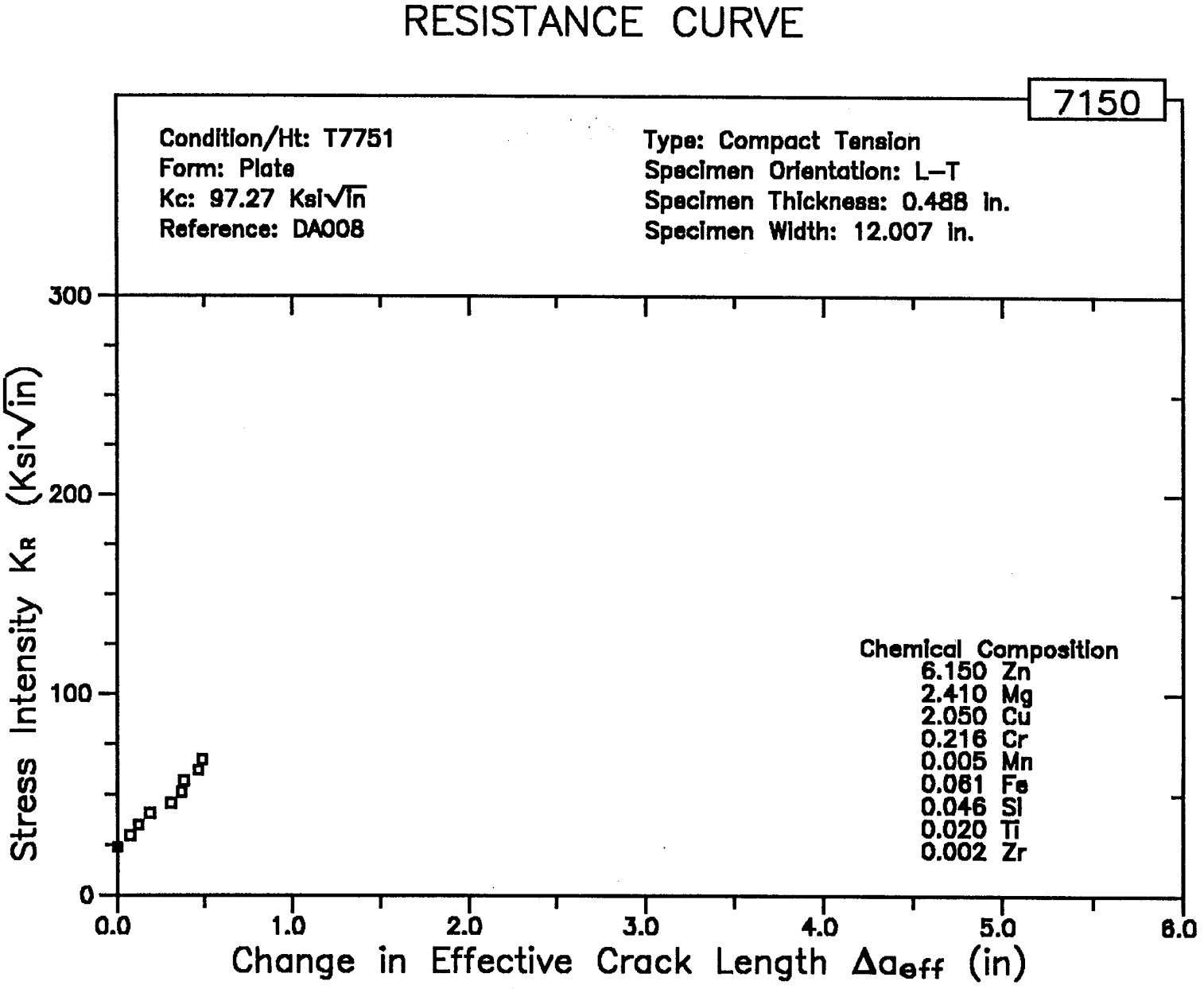



Figure 8.15.2.3.9

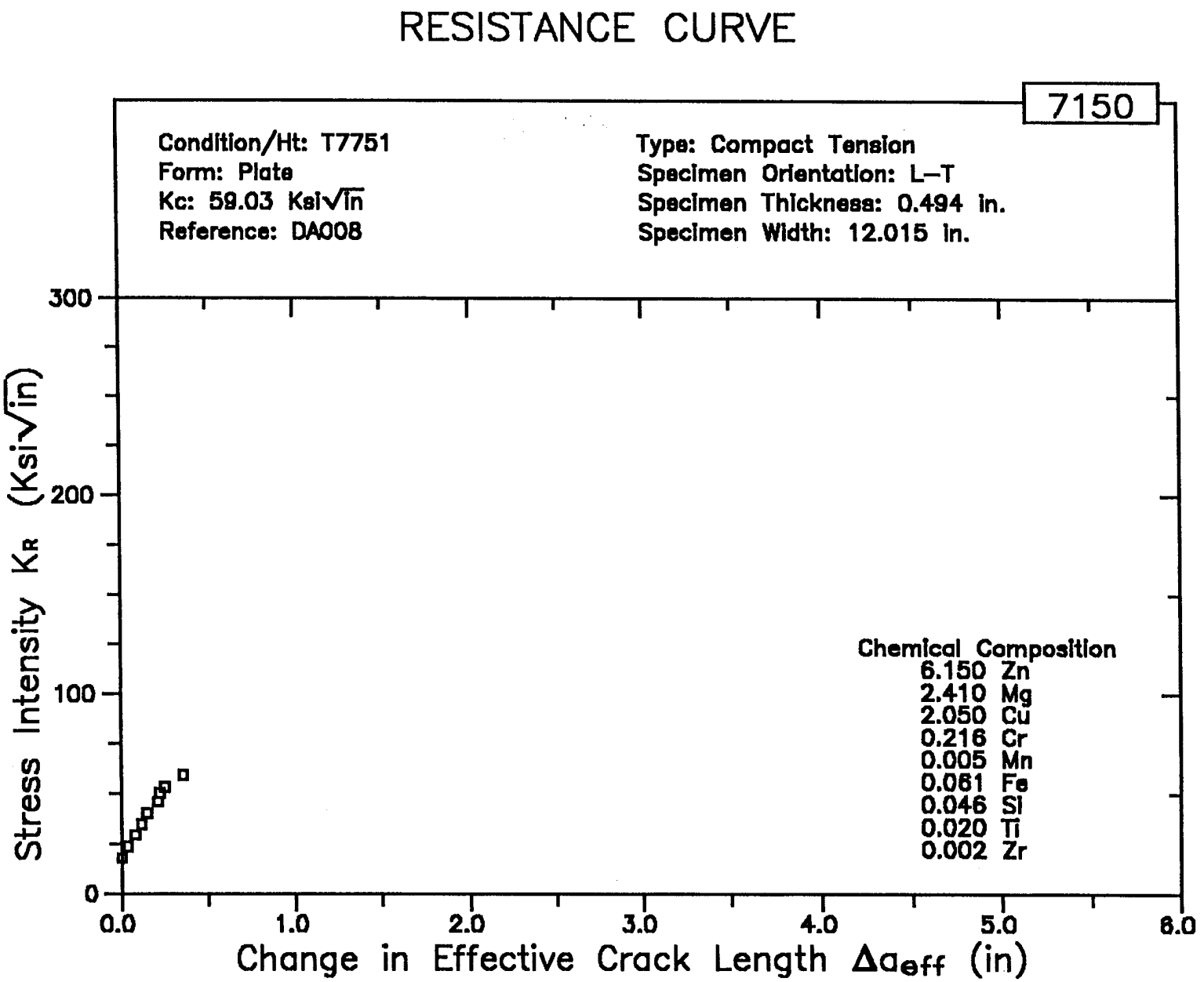



Figure 8.15.2.3.10

# RESISTANCE CURVE

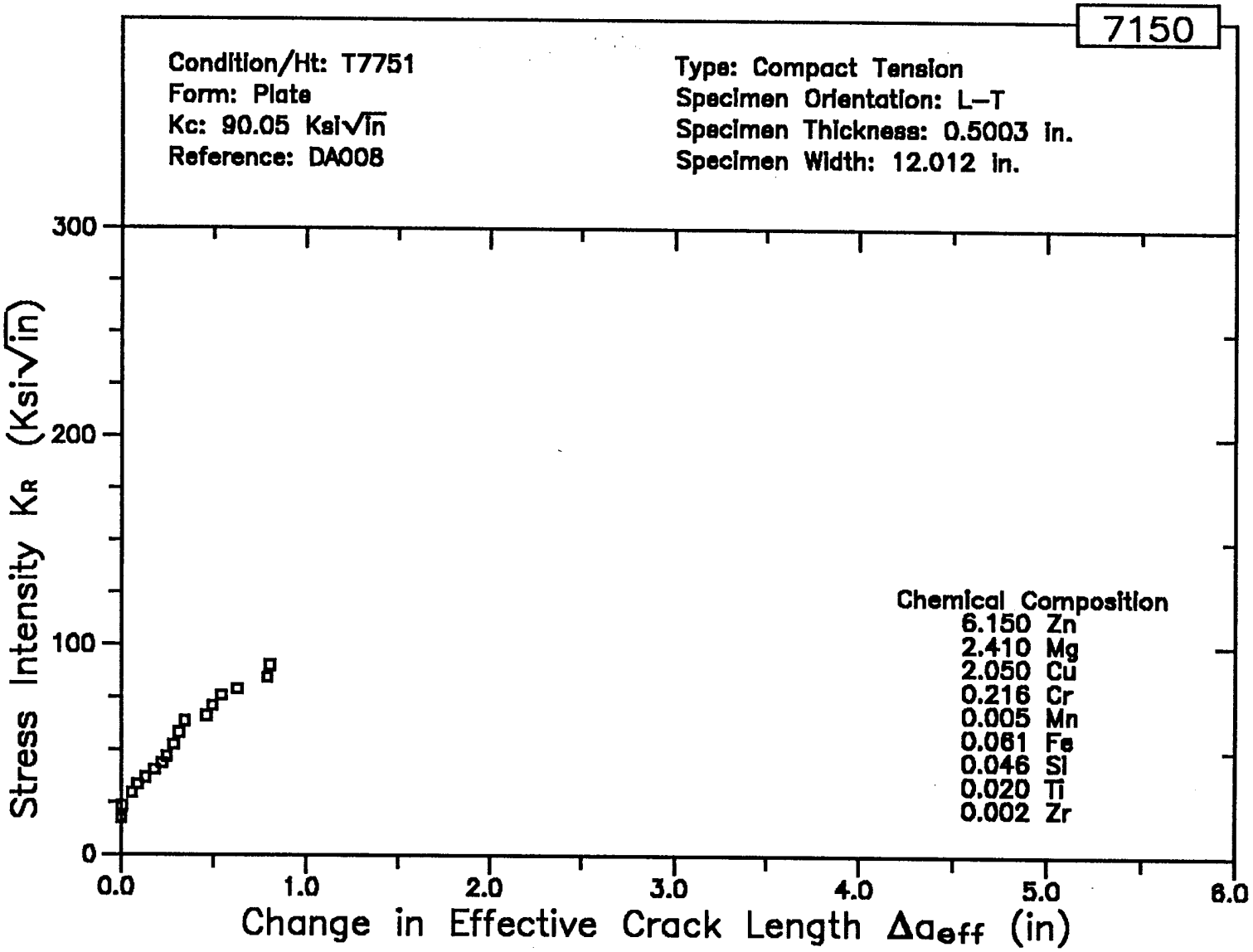



Figure 8.15.2.3.11

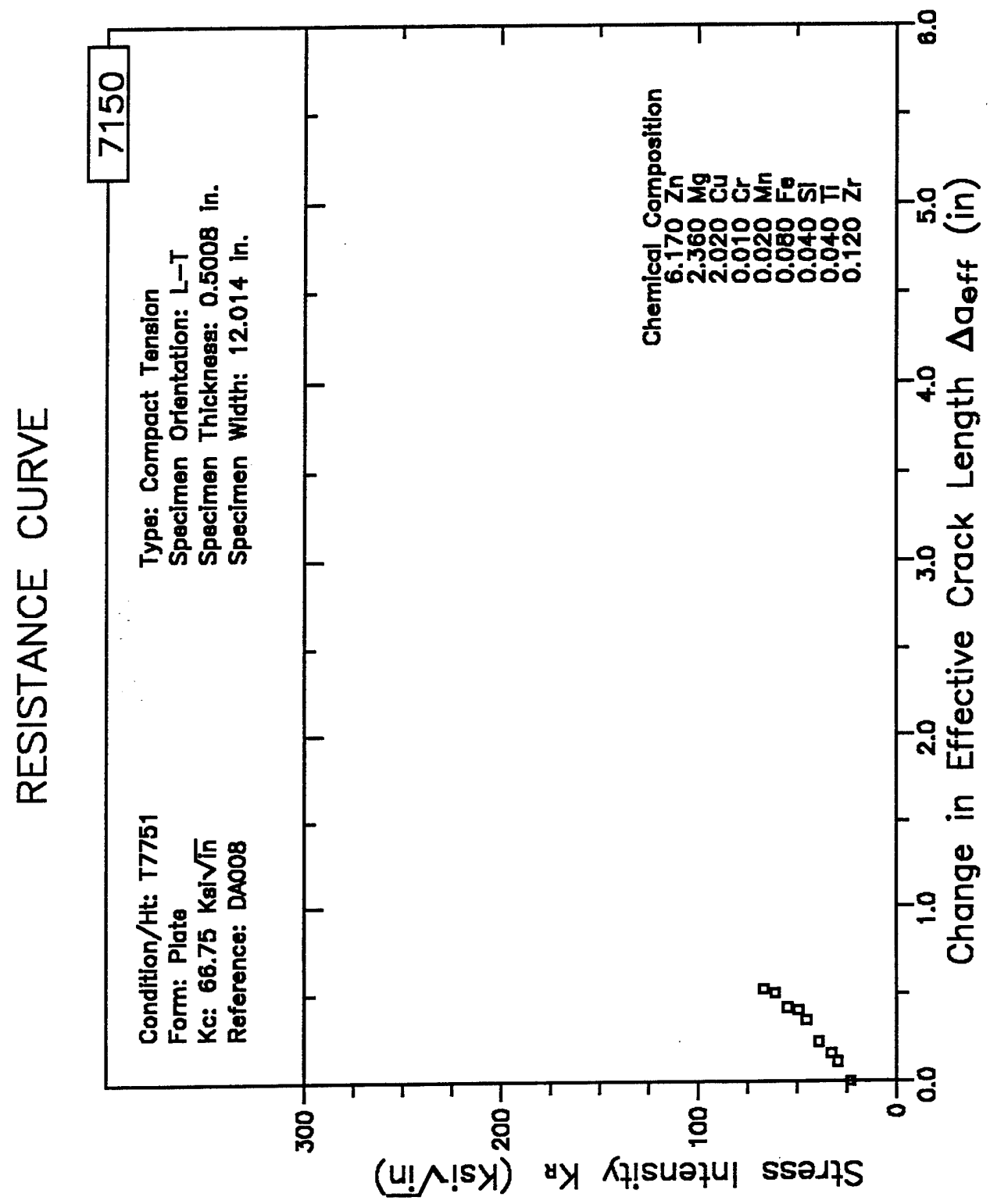



**Figure 8.15.2.3.12**

# RESISTANCE CURVE

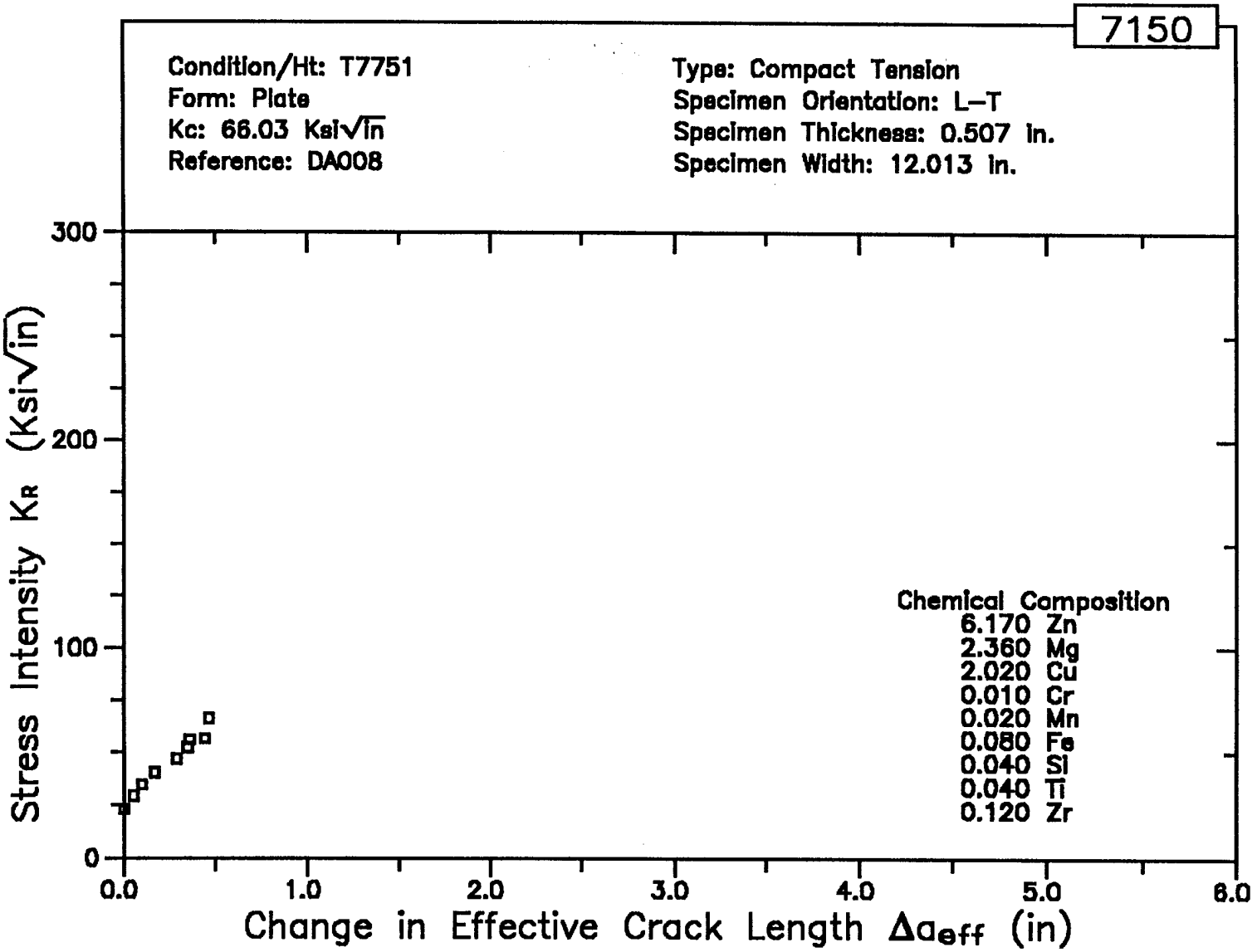



Figure 8.15.2.3.13

# RESISTANCE CURVE

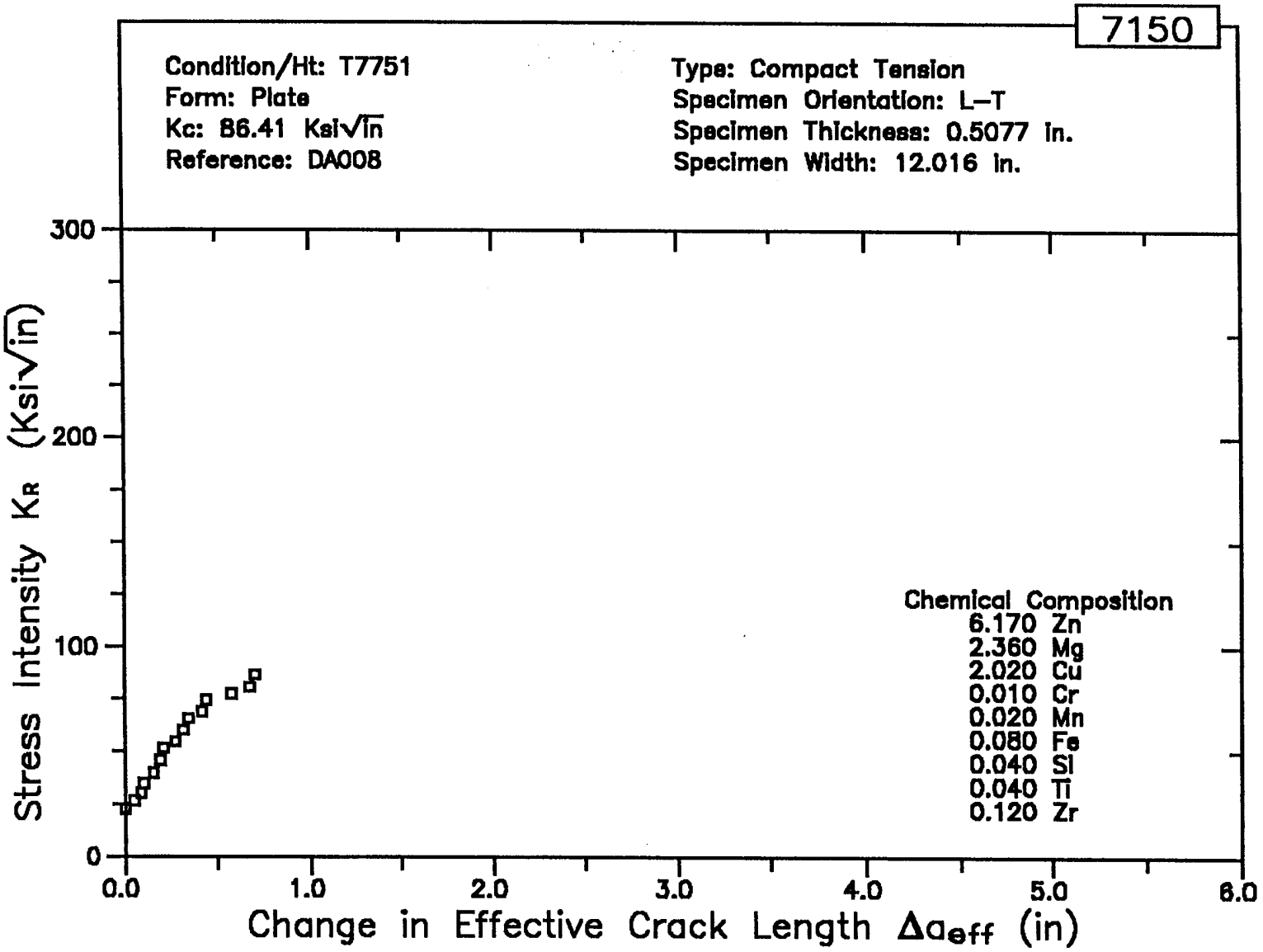



Figure 8.15.2.3.14

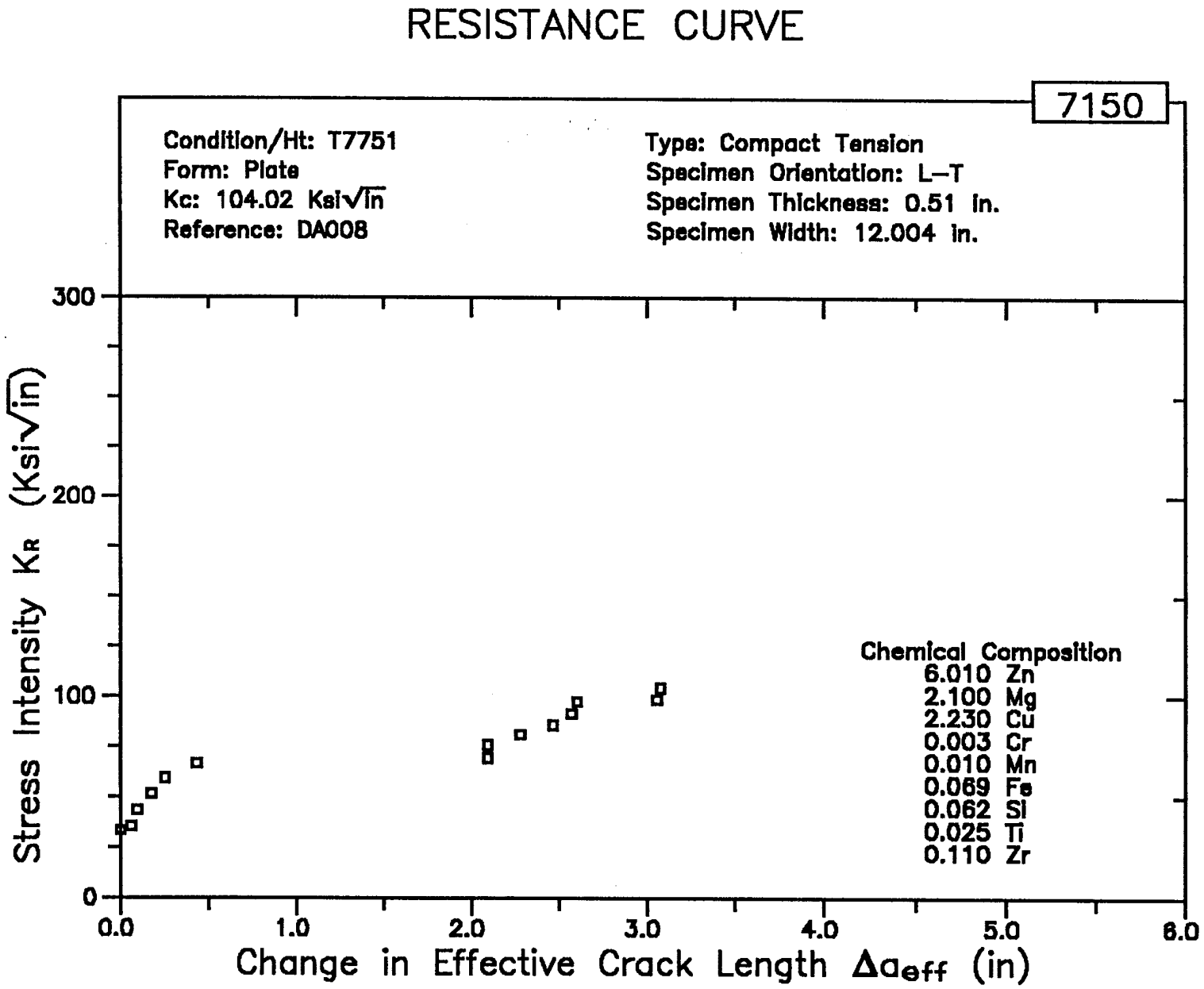



Figure 8.15.2.3.15

# RESISTANCE CURVE

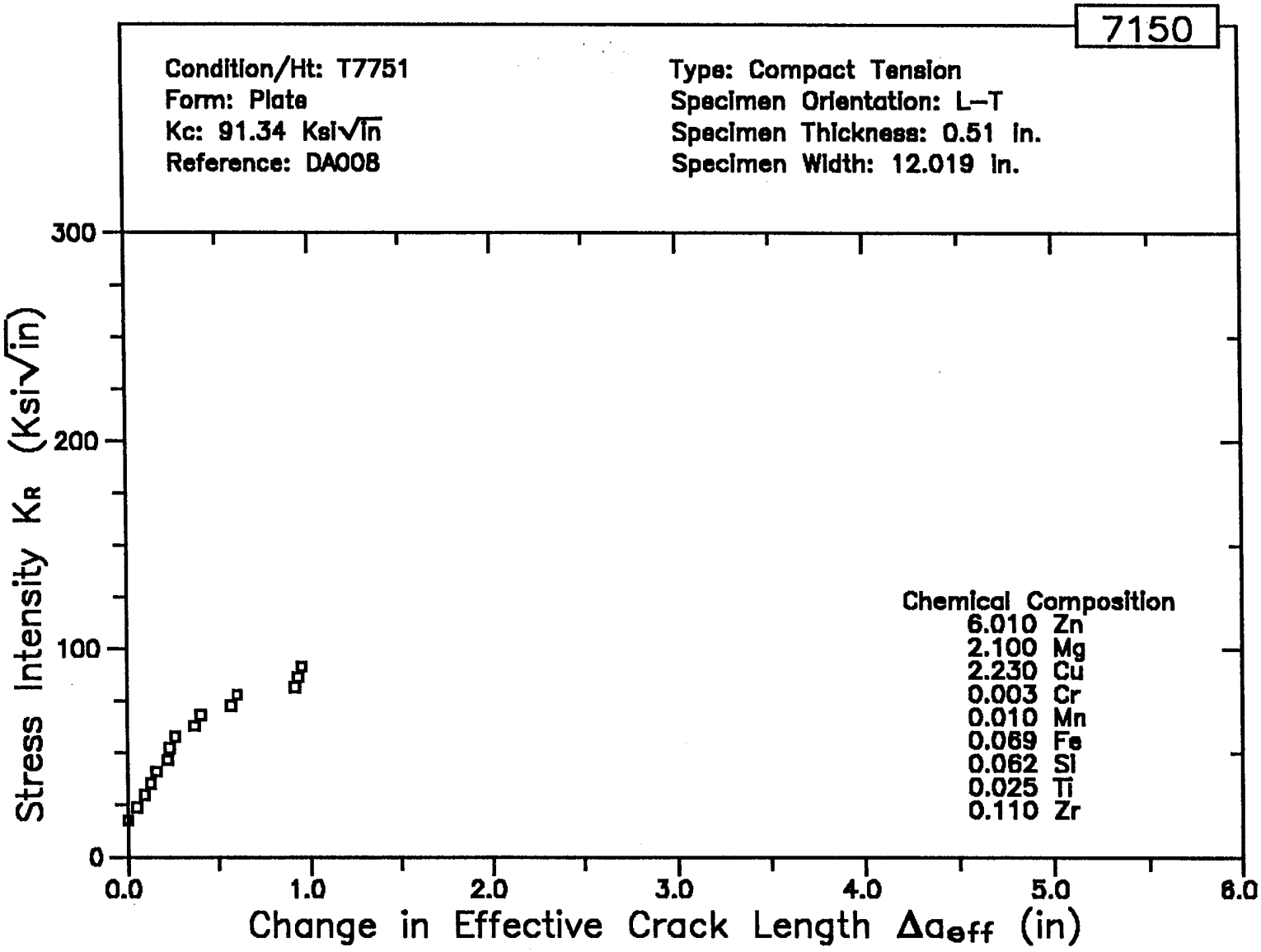



Figure 8.15.2.3.16

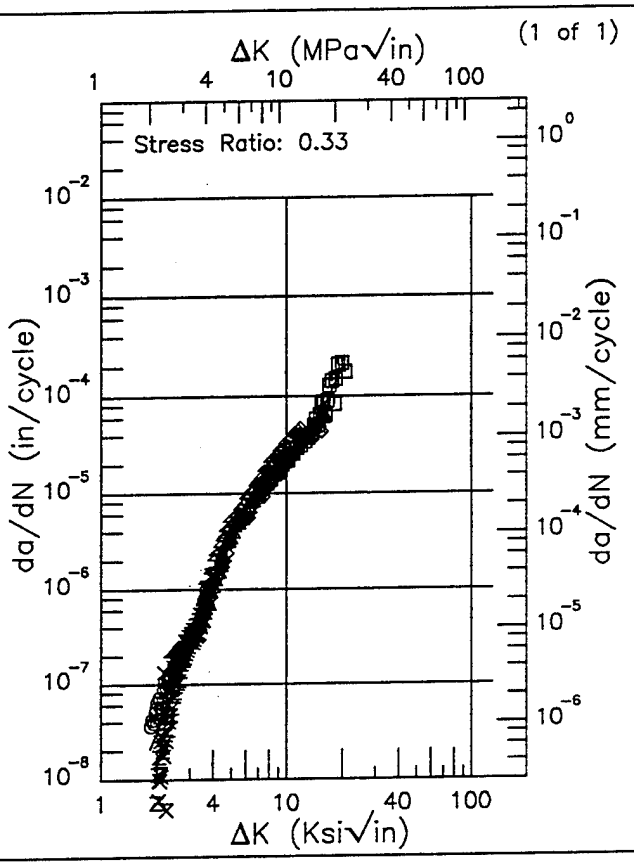
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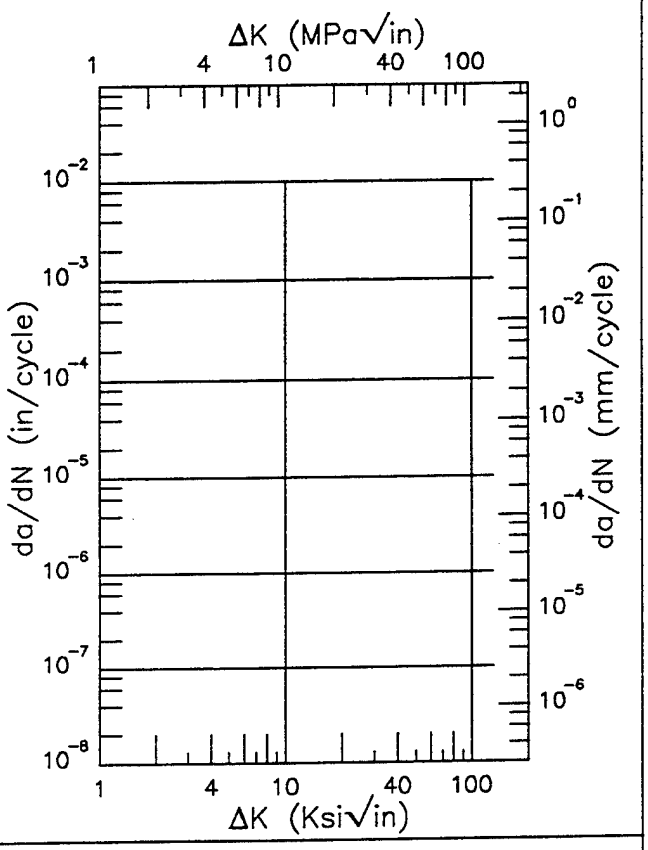
7150

R

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: WOL
Orientation: L–T
Frequency: 25 Hz
Environment: H.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.249 – 0.253 in.
Specimen Width: 2.55 – 2.554 in.
Ref: AL014




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 1.85 (min) | 0.0208 |
| 2. | 0.0313 |
| 2.5 | 0.105 |
| 3. | 0.286 |
| 3.5 | 0.654 |
| 4. | 1.29 |
| 5. | 3.64 |
| 6. | 7.38 |
| 7. | 11.8 |
| 8. | 16.3 |
| 9. | 20.6 |
| 10. | 24.8 |
| 13. | 39.9 |
| 16. | 78.9 |
| 20. | 199. |
| 20.66 (max) | 205. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

RMS % Error
31.87

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

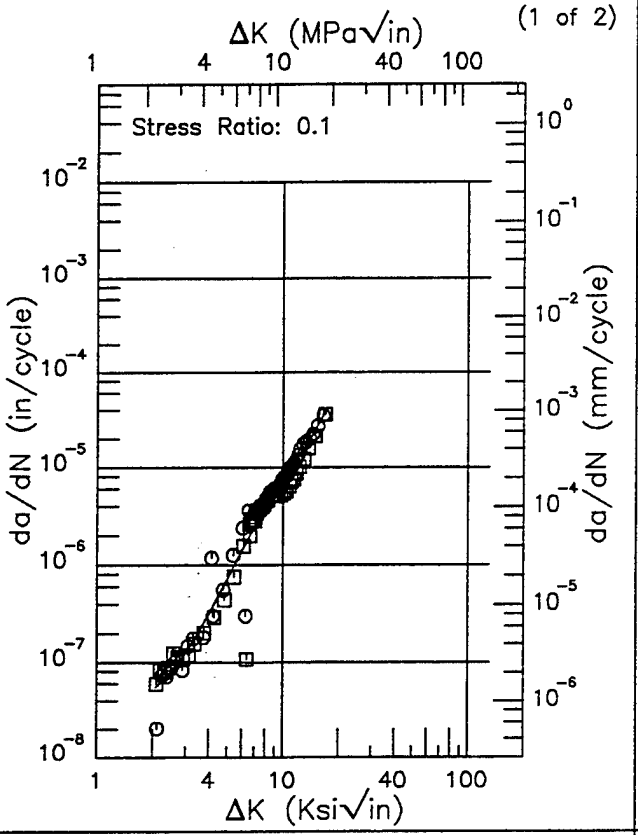
RMS % Error

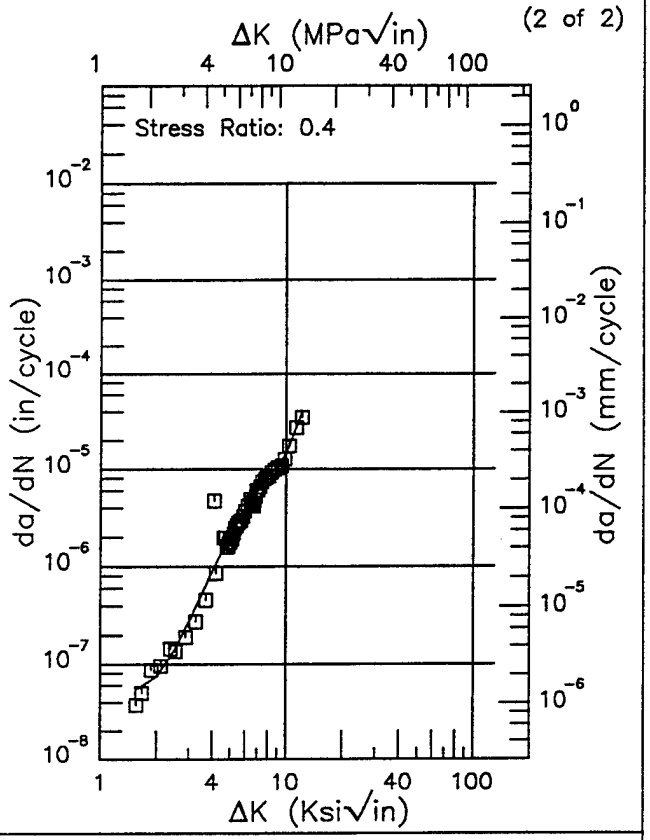
Life Prediction Ratio Summary
0. .5 .8 1.25 2.

**Figure 8.15.3.1.1**

Condition/Ht: T7751
Form: 1.12 – 1.25 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR; RT

Yield Strength: 81 – 82.6 ksi
Ult. Strength:
Specimen Thk: 0.499 – 0.5 in.
Specimen Width: 2.002 – 2.003 in.
Ref: DA008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.08 (min) | 0.0549 |
| 2.5 | 0.0775 |
| 3. | 0.124 |
| 3.5 | 0.200 |
| 4. | 0.316 |
| 5. | 0.712 |
| 6. | 1.40 |
| 7. | 2.45 |
| 8. | 3.86 |
| 9. | 5.58 |
| 10. | 7.54 |
| 13. | 15.3 |
| 16. | 31.0 |
| 16.83 (max) | 38.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.55 (min) | 0.0551 |
| 1.6 | 0.0555 |
| 2. | 0.0747 |
| 2.5 | 0.140 |
| 3. | 0.274 |
| 3.5 | 0.513 |
| 4. | 0.889 |
| 5. | 2.11 |
| 6. | 3.80 |
| 7. | 5.82 |
| 8. | 8.12 |
| 9. | 10.7 |
| 10. | 14.4 |
| 12.13 (max) | 38.2 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 34.83 | 0. .5 .8 1.25 2. |

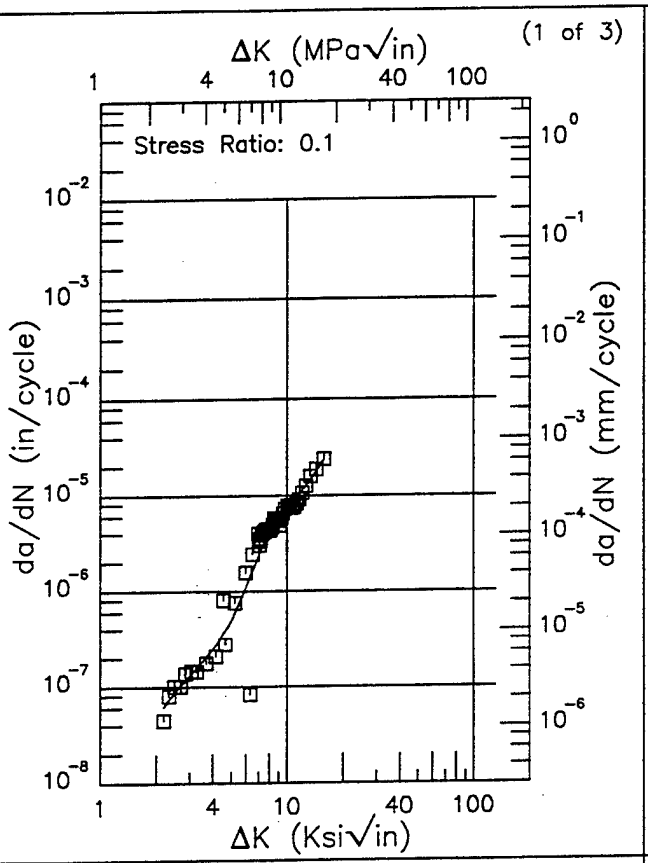
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 52.58 | 0. .5 .8 1.25 2. |

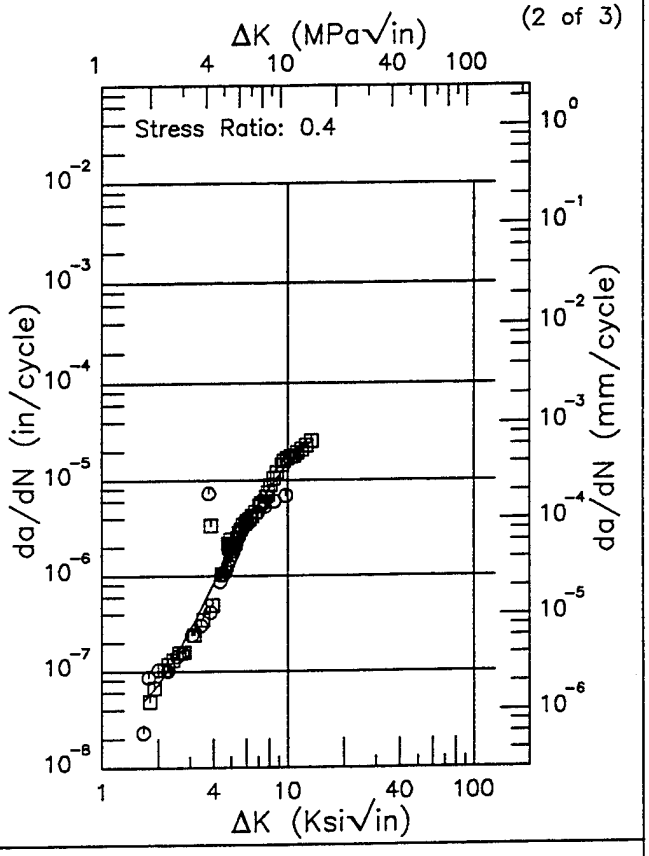
**Figure 8.15.3.1.2**

R | 7150 |

Condition/Ht: T7751
Form: 1.12 – 1.25 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 81 – 82.2 ksi
Ult. Strength:
Specimen Thk: 0.499 – 0.5 in.
Specimen Width: 2 – 2.002 in.
Ref: DA008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.19 (min) | 0.0618 |
| 2.5 | 0.0877 |
| 3. | 0.131 |
| 3.5 | 0.181 |
| 4. | 0.247 |
| 5. | 0.487 |
| 6. | 1.07 |
| 7. | 2.32 |
| 8. | 4.24 |
| 9. | 6.15 |
| 10. | 7.31 |
| 13. | 13.5 |
| 15.70 (max) | 23.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.66 (min) | 0.0485 |
| 2. | 0.0720 |
| 2.5 | 0.142 |
| 3. | 0.275 |
| 3.5 | 0.497 |
| 4. | 0.833 |
| 5. | 1.87 |
| 6. | 3.40 |
| 7. | 5.47 |
| 8. | 8.13 |
| 9. | 11.4 |
| 10. | 14.9 |
| 13. | 24.1 |
| 13.35 (max) | 24.9 |

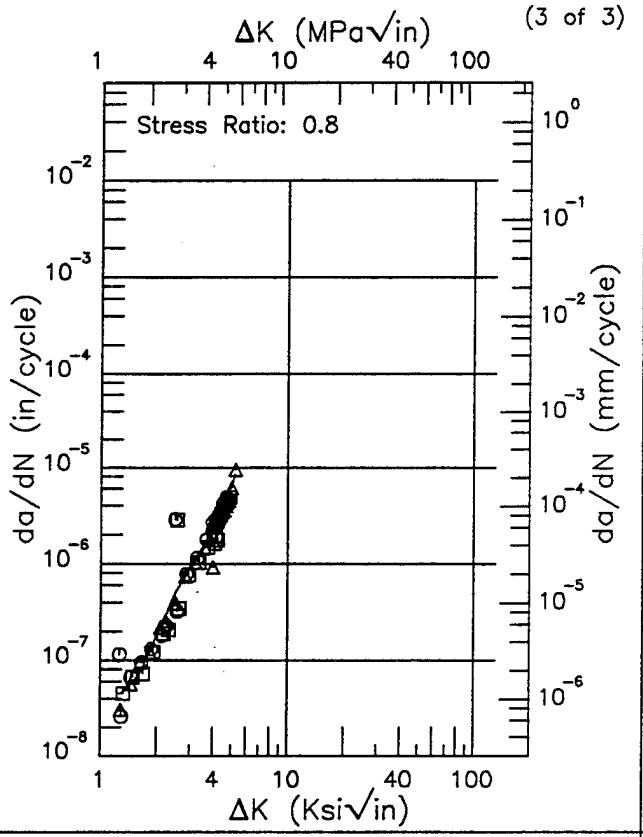
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 31.33 | 0. .5 .8 1.25 2. |

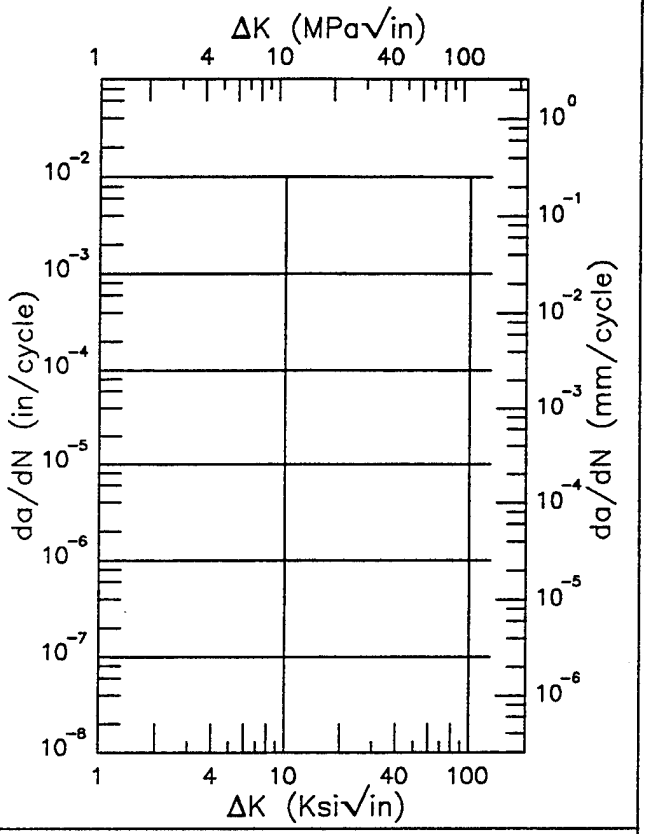
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| >100.0 | 0. .5 .8 1.25 2. |

**Figure 8.15.3.1.3**

Condition/Ht: T7751
Form: 1.12 – 1.25 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 81 – 82.2 ksi
Ult. Strength:
Specimen Thk: 0.499 – 0.5 in.
Specimen Width: 2 – 2.002 in.
Ref: DA008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.26 (min) | 0.0446 |
| 1.3 | 0.0447 |
| 1.6 | 0.0691 |
| 2. | 0.181 |
| 2.5 | 0.498 |
| 3. | 0.895 |
| 3.5 | 1.35 |
| 4. | 2.11 |
| 5. | 6.53 |
| 5.22 (max) | 8.60 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 79.56 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

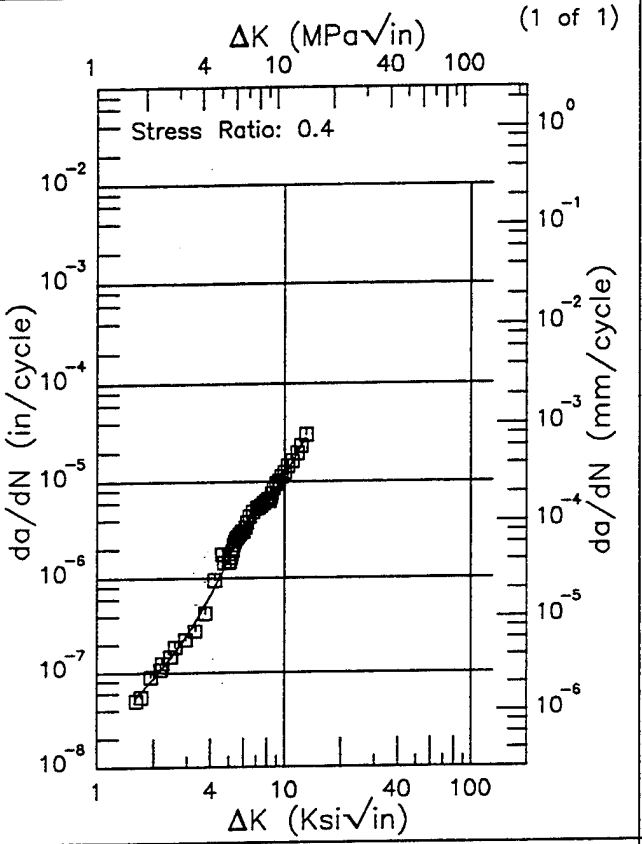
**Figure 8.15.3.1.3 (Concluded)**

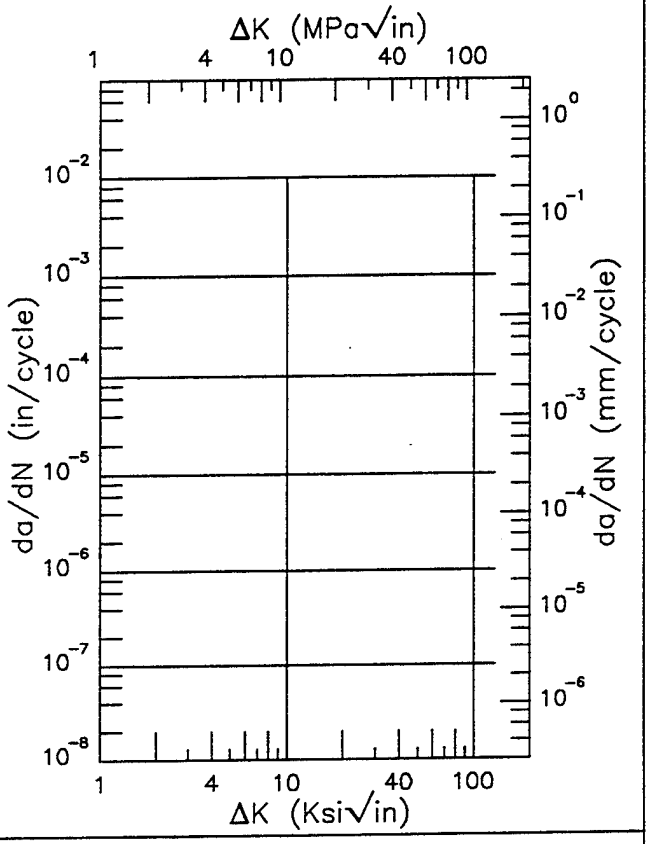
R | 7150 |

Condition/Ht: T7751
Form: 1.25 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 15 Hz
Environment: LAB AIR; RT

Yield Strength: 81 ksi
Ult. Strength:
Specimen Thk: 0.5 in.
Specimen Width: 2.002 in.
Ref: DA008

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| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.61 (min) | 0.0539 |
| 2. | 0.0867 |
| 2.5 | 0.151 |
| 3. | 0.253 |
| 3.5 | 0.412 |
| 4. | 0.659 |
| 5. | 1.60 |
| 6. | 3.30 |
| 7. | 5.40 |
| 8. | 7.12 |
| 9. | 8.77 |
| 10. | 11.5 |
| 12.93 (max) | 27.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

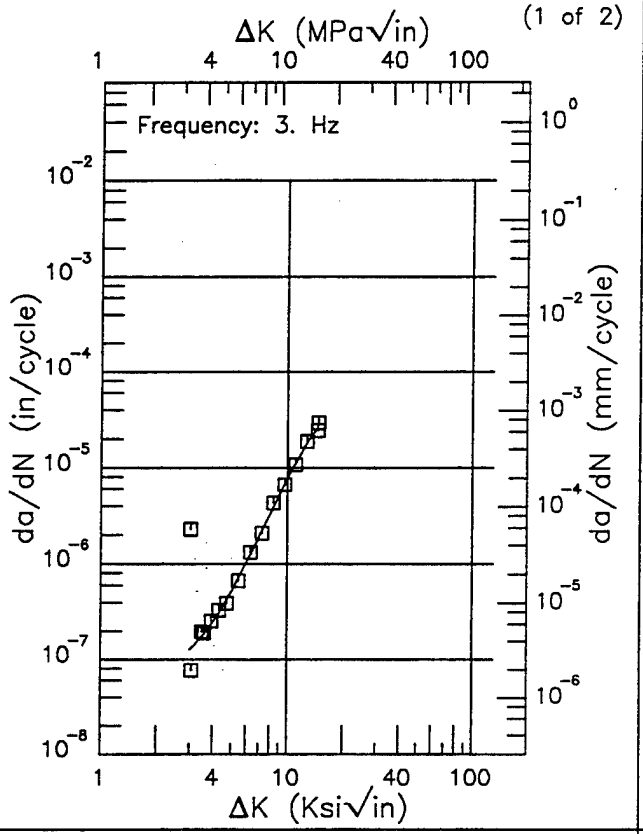
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.61 | 0. .5 .8 1.25 2. |

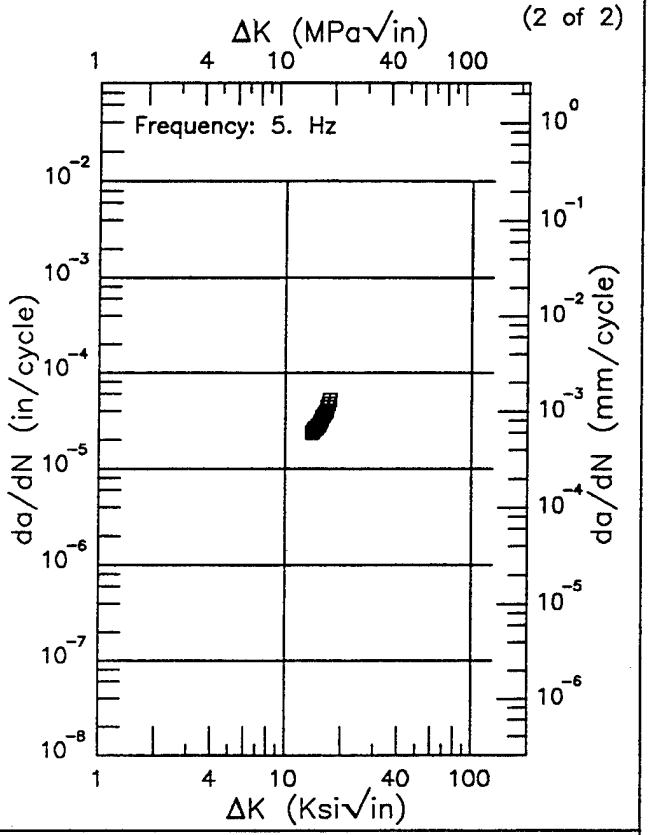
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.15.3.1.4**

Condition/Ht: T7751
Form: 0.25 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 81 ksi
Ult. Strength:
Specimen Thk: 0.25 in.
Specimen Width: 24.94 in.
Ref: DA008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.02 (min) | 0.128 |
| 3.5 | 0.174 |
| 4. | 0.248 |
| 5. | 0.518 |
| 6. | 1.03 |
| 7. | 1.90 |
| 8. | 3.26 |
| 9. | 5.19 |
| 10. | 7.76 |
| 13. | 19.0 |
| 14.59 (max) | 26.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 13.90 (min) | 23.4 |
| 16. | 34.9 |
| 17.30 (max) | 50.8 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| >100.0 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.39 | 0. .5 .8 1.25 2. |

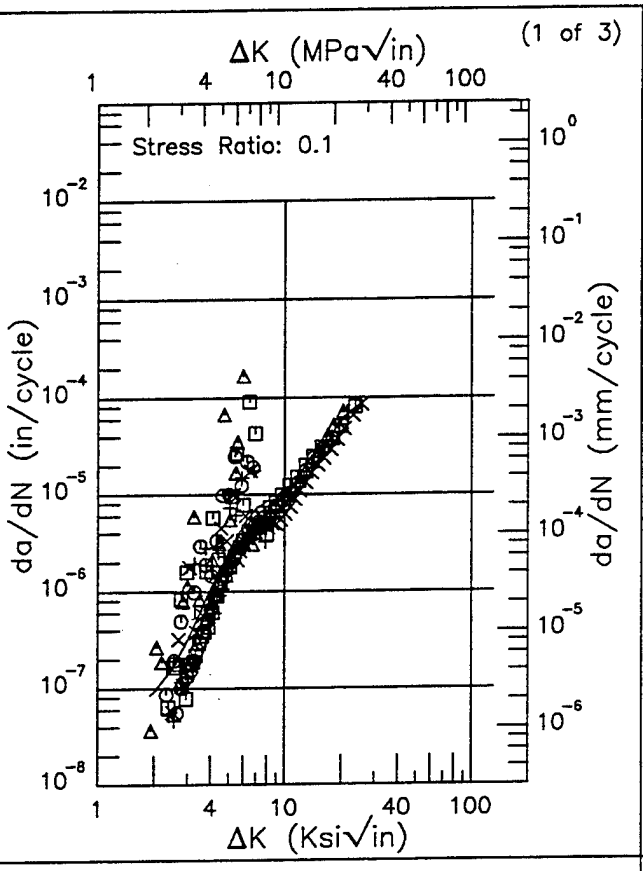
**Figure 8.15.3.1.5**

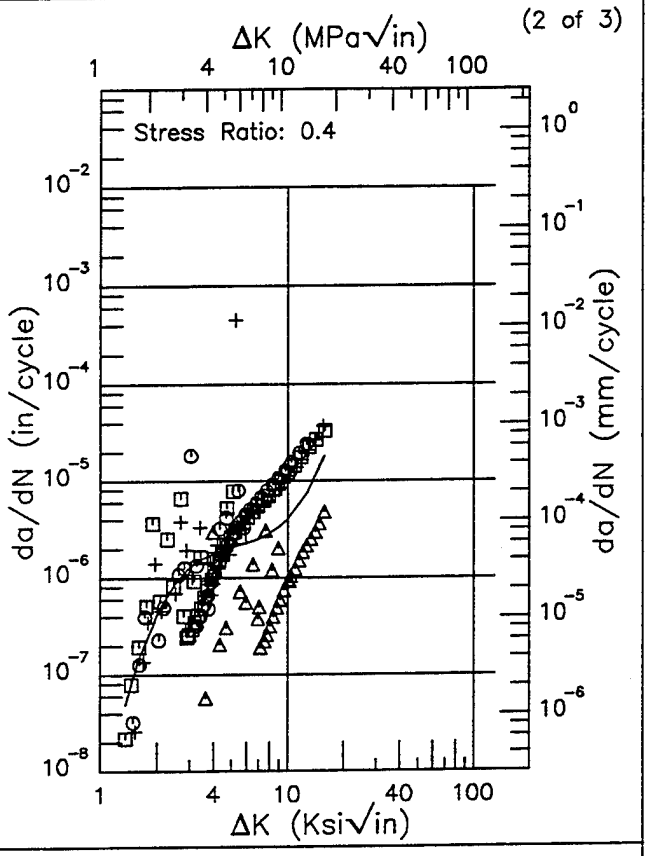
7150

R

Condition/Ht: T77511
Form: 0.7 – 1.45 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 86.5 – 90.5 ksi
Ult. Strength:
Specimen Thk: 0.493 – 0.498 in.
Specimen Width: 1.997 – 2 in.
Ref: DA008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.91 (min) | 0.0859 |
| 2. | 0.0922 |
| 2.5 | 0.163 |
| 3. | 0.315 |
| 3.5 | 0.594 |
| 4. | 1.05 |
| 5. | 2.61 |
| 6. | 4.86 |
| 7. | 7.09 |
| 8. | 8.50 |
| 9. | 8.96 |
| 10. | 9.15 |
| 13. | 12.5 |
| 16. | 29.1 |
| 20. | 60.1 |
| 25. | 84.1 |
| 25.41 (max) | 92.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.36 (min) | 0.0497 |
| 1.6 | 0.145 |
| 2. | 0.423 |
| 2.5 | 0.869 |
| 3. | 1.27 |
| 3.5 | 1.58 |
| 4. | 1.80 |
| 5. | 2.07 |
| 6. | 2.28 |
| 7. | 2.53 |
| 8. | 2.87 |
| 9. | 3.35 |
| 10. | 4.02 |
| 13. | 8.05 |
| 15.84 (max) | 18.1 |

RMS % Error
>100.0

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error
>100.0

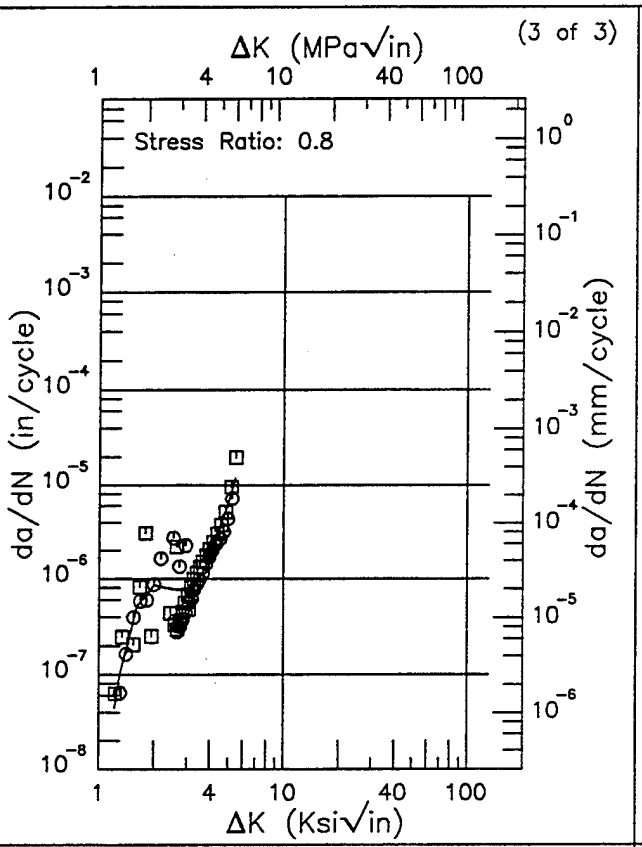
Life Prediction Ratio Summary
0. .5 .8 1.25 2.

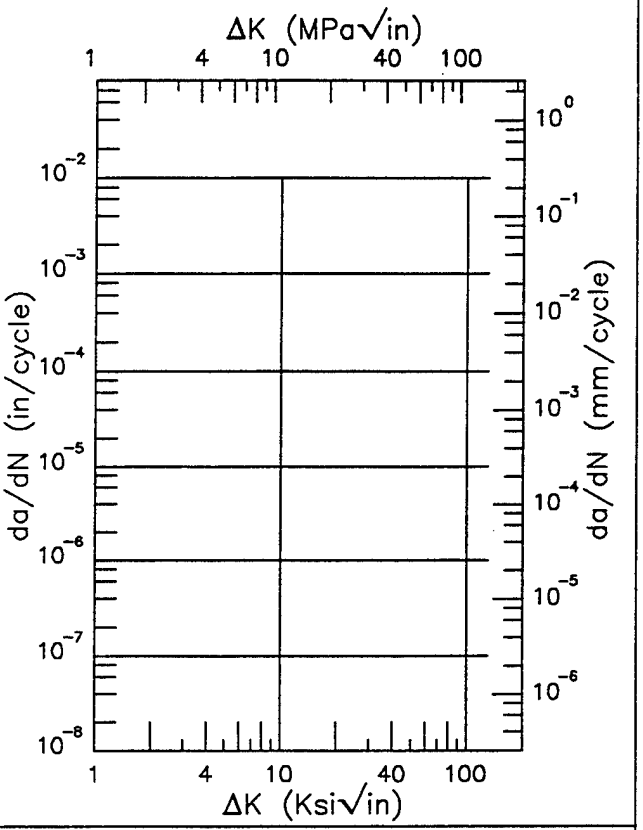
**Figure 8.15.3.1.6**

Condition/Ht: T77511
Form: 0.7 – 1.45 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 86.5 – 90.5 ksi
Ult. Strength:
Specimen Thk: 0.493 – 0.498 in.
Specimen Width: 1.997 – 2 in.
Ref: DA008

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| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 1.22 (min) | 0.0441 |
| 1.3 | 0.0985 |
| 1.6 | 0.506 |
| 2. | 0.855 |
| 2.5 | 0.782 |
| 3. | 0.742 |
| 3.5 | 0.966 |
| 4. | 1.67 |
| 5. | 6.45 |
| 5.46 (max) | 11.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 77.68 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.15.3.1.6 (Concluded)**

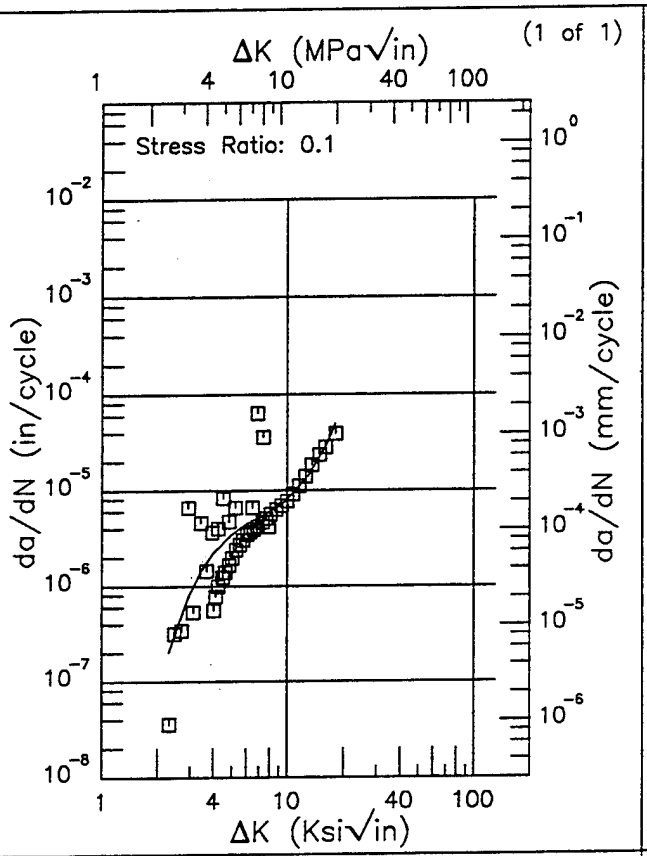
7150

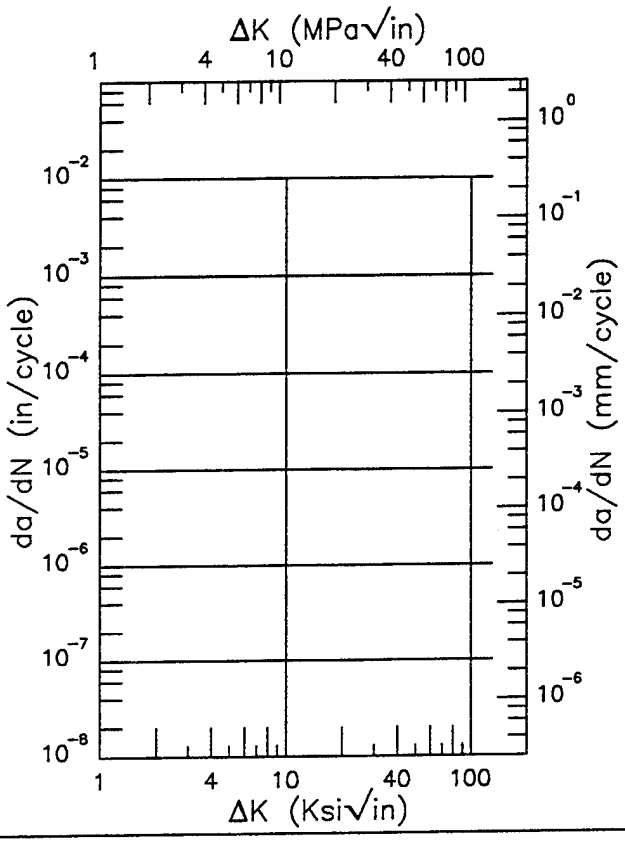
R

Condition/Ht: T77511
Form: 1.45 in. Extrusion
Specimen Type: CT
Orientation: L-T
Frequency: 25 Hz
Environment: LAB AIR; RT

Yield Strength: 90.5 ksi
Ult. Strength:
Specimen Thk: 0.493 in.
Specimen Width: 2.002 in.
Ref: DA008

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.30 (min) | 0.201 |
| 2.5 | 0.336 |
| 3. | 0.850 |
| 3.5 | 1.52 |
| 4. | 2.22 |
| 5. | 3.46 |
| 6. | 4.40 |
| 7. | 5.20 |
| 8. | 6.00 |
| 9. | 6.92 |
| 10. | 8.07 |
| 13. | 14.2 |
| 16. | 29.0 |
| 18.03 (max) | 50.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| >100.0 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.15.3.1.7**

# TABLE 8.16.1.1

## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 7175 AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Forging | T66 | --- | --- | --- | 23.2 | 3.1 | 2 | 20.8 | 1.1 | 7 |
| | T73 | --- | --- | --- | --- | --- | --- | 27.1 | 1.2 | 4 |
| | T7352 | --- | --- | --- | 24.5 | 0.5 | 2 | --- | --- | --- |
| | T736 | 31.2 | 3.8 | 4 | 26.4 | 3.6 | 10 | 25.3 | 2.1 | 23 |
| | T73652 | 32.7 | 8. | 2 | --- | --- | --- | --- | --- | --- |
| Extrusion | T73511 | 32.8 | 6.5 | 17 | 27. | 4.9 | 12 | --- | --- | --- |
| | T76511 | 32.9 | 3.5 | 48 | 22.6 | 2.5 | 36 | 20.9 | 1.3 | 3 |

## TABLE 8.16.1.2.1



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7354 | FORGING | 0.1 | 6 | | 1.15 | 10.68 | 83.04 | | |
| T736 | FORGING | 0.1 | 6 | | 1.1 | 11.84 | | | |
| | | 0.3 | 6 | | 3.76 | 19.57 | | | |
| | | 0.33 | 5.2 | | | 15.96 | | | |
| T76511 | EXTRUSION | 0.1 | 20 | | 1.45 | 12.71 | | | |
| | | 0.1 | 20 | | 1.3 | 12.64 | | | |
| | | 0.1 | 30 | 0.15 | 1.11 | | | | |

## TABLE 8.16.1.2.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: F.C.S.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.08 | 1 | | 1.32 | 10.79 | | | |

## TABLE 8.16.1.2.3



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.1 | 1 | | 2.03 | 11.22 | 55.07 | | |
| | | 0.3 | 1 | | 1.77 | 15.31 | | | |
| | | 0.33 | 5.2 | | | 19.65 | | | |
| | | 0.5 | 1 | | 2.97 | 17.29 | | | |

## TABLE 8.16.1.2.4

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: JP-4 Jet Fuel**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) *ΔK Level* (*Ksi√in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.02 | 1-20 | | 0.44 | 6.67 | 47.58 | | |
| T74 | FORGING | 0.02 | 1-20 | | 0.36 | 3.83 | 35.42 | | |

## TABLE 8.16.1.2.5



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: L.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.08 | 0.1 | | | 10.3 | | | |
| | | 0.08 | 1 | | 0.43 | 9.41 | 51.46 | | |
| | | 0.08 | 6 | | | 5.67 | | | |
| | | 0.08 | 6 | | | 8.49 | | | |
| | | 0.08 | 6 | | | 5.92 | 36.84 | | |
| | | 0.3 | 6 | | 0.53 | 10.12 | | | |

# TABLE 8.16.1.2.6

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi√in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.02 | 10 | | | 10.52 | 57.48 | | |
| T73652 | FORGING | 0.02 | 1-15 | 0.12 | | | | | |
| | | 0.02 | 1-18 | 0.12 | 0.76 | 7.48 | | | |
| | | 0.02 | 0.1-20 | | | 8.39 | 37.54 | | |
| T74 | FORGING | 0.02 | 0.08-10 | | | 3.44 | 38.3 | | |
| | | 0.02 | 0.1-20 | | 0.51 | 8.78 | 33.73 | | |
| | | 0.02 | | | 0.16 | 2.43 | 35.19 | | |
| | | 0.02 | | | 0.31 | 7.65 | 46.92 | | |
| | | 0.1 | 10 | | | 9.23 | 64.01 | | |
| | | 0.1 | 10 | | 1.5 | 9.96 | | | |
| | | 0.1 | 25 | 0.13 | 1.77 | | | | |
| | | 0.5 | 10 | | 2.68 | 16.24 | | | |
| | | 0.5 | 20 | | 2.29 | 16.19 | | | |
| | | 0.5 | 25 | 0.14 | | | | | |
| | | 0.8 | 10 | | 4.66 | | | | |
| | | 0.8 | 20 | 0.2 | 3.05 | | | | |
| | UNSPECIFIED | 0.1 | 10 | | | 4.07 | 50.49 | | |

## TABLE 8.16.1.2.7



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: S.S.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCCR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.02 | 0.1-20 | | 1 | 11.65 | 66.39 | | |
| T74 | FORGING | 0.02 | 0.1-20 | | 1 | 11.52 | 66.1 | | |

## TABLE 8.16.1.2.8

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7354 | FORGING | 0.1 | 1 | | 0.63 | 27.02 | | | |
| T736 | FORGING | 0.1 | 1 | | 1.57 | | | | |
| | | 0.5 | 1 | 0.33 | 6.28 | 56.78 | | | |
| T73652 | FORGING | 0.3 | 1 | | 3.24 | 29.39 | | | |
| | | 0.5 | 1 | | | 33.28 | | | |

## TABLE 8.16.1.2.9



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Salt Fog**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.33 | 5.2 | | | 41.76 | | | |

## TABLE 8.16.1.2.10

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.33 | 5.2 | | | 16.23 | | | |
| | | 0.33 | 18.3 | | | 12.47 | | | |

## TABLE 8.16.1.2.11



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.33 | 5.2 | | | 18.22 | | | |
| | | 0.33 | 18.3 | | | 23.76 | | | |

## TABLE 8.16.1.2.12

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: JP-4 Jet Fuel**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.02 | 1-20 | | 0.67 | 5.18 | 74.87 | | |
| T74 | FORGING | 0.02 | 1-20 | | 0.68 | 5.46 | 79.05 | | |

## TABLE 8.16.1.2.13



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: L.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi√in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.08 | 6 | | | 1.95 | | | |
| | | 0.08 | 6 | | | 3.97 | | | |

## TABLE 8.16.1.2.14

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.02 | 1-20 | | | 10.1 | 50.27 | | |
| T74 | FORGING | 0.02 | 1-20 | | 0.41 | 10.27 | 48.92 | | |

## TABLE 8.16.1.2.15



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: S.S.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T73652 | FORGING | 0.02 | 1-20 | | 0.97 | 9.61 | 76.62 | | |
| T74 | FORGING | 0.02 | 0.1-20 | | 0.57 | 9.17 | 72.11 | | |

## TABLE 8.16.1.2.16

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7354 | FORGING | 0.1 | 1 | | 1.15 | 36.01 | | | |

## TABLE 8.16.1.2.17



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Salt Fog**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.33 | 5.2 | | | 31.47 | | | |
| | | 0.33 | 18.3 | | | 21.63 | | | |

# FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
# 7175 AT ROOM TEMPERATURE

**ORIENTATION: S-T** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.33 | 18.3 | | | 11.92 | | | |

## TABLE 8.16.1.2.19



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7175 AT ROOM TEMPERATURE

**ORIENTATION: S-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T736 | FORGING | 0.33 | 18.3 | | | 17.14 | | | |

# TABLE 8.16.2.1



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T66 | Forging | 1.00 | R.T. | L-T | 82.4 | 1.000 | 0.500 | CT | 0.541 | 0.49 | 36.30 | --- | --- | 1973 | 86213 |
| T66 | Forging | 1.00 | R.T. | T-L | 80.2 | 1.000 | 0.499 | CT | 0.551 | 0.25 | 25.40 | 23.2 | 3.1 | 1973 | 86213 |
| | | 1.00 | | | 80.2 | 1.000 | 0.499 | CT | 0.541 | 0.17 | 21.00 | | | 1973 | 86213 |
| T66 | Forging | 1.00 | R.T. | S-L | 70.4 | 1.000 | 0.499 | CT | 0.535 | 0.25 | 22.30 | 20.8 | 1.1 | 1973 | 86213 |
| | | 1.00 | | | 70.4 | 1.000 | 0.500 | CT | 0.525 | 0.23 | 21.50 | | | 1973 | 86213 |
| | | 1.00 | | | 70.4 | 1.000 | 0.499 | CT | 0.523 | 0.19 | 19.40 | | | 1973 | 86213 |
| | | 1.00 | | | 73.0 | 1.000 | 0.500 | CT | 0.539 | 0.20 | 20.70 | | | 1973 | 86213 |
| | | 1.00 | | | 73.0 | 1.000 | 0.500 | CT | 0.533 | 0.18 | 19.40 | | | 1973 | 86213 |
| | | 1.00 | | | 73.0 | 1.000 | 0.499 | CT | 0.528 | 0.23 | 21.90 | | | 1973 | 86213 |
| | | 1.00 | | | 73.0 | 1.000 | 0.500 | CT | 0.503 | 0.20 | 20.60 | | | 1973 | 86213 |
| T66 | Forging | 0.50 | 89 | L-T | 80.4 | 1.000 | 0.500 | CT | 0.538 | 0.47 | 34.90 | 34.7 | 0.3 | 1973 | 86213 |
| | | 0.50 | | | 80.4 | 1.000 | 0.501 | CT | 0.541 | 0.46 | 34.50 | | | 1973 | 86213 |
| T66 | Forging | 0.50 | 89 | T-L | 82.2 | 1.000 | 0.500 | CT | 0.531 | 0.24 | 25.70 | --- | --- | 1973 | 86213 |
| T73 | Forging | 8.50 | R.T. | T-L | 47.7 | 1.500 | 0.750 | CT | 0.775 | 0.52 | 21.80 | --- | --- | 1973 | 86213 |
| T73 | Forging | 1.00 | R.T. | S-L | 64.9 | 1.000 | 0.500 | CT | 0.517 | 0.46 | 27.90 | 27.1 | 1.2 | 1973 | 86213 |
| | | 1.00 | | | 64.9 | 1.000 | 0.500 | CT | 0.520 | 0.41 | 26.40 | | | 1973 | 86213 |
| | | 1.00 | | | 64.9 | 1.000 | 0.500 | CT | 0.480 | 0.40 | 25.80 | | | 1973 | 86213 |
| | | 1.00 | | | 64.9 | 1.000 | 0.500 | CT | 0.525 | 0.47 | 28.20 | | | 1973 | 86213 |
| T73 | Extrusion | 4.50 | 82 | L-C | 62.2 | 2.000 | 1.002 | CT | 1.052 | 0.87 | 36.60 | --- | --- | 1973 | 86213 |
| T73511 | Extrusion | 1.30 | -65 | L-T | 62.4 | 2.000 | 1.017 | CT | 1.040 | 0.59 | 30.50 | 34.5 | 4.5 | 1977 | LG001 |
| | | 1.30 | | | 63.5 | 2.497 | 1.250 | CT | 1.320 | 0.58 | 30.79 | | | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 2.997 | 1.500 | CT | 1.562 | 0.55 | 30.90 | | | 1977 | LG001 |
| | | 1.30 | | | 65.8 | 2.501 | 1.250 | CT | 1.360 | 1.00 | 41.70 | | | 1977 | LG001 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 • $(K_{Ic}/TYS)^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ (Ksi • $\sqrt{in.}$)) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T73511 Cont'd | Extrusion Cont'd | 1.30 | -65 Cont'd | L-T Cont'd | 67.2 | 1.999 | 1.020 | CT | 1.084 | 0.85 | 39.40 | Cont'd | Cont'd | 1977 | LG001 |
| | | 1.30 | | | 67.6 | 2.994 | 1.503 | CT | 1.572 | 0.65 | 34.70 | | | 1977 | LG001 |
| | | 1.30 | | | 67.6 | 1.498 | 0.750 | CT | 0.749 | 0.60 | 33.20 | | | 1977 | LG001 |
| T73511 | Extrusion | 1.30 | -65 | T-L | 60.9 | 2.501 | 1.250 | CT | 1.306 | 0.45 | 26.10 | 26.7 | 4.4 | 1977 | LG001 |
| | | 1.30 | | | 60.9 | 3.000 | 1.500 | CT | 1.520 | 0.25 | 19.29 | | | 1977 | LG001 |
| | | 1.30 | | | 60.9 | 2.000 | 1.013 | CT | 1.147 | 0.45 | 25.90 | | | 1977 | LG001 |
| | | 1.30 | | | 60.9 | 3.003 | 1.499 | CT | 1.504 | 0.28 | 20.50 | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 1.501 | 0.752 | CT | 0.765 | 0.59 | 31.20 | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 2.501 | 1.250 | CT | 1.353 | 0.49 | 28.60 | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 1.990 | 1.008 | CT | 1.118 | 0.56 | 30.50 | | | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 2.501 | 1.251 | CT | 1.325 | 0.41 | 26.60 | | | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 1.499 | 0.751 | CT | 0.763 | 0.57 | 31.40 | | | 1977 | LG001 |
| T73511 | Extrusion | 1.80 | R.T. | L-T | 62.4 | 3.000 | 1.500 | CT | --- | 0.87 | 36.90 | 32.8 | 6.5 | 1981 | LG003 |
| | | 1.30 | | | 66.1 | 2.999 | 1.500 | CT | 1.532 | 1.28 | 47.40 | | | 1977 | LG001 |
| | | 1.30 | | | 66.7 | 2.999 | 1.500 | CT | 1.516 | 0.84 | 38.80 | | | 1977 | LG001 |
| | | 1.30 | | | 66.9 | 2.495 | 1.250 | CT | 1.292 | 0.51 | 30.40 | | | 1977 | LG001 |
| | | 1.30 | | | 67.1 | 2.003 | 1.001 | CT | 1.045 | 0.51 | 30.40 | | | 1977 | LG001 |
| | | 1.30 | | | 67.1 | 1.503 | 0.749 | CT | 0.770 | 0.47 | 29.10 | | | 1977 | LG001 |
| | | 1.30 | | | 67.1 | 2.002 | 1.000 | CT | 1.019 | 0.50 | 30.29 | | | 1977 | LG001 |
| | | 1.30 | | | 67.1 | 1.503 | 0.746 | CT | 0.765 | 0.53 | 30.90 | | | 1977 | LG001 |
| | | 1.30 | | | 68.0 | 1.500 | 0.752 | CT | 0.786 | 0.33 | 24.90 | | | 1977 | LG001 |
| | | 1.30 | | | 68.0 | 2.000 | 1.000 | CT | 1.088 | 0.47 | 29.60 | | | 1977 | LG001 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * $(K_{Ic}/TYS)^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T73511 Cont'd | Extrusion Cont'd | 1.30 | R.T. Cont'd | L-T Cont'd | 68.0 | 2.400 | 1.200 | CT | 1.288 | 0.45 | 29.00 | Cont'd | Cont'd | 1977 | LG001 |
| | | 1.30 | | | 68.0 | 1.000 | 0.501 | CT | 0.534 | 0.29 | 23.40 | | | 1977 | LG001 |
| | | 1.30 | | | 68.3 | 2.505 | 1.250 | CT | 1.310 | 0.72 | 36.90 | | | 1977 | LG001 |
| | | 1.30 | | | 68.7 | 2.505 | 1.250 | CT | 1.355 | 0.40 | 27.70 | | | 1977 | LG001 |
| | | 1.30 | | | 68.7 | 3.000 | 1.505 | CT | 1.580 | 0.87 | 40.70 | | | 1977 | LG001 |
| | | 1.30 | | | 68.8 | 3.000 | 1.505 | CT | 1.550 | 0.91 | 41.70 | | | 1977 | LG001 |
| | | 1.30 | | | 70.6 | 3.001 | 1.500 | CT | 1.521 | 0.44 | 29.79 | | | 1977 | LG001 |
| T73511 | Extrusion | 1.30 | R.T. | T-L | 62.6 | 2.501 | 1,250 | CT | 1.345 | 0.57 | 29.90 | 27.0 | 4.9 | 1977 | LG001 |
| | | 1.80 | | | 63.2 | 3.000 | 1.500 | CT | --- | 0.79 | 35.50 | | | 1981 | LG003 |
| | | 1.30 | | | 63.7 | 1.505 | 0.749 | CT | 0.825 | 0.29 | 21.79 | | | 1977 | LG001 |
| | | 1.30 | | | 63.7 | 3.000 | 1.499 | CT | 1.533 | 0.27 | 21.00 | | | 1977 | LG001 |
| | | 1.30 | | | 64.1 | 1.500 | 0.751 | CT | 0.807 | 0.50 | 28.70 | | | 1977 | LG001 |
| | | 1.30 | | | 64.7 | 1.998 | 1.012 | CT | 1.063 | 0.48 | 28.40 | | | 1977 | LG001 |
| | | 1.30 | | | 64.8 | 1.000 | 0.501 | CT | 0.533 | 0.40 | 26.10 | | | 1977 | LG001 |
| | | 1.30 | | | 65.0 | 2.500 | 1.251 | CT | 1.203 | 0.39 | 25.70 | | | 1977 | LG001 |
| | | 1.30 | | | 65.0 | 2.500 | 1.243 | CT | 1.294 | 0.31 | 22.90 | | | 1977 | LG001 |
| | | 1.30 | | | 67.1 | 2.000 | 1.005 | CT | 1.047 | 0.23 | 20.50 | | | 1977 | LG001 |
| | | 1.30 | | | 68.0 | 2.000 | 1.000 | CT | 1.088 | 0.59 | 33.20 | | | 1977 | LG001 |
| | | 1.30 | | | 68.0 | 2.400 | 1.200 | CT | 1.290 | 0.49 | 30.40 | | | 1977 | LG001 |
| T7352 | Forging | 0.75 | R.T. | T-L | 53.9 | 1.500 | 0.622 | NB | 0.754 | 0.53 | 24.80 | 24.5 | 0.5 | 1973 | 86213 |
| | | 0.75 | | | 53.9 | 1.500 | 0.622 | NB | 0.729 | 0.50 | 24.10 | | | 1973 | 86213 |
| T7352 | Forging | 2.75 | 82 | L-S | 60.8 | 2.000 | 0.998 | CT | 1.023 | 0.96 | 37.70 | --- | --- | 1973 | 86213 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 • ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ Ksi • √in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7352 | Forging | 3.00 | 86 | T-L | 52.2 | 1.990 | 1.000 | CT | 1.015 | 0.87 | 30.80 | 30.7 | 0.1 | 1973 | 86213 |
| | | 3.00 | | | 52.2 | 1.990 | 1.000 | CT | 1.045 | 0.86 | 30.60 | | | 1973 | 86213 |
| T7352 | Forging | 3.00 | 86 | S-L | 55.8 | 1.990 | 0.999 | CT | 1.018 | 0.47 | 24.20 | 24.5 | 0.4 | 1973 | 86213 |
| | | 3.00 | | | 55.8 | 1.990 | 1.000 | CT | 1.015 | 0.49 | 24.80 | | | 1973 | 86213 |
| T736 | Forging | 2.50 | -65 | S-T | 66.6 | 2.000 | 1.000 | CT | 1.000 | 0.38 | 26.00 | 26.3 | 0.4 | 1972 | 83058 |
| | | 2.50 | | | 66.6 | 2.000 | 1.000 | CT | 1.000 | 0.40 | 26.70 | | | 1972 | 83058 |
| | | 2.50 | | | 66.6 | 2.000 | 1.000 | CT | 1.000 | 0.38 | 26.10 | | | 1972 | 83058 |
| T736 | Forging | 2.50 | 0 | S-T | 65.9 | 2.000 | 1.000 | CT | 1.000 | 0.40 | 26.30 | 26.6 | 0.4 | 1972 | 83058 |
| | | 2.50 | | | 65.9 | 2.000 | 1.000 | CT | 1.000 | 0.40 | 26.40 | | | 1972 | 83058 |
| | | 2.50 | | | 65.9 | 2.000 | 1.000 | CT | 1.000 | 0.42 | 27.10 | | | 1972 | 83058 |
| T736 | Forging | 3.00 | R.T. | L-S | 63.9 | 2.000 | 1.000 | CT | 1.073 | 0.86 | 37.40 | 32.1 | 7.5 | 1973 | 86213 |
| | | 3.00 | | | 65.7 | 2.000 | 1.000 | CT | 1.012 | 0.42 | 26.80 | | | 1973 | 86213 |
| T736 | Forging | 2.00 | R.T. | L-T | 68.0 | 1.500 | 0.749 | CT | 0.804 | 0.41 | 27.40 | 31.2 | 3.8 | 1973 | 86213 |
| | | ... | | | 68.5 | 1.400 | 0.698 | CT | 0.740 | 0.67 | 36.40 | | | 1973 | 85880 |
| | | 3.00 | | | 69.0 | 1.500 | 0.750 | CT | 0.825 | 0.46 | 29.60 | | | 1973 | 86213 |
| | | 1.00 | | | 76.9 | 1.000 | 0.500 | CT | 0.480 | 0.42 | 31.50 | | | 1972 | 84368 |
| T736 | Forging | 3.00 | R.T. | T-L | 59.7 | 2.000 | 1.000 | CT | 1.025 | 0.31 | 21.10 | 26.4 | 3.6 | 1973 | 86213 |
| | | 4.00 | | | 59.9 | 2.000 | 1.000 | CT | 1.090 | 0.51 | 27.10 | | | 1972 | 84368 |
| | | 4.00 | | | 59.9 | 2.000 | 1.000 | CT | 1.070 | 0.50 | 26.90 | | | 1972 | 84368 |
| | | 3.00 | | | 65.7 | 2.000 | 1.000 | CT | 1.100 | 0.39 | 26.10 | | | 1972 | 84368 |
| | | 3.00 | | | 65.7 | 2.000 | 0.998 | CT | 1.086 | 0.35 | 24.70 | | | 1973 | 86213 |
| | | 3.00 | | | 65.7 | 2.000 | 1.000 | CT | 1.090 | 0.35 | 24.70 | | | 1972 | 84368 |
| | | 3.00 | | | 65.7 | 2.000 | 0.998 | CT | 1.104 | 0.39 | 26.10 | | | 1973 | 86213. |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi * √in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T736 Cont'd | Forging Cont'd | 2.50 | R.T. Cont'd | T-L Cont'd | 66.3 | 2.000 | 1.000 | CT | 1.000 | 0.29 | 22.70 | Cont'd | Cont'd | 1972 | 83058 |
| | | 1.00 | | | 73.0 | 1.000 | 0.500 | CT | 0.526 | 0.47 | 31.50 | | | 1973 | 86213 |
| | | --- | | | 75.4 | 1.000 | 0.500 | CT | 0.500 | 0.48 | 33.10 | | | 1972 | 83058 |
| T736 | Forging | 2.50 | R.T. | S-T | 64.9 | 2.000 | 1.000 | CT | 1.000 | 0.67 | 33.50 | 29.7 | 3.6 | 1972 | 83058 |
| | | 2.50 | | | 64.9 | 2.000 | 1.000 | CT | 1.000 | 0.65 | 33.10 | | | 1972 | 83058 |
| | | 2.50 | | | 64.9 | 2.000 | 1.000 | CT | 1.000 | 0.50 | 29.10 | | | 1972 | 83058 |
| | | --- | | | 65.5 | 1.000 | 0.500 | CT | 0.500 | 0.45 | 27.70 | | | 1972 | 83058 |
| | | --- | | | 65.5 | 1.000 | 0.500 | CT | 0.500 | 0.37 | 25.20 | | | 1972 | 83058 |
| T736 | Forging | 4.00 | R.T. | S-L | 61.4 | 2.000 | 1.000 | CT | 1.040 | 0.31 | 21.70 | 25.3 | 2.1 | 1972 | 84368 |
| | | 4.00 | | | 61.4 | 2.000 | 1.000 | CT | 1.010 | 0.32 | 22.10 | | | 1972 | 84368 |
| | | 2.00 | | | 62.6 | 1.500 | 0.750 | CT | 0.800 | 0.49 | 27.60 | | | 1972 | 84368 |
| | | 2.50 | | | 62.6 | 1.500 | 0.749 | CT | 0.781 | 0.53 | 28.80 | | | 1973 | 86213 |
| | | 2.50 | | | 62.6 | 1.500 | 0.749 | CT | 0.797 | 0.49 | 27.60 | | | 1973 | 86213 |
| | | 3.00 | | | 62.6 | 1.500 | 0.750 | CT | 0.780 | 0.53 | 28.80 | | | 1972 | 84368 |
| | | 1.00 | | | 65.2 | 1.500 | 0.750 | CT | 0.830 | 0.40 | 26.00 | | | 1972 | 84368 |
| | | --- | | | 65.5 | 1.000 | 0.500 | CT | 0.500 | 0.39 | 26.00 | | | 1972 | 83058 |
| | | --- | | | 65.5 | 1.000 | 0.500 | CT | 0.500 | 0.46 | 28.10 | | | 1972 | 83058 |
| | | 3.00 | | | 65.6 | 2.000 | 1.000 | CT | 1.080 | 0.31 | 23.00 | | | 1972 | 84368 |
| | | 3.00 | | | 65.6 | 2.000 | 0.998 | CT | 1.084 | 0.31 | 23.00 | | | 1973 | 86213 |
| | | 1.00 | | | 65.7 | 1.000 | 0.500 | CT | 0.481 | 0.33 | 23.70 | | | 1973 | 86213 |
| | | --- | | | 65.7 | 1.000 | 0.500 | CT | 0.500 | 0.36 | 24.80 | | | 1972 | 83242 |
| | | 1.00 | | | 65.7 | 1.000 | 0.500 | CT | 0.527 | 0.38 | 25.70 | | | 1973 | 86213 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi * √in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T736 Cont'd | Forging Cont'd | --- | R.T. Cont'd | S-L Cont'd | 65.7 | 1.000 | 0.500 | CT | 0.500 | 0.36 | 24.80 | Cont'd | Cont'd | 1972 | 83242 |
| | | 1.00 | | | 65.7 | 1.000 | 0.500 | CT | 0.509 | 0.43 | 27.20 | | | 1973 | 86213 |
| | | --- | | | 65.7 | 1.000 | 0.500 | CT | 0.500 | 0.36 | 24.80 | | | 1972 | 83242 |
| | | --- | | | 65.7 | 1.000 | 0.500 | CT | 0.500 | 0.36 | 24.80 | | | 1972 | 83242 |
| | | 2.00 | | | 66.4 | 1.500 | 0.750 | CT | 0.830 | 0.39 | 26.30 | | | 1972 | 84368 |
| | | 2.00 | | | 66.7 | 1.500 | 0.750 | CT | 0.827 | 0.33 | 24.10 | | | 1973 | 86213 |
| | | 2.00 | | | 67.4 | 1.000 | 0.500 | CT | 0.490 | 0.35 | 25.10 | | | 1972 | 84368 |
| | | 1.00 | | | 67.4 | 1.000 | 0.500 | CT | 0.500 | 0.37 | 25.80 | | | 1972 | 84368 |
| | | 2.00 | | | 68.4 | 1.000 | 0.500 | CT | 0.490 | 0.28 | 22.70 | | | 1972 | 84368 |
| T736 | Forging | 0.50 | 82 | L-T | 70.6 | 1.000 | 0.500 | CT | 0.517 | 0.37 | 27.20 | 28.7 | 2.4 | 1973 | 86213 |
| | | 0.50 | | | 70.6 | 1.000 | 0.501 | CT | 0.539 | 0.38 | 27.50 | | | 1973 | 86213 |
| | | 1.50 | | | 76.9 | 0.990 | 0.499 | CT | 0.477 | 0.42 | 31.50 | | | 1973 | 86213 |
| T736 | Forging | 4.00 | 82 | T-L | 59.9 | 1.990 | 1.000 | CT | 1.074 | 0.50 | 26.90 | 26.2 | 1.4 | 1973 | 86213 |
| | | 4.00 | | | 59.9 | 1.990 | 0.998 | CT | 1.087 | 0.51 | 27.10 | | | 1973 | 86213 |
| | | 2.75 | | | 73.8 | 2.000 | 0.999 | CT | 1.102 | 0.28 | 24.60 | | | 1973 | 86213 |
| T736 | Forging | 4.00 | 82 | S-L | 61.4 | 2.000 | 0.998 | CT | 1.037 | 0.31 | 21.70 | 24.9 | 2.6 | 1973 | 86213 |
| | | 4.00 | | | 61.4 | 2.000 | 0.998 | CT | 1.009 | 0.32 | 22.10 | | | 1973 | 86213 |
| | | 2.50 | | | 65.1 | 1.500 | 0.750 | CT | 0.804 | 0.54 | 30.30 | | | 1973 | 86213 |
| | | 2.50 | | | 65.1 | 1.500 | 0.749 | CT | 0.820 | 0.41 | 26.40 | | | 1973 | 86213 |
| | | 1.50 | | | 65.2 | 1.500 | 0.750 | CT | 0.830 | 0.40 | 26.00 | | | 1973 | 86213 |
| | | 1.00 | | | 66.3 | 1.000 | 0.500 | CT | 0.497 | 0.38 | 26.00 | | | 1973 | 86213 |
| | | 2.00 | | | 66.4 | 1.500 | 0.749 | CT | 0.832 | 0.39 | 26.30 | | | 1973 | 86213 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T736 Cont'd | Forging Cont'd | 3.00 | 82 Cont'd | S-L Cont'd | 67.1 | 1.000 | 0.498 | CT | 0.528 | 0.39 | 26.40 | Cont'd | Cont'd | 1973 | 86213 |
| | | 1.50 | | | 67.4 | 1.000 | 0.499 | CT | 0.500 | 0.37 | 25.80 | | | 1973 | 86213 |
| | | 1.50 | | | 67.4 | 0.990 | 0.499 | CT | 0.492 | 0.35 | 25.10 | | | 1973 | 86213 |
| | | 3.00 | | | 67.7 | 1.000 | 0.500 | CT | 0.545 | 0.36 | 25.70 | | | 1973 | 86213 |
| | | 1.50 | | | 68.4 | 0.990 | 0.499 | CT | 0.490 | 0.28 | 22.70 | | | 1973 | 86213 |
| | | 3.00 | | | 69.8 | 1.500 | 0.749 | CT | 0.759 | 0.21 | 20.20 | | | 1973 | 86213 |
| | | 3.00 | | | 69.8 | 1.490 | 0.750 | CT | 0.804 | 0.28 | 23.20 | | | 1973 | 86213 |
| T736 | Forging | 5.00 | 84 | L-T | 62.1 | 2.990 | 1,500 | CT | 1.639 | 0.73 | 33.60 | 34.3 | 0.9 | 1973 | 86213 |
| | | 2.00 | | | 65.6 | 2.000 | 1.000 | CT | 1.097 | 0.73 | 35.40 | | | 1973 | 86213 |
| | | 2.00 | | | 67.1 | 2.000 | 1.000 | CT | 1.088 | 0.64 | 34.00 | | | 1973 | 86213 |
| T736 | Forging | 5.00 | 84 | T-L | 70.0 | 2.991 | 1.500 | CT | 1.594 | 0.38 | 27.40 | 25.3 | 3.5 | 1973 | 86213 |
| | | 5.00 | | | 70.0 | 2.991 | 1.500 | CT | 1.586 | 0.43 | 29.00 | | | 1973 | 86213 |
| | | 3.00 | | | 74.2 | 2.000 | 1.001 | CT | 1.072 | 0.25 | 23.40 | | | 1973 | 86213 |
| | | 3.00 | | | 74.2 | 2.000 | 0.999 | CT | 1.070 | 0.21 | 21.40 | | | 1973 | 86213 |
| T736 | Forging | 3.00 | 84 | S-L | 62.8 | 1.490 | 0.750 | CT | 0.791 | 0.62 | 31.30 | 28.8 | 2.3 | 1973 | 86213 |
| | | 0.75 | | | 66.3 | 1.000 | 0.501 | CT | 0.554 | 0.46 | 28.30 | | | 1973 | 86213 |
| | | 0.75 | | | 66.3 | 1.000 | 0.501 | CT | 0.536 | 0.41 | 26.80 | | | 1973 | 86213 |
| T736 | Forging | 3.00 | 85 | L-T | 71.6 | 2.000 | 0.999 | CT | 1.107 | 0.73 | 38.60 | --- | --- | 1973 | 86213 |
| T736 | Forging | 3.00 | 85 | T-L | 73.8 | 2.000 | 1.000 | CT | 1.093 | 0.32 | 26.60 | --- | --- | 1973 | 86213 |
| T736 | Forging | 3.00 | 85 | S-T | 75.5 | 1.500 | 0.749 | CT | 0.810 | 0.24 | 23.50 | --- | --- | 1973 | 86213 |
| T736 | Forging | 3.00 | 88 | T-L | 69.3 | 2.000 | 1.000 | CT | 1.097 | 0.30 | 23.90 | 23.3 | 0.8 | 1973 | 86213 |
| | | 3.00 | | | 69.4 | 2.000 | 1.000 | CT | 1.099 | 0.27 | 22.70 | | | 1973 | 86213 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi * √in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T736 | Forging | 3.00 | 88 | S-L | 66.2 | 1.000 | 0.498 | CT | 0.539 | 0.40 | 26.50 | 25.6 | 1.0 | 1973 | 86213 |
| | | 3.00 | | | 66.3 | 1.000 | 0.498 | CT | 0.532 | 0.38 | 25.70 | | | 1973 | 86213 |
| | | 3.00 | | | 68.5 | 1.000 | 0.500 | CT | 0.552 | 0.32 | 24.50 | | | 1973 | 86213 |
| T736 | Forging | 0.50 | 89 | S-L | 67.1 | 1.000 | 0.501 | CT | 0.549 | 0.43 | 27.90 | 27.1 | 1.1 | 1973 | 86213 |
| | | 0.50 | | | 67.1 | 1.000 | 0.500 | CT | 0.531 | 0.38 | 26.30 | | | 1973 | 86213 |
| T736 | Forging | 2.50 | 200 | S-T | 60.5 | 2.000 | 1.000 | CT | 1.000 | 0.74 | 33.00 | 34.1 | 1.0 | 1972 | 83058 |
| | | 2.50 | | | 60.5 | 2.000 | 1.000 | CT | 1.000 | 0.81 | 34.40 | | | 1972 | 83058 |
| | | 2.50 | | | 60.5 | 2.000 | 1.000 | CT | 1.000 | 0.84 | 35.00 | | | 1972 | 83058 |
| T73652 | Forging | 1.25 | R.T. | L-T | 63.5 | 2.501 | 1.251 | CT | 1.308 | 0.45 | 27.00 | 32.7 | 8.0 | 1977 | MA005 |
| | | 3.10 | | | 71.7 | 2.506 | 1.250 | CT | 1.343 | 0.71 | 38.30 | | | 1981 | MA002 |
| T73652 | Forging | 1.25 | R.T. | T-L | 63.5 | 2.498 | 1.243 | CT | 1.335 | 0.34 | 23.50 | --- | --- | 1977 | MA005 |
| T73652 | Forging | 3.75 | 82 | L-T | 62.9 | 4.000 | 1.999 | CT | 2.162 | 1.00 | 39.80 | --- | --- | 1973 | 86213 |
| T76511 | Extrusion | 3.75 | R.T. | L-T | 62.1 | 3.972 | 2.000 | CT | 2.105 | 0.93 | 38.40 | 32.9 | 3.5 | 1978 | MPC01 |
| | | 3.75 | | | 62.7 | 4.031 | 2.000 | CT | 2.056 | 0.90 | 37.70 | | | 1978 | MPC01 |
| | | 3.75 | | | 62.8 | 4.023 | 1.998 | CT | 2.092 | 0.90 | 38.10 | | | 1978 | MPC01 |
| | | 3.75 | | | 63.4 | 4.039 | 2.000 | CT | 2.100 | 0.90 | 38.30 | | | 1978 | MPC01 |
| | | 3.75 | | | 63.4 | 3.979 | 2.000 | CT | 2.069 | 0.87 | 37.80 | | | 1978 | MPC01 |
| | | 3.75 | | | 63.5 | 3.977 | 2.000 | CT | 2.068 | 0.90 | 38.10 | | | 1978 | MPC01 |
| | | 3.75 | | | 63.7 | 4.029 | 2.000 | CT | 2.095 | 0.93 | 39.00 | | | 1978 | MPC01 |
| | | 3.75 | | | 64.0 | 3.987 | 2.000 | CT | 2.153 | 0.87 | 37.90 | | | 1978 | MPC01 |
| | | 3.75 | | | 64.1 | 3.990 | 2.000 | CT | 2.075 | 0.84 | 37.40 | | | 1978 | MPC01 |
| | | 3.75 | | | 64.4 | 4.010 | 2.000 | CT | 2.085 | 0.84 | 37.40 | | | 1978 | MPC01 |
| | | 3.75 | | | 64.5 | 3.979 | 2.000 | CT | 2.109 | 0.84 | 37.90 | | | 1978 | MPC01 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 • $(K_{Ic}/TYS)^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi • √in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T76511 Cont'd | Extrusion Cont'd | 3.75 | R.T. Cont'd | L-T Cont'd | 64.7 | 3.970 | 2.000 | CT | 2.104 | 0.87 | 38.50 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 1.40 | | | 67.5 | 0.994 | 0.600 | CT | 0.507 | 0.50 | 30.40 | | | 1978 | MPC01 |
| | | 1.40 | | | 67.5 | 1.010 | 0.600 | CT | 0.505 | 0.46 | 29.20 | | | 1978 | MPC01 |
| | | 1.80 | | | 67.5 | 4.008 | 1.765 | CT | 2.044 | 0.50 | 30.90 | | | 1978 | MPC01 |
| | | 1.40 | | | 67.5 | 1.004 | 0.600 | CT | 0.492 | 0.44 | 28.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 68.3 | 2.002 | 0.996 | CT | 1.001 | 0.65 | 35.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 68.3 | 2.002 | 0.996 | CT | 1.021 | 0.55 | 32.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 68.3 | 1.986 | 0.996 | CT | 1.013 | 0.57 | 33.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 68.3 | 1.996 | 0.996 | CT | 1.018 | 0.65 | 35.00 | | | 1978 | MPC01 |
| | | 1.80 | | | 68.3 | 4.014 | 1.764 | CT | 2.007 | 0.44 | 29.10 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.5 | 1.982 | 0.999 | CT | 0.991 | 0.50 | 30.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.5 | 2.006 | 0.999 | CT | 0.983 | 0.48 | 30.60 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.5 | 2.002 | 0.999 | CT | 1.001 | 0.52 | 31.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.5 | 1.980 | 0.999 | CT | 0.970 | 0.44 | 28.80 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.5 | 1.998 | 0.999 | CT | 0.979 | 0.48 | 30.30 | | | 1978 | MPC01 |
| | | 1.80 | | | 68.8 | 3.000 | 1.500 | CT | --- | 0.59 | 33.50 | | | 1981 | LG003 |
| | | 3.00 | | | 69.5 | 1.985 | 0.999 | CT | 1.032 | 0.52 | 32.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 2.004 | 0.999 | CT | 1.022 | 0.52 | 32.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 69.5 | 2.008 | 0.997 | CT | 1.024 | 0.57 | 34.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 69.5 | 1.983 | 0.997 | CT | 1.031 | 0.62 | 34.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 2.004 | 0.996 | CT | 1.002 | 0.55 | 32.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 2.004 | 0.998 | CT | 1.002 | 0.52 | 32.10 | | | 1978 | MPC01 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_Q$ Ksi * $\sqrt{in.}$) | $K_{Ic}$ $K_Q$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T76511 Cont'd | Extrusion Cont'd | 3.00 | R.T. Cont'd | L-T Cont'd | 69.5 | 2.000 | 0.999 | CT | 1.020 | 0.48 | 30.90 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 2.004 | 0.999 | CT | 1.022 | 0.50 | 31.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 1.990 | 0.995 | CT | 0.995 | 0.57 | 33.50 | | | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 2.004 | 0.998 | CT | 1.002 | 0.48 | 30.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 69.5 | 2.008 | 0.996 | CT | 1.004 | 0.55 | 32.80 | | | 1978 | MPC01 |
| | | 1.40 | | | 69.6 | 1.994 | 1.001 | CT | 0.997 | 0.42 | 29.10 | | | 1978 | MPC01 |
| | | 1.40 | | | 69.6 | 2.008 | 1.001 | CT | 1.024 | 0.38 | 27.80 | | | 1978 | MPC01 |
| | | 1.40 | | | 69.6 | 1.986 | 1.001 | CT | 0.993 | 0.38 | 27.60 | | | 1978 | MPC01 |
| | | 1.40 | | | 69.6 | 1.983 | 1.001 | CT | 1.051 | 0.38 | 27.70 | | | 1978 | MPC01 |
| | | 1.80 | | | 69.6 | 4.022 | 1.765 | CT | 1.971 | 0.44 | 29.40 | | | 1978 | MPC01 |
| | | 1.40 | | | 69.6 | 2.004 | 1.001 | CT | 0.982 | 0.38 | 27.20 | | | 1978 | MPC01 |
| | | 2.80 | | | 70.5 | 1.990 | 1.000 | CT | 1.015 | 0.46 | 30.80 | | | 1978 | MPC01 |
| | | 3.50 | | | 71.0 | 1.990 | 1.000 | CT | 0.995 | 0.48 | 31.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 71.0 | 1.992 | 0.998 | CT | 0.996 | 0.48 | 31.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 71.0 | 1.986 | 1.001 | CT | 0.993 | 0.52 | 33.00 | | | 1978 | MPC01 |
| T76511 | Extrusion | 3.50 | R.T. | T-L | 62.2 | 1.992 | 1.000 | CT | 1.016 | 0.36 | 24.00 | 22.6 | 2.5 | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 2.011 | 0.999 | CT | 1.066 | 0.38 | 24.60 | | | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 1.988 | 0.999 | CT | 1.014 | 0.36 | 24.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 2.004 | 0.999 | CT | 1.102 | 0.34 | 23.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 2.006 | 0.999 | CT | 0.983 | 0.30 | 22.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 63.0 | 2.014 | 0.999 | CT | 1.007 | 0.34 | 23.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 63.0 | 2.002 | 0.999 | CT | 0.961 | 0.28 | 21.80 | | | 1978 | MPC01 |

# TABLE 8.16.2.1 (CONTINUED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T76511 Cont'd | Extrusion Cont'd | 3.00 | R.T. Cont'd | T-L Cont'd | 63.2 | 2.006 | 1.005 | CT | 1.003 | 0.28 | 21.70 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 63.2 | 1.982 | 0.999 | CT | 1.011 | 0.28 | 21.50 | | | 1978 | MPC01 |
| | | 3.00 | | | 63.2 | 2.010 | 1.003 | CT | 0.985 | 0.27 | 21.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 63.2 | 2.018 | 1.004 | CT | 0.989 | 0.27 | 21.20 | | | 1978 | MPC01 |
| | | 1.40 | | | 64.0 | 1.002 | 0.599 | CT | 0.501 | 0.28 | 22.10 | | | 1978 | MPC01 |
| | | 1.40 | | | 64.0 | 0.994 | 0.600 | CT | 0.497 | 0.27 | 21.40 | | | 1978 | MPC01 |
| | | 1.40 | | | 64.0 | 1.010 | 0.600 | CT | 0.505 | 0.28 | 21.80 | | | 1978 | MPC01 |
| | | 1.40 | | | 64.0 | 0.996 | 0.599 | CT | 0.488 | 0.25 | 21.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.4 | 2.004 | 1.002 | CT | 1.002 | 0.25 | 20.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.4 | 2.004 | 1.015 | CT | 1.004 | 0.27 | 21.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.4 | 1.984 | 1.004 | CT | 0.972 | 0.25 | 21.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.6 | 1.992 | 0.996 | CT | 0.936 | 0.25 | 21.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.6 | 2.015 | 0.996 | CT | 0.967 | 0.27 | 21.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.6 | 1.988 | 0.995 | CT | 0.994 | 0.27 | 21.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.6 | 2.010 | 0.995 | CT | 0.965 | 0.25 | 21.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.6 | 1.996 | 0.995 | CT | 0.998 | 0.27 | 21.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 64.6 | 2.010 | 0.995 | CT | 1.025 | 0.24 | 20.40 | | | 1978 | MPC01 |
| | | 1.80 | | | 66.2 | 3.988 | 1.764 | CT | 2.034 | 0.42 | 27.20 | | | 1978 | MPC01 |
| | | 1.80 | | | 66.7 | 3.996 | 1.764 | CT | 2.078 | 0.42 | 27.40 | | | 1978 | MPC01 |
| | | 1.80 | | | 67.0 | 3.000 | 1.500 | CT | --- | 0.56 | 31.70 | | | 1981 | LG003 |
| | | 1.40 | | | 68.2 | 2.005 | 1.000 | CT | 1.123 | 0.24 | 21.40 | | | 1978 | MPC01 |
| | | 1.40 | | | 68.2 | 1.989 | 1.000 | CT | 1.074 | 0.24 | 21.20 | | | 1978 | MPC01 |

# TABLE 8.16.2.1 (CONTINUED)

## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T76511 Cont'd | Extrusion Cont'd | 1.40 | R.T. Cont'd | T-L Cont'd | 68.2 | 2.014 | 1.001 | CT | 1.027 | 0.22 | 20.80 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 1.40 | | | 68.2 | 2.015 | 1.001 | CT | 1.088 | 0.21 | 20.40 | | | 1978 | MPC01 |
| | | 1.40 | | | 68.2 | 1.985 | 1.001 | CT | 1.072 | 0.22 | 20.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.8 | 1.978 | 0.998 | CT | 1.009 | 0.25 | 22.40 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.8 | 1.986 | 0.998 | CT | 0.993 | 0.27 | 23.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 68.8 | 1.983 | 0.998 | CT | 1.031 | 0.34 | 25.60 | | | 1978 | MPC01 |
| | | 1.80 | | | 69.0 | 4.037 | 1.764 | CT | 2.059 | 0.40 | 27.60 | | | 1978 | MPC01 |
| T76511 | Extrusion | 3.00 | R.T. | S-T | 60.7 | 1.982 | 1.002 | CT | 0.991 | 0.30 | 21.50 | 21.4 | 0.7 | 1978 | MPC01 |
| | | 3.00 | | | 60.7 | 2.000 | 1.001 | CT | 0.960 | 0.28 | 20.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.7 | 2.017 | 1.002 | CT | 0.968 | 0.32 | 21.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.7 | 2.002 | 1.002 | CT | 0.981 | 0.28 | 21.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.7 | 1.998 | 1.000 | CT | 0.939 | 0.27 | 20.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.7 | 1.980 | 1.002 | CT | 0.970 | 0.30 | 21.80 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.5 | 1.982 | 0.999 | CT | 0.991 | 0.28 | 21.40 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.5 | 1.992 | 0.999 | CT | 0.976 | 0.28 | 21.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.5 | 1.990 | 0.999 | CT | 0.975 | 0.27 | 20.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.5 | 2.011 | 1.002 | CT | 0.945 | 0.30 | 21.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.5 | 2.013 | 0.999 | CT | 0.966 | 0.27 | 20.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.5 | 2.008 | 0.998 | CT | 1.004 | 0.27 | 20.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.5 | 1.990 | 0.999 | CT | 0.975 | 0.24 | 19.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.5 | 1.984 | 0.997 | CT | 1.012 | 0.30 | 21.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.5 | 1.982 | 1.005 | CT | 0.971 | 0.28 | 21.40 | | | 1978 | MPC01 |

# TABLE 8.16.2.1 (CONCLUDED)



## ALUMINUM 7175 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * $(K_{Ic}/TYS)^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T76511 Cont'd | Extrusion Cont'd | 3.00 | R.T. Cont'd | S-T Cont'd | 62.0 | 2.015 | 1.005 | CT | 0.927 | 0.28 | 21.50 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 62.0 | 2.012 | 0.998 | CT | 1.006 | 0.28 | 21.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.0 | 1.996 | 0.996 | CT | 0.978 | 0.30 | 22.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.0 | 2.009 | 1.002 | CT | 0.924 | 0.30 | 21.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 1.984 | 0.998 | CT | 0.992 | 0.27 | 20.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 2.008 | 0.999 | CT | 0.964 | 0.28 | 21.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 62.2 | 1.996 | 0.998 | CT | 0.998 | 0.32 | 23.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 63.4 | 2.000 | 0.999 | CT | 0.960 | 0.30 | 22.60 | | | 1978 | MPC01 |
| | | 3.50 | | | 63.4 | 1.980 | 0.999 | CT | 0.970 | 0.28 | 21.90 | | | 1978 | MPC01 |
| | | 1.40 | | | 66.6 | 0.998 | 0.599 | CT | 0.479 | 0.25 | 21.50 | | | 1978 | MPC01 |
| | | 1.40 | | | 66.6 | 1.004 | 0.600 | CT | 0.472 | 0.24 | 20.90 | | | 1978 | MPC01 |
| | | 1.40 | | | 66.6 | 1.011 | 0.600 | CT | 0.465 | 0.22 | 20.50 | | | 1978 | MPC01 |
| | | 1.40 | | | 66.6 | 1.002 | 0.600 | CT | 0.451 | 0.25 | 21.60 | | | 1978 | MPC01 |
| T76511 | Extrusion | 1.80 | R.T. | S-L | 66.1 | 1.489 | 0.751 | CT | 0.804 | 0.27 | 22.30 | 20.9 | 1.3 | 1978 | MPC01 |
| | | 1.80 | | | 66.4 | 1.498 | 0.750 | CT | 0.779 | 0.22 | 20.00 | | | 1978 | MPC01 |
| | | 1.80 | | | 66.4 | 1.498 | 0.751 | CT | 0.809 | 0.22 | 20.30 | | | 1978 | MPC01 |

# TABLE 8.16.2.2



## ALUMINUM 7175 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T73511 | Extru-sion | 1.30 | R.T. | L-T | 63.4 | 5.910 | 0.551 | 1.880 | --- | --- | 34.20 | 62.80 | --- | --- | --- | --- | --- | 1977 | LG001 |
| T73511 | Extru-sion | 1.30 | R.T. | L-T | 66.1 | 8.010 | 0.250 | 2.510 | --- | --- | 39.90 | 84.40 | 84.7 | 2.1 | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 7.990 | 0.251 | 2.470 | --- | --- | 40.70 | 85.20 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 7.990 | 0.251 | 2.520 | --- | --- | 40.90 | 86.80 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 7.990 | 0.252 | 2.520 | --- | --- | 40.50 | 85.80 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 65.2 | 7.990 | 0.256 | 2.250 | --- | --- | 41.00 | 81.20 | | | --- | | | 1977 | LG001 |
| T73511 | Extru-sion | 1.30 | R.T. | L-T | 66.8 | 8.010 | 0.497 | 2.150 | --- | --- | 41.70 | 80.30 | 78.6 | 2.1 | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 66.8 | 8.000 | 0.500 | 2.080 | --- | --- | 42.70 | 80.60 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 8.000 | 0.501 | 3.940 | 4.350 | 24.80 | 28.80 | 84.80* | | | 92.89* | | | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 8.000 | 0.501 | 2.250 | 3.300 | 35.20 | 37.40 | 74.00 | | | 95.36* | | | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 7.990 | 0.502 | 2.410 | --- | --- | 37.90 | 78.10 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 66.8 | 8.000 | 0.503 | 2.440 | --- | 35.30 | 37.80 | 78.60 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 66.8 | 8.010 | 0.504 | 2.530 | --- | --- | 37.40 | 79.40 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 66.1 | 7.980 | 0.505 | 2.490 | --- | --- | 37.90 | 79.90 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 65.2 | 8.000 | 0.506 | 2.420 | --- | 22.00 | 37.80 | 78.20 | | | --- | | | 1977 | LG001 |
| T73511 | Extru-sion | 1.30 | R.T. | L-T | 66.1 | 7.980 | 0.749 | 2.480 | --- | --- | 37.30 | 78.30 | 75.3 | 4.2 | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 66.8 | 7.990 | 0.749 | 2.540 | --- | --- | 33.90 | 72.30 | | | --- | | | 1977 | LG001 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.16.2.2 (CONCLUDED)



| ALUMINUM 7175 $K_C$ | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | CRACK LENGTH | | GROSS STRESS | | $K_{app}$ | | | $K_C$ | | | DATE | REFER |
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | INIT (in.) $2a_o$ | FINAL (in.) $2a_f$ | ONSET (Ksi) $\sigma_o$ | MAX (Ksi) $\sigma_{max}$ | $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | STAN DEV | $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | STAN DEV | | |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T73511 | Extru-sion | 1.30 | R.T. | T-L | 64.0 | 8.000 | 0.248 | 2.590 | --- | --- | 25.70 | 55.40 | 54.9 | 5.5 | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 7.990 | 0.250 | 2.570 | --- | --- | 21.50 | 46.30 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 8.010 | 0.250 | 2.490 | --- | --- | 29.20 | 61.50 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 63.3 | 8.010 | 0.251 | 2.540 | --- | --- | 22.80 | 48.50 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 63.3 | 8.020 | 0.251 | 2.530 | --- | --- | 27.10 | 57.60 | | | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 8.030 | 0.251 | 2.520 | --- | --- | 26.50 | 56.10 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 7.980 | 0.252 | 2.260 | --- | 15.90 | 25.80 | 51.30 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 8.020 | 0.252 | 2.530 | --- | --- | 25.60 | 54.40 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 8.000 | 0.253 | 2.540 | --- | --- | 29.60 | 63.00 | | | --- | | | 1977 | LG001 |
| T73511 | Extru-sion | 1.30 | R.T. | T-L | 63.3 | 8.010 | 0.498 | 2.150 | --- | --- | 26.30 | 50.60 | 50.7 | 1.2 | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 7.980 | 0.499 | 2.680 | --- | --- | 22.20 | 49.10 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 7.990 | 0.499 | 2.130 | --- | --- | 27.60 | 52.80 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 8.010 | 0.500 | 2.200 | --- | --- | 26.50 | 50.60 | | | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 7.940 | 0.502 | 2.460 | --- | --- | 23.90 | 49.90 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 63.3 | 7.990 | 0.502 | 2.510 | --- | --- | 23.70 | 50.10 | | | --- | | | 1977 | LG001 |
| | | 1.30 | | | 64.0 | 7.990 | 0.505 | 2.430 | --- | --- | 24.90 | 51.70 | | | --- | | | 1977 | LG001 |
| T73511 | Extru-sion | 1.30 | R.T. | T-L | 64.0 | 8.000 | 0.509 | 2.470 | --- | 17.40 | 25.30 | 53.00 | 51.0 | 2.8 | --- | --- | --- | 1977 | LG001 |
| | | 1.30 | | | 65.6 | 8.010 | 0.509 | 2.400 | --- | 17.20 | 23.80 | 49.00 | | | --- | --- | --- | 1977 | LG001 |

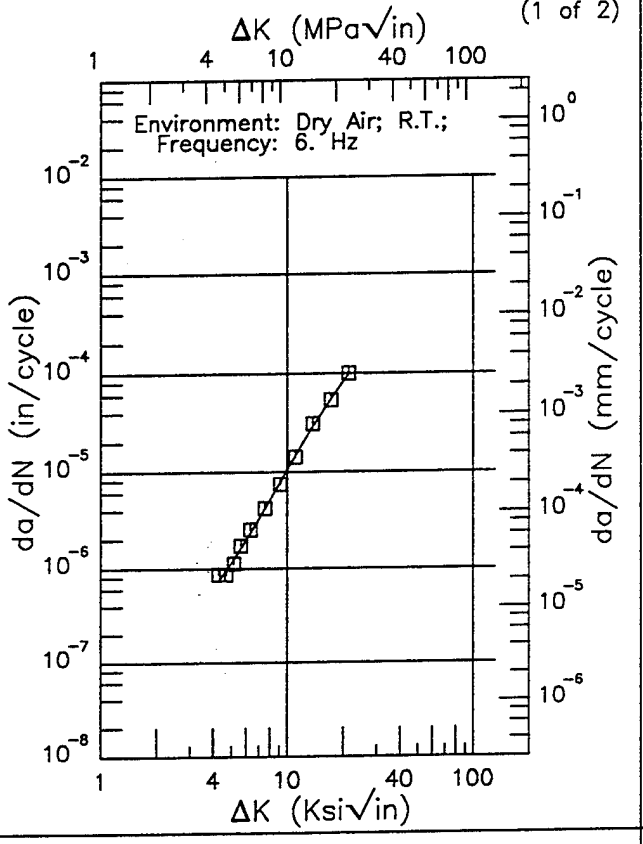
7175

EF

Condition/Ht: T7354
Form: 6 in. Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.1

Yield Strength: 64.8 ksi
Ult. Strength: 75.7 ksi
Specimen Thk: 0.498 in.
Specimen Width: 2.547 – 2.55 in.
Ref: GD002

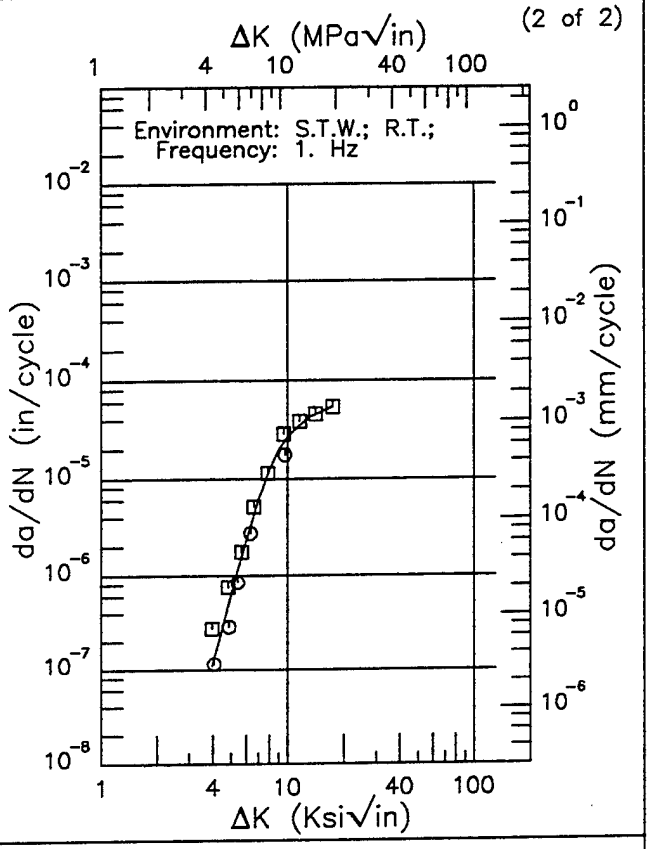
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.27 (min) | 0.746 |
| 5. | 1.15 |
| 6. | 1.99 |
| 7. | 3.27 |
| 8. | 5.08 |
| 9. | 7.53 |
| 10. | 10.7 |
| 13. | 24.8 |
| 16. | 45.8 |
| 20. | 83.0 |
| 21.32 (max) | 97.2 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.01 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.96 (min) | 0.110 |
| 4. | 0.119 |
| 5. | 0.631 |
| 6. | 2.32 |
| 7. | 6.14 |
| 8. | 12.4 |
| 9. | 19.8 |
| 10. | 27.0 |
| 13. | 42.1 |
| 16. | 50.5 |
| 17.40 (max) | 54.0 |

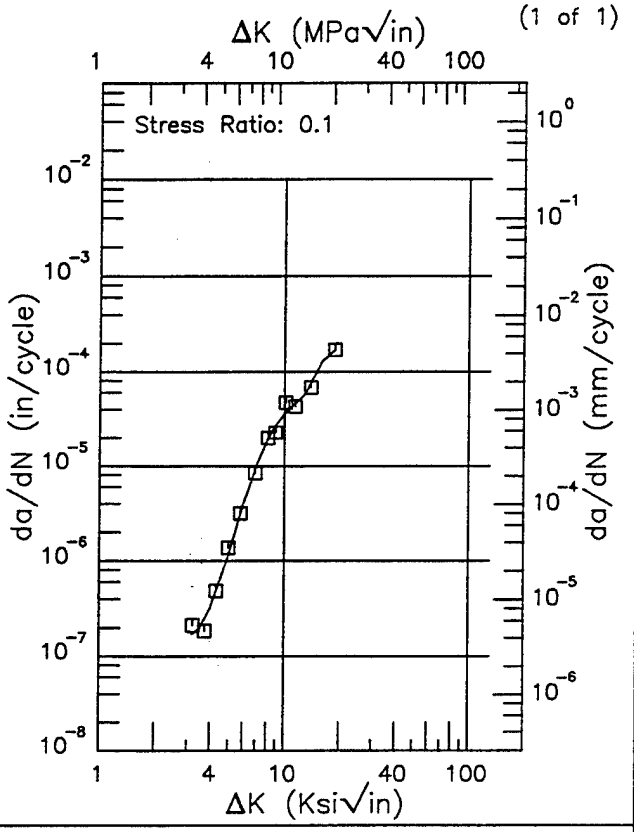
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 46.01 | 0. .5 .8 1.25 2. |

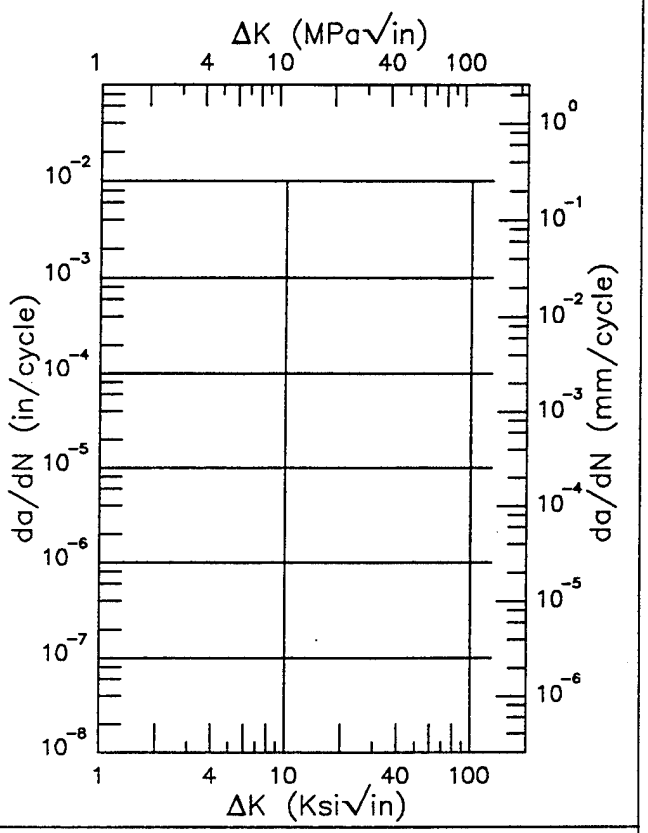
**Figure 8.16.3.1.1**

Condition/Ht: T7354
Form: 6 in. Forging
Specimen Type: CT
Orientation: T–L
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 62.6 ksi
Ult. Strength: 73.5 ksi
Specimen Thk: 0.499 in.
Specimen Width: 2.55 in.
Ref: GD002

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.20 (min) | 0.170 |
| 3.5 | 0.194 |
| 4. | 0.314 |
| 5. | 1.15 |
| 6. | 3.89 |
| 7. | 9.88 |
| 8. | 18.4 |
| 9. | 27.5 |
| 10. | 36.0 |
| 13. | 58.1 |
| 16. | 130. |
| 18.60 (max) | 168. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 15.44 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

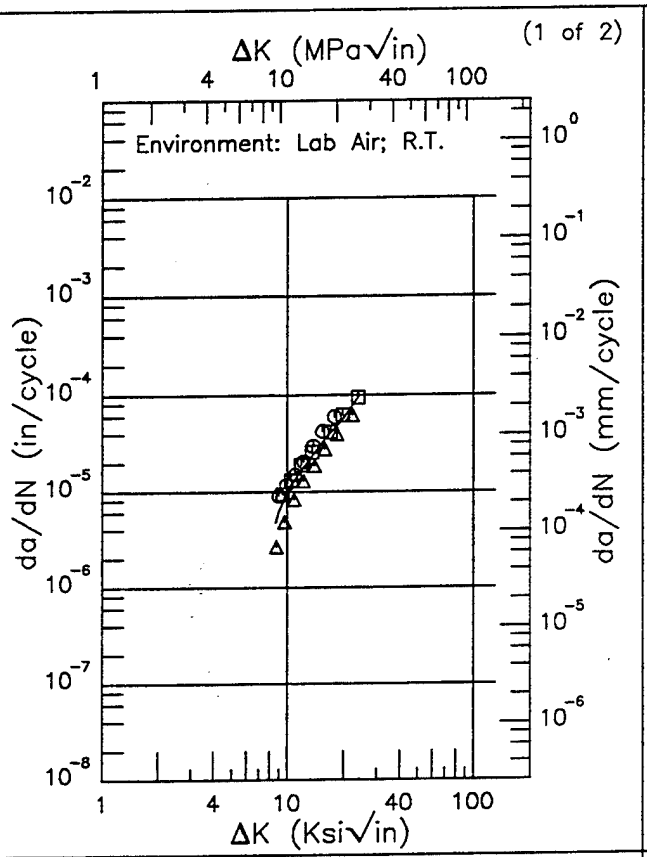
**Figure 8.16.3.1.2**

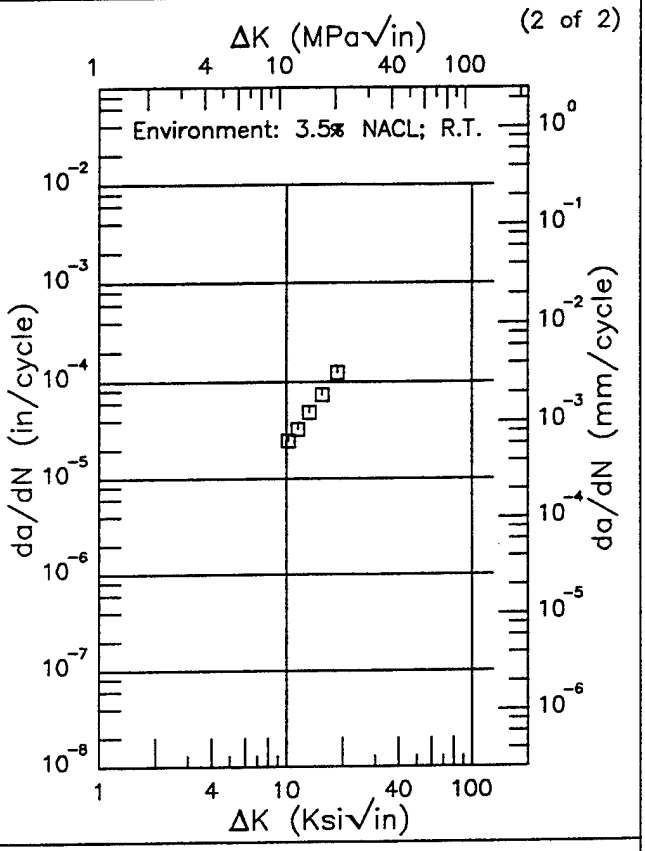
7175

E

Condition/Ht: T736
Form: 0.7 in. Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.02
Frequency: 10 Hz

Yield Strength: 68.5 ksi
Ult. Strength: 77.5 ksi
Specimen Thk: 0.7 in.
Specimen Width: 1.4 in.
Ref: 85880




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.66 (min) | 4.81 |
| 9. | 6.25 |
| 10. | 10.5 |
| 13. | 20.9 |
| 16. | 36.0 |
| 20. | 57.5 |
| 23.70 (max) | 92.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error: 25.55

Life Prediction Ratio Summary

△ ⊡⊙

0. .5 .8 1.25 2.

RMS % Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

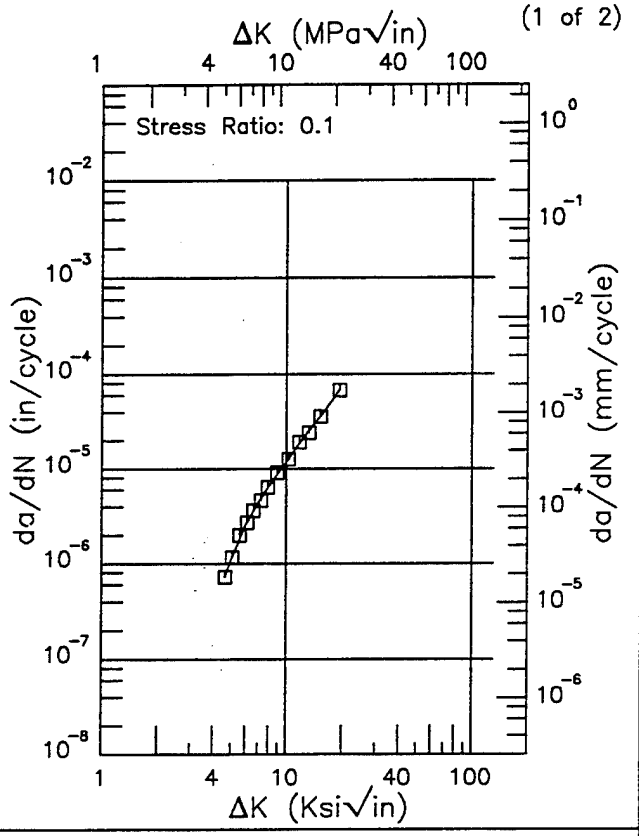
**Figure 8.16.3.1.3**

7175 R

Condition/Ht: T736
Form: 1 in. Forging
Specimen Type: CT
Orientation: L–T
Frequency: 6 Hz
Environment: DRY AIR; RT

Yield Strength: 69.3 ksi
Ult. Strength: 78.7 ksi
Specimen Thk: 0.401 in.
Specimen Width: 2.566 – 2.571 in.
Ref: GD001

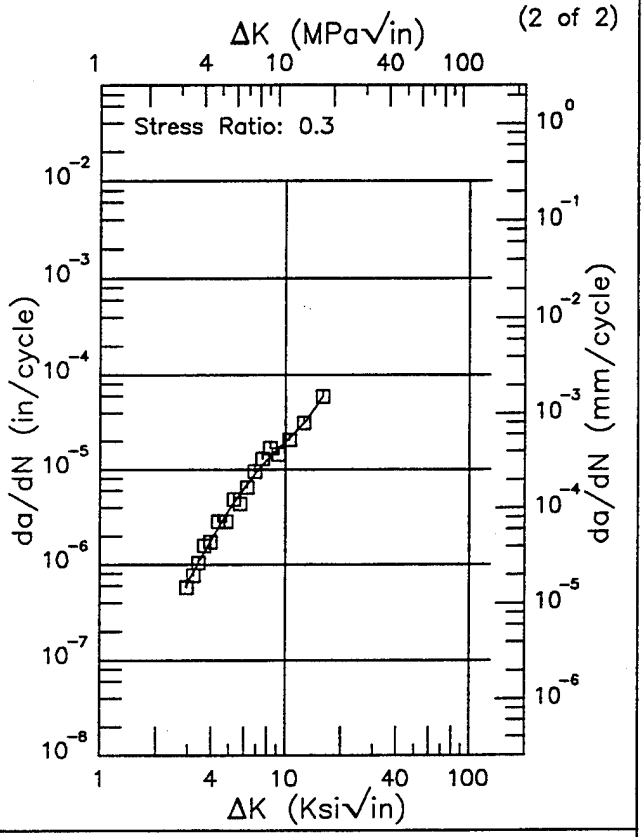
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.64 (min) | 0.722 |
| 5. | 1.10 |
| 6. | 2.54 |
| 7. | 4.37 |
| 8. | 6.49 |
| 9. | 8.93 |
| 10. | 11.8 |
| 13. | 24.0 |
| 16. | 40.7 |
| 19.27 (max) | 68.0 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.54 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 2.93 (min) | 0.593 |
| 3. | 0.648 |
| 3.5 | 1.14 |
| 4. | 1.83 |
| 5. | 3.76 |
| 6. | 6.35 |
| 7. | 9.38 |
| 8. | 12.6 |
| 9. | 16.0 |
| 10. | 19.6 |
| 13. | 33.2 |
| 15.83 (max) | 58.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.63 | 0. .5 .8 1.25 2. |

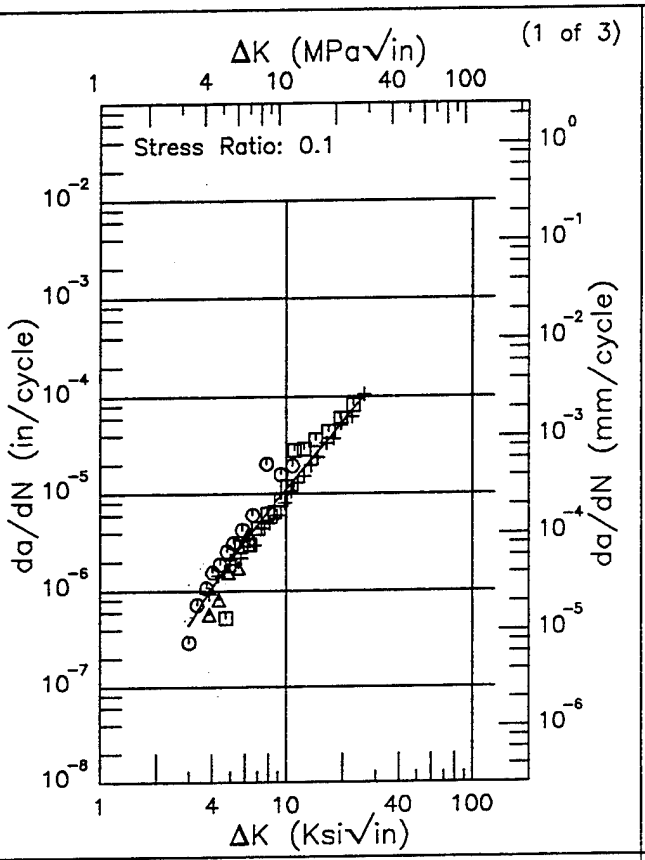
**Figure 8.16.3.1.4**

7175

R

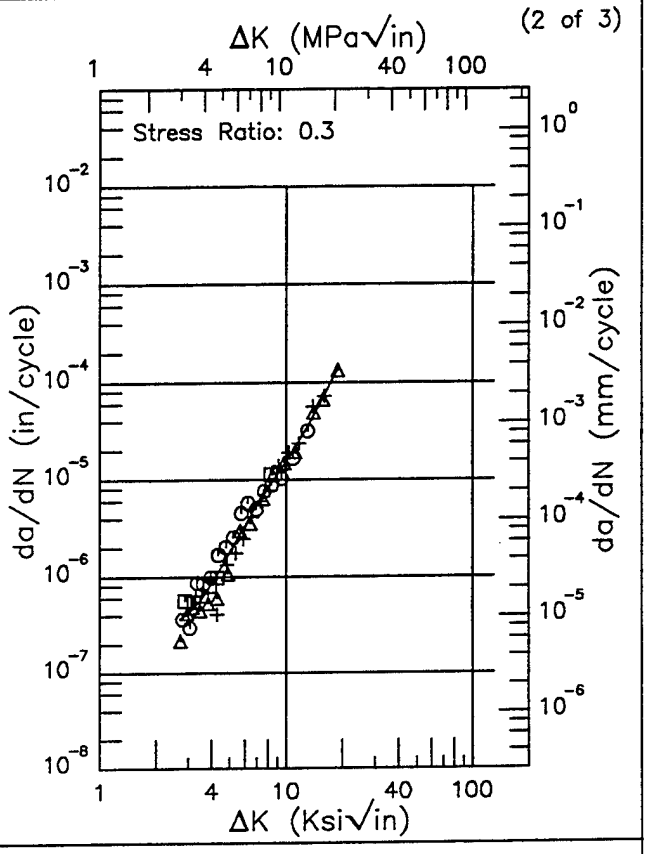
Condition/Ht: T736
Form: 1 in. Forging
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: H.H.A.; RT

Yield Strength: 69.3 ksi
Ult. Strength: 78.7 ksi
Specimen Thk: 0.398 – 0.404 in.
Specimen Width: 2.545 – 2.57 in.
Ref: GD001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.99 (min) | 0.440 |
| 3. | 0.445 |
| 3.5 | 0.726 |
| 4. | 1.08 |
| 5. | 2.03 |
| 6. | 3.27 |
| 7. | 4.82 |
| 8. | 6.65 |
| 9. | 8.78 |
| 10. | 11.2 |
| 13. | 20.4 |
| 16. | 32.8 |
| 20. | 55.1 |
| 25. | 94.4 |
| 25.85 (max) | 103. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 43.12 | 0. .5 .8 1.25 2. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.70 (min) | 0.369 |
| 3. | 0.419 |
| 3.5 | 0.578 |
| 4. | 0.840 |
| 5. | 1.77 |
| 6. | 3.34 |
| 7. | 5.53 |
| 8. | 8.17 |
| 9. | 11.4 |
| 10. | 15.3 |
| 13. | 34.9 |
| 16. | 72.8 |
| 18.80 (max) | 133. |

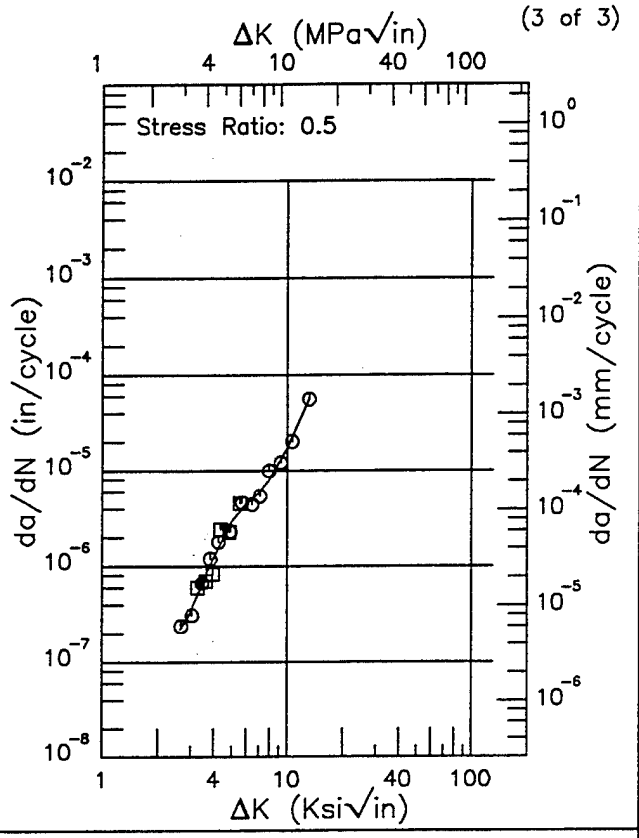
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 25.99 | 0. .5 .8 1.25 2. |

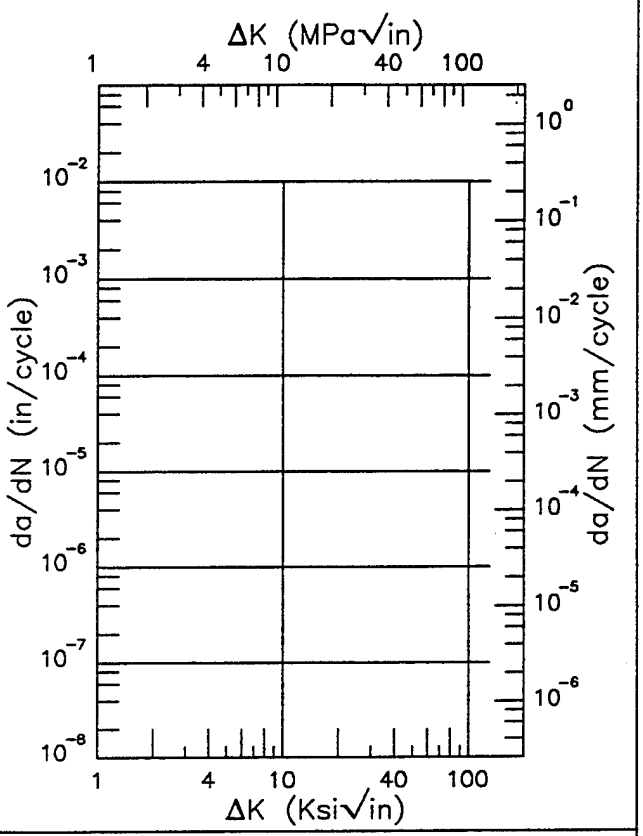
**Figure 8.16.3.1.5**

7175 R

Condition/Ht: T736
Form: 1 in. Forging
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: H.H.A.; RT

Yield Strength: 69.3 ksi
Ult. Strength: 78.7 ksi
Specimen Thk: 0.398 – 0.404 in.
Specimen Width: 2.545 – 2.57 in.
Ref: GD001




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 2.66 (min) | 0.221 |
| 3. | 0.344 |
| 3.5 | 0.676 |
| 4. | 1.24 |
| 5. | 2.97 |
| 6. | 4.56 |
| 7. | 5.95 |
| 8. | 8.20 |
| 9. | 12.2 |
| 10. | 17.3 |
| 13. | 53.6 |
| 13.04 (max) | 55.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.03 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

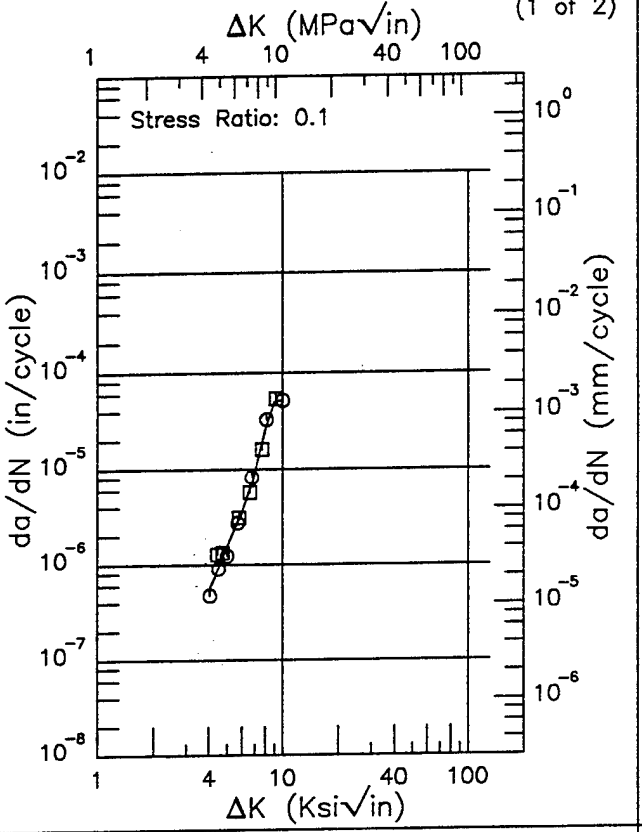
**Figure 8.16.3.1.5 (Concluded)**

R 7175

Condition/Ht: T736
Form: 1 in. Forging
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 69.3 ksi
Ult. Strength: 78.7 ksi
Specimen Thk: 0.394 – 0.403 in.
Specimen Width: 2.54 – 2.567 in.
Ref: GD001

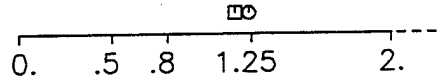
(1 of 2)



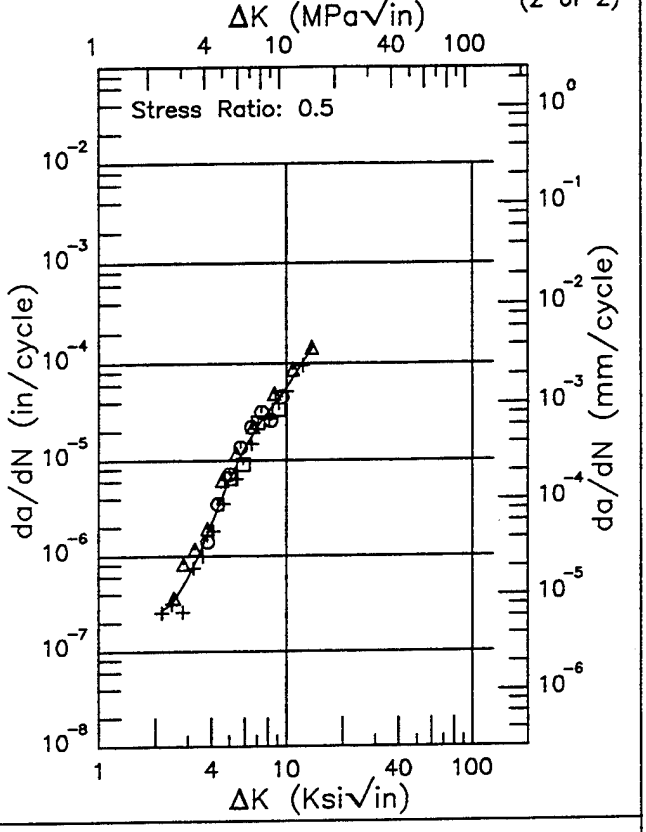

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.02 (min) | 0.540 |
| 5. | 1.57 |
| 6. | 3.49 |
| 7. | 8.96 |
| 8. | 26.0 |
| 9. | 51.2 |
| 9.94 (max) | 51.9 |

| RMS % Error |
|---|
| 17.16 |

Life Prediction Ratio Summary




(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.15 (min) | 0.267 |
| 2.5 | 0.334 |
| 3. | 0.590 |
| 3.5 | 1.13 |
| 4. | 2.14 |
| 5. | 6.28 |
| 6. | 13.5 |
| 7. | 22.2 |
| 8. | 31.8 |
| 9. | 42.8 |
| 10. | 56.8 |
| 13. | 122. |
| 13.68 (max) | 139. |

| RMS % Error |
|---|
| 25.63 |

Life Prediction Ratio Summary

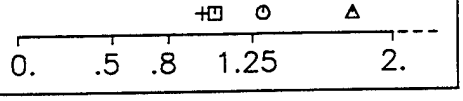



**Figure 8.16.3.1.6**

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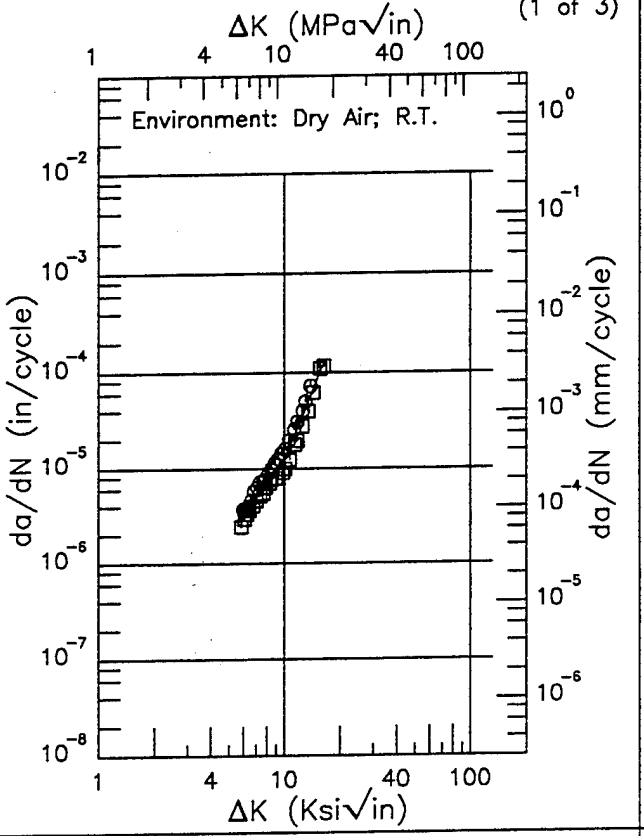
7175

E

Condition/Ht: T736
Form: 4 – 5 in. Forging
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.33
Frequency: 18.3 Hz

Yield Strength: 59.9 – 60.1 ksi
Ult. Strength: 69.5 – 70.8 ksi
Specimen Thk: 1.501 – 1.502 in.
Specimen Width: 3.8 in.
Ref: 86842

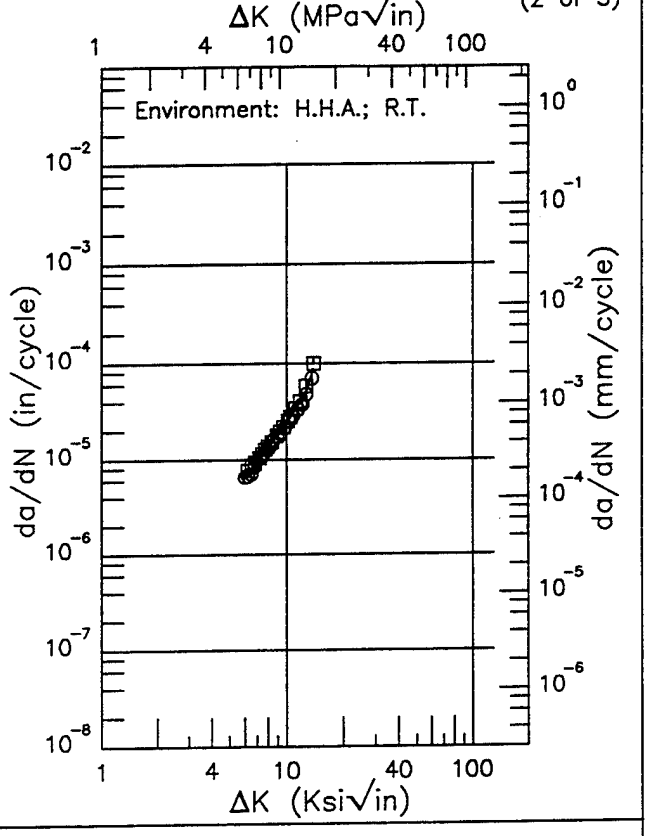
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.85 (min) | 2.87 |
| 6. | 3.16 |
| 7. | 5.18 |
| 8. | 7.31 |
| 9. | 9.55 |
| 10. | 12.5 |
| 13. | 40.9 |
| 16. | 116. |
| 16.26 (max) | 120. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.20 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.01 (min) | 6.39 |
| 7. | 9.65 |
| 8. | 13.7 |
| 9. | 18.2 |
| 10. | 23.8 |
| 13. | 55.8 |
| 13.84 (max) | 88.7 |

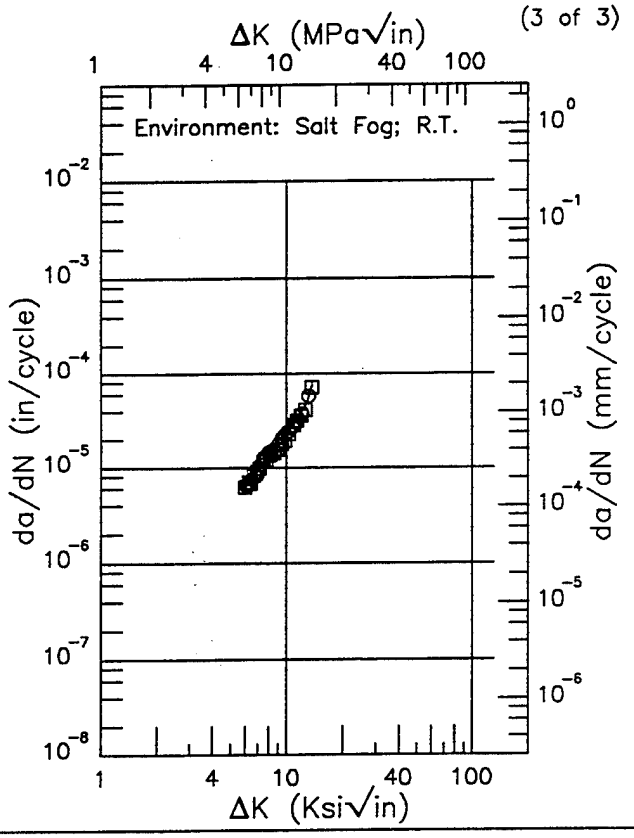
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.72 | 0. .5 .8 1.25 2. |

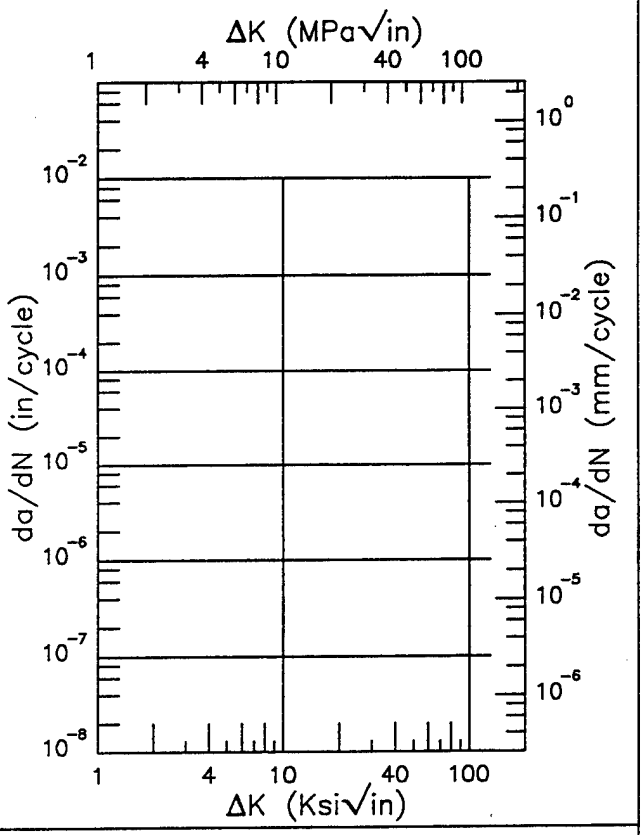
**Figure 8.16.3.1.7**

Condition/Ht: T736
Form: 4 – 5 in. Forging
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.33
Frequency: 18.3 Hz

Yield Strength: 59.9 – 60.1 ksi
Ult. Strength: 69.5 – 70.8 ksi
Specimen Thk: 1.501 – 1.502 in.
Specimen Width: 3.8 in.
Ref: 86842

(3 of 3)



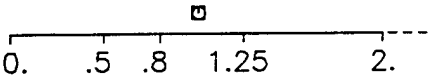




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.96 (min) | 6.04 |
| 6. | 6.11 |
| 7. | 9.18 |
| 8. | 13.4 |
| 9. | 17.1 |
| 10. | 21.6 |
| 13. | 51.1 |
| 13.62 (max) | 73.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

RMS % Error: 5.95

Life Prediction Ratio Summary




RMS % Error

Life Prediction Ratio Summary

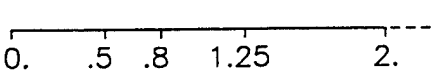



**Figure 8.16.3.1.7 (Concluded)**

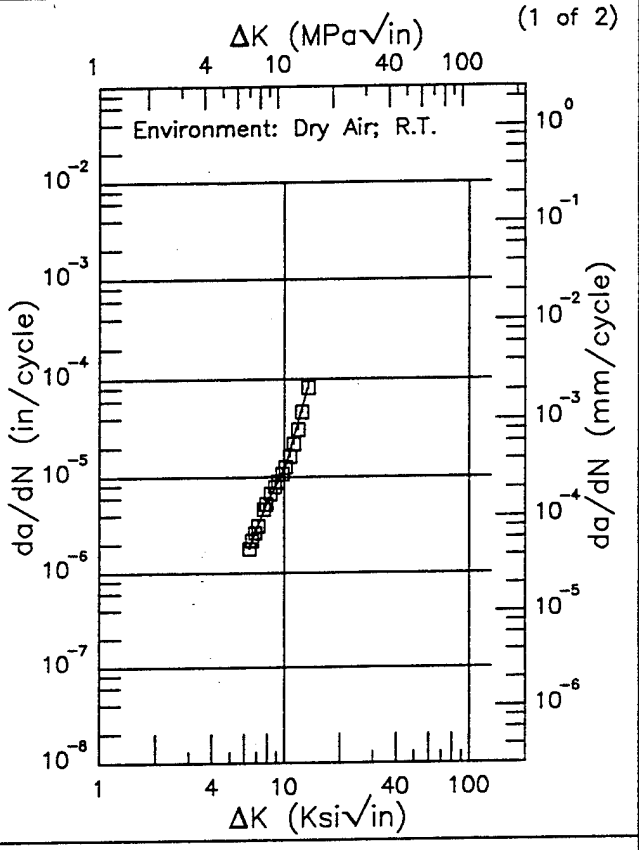
7175

E

Condition/Ht: T736
Form: 5 in. Forging
Specimen Type: CT
Orientation: S-T
Stress Ratio: 0.33
Frequency: 18.3 Hz

Yield Strength: 58.5 ksi
Ult. Strength: 68.9 ksi
Specimen Thk: 1.5 in.
Specimen Width: 3.8 in.
Ref: 86842

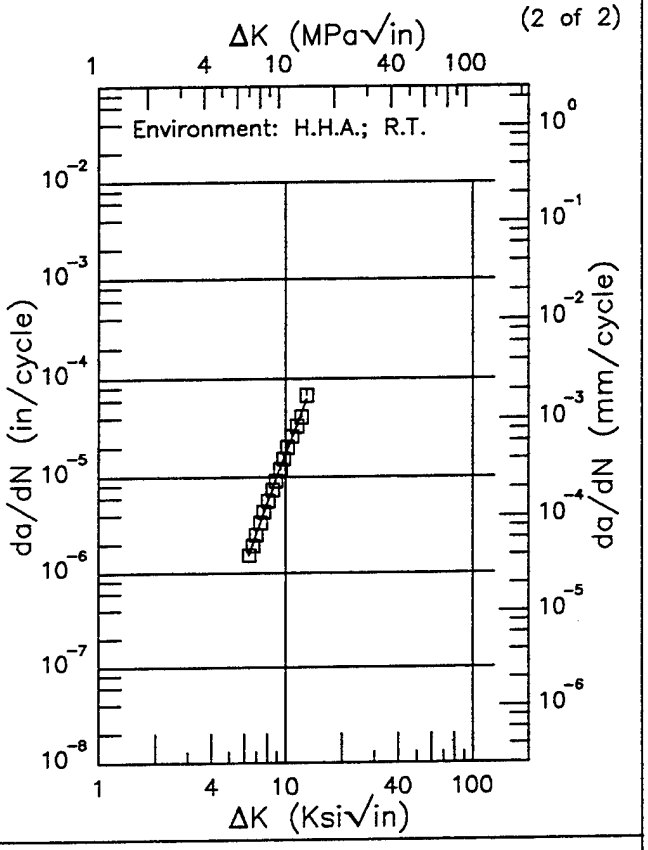
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.41 (min) | 1.79 |
| 7. | 2.81 |
| 8. | 5.50 |
| 9. | 8.33 |
| 10. | 11.9 |
| 13. | 67.1 |
| 13.35 (max) | 81.6 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.29 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.38 (min) | 1.55 |
| 7. | 2.55 |
| 8. | 5.34 |
| 9. | 10.1 |
| 10. | 17.1 |
| 12.96 (max) | 62.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.20 | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.8**

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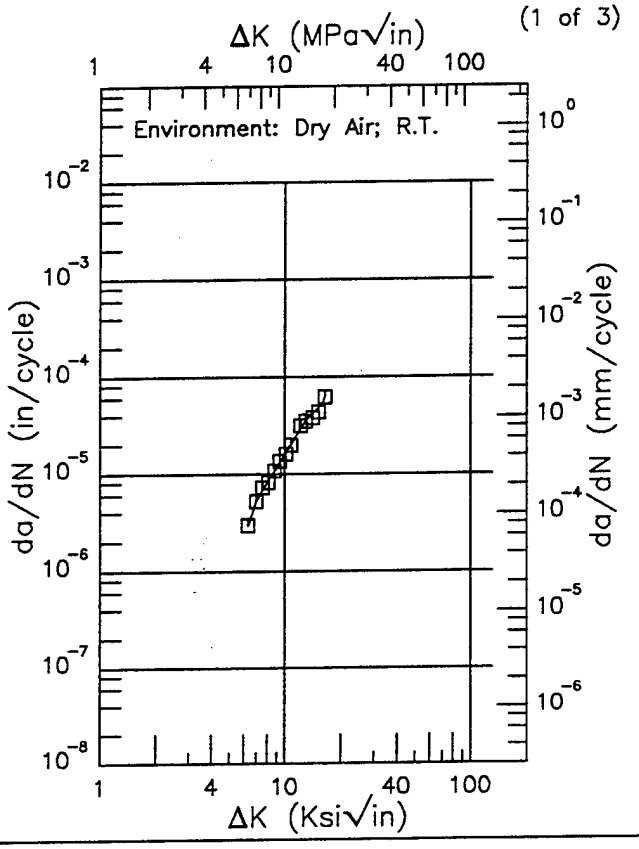
7175

E

Condition/Ht: T736
Form: 5 in. Forging
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.33
Frequency: 5.2 Hz

Yield Strength: 62.1 ksi
Ult. Strength: 72.5 ksi
Specimen Thk: 0.744 – 0.747 in.
Specimen Width: 3 in.
Ref: 86842

(1 of 3)



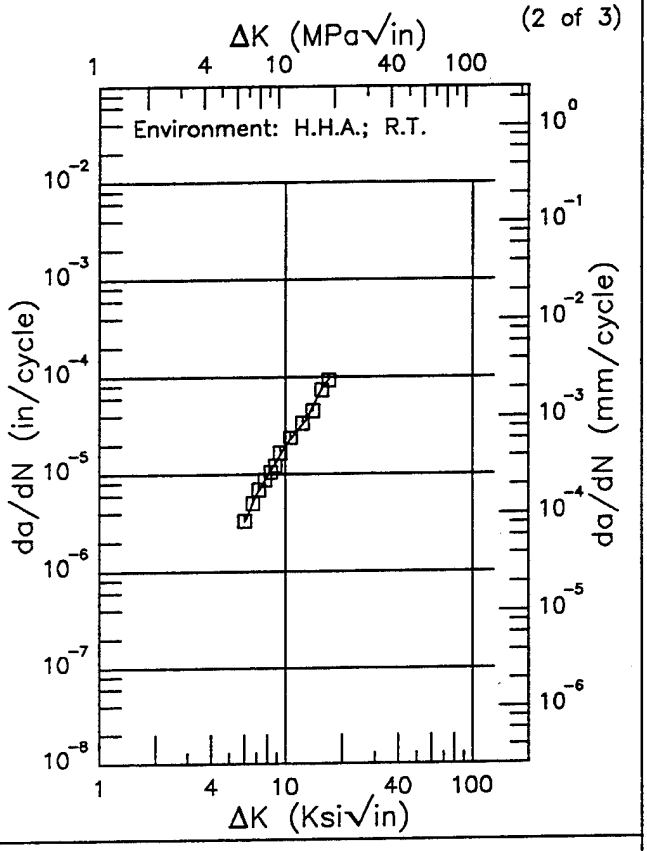

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.32 (min) | 2.94 |
| 7. | 5.27 |
| 8. | 8.30 |
| 9. | 11.4 |
| 10. | 16.0 |
| 13. | 35.7 |
| 16. | 54.4 |
| 16.26 (max) | 61.4 |

| RMS % Error |
|---|
| 5.43 |

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.04 (min) | 3.26 |
| 7. | 6.12 |
| 8. | 9.43 |
| 9. | 13.7 |
| 10. | 19.7 |
| 13. | 36.8 |
| 16. | 80.9 |
| 16.99 (max) | 92.0 |

| RMS % Error |
|---|
| 3.47 |

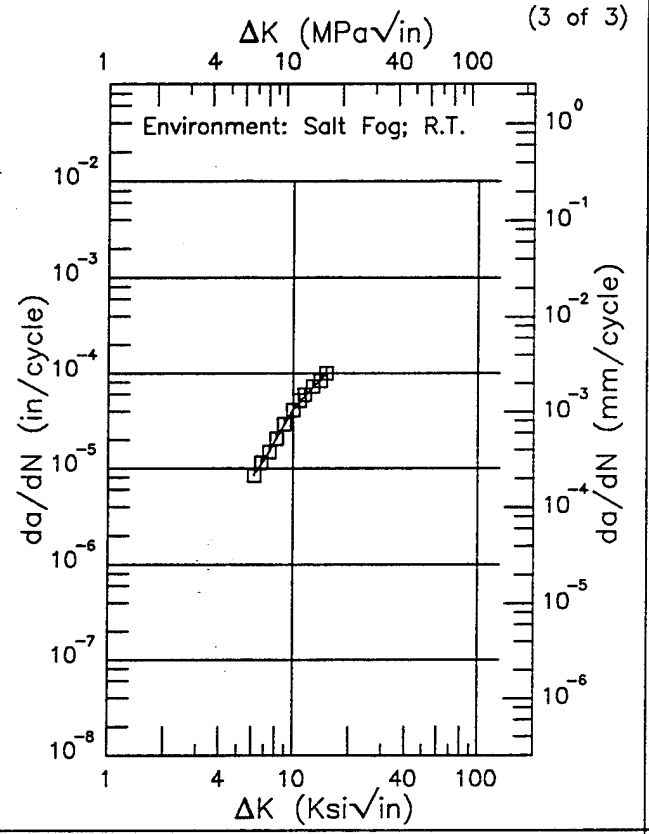
Life Prediction Ratio Summary

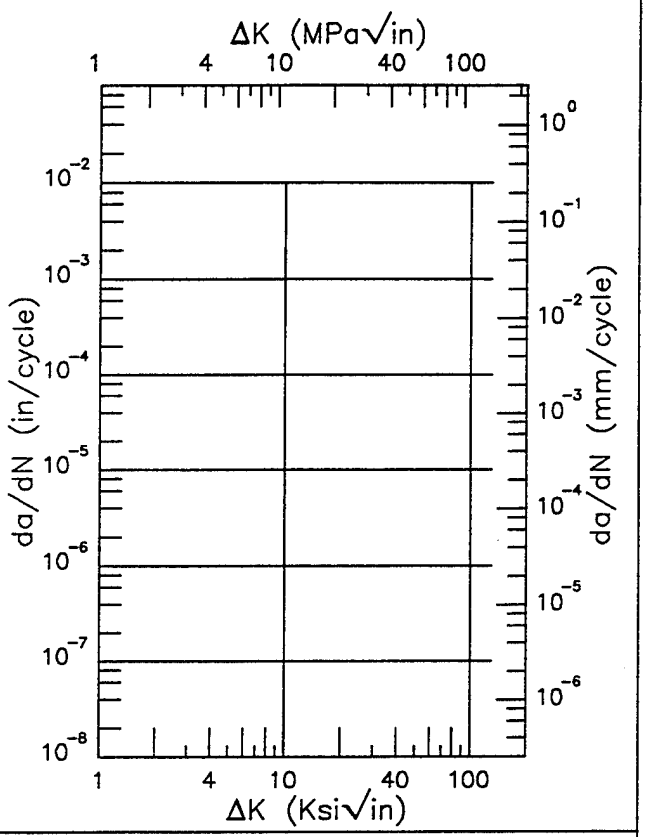
0. .5 .8 1.25 2.

**Figure 8.16.3.1.9**

Condition/Ht: T736
Form: 5 in. Forging
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.33
Frequency: 5.2 Hz

Yield Strength: 62.1 ksi
Ult. Strength: 72.5 ksi
Specimen Thk: 0.744 – 0.747 in.
Specimen Width: 3 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.16 (min) | 8.60 |
| 7. | 12.5 |
| 8. | 19.7 |
| 9. | 29.8 |
| 10. | 41.8 |
| 13. | 74.3 |
| 14.93 (max) | 97.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.57 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.9 (Concluded)**

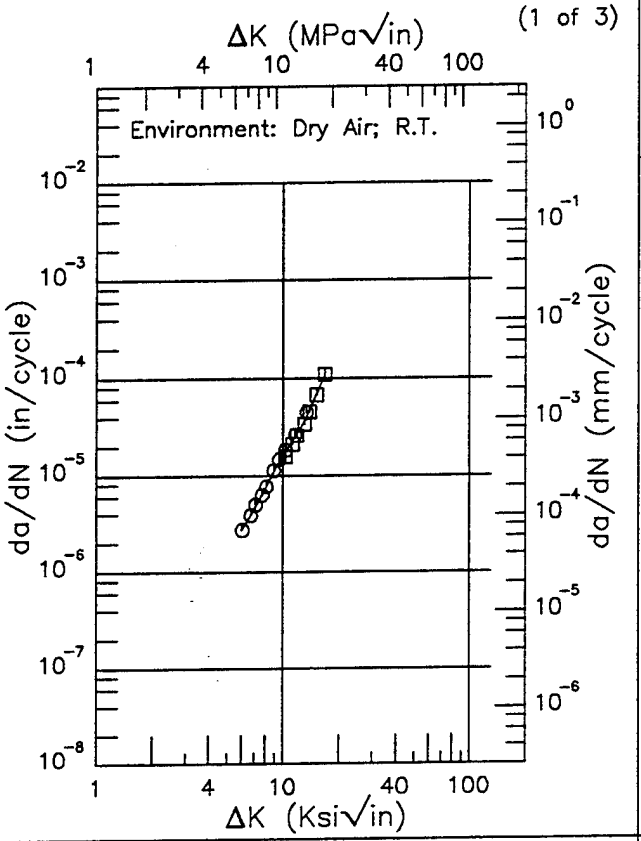
7175

E

Condition/Ht: T736
Form: 5 in. Forging
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 5.2 Hz

Yield Strength: 60.1 ksi
Ult. Strength: 69.5 ksi
Specimen Thk: 0.743 – 0.751 in.
Specimen Width: 3 in.
Ref: 86842

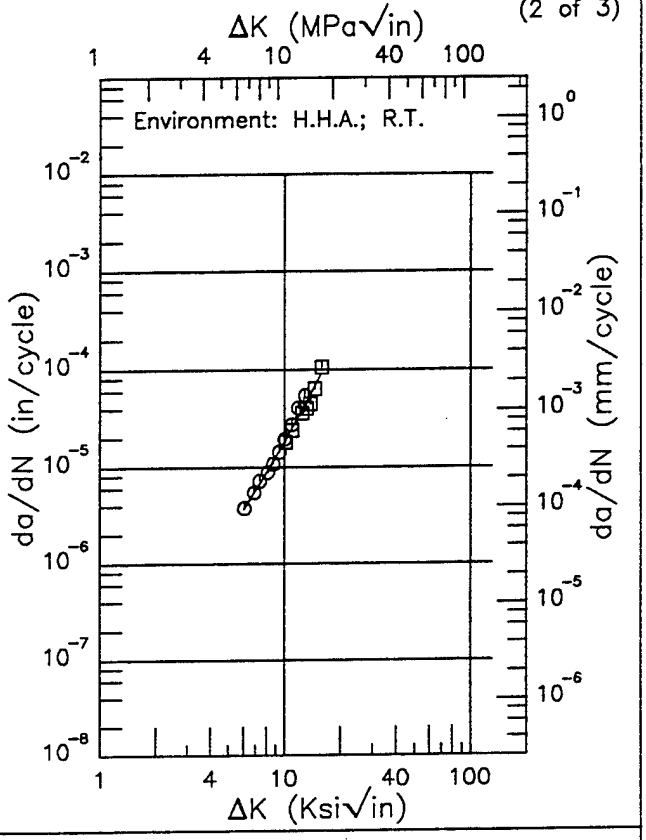
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.02 (min) | 2.74 |
| 7. | 4.50 |
| 8. | 7.48 |
| 9. | 11.6 |
| 10. | 16.2 |
| 13. | 35.6 |
| 16. | 89.4 |
| 16.71 (max) | 108. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.40 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.07 (min) | 3.75 |
| 7. | 5.78 |
| 8. | 8.79 |
| 9. | 12.9 |
| 10. | 18.2 |
| 13. | 44.9 |
| 15.81 (max) | 90.7 |

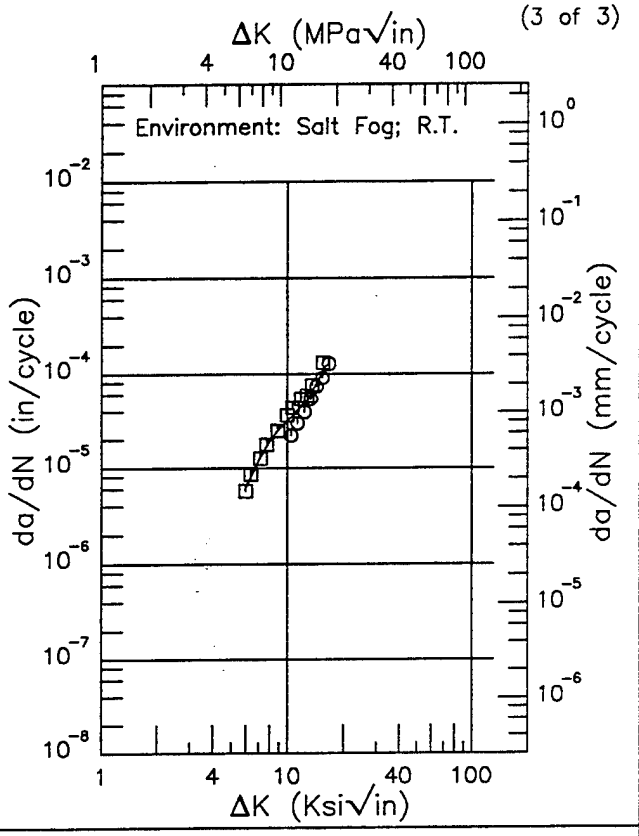
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.72 | 0. .5 .8 1.25 2. |

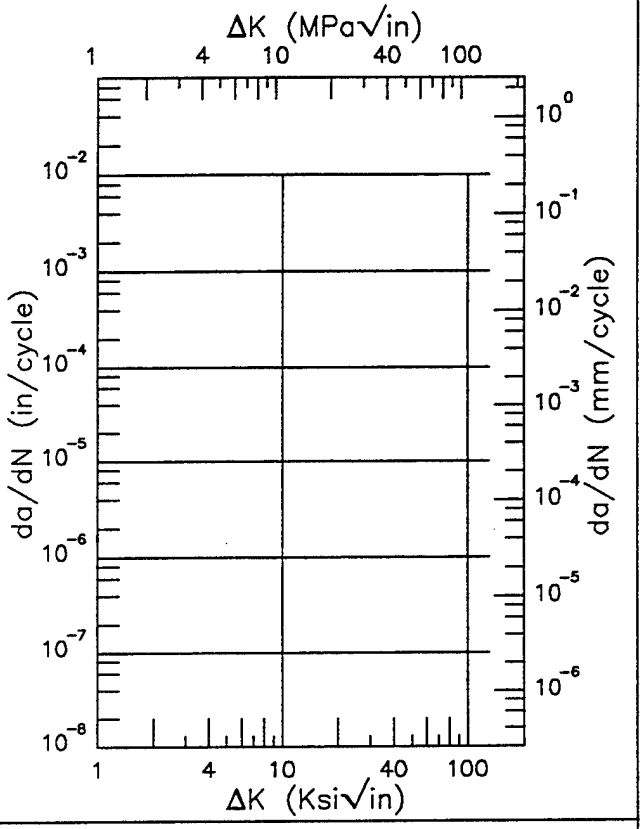
**Figure 8.16.3.1.10**

Condition/Ht: T736
Form: 5 in. Forging
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 5.2 Hz

Yield Strength: 60.1 ksi
Ult. Strength: 69.5 ksi
Specimen Thk: 0.743 – 0.751 in.
Specimen Width: 3 in.
Ref: 86842

(3 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.94 (min) | 6.00 |
| 6. | 6.29 |
| 7. | 12.1 |
| 8. | 19.0 |
| 9. | 25.8 |
| 10. | 31.5 |
| 13. | 54.5 |
| 16. | 120. |
| 16.59 (max) | 128. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.64 | ⊙ □ 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

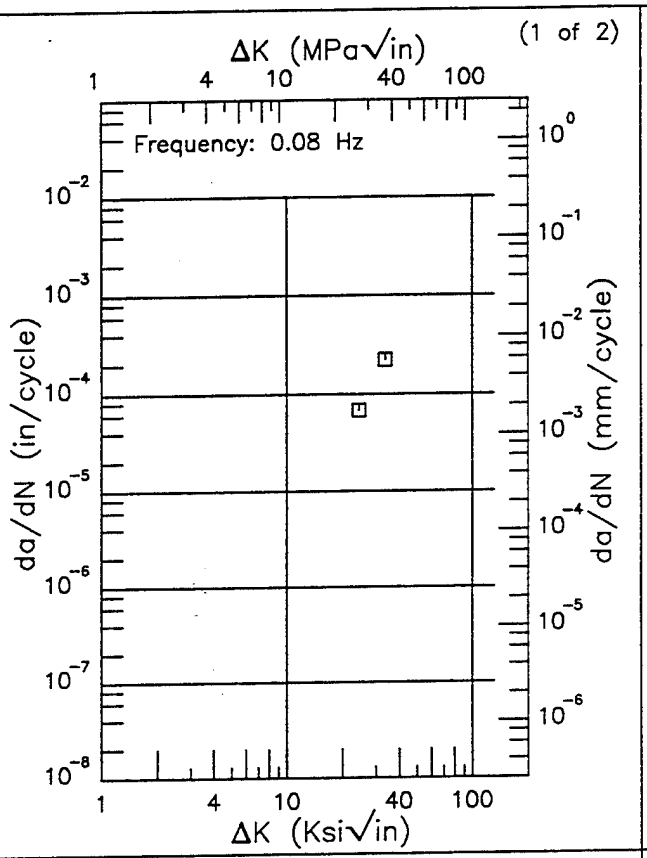
**Figure 8.16.3.1.10 (Concluded)**

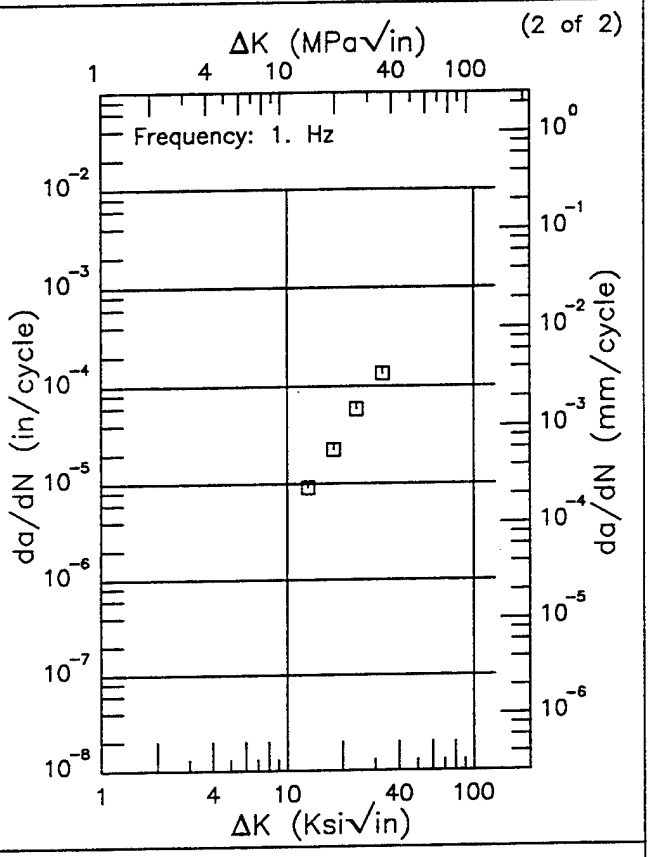
## 7175

F

Condition/Ht: T736
Form: 2 in. Forging
Specimen Type: DCB
Orientation: L–T
Stress Ratio: 0.02
Environment: DRY AIR; RT

Yield Strength: 69 – 71 ksi
Ult. Strength: 78 – 79 ksi
Specimen Thk: 0.75 in.
Specimen Width: 5.5 in.
Ref: 84360




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

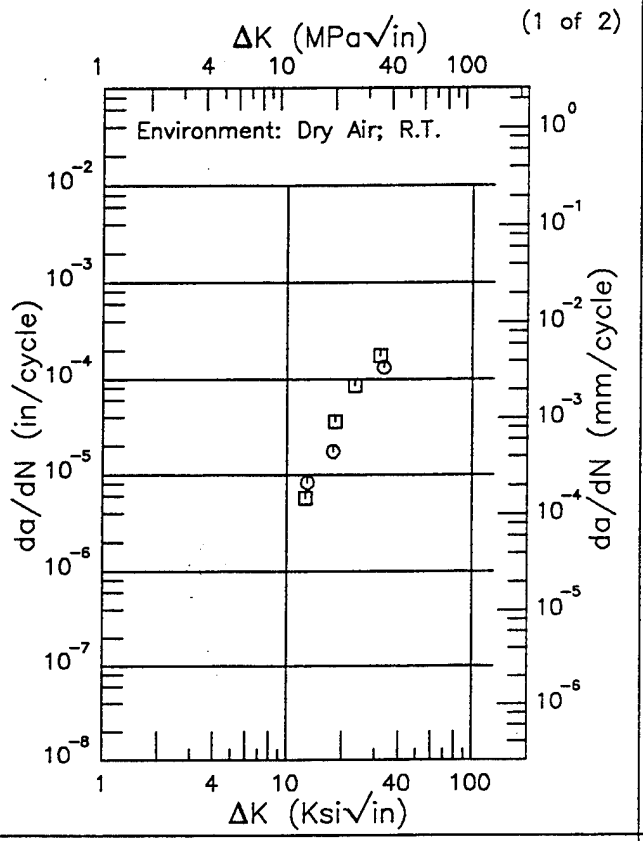
ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

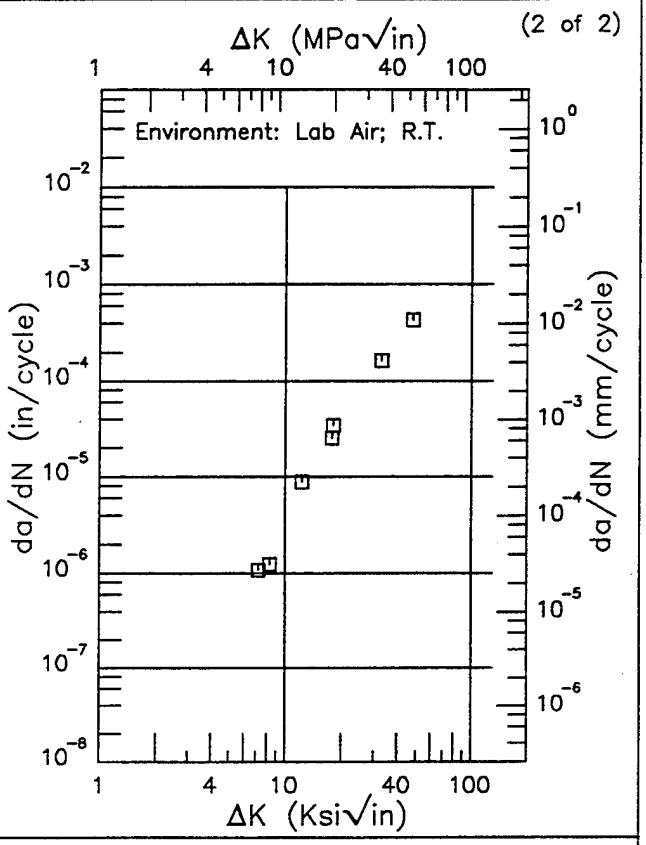
**Figure 8.16.3.1.11**

Condition/Ht: T736
Form: 2 – 3 in. Forging
Specimen Type: DCB
Orientation: L–T
Stress Ratio: 0.02
Frequency: 10 Hz

Yield Strength: 69 – 71 ksi
Ult. Strength: 78 – 79 ksi
Specimen Thk: 0.75 in.
Specimen Width: 5.5 in.
Ref: 84360




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

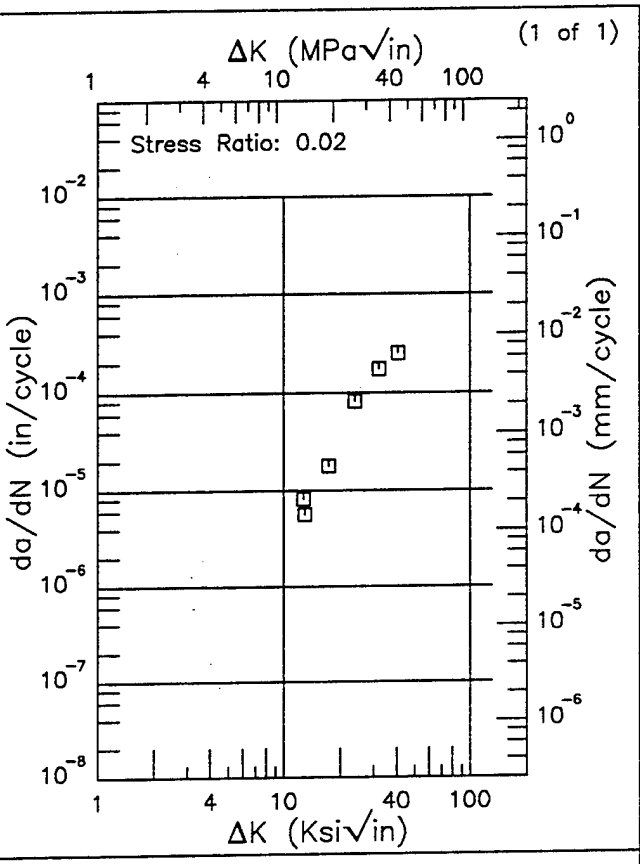
**Figure 8.16.3.1.12**

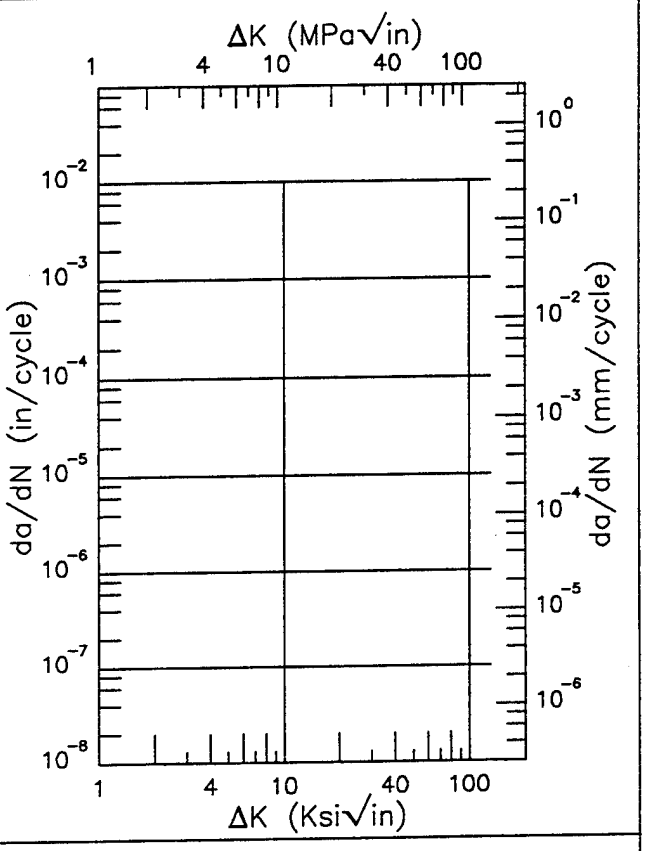
7175

R

Condition/Ht: T736
Form: 3 in. Forging
Specimen Type: DCB
Orientation: L–T
Frequency: 10 Hz
Environment: DRY AIR; RT

Yield Strength: 69.5 ksi
Ult. Strength: 78 ksi
Specimen Thk: 0.625 in.
Specimen Width: 5.5 in.
Ref: 84360




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

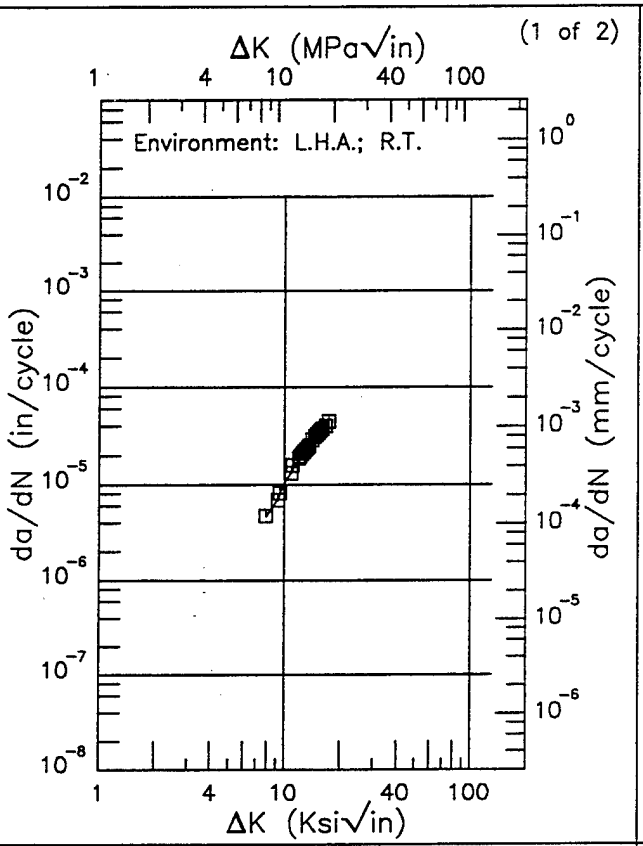
ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

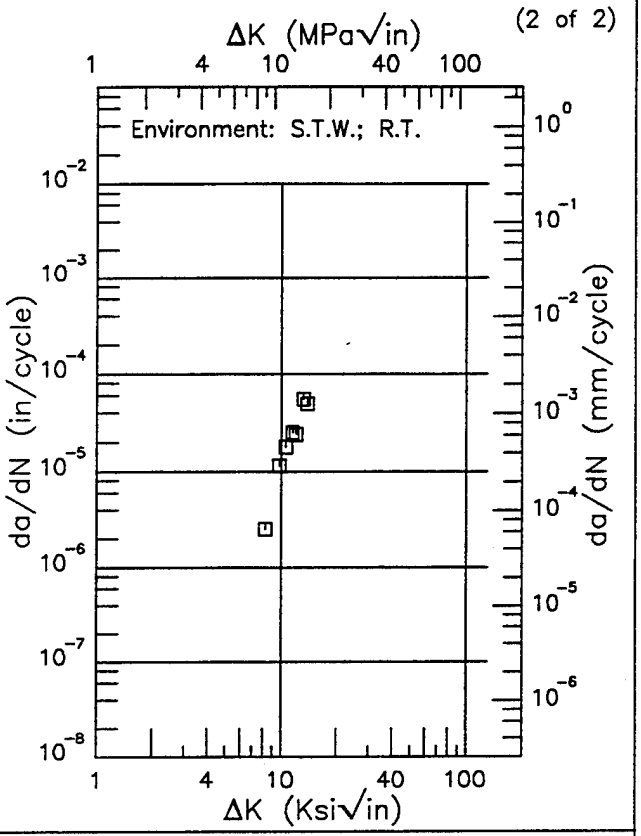
| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.13**

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.08
Frequency: 0.1 Hz

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 1 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.94 (min) | 4.66 |
| 8. | 4.70 |
| 9. | 6.57 |
| 10. | 10.3 |
| 13. | 23.1 |
| 16. | 37.4 |
| 17.28 (max) | 43.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.73 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

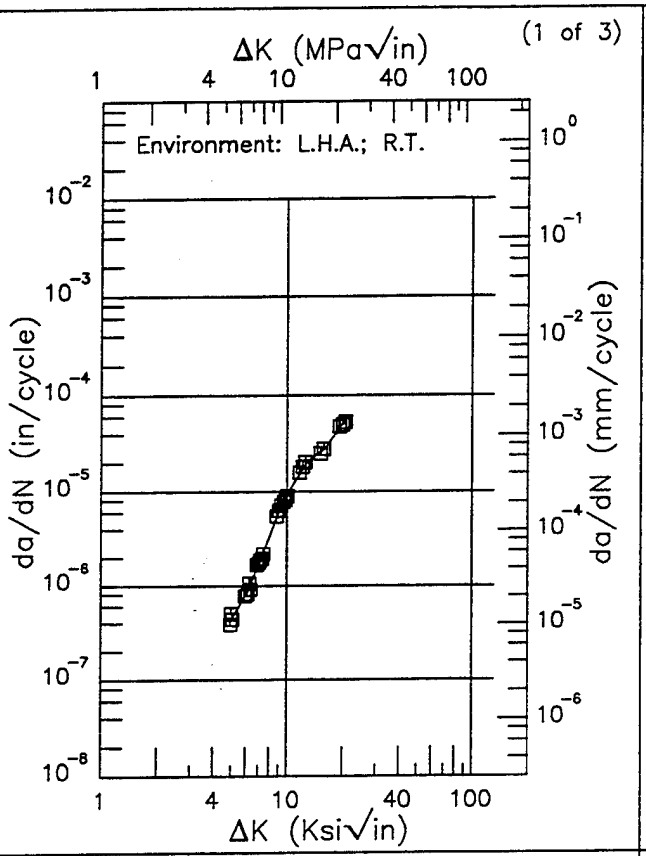
**Figure 8.16.3.1.14**

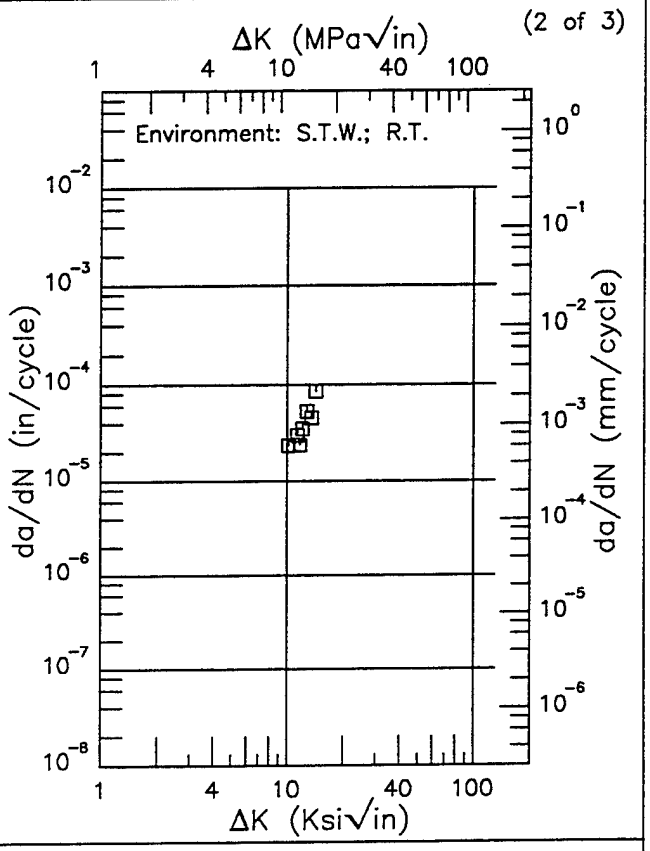
7175

E

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.08
Frequency: 1 Hz

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 0.99 – 1 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.93 (min) | 0.418 |
| 5. | 0.432 |
| 6. | 0.802 |
| 7. | 1.65 |
| 8. | 3.27 |
| 9. | 5.88 |
| 10. | 9.41 |
| 13. | 20.8 |
| 16. | 28.4 |
| 20. | 51.5 |
| 20.53 (max) | 52.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

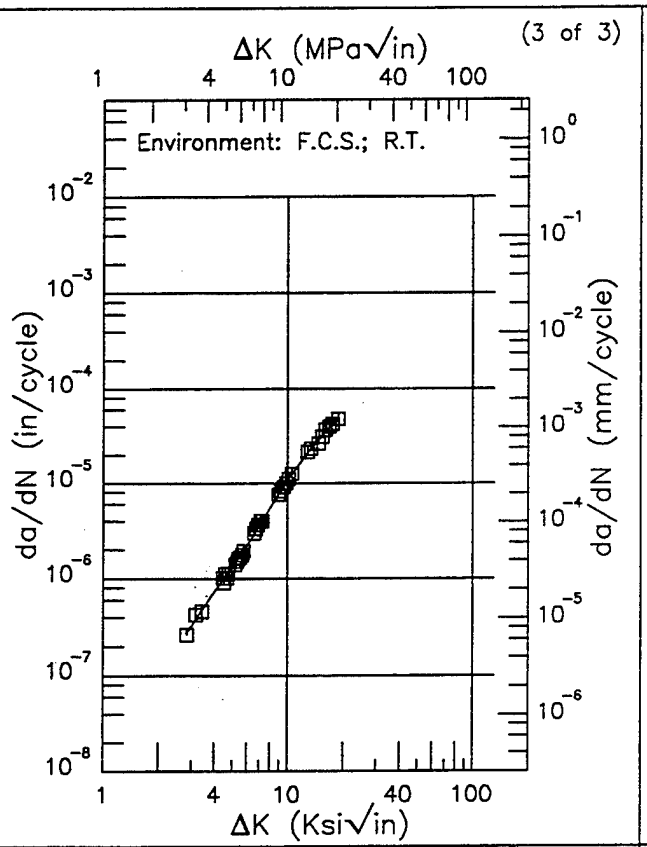
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.81 | 0. .5 .8 1.25 2. |

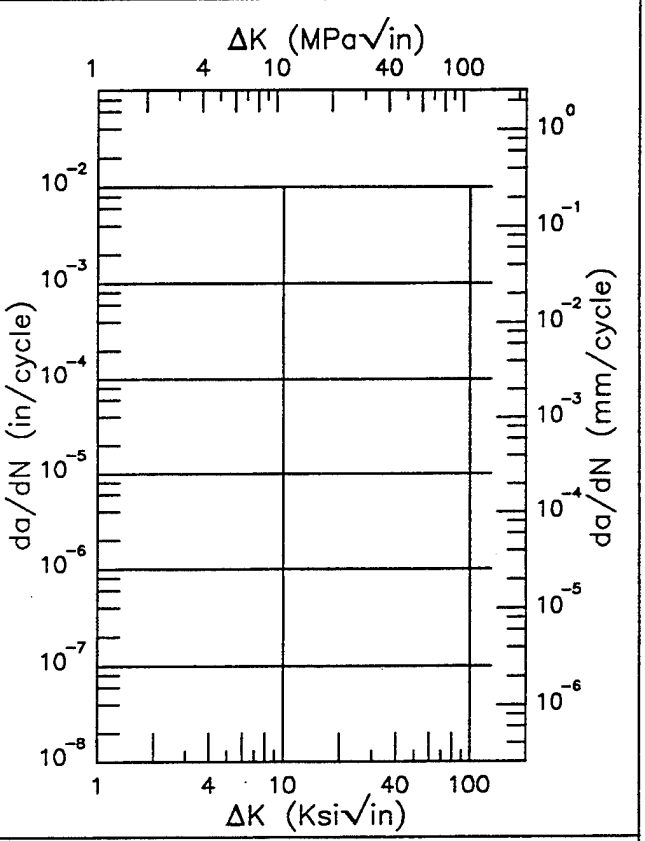
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.15**

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.08
Frequency: 1 Hz

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 0.99 – 1 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.82 (min) | 0.275 |
| 3. | 0.328 |
| 3.5 | 0.503 |
| 4. | 0.721 |
| 5. | 1.32 |
| 6. | 2.20 |
| 7. | 3.51 |
| 8. | 5.37 |
| 9. | 7.82 |
| 10. | 10.8 |
| 13. | 21.4 |
| 16. | 35.1 |
| 18.66 (max) | 47.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.01 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.15 (Concluded)**

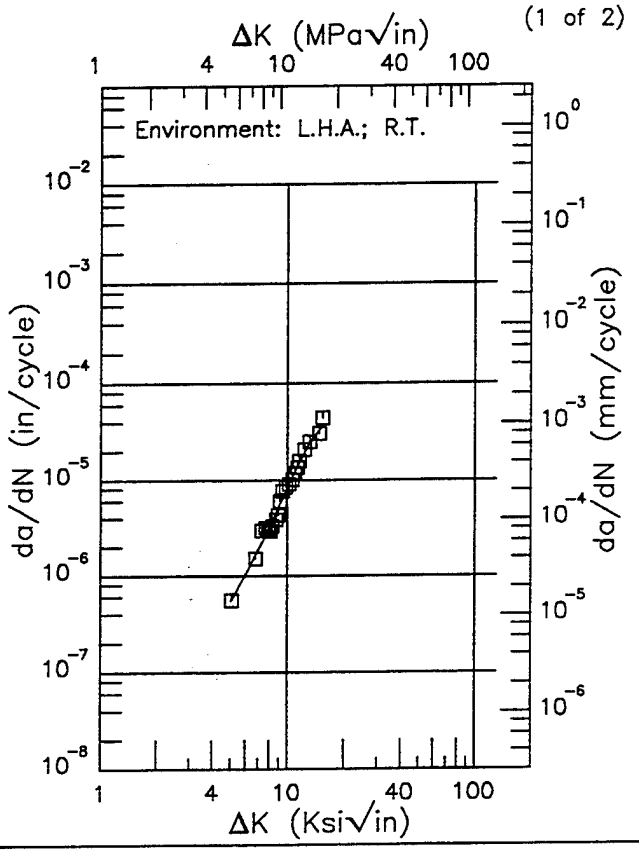
7175

E

Condition/Ht: T73652
Form: 6 in. Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.08
Frequency: 6 Hz

Yield Strength: 68 – 70 ksi
Ult. Strength: 77 – 80 ksi
Specimen Thk: 0.99 – 0.998 in.
Specimen Width: 7.4 in.
Ref: 85837;88579

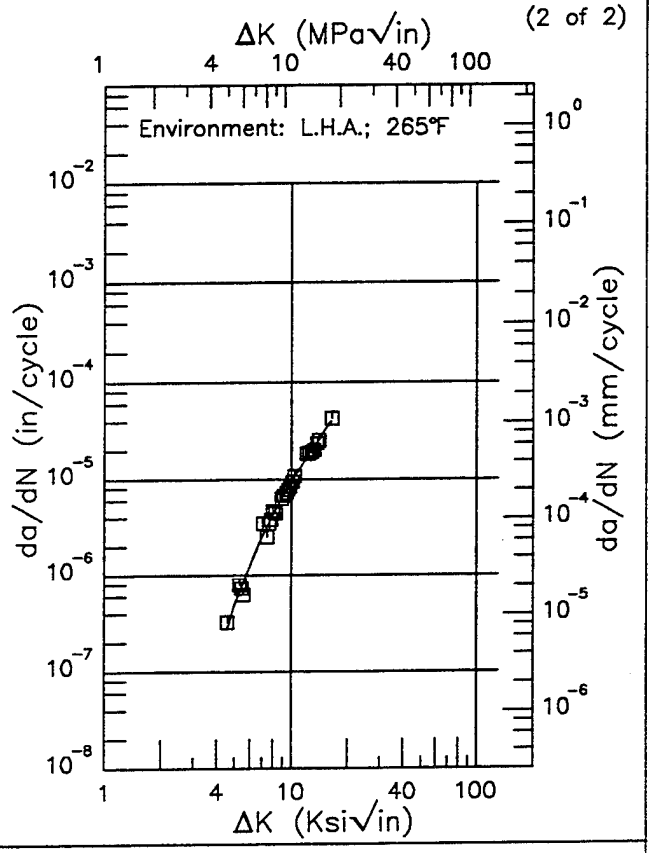
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.05 (min) | 0.548 |
| 6. | 1.02 |
| 7. | 1.85 |
| 8. | 3.18 |
| 9. | 5.31 |
| 10. | 8.49 |
| 13. | 23.6 |
| 15.25 (max) | 36.1 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.88 | 0. .5 .8 1.25 2. |

(2 of 2)



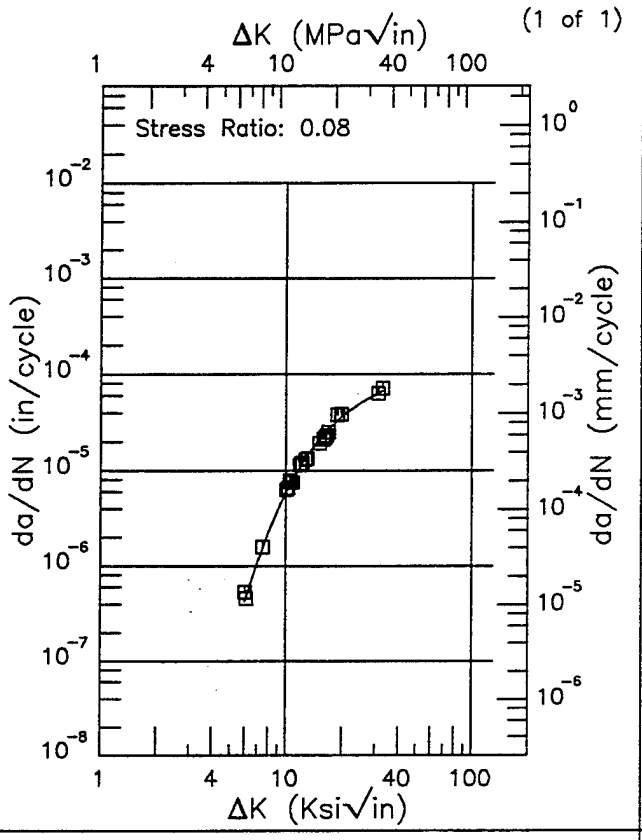

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.56 (min) | 0.289 |
| 5. | 0.492 |
| 6. | 1.26 |
| 7. | 2.53 |
| 8. | 4.33 |
| 9. | 6.65 |
| 10. | 9.49 |
| 13. | 21.0 |
| 16. | 37.4 |
| 16.44 (max) | 40.2 |

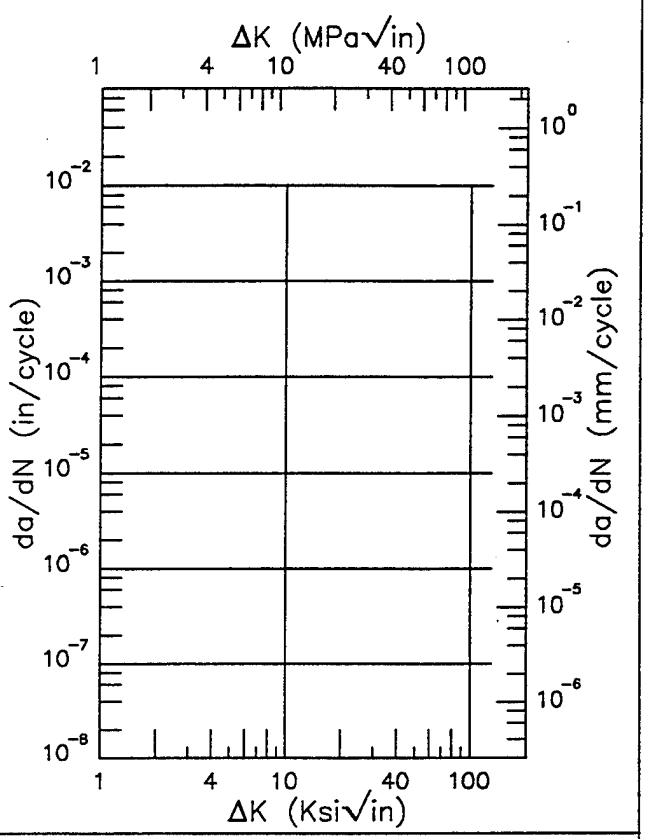
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.38 | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.16**

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Frequency: 6 Hz
Environment: L.H.A.; RT

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 0.5 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.02 (min) | 0.421 |
| 7. | 1.07 |
| 8. | 2.19 |
| 9. | 3.81 |
| 10. | 5.92 |
| 13. | 14.4 |
| 16. | 24.2 |
| 20. | 36.8 |
| 25. | 50.3 |
| 30. | 61.4 |
| 32.75 (max) | 66.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.51 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

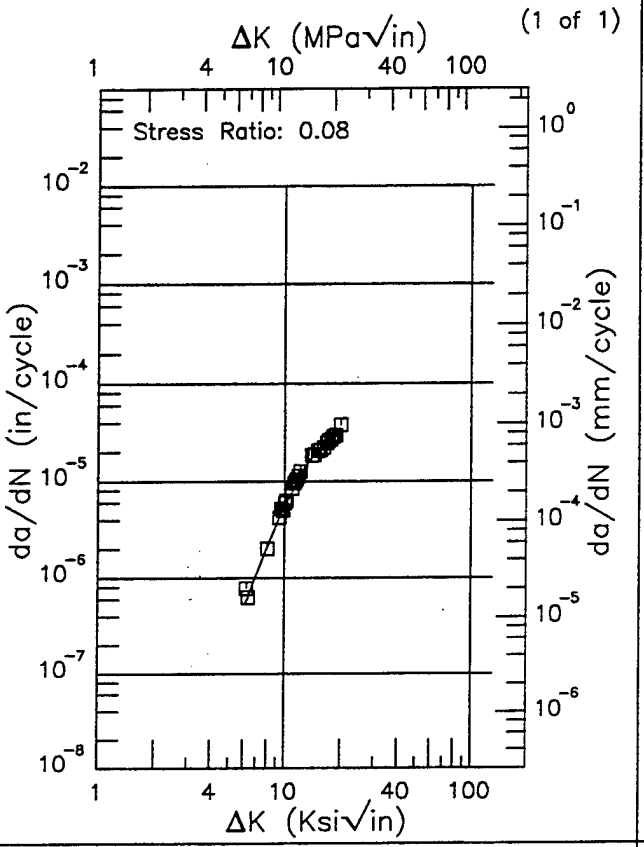
**Figure 8.16.3.1.17**

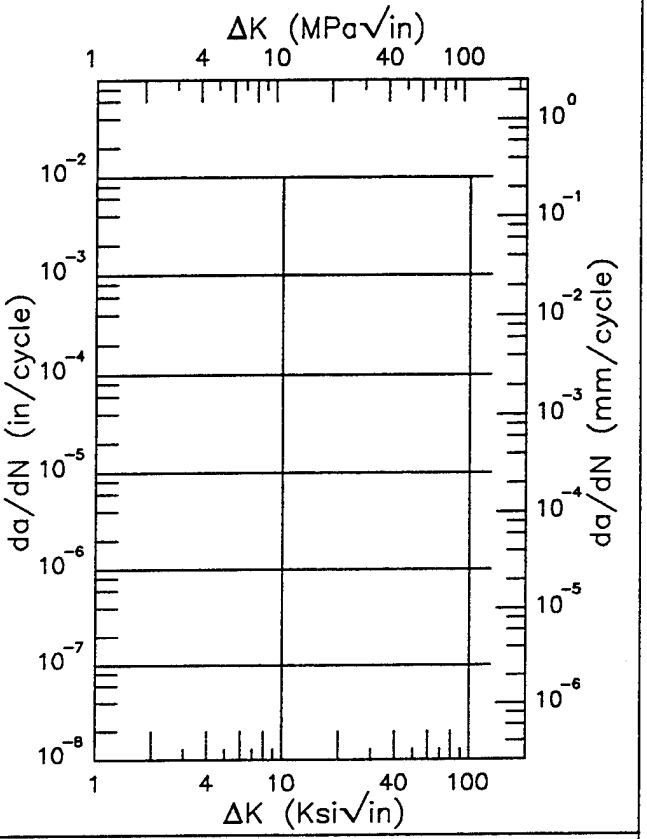
7175

R

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Frequency: 6 Hz
Environment: L.H.A.; RT

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 0.25 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.20 (min) | 0.554 |
| 7. | 1.06 |
| 8. | 2.07 |
| 9. | 3.60 |
| 10. | 5.67 |
| 13. | 14.5 |
| 16. | 24.1 |
| 19.86 (max) | 31.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.87 | 0. .5 .8 1.25 2. |

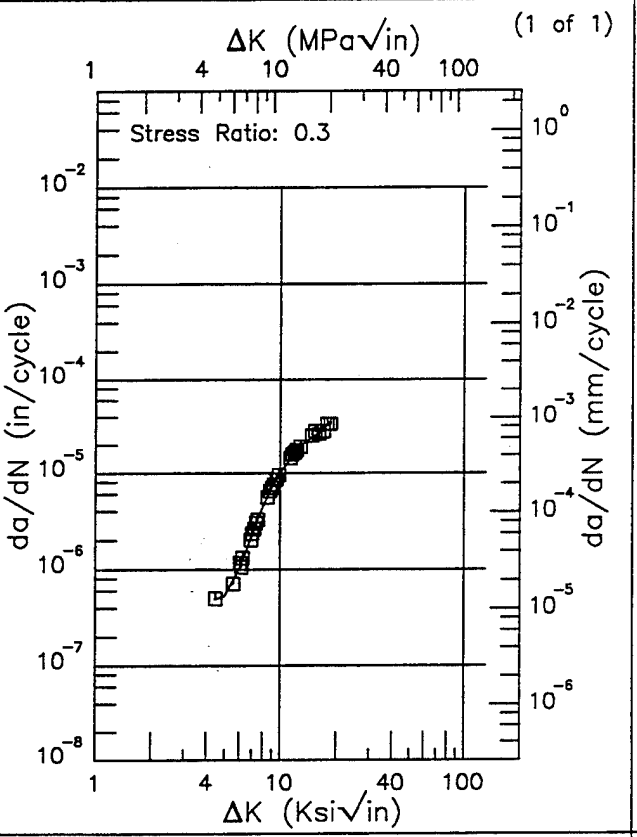
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

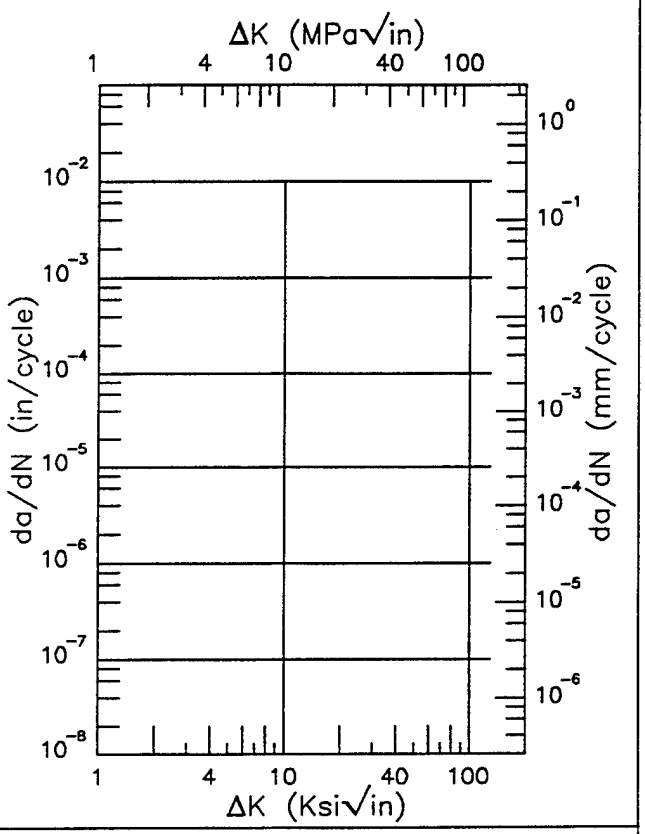
**Figure 8.16.3.1.18**

7175 R

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Frequency: 6 Hz
Environment: L.H.A.; RT

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 1 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.45 (min) | 0.498 |
| 5. | 0.533 |
| 6. | 1.01 |
| 7. | 2.21 |
| 8. | 4.34 |
| 9. | 7.08 |
| 10. | 10.1 |
| 13. | 20.1 |
| 16. | 26.8 |
| 18.40 (max) | 35.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.66 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.19**

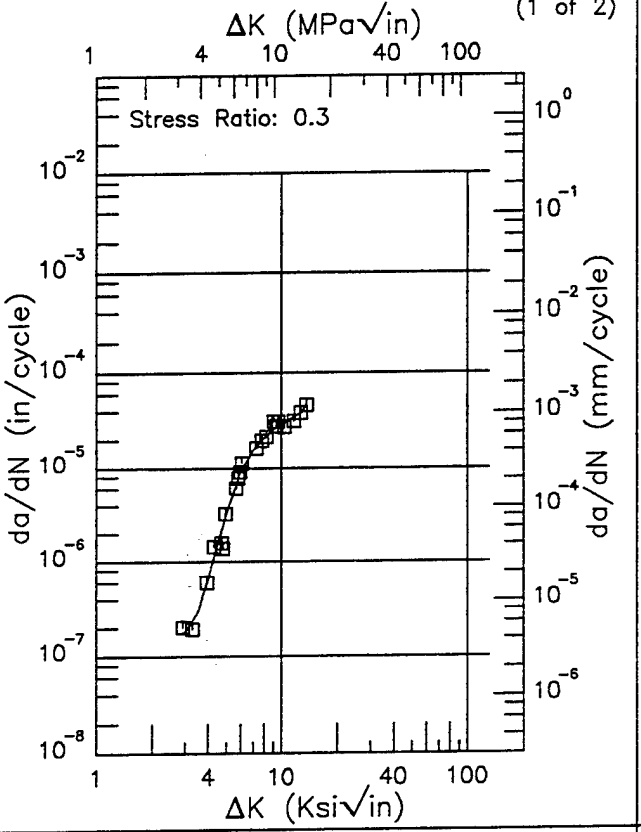
7175

R

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 68 ksi
Ult. Strength: 77 ksi
Specimen Thk: 1 in.
Specimen Width: 7.4 in.
Ref: 88579

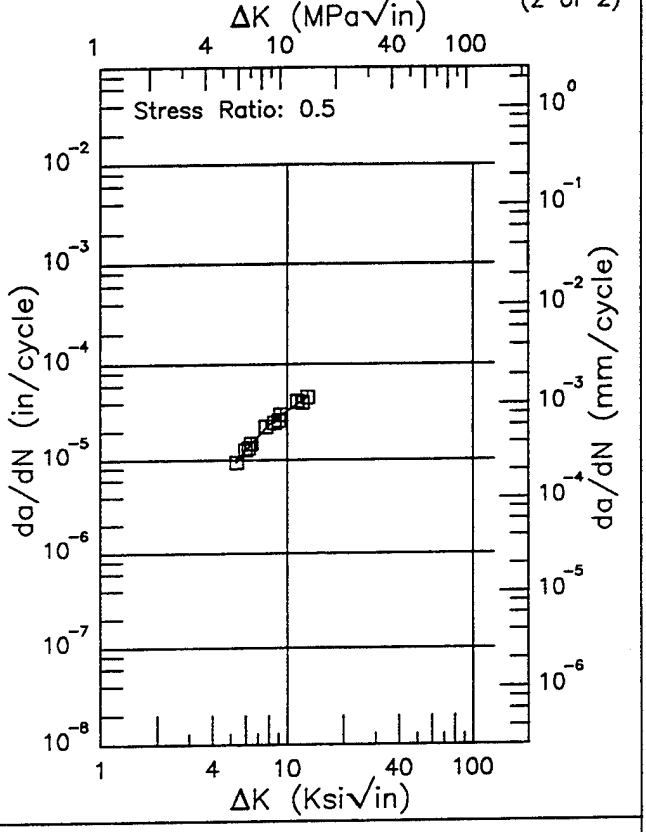
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.91 (min) | 0.176 |
| 3. | 0.178 |
| 3.5 | 0.285 |
| 4. | 0.640 |
| 5. | 3.24 |
| 6. | 9.28 |
| 7. | 15.7 |
| 8. | 20.9 |
| 9. | 25.6 |
| 10. | 29.4 |
| 13. | 39.1 |
| 13.55 (max) | 47.5 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 15.36 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.36 (min) | 9.41 |
| 6. | 12.6 |
| 7. | 17.8 |
| 8. | 23.1 |
| 9. | 28.3 |
| 10. | 33.3 |
| 12.77 (max) | 45.5 |

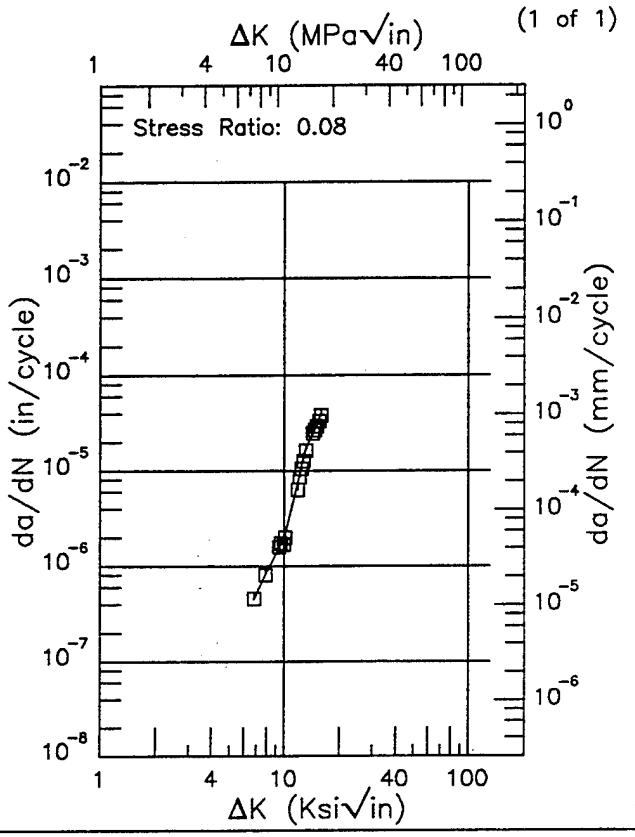
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.30 | 0. .5 .8 1.25 2. |

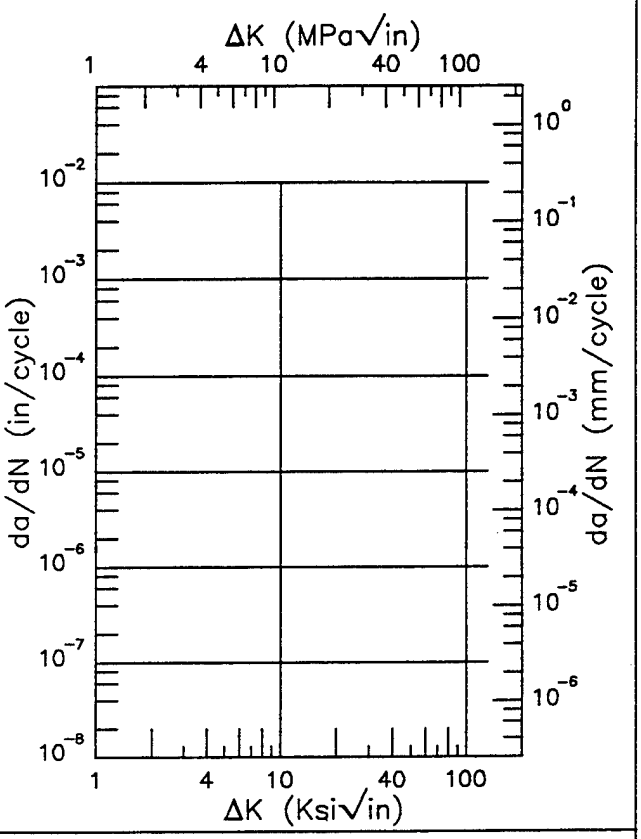
**Figure 8.16.3.1.20**

7175 R

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: T–L
Frequency: 6 Hz
Environment: L.H.A.; RT

Yield Strength: 64 ksi
Ult. Strength: 74 ksi
Specimen Thk: 1 in.
Specimen Width: 7.4 in.
Ref: 88579




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.81 (min) | 0.449 |
| 7. | 0.507 |
| 8. | 0.873 |
| 9. | 1.33 |
| 10. | 1.95 |
| 13. | 15.9 |
| 15.77 (max) | 39.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.86 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.21**

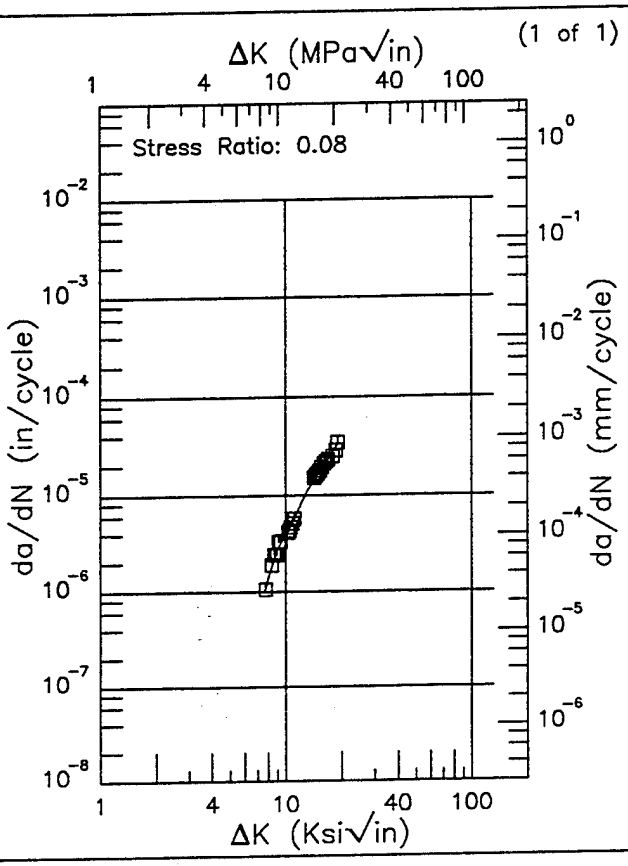
7175

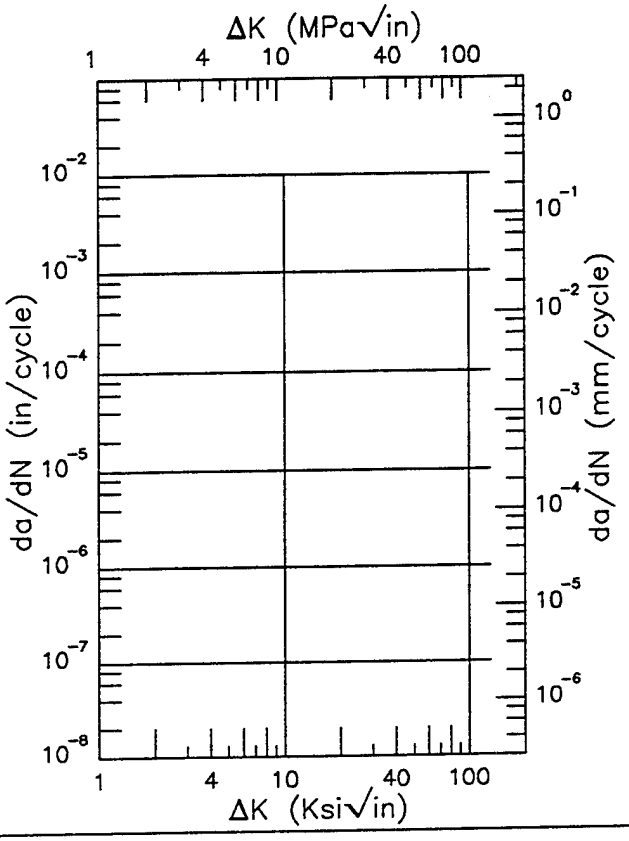
R

Condition/Ht: T73652
Form: Forging
Specimen Type: CT
Orientation: T–L
Frequency: 6 Hz
Environment: L.H.A.; RT

Yield Strength: 64 ksi
Ult. Strength: 74 ksi
Specimen Thk: 0.5 in.
Specimen Width: 7.4 in.
Ref: 88579

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.73 (min) | 1.04 |
| 8. | 1.41 |
| 9. | 2.79 |
| 10. | 3.97 |
| 13. | 10.9 |
| 16. | 20.6 |
| 18.99 (max) | 33.6 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.74 | 0. .5 .8 1.25 2. |

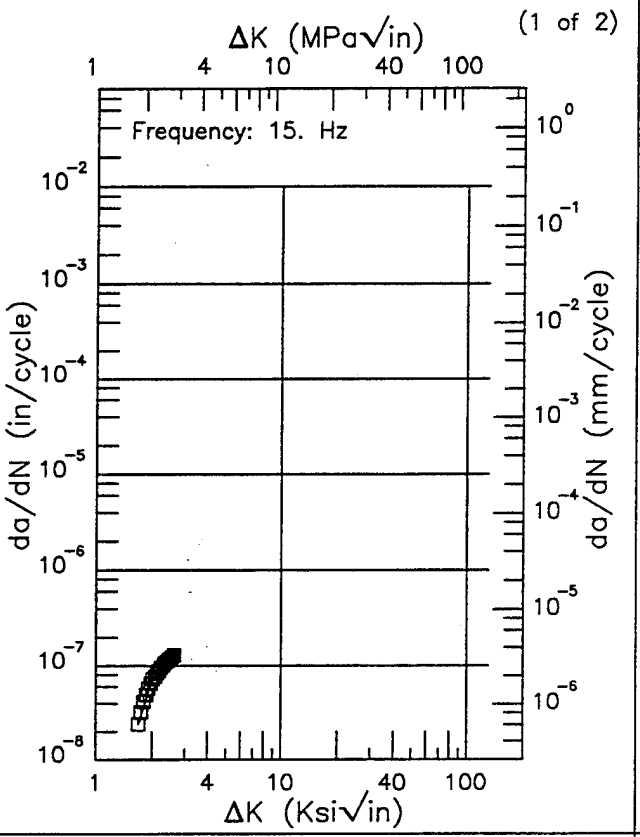
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

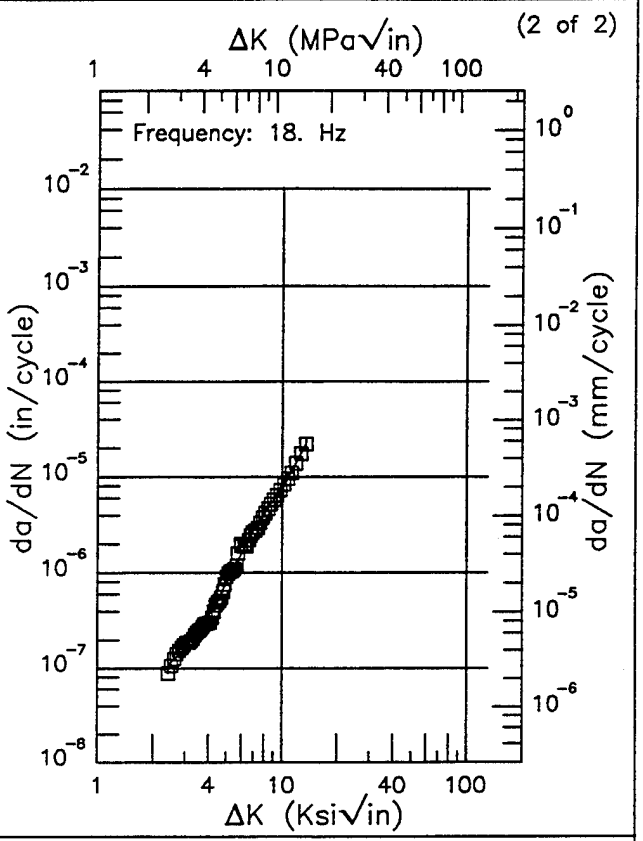
**Figure 8.16.3.1.22**

7175 F

Condition/Ht: T73652
Form: Forging
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.02
Environment: LAB AIR; RT

Yield Strength: 71.7 ksi
Ult. Strength: 81.5 ksi
Specimen Thk: 0.107 – 0.11 in.
Specimen Width: 3.947 – 3.951 in.
Ref: MA002




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 1.69 (min) | 0.0239 |
| 2. | 0.0702 |
| 2.5 | 0.119 |
| 2.61 (max) | 0.126 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 2.41 (min) | 0.109 |
| 2.5 | 0.115 |
| 3. | 0.163 |
| 3.5 | 0.239 |
| 4. | 0.354 |
| 5. | 0.764 |
| 6. | 1.55 |
| 7. | 2.75 |
| 8. | 4.21 |
| 9. | 5.69 |
| 10. | 7.48 |
| 13. | 19.2 |
| 13.43 (max) | 21.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.45 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.78 | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.23**

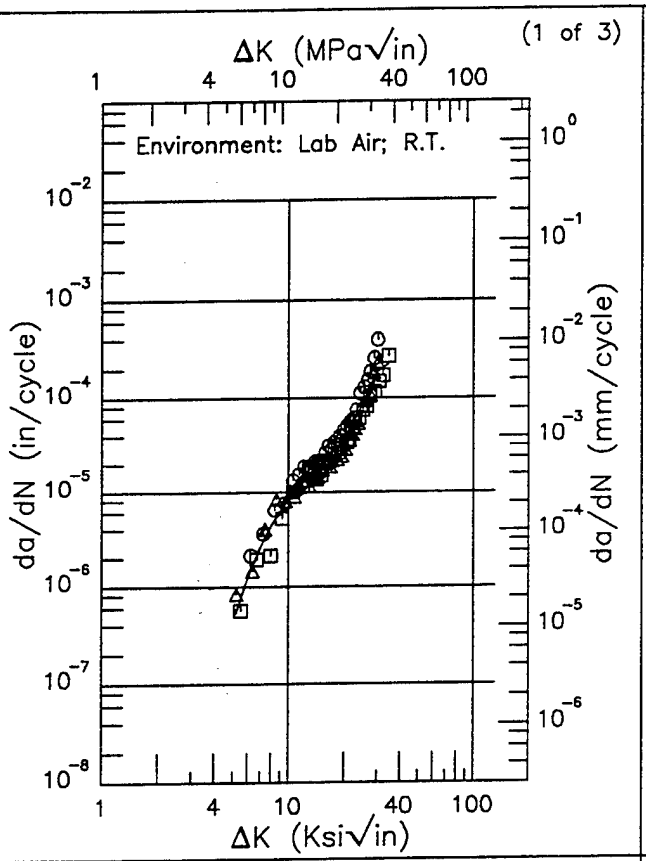
7175

E

Condition/Ht: T73652
Form: 1.25 in. Forging
Specimen Type: WOL
Orientation: L–T
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 66.3 – 70.3 ksi
Ult. Strength: 76.8 – 79.3 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA005

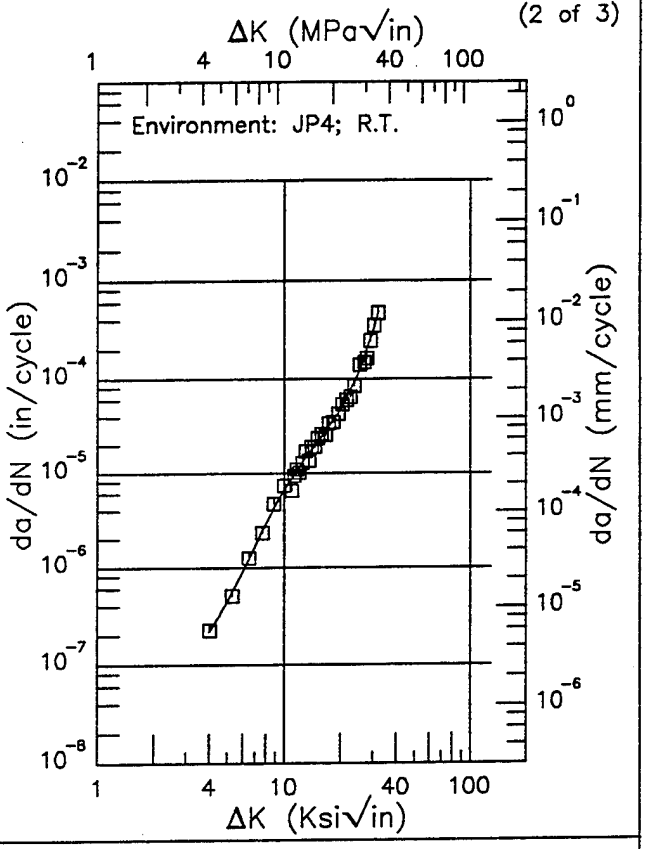
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.21 (min) | 0.522 |
| 6. | 1.23 |
| 7. | 2.59 |
| 8. | 4.34 |
| 9. | 6.32 |
| 10. | 8.39 |
| 13. | 14.8 |
| 16. | 22.2 |
| 20. | 37.5 |
| 25. | 84.3 |
| 30. | 188. |
| 34.62 (max) | 224. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 25.59 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.00 (min) | 0.218 |
| 5. | 0.442 |
| 6. | 0.889 |
| 7. | 1.67 |
| 8. | 2.87 |
| 9. | 4.55 |
| 10. | 6.67 |
| 13. | 14.5 |
| 16. | 24.6 |
| 20. | 47.6 |
| 25. | 113. |
| 30. | 299. |
| 31.92 (max) | 482. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.33 | 0. .5 .8 1.25 2. |

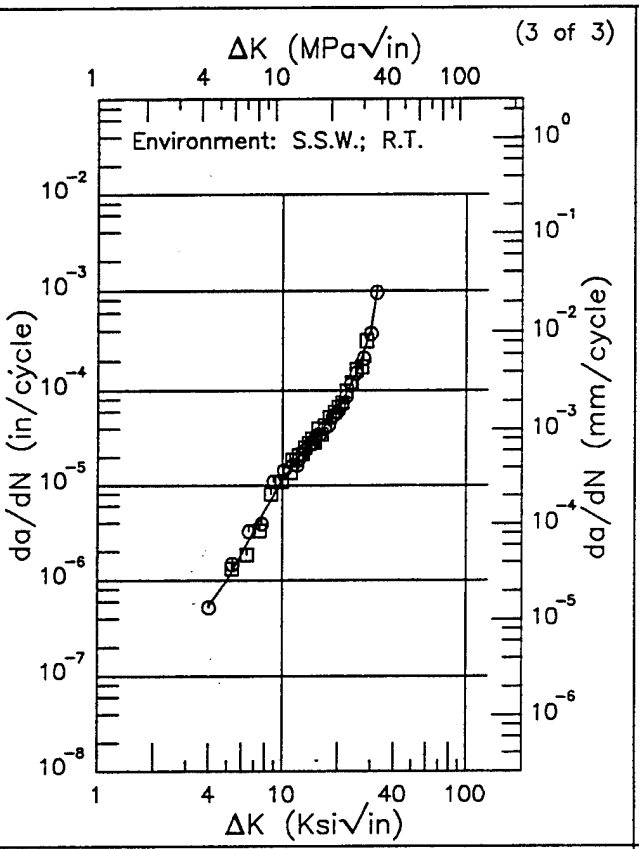
**Figure 8.16.3.1.24**

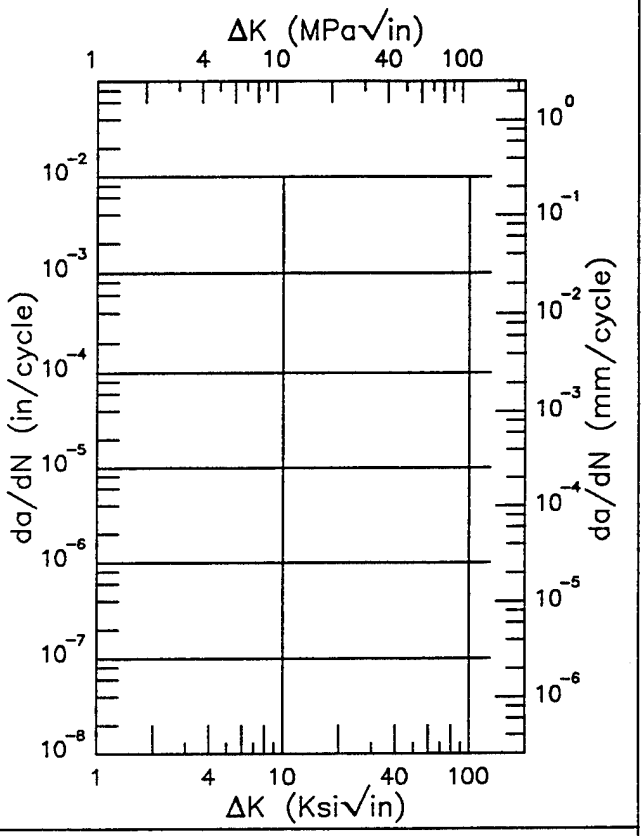
7175 E

Condition/Ht: T73652
Form: 1.25 in. Forging
Specimen Type: WOL
Orientation: L–T
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 66.3 – 70.3 ksi
Ult. Strength: 76.8 – 79.3 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA005

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| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.99 (min) | 0.537 |
| 4. | 0.540 |
| 5. | 1.00 |
| 6. | 1.88 |
| 7. | 3.32 |
| 8. | 5.44 |
| 9. | 8.26 |
| 10. | 11.7 |
| 13. | 23.1 |
| 16. | 36.4 |
| 20. | 66.4 |
| 25. | 145. |
| 30. | 402. |
| 32.21 (max) | 922. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.90 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.24 (Concluded)**

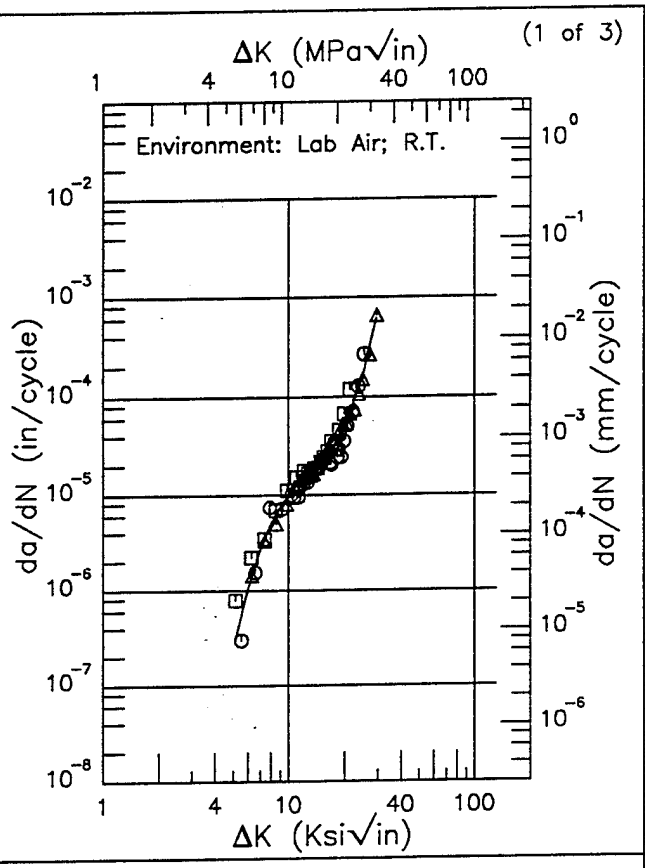
7175

E

Condition/Ht: T73652
Form: 1.25 in. Forging
Specimen Type: WOL
Orientation: T-L
Stress Ratio: 0.02
Frequency: 1 - 20 Hz

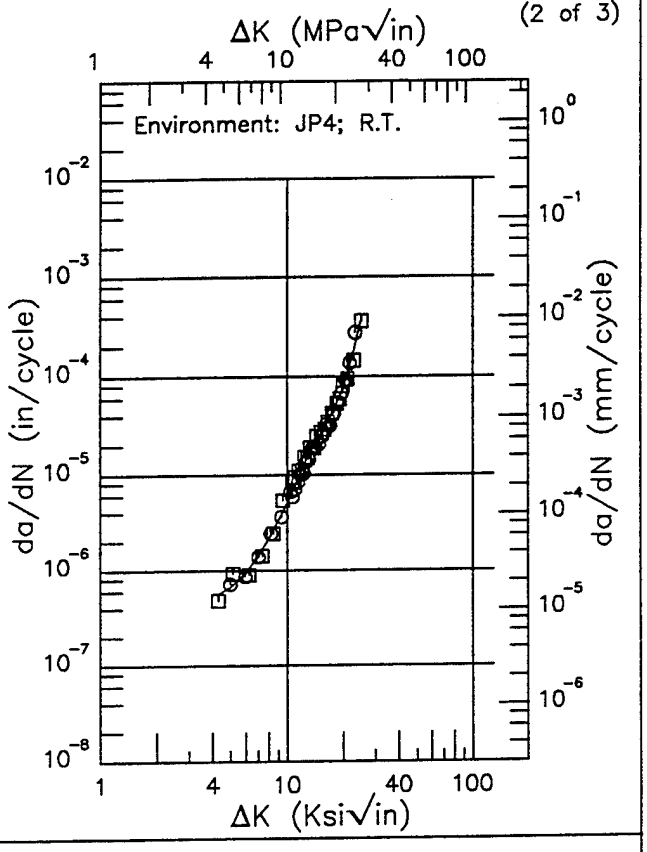
Yield Strength: 59 - 63.5 ksi
Ult. Strength: 70 - 72.3 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA005

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| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.14 (min) | 0.296 |
| 6. | 1.04 |
| 7. | 2.68 |
| 8. | 4.98 |
| 9. | 7.56 |
| 10. | 10.1 |
| 13. | 16.5 |
| 16. | 24.3 |
| 20. | 50.3 |
| 25. | 166. |
| 29.64 (max) | 618. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.29 (min) | 0.567 |
| 5. | 0.673 |
| 6. | 0.946 |
| 7. | 1.41 |
| 8. | 2.16 |
| 9. | 3.35 |
| 10. | 5.18 |
| 13. | 15.9 |
| 16. | 30.6 |
| 20. | 74.9 |
| 25. | 358. |
| 25.04 (max) | 361. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 29.20 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.53 | 0. .5 .8 1.25 2. |

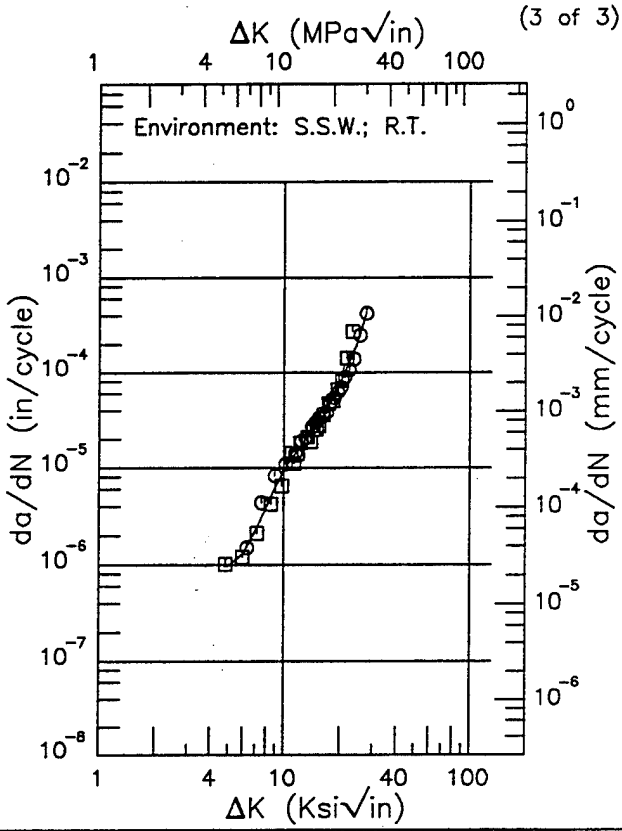
**Figure 8.16.3.1.25**

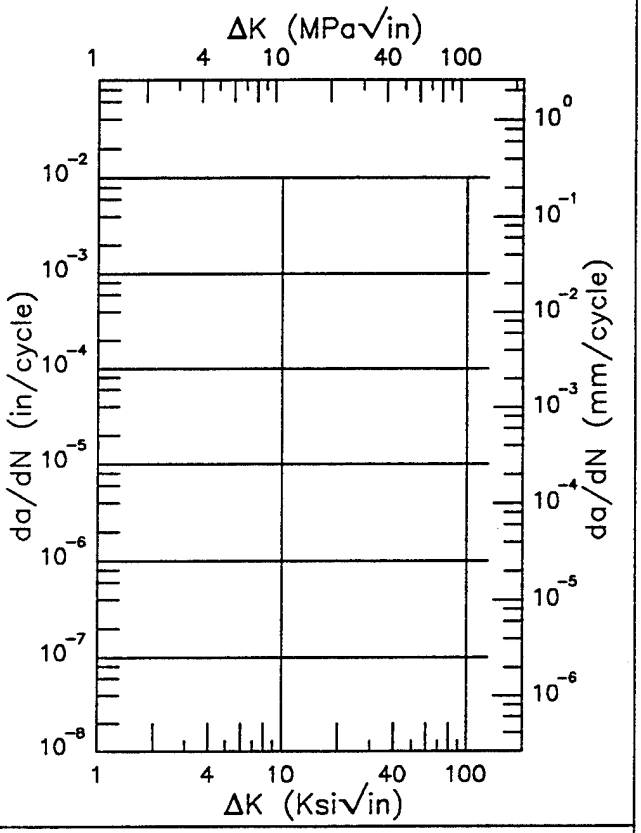
7175 E

Condition/Ht: T73652
Form: 1.25 in. Forging
Specimen Type: WOL
Orientation: T–L
Stress Ratio: 0.02
Frequency: 1 – 20 Hz

Yield Strength: 59 – 63.5 ksi
Ult. Strength: 70 – 72.3 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA005

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| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.82 (min) | 0.974 |
| 5. | 0.974 |
| 6. | 1.31 |
| 7. | 2.21 |
| 8. | 3.86 |
| 9. | 6.37 |
| 10. | 9.61 |
| 13. | 19.7 |
| 16. | 33.0 |
| 20. | 76.6 |
| 25. | 226. |
| 27.58 (max) | 408. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.63 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.25 (Concluded)**

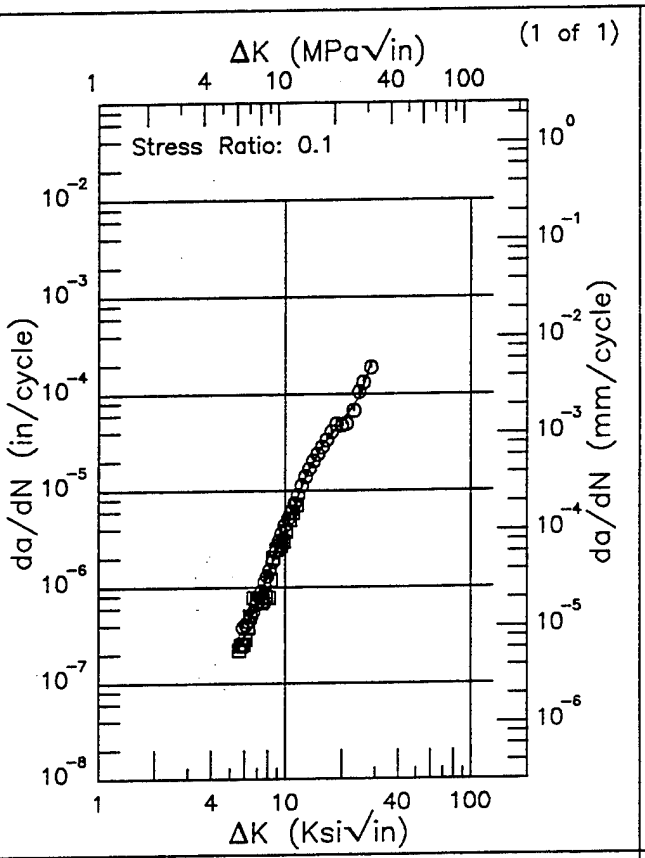
7175

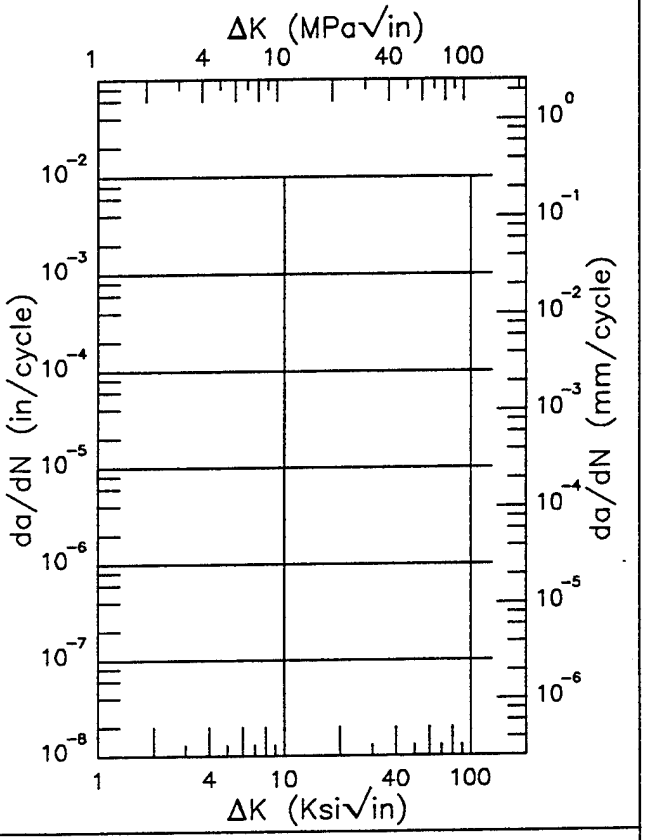
R

Condition/Ht: T74
Form:
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.25 – 0.252 in.
Specimen Width: 2 in.
Ref: NC005

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.62 (min) | 0.248 |
| 6. | 0.323 |
| 7. | 0.651 |
| 8. | 1.27 |
| 9. | 2.35 |
| 10. | 4.07 |
| 13. | 14.3 |
| 16. | 30.6 |
| 20. | 50.5 |
| 25. | 97.4 |
| 28.48 (max) | 213. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.29 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

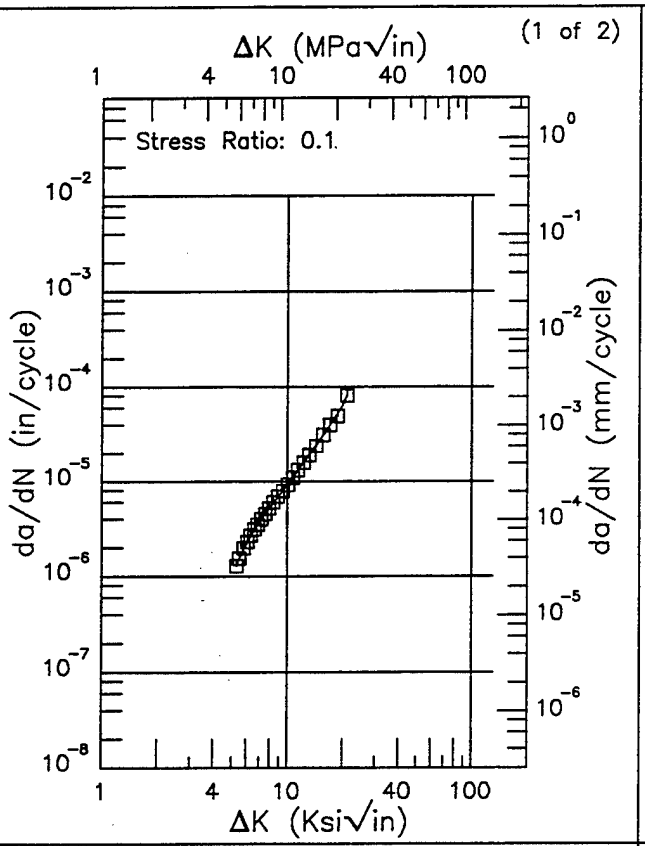
**Figure 8.16.3.1.26**

7175 R

Condition/Ht: T74
Form: Forging
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 72.4 ksi
Ult. Strength:
Specimen Thk: 0.363 – 0.365 in.
Specimen Width: 1.498 – 1.499 in.
Ref: SW001

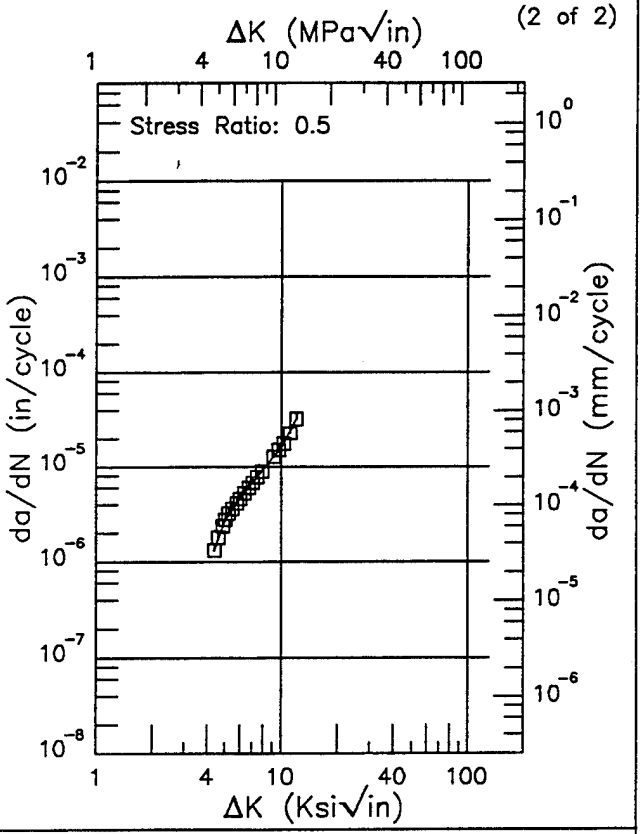
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.29 (min) | 1.30 |
| 6. | 2.20 |
| 7. | 3.66 |
| 8. | 5.26 |
| 9. | 7.07 |
| 10. | 9.23 |
| 13. | 18.7 |
| 16. | 33.2 |
| 20. | 64.0 |
| 20.89 (max) | 79.6 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.74 | 0. .5 .8 1.25 2. |

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| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.36 (min) | 1.30 |
| 5. | 2.68 |
| 6. | 4.60 |
| 7. | 6.69 |
| 8. | 9.33 |
| 9. | 12.4 |
| 10. | 16.2 |
| 11.98 (max) | 31.6 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.53 | 0. .5 .8 1.25 2. |

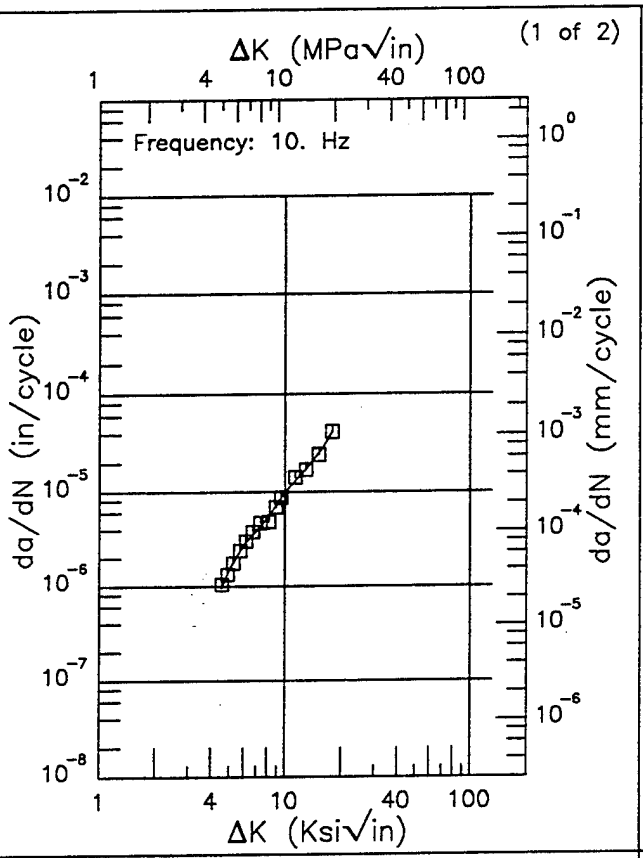
**Figure 8.16.3.1.27**

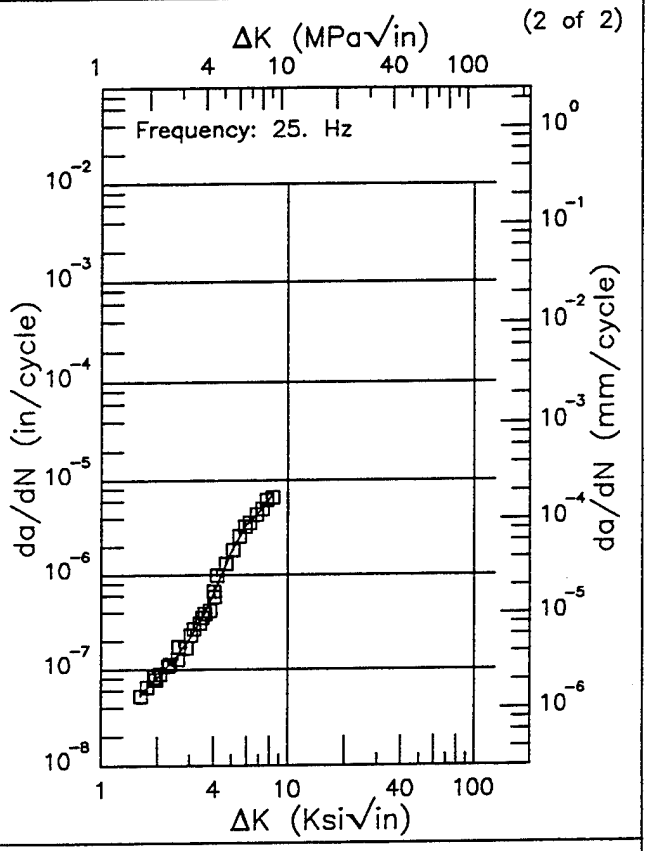
7175

F

Condition/Ht: T74
Form: Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 72.4 ksi
Ult. Strength:
Specimen Thk: 0.171 in.
Specimen Width: 1.5 in.
Ref: SW001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.57 (min) | 0.951 |
| 5. | 1.50 |
| 6. | 2.74 |
| 7. | 3.85 |
| 8. | 5.22 |
| 9. | 7.30 |
| 10. | 9.96 |
| 13. | 17.5 |
| 16. | 29.1 |
| 17.79 (max) | 41.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.62 (min) | 0.0545 |
| 2. | 0.0821 |
| 2.5 | 0.132 |
| 3. | 0.213 |
| 3.5 | 0.357 |
| 4. | 0.624 |
| 5. | 1.77 |
| 6. | 3.42 |
| 7. | 4.59 |
| 8. | 6.35 |
| 8.22 (max) | 7.06 |

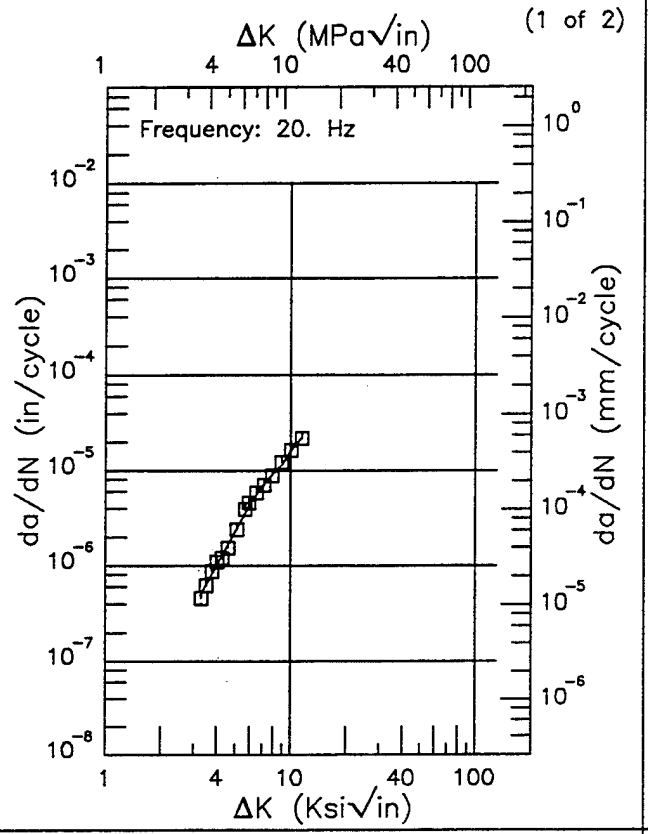
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.84 | 0. .5 .8 1.25 2. |

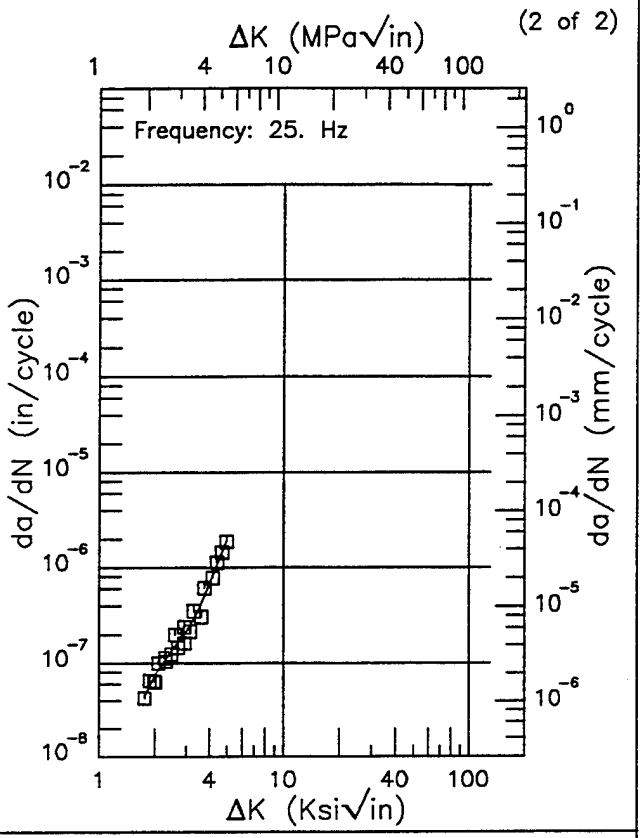
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.77 | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.28**

Condition/Ht: T74
Form: Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.5
Environment: LAB AIR; RT

Yield Strength: 72.4 ksi
Ult. Strength:
Specimen Thk: 0.192 in.
Specimen Width: 1.502 in.
Ref: SW001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.28 (min) | 0.493 |
| 3.5 | 0.618 |
| 4. | 1.00 |
| 5. | 2.29 |
| 6. | 4.38 |
| 7. | 6.94 |
| 8. | 9.20 |
| 9. | 11.7 |
| 10. | 16.2 |
| 11.42 (max) | 21.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.75 (min) | 0.0438 |
| 2. | 0.0750 |
| 2.5 | 0.138 |
| 3. | 0.215 |
| 3.5 | 0.367 |
| 4. | 0.687 |
| 4.93 (max) | 1.84 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.19 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 15.04 | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.29**

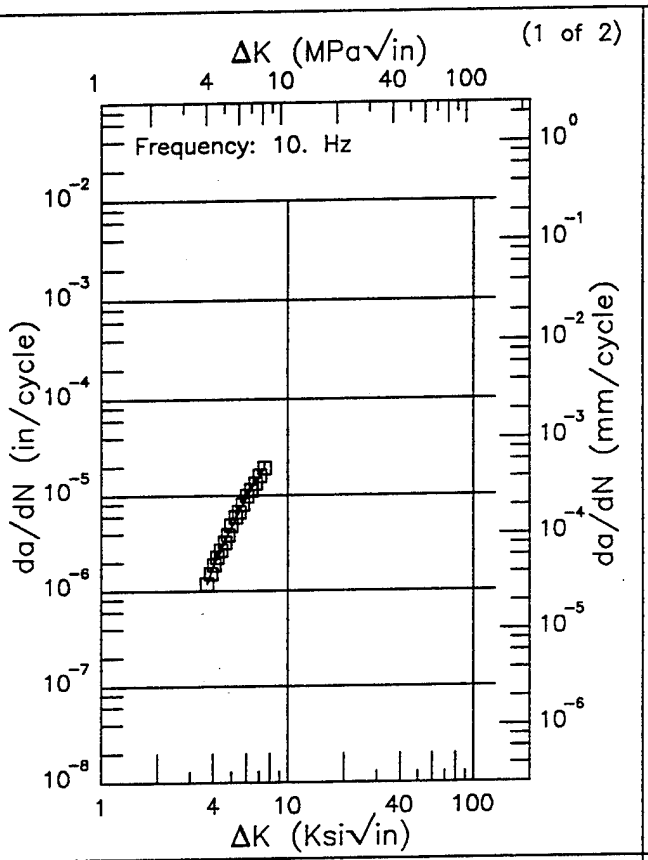
## 7175

F

Condition/Ht: T74
Form: Forging
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.8
Environment: LAB AIR; RT

Yield Strength: 72.4 ksi
Ult. Strength:
Specimen Thk: 0.187 – 0.19 in.
Specimen Width: 1.498 – 1.501 in.
Ref: SW001

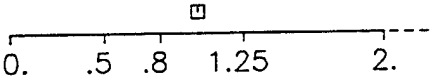
(1 of 2)



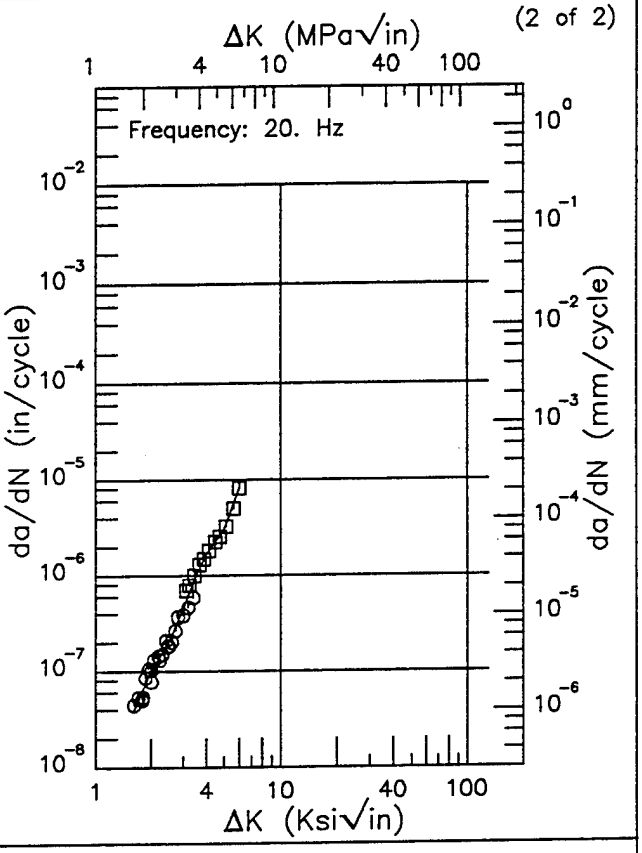

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.70 (min) | 1.18 |
| 4. | 1.77 |
| 5. | 4.66 |
| 6. | 9.34 |
| 7. | 15.3 |
| 7.48 (max) | 19.1 |

| RMS % Error |
|---|
| 1.49 |

Life Prediction Ratio Summary




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| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.61 (min) | 0.0385 |
| 2. | 0.0997 |
| 2.5 | 0.203 |
| 3. | 0.454 |
| 3.5 | 0.993 |
| 4. | 1.67 |
| 5. | 3.05 |
| 5.98 (max) | 8.07 |

| RMS % Error |
|---|
| 14.24 |

Life Prediction Ratio Summary

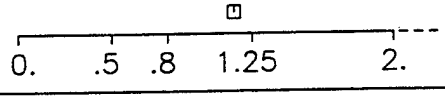
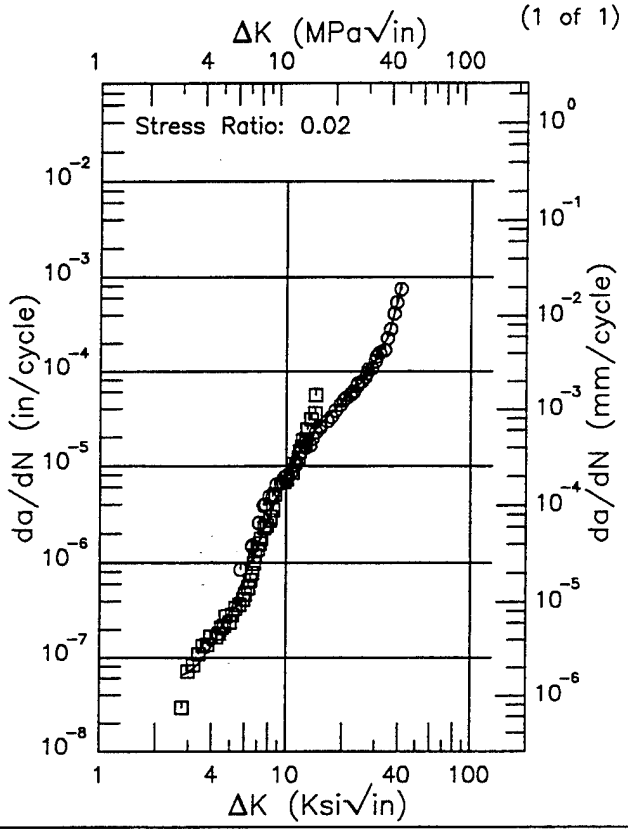
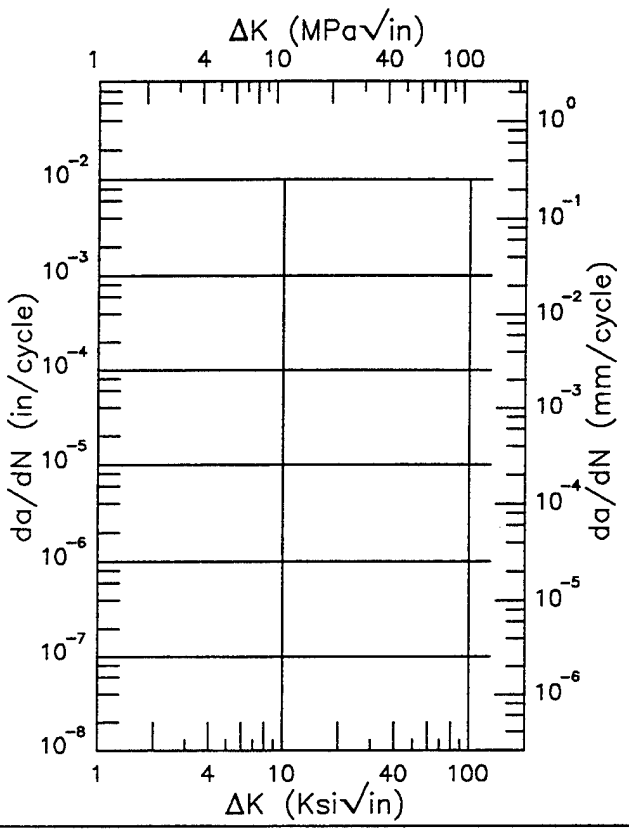



**Figure 8.16.3.1.30**

Condition/Ht: T74
Form: Forging
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency:
Environment: LAB AIR; RT

Yield Strength: 70 ksi
Ult. Strength: 79 ksi
Specimen Thk: 0.25 in.
Specimen Width: 3.95 in.
Ref: MD002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.76 (min) | 0.0651 |
| 3. | 0.0694 |
| 3.5 | 0.0912 |
| 4. | 0.133 |
| 5. | 0.311 |
| 6. | 0.711 |
| 7. | 1.49 |
| 8. | 2.82 |
| 9. | 4.86 |
| 10. | 7.65 |
| 16. | 30.9 |
| 20. | 46.9 |
| 30. | 129. |
| 40. | 626. |
| 41.10 (max) | 829. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 27.15 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

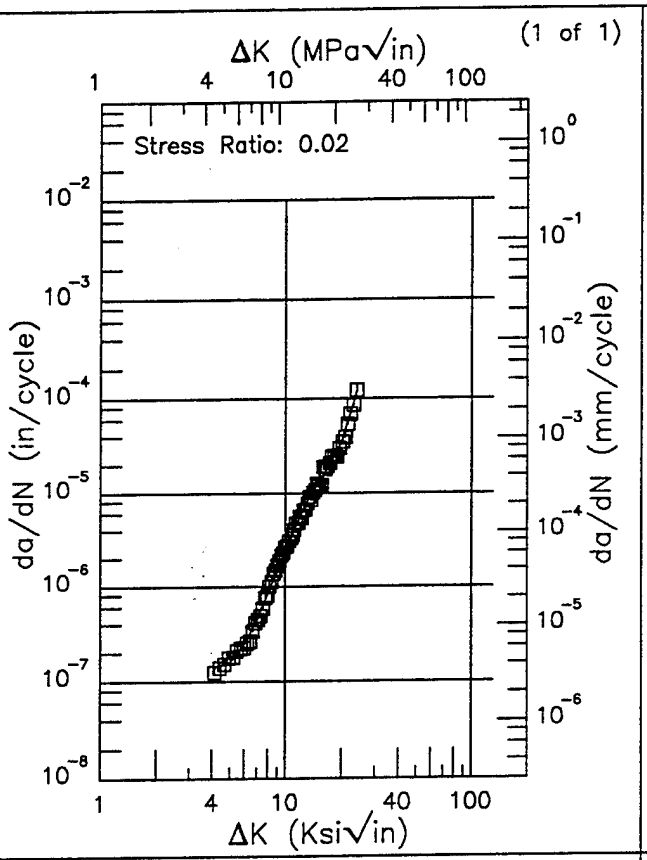
**Figure 8.16.3.1.31**

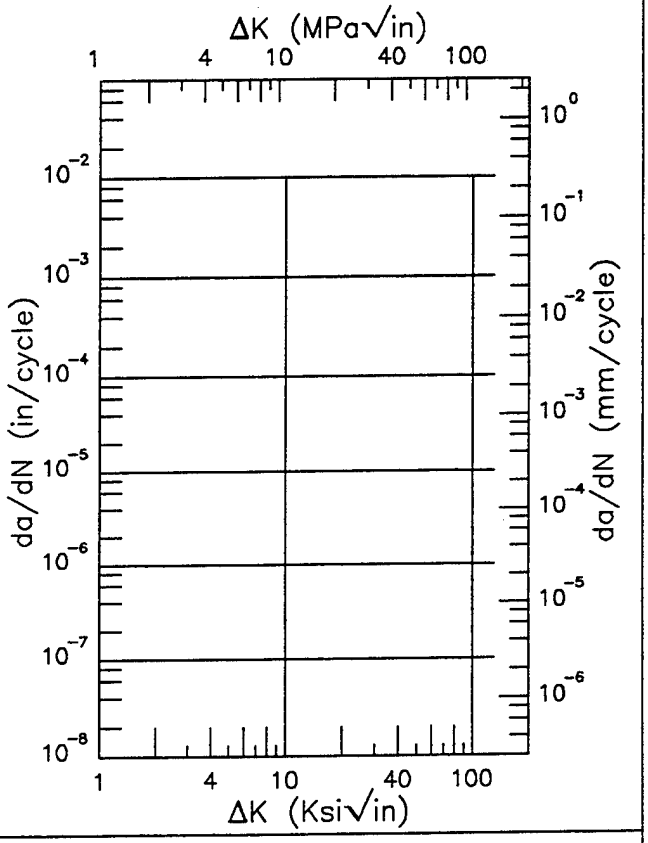
7175

R

Condition/Ht: T74
Form: Forging
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency:
Environment: LAB AIR; RT

Yield Strength: 70 ksi
Ult. Strength: 79 ksi
Specimen Thk: 0.109 in.
Specimen Width: 3.95 in.
Ref: MD002




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.13 (min) | 0.140 |
| 5. | 0.155 |
| 6. | 0.247 |
| 7. | 0.447 |
| 8. | 0.819 |
| 9. | 1.45 |
| 10. | 2.43 |
| 13. | 7.87 |
| 16. | 15.6 |
| 20. | 35.2 |
| 24.00 (max) | 121. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.62 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.32**

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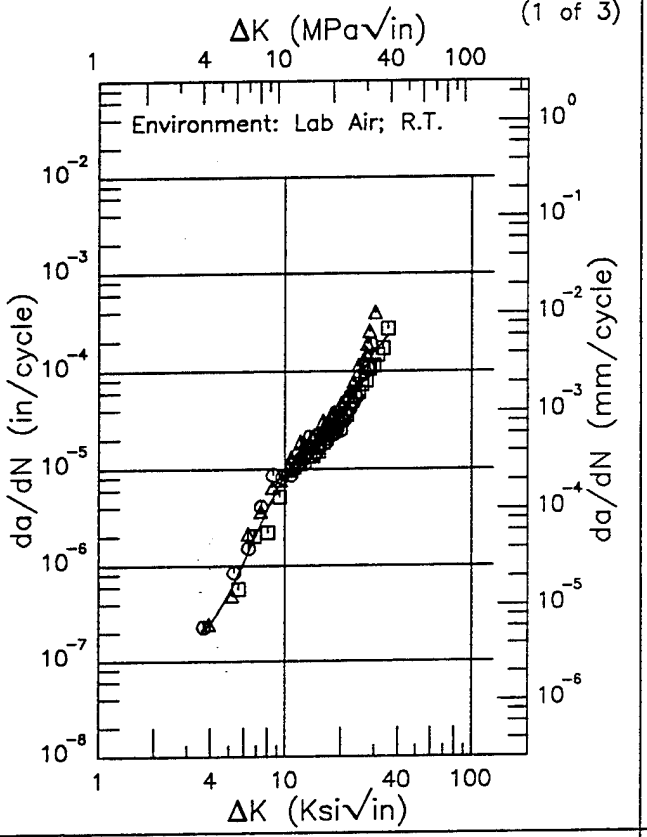
7175

E

Condition/Ht: T74
Form: Forging
Specimen Type: WOL
Orientation: L–T
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 66 – 70 ksi
Ult. Strength: 77 – 79 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MD002

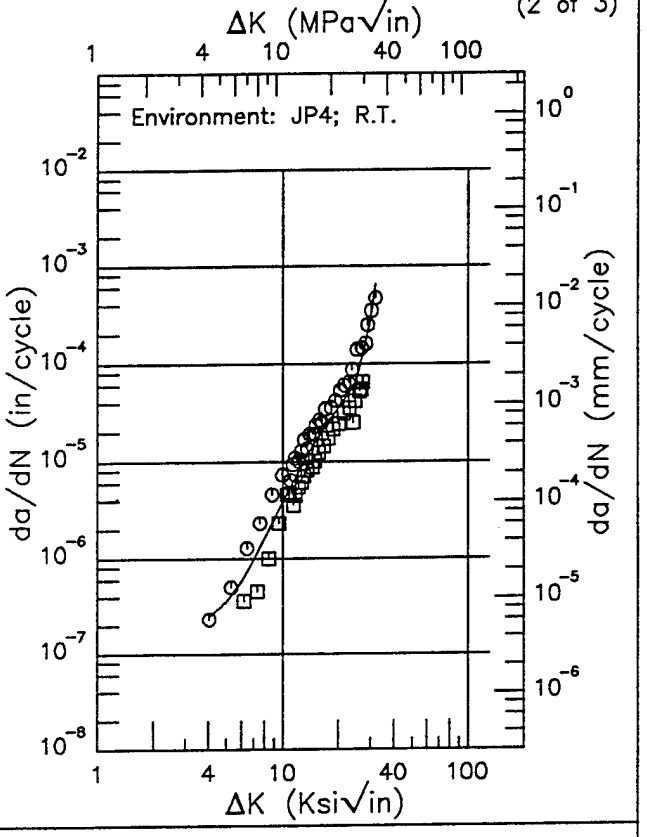
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.67 (min) | 0.208 |
| 4. | 0.249 |
| 5. | 0.507 |
| 6. | 1.08 |
| 7. | 2.13 |
| 8. | 3.81 |
| 9. | 6.09 |
| 10. | 8.78 |
| 13. | 15.7 |
| 16. | 20.2 |
| 20. | 33.7 |
| 25. | 85.1 |
| 30. | 159. |
| 35. | 224. |
| 35.40 (max) | 229. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 28.85 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.02 (min) | 0.252 |
| 5. | 0.355 |
| 6. | 0.580 |
| 7. | 0.973 |
| 8. | 1.60 |
| 9. | 2.53 |
| 10. | 3.83 |
| 13. | 10.2 |
| 16. | 19.5 |
| 20. | 35.4 |
| 25. | 64.4 |
| 30. | 275. |
| 31.70 (max) | 655. |

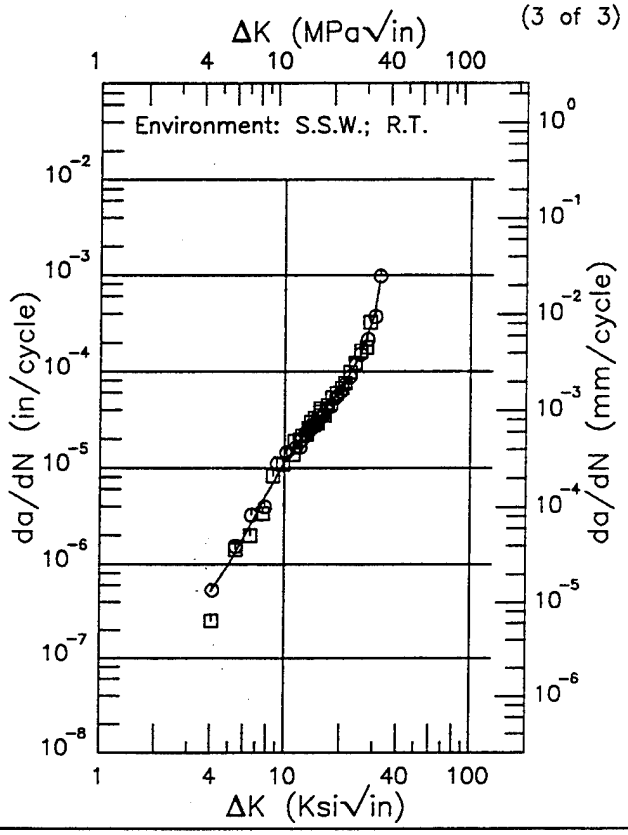
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 44.14 | 0. .5 .8 1.25 2. |

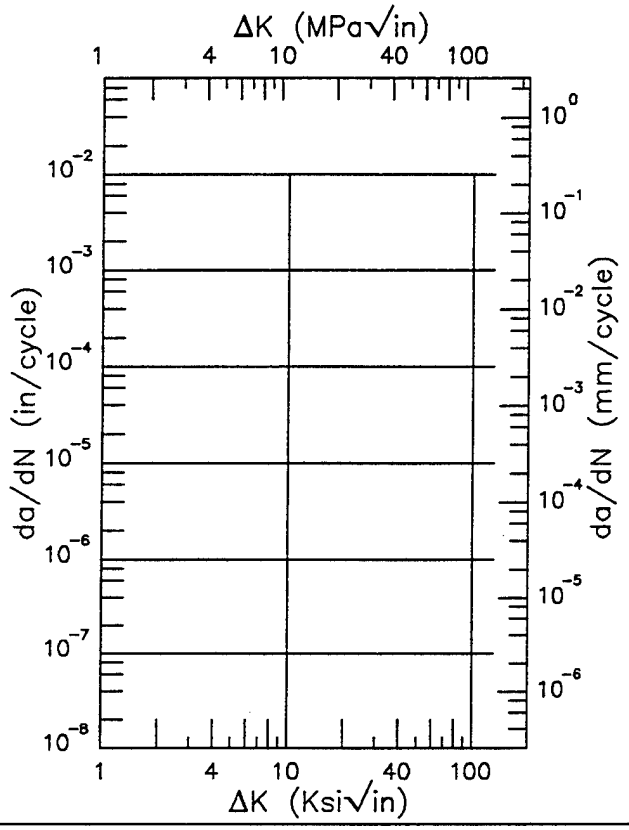
**Figure 8.16.3.1.33**

Condition/Ht: T74
Form: Forging
Specimen Type: WOL
Orientation: L–T
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 66 – 70 ksi
Ult. Strength: 77 – 79 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MD002

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| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.03 (min) | 0.525 |
| 5. | 0.997 |
| 6. | 1.89 |
| 7. | 3.33 |
| 8. | 5.42 |
| 9. | 8.19 |
| 10. | 11.5 |
| 13. | 23.0 |
| 16. | 36.6 |
| 20. | 66.1 |
| 25. | 141. |
| 30. | 388. |
| 32.20 (max) | 886. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.14 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.16.3.1.33 (Concluded)**

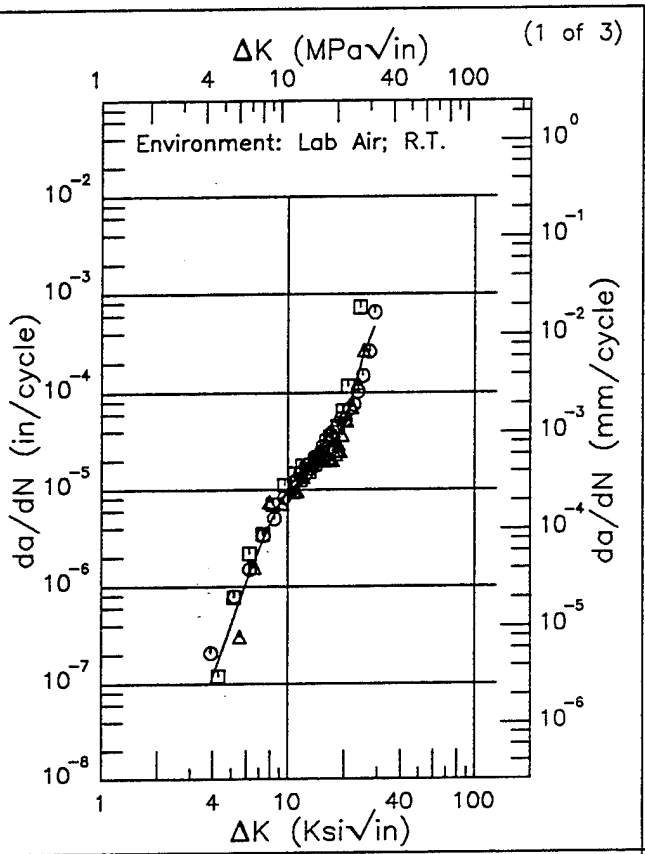
7175

E

Condition/Ht: T74
Form: Forging
Specimen Type: WOL
Orientation: T-L
Stress Ratio: 0.02
Frequency: 0.1 - 20 Hz

Yield Strength: 59 - 64 ksi
Ult. Strength: 70 - 72 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MD002

(1 of 3)



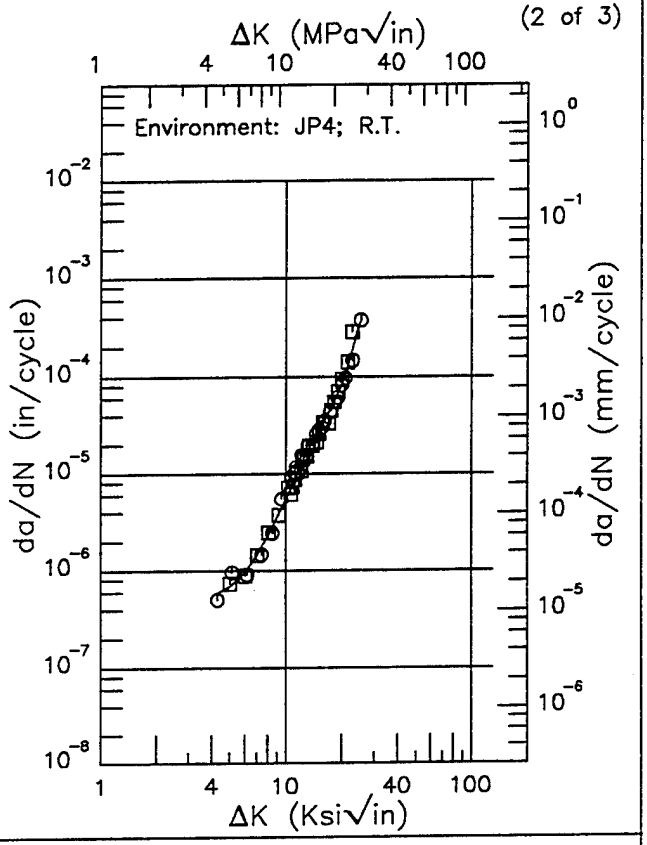

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.88 (min) | 0.102 |
| 4. | 0.120 |
| 5. | 0.414 |
| 6. | 1.11 |
| 7. | 2.43 |
| 8. | 4.48 |
| 9. | 7.18 |
| 10. | 10.3 |
| 13. | 18.0 |
| 16. | 23.4 |
| 20. | 48.9 |
| 25. | 231. |
| 28.90 (max) | 468. |

RMS % Error
44.39

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.29 (min) | 0.590 |
| 5. | 0.681 |
| 6. | 0.958 |
| 7. | 1.45 |
| 8. | 2.26 |
| 9. | 3.53 |
| 10. | 5.46 |
| 13. | 16.6 |
| 16. | 33.1 |
| 20. | 79.1 |
| 25. | 344. |
| 25.30 (max) | 364. |

RMS % Error
14.66

Life Prediction Ratio Summary

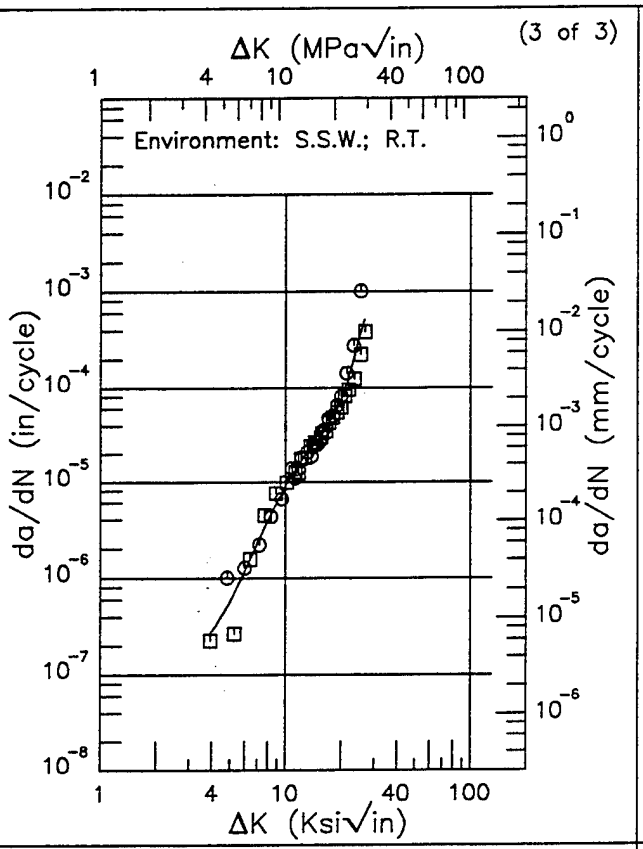
0. .5 .8 1.25 2.

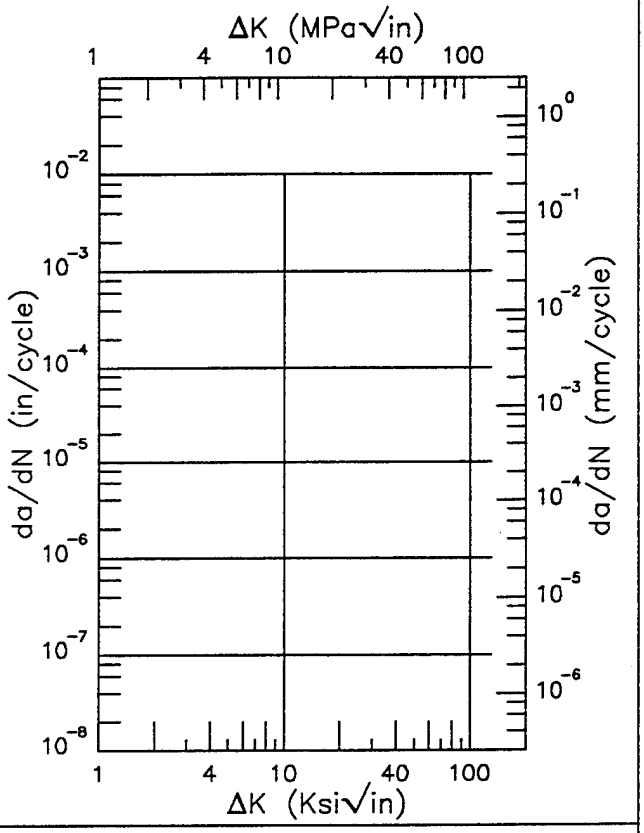
**Figure 8.16.3.1.34**

7175 E

Condition/Ht: T74
Form: Forging
Specimen Type: WOL
Orientation: T–L
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 59 – 64 ksi
Ult. Strength: 70 – 72 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MD002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.89 (min) | 0.263 |
| 4. | 0.282 |
| 5. | 0.571 |
| 6. | 1.17 |
| 7. | 2.24 |
| 8. | 3.92 |
| 9. | 6.26 |
| 10. | 9.17 |
| 13. | 20.2 |
| 16. | 33.7 |
| 20. | 72.1 |
| 25. | 351. |
| 26.80 (max) | 517. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 34.34 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

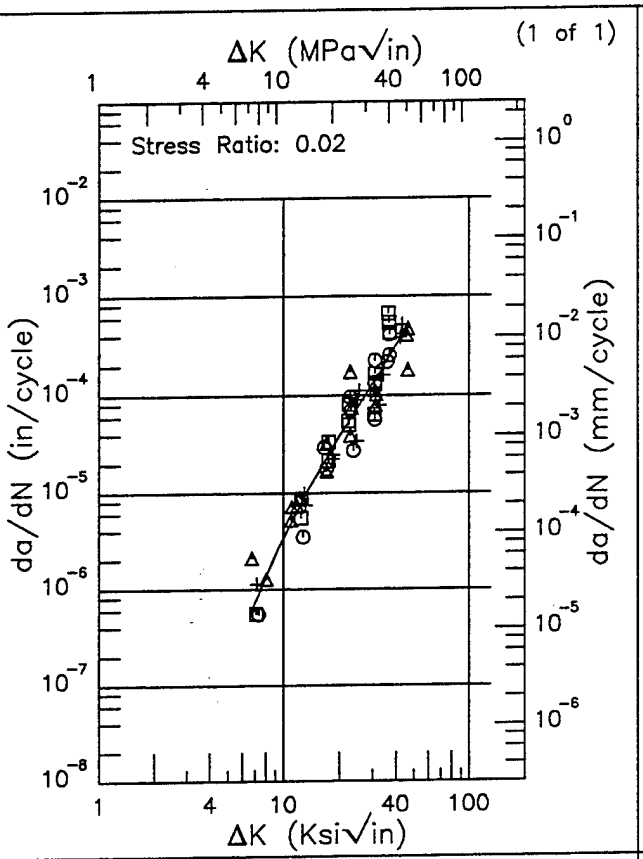
**Figure 8.16.3.1.34 (Concluded)**

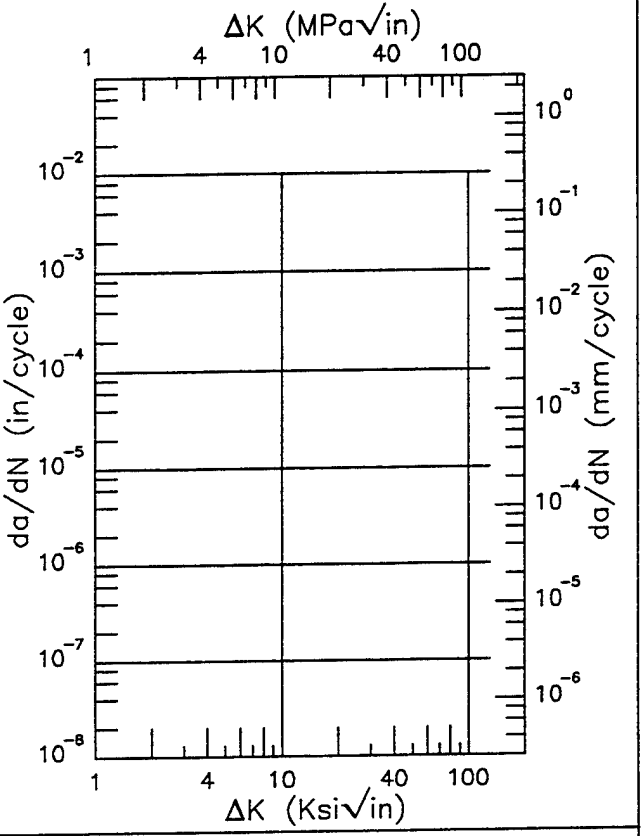
7175

R

Condition/Ht: T74
Form: 2.4 in. Forging
Specimen Type: TDCB
Orientation: L–T
Frequency: 0.1 – 10 Hz
Environment: LAB AIR; RT

Yield Strength: 69 – 71 ksi
Ult. Strength: 78 – 79 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5.5 in.
Ref: MD002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.72 (min) | 0.595 |
| 7. | 0.725 |
| 8. | 1.34 |
| 9. | 2.24 |
| 10. | 3.44 |
| 13. | 9.22 |
| 16. | 18.8 |
| 20. | 38.3 |
| 25. | 75.9 |
| 30. | 132. |
| 35. | 211. |
| 40. | 319. |
| 46.40 (max) | 514. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 61.11 | 0. .5 .8 1.25 2. |

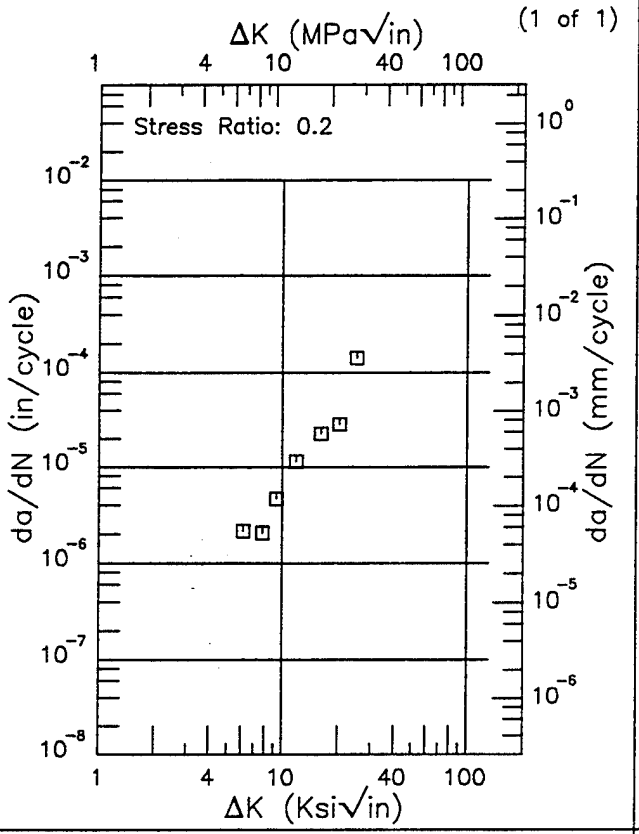
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

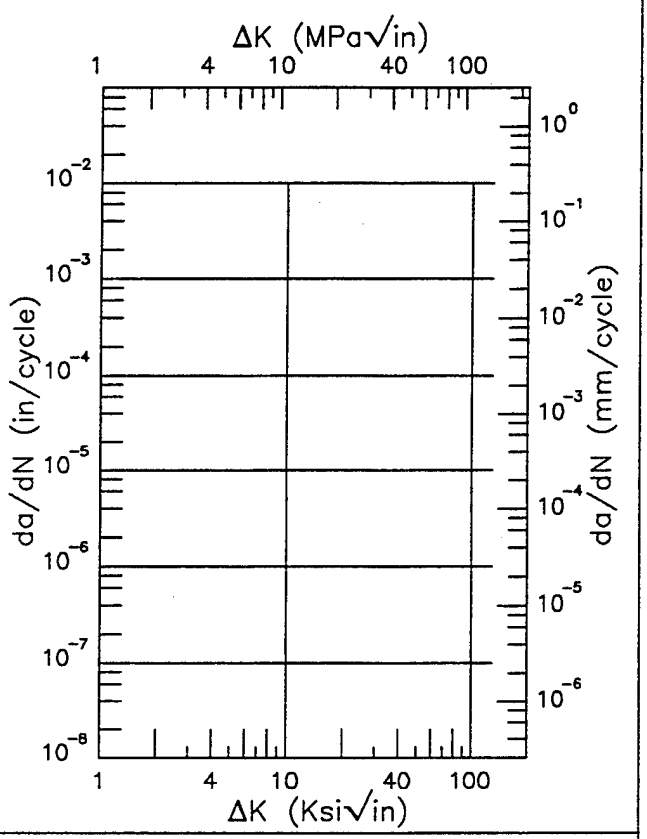
**Figure 8.16.3.1.35**

7175 R

Condition/Ht: T74
Form: 2.4 in. Forging
Specimen Type: TDCB
Orientation: L–T
Frequency: 0.1 – 10 Hz
Environment: L.H.A.; RT

Yield Strength: 69 ksi
Ult. Strength: 78 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5.5 in.
Ref: MD002




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

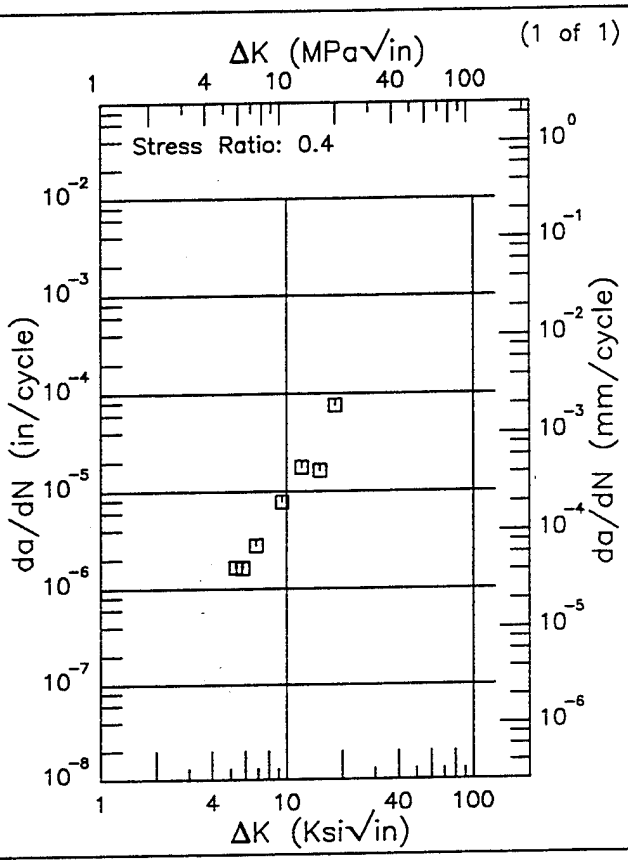
**Figure 8.16.3.1.36**

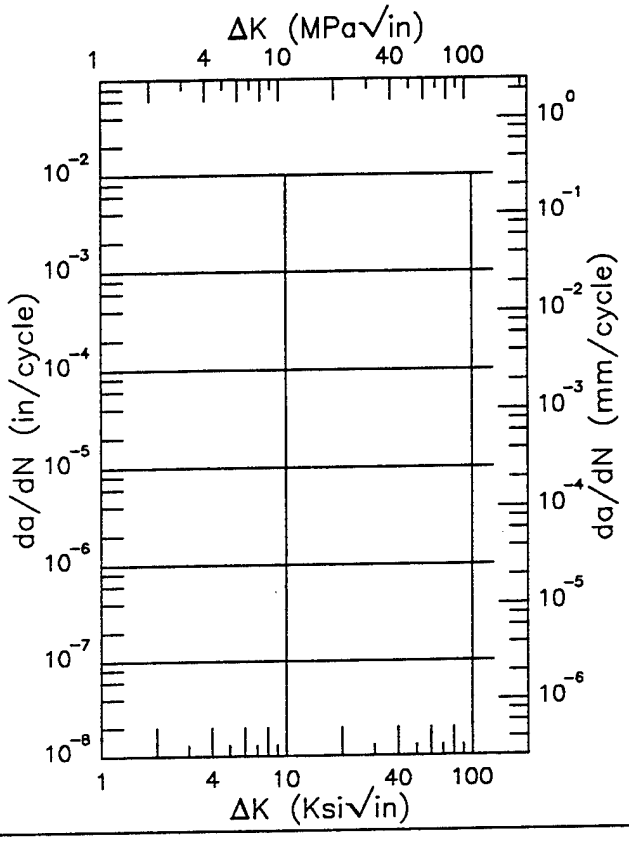
R 7175

Condition/Ht: T74
Form: 3.1 in. Forging
Specimen Type: TDCB
Orientation: L–T
Frequency: 0.1 – 10 Hz
Environment: DRY AIR; RT

Yield Strength: 66 ksi
Ult. Strength: 75 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5.5 in.
Ref: MD002

(1 of 1)




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

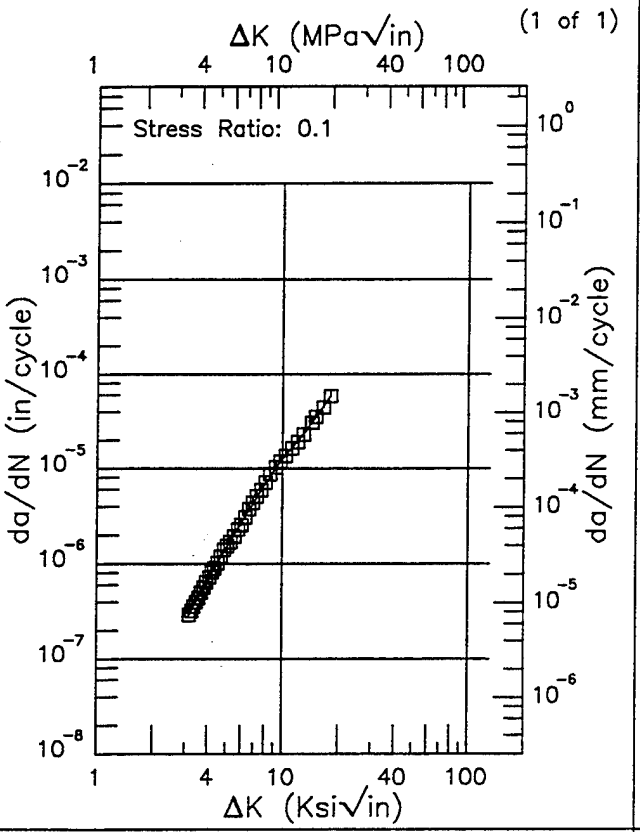
| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

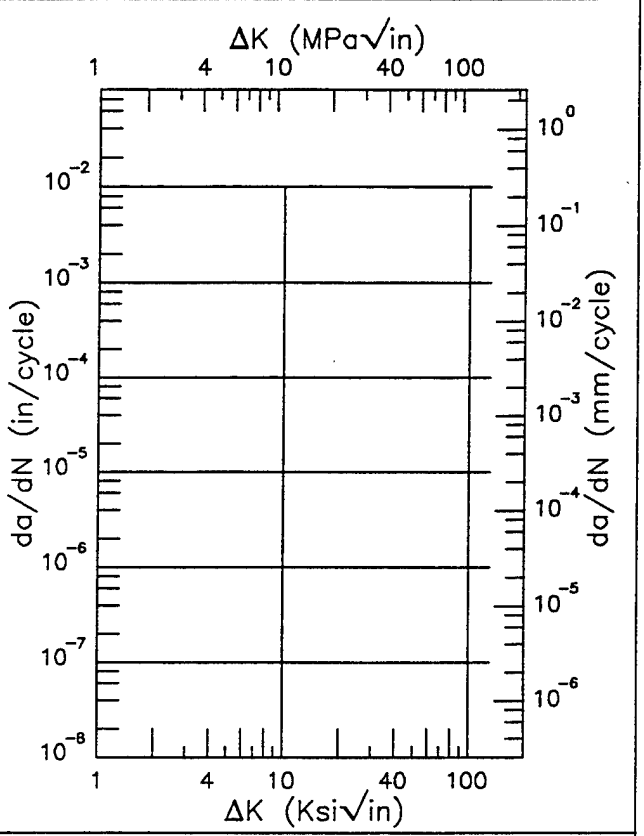
**Figure 8.16.3.1.37**

7175 R

Condition/Ht: T76511
Form: Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: DRY AIR; RT

Yield Strength: 64.2 ksi
Ult. Strength:
Specimen Thk: 0.494 in.
Specimen Width: 2 in.
Ref: RI008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.16 (min) | 0.289 |
| 3.5 | 0.418 |
| 4. | 0.672 |
| 5. | 1.45 |
| 6. | 2.65 |
| 7. | 4.38 |
| 8. | 6.70 |
| 9. | 9.54 |
| 10. | 12.7 |
| 13. | 23.2 |
| 16. | 42.0 |
| 17.88 (max) | 57.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.13 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

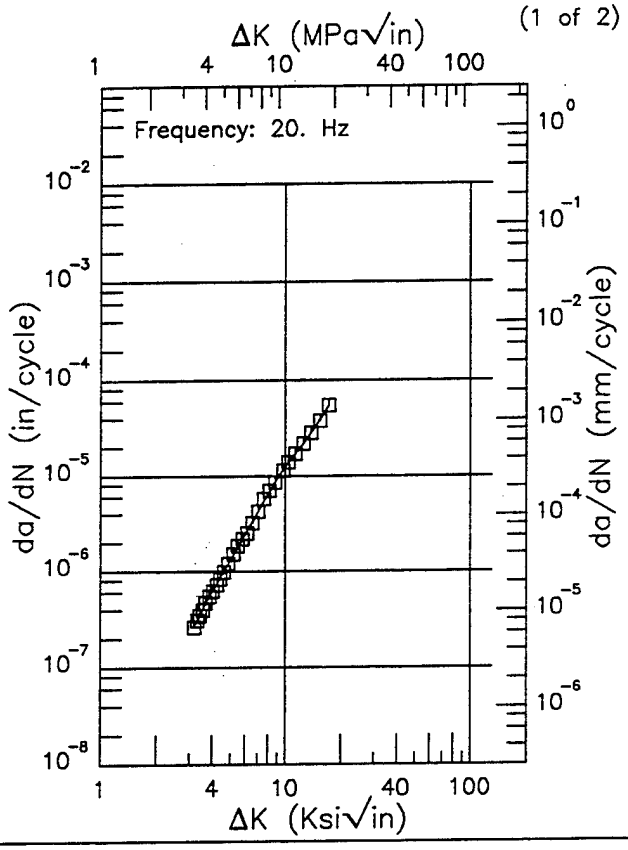
**Figure 8.16.3.1.38**

F | 7175

Condition/Ht: T76511
Form: Extrusion
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.1
Environment: DRY AIR; RT

Yield Strength: 64.2 ksi
Ult. Strength:
Specimen Thk: 0.245 in.
Specimen Width: 2.004 in.
Ref: RI008

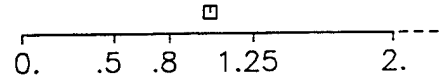
(1 of 2)



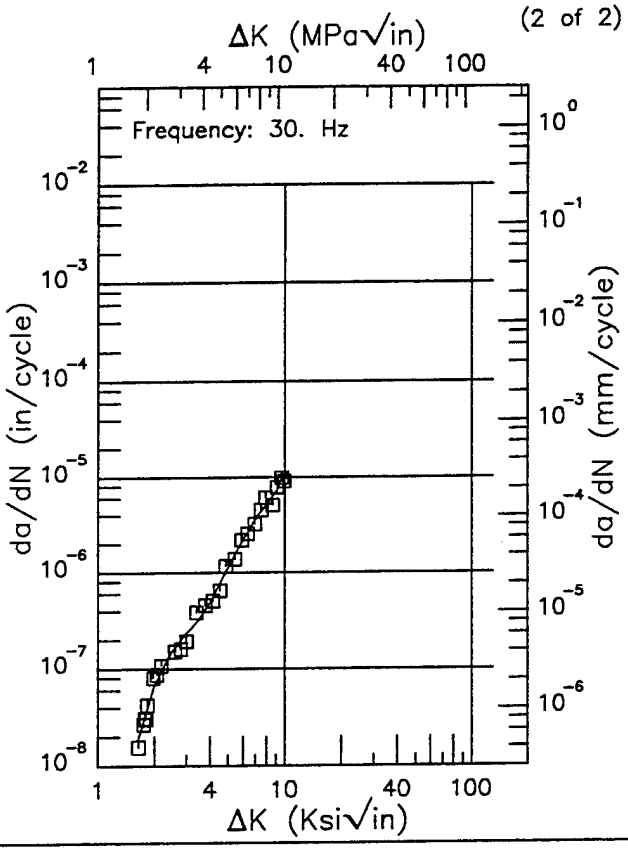

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.17 (min) | 0.266 |
| 3.5 | 0.380 |
| 4. | 0.607 |
| 5. | 1.30 |
| 6. | 2.39 |
| 7. | 4.05 |
| 8. | 6.38 |
| 9. | 9.32 |
| 10. | 12.6 |
| 13. | 23.9 |
| 16. | 44.2 |
| 17.12 (max) | 54.7 |

RMS % Error: 2.43

Life Prediction Ratio Summary




(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.64 (min) | 0.0182 |
| 2. | 0.0675 |
| 2.5 | 0.154 |
| 3. | 0.234 |
| 3.5 | 0.330 |
| 4. | 0.486 |
| 5. | 1.11 |
| 6. | 2.21 |
| 7. | 3.64 |
| 8. | 5.14 |
| 9. | 7.00 |
| 9.88 (max) | 10.6 |

RMS % Error: 14.37

Life Prediction Ratio Summary

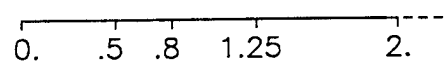


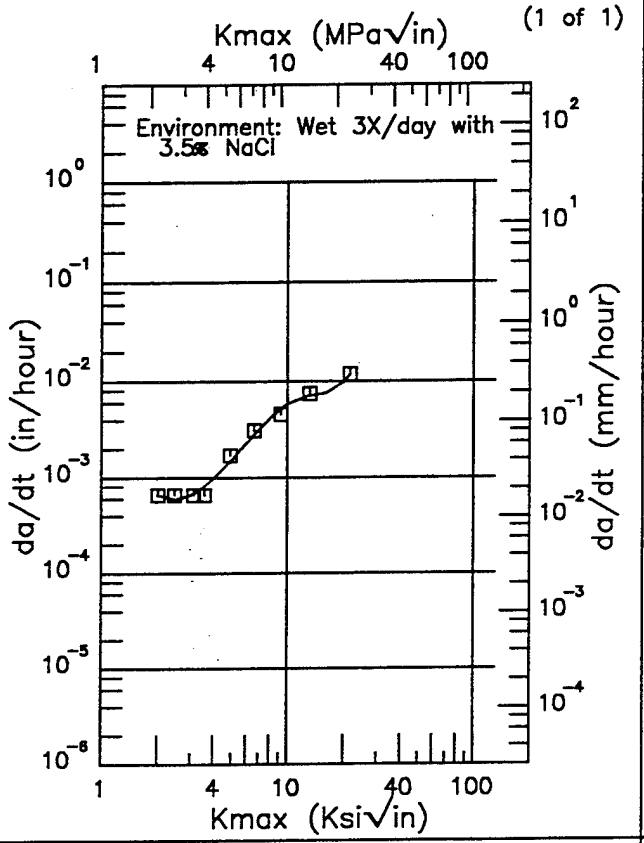

**Figure 8.16.3.1.39**

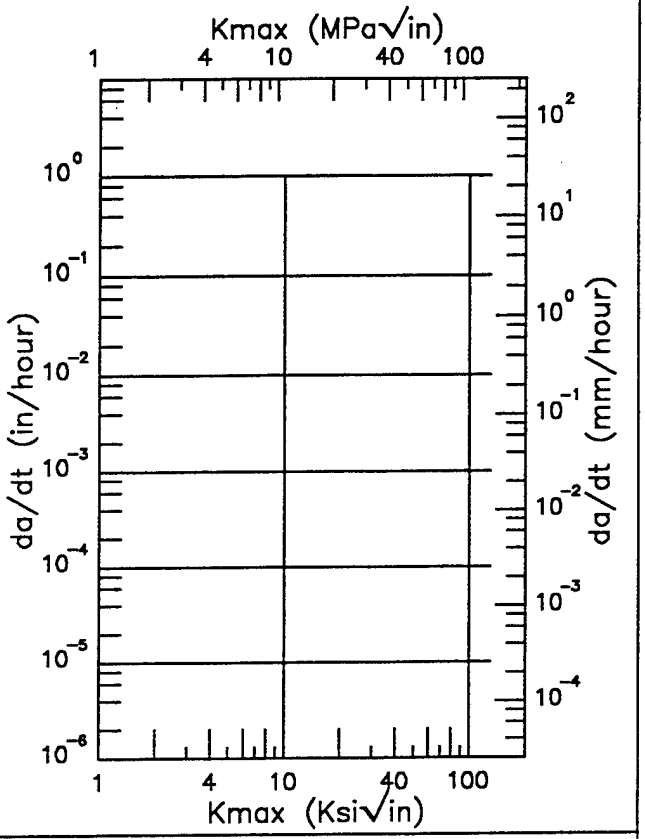
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## 7175

Condition/Ht: T66
Form: Forging
Specimen Type: DCB
Orientation: S–L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
$A_o$:
$K_{Iscc}$:
Ref: 78313




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 2.00 (min) | 0.658 |
| 3. | 0.593 |
| 3. | 0.657 |
| 4. | 0.793 |
| 4. | 0.988 |
| 5. | 1.54 |
| 6. | 2.29 |
| 7. | 3.18 |
| 8. | 4.13 |
| 9. | 5.05 |
| 10. | 5.85 |
| 13. | 7.10 |
| 16. | 7.59 |
| 20. | 9.89 |
| 21.50 (max) | 11.8 |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

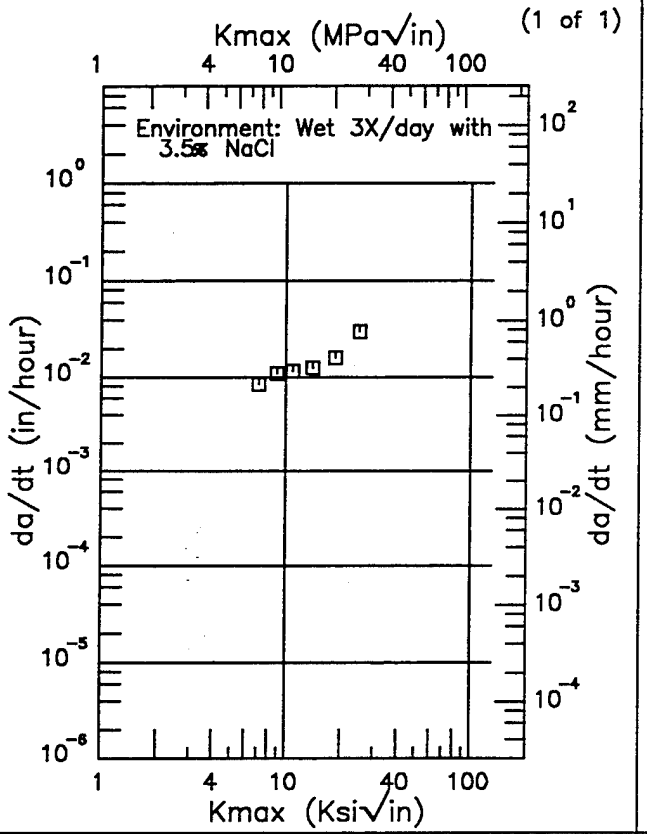
| RMS % Error |
|---|
| 10.66 |

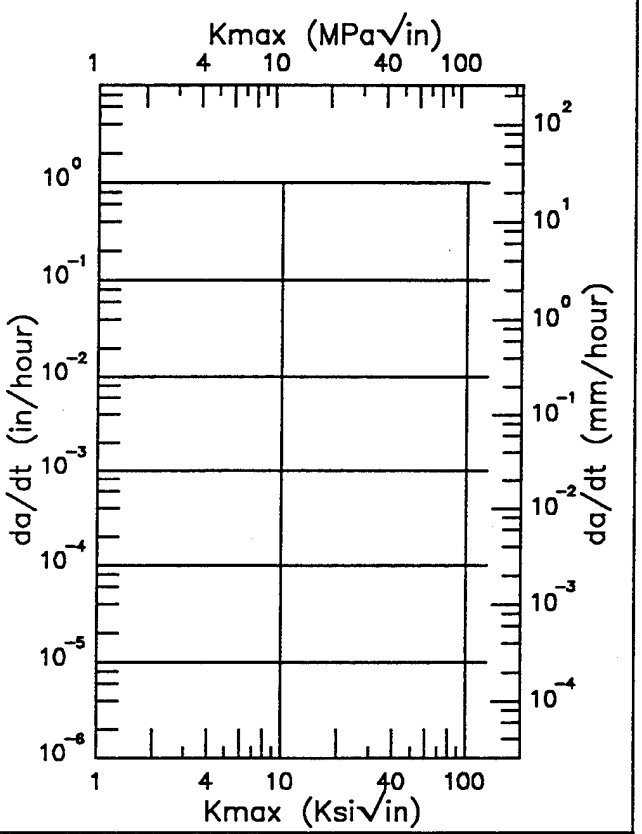
| RMS % Error |
|---|

**Figure 8.16.3.2.1**

Condition/Ht: T66
Form: Forging
Specimen Type: DCB
Orientation: S–L
Yield Strength:
Ult. Strength:

Specimen Thk: 1 in.
Specimen Width: 5 in.
$A_o$:
$K_{Iscc}$:
Ref: 78313




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

| RMS % Error | | RMS % Error | |
|---|---|---|---|

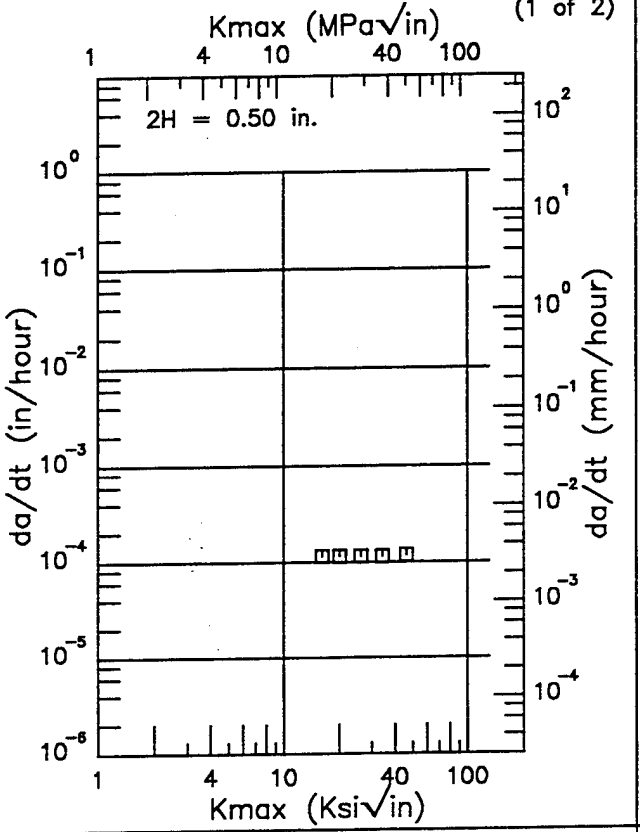
**Figure 8.16.3.2.2**

7175

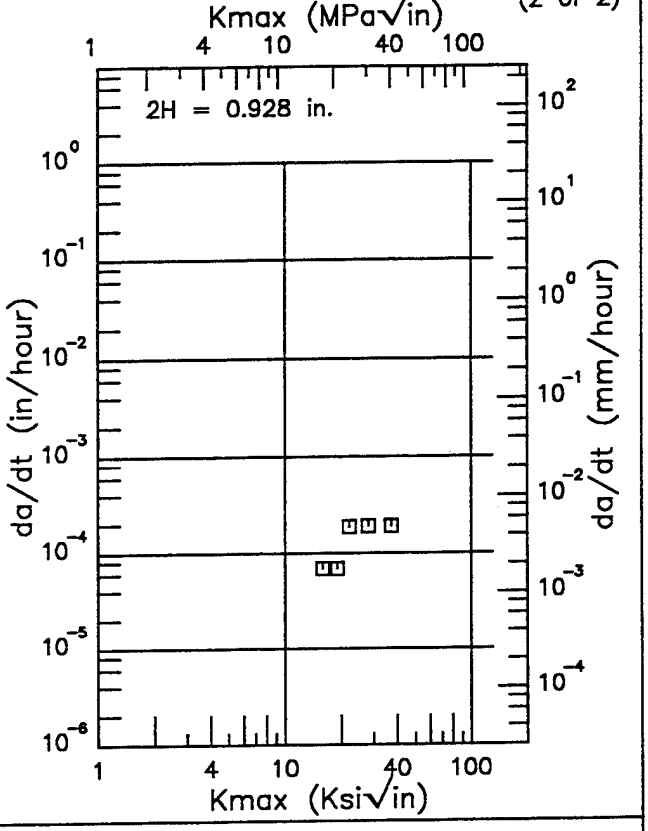
Condition/Ht: T736
Form: Forging
Specimen Type: DCB
Orientation:
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
Ao:
$K_{Iscc}$:
Ref: 84284

(1 of 2)




(2 of 2)




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

| RMS % Error | |
|---|---|

| RMS % Error | |
|---|---|

**Figure 8.16.3.2.3**

# TABLE 8.16.3.3



## $K_{Iscc}$ SUMMARY FOR ALUMINUM ALLOY 7175

| Condition/ Heat Treat | Prod Form | Test Temp (°F) | Spec Or. | Yield Str (Ksi) | Envir. | Specimen | | | Prod Thk (in) | Crack (in) | $K_Q$ (Ksi√in) | $K_{Iscc}$ (Ksi√in) | Test Time (min) | Test Date | Refer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Design | Width (in) | Thick (in) | | | | | | | |
| T66 | F | R.T. | S-L | 76 | 3.5% NaCl | DCB | 5 | 1 | .... | 0.7 | 29 | <5 | .... | 1969 | 78313 |
| | | | | | | DCB | 5 | 1 | .... | 0.7 | 29 | <7 | .... | 1969 | 78313 |
| | | | | | | DCB | 5 | 1 | .... | 0.7 | 29 | <6 | .... | 1969 | 78313 |
| T73511 | E | R.T. | S-L | --- | 3.5% NaCl | DCB | 4.75 | 1 | 1.3 | 0.96 | --- | 24.1 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 1.01 | --- | 22.6 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 0.96 | --- | 31.2 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 0.93 | --- | 24.4 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 0.94 | --- | 24.6 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 0.97 | --- | 22.4 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 1.13 | --- | 20.5 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 1.1 | --- | 25.6 | 89280 | 1977 | LG001 |
| | | | | | | DCB | 4.75 | 1 | 1.3 | 0.9 | --- | 24.1 | 89280 | 1977 | LG001 |
| T736 | F | R.T. | L-T | 65.9 | 3.5% NaCl | TDCB | 5 | 1.25 | 3.1 | --- | --- | 30.6 | --- | 1971 | 84360 |
| | | | S-L | 65.7 | 3.5% NaCl | CT | 1 | 0.5 | --- | --- | 24.8 | 18.7 | 61740 | 1972 | 83242 |
| T73652 | F | R.T. | L-T | 68 | F.C.S. | DCB | 5.5 | 1 | 6 | --- | 44 | >27.6 | 76140 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 44 | >27.8 | 76140 | 1976 | RI006 |
| | | | | | S.C.S. | DCB | 5.5 | 1 | 6 | --- | 44 | 27.7 | 76200 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 44 | 27.5 | 76200 | 1976 | RI006 |

## TABLE 8.16.3.3 (CONCLUDED)



## $K_{Iscc}$ SUMMARY FOR ALUMINUM ALLOY 7175

| Condition/ Heat Treat | Prod Form | Test Temp (°F) | Spec Or. | Yield Str (Ksi) | Envir. | Specimen | | | Prod Thk (in) | Crack (in) | $K_Q$ (Ksi√in) | $K_{Iscc}$ (Ksi√in) | Test Time (min) | Test Date | Refer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Design | Width (in) | Thick (in) | | | | | | | |
| T73652 (cont'd) | F (cont'd) | R.T. (cont'd) | L-T (cont'd) | 68 (cont'd) | S.T.W. | DCB | 5.5 | 1 | 6 | --- | 44 | >21.5 | 133680 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 44 | >21.5 | 133680 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 44 | >22.5 | 123600 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 44 | >22.5 | 133680 | 1976 | RI006 |
| | | | T-L | 63.5 | JP-4 Fuel | BWOL | 3.085 | 1.252 | 1.25 | 1.37 | --- | >17 | 148320 | 1977 | MA005 |
| | | | | | | BWOL | 3.087 | 1.252 | 1.25 | 1.4 | --- | >16.8 | 148320 | 1977 | MA005 |
| | | | | | Sim. Sea Water | BWOL | 3.086 | 1.247 | 1.25 | 1.7 | --- | >17.7 | 132480 | 1977 | MA005 |
| | | | | | | BWOL | 3.087 | 1.248 | 1.25 | 1.41 | --- | >17.6 | 132480 | 1977 | MA005 |
| | | | | 64 | S.T.W. | DCB | 5.5 | 1 | 6 | --- | 40 | 22 | 133680 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 40 | >18 | 133680 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 40 | >18.5 | 133680 | 1976 | RI006 |
| | | | | | | DCB | 5.5 | 1 | 6 | --- | 40 | >18.5 | 133680 | 1976 | RI006 |
| | | | S-T | 57.5 | JP-4 Fuel | BWOL | 3.086 | 1.248 | 1.25 | 1.41 | --- | >18.2 | 148320 | 1977 | MA005 |
| | | | | | | BWOL | 3.084 | 1.252 | 1.25 | 1.35 | --- | >17.9 | 148320 | 1977 | MA005 |
| | | | | | Sim. Sea Water | BWOL | 3.084 | 1.248 | 1.25 | 1.38 | --- | >17 | 132480 | 1977 | MA005 |
| | | | | | | BWOL | 3.086 | 1.248 | 1.25 | 1.37 | --- | >17.6 | 132480 | 1977 | MA005 |

# TABLE 8.17.1.1

## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 7178 AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Plate | T651 | 25.3 | 1.9 | 5 | 21.5 | 1.8 | 10 | 15. | 0.3 | 3 |
| | T7651 | 27.8 | 1.8 | 16 | 23.1 | 2.4 | 18 | 17.3 | 0.4 | 5 |
| Extrusion | T6510 | --- | --- | --- | 18.5 | 1.3 | 6 | 14.5 | 0.1 | 2 |
| | T76510 | 30.5 | 0.9 | 6 | 26.8 | 1.1 | 5 | 16.2 | 0.4 | 2 |
| | T76511 | 25.7 | 0.3 | 2 | --- | --- | --- | --- | --- | --- |
| Forged Bar | T76510 | --- | --- | --- | 19.2 | 1.2 | 5 | --- | --- | --- |

## TABLE 8.17.1.2.1



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7178 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Distilled Water**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Δ*K Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T76 | SHEET | 0.02 | | | 0.85 | 11.5 | 83.11 | | |

## TABLE 8.17.1.2.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7178 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6 | SHEET | 0. | 9 | | 0.79 | 21.79 | | | |
| | | 0.05 | 9 | | 0.71 | 10.46 | | | |
| | | 0.05 | 9 | | | 24.71 | 145.22 | | |
| | | 0.5 | 9 | 0.2 | 2.99 | | | | |
| | | 0.5 | 9 | | 6.33 | 53.38 | | | |
| | | 0.6 | 9 | | 9.94 | 91.29 | | | |

## TABLE 8.17.1.2.3



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7178 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6 | SHEET | 0.02 | 1 | | | | 109.75 | | |
| | | 0.02 | 5 | | | 12.3 | | | |
| | | 0.02 | 13 | | | 9.77 | | | |
| | | 0.02 | 14 | | | 12.22 | 89.91 | | |
| | | 0.5 | 1 | | | 39.26 | | | |
| | | 0.5 | 3 | | | 59.88 | | | |
| | | 0.5 | 14 | | | 44.51 | | | |
| T651 | SHEET | 0.02 | 0.1-12 | | 0.92 | 15.34 | 104.72 | | |
| | PLATE | 0. | 20 | | 0.81 | 13.19 | 54.46 | | |
| | | 0.02 | 0.1-12 | | 1.12 | 17.2 | 151.49 | | |
| | | 0.02 | 0.1-12 | | 0.91 | 14.1 | 86.56 | | |
| T76 | SHEET | 0.02 | --- | | 0.64 | 7.18 | 58.42 | | |
| | | 0.02 | --- | | 0.59 | 7.09 | 64.88 | | |
| T7651 | PLATE | 0.33 | 5.2 | | | 13.65 | | | |
| | | 0.33 | 5.2 | | | 11.95 | | | |
| | | 0.33 | 5.2 | | | 12.47 | | | |

## TABLE 8.17.1.2.3 (CONCLUDED)

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7178 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi/in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T76510 | EXTRUSION | 0.33 | 5.2 | | | 12.63 | | | |
| | | 0.33 | 5.2 | | | 12.29 | | | |
| | EXTRUDED BAR | 0.33 | 5.2 | | | 13.47 | | | |

## TABLE 8.17.1.2.4



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7178 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | PLATE | 0. | 20 | | 0.94 | 22.93 | 140.35 | | |
| | | 0.01 | 6 | | | 29.27 | 153.99 | | |

## TABLE 8.17.1.2.5

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7178 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | PLATE | 0. | 20 | | 0.56 | 12.12 | 82.3 | | |
| T7651 | PLATE | 0.33 | 5.2 | | | 13.23 | | | |
| | | 0.33 | 5.2 | | | 16.22 | | | |

## TABLE 8.17.1.2.6



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7178 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | PLATE | 0.01 | 6 | | | 24.57 | 196.46 | | |

# TABLE 8.17.2.1



## ALUMINUM 7178 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 • ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi • $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T651 | Plate | 1.00 | R.T. | L-T | 81.0 | 2.000 | 1.048 | NB | 1.060 | 0.27 | 26.50 | 25.3 | 1.9 | 1973 | 86213 |
| | | 1.00 | | | 81.0 | 2.000 | 1.048 | NB | 1.050 | 0.24 | 25.10 | | | 1973 | 86213 |
| | | 1.00 | | | 81.0 | 2.000 | 1.048 | NB | 1.040 | 0.26 | 26.00 | | | 1973 | 86213 |
| | | 1.00 | | | 81.0 | 2.000 | 1.048 | NB | 1.030 | 0.27 | 26.70 | | | 1973 | 86213 |
| | | 0.50 | | | 82.4 | 1.000 | 0.500 | NB | 0.499 | 0.18 | 22.10 | | | 1969 | 77140 |
| T651 | Plate | 1.37 | R.T. | T-L | 77.8 | 2.000 | 0.999 | CT | 1.065 | 0.18 | 20.80 | 21.5 | 1.8 | 1969 | 77140 |
| | | 1.37 | | | 77.8 | 2.000 | 0.999 | CT | 1.052 | 0.18 | 20.60 | | | 1969 | 77140 |
| | | 1.37 | | | 77.8 | 1.930 | 0.999 | NB | 0.956 | 0.17 | 20.50 | | | 1969 | 77140 |
| | | 1.37 | | | 77.8 | 1.940 | 0.999 | NB | 0.944 | 0.16 | 19.80 | | | 1969 | 77140 |
| | | 0.50 | | | 78.8 | 0.990 | 0.460 | NB | 0.510 | 0.14 | 18.60 | | | 1969 | 77140 |
| | | 0.50 | | | 78.8 | 1.000 | 0.500 | NB | 0.496 | 0.17 | 20.80 | | | 1969 | 77140 |
| | | 1.00 | | | 80.8 | 2.000 | 1.048 | NB | 1.060 | 0.21 | 23.40 | | | 1973 | 86213 |
| | | 1.00 | | | 80.8 | 2.000 | 1.048 | NB | 1.040 | 0.20 | 23.00 | | | 1973 | 86213 |
| | | 1.00 | | | 80.8 | 2.000 | 1.048 | NB | 1.060 | 0.20 | 22.90 | | | 1973 | 86213 |
| | | 1.00 | | | 80.8 | 2.000 | 1.048 | NB | 1.050 | 0.22 | 24.20 | | | 1973 | 86213 |
| T651 | Plate | 1.37 | R.T. | S-L | 68.1 | 1.000 | 0.500 | CT | 0.494 | 0.12 | 14.80 | 15.0 | 0.3 | 1973 | 86213 |
| | | 1.37 | | | 68.1 | 1.000 | 0.500 | CT | 0.508 | 0.12 | 15.00 | | | 1973 | 86213 |
| | | 1.37 | | | 68.1 | 1.000 | 0.500 | CT | 0.483 | 0.13 | 15.30 | | | 1973 | 86213 |
| T651 | Extrusion | 0.75 | 82 | T-L | 72.0 | 1.500 | 0.739 | NB | 0.725 | 0.27 | 23.70 | 24.1 | 0.5 | 1973 | 86213 |
| | | 0.75 | | | 72.0 | 1.500 | 0.739 | NB | 0.787 | 0.29 | 24.40 | | | 1973 | 86213 |
| T6510 | Extrusion | 3.50 | R.T. | T-L | 69.2 | 0.990 | 0.500 | NB | 0.461 | 0.14 | 16.50 | 18.5 | 1.3 | 1969 | 77140 |
| | | 3.50 | | | 69.2 | 2.000 | 1.001 | CT | 1.041 | 0.17 | 18.30 | | | 1969 | 77140 |
| | | 3.50 | | | 69.2 | 1.990 | 1.000 | CT | 1.030 | 0.16 | 17.70 | | | 1969 | 77140 |

# TABLE 8.17.2.1 (CONTINUED)



## ALUMINUM 7178 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6510 Cont'd | Extrusion Cont'd | 0.68 | R.T. Cont'd | T-L Cont'd | 82.9 | 1.490 | 0.626 | NB | 0.742 | 0.15 | 20.40 | Cont'd | Cont'd | 1969 | 77140 |
| | | 0.68 | | | 83.4 | 1.500 | 0.648 | NB | 0.701 | 0.13 | 19.20 | | | 1969 | 77140 |
| | | 0.68 | | | 83.4 | 1.490 | 0.625 | NB | 0.697 | 0.13 | 18.80 | | | 1969 | 77140 |
| T6510 | Extrusion | 3.50 | R.T. | S-L | 62.3 | 2.000 | 0.998 | CT | 0.994 | 0.14 | 14.50 | 14.5 | 0.1 | 1969 | 77140 |
| | | 3.50 | | | 62.3 | 2.000 | 1.001 | CT | 0.997 | 0.13 | 14.40 | | | 1969 | 77140 |
| T7651 | Plate | 0.50 | R.T. | L-T | 71.2 | 0.998 | 0.447 | NB | 0.519 | 0.42 | 29.90 | 27.8 | 1.8 | 1978 | MPC01 |
| | | 0.50 | | | 71.2 | 0.990 | 0.446 | NB | 0.505 | 0.42 | 29.50 | | | 1978 | MPC01 |
| | | 0.50 | | | 71.2 | 1.000 | 0.483 | NB | 0.530 | 0.40 | 29.00 | | | 1978 | MPC01 |
| | | 0.50 | | | 71.2 | 0.990 | 0.447 | NB | 0.507 | 0.41 | 28.80 | | | 1973 | 86213 |
| | | 0.50 | | | 71.2 | 0.990 | 0.446 | NB | 0.499 | 0.41 | 29.00 | | | 1973 | 86213 |
| | | 1.00 | | | 71.2 | 2.000 | 1.001 | NB | 1.030 | 0.48 | 31.20 | | | 1973 | 86213 |
| | | 0.50 | | | 71.2 | 0.990 | 0.482 | NB | 0.525 | 0.40 | 28.50 | | | 1973 | 86213 |
| | | 1.00 | | | 71.2 | 2.000 | 1.001 | NB | 1.060 | 0.44 | 29.80 | | | 1973 | 86213 |
| | | 1.37 | | | 72.6 | 2.014 | 1.001 | NB | 1.007 | 0.30 | 26.00 | | | 1978 | MPC01 |
| | | 1.37 | | | 72.6 | 2.011 | 0.999 | CT | 1.086 | 0.30 | 26.10 | | | 1978 | MPC01 |
| | | 1.37 | | | 72.6 | 2.000 | 1.000 | CT | 0.997 | 0.33 | 26.30 | | | 1973 | 86213 |
| | | 1.37 | | | 72.6 | 2.000 | 1.000 | CT | 1.000 | 0.32 | 26.40 | | | 1978 | MPC01 |
| | | 1.37 | | | 72.6 | 1.982 | 1.000 | CT | 0.991 | 0.32 | 26.30 | | | 1978 | MPC01 |
| | | 1.37 | | | 72.6 | 2.004 | 1.001 | NB | 1.002 | 0.32 | 26.70 | | | 1978 | MPC01 |
| | | 1.00 | | | 74.4 | 2.004 | 0.970 | CT | 1.062 | 0.28 | 25.40 | | | 1978 | MPC01 |
| | | 1.00 | | | 74.4 | 1.998 | 0.972 | CT | 1.079 | 0.30 | 26.50 | | | 1978 | MPC01 |

# TABLE 8.17.2.1 (CONTINUED)



| ALUMINUM 7178 $K_{Ic}$ | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7651 | Plate | 2.00 | R.T. | T-L | 63.8 | 4.002 | 2.036 | NB | 2.201 | 0.34 | 23.70 | 23.1 | 2.4 | 1978 | MPC01 |
| | | 2.00 | | | 63.8 | 4.000 | 2.036 | NB | 2.105 | 0.29 | 21.80 | | | 1973 | 86213 |
| | | 0.50 | | | 69.2 | 0.994 | 0.447 | NB | 0.467 | 0.27 | 23.30 | | | 1978 | MPC01 |
| | | 0.50 | | | 69.2 | 1.000 | 0.485 | NB | 0.520 | 0.28 | 24.10 | | | 1978 | MPC01 |
| | | 0.50 | | | 69.2 | 1.002 | 0.448 | NB | 0.521 | 0.28 | 24.10 | | | 1978 | MPC01 |
| | | 0.50 | | | 69.2 | 0.998 | 0.485 | NB | 0.529 | 0.32 | 25.40 | | | 1978 | MPC01 |
| | | 1.00 | | | 69.9 | 2.002 | 0.974 | CT | 1.041 | 0.18 | 19.10 | | | 1978 | MPC01 |
| | | 1.00 | | | 69.9 | 2.002 | 0.973 | CT | 1.061 | 0.18 | 19.30 | | | 1978 | MPC01 |
| | | 1.00 | | | 70.5 | 2.000 | 1.001 | NB | 1.080 | 0.40 | 28.30 | | | 1978 | MPC01 |
| | | 1.00 | | | 70.5 | 2.000 | 1.001 | NB | 1.040 | 0.38 | 27.70 | | | 1978 | MPC01 |
| | | 1.37 | | | 71.1 | 2.000 | 1.000 | CT | 1.022 | 0.26 | 22.80 | | | 1973 | 86213 |
| | | 1.37 | | | 71.1 | 1.988 | 0.999 | CT | 0.994 | 0.25 | 23.00 | | | 1978 | MPC01 |
| | | 1.37 | | | 71.1 | 2.000 | 1.001 | NB | 0.993 | 0.24 | 22.10 | | | 1973 | 86213 |
| | | 1.37 | | | 71.1 | 2.012 | 1.000 | NB | 1.046 | 0.25 | 23.30 | | | 1978 | MPC01 |
| | | 1.37 | | | 71.1 | 2.000 | 1.001 | NB | 1.048 | 0.25 | 22.40 | | | 1973 | 86213 |
| | | 1.37 | | | 71.1 | 2.000 | 1.001 | NB | 1.000 | 0.24 | 22.30 | | | 1978 | MPC01 |
| | | 1.37 | | | 71.1 | 2.000 | 0.999 | CT | 1.020 | 0.21 | 21.20 | | | 1978 | MPC01 |
| | | 1.37 | | | 71.1 | 1.990 | 0.999 | CT | 1.015 | 0.24 | 22.60 | | | 1978 | MPC01 |
| T7651 | Plate | 1.37 | R.T. | S-L | 66.8 | 1.000 | 0.500 | CT | 0.480 | 0.15 | 16.80 | 17.3 | 0.4 | 1978 | MPC01 |
| | | 1.37 | | | 66.8 | 1.000 | 0.500 | CT | 0.494 | 0.17 | 17.60 | | | 1973 | 86213 |
| | | 1.37 | | | 66.8 | 1.010 | 0.500 | CT | 0.495 | 0.15 | 17.10 | | | 1978 | MPC01 |
| | | 1.37 | | | 66.8 | 1.002 | 0.500 | CT | 0.501 | 0.16 | 17.90 | | | 1978 | MPC01 |
| | | 1.37 | | | 66.8 | 1.000 | 0.500 | CT | 0.487 | 0.17 | 17.20 | | | 1973 | 86213 |

# TABLE 8.17.2.1 (CONTINUED)



## ALUMINUM 7178 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ (Ksi * √in.)) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T76510 | Extrusion | 3.50 | R.T. | L-S | 61.4 | 2.000 | 1.001 | NB | 1.029 | 0.71 | 32.80 | 33.0 | 0.2 | 1973 | 86213 |
| | | 3.50 | | | 63.0 | 2.000 | 1.002 | NB | 1.096 | 0.69 | 33.10 | | | 1973 | 86213 |
| T76510 | Extrusion | 3.50 | R.T. | L-T | 61.4 | 2.000 | 1.000 | NB | 1.012 | 0.60 | 30.00 | 30.5 | 0.9 | 1973 | 86213 |
| | | 0.68 | | | 67.6 | 1.500 | 0.655 | NB | 0.702 | 0.50 | 30.30 | | | 1973 | 86213 |
| | | 0.68 | | | 68.0 | 1.490 | 0.656 | NB | 0.665 | 0.48 | 29.90 | | | 1973 | 86213 |
| | | 0.68 | | | 69.4 | 1.490 | 0.663 | NB | 0.767 | 0.52 | 31.60 | | | 1973 | 86213 |
| | | 0.68 | | | 69.4 | 1.490 | 0.659 | NB | 0.673 | 0.45 | 29.40 | | | 1973 | 86213 |
| | | 0.68 | | | 69.4 | 1.500 | 0.620 | NB | 0.772 | 0.52 | 31.70 | | | 1973 | 86213 |
| T76510 | Extrusion | 0.68 | R.T. | T-L | 66.2 | 1.490 | 0.658 | NB | 0.670 | 0.41 | 26.90 | 26.8 | 1.1 | 1973 | 86213 |
| | | 0.68 | | | 66.2 | 1.490 | 0.625 | NB | 0.703 | 0.46 | 28.50 | | | 1973 | 86213 |
| | | 0.68 | | | 66.7 | 1.490 | 0.658 | NB | 0.708 | 0.41 | 27.10 | | | 1973 | 86213 |
| | | 0.68 | | | 66.7 | 1.490 | 0.624 | NB | 0.670 | 0.38 | 25.90 | | | 1973 | 86213 |
| | | 0.68 | | | 66.7 | 1.500 | 0.649 | NB | 0.780 | 0.37 | 25.70 | | | 1973 | 86213 |
| T76510 | Extrusion | 3.50 | R.T. | S-L | 54.4 | 2.000 | 1.000 | CT | 0.937 | 0.21 | 15.90 | 16.2 | 0.4 | 1973 | 86213 |
| | | 3.50 | | | 54.4 | 2.000 | 0.999 | CT | 0.946 | 0.23 | 16.40 | | | 1973 | 86213 |
| T76510 | Forged Bar | 3.50 | R.T. | T-L | 57.2 | 1.000 | 0.500 | NB | 0.473 | 0.28 | 19.30 | 19.2 | 1.2 | 1973 | 86213 |
| | | 3.50 | | | 58.4 | 2.000 | 1.001 | CT | 0.943 | 0.23 | 17.70 | | | 1973 | 86213 |
| | | 3.50 | | | 58.4 | 2.000 | 1.001 | CT | 0.931 | 0.25 | 18.50 | | | 1973 | 86213 |
| | | 3.50 | | | 58.4 | 1.000 | 0.500 | NB | 0.482 | 0.28 | 19.60 | | | 1973 | 86213 |
| | | 3.50 | | | 61.9 | 1.000 | 0.500 | NB | 0.459 | 0.29 | 20.90 | | | 1973 | 86213 |
| T76511 | Extrusion | 0.40 | R.T. | L-T | 74.7 | 1.000 | 0.401 | NB | 0.467 | 0.29 | 25.50 | 25.7 | 0.3 | 1973 | 86213 |
| | | 1.44 | | | 76.6 | 3.000 | 1.400 | CT | 1.571 | 0.29 | 25.90 | | | 1973 | 86213 |

# TABLE 8.17.2.1 (CONCLUDED)



## ALUMINUM 7178 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * $\sqrt{in.}$) | $K_{Ic}$ MEAN | STAN DEV | | |
| T76511 | Extrusion | 1.44 | R.T. | T-L | 75.0 | 3.000 | 1.401 | CT | 1.578 | 0.18 | 20.30 | --- | --- | 1973 | 86213 |
| T76511 | Extrusion | 1.25 | 83 | L-T | 68.5 | 3.000 | 1.227 | NB | 1.457 | 0.41 | 27.70 | 28.5 | 1.1 | 1973 | 86213 |
| | | 1.25 | | | 68.5 | 3.000 | 1.217 | NB | 1.465 | 0.45 | 29.20 | | | 1973 | 86213 |
| T76511 | Extrusion | 1.25 | 83 | T-L | 67.6 | 3.000 | 1.170 | NB | 1.470 | 0.37 | 26.00 | 26.0 | 0.0 | 1973 | 86213 |
| | | 1.25 | | | 67.6 | 3.000 | 1.166 | NB | 1.463 | 0.37 | 26.00 | | | 1973 | 86213 |
| T76511 | Extrusion | 1.44 | 84 | S-L | 69.1 | 2.000 | 0.821 | CT | 0.998 | 0.26 | 22.20 | 20.1 | 3.0 | 1973 | 86213 |
| | | 1.44 | | | 69.1 | 2.000 | 0.821 | CT | 1.000 | 0.17 | 18.00 | | | 1973 | 86213 |
| T76511 | Extrusion | 2.00 | 86 | L-T | 72.3 | 4.000 | 1.961 | CT | 2.078 | 0.34 | 26.50 | 26.2 | 0.4 | 1973 | 86213 |
| | | 2.00 | | | 72.3 | 4.000 | 1.962 | CT | 2.077 | 0.32 | 25.90 | | | 1973 | 86213 |
| T76511 | Extrusion | 2.00 | 86 | S-L | 64.4 | 1.500 | 0.750 | CT | 0.735 | 0.16 | 16.20 | 16.2 | 0.0 | 1973 | 86213 |
| | | 2.00 | | | 64.4 | 1.500 | 0.750 | CT | 0.746 | 0.16 | 16.20 | | | 1973 | 86213 |

# TABLE 8.17.2.2





## ALUMINUM 7178 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | L-T | 82.4 | 2.000 | 0.064 | 0.621 | 0.812 | --- | 37.20 | 39.05 | 39.9 | 3.1 | 46.87 | 46.3 | 3.3 | 1973 | 86213 |
| | | 0.06 | | | 82.4 | 2.000 | 0.064 | 0.621 | 0.790 | --- | 35.70 | 37.48 | | | 44.09 | | | 1973 | 86213 |
| | | 0.06 | | | 82.4 | 2.000 | 0.064 | 0.622 | 0.825 | --- | 36.90 | 38.81 | | | 47.00 | | | 1973 | 86213 |
| | | 0.06 | | | 82.4 | 2.000 | 0.064 | 0.625 | 0.760 | --- | 31.30 | 32.99 | | | 37.60 | | | 1973 | 86213 |
| | | 0.06 | | | 82.4 | 2.000 | 0.064 | 0.625 | 0.860 | --- | 36.10 | 38.05 | | | 47.49 | | | 1973 | 86213 |
| | | 0.06 | | | 82.4 | 2.000 | 0.064 | 0.620 | --- | --- | 35.70 | 37.48 | | | --- | | | 1973 | 86213 |
| | | 0.06 | | | 82.4 | 2.000 | 0.064 | 0.625 | 0.770 | --- | 37.80 | 39.84 | | | 45.83 | | | 1973 | 86213 |
| | | 0.06 | | | 82.6 | 2.000 | 0.064 | 0.621 | 0.780 | --- | 42.50 | 44.61 | | | 52.01* | | | 1973 | 86213 |
| | | 0.06 | | | 83.4 | 2.000 | 0.064 | 0.624 | 0.770 | --- | 40.40 | 42.58 | | | 48.99 | | | 1973 | 86213 |
| | | 0.06 | | | 83.4 | 2.000 | 0.064 | 0.622 | 0.790 | --- | 40.20 | 42.29 | | | 49.65 | | | 1973 | 86213 |
| | | 0.06 | | | 83.4 | 2.000 | 0.064 | 0.625 | 0.760 | --- | 39.70 | 41.84 | | | 47.70 | | | 1973 | 86213 |
| | | 0.06 | | | 83.4 | 2.000 | 0.064 | 0.624 | 0.740 | --- | 38.50 | 40.58 | | | 45.40 | | | 1973 | 86213 |
| | | 0.06 | | | 82.6 | 2.000 | 0.065 | 0.622 | 0.750 | --- | 41.20 | 43.34 | | | 49.04 | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | R.T. | L-T | 83.6 | 3.000 | 0.122 | 0.999 | 1.360 | --- | 25.60 | 34.43 | 40.9 | 4.1 | 43.01 | 50.4 | 5.0 | 1973 | 86213 |
| | | 0.12 | | | 83.6 | 2.990 | 0.123 | 0.994 | 1.340 | --- | 27.00 | 36.24 | | | 44.87 | | | 1973 | 86213 |
| | | 0.12 | | | 83.6 | 2.990 | 0.123 | 0.998 | 1.320 | --- | 27.60 | 37.14 | | | 45.32 | | | 1973 | 86213 |
| | | 0.12 | | | 83.6 | 3.000 | 0.123 | 1.090 | 1.390 | --- | 31.00 | 44.22 | | | 53.01 | | | 1973 | 86213 |
| | | 0.12 | | | 83.6 | 3.000 | 0.123 | 1.090 | 1.360 | --- | 31.20 | 44.50 | | | 52.41 | | | 1973 | 86213 |
| | | 0.12 | | | 83.6 | 3.000 | 0.123 | 0.994 | 1.350 | --- | 27.40 | 36.76 | | | 45.76 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.17.2.2 (CONTINUED)



## ALUMINUM 7178 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.12 | R.T. Cont'd | L-T Cont'd | 75.3 | 3.000 | 0.124 | 1.000 | 1.340 | --- | 35.30 | 47.54 | Cont'd | Cont'd | 58.60* | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.12 | | | 75.3 | 3.000 | 0.124 | 1.000 | 1.320 | --- | 33.50 | 45.12 | | | 54.95 | | | 1973 | 86213 |
| | | 0.12 | | | 83.3 | 3.000 | 0.125 | 1.000 | 1.370 | --- | 33.10 | 44.58 | | | 55.94 | | | 1973 | 86213 |
| | | 0.12 | | | 83.3 | 3.000 | 0.125 | 1.000 | 1.400 | --- | 34.10 | 45.92 | | | 58.66 | | | 1973 | 86213 |
| | | 0.12 | | | 83.5 | 3.000 | 0.125 | 1.080 | 1.400 | --- | 27.60 | 39.12 | | | 47.48 | | | 1973 | 86213 |
| | | 0.12 | | | 83.5 | 3.000 | 0.125 | 1.000 | 1.420 | --- | 29.50 | 39.73 | | | 51.35 | | | 1973 | 86213 |
| | | 0.12 | | | 83.5 | 3.000 | 0.125 | 1.060 | 1.330 | --- | 27.80 | 38.91 | | | 45.88 | | | 1973 | 86213 |
| | | 0.12 | | | 82.5 | 3.000 | 0.128 | 1.000 | 1.470 | --- | 28.70 | 38.65 | | | 51.46 | | | 1973 | 86213 |
| | | 0.12 | | | 82.5 | 3.000 | 0.129 | 1.000 | 1.500 | --- | 30.40 | 40.94 | | | 55.49 | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | L-T | 81.6 | 15.820 | 0.064 | 1.000 | 1.000 | --- | 38.20 | 47.99 | 46.5 | 1.7 | 47.99 | 47.8 | 2.2 | 1973 | 86213 |
| | | 0.06 | | | 81.6 | 15.820 | 0.064 | 4.000 | 4.000 | --- | 17.20 | 44.90 | | | 44.90 | | | 1973 | 86213 |
| | | 0.06 | | | 81.6 | 15.820 | 0.064 | 3.030 | 3.260 | --- | 21.20 | 47.33 | | | 49.27 | | | 1973 | 86213 |
| | | 0.06 | | | 81.6 | 15.810 | 0.065 | 6.000 | 6.320 | --- | 13.20 | 44.55 | | | 46.23 | | | 1973 | 86213 |
| | | 0.06 | | | 81.6 | 15.820 | 0.066 | 3.020 | 3.310 | --- | 21.50 | 47.91 | | | 50.39 | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | T-L | 77.8 | 2.000 | 0.064 | 0.625 | 0.740 | --- | 33.60 | 35.41 | 36.7 | 2.3 | 39.62 | 44.6 | 2.5 | 1973 | 86213 |
| | | 0.06 | | | 77.8 | 2.000 | 0.064 | 0.622 | 0.795 | --- | 35.30 | 37.13 | | | 43.75 | | | 1973 | 86213 |
| | | 0.06 | | | 77.8 | 2.000 | 0.064 | 0.621 | 0.785 | --- | 36.90 | 38.74 | | | 45.32 | | | 1973 | 86213 |
| | | 0.06 | | | 77.8 | 2.000 | 0.064 | 0.623 | 0.805 | --- | 37.10 | 39.02 | | | 46.41 | | | 1973 | 86213 |
| | | 0.06 | | | 77.8 | 2.000 | 0.064 | 0.625 | 0.780 | --- | 36.90 | 38.89 | | | 45.16 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.17.2.2 (CONTINUED)



## ALUMINUM 7178 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.06 | R.T. Cont'd | T-L Cont'd | 77.8 | 2.000 | 0.064 | 0.625 | 0.920 | --- | 33.00 | 34.78 | Cont'd | Cont'd | 45.80 | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.06 | | | 77.8 | 2.000 | 0.064 | 0.619 | 0.845 | --- | 35.60 | 37.30 | | | 46.17 | | | 1973 | 86213 |
| | | 0.06 | | | 80.4 | 2.000 | 0.065 | 0.627 | 0.850 | --- | 37.00 | 39.08 | | | 48.24 | | | 1973 | 86213 |
| | | 0.06 | | | 80.4 | 2.000 | 0.065 | 0.628 | 0.850 | --- | 32.30 | 34.18 | | | 42.12 | | | 1973 | 86213 |
| | | 0.06 | | | 81.0 | 2.000 | 0.065 | 0.627 | 0.850 | --- | 32.30 | 34.11 | | | 42.12 | | | 1973 | 86213 |
| | | 0.06 | | | 81.0 | 2.000 | 0.065 | 0.627 | 0.830 | --- | 37.90 | 40.03 | | | 48.54 | | | 1973 | 86213 |
| | | 0.06 | | | 80.4 | 2.000 | 0.066 | 0.626 | 0.860 | --- | 33.10 | 34.96 | | | 43.55 | | | 1973 | 86213 |
| | | 0.06 | | | 80.4 | 2.000 | 0.066 | 0.627 | 0.900 | --- | 31.70 | 33.48 | | | 43.22 | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | R.T. | T-L | 79.4 | 2.990 | 0.123 | 0.996 | 1.250 | --- | 21.30 | 28.63 | 33.4 | 2.3 | 33.54 | 38.8 | 3.8 | 1973 | 86213 |
| | | 0.12 | | | 79.4 | 3.000 | 0.123 | 0.996 | 1.200 | --- | 21.20 | 28.48 | | | 32.36 | | | 1973 | 86213 |
| | | 0.12 | | | 75.3 | 3.000 | 0.125 | 1.000 | 1.000 | --- | 25.90 | 34.88 | | | 34.88 | | | 1973 | 86213 |
| | | 0.12 | | | 75.3 | 3.000 | 0.125 | 1.000 | 1.000 | --- | 25.90 | 34.88 | | | 34.88 | | | 1973 | 86213 |
| | | 0.12 | | | 77.4 | 3.000 | 0.125 | 1.060 | 1.440 | --- | 23.50 | 32.89 | | | 41.40 | | | 1973 | 86213 |
| | | 0.12 | | | 77.4 | 3.000 | 0.125 | 1.060 | 1.440 | --- | 24.50 | 34.29 | | | 43.16 | | | 1973 | 86213 |
| | | 0.12 | | | 77.4 | 3.000 | 0.125 | 1.060 | 1.270 | --- | 23.50 | 32.89 | | | 37.42 | | | 1973 | 86213 |
| | | 0.12 | | | 78.0 | 3.000 | 0.125 | 1.000 | 1.230 | --- | 26.20 | 35.29 | | | 40.72 | | | 1973 | 86213 |
| | | 0.12 | | | 78.0 | 3.000 | 0.125 | 1.000 | 1.300 | --- | 25.90 | 34.88 | | | 41.98 | | | 1973 | 86213 |
| | | 0.12 | | | 79.2 | 3.000 | 0.125 | 1.110 | 1.300 | --- | 23.60 | 34.09 | | | 38.26 | | | 1973 | 86213 |
| | | 0.12 | | | 79.2 | 3.000 | 0.125 | 1.080 | 1.380 | --- | 24.20 | 34.30 | | | 41.14 | | | 1973 | 86213 |

# TABLE 8.17.2.2 (CONTINUED)

## ALUMINUM 7178 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 Cont'd | Sheet Cont'd | 0.12 | R.T. Cont'd | T-L Cont'd | 78.0 | 3.000 | 0.128 | 1.000 | 1.390 | --- | 25.30 | 34.07 | Cont'd | Cont'd | 43.26 | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.12 | | | 78.0 | 3.000 | 0.128 | 1.000 | 1.320 | --- | 25.40 | 34.21 | | | 41.67 | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | T-L | 78.6 | 15.810 | 0.065 | 3.010 | 3.230 | --- | 19.90 | 44.26 | 42.1 | 1.4 | 46.01 | 46.5 | 1.8 | 1973 | 86213 |
| | | 0.06 | | | 78.6 | 15.820 | 0.065 | 1.000 | 1.460 | --- | 32.10 | 40.33 | | | 48.87 | | | 1973 | 86213 |
| | | 0.06 | | | 78.6 | 15.820 | 0.065 | 4.000 | 4.550 | --- | 16.20 | 42.29 | | | 45.66 | | | 1973 | 86213 |
| | | 0.06 | | | 78.6 | 15.820 | 0.065 | 6.000 | 6.480 | --- | 12.40 | 41.84 | | | 44.23 | | | 1973 | 86213 |
| | | 0.06 | | | 78.6 | 15.820 | 0.065 | 1.010 | 1.310 | --- | 33.20 | 41.92 | | | 47.83 | | | 1973 | 86213 |
| T651 | Plate | 0.25 | R.T. | L-T | 84.3 | 4.000 | 0.254 | 1.330 | 1.960 | --- | 23.40 | 36.33 | 35.6 | 1.0 | 48.45 | 50.0 | 2.1 | 1973 | 86213 |
| | | 0.25 | | | 84.3 | 4.000 | 0.255 | 1.430 | 2.290 | --- | 21.40 | 34.86 | | | 51.46 | | | 1973 | 86213 |
| T651 | Plate | 0.25 | R.T. | T-L | 79.5 | 4.000 | 0.247 | 1.420 | 1.680 | --- | 15.10 | 24.48 | 24.7 | 0.3 | 27.60 | 27.3 | 0.4 | 1973 | 86213 |
| | | 0.25 | | | 79.5 | 4.000 | 0.247 | 1.390 | 1.560 | --- | 15.60 | 24.93 | | | 27.00 | | | 1973 | 86213 |
| T651 | Plate | 0.25 | R.T. | T-L | 80.4 | 4.000 | 0.254 | 1.330 | 1.330 | --- | 16.80 | 26.08 | 25.7 | 0.7 | 26.08 | 28.5 | 4.0 | 1973 | 86213 |
| | | 0.25 | | | 80.4 | 4.000 | 0.254 | 1.440 | 2.070 | --- | 15.20 | 24.88 | | | 33.06 | | | 1973 | 86213 |
| | | 0.25 | | | 80.4 | 4.000 | 0.255 | 1.330 | 1.330 | --- | 16.90 | 26.24 | | | 26.24 | | | 1973 | 86213 |
| T7651 | Plate | 1.00 | R.T. | L-T | 71.2 | 20.000 | 1.005 | 7.000 | 8.640 | --- | 11.90 | 42.73 | 42.1 | 0.7 | 49.69 | 48.8 | 1.0 | 1973 | 86213 |
| | | 1.00 | | | 71.2 | 20.000 | 1.005 | 7.000 | 8.570 | --- | 11.50 | 41.30 | | | 47.72 | | | 1973 | 86213 |
| | | 1.00 | | | 71.2 | 20.000 | 1.005 | 7.000 | 8.600 | --- | 11.80 | 42.37 | | | 49.09 | | | 1973 | 86213 |

# TABLE 8.17.2.2 (CONCLUDED)





| ALUMINUM 7178 $K_C$ | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | CRACK LENGTH | | GROSS STRESS | | $K_{app}$ | | | $K_C$ | | | DATE | REFER |
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | INIT (in.) $2a_o$ | FINAL (in.) $2a_f$ | ONSET (Ksi) $\sigma_o$ | MAX (Ksi) $\sigma_{max}$ | $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | STAN DEV | $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | STAN DEV | | |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T7651 | Plate | 0.25 | R.T. | T-L | 71.0 | 4.000 | 0.247 | 1.410 | 1.610 | --- | 19.80 | 31.95 | 32.3 | 0.5 | 35.06 | 36.0 | 1.4 | 1973 | 86213 |
| | | 0.25 | | | 71.0 | 4.000 | 0.247 | 1.460 | 1.730 | --- | 19.80 | 32.71 | | | 37.01 | | | 1973 | 86213 |
| T7651 | Plate | 1.00 | R.T. | T-L | 70.5 | 20.000 | 1.005 | 7.000 | 7.850 | --- | 8.20 | 29.45 | 29.8 | 0.4 | 31.88 | 33.1 | 1.2 | 1973 | 86213 |
| | | 1.00 | | | 70.5 | 20.000 | 1.005 | 7.000 | 8.050 | --- | 8.40 | 30.17 | | | 33.26 | | | 1973 | 86213 |
| | | 1.00 | | | 70.5 | 20.000 | 1.005 | 7.000 | 8.500 | --- | 8.30 | 29.81 | | | 34.22 | | | 1973 | 86213 |

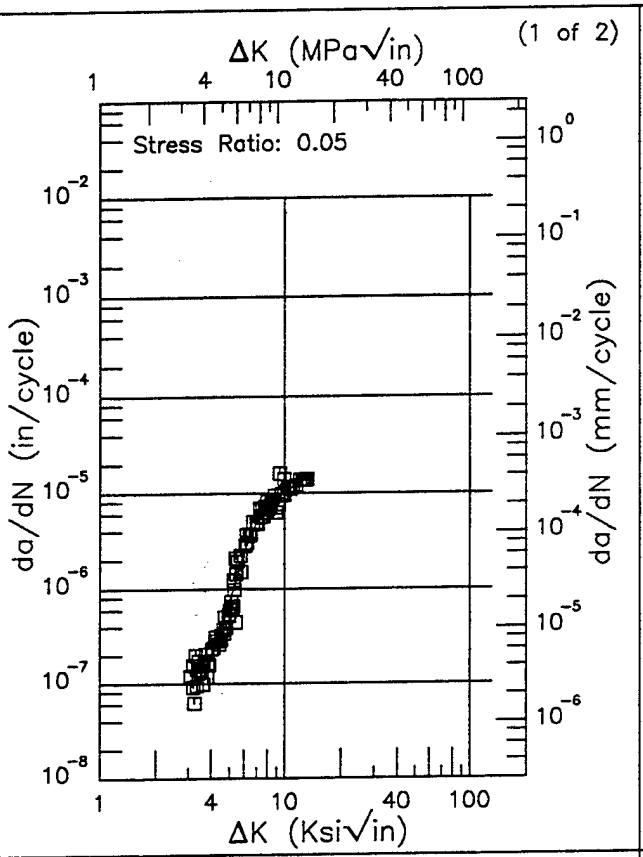
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R | 7178 |

Condition/Ht: T6
Form: Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 9 Hz
Environment: H.H.A.; RT

Yield Strength: 82 ksi
Ult. Strength: 89.7 ksi
Specimen Thk: 0.19 in.
Specimen Width: 3.75 in.
Ref: BW001

(1 of 2)



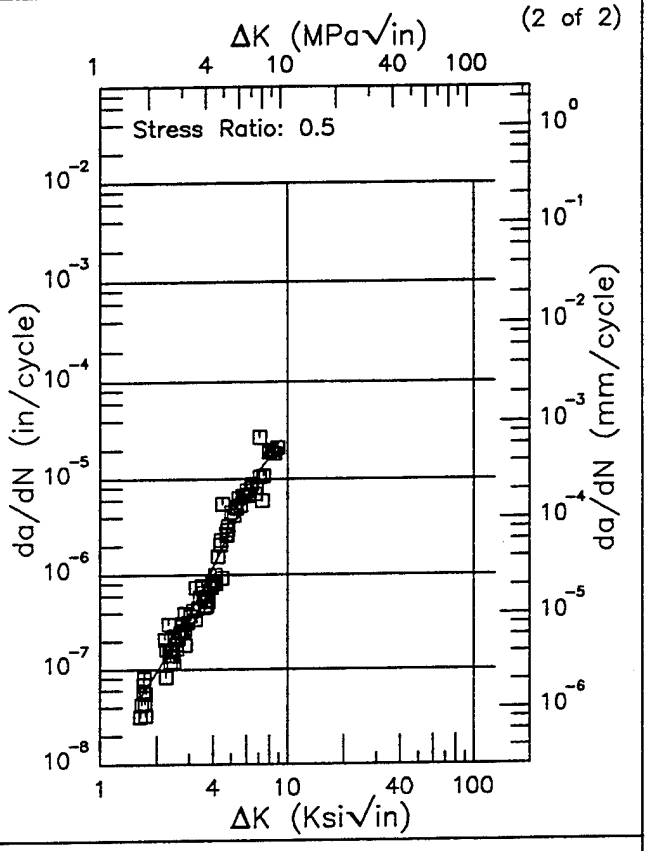

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.09 (min) | 0.129 |
| 3.5 | 0.121 |
| 4. | 0.184 |
| 5. | 0.708 |
| 6. | 2.37 |
| 7. | 4.99 |
| 8. | 7.33 |
| 9. | 9.07 |
| 10. | 10.5 |
| 13. | 13.9 |
| 13.11 (max) | 14.0 |

RMS % Error
23.67

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.64 (min) | 0.0504 |
| 2. | 0.0934 |
| 2.5 | 0.198 |
| 3. | 0.384 |
| 3.5 | 0.692 |
| 4. | 1.18 |
| 5. | 2.99 |
| 6. | 6.57 |
| 7. | 11.8 |
| 8. | 16.8 |
| 8.87 (max) | 19.0 |

RMS % Error
36.40

Life Prediction Ratio Summary

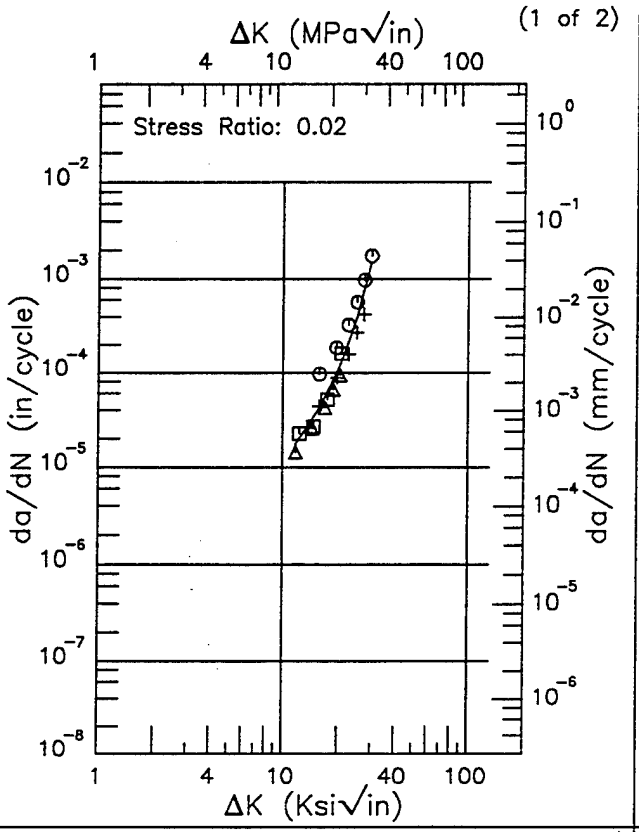
0. .5 .8 1.25 2.

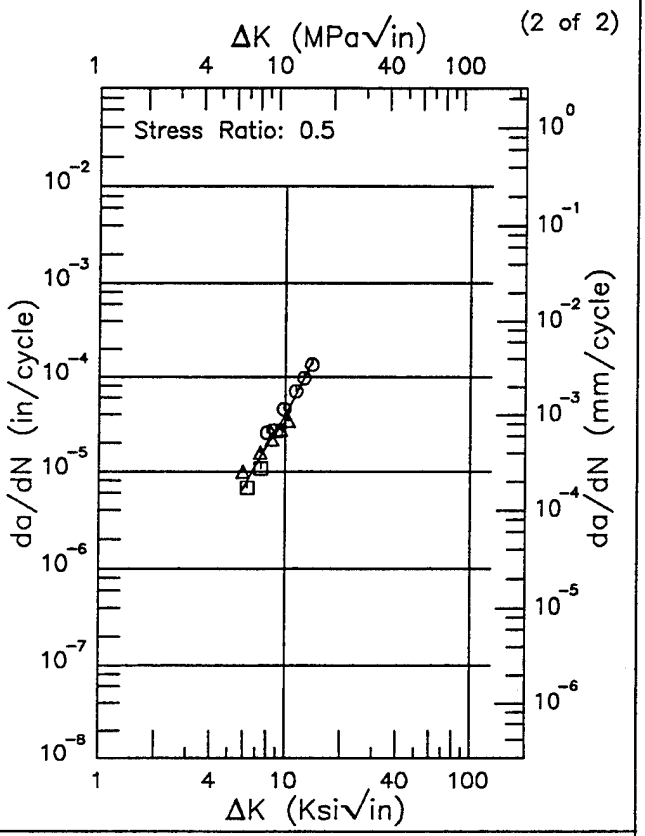
**Figure 8.17.3.1.1**

7178 R

Condition/Ht: T6
Form: 0.2 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: LAB AIR; RT

Yield Strength: 81.8 – 86 ksi
Ult. Strength: 88.2 – 90.5 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.5 in.
Ref: 86088




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.70 (min) | 17.4 |
| 13. | 23.1 |
| 16. | 44.0 |
| 20. | 110. |
| 25. | 390. |
| 29.76 (max) | 1458. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.94 (min) | 6.50 |
| 6. | 6.76 |
| 7. | 11.9 |
| 8. | 18.7 |
| 9. | 27.5 |
| 10. | 39.3 |
| 13. | 106. |
| 13.88 (max) | 141. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 43.83 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 22.62 | 0. .5 .8 1.25 2. |

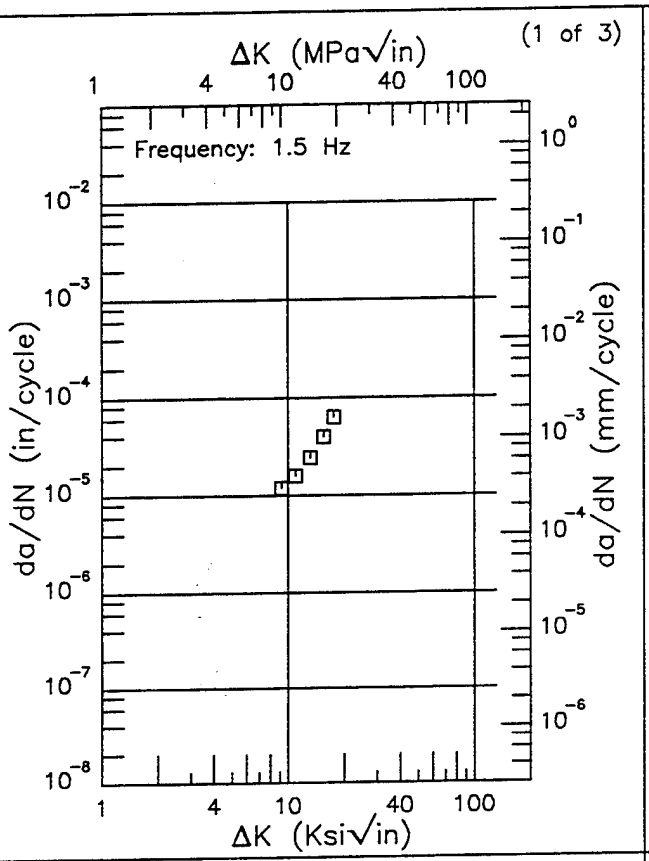
**Figure 8.17.3.1.2**

F 7178

Condition/Ht: T6
Form: 0.2 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.02
Environment: LAB AIR; RT

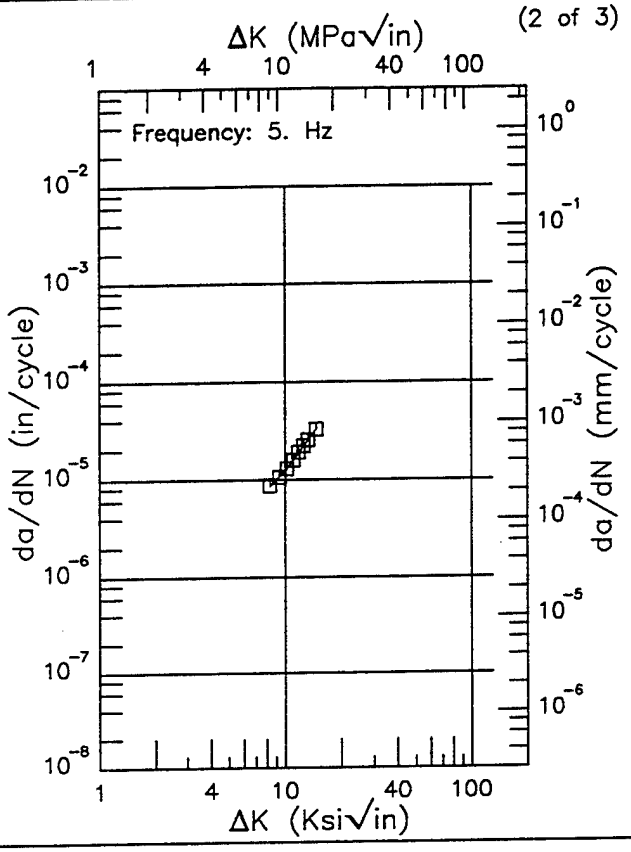
Yield Strength: 86 ksi
Ult. Strength: 90.2 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.5 in.
Ref: 86088

(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 8.28 (min) | 8.55 |
| 9. | 9.99 |
| 10. | 12.3 |
| 13. | 24.0 |
| 14.65 (max) | 32.0 |

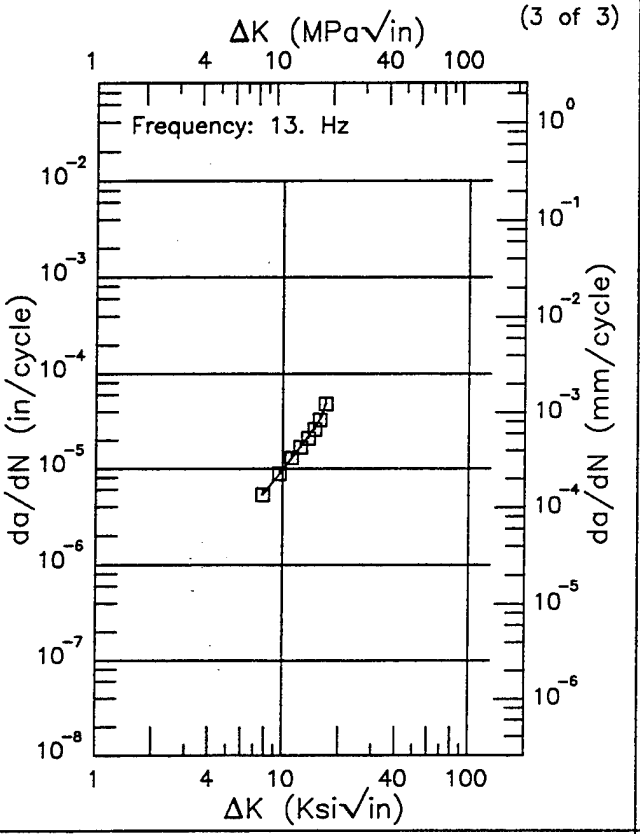
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

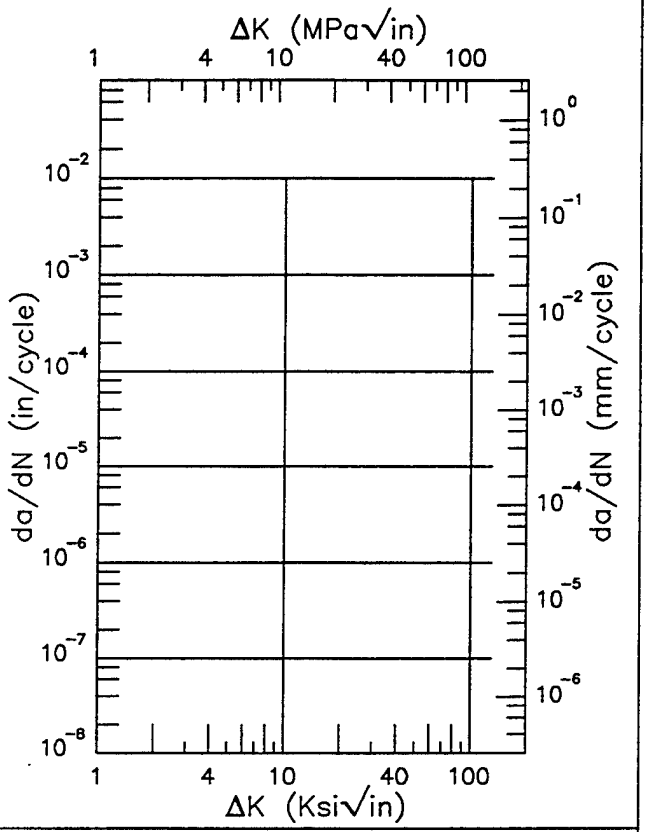
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 0.44 | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.3**

Condition/Ht: T6
Form: 0.2 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.02
Environment: LAB AIR; RT

Yield Strength: 86 ksi
Ult. Strength: 90.2 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.5 in.
Ref: 86088




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 7.78 (min) | 5.30 |
| 8. | 5.68 |
| 9. | 7.54 |
| 10. | 9.77 |
| 13. | 18.9 |
| 16. | 34.8 |
| 16.74 (max) | 47.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.53 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.3 (Concluded)**

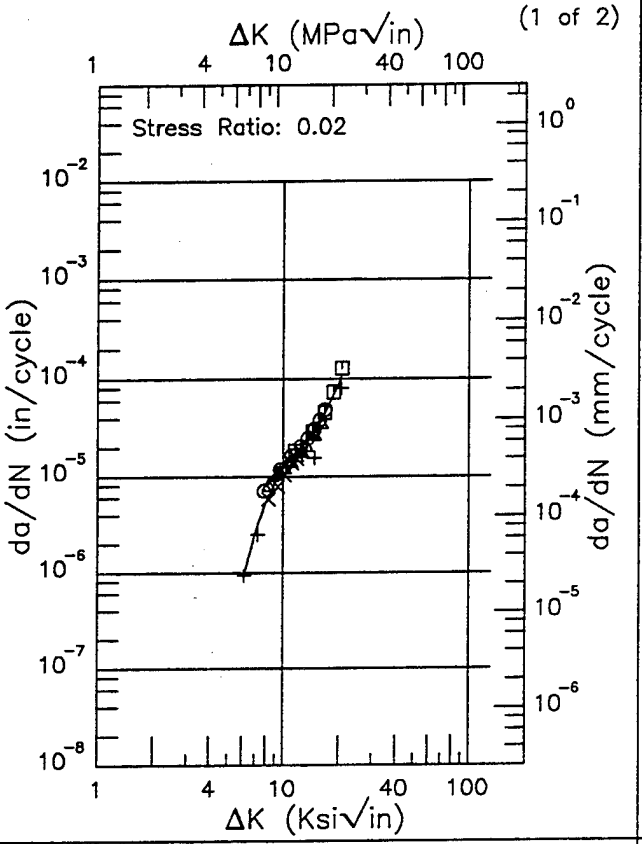
7178

R

Condition/Ht: T6
Form: 0.2 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 14 Hz
Environment: LAB AIR; RT

Yield Strength: 81.8 – 85 ksi
Ult. Strength: 88.2 – 90.5 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.5 in.
Ref: 86088

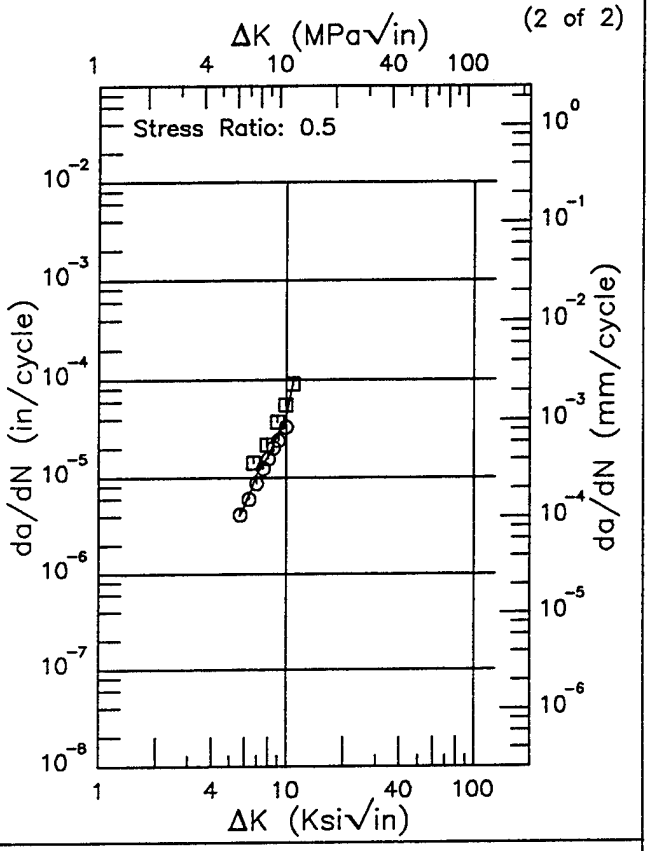
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.14 (min) | 0.893 |
| 7. | 2.50 |
| 8. | 5.37 |
| 9. | 8.77 |
| 10. | 12.2 |
| 13. | 22.3 |
| 16. | 37.1 |
| 20. | 89.9 |
| 20.58 (max) | 105. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.65 | 0. .5 .8 1.25 2. |

(2 of 2)



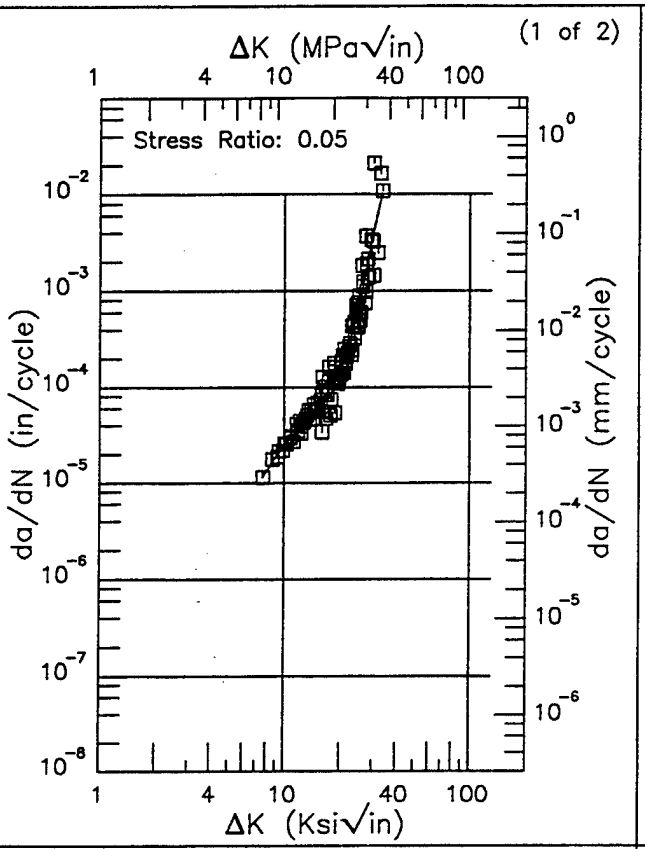

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.67 (min) | 4.04 |
| 6. | 5.19 |
| 7. | 10.9 |
| 8. | 16.5 |
| 9. | 27.7 |
| 10. | 44.5 |
| 10.80 (max) | 90.8 |

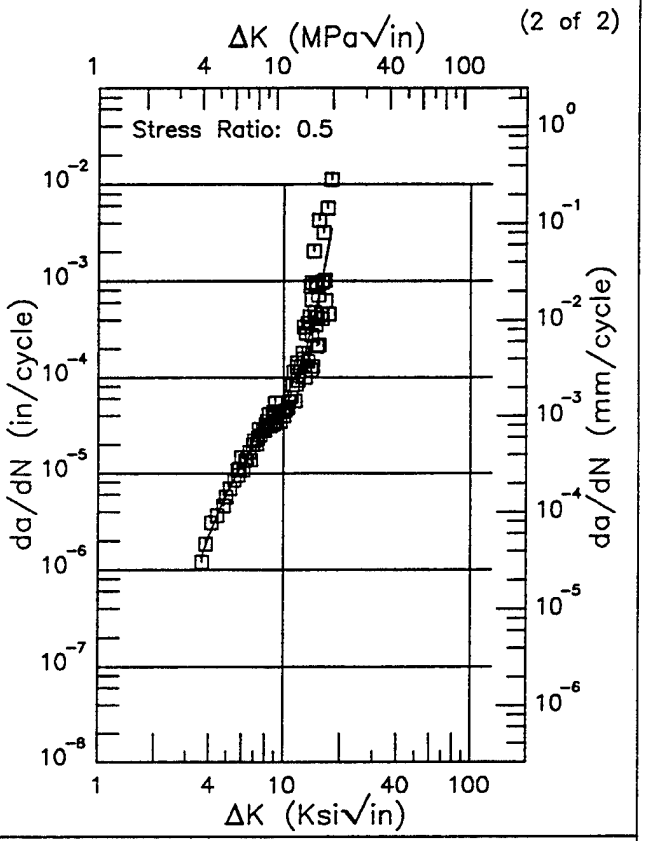
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.97 | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.4**

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 9 Hz
Environment: H.H.A.; RT

Yield Strength: 82 ksi
Ult. Strength: 89.7 ksi
Specimen Thk: 0.19 in.
Specimen Width: 6 in.
Ref: BW001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.65 (min) | 11.4 |
| 8. | 13.3 |
| 9. | 18.9 |
| 10. | 24.7 |
| 13. | 44.3 |
| 16. | 71.1 |
| 20. | 145. |
| 25. | 624. |
| 30. | 4018. |
| 33.50 (max) | 10142. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.65 (min) | 1.34 |
| 4. | 2.27 |
| 5. | 6.33 |
| 6. | 12.0 |
| 7. | 19.0 |
| 8. | 27.5 |
| 9. | 38.3 |
| 10. | 53.4 |
| 13. | 180. |
| 16. | 949. |
| 17.91 (max) | 3484. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 51.34 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 86.64 | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.5**

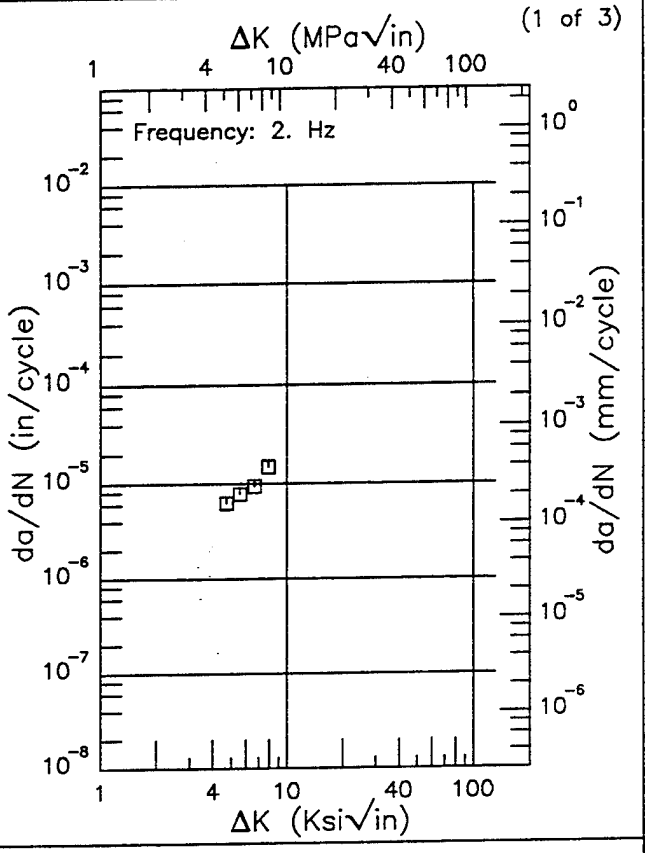
7178

F

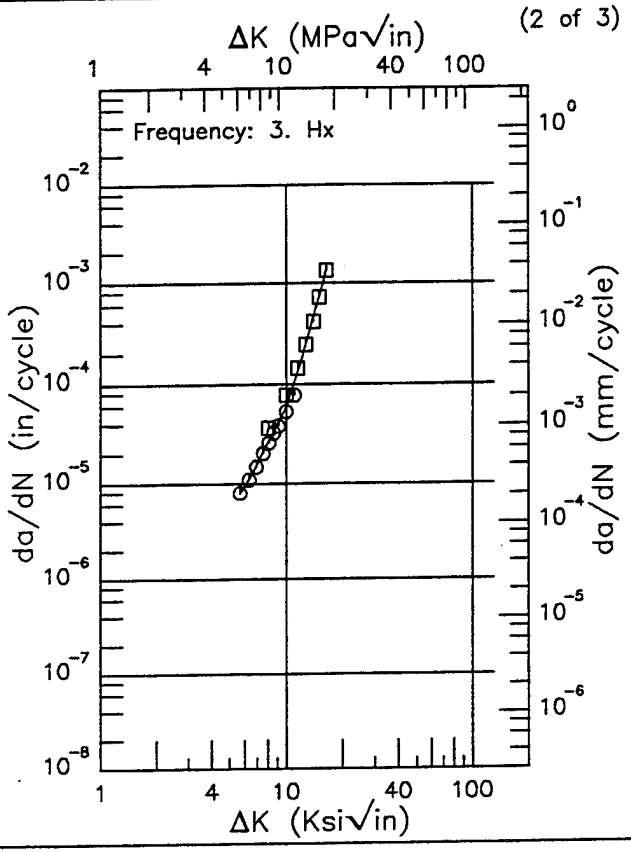
Condition/Ht: T6
Form: 0.2 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.5
Environment: LAB AIR; RT

Yield Strength: 85 – 86 ksi
Ult. Strength: 90.2 – 90.5 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.5 in.
Ref: 86088

(1 of 3)




(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.65 (min) | 7.96 |
| 6. | 9.25 |
| 7. | 15.8 |
| 8. | 26.8 |
| 9. | 40.7 |
| 10. | 59.9 |
| 13. | 280. |
| 16. | 1077. |
| 16.38 (max) | 1340. |

RMS % Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS % Error
14.07

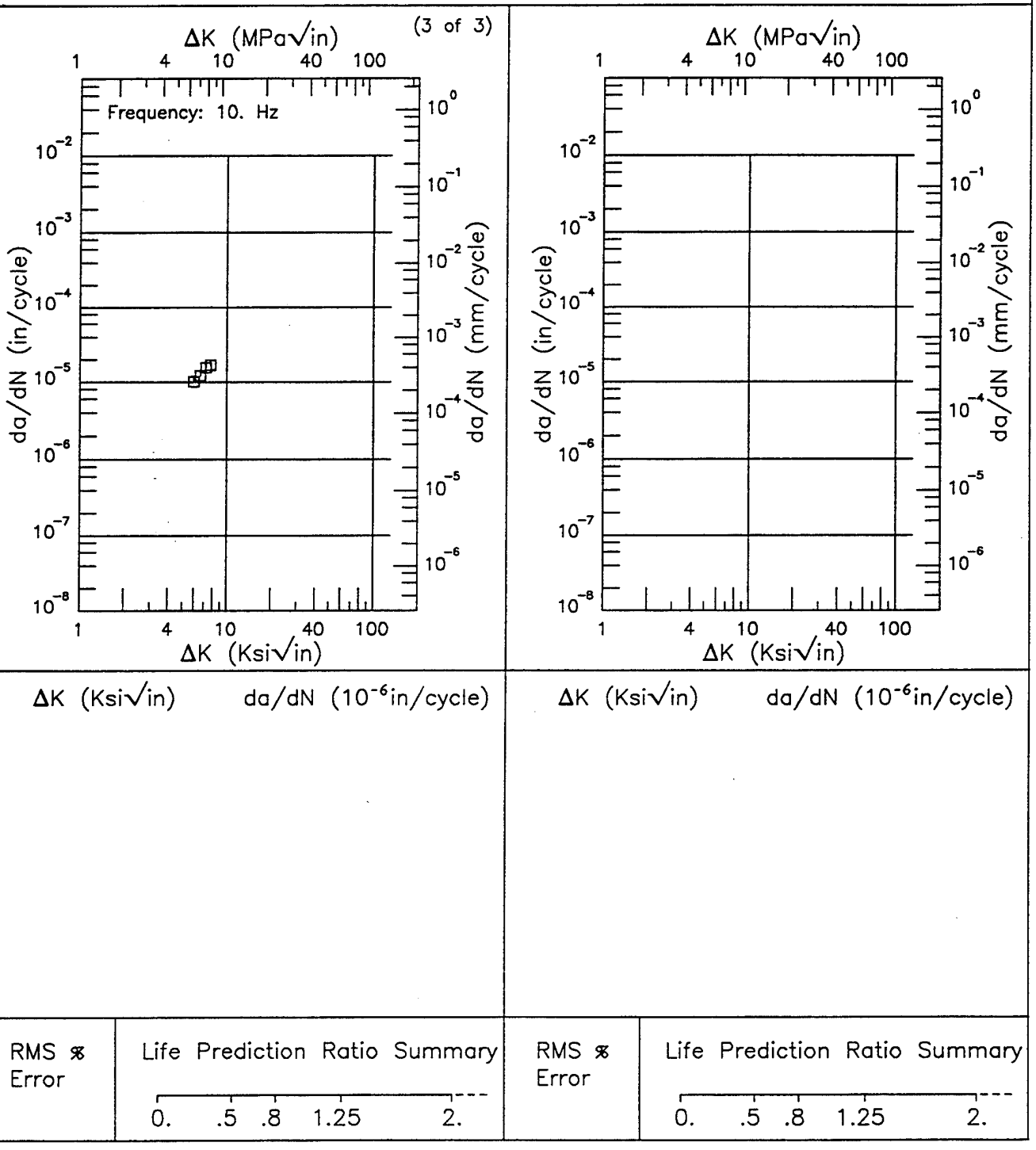
Life Prediction Ratio Summary

0. .5 .8 1.25 2.

**Figure 8.17.3.1.6**

Condition/Ht: T6
Form: 0.2 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.5
Environment: LAB AIR; RT

Yield Strength: 85 – 86 ksi
Ult. Strength: 90.2 – 90.5 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.5 in.
Ref: 86088




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.6 (Concluded)**

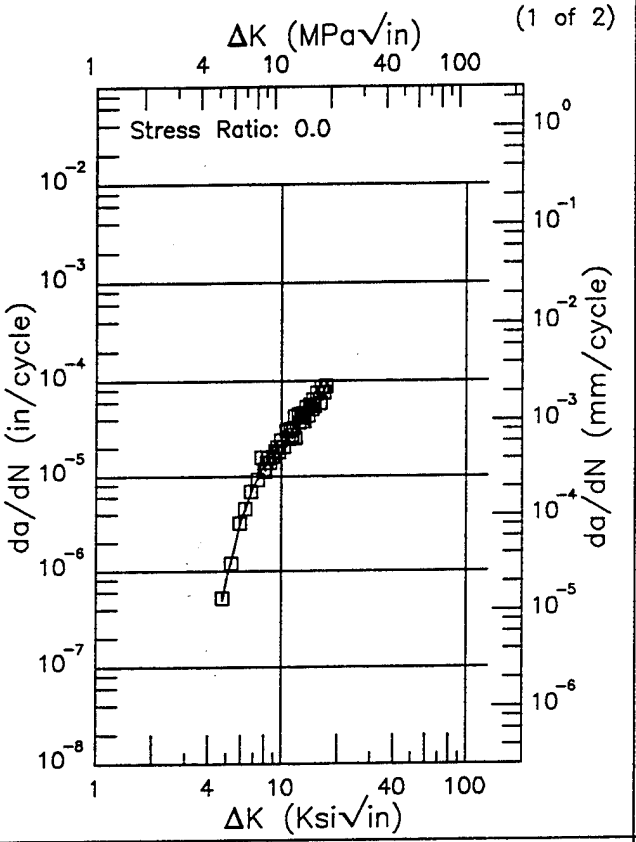
7178

R

Condition/Ht: T6
Form: 0.25 in. Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 9 Hz
Environment: H.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.163 in.
Specimen Width: 5 in.
Ref: BW002

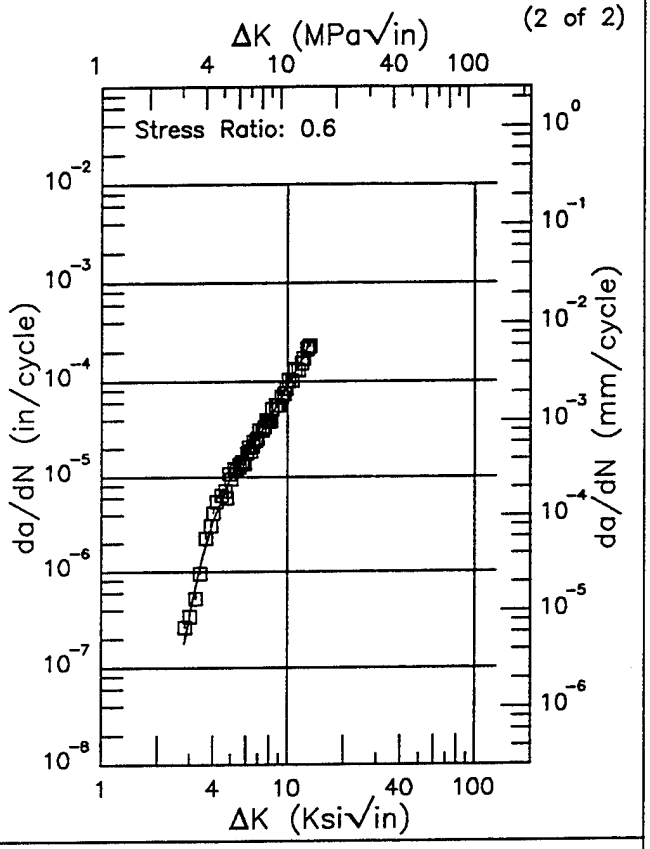
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.76 (min) | 0.489 |
| 5. | 0.790 |
| 6. | 3.35 |
| 7. | 7.86 |
| 8. | 13.0 |
| 9. | 17.5 |
| 10. | 21.8 |
| 13. | 42.7 |
| 16. | 69.7 |
| 17.25 (max) | 84.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.07 | 0. .5 .8 1.25 2. |

(2 of 2)



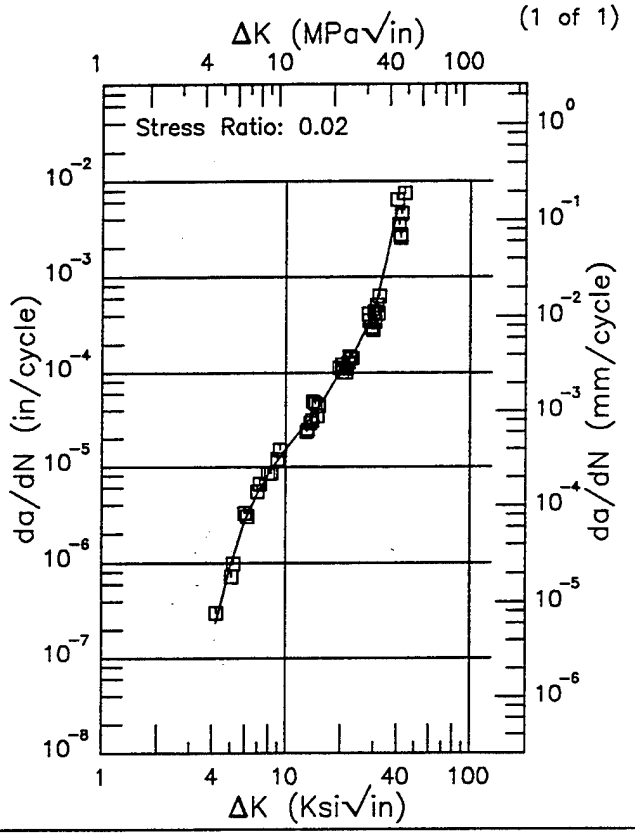

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.81 (min) | 0.180 |
| 3. | 0.359 |
| 3.5 | 1.39 |
| 4. | 3.43 |
| 5. | 9.94 |
| 6. | 17.7 |
| 7. | 26.6 |
| 8. | 39.8 |
| 9. | 61.8 |
| 10. | 91.3 |
| 13. | 232. |
| 13.07 (max) | 239. |

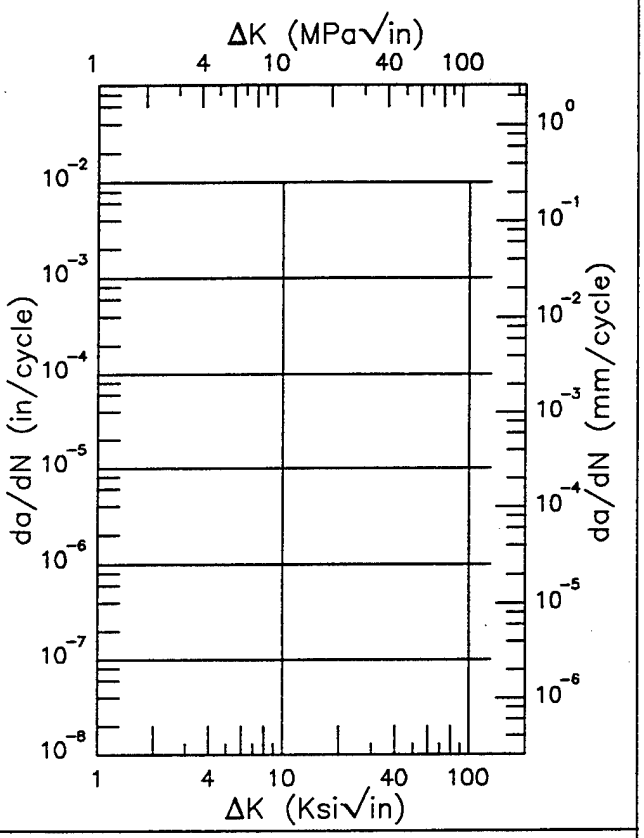
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.48 | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.7**

Condition/Ht: T651
Form: 0.13 in. Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 0.1 – 12 Hz
Environment: LAB AIR; RT

Yield Strength: 82.5 ksi
Ult. Strength: 88.5 ksi
Specimen Thk: 0.063 in.
Specimen Width: 6 in.
Ref: MA011




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.20 (min) | 0.236 |
| 5. | 0.924 |
| 6. | 2.69 |
| 7. | 5.29 |
| 8. | 8.38 |
| 9. | 11.7 |
| 10. | 15.3 |
| 13. | 28.7 |
| 16. | 51.3 |
| 20. | 105. |
| 25. | 209. |
| 30. | 430. |
| 35. | 1514. |
| 40. | 5211. |
| 43.81 (max) | 4993. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 22.20 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

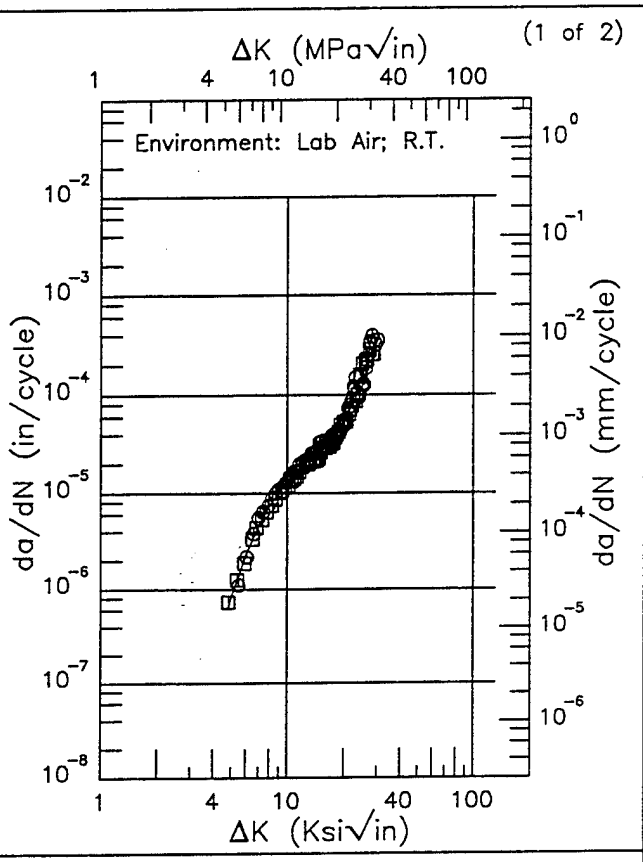
**Figure 8.17.3.1.8**

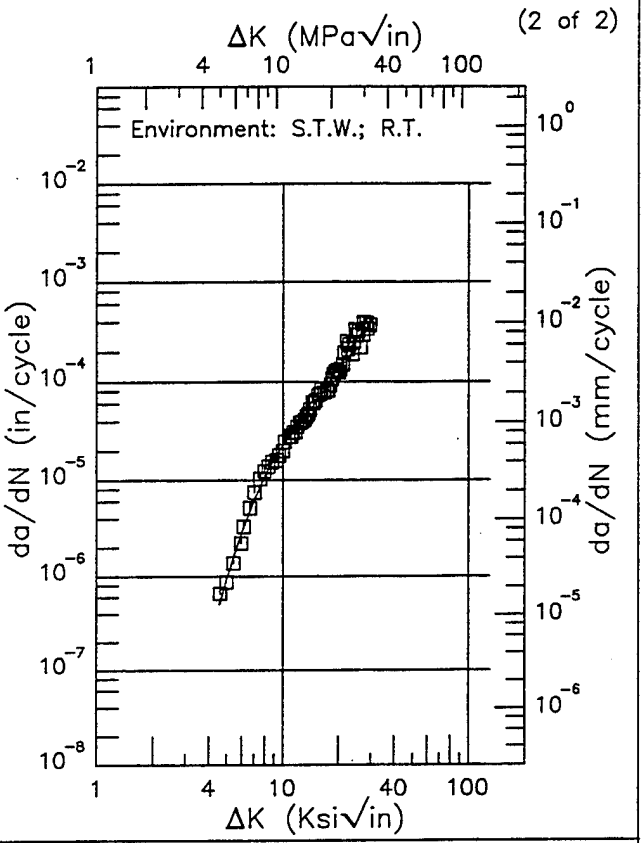
7178

E

Condition/Ht: T651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Stress Ratio: 0.
Frequency: 20 Hz

Yield Strength: 81.5 ksi
Ult. Strength: 89.7 ksi
Specimen Thk: 0.125 in.
Specimen Width: 8 in.
Ref: RI002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.82 (min) | 0.634 |
| 5. | 0.806 |
| 6. | 2.25 |
| 7. | 4.47 |
| 8. | 7.20 |
| 9. | 10.2 |
| 10. | 13.2 |
| 13. | 21.7 |
| 16. | 30.5 |
| 20. | 54.5 |
| 25. | 159. |
| 30. | 362. |
| 30.28 (max) | 372. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.58 (min) | 0.509 |
| 5. | 0.944 |
| 6. | 2.87 |
| 7. | 6.24 |
| 8. | 10.9 |
| 9. | 16.6 |
| 10. | 22.9 |
| 13. | 43.1 |
| 16. | 70.0 |
| 20. | 140. |
| 25. | 272. |
| 29.56 (max) | 375. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.84 | 0. .5 .8 1.25 2. |

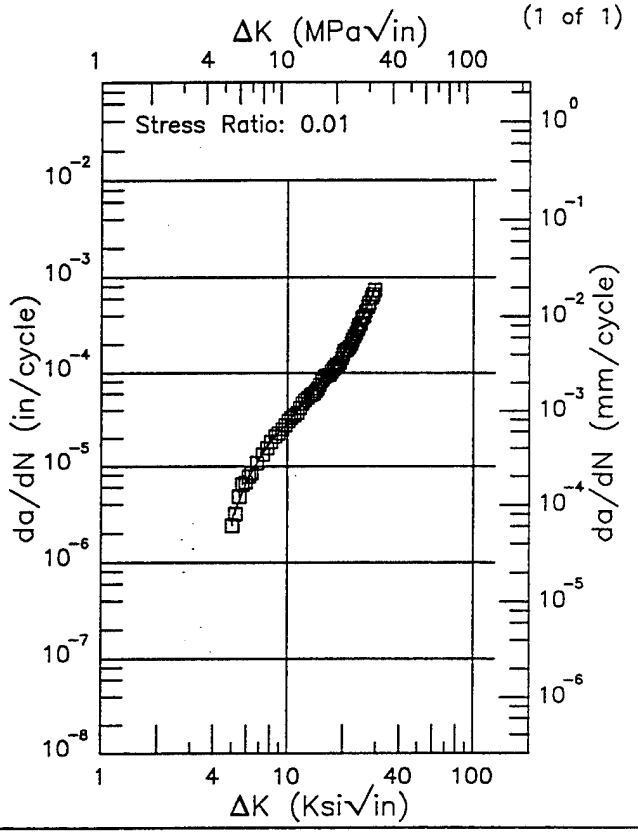
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.89 | 0. .5 .8 1.25 2. |

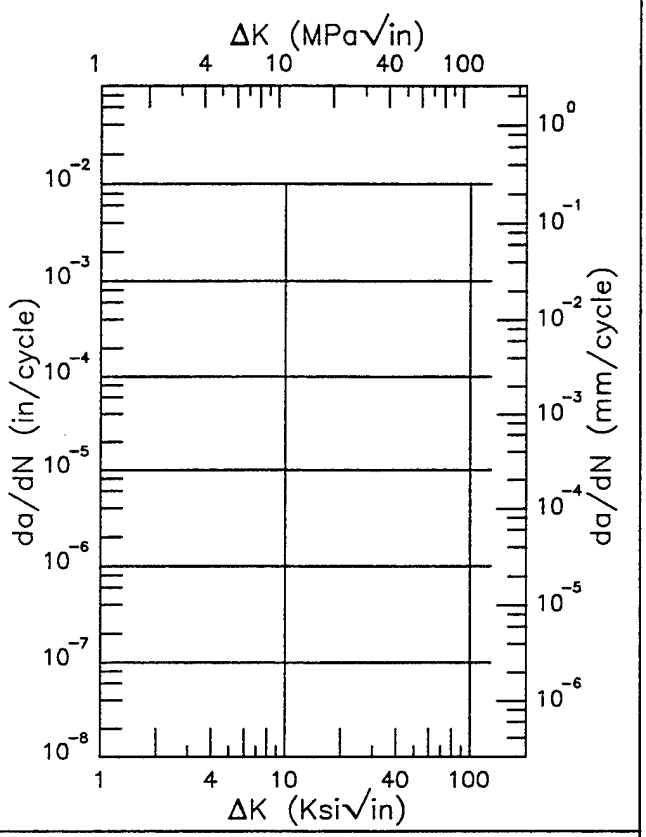
**Figure 8.17.3.1.9**

7178 R

Condition/Ht: T651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 6 Hz
Environment: S.T.W.; RT

Yield Strength: 81.5 ksi
Ult. Strength: 89.7 ksi
Specimen Thk: 0.125 in.
Specimen Width: 8 in.
Ref: RI002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.01 (min) | 2.71 |
| 6. | 6.80 |
| 7. | 12.0 |
| 8. | 17.6 |
| 9. | 23.3 |
| 10. | 29.3 |
| 13. | 53.4 |
| 16. | 89.2 |
| 20. | 154. |
| 25. | 352. |
| 29.40 (max) | 710. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.95 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

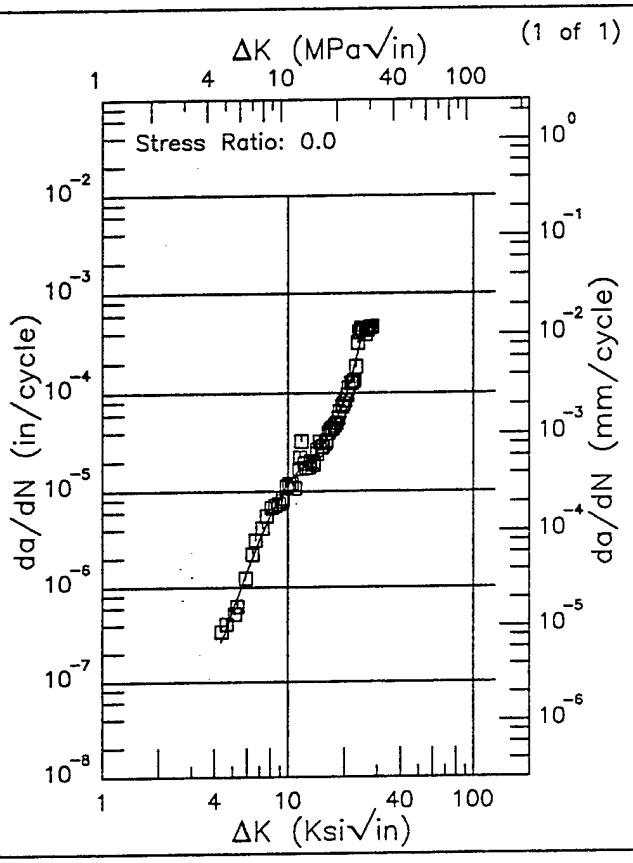
**Figure 8.17.3.1.10**

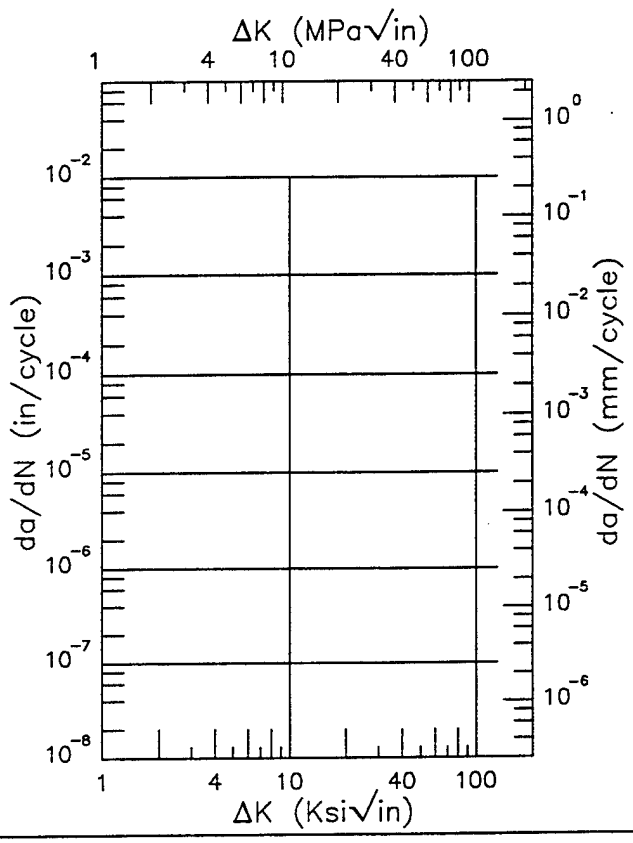
7178

R

Condition/Ht: T651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: T–L
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 81.5 ksi
Ult. Strength: 89.7 ksi
Specimen Thk: 0.125 in.
Specimen Width: 8 in.
Ref: RI002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.35 (min) | 0.266 |
| 5. | 0.558 |
| 6. | 1.45 |
| 7. | 3.10 |
| 8. | 5.58 |
| 9. | 8.73 |
| 10. | 12.1 |
| 13. | 21.0 |
| 16. | 33.0 |
| 20. | 82.3 |
| 25. | 391. |
| 27.90 (max) | 412. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.95 | 0. .5 .8 1.25 2. |

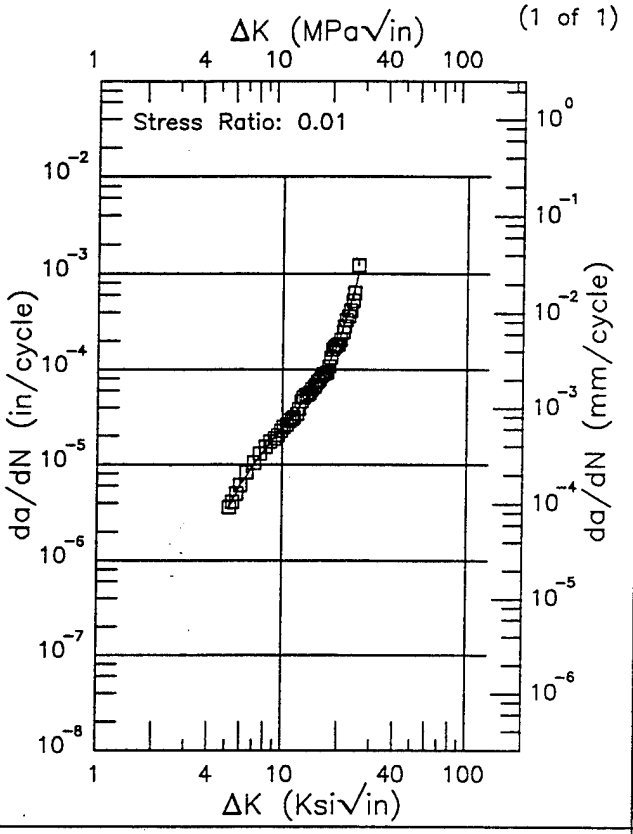
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

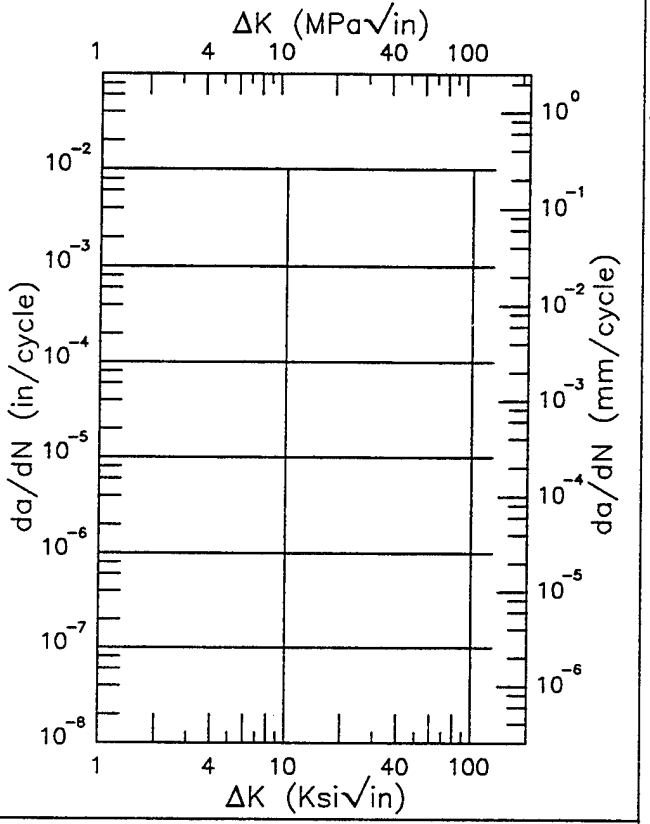
**Figure 8.17.3.1.11**

7178 R

Condition/Ht: T651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: T–L
Frequency: 6 Hz
Environment: S.T.W.; RT

Yield Strength: 81.5 ksi
Ult. Strength: 89.7 ksi
Specimen Thk: 0.125 in.
Specimen Width: 8 in.
Ref: RI002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.16 (min) | 3.64 |
| 6. | 6.27 |
| 7. | 10.0 |
| 8. | 14.3 |
| 9. | 19.1 |
| 10. | 24.6 |
| 13. | 46.2 |
| 16. | 82.4 |
| 20. | 196. |
| 25. | 875. |
| 25.29 (max) | 968. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.20 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

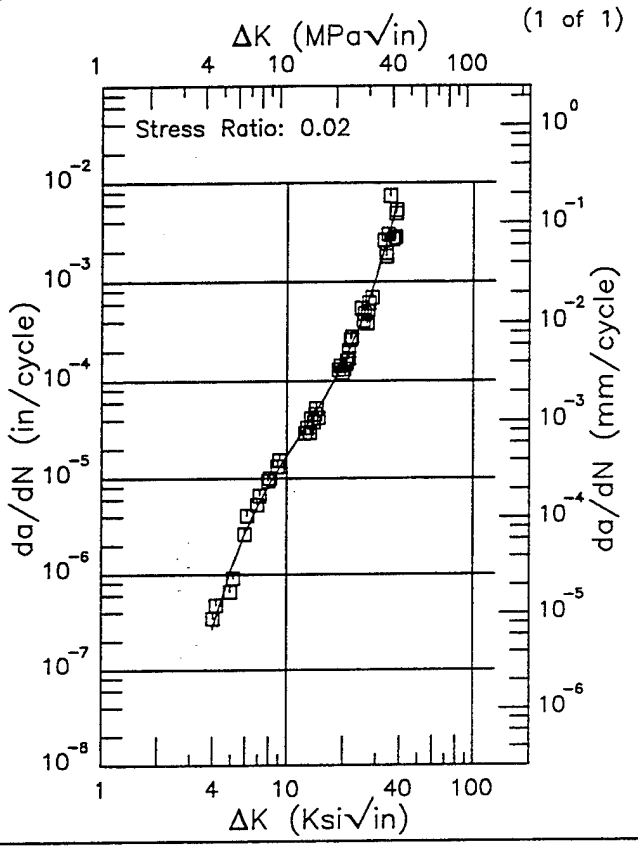
**Figure 8.17.3.1.12**

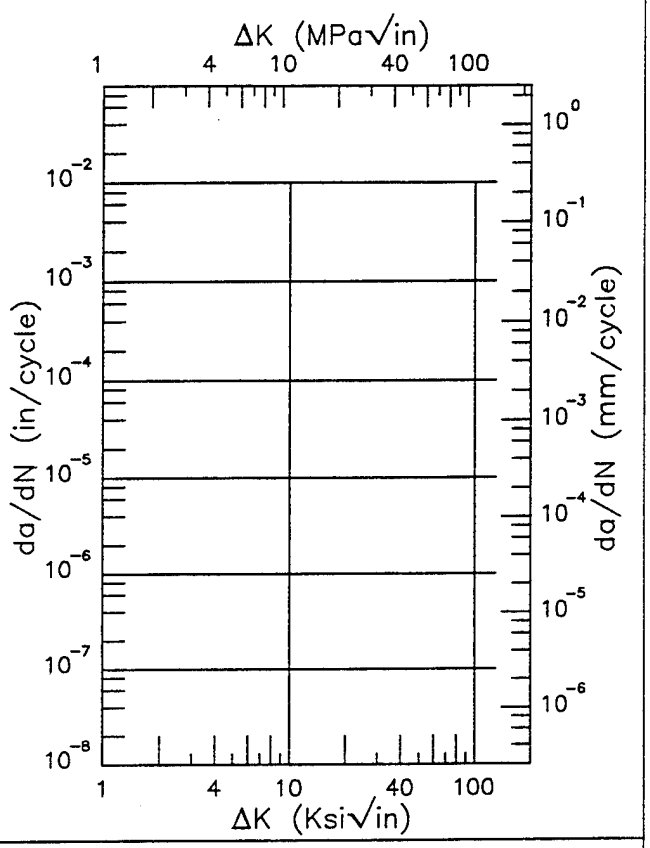
7178

R

Condition/Ht: T651
Form: 0.31 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 0.1 – 12 Hz
Environment: LAB AIR; RT

Yield Strength: 83.5 ksi
Ult. Strength: 89.5 ksi
Specimen Thk: 0.1 in.
Specimen Width: 6 in.
Ref: MA011




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.99 (min) | 0.272 |
| 4. | 0.276 |
| 5. | 1.12 |
| 6. | 2.77 |
| 7. | 5.26 |
| 8. | 8.51 |
| 9. | 12.5 |
| 10. | 17.2 |
| 13. | 36.8 |
| 16. | 69.0 |
| 20. | 151. |
| 25. | 403. |
| 30. | 1091. |
| 35. | 3014. |
| 38.42 (max) | 6094. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 27.20 | 0. .5 .8 1.25 2. |

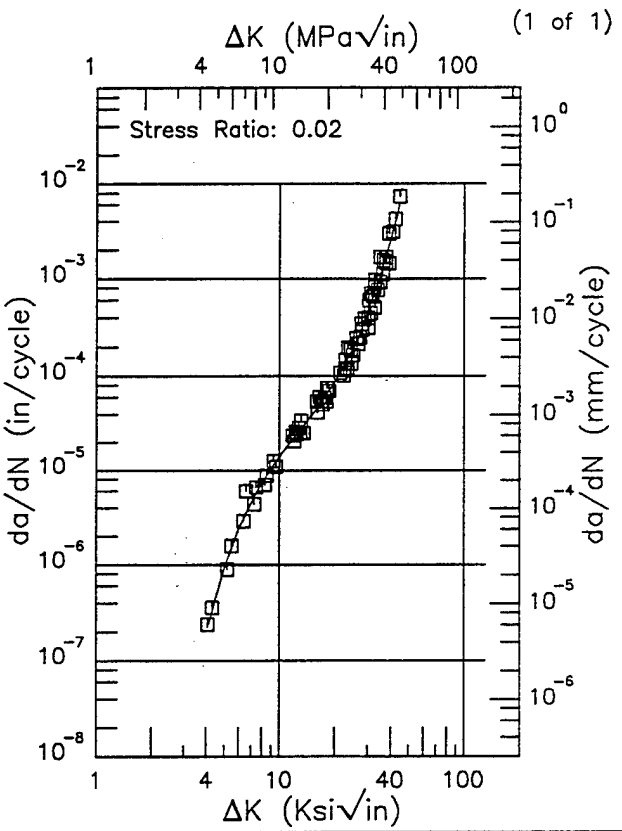
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

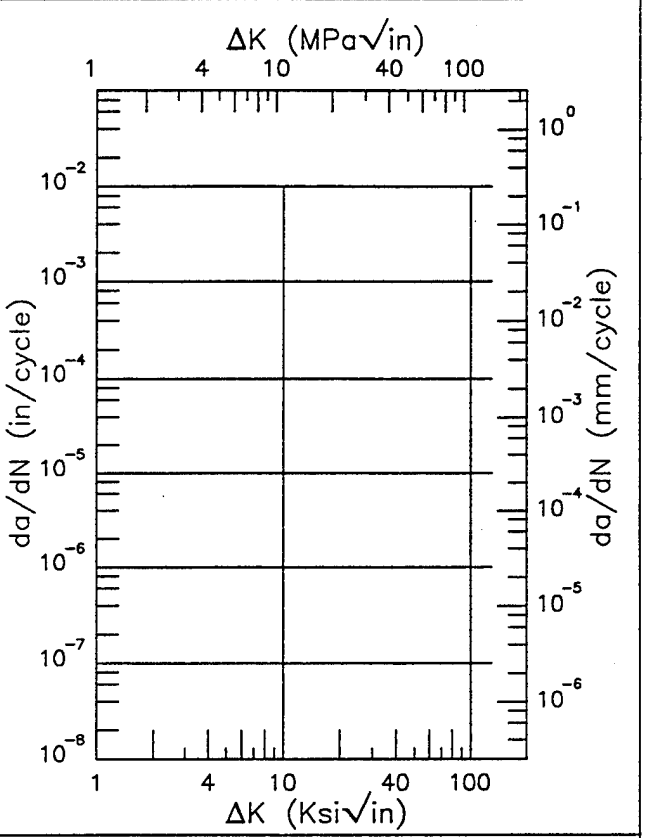
**Figure 8.17.3.1.13**

7178 R

Condition/Ht: T651
Form: 0.5 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 0.1 – 12 Hz
Environment: LAB AIR; RT

Yield Strength: 72 ksi
Ult. Strength: 80.5 ksi
Specimen Thk: 0.185 in.
Specimen Width: 6 in.
Ref: MA011




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.05 (min) | 0.223 |
| 5. | 0.909 |
| 6. | 2.36 |
| 7. | 4.53 |
| 8. | 7.29 |
| 9. | 10.5 |
| 10. | 14.1 |
| 13. | 27.2 |
| 16. | 45.7 |
| 20. | 86.6 |
| 25. | 194. |
| 30. | 449. |
| 35. | 1081. |
| 40. | 2673. |
| 44.41 (max) | 6045. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.21 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.14**

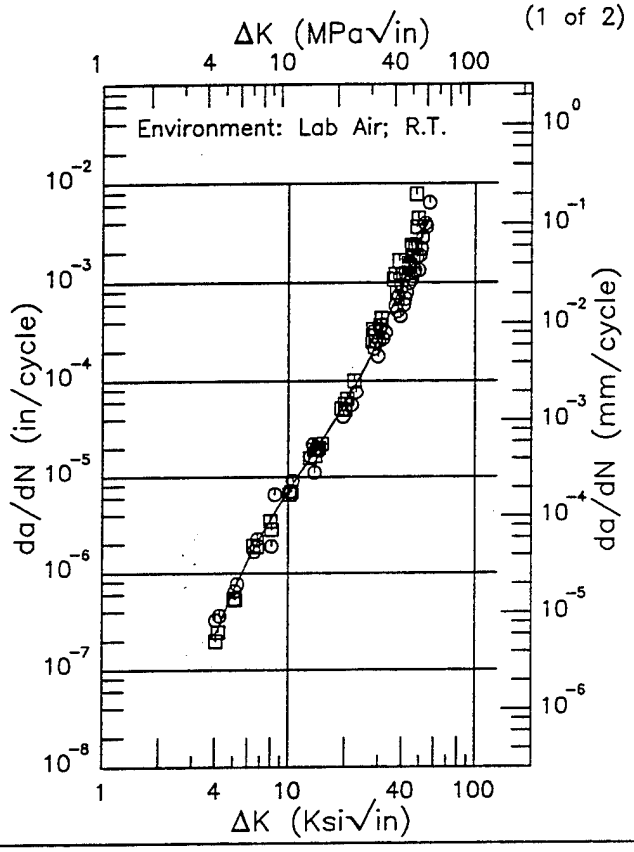
## 7178

E

Condition/Ht: T76
Form: 0.1 – 0.19 in. Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Stress Ratio: 0.02
Frequency:

Yield Strength: 70.5 – 75 ksi
Ult. Strength: 79 – 81.5 ksi
Specimen Thk: 0.1 in.
Specimen Width:
Ref: MA012

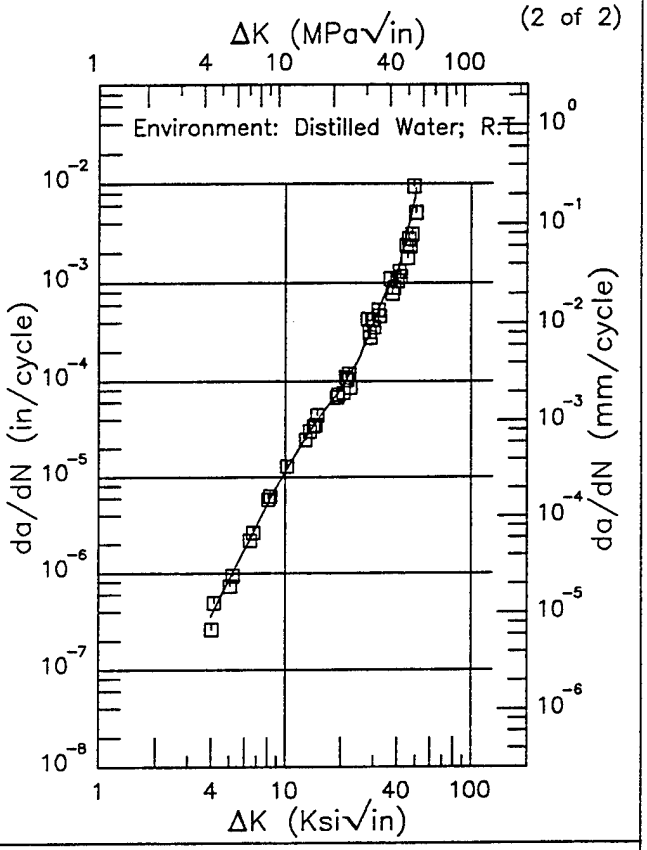
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.01 (min) | 0.231 |
| 5. | 0.639 |
| 6. | 1.33 |
| 7. | 2.31 |
| 8. | 3.60 |
| 9. | 5.22 |
| 10. | 7.18 |
| 13. | 15.5 |
| 16. | 28.8 |
| 20. | 58.4 |
| 25. | 129. |
| 30. | 268. |
| 35. | 533. |
| 40. | 991. |
| 50. | 2683. |
| 56.27 (max) | 4280. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 40.36 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.00 (min) | 0.358 |
| 5. | 0.851 |
| 6. | 1.73 |
| 7. | 3.14 |
| 8. | 5.18 |
| 9. | 7.95 |
| 10. | 11.5 |
| 13. | 26.8 |
| 16. | 47.5 |
| 20. | 83.1 |
| 25. | 169. |
| 30. | 396. |
| 35. | 830. |
| 40. | 1209. |
| 50. | 7651. |
| 50.42 (max) | 9224. |

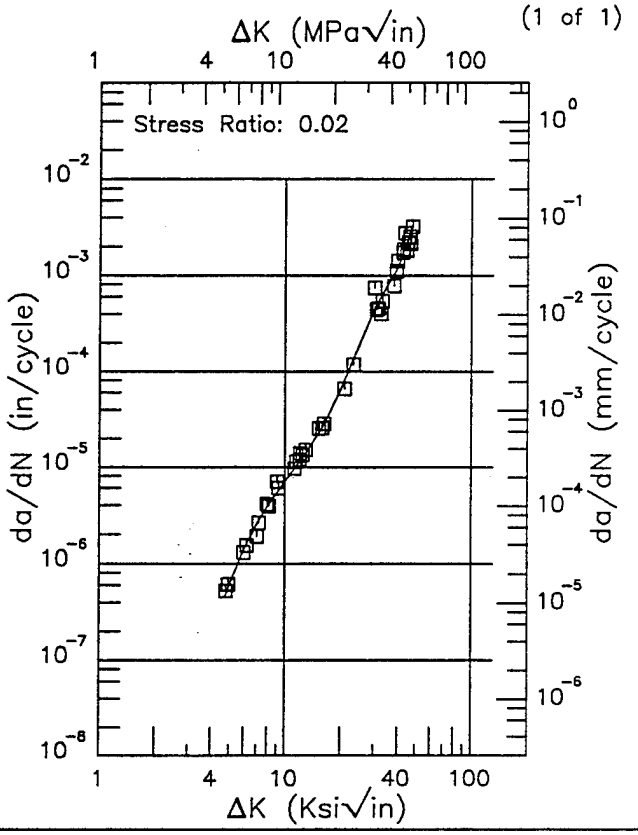
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 23.15 | 0. .5 .8 1.25 2. |

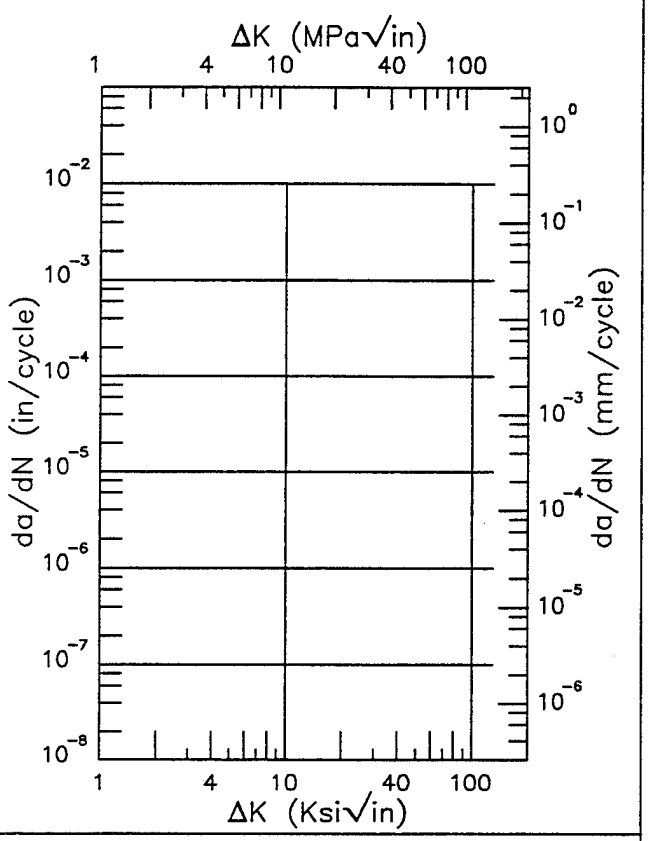
**Figure 8.17.3.1.15**

7178 R

Condition/Ht: T76
Form: 0.19 in. Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency:
Environment: LAB AIR; RT

Yield Strength: 70.5 ksi
Ult. Strength: 79 ksi
Specimen Thk: 0.194 in.
Specimen Width:
Ref: MA012




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.78 (min) | 0.462 |
| 5. | 0.591 |
| 6. | 1.40 |
| 7. | 2.50 |
| 8. | 3.83 |
| 9. | 5.35 |
| 10. | 7.09 |
| 13. | 14.2 |
| 16. | 26.9 |
| 20. | 64.9 |
| 25. | 190. |
| 30. | 441. |
| 35. | 776. |
| 40. | 1197. |
| 47.92 (max) | 3308. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.70 | 0. .5 .8 1.25 2. |

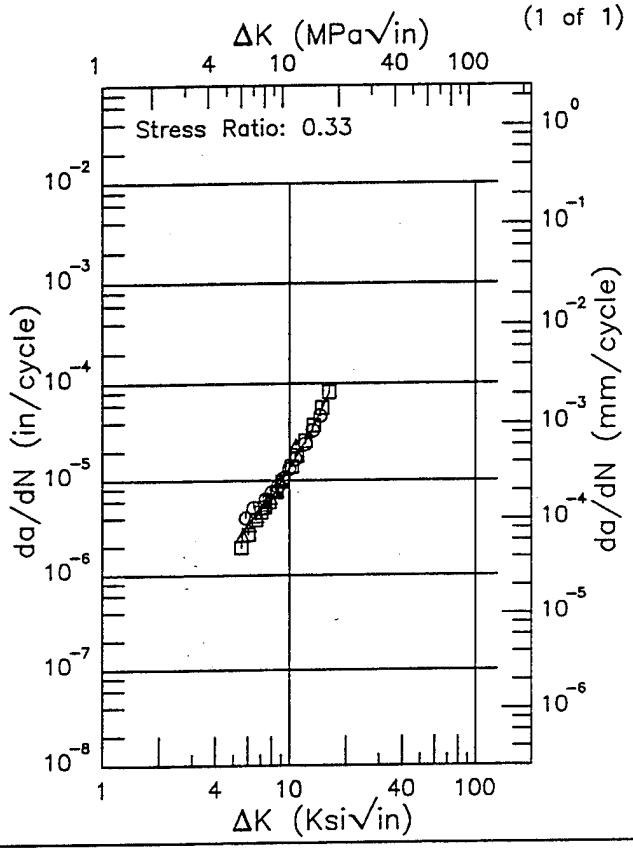
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

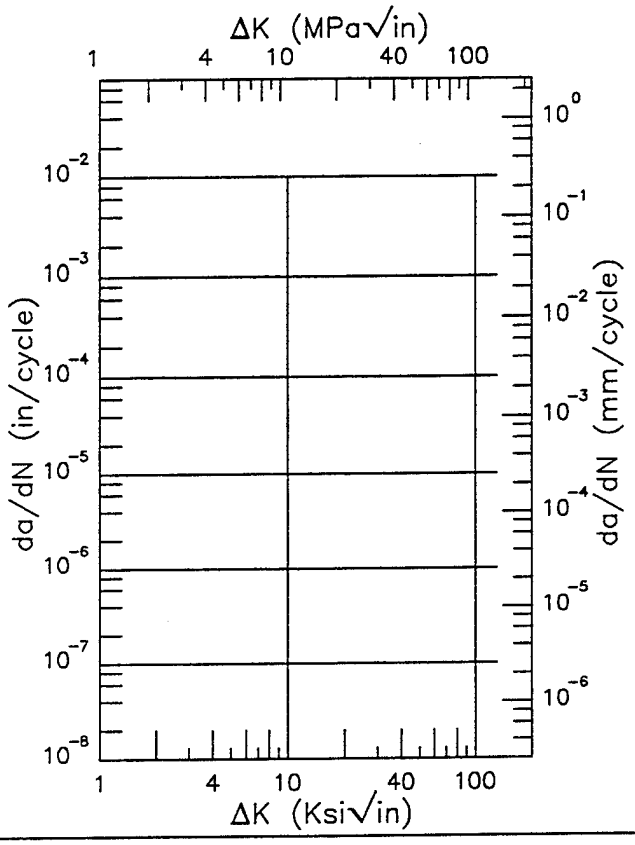
**Figure 8.17.3.1.16**

R | 7178

Condition/Ht: T7651
Form: 1.38 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 72.6 ksi
Ult. Strength: 81.3 ksi
Specimen Thk: 0.748 in.
Specimen Width: 3 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.52 (min) | 2.59 |
| 6. | 3.39 |
| 7. | 4.90 |
| 8. | 6.65 |
| 9. | 9.49 |
| 10. | 13.7 |
| 13. | 31.5 |
| 16. | 76.8 |
| 16.23 (max) | 81.1 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.92 | 0. .5 .8 1.25 2. |

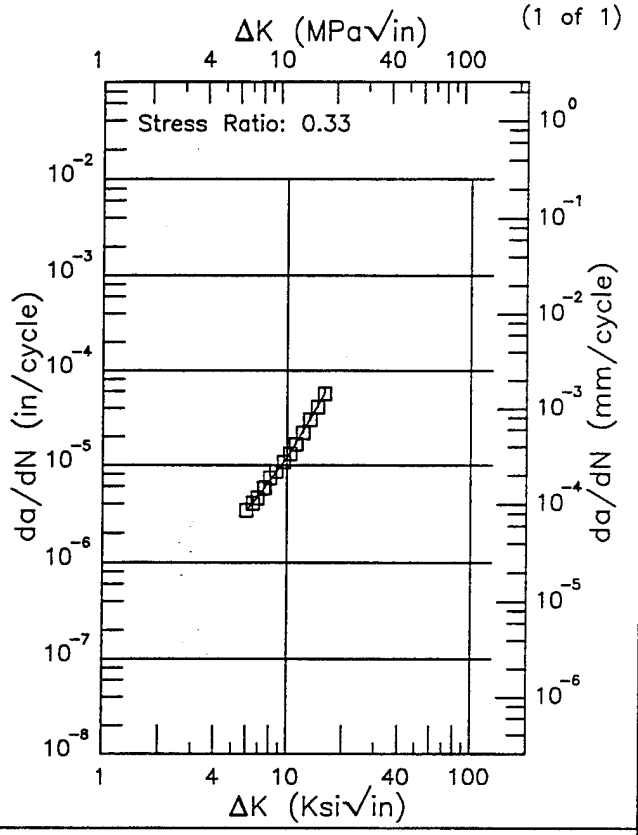
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

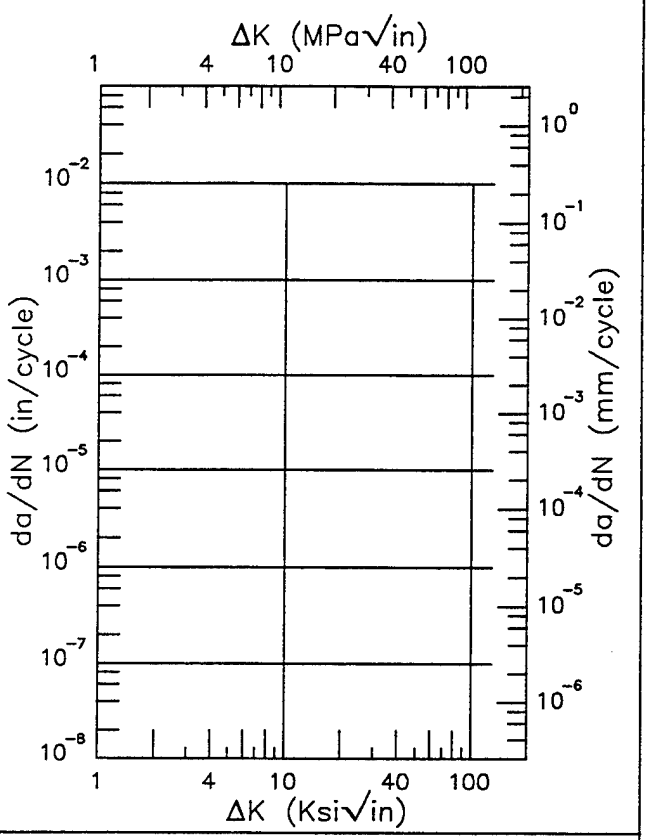
**Figure 8.17.3.1.17**

7178 R

Condition/Ht: T7651
Form: 0.44 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 70.9 ksi
Ult. Strength: 80 ksi
Specimen Thk: 0.444 in.
Specimen Width: 3 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.99 (min) | 3.39 |
| 6. | 3.40 |
| 7. | 4.80 |
| 8. | 6.94 |
| 9. | 9.32 |
| 10. | 11.9 |
| 13. | 28.5 |
| 15.78 (max) | 56.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.21 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

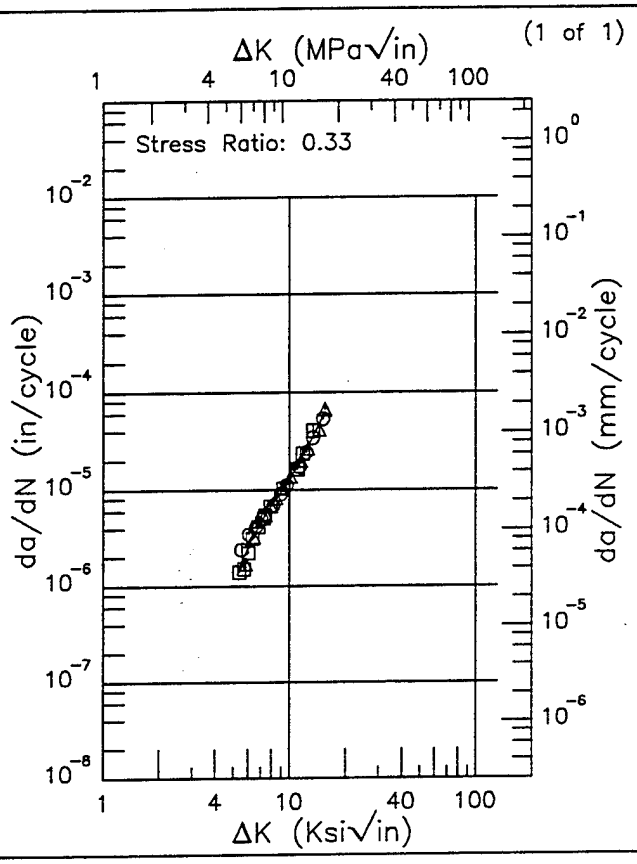
**Figure 8.17.3.1.18**

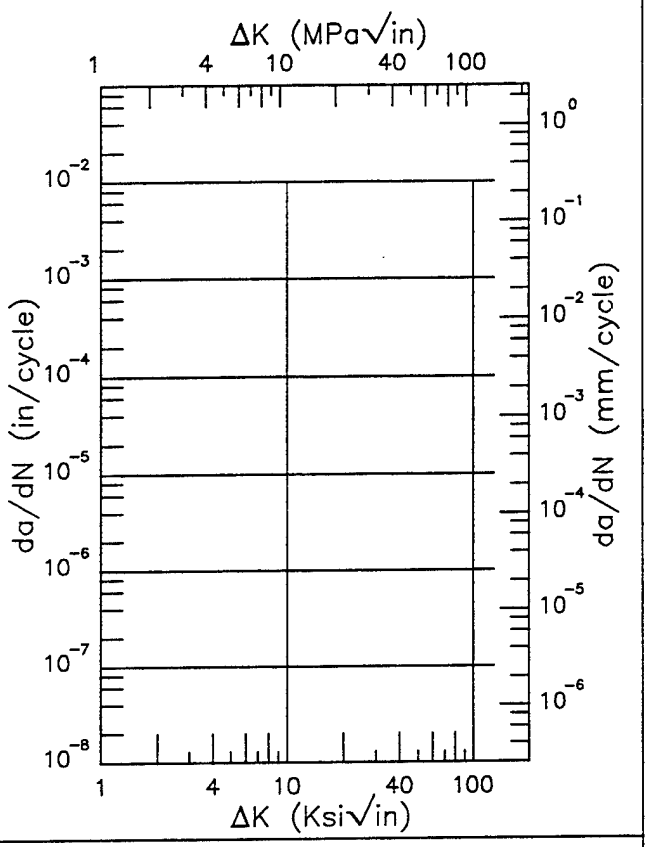
7178

R

Condition/Ht: T7651
Form: 0.48 – 0.49 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 69.2 – 70.9 ksi
Ult. Strength: 80 ksi
Specimen Thk: 0.481 – 0.486 in.
Specimen Width: 2.999 – 3 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.37 (min) | 1.53 |
| 6. | 2.50 |
| 7. | 4.57 |
| 8. | 6.96 |
| 9. | 9.40 |
| 10. | 12.5 |
| 13. | 31.8 |
| 15.40 (max) | 60.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

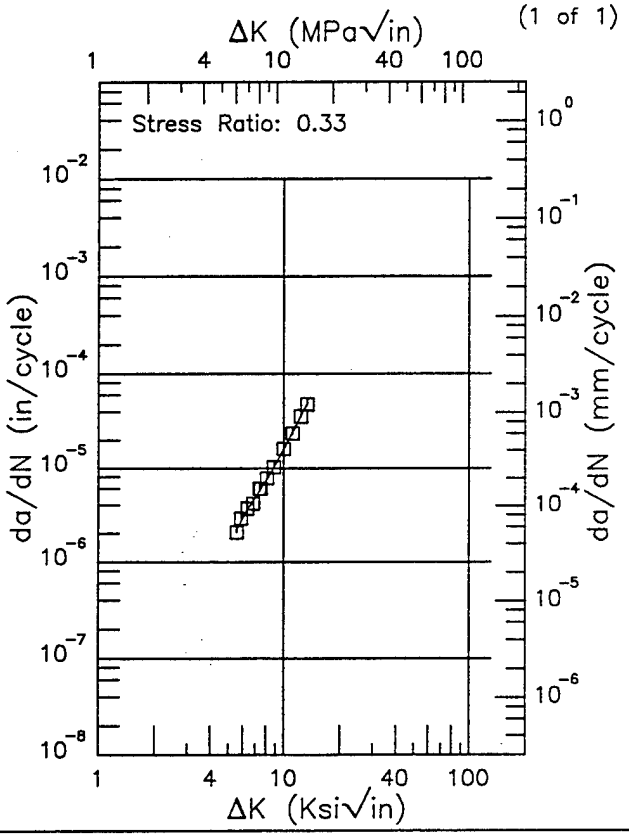
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.28 | 0. .5 .8 1.25 2. |

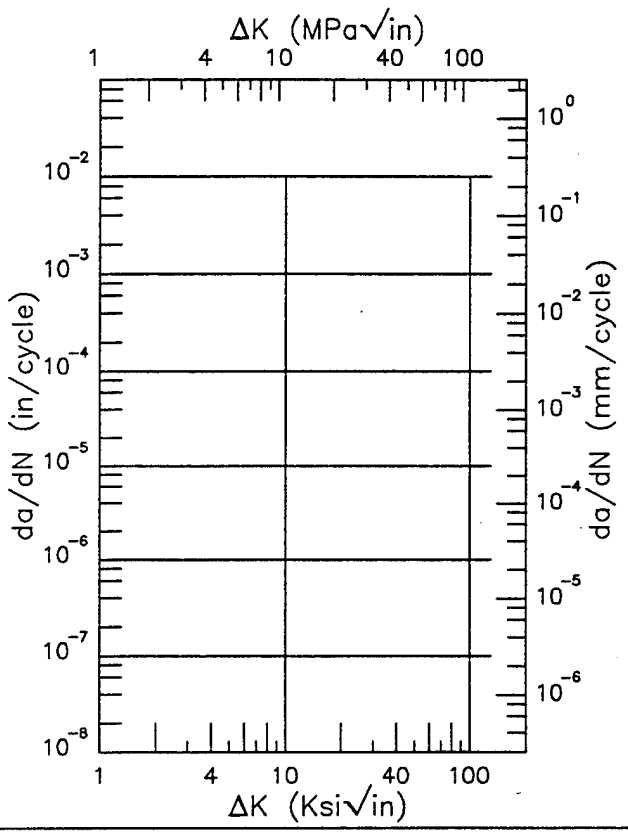
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.19**

Condition/Ht: T7651
Form: 1.38 in. Plate
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 71.1 ksi
Ult. Strength: 80.5 ksi
Specimen Thk: 0.751 in.
Specimen Width: 3 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.54 (min) | 2.11 |
| 6. | 2.94 |
| 7. | 4.81 |
| 8. | 7.29 |
| 9. | 11.0 |
| 10. | 16.2 |
| 13. | 43.5 |
| 13.28 (max) | 47.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.40 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.17.3.1.20**

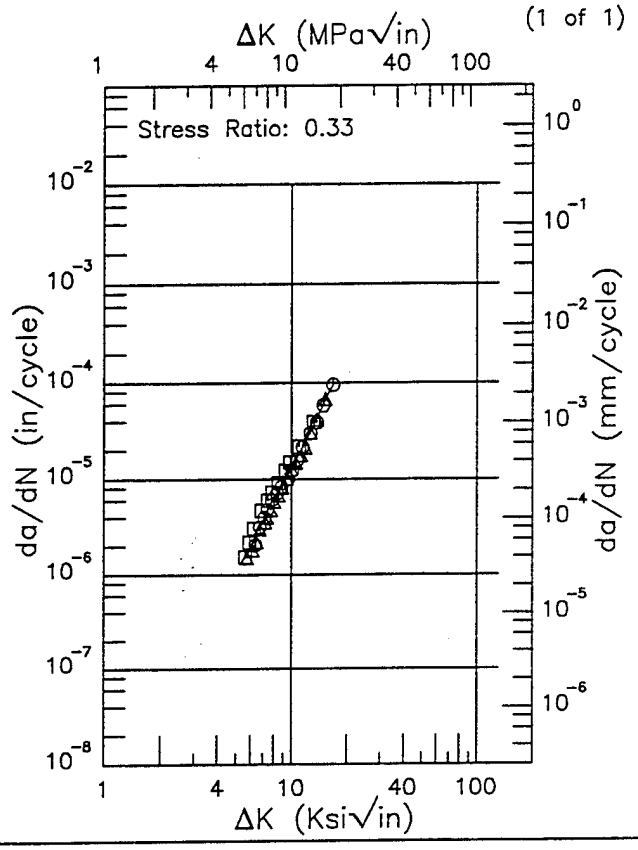
7178

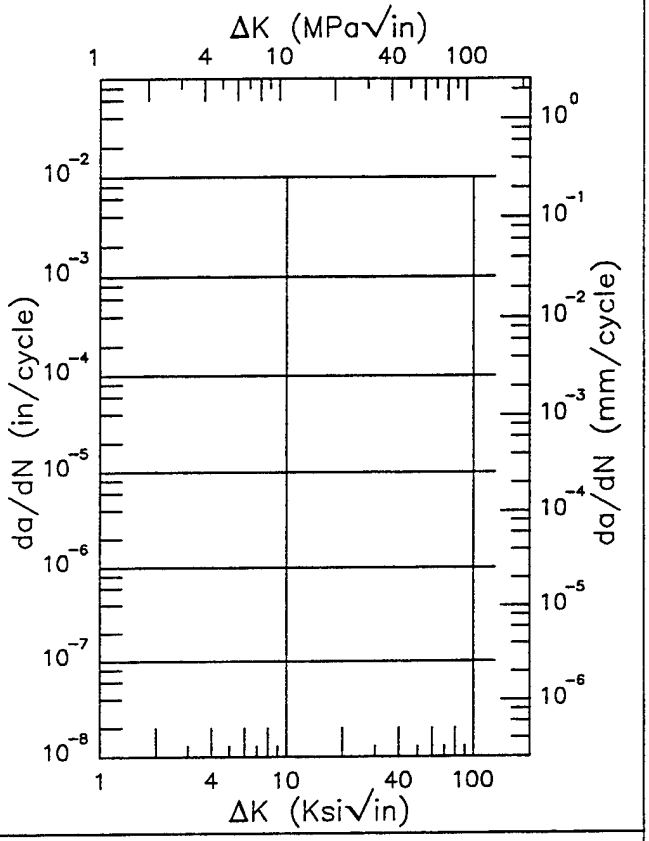
R

Condition/Ht: T7651
Form: 0.49 in. Plate
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 69.2 ksi
Ult. Strength: 79.1 ksi
Specimen Thk: 0.485 in.
Specimen Width: 3 in.
Ref: 86213

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.59 (min) | 1.46 |
| 6. | 1.97 |
| 7. | 3.72 |
| 8. | 6.22 |
| 9. | 9.38 |
| 10. | 13.2 |
| 13. | 34.0 |
| 16. | 81.8 |
| 16.70 (max) | 94.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error
13.63

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS % Error

Life Prediction Ratio Summary

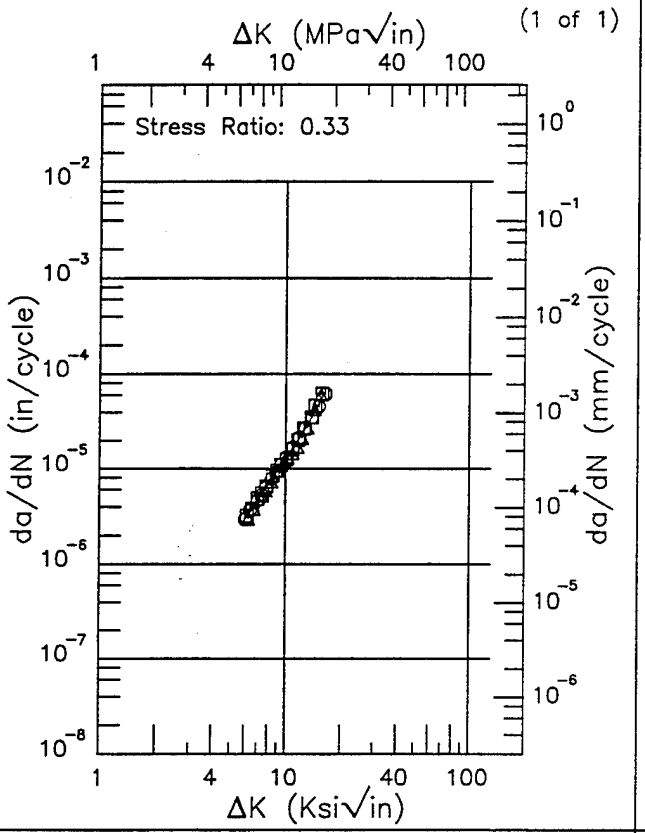
0. .5 .8 1.25 2.

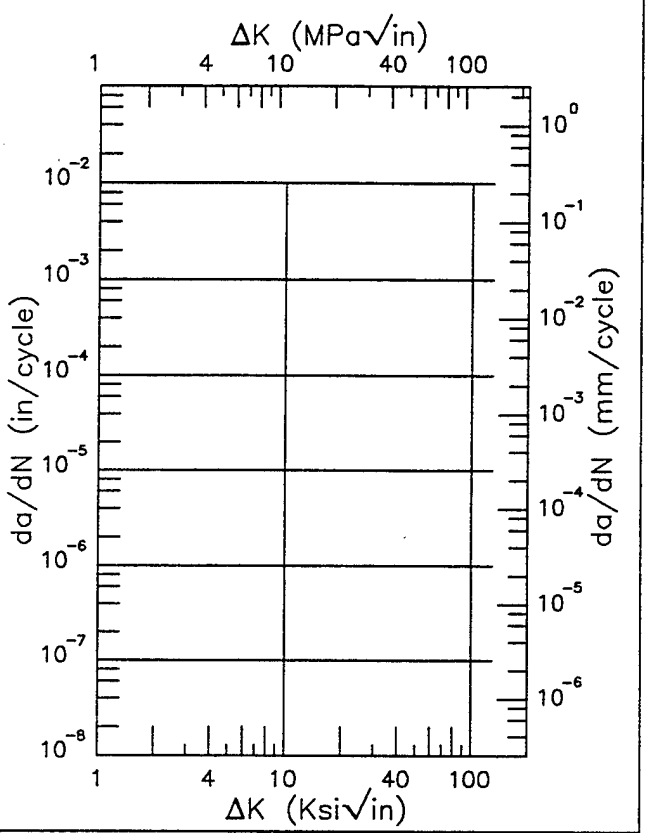
**Figure 8.17.3.1.21**

7178 R

Condition/Ht: T76510
Form: 0.69 in. Extrusion
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 65.3 ksi
Ult. Strength: 76 ksi
Specimen Thk: 0.657 – 0.659 in.
Specimen Width: 3.004 – 3.006 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.03 (min) | 2.95 |
| 7. | 4.46 |
| 8. | 6.77 |
| 9. | 9.56 |
| 10. | 12.6 |
| 13. | 27.7 |
| 16. | 61.4 |
| 16.32 (max) | 62.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.17 | 0. .5 .8 1.25 2. |

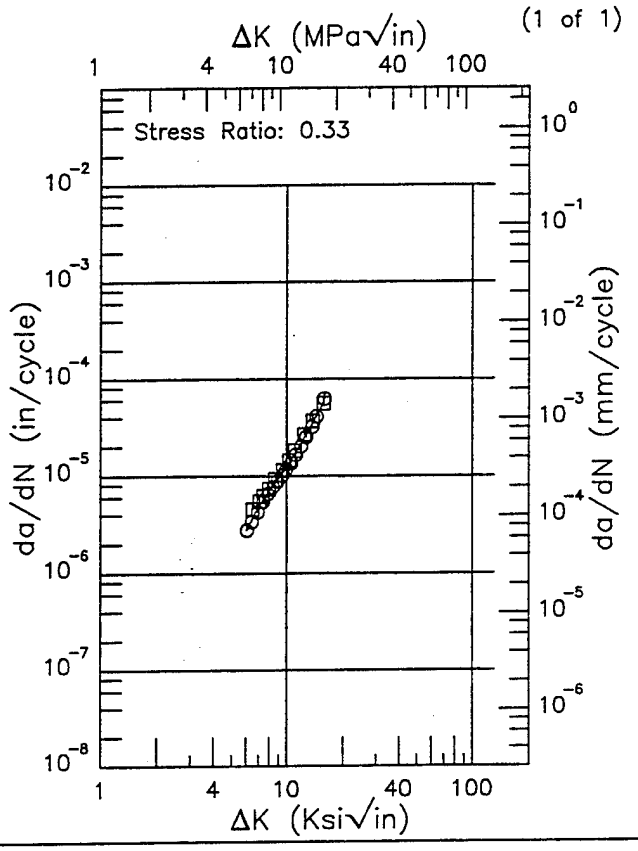
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

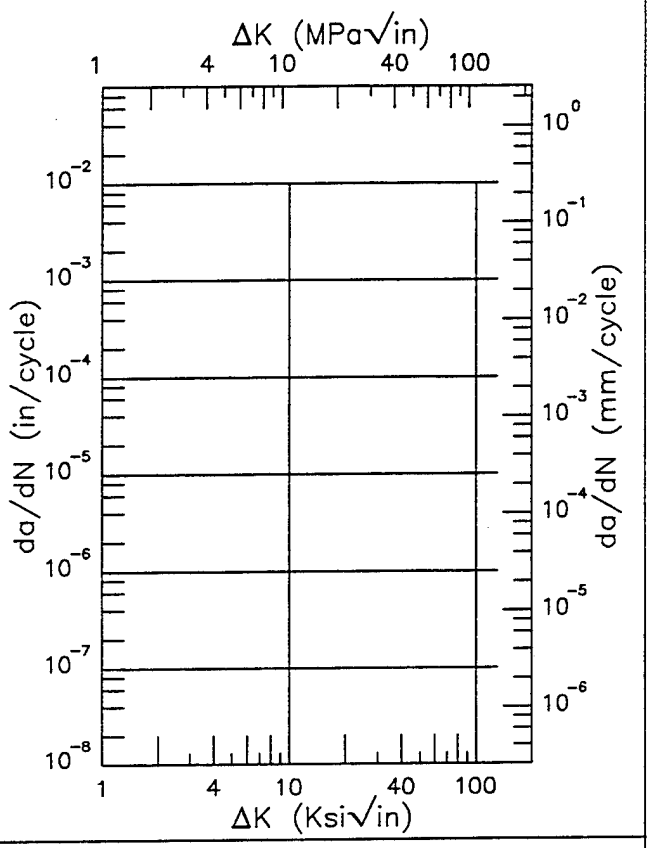
**Figure 8.17.3.1.22**

R 7178

Condition/Ht: T76510
Form: 0.69 in. Extrusion
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 65.3 ksi
Ult. Strength: 76 ksi
Specimen Thk: 0.628 in.
Specimen Width: 3 – 3.006 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.04 (min) | 2.81 |
| 7. | 4.87 |
| 8. | 7.00 |
| 9. | 9.31 |
| 10. | 12.3 |
| 13. | 28.4 |
| 15.78 (max) | 57.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.16 | 0. .5 .8 1.25 2. |

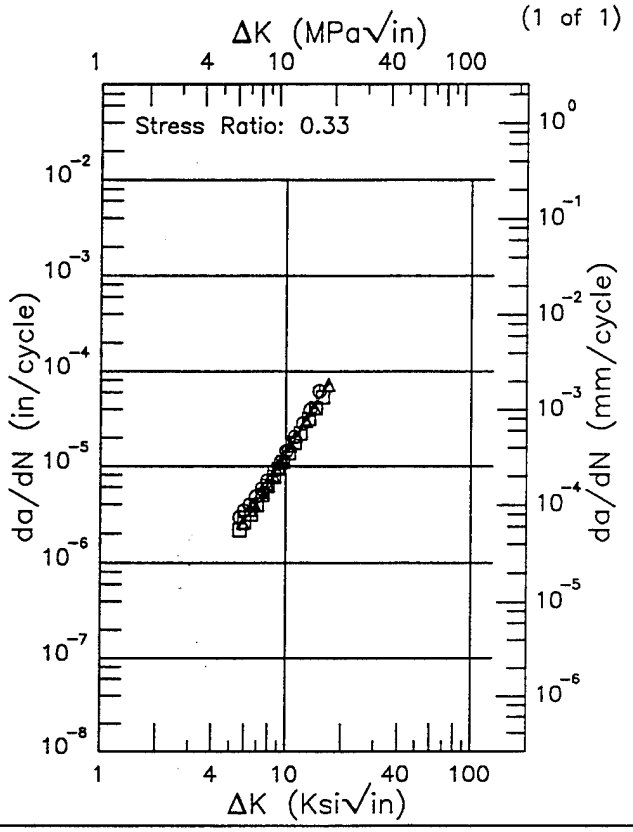
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

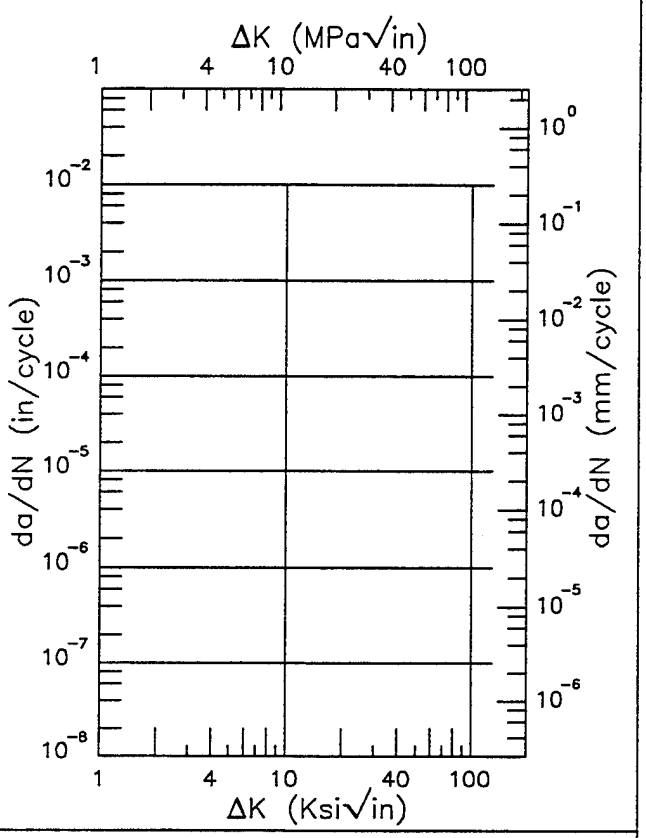
**Figure 8.17.3.1.23**

7178 R

Condition/Ht: T76510
Form: 3.5 in. Extruded Bar
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: LAB AIR; RT

Yield Strength: 63.4 ksi
Ult. Strength: 73.6 ksi
Specimen Thk: 0.75 – 0.752 in.
Specimen Width: 2.998 – 3.004 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.65 (min) | 2.36 |
| 6. | 2.77 |
| 7. | 4.32 |
| 8. | 6.53 |
| 9. | 9.53 |
| 10. | 13.5 |
| 13. | 32.0 |
| 16. | 62.1 |
| 16.84 (max) | 72.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.47 | 0. .5 .8 1.25 2. |

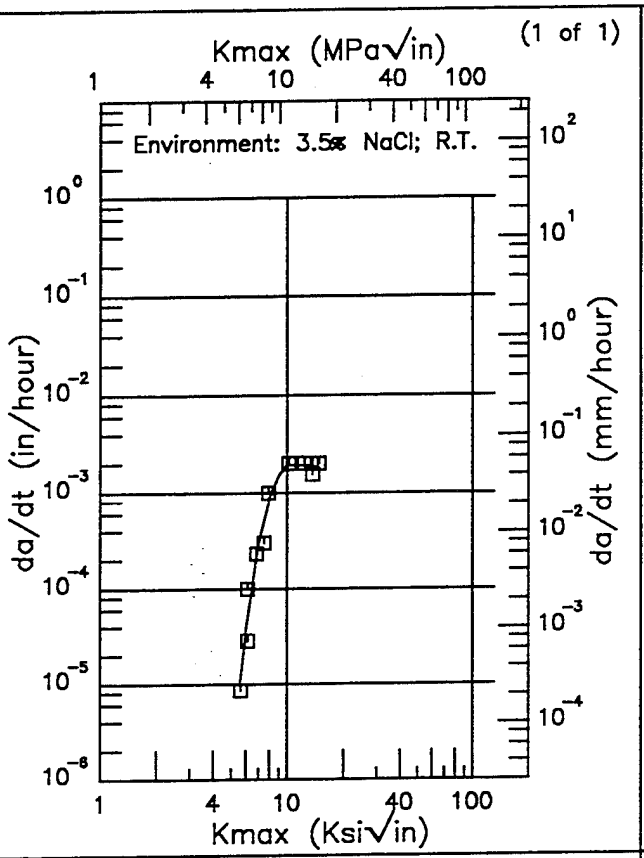
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

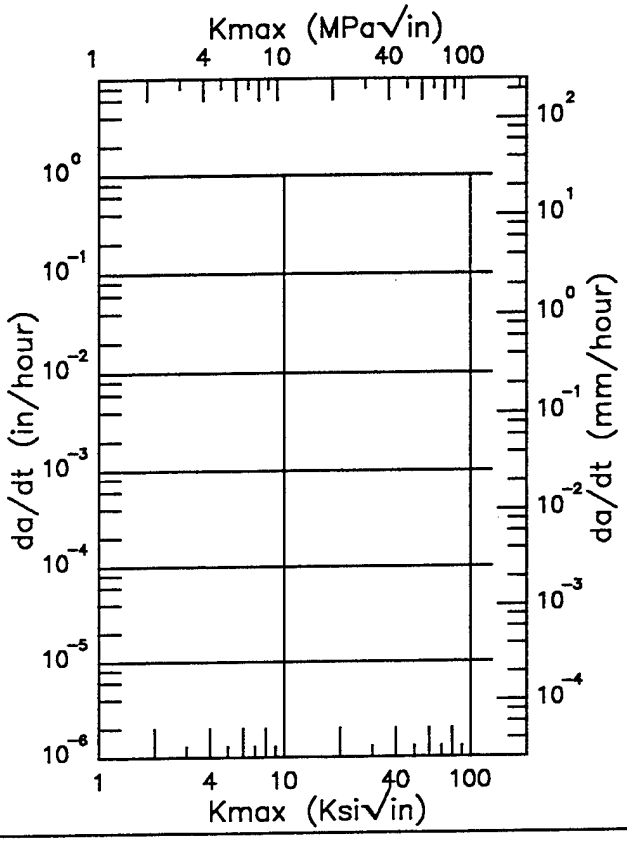
**Figure 8.17.3.1.24**

## 7178

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|
| 5.60 (min) | 0.0103 |
| 6. | 0.0367 |
| 7. | 0.294 |
| 8. | 0.883 |
| 9. | 1.52 |
| 10. | 1.92 |
| 13. | 1.93 |
| 14.70 (max) | 1.82 |

| Kmax (Ksi√in) | da/dt ($10^{-3}$in/hour) |
|---|---|

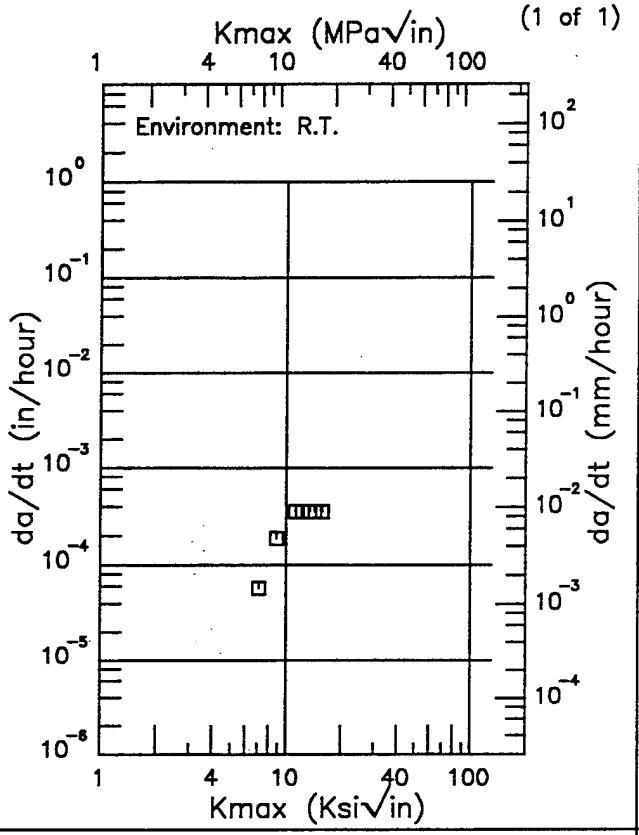
| RMS % Error |
|---|
| 40.82 |

| RMS % Error |
|---|

**Figure 8.17.3.2.1**

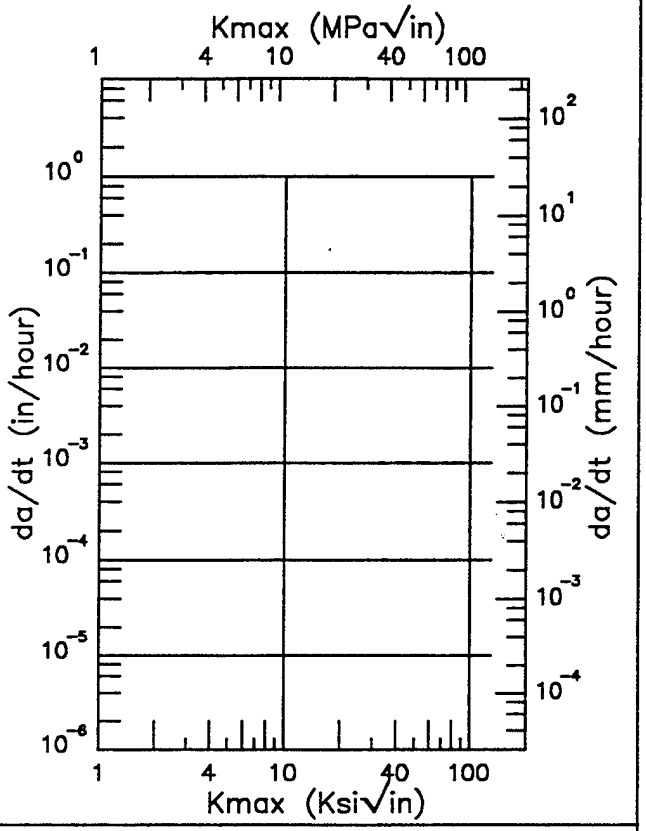
Condition/Ht: T651+ 1HR AT 320F
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

RMS % Error




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

RMS % Error

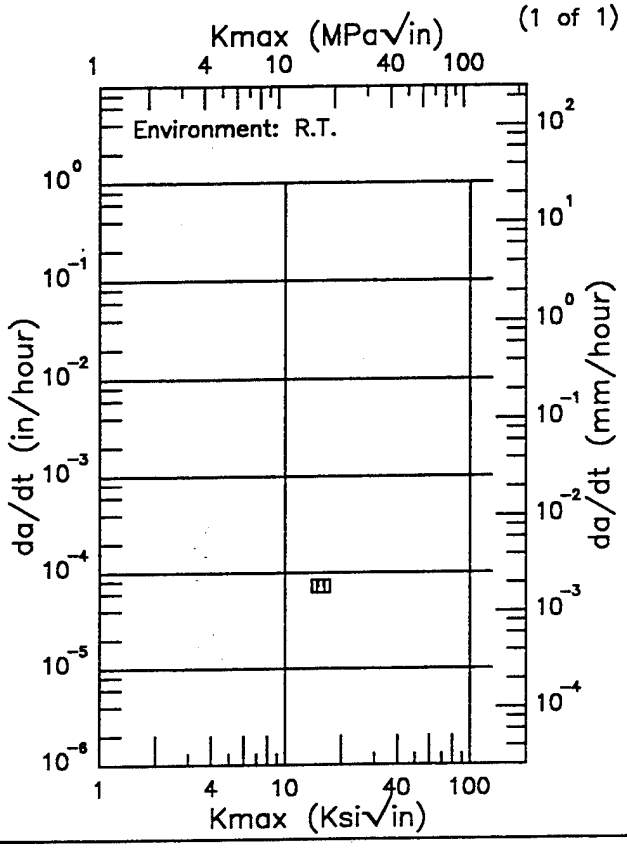
**Figure 8.17.3.2.2**

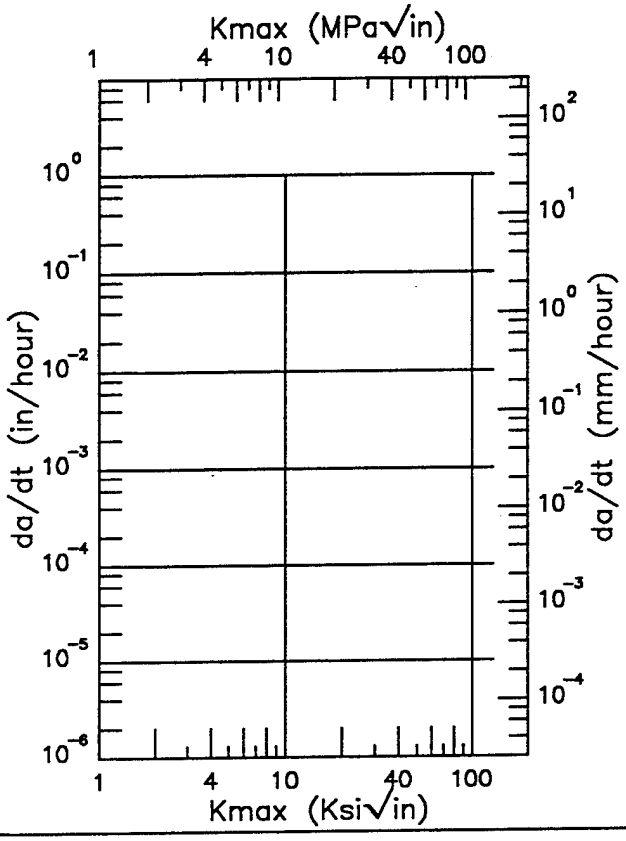
7178

Condition/Ht: T651+ 8HR AT 320F
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543

(1 of 1)




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

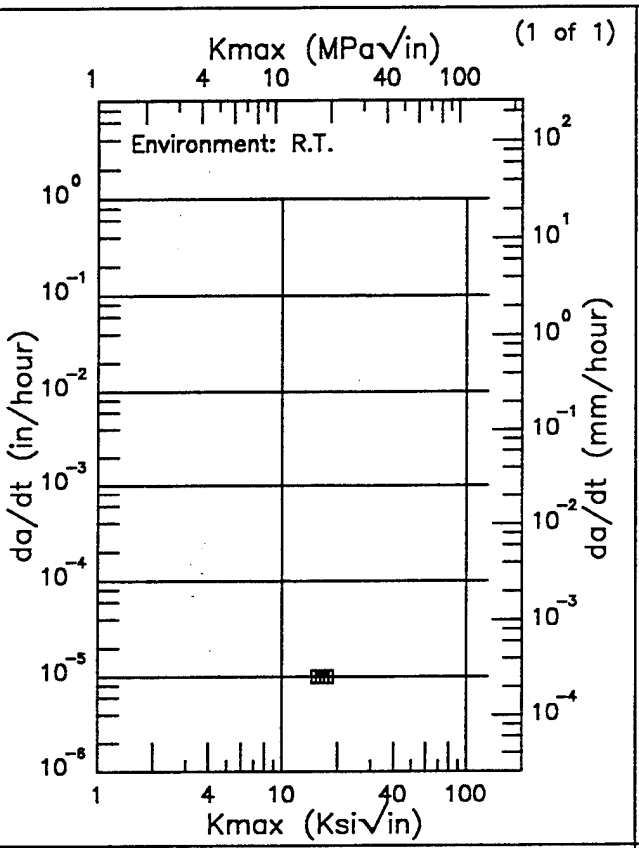
Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

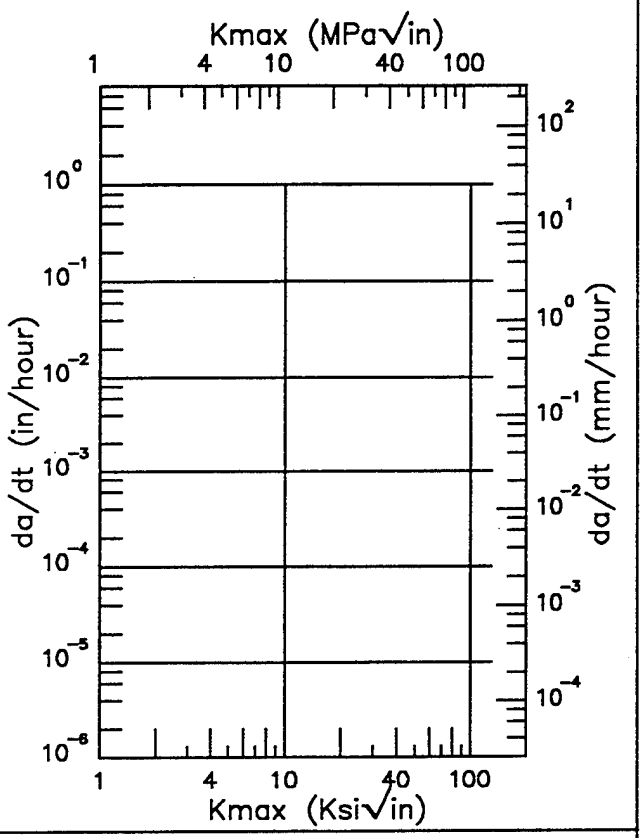
| RMS % Error | | RMS % Error | |
|---|---|---|---|

**Figure 8.17.3.2.3**

Condition/Ht: T651+ 12HR AT 320F
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T-L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

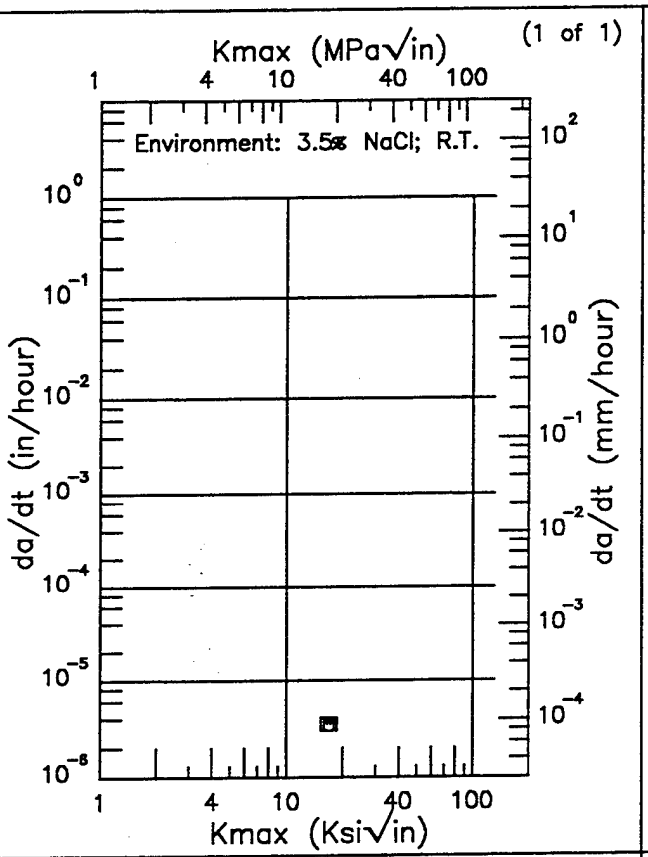
| RMS % Error | | RMS % Error | |
|---|---|---|---|

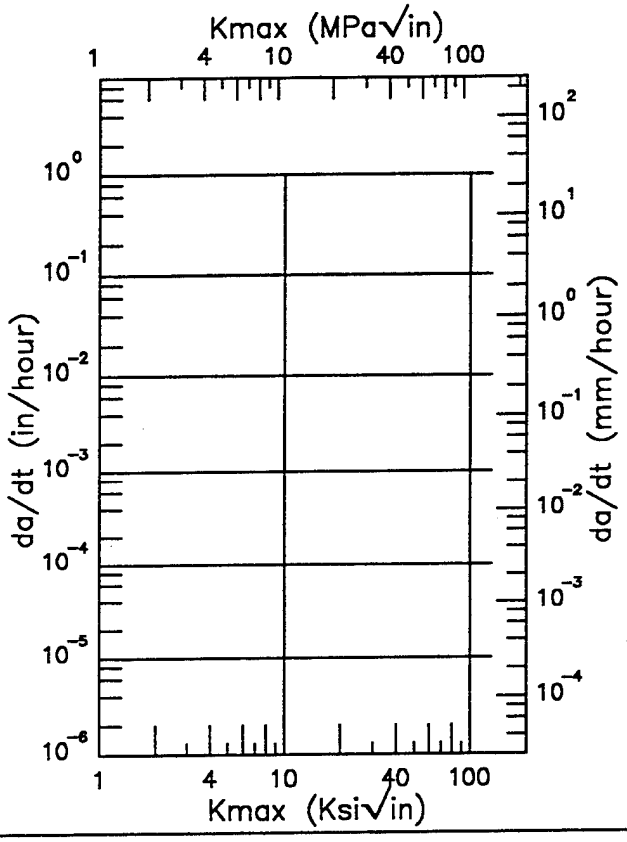
**Figure 8.17.3.2.4**

## 7178

Condition/Ht: T7651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Yield Strength:
Ult. Strength:

Specimen Thk:
Specimen Width:
$A_o$:
$K_{Iscc}$:
Ref: 85543




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

| RMS % Error | | RMS % Error | |
|---|---|---|---|

**Figure 8.17.3.2.5**

# TABLE 8.18.2.2



## ALUMINUM 7178 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T6 | Sheet | 0.06 | R.T. | L-T | 82.2 | 3.000 | 0.063 | 1.260 | 1.883 | --- | 24.80 | 39.25 | 39.0 | 1.5 | 57.36* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 82.2 | 3.000 | 0.063 | 1.200 | 1.828 | --- | 26.40 | 40.30 | | | 58.95* | | | 1973 | 86213 |
| | | 0.06 | | | 82.2 | 3.000 | 0.063 | 1.100 | 1.762 | --- | 26.00 | 37.32 | | | 55.67 | | | 1973 | 86213 |
| T6 | Sheet | 0.12 | R.T. | L-T | 81.8 | 3.000 | 0.123 | 1.160 | 2.102 | --- | 29.10 | 43.35 | 41.6 | 2.5 | 78.56* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 81.8 | 3.000 | 0.124 | 1.200 | 2.066 | --- | 26.10 | 39.84 | | | 68.60* | | | 1973 | 86213 |
| T6 | Sheet | 0.02 | R.T. | T-L | 78.6 | 3.000 | 0.021 | 1.120 | 1.879 | --- | 29.10 | 42.29 | 42.2 | 0.1 | 67.13* | --- | --- | 1973 | 86213 |
| | | 0.02 | | | 78.6 | 3.000 | 0.021 | 1.140 | 2.016 | --- | 28.60 | 42.08 | | | 72.50* | | | 1973 | 86213 |
| T6 | Sheet | 0.06 | R.T. | T-L | 79.4 | 3.000 | 0.063 | 1.170 | 1.768 | --- | 23.90 | 35.82 | --- | --- | 51.37 | --- | --- | 1973 | 86213 |
| T6 | Sheet | 0.12 | R.T. | T-L | 77.0 | 3.000 | 0.125 | 1.200 | 2.055 | --- | 20.30 | 30.99 | 31.1 | 0.1 | 52.89* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 77.0 | 3.000 | 0.125 | 1.300 | 2.033 | --- | 19.20 | 31.12 | | | 49.23 | | | 1973 | 86213 |
| T76 | Sheet | 0.06 | R.T. | L-T | 71.6 | 3.000 | 0.064 | 1.200 | 2.059 | --- | 32.00 | 48.84 | 50.1 | 1.8 | 83.62* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 71.6 | 3.000 | 0.064 | 1.120 | 2.010 | --- | 35.40 | 51.45 | | | 89.36* | | | 1973 | 86213 |
| T76 | Sheet | 0.12 | R.T. | L-T | 67.4 | 3.000 | 0.130 | 1.150 | 2.093 | --- | 34.20 | 50.63* | --- | --- | 91.64* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 67.4 | 3.000 | 0.131 | 1.260 | 2.150 | --- | 31.80 | 50.33* | | | 89.07* | | | 1973 | 86213 |
| T76 | Sheet | 0.06 | R.T. | T-L | 71.4 | 3.000 | 0.064 | 1.140 | 1.824 | --- | 29.70 | 43.70 | 43.2 | 0.7 | 66.15* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 71.4 | 3.000 | 0.065 | 1.240 | 1.910 | --- | 27.30 | 42.69 | | | 64.33* | | | 1973 | 86213 |
| T76 | Sheet | 0.12 | R.T. | T-L | 66.8 | 3.000 | 0.132 | 1.210 | 2.089 | --- | 29.50 | 45.30 | 45.5 | 0.3 | 78.81* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 66.8 | 3.000 | 0.132 | 1.200 | 2.015 | --- | 30.00 | 45.79 | | | 75.95* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.1.1

## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 7475 AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Plate | T651 | 40.1 | 2.4 | 19 | 34.6 | 3.5 | 120 | 32.9 | 2.5 | 8 |
| | T651 (SP) | 35.3 | 1.9 | 8 | 34.4 | 2.1 | 11 | 27.3 | 1.6 | 10 |
| | T7351 | 47.1 | 4.9 | 150 | 37.2 | 4. | 109 | 30.6 | 2.7 | 60 |
| | T7351 (SP) | --- | --- | --- | 37.6 | 2.5 | 17 | --- | --- | --- |
| | T7651 | 42.1 | 3.7 | 11 | 34. | 2.9 | 8 | 27.6 | 0.8 | 5 |
| | T7651 (SP) | 42.4 | 2.9 | 3 | 35.7 | 0.4 | 3 | 27.3 | 2.1 | 6 |

## TABLE 8.19.1.2.1

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: 3.5% NaCl**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 158.74 | | |

## TABLE 8.19.1.2.2



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Distilled Water**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.05 | 1 | | | 5.97 | 40.97 | | |
| | | 0.8 | 1 | | 2.64 | | | | |
| T761 | SHEET | 0.05 | 1 | | | 7.27 | | | |
| | | 0.05 | 1 | | | 7.04 | 52.88 | | |
| | | 0.05 | 1 | | | 7.85 | 79.12 | | |
| | | 0.8 | 1 | | 2.72 | | | | |
| | | 0.8 | 1 | 0.4 | 3.02 | | | | |
| | | 0.8 | 1 | | 3.74 | | | | |
| T7651 | PLATE | 0.05 | 1 | | | 5.82 | 34.93 | | |
| | | 0.8 | 1 | | 2.86 | | | | |
| T7651; 255F 4HR | PLATE | 0.05 | 1 | | | 3.91 | 51.69 | | |
| | | 0.8 | 1 | | 2.62 | | | | |

## TABLE 8.19.1.2.3

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.33 | 13.3 | | | 10.24 | | | |
| T7351 | PLATE | 0.1 | 6 | | 0.25 | 2.71 | 43.48 | | |
| | | 0.3 | 6 | | 0.34 | 5.89 | 59.13 | | |
| | | 0.33 | 2-20 | | | 4.94 | | | |
| | | 0.5 | 6 | | 0.6 | 8.83 | 75.52 | | |
| T761 | SHEET | 0.33 | 13.3 | | | 8.66 | 59.23 | | |
| T7651 | PLATE | -0.2 | 6 | | 0.18 | 3.73 | 31.55 | | |
| | | 0.1 | 6 | | | 3.64 | 39.02 | | |
| | | 0.1 | 20 | | 1.04 | 5.63 | | | |
| | | 0.3 | 6 | | 0.61 | | | | |
| | | 0.5 | 6 | 0.11 | 1.14 | 11.83 | | | |

## TABLE 8.19.1.2.4



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) *ΔK Level* (*Ksi√in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 42.27 | | |
| | | 0.05 | 2 | | | | 57.03 | | |
| | | 0.05 | 2 | | | | | 962.28 | |
| | | 0.33 | 13.3 | | | 28.74 | | | |
| T651 | PLATE | 0.33 | 5.2 | | | 33.3 | 302.31 | | |
| | | 0.33 | 25 | 0.05 | | | | | |
| | | 0.33 | | | 0.93 | 35.45 | 242.07 | | |
| T7351 | PLATE | 0.1 | 1 | | | 3.17 | 48.06 | | |
| | | 0.1 | 9-30 | | 0.26 | | | | |
| | | 0.1 | 9-30 | | | 10.2 | 100.48 | | |
| | | 0.25 | 5.5-33 | 0.03 | | | | | |
| | | 0.33 | 25 | 0.06 | 0.91 | 13.03 | 87.6 | | |
| | | 0.5 | 6-33 | 0.11 | | | | | |
| | | 0.5 | 6-33 | | | 20.57 | | | |
| T761 | SHEET | 0.33 | 13.3 | | | 19.22 | | | |
| T7651 | PLATE | 0.1 | 0.1 | | | 6.27 | | | |

## TABLE 8.19.1.2.5

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: JP-4 Jet Fuel**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi√in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.02 | 0.1-20 | | 0.46 | 4.46 | 43.15 | | |

## TABLE 8.19.1.2.6



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) *ΔK Level* (*Ksi√in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6 | SHEET | 0.1 | 5 | | | | 45.57 | | |
| | | 0.1 | 10 | | | 4.74 | | | |
| | | 0.3 | 10 | | | 9.35 | 77.1 | | |
| | | 0.5 | 5 | | 2.14 | | | | |
| | | 0.5 | 10 | | | 12.44 | | | |
| T61 | PLATE | 0.1 | 20 | | | 6.53 | | | |
| T6151 | SHEET | 0.1 | 20 | | | 5.12 | 43.17 | | |
| T651 | PLATE | 0.33 | 25 | | 1.03 | 18.69 | | | |
| T7351 | PLATE | -1 | 1 | | | | | 801.56 | |
| | | -1 | 2-15 | | 0.4 | | | | |
| | | 0.02 | 0.1-20 | | 0.21 | 4.39 | 40.96 | | |
| | | 0.05 | 5 | 0.05 | 0.55 | 5.31 | 39.92 | 575.67 | |
| | | 0.1 | 10 | | 0.25 | 4.99 | | | |
| | | 0.1 | 5-10 | | | 6.44 | 66.02 | | |
| | | 0.1 | 5-20 | 0.03 | 0.34 | 5.49 | 49.68 | | |
| | | 0.1 | 20 | | | 5.65 | | | |

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi√in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 (Cont'd) | PLATE (Cont'd) | 0.4 | 5-15 | | 0.95 | | | | |
| | | 0.4 | 20 | 0.15 | 1.03 | 10.09 | 64.81 | | |
| | | 0.5 | 10 | | 1.05 | 14.52 | | | |
| | | 0.8 | 20 | 0.16 | 2.43 | | | | |
| | | 0.8 | 5-30 | 0.14 | 2.46 | | | | |
| T761 | SHEET | 0.1 | 3 | | | | 44.02 | 994.06 | |
| | | 0.1 | 7 | 0.07 | 0.9 | 8.75 | 39.95 | | |
| | | 0.1 | 3-20 | 0.09 | 0.6 | 7.27 | 40.61 | | |
| | | 0.1 | 20 | | | 5.65 | 32.53 | | |
| | | 0.4 | 5 | 0.14 | 1.61 | 13.29 | 58.93 | | |
| | | 0.4 | 5-15 | 0.13 | 1.74 | 19.64 | 69.11 | | |
| | | 0.8 | 10 | 0.3 | 3.67 | 16.04 | | | |
| | | 0.8 | 3-15 | 0.07 | 2.02 | 23.06 | | | |
| T7651 | SHEET | 0. | 6 | | | 4.2 | 41.52 | | |
| | | 0. | 30 | | 0.28 | | | | |
| | | 0.4 | 30 | | 1.02 | | | | |

## TABLE 8.19.1.2.6 (CONCLUDED)



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi/in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7651 (Cont'd) | SHEET (Cont'd) | 0.4 | --- | | | | 76.25 | | |
| | | 0.8 | 2 | | | 21.49 | | | |
| | | 0.8 | 5-10 | | 3.51 | | | | |
| | PLATE | 0. | 3 | | | | | 512.41 | |
| | | 0.05 | 5 | | | 6.47 | 44.83 | | |
| | | 0.05 | 5-10 | | 0.24 | | | | |
| | | 0.4 | 10 | | 0.93 | 8.86 | 46.88 | | |
| | | 0.4 | 20 | 0.08 | 0.88 | | | | |
| | | 0.8 | 10 | | 4.04 | | | | |
| | | 0.8 | 30 | 0.14 | 2.25 | | | | |
| T7651; 255F 4HR | PLATE | 0.05 | 8 | | 0.39 | 7.59 | 90.38 | 665.88 | |
| | | 0.4 | 5 | | | | | | |
| | | 0.4 | 5-15 | 0.1 | 1.53 | | | | |
| | | 0.8 | 10-15 | 0.25 | 3.34 | 19.14 | | | |

## TABLE 8.19.1.2.7

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: S.S.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.02 | 0.1-20 | | 0.43 | 6.73 | 62.57 | | |

8-1029

7475

## TABLE 8.19.1.2.8



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | -0.2 | 1 | | | 3.02 | | | |
| | | 0.1 | 1 | | | 21.06 | 131.96 | | |
| | | 0.1 | 1 | | 0.72 | 13.32 | | | |
| | | 0.1 | 6 | | | 8.55 | | | |
| | | 0.3 | 1 | | | 45.97 | 174.12 | | |
| | | 0.3 | 1 | | 0.68 | 30.24 | | | |
| | | 0.33 | 2-20 | | | 22.15 | | | |
| | | 0.5 | 1 | | 1.63 | 65.27 | 338.64 | | |
| | | 0.5 | 1 | | 4.57 | 43.67 | | | |
| T7651 | SHEET | 0. | 1 | | | 27.14 | | | |
| | | 0.01 | 1-5 | | | 31.99 | | | |
| | PLATE | -0.2 | 1 | | 0.38 | 20.48 | | | |
| | | 0.1 | 0.1 | | | 14.93 | 186.07 | | |
| | | 0.1 | 1 | | 0.3 | 26.41 | 122.35 | | |
| | | 0.3 | 1 | | 1.16 | 36.33 | 162.49 | | |
| | | 0.5 | 1 | | 4.07 | 44.79 | | | |

## TABLE 8.19.1.2.9

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Salt Fog**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.33 | 13.3 | | | 43.76 | | | |
| T761 | SHEET | 0.33 | 13.3 | | | 35.76 | 184.56 | | |

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7475

## TABLE 8.19.1.2.10



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: 3.5% NaCl**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 190.67 | | |
| T761 | SHEET | 0.05 | 2 | | | | 147.17 | | |

## TABLE 8.19.1.2.11

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.33 | 13.3 | | | 11.47 | 89.65 | | |
| | | 0.33 | 13.3 | | | 8.87 | | | |
| T651 | PLATE | 0.1 | 1 | | 0.89 | 8.52 | | | |
| T7351 | PLATE | 0.1 | 6 | | 0.24 | 3.33 | 53.54 | | |
| | | 0.3 | 6 | | 0.39 | 7.64 | 65.97 | | |
| | | 0.5 | 6 | | 0.75 | | | | |
| T761 | SHEET | 0.33 | 13.3 | | | 10.6 | 73.63 | | |
| | | 0.33 | 13.3 | | | 8.21 | | | |

## TABLE 8.19.1.2.12



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) *ΔK Level (Ksi√in)* | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.33 | 13.3 | | | 21.32 | | | |
| | | 0.33 | 13.3 | | | 26.31 | 180.58 | | |
| T7351 | PLATE | 0.1 | 0.1 | | | 4.5 | 50.43 | | |
| | | 0.1 | 1 | | | 3.58 | 49.24 | | |
| | | 0.33 | 2-20 | | | 12.6 | | | |
| T761 | SHEET | 0.25 | 2 | | | 10.96 | 59.88 | | |
| | | 0.33 | 13.3 | | | 19.94 | | | |
| | | 0.33 | 13.3 | | | 19.96 | 113.02 | | |

## TABLE 8.19.1.2.13

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: L.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.33 | 2-20 | | | 4.72 | 114.75 | | |
| | | 0.33 | 2-30 | | 0.3 | 4.08 | | | |
| | | 0.33 | 30 | | | 1.96 | 62.02 | | |
| | | 0.33 | 2-30 | | 0.19 | 4.08 | 57.6 | | |
| | | 0.33 | 2-30 | | 0.36 | 3.93 | | | |

## TABLE 8.19.1.2.14



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T6151 | SHEET | 0.1 | 20 | | | 6.79 | 46.35 | | |
| T76 | SHEET | 0.33 | 13.3 | | | 9.29 | | | |
| T761 | SHEET | 0.1 | 20 | | | 4.27 | 43.73 | | |

## TABLE 8.19.1.2.15

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.1 | 1 | | | 7.62 | 124.08 | | |
| | | 0.3 | 1 | | 0.34 | 42.7 | 221.11 | | |
| | | 0.33 | 2 | | | 39.16 | | | |
| | | 0.33 | 20 | | | 22.07 | | | |
| | | 0.33 | 20 | | 1.18 | 21.93 | | | |
| | | 0.33 | 30 | | 1.27 | | | | |
| | | 0.5 | 1 | | 1.41 | 44.89 | 370.99 | | |

## TABLE 8.19.1.2.16



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Salt Fog**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) ΔK *Level* (*Ksi/in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.33 | 13.3 | | | 40.19 | 208.85 | | |
| | | 0.33 | 13.3 | | | 30.03 | | | |
| T761 | SHEET | 0.33 | 13.3 | | | 39.31 | 191.15 | | |
| | | 0.33 | 13.3 | | | 33.86 | | | |

## TABLE 8.19.1.2.17

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: S-L** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.1 | 6 | | 0.79 | 7.48 | 141.92 | | |
| | | 0.33 | 2-20 | | | 5.52 | | | |
| | | 0.5 | 6 | | 1.37 | 25.12 | | | |

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7475

## TABLE 8.19.1.2.18



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: S-L** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.33 | 2-20 | | | 11.63 | | | |

## TABLE 8.19.1.2.19

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: S-L** **ENVIRONMENT: L.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.33 | 2-30 | | 1.1 | 6.79 | | | |

## TABLE 8.19.1.2.20



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: S-L** **ENVIRONMENT: S.T.W.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) ΔK *Level* (*Ksi/in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7351 | PLATE | 0.1 | 1 | | 2.07 | 35.29 | | | |
| | | 0.3 | 1 | | 4.21 | 45.75 | | | |
| | | 0.33 | 20 | | | 23.15 | | | |
| | | 0.5 | 1 | | 4.71 | 58.2 | | | |

## TABLE 8.19.1.2.21

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 AT ROOM TEMPERATURE

**ORIENTATION: Unspecified** **ENVIRONMENT: 3.5% NaCl**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7651 | PLATE | 0.1 | 1 | | | 26.41 | | | |

## TABLE 8.19.1.2.22



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 7475 AT ROOM TEMPERATURE

**ORIENTATION: Unspecified** **ENVIRONMENT: Dry Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | PLATE | 0.1 | 20 | | | 9.31 | 41.23 | | |
| | | 0.1 | 20 | | | 5.76 | 37.18 | | |
| | | 0.1 | 20 | | | 3.36 | 19.35 | | |

# TABLE 8.19.2.1



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ Ksi√in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6 | Plate | 1.62 | 83 | S-L | 69.6 | 1.000 | 0.499 | CT | 0.529 | 0.46 | 29.80 | 30.1 | 0.4 | 1973 | 86213 |
| | | 1.62 | | | 69.6 | 1.000 | 0.499 | CT | 0.552 | 0.47 | 30.30 | | | 1973 | 86213 |
| T651 | Plate | 0.95 | R.T. | L-T | 72.3 | 2.004 | 0.958 | CT | 1.042 | 0.75 | 40.40 | 40.1 | 2.4 | 1978 | MPC01 |
| | | 0.92 | | | 72.3 | 2.979 | 0.960 | CT | 1.549 | 0.81 | 41.90 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.3 | 3.017 | 0.931 | CT | 1.569 | 0.87 | 44.00 | | | 1978 | MPC01 |
| | | 0.95 | | | 74.3 | 1.985 | 0.931 | CT | 1.032 | 0.72 | 40.60 | | | 1978 | MPC01 |
| | | 0.95 | | | 74.5 | 2.009 | 0.950 | CT | 1.065 | 0.70 | 40.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.5 | 3.014 | 0.952 | CT | 1.537 | 0.78 | 42.20 | | | 1978 | MPC01 |
| | | 0.95 | | | 74.8 | 1.996 | 0.934 | CT | 1.058 | 0.72 | 40.50 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.8 | 3.021 | 0.935 | CT | 1.571 | 0.81 | 43.20 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.8 | 2.011 | 0.918 | CT | 1.086 | 0.78 | 42.60 | | | 1978 | MPC01 |
| | | 0.95 | | | 75.1 | 1.996 | 0.931 | CT | 1.038 | 0.78 | 42.40 | | | 1978 | MPC01 |
| | | 0.87 | | | 76.6 | 2.975 | 0.860 | CT | 1.547 | 0.67 | 40.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 76.6 | 1.985 | 0.903 | CT | 1.072 | 0.72 | 41.60 | | | 1978 | MPC01 |
| | | 0.87 | | | 76.6 | 2.017 | 0.859 | CT | 1.049 | 0.65 | 39.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 76.9 | 2.992 | 0.951 | CT | 1.496 | 0.52 | 36.00 | | | 1978 | MPC01 |
| | | 0.95 | | | 76.9 | 2.012 | 0.949 | CT | 1.046 | 0.52 | 35.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 77.5 | 2.992 | 0.910 | CT | 1.526 | 0.60 | 38.70 | | | 1978 | MPC01 |
| | | 0.92 | | | 77.5 | 1.996 | 0.904 | CT | 1.098 | 0.55 | 36.80 | | | 1978 | MPC01 |
| | | 0.92 | | | 78.0 | 3.004 | 0.932 | CT | 1.532 | 0.57 | 38.00 | | | 1978 | MPC01 |
| | | 0.92 | | | 78.0 | 2.000 | 0.932 | CT | 1.040 | 0.60 | 38.70 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 | Plate | 1.00 | R.T. | T-L | --- | 2.017 | 1.000 | CT | 1.049 | --- | 38.80 | 34.6 | 3.5 | 1978 | MPC01 |
| | | 1.50 | | | 69.0 | 3.022 | 1.501 | CT | 1.541 | 0.60 | 34.00 | | | 1978 | MPC01 |
| | | 1.00 | | | 69.0 | 1.993 | 0.999 | CT | 1.056 | 0.84 | 40.50 | | | 1978 | MPC01 |
| | | 1.00 | | | 69.0 | 3.028 | 1.025 | CT | 1.605 | 0.90 | 41.80 | | | 1978 | MPC01 |
| | | 0.87 | | | 69.5 | 1.992 | 0.886 | CT | 1.036 | 0.62 | 35.30 | | | 1978 | MPC01 |
| | | 0.92 | | | 69.5 | 2.010 | 0.947 | CT | 1.045 | 0.60 | 34.70 | | | 1978 | MPC01 |
| | | 0.87 | | | 69.5 | 3.020 | 0.888 | CT | 1.510 | 0.62 | 35.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 69.6 | 1.990 | 0.866 | CT | 1.035 | 0.72 | 38.10 | | | 1978 | MPC01 |
| | | 0.87 | | | 69.8 | 2.008 | 0.876 | CT | 1.004 | 0.62 | 35.30 | | | 1978 | MPC01 |
| | | 1.00 | | | 69.8 | 1.987 | 1.001 | CT | 1.053 | 0.57 | 34.00 | | | 1978 | MPC01 |
| | | 0.87 | | | 69.8 | 3.020 | 0.880 | CT | 1.540 | 0.72 | 38.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 70.6 | 2.988 | 0.882 | CT | 1.494 | 0.70 | 38.00 | | | 1978 | MPC01 |
| | | 1.00 | | | 70.6 | 2.017 | 0.999 | CT | 1.049 | 0.72 | 38.80 | | | 1978 | MPC01 |
| | | 0.92 | | | 70.6 | 2.011 | 0.959 | CT | 1.086 | 0.57 | 34.50 | | | 1978 | MPC01 |
| | | 0.87 | | | 70.6 | 1.996 | 0.880 | CT | 1.018 | 0.60 | 35.20 | | | 1978 | MPC01 |
| | | 1.00 | | | 70.6 | 2.979 | 1.006 | CT | 1.549 | 0.84 | 41.60 | | | 1978 | MPC01 |
| | | 0.87 | | | 70.7 | 1.983 | 0.873 | CT | 1.071 | 0.44 | 30.40 | | | 1978 | MPC01 |
| | | 1.00 | | | 70.7 | 3.024 | 0.993 | CT | 1.542 | 0.70 | 37.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 70.7 | 1.993 | 0.990 | CT | 1.056 | 0.62 | 35.70 | | | 1978 | MPC01 |
| | | 0.87 | | | 70.8 | 2.000 | 0.889 | CT | 1.040 | 0.57 | 34.00 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.0 | 2.000 | 0.871 | CT | 1.000 | 0.84 | 41.20 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.1 | 2.010 | 0.871 | CT | 1.025 | 0.67 | 37.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.1 | 2.981 | 0.873 | CT | 1.580 | 0.65 | 36.80 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 Cont'd | Plate Cont'd | 0.87 | R.T. Cont'd | T-L Cont'd | 71.2 | 2.012 | 0.870 | CT | 1.026 | 0.52 | 33.20 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 0.87 | | | 71.2 | 2.002 | 0.882 | CT | 1.061 | 0.84 | 41.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.3 | 1.993 | 0.869 | CT | 1.056 | 0.55 | 34.10 | | | 1978 | MPC01 |
| | | 1.00 | | | 71.4 | 2.978 | 1.007 | CT | 1.519 | 0.81 | 40.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 71.4 | 2.002 | 1.002 | CT | 1.021 | 0.70 | 38.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.5 | 2.008 | 0.884 | CT | 1.024 | 0.60 | 35.10 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.6 | 2.000 | 0.865 | CT | 1.000 | 0.72 | 38.80 | | | 1978 | MPC01 |
| | | 0.87 | | | 71.7 | 1.985 | 0.895 | CT | 1.052 | 0.50 | 32.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 71.7 | 2.998 | 0.921 | CT | 1.529 | 0.52 | 33.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 71.7 | 1.985 | 0.920 | CT | 1.032 | 0.46 | 31.50 | | | 1978 | MPC01 |
| | | 1.00 | | | 71.8 | 1.982 | 1.001 | CT | 1.090 | 0.50 | 32.60 | | | 1978 | MPC01 |
| | | 0.92 | | | 71.9 | 2.017 | 0.894 | CT | 1.069 | 0.65 | 37.30 | | | 1978 | MPC01 |
| | | 0.92 | | | 71.9 | 1.985 | 0.927 | CT | 1.052 | 0.52 | 33.60 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.0 | 2.008 | 0.907 | CT | 1.004 | 0.52 | 33.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.0 | 1.981 | 0.952 | CT | 1.030 | 0.50 | 32.90 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.0 | 1.989 | 0.927 | CT | 1.054 | 0.57 | 35.10 | | | 1978 | MPC01 |
| | | 0.87 | | | 72.1 | 2.014 | 0.867 | CT | 1.047 | 0.55 | 34.60 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.4 | 2.000 | 0.931 | CT | 1.040 | 0.62 | 36.90 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.4 | 1.996 | 0.921 | CT | 1.018 | 0.62 | 36.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.5 | 2.018 | 0.929 | CT | 1.029 | 0.52 | 33.60 | | | 1978 | MPC01 |
| | | 0.87 | | | 72.6 | 2.000 | 0.887 | CT | 1.040 | 0.50 | 33.30 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.7 | 1.985 | 0.934 | CT | 1.032 | 0.52 | 33.70 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 Cont'd | Plate Cont'd | 0.62 | R.T. Cont'd | T-L Cont'd | 72.7 | 2.990 | 0.646 | CT | 1.509 | 0.45 | 30.80 | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.62 | | | 72.7 | 3.000 | 0.646 | CT | 1.516 | 0.53 | 33.60 | | | 1973 | 86213 |
| | | 0.92 | | | 72.7 | 2.000 | 0.928 | CT | 1.040 | 0.52 | 34.00 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.7 | 1.971 | 0.904 | CT | 1.025 | 0.60 | 35.70 | | | 1978 | MPC01 |
| | | 0.92 | | | 72.8 | 2.012 | 0.921 | CT | 1.046 | 0.50 | 33.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 72.8 | 2.015 | 0.896 | CT | 1.048 | 0.50 | 33.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 72.9 | 1.987 | 0.878 | CT | 1.053 | 0.62 | 36.50 | | | 1978 | MPC01 |
| | | 0.92 | | | 73.0 | 1.989 | 0.932 | CT | 1.054 | 0.48 | 32.70 | | | 1978 | MPC01 |
| | | 0.87 | | | 73.1 | 1.989 | 0.888 | CT | 1.034 | 0.50 | 33.20 | | | 1978 | MPC01 |
| | | 0.95 | | | 73.2 | 2.010 | 0.954 | CT | 1.005 | 0.62 | 36.60 | | | 1978 | MPC01 |
| | | 0.62 | | | 73.2 | 3.000 | 0.645 | CT | 1.539 | 0.49 | 32.30 | | | 1973 | 86213 |
| | | 0.62 | | | 73.2 | 3.000 | 0.646 | CT | 1.476 | 0.41 | 29.80 | | | 1973 | 86213 |
| | | 0.95 | | | 73.2 | 2.004 | 0.952 | CT | 1.062 | 0.65 | 37.50 | | | 1978 | MPC01 |
| | | 0.95 | | | 73.2 | 1.992 | 0.955 | CT | 1.036 | 0.57 | 35.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 73.3 | 2.006 | 0.932 | CT | 1.043 | 0.52 | 34.20 | | | 1978 | MPC01 |
| | | 0.92 | | | 73.4 | 2.014 | 0.929 | CT | 1.007 | 0.60 | 36.10 | | | 1978 | MPC01 |
| | | 1.00 | | | 73.4 | 2.013 | 0.978 | CT | 1.067 | 0.42 | 30.20 | | | 1978 | MPC01 |
| | | 1.00 | | | 73.4 | 1.983 | 0.993 | CT | 1.071 | 0.48 | 32.70 | | | 1978 | MPC01 |
| | | 0.87 | | | 73.6 | 3.018 | 0.881 | CT | 1.509 | 0.48 | 32.70 | | | 1978 | MPC01 |
| | | 0.87 | | | 73.6 | 1.998 | 0.878 | CT | 1.039 | 0.60 | 32.00 | | | 1978 | MPC01 |
| | | 0.87 | | | 73.7 | 1.984 | 0.865 | CT | 0.972 | 0.81 | 42.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 73.7 | 1.994 | 0.872 | CT | 0.937 | 0.87 | 43.60 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 Cont'd | Plate Cont'd | 0.87 | R.T. Cont'd | T-L Cont'd | 73.9 | 2.992 | 0.873 | CT | 1.556 | 0.40 | 29.60 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 0.87 | | | 73.9 | 2.013 | 0.886 | CT | 1.087 | 0.44 | 31.70 | | | 1978 | MPC01 |
| | | 0.87 | | | 73.9 | 1.980 | 0.873 | CT | 1.010 | 0.38 | 29.50 | | | 1978 | MPC01 |
| | | 0.92 | | | 73.9 | 1.981 | 0.922 | CT | 1.030 | 0.52 | 34.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.0 | 1.990 | 0.911 | CT | 1.035 | 0.57 | 36.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.0 | 1.996 | 0.927 | CT | 1.038 | 0.50 | 33.70 | | | 1978 | MPC01 |
| | | 0.95 | | | 74.1 | 2.012 | 0.956 | CT | 1.046 | 0.72 | 40.40 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.2 | 1.989 | 0.918 | CT | 1.034 | 0.55 | 35.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 74.3 | 1.998 | 0.872 | CT | 1.019 | 0.38 | 29.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 74.3 | 2.998 | 0.879 | CT | 1.499 | 0.42 | 31.10 | | | 1978 | MPC01 |
| | | 0.87 | | | 74.3 | 2.015 | 0.877 | CT | 1.088 | 0.55 | 35.00 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.3 | 2.004 | 0.920 | CT | 1.042 | 0.48 | 32.90 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.3 | 3.026 | 0.919 | CT | 1.543 | 0.62 | 37.20 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.3 | 1.988 | 0.903 | CT | 0.994 | 0.57 | 36.00 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.4 | 2.002 | 0.920 | CT | 1.001 | 0.46 | 32.50 | | | 1978 | MPC01 |
| | | 1.00 | | | 74.5 | 2.000 | 1.011 | CT | 1.020 | 0.36 | 28.50 | | | 1978 | MPC01 |
| | | 1.00 | | | 74.5 | 1.983 | 1.011 | CT | 1.051 | 0.36 | 28.90 | | | 1978 | MPC01 |
| | | 0.87 | | | 74.5 | 1.993 | 0.860 | CT | 1.056 | 0.44 | 31.70 | | | 1978 | MPC01 |
| | | 1.00 | | | 74.5 | 1.979 | 1.011 | CT | 1.049 | 0.36 | 28.80 | | | 1978 | MPC01 |
| | | 0.75 | | | 74.6 | 4.955 | 0.751 | CT | 2.527 | 0.72 | 40.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 74.6 | 2.013 | 0.866 | CT | 0.966 | 0.78 | 41.90 | | | 1978 | MPC01 |
| | | 0.92 | | | 74.8 | 3.024 | 0.908 | CT | 1.542 | 0.57 | 36.30 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T651 Cont'd | Plate Cont'd | 0.92 | R.T. Cont'd | T-L Cont'd | 74.8 | 2.004 | 0.908 | CT | 1.042 | 0.60 | 36.70 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 0.92 | | | 74.9 | 1.996 | 0.919 | CT | 1.038 | 0.48 | 33.50 | | | 1978 | MPC01 |
| | | 0.92 | | | 75.0 | 1.981 | 0.907 | CT | 1.030 | 0.38 | 29.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.0 | 2.000 | 0.964 | CT | 1.026 | 0.48 | 33.00 | | | 1973 | 86213 |
| | | 0.75 | | | 75.1 | 4.967 | 0.759 | CT | 2.533 | 0.70 | 40.30 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.4 | 1.985 | 1.010 | CT | 1.052 | 0.40 | 30.30 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.4 | 2.000 | 1.010 | CT | 1.060 | 0.42 | 31.00 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.4 | 2.012 | 1.010 | CT | 1.046 | 0.38 | 30.00 | | | 1978 | MPC01 |
| | | 0.92 | | | 75.4 | 1.983 | 0.925 | CT | 1.031 | 0.46 | 33.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 75.4 | 1.988 | 0.904 | CT | 1.014 | 0.44 | 32.40 | | | 1978 | MPC01 |
| | | 0.75 | | | 75.4 | 4.943 | 0.749 | CT | 2.521 | 0.67 | 39.50 | | | 1978 | MPC01 |
| | | 0.92 | | | 75.5 | 1.984 | 0.917 | CT | 1.012 | 0.50 | 34.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 75.5 | 3.006 | 0.918 | CT | 1.533 | 0.62 | 37.80 | | | 1978 | MPC01 |
| | | 0.75 | | | 75.6 | 5.046 | 0.748 | CT | 2.523 | 0.65 | 39.20 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.7 | 1.993 | 1.002 | CT | 1.056 | 0.44 | 31.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.7 | 2.019 | 1.002 | CT | 1.070 | 0.40 | 30.80 | | | 1978 | MPC01 |
| | | 0.87 | | | 75.7 | 1.983 | 0.867 | CT | 1.031 | 0.42 | 31.60 | | | 1978 | MPC01 |
| | | 1.00 | | | 75.7 | 1.987 | 1.003 | CT | 1.053 | 0.40 | 30.30 | | | 1978 | MPC01 |
| | | 0.87 | | | 75.9 | 1.996 | 0.873 | CT | 1.018 | 0.52 | 35.20 | | | 1978 | MPC01 |
| | | 0.87 | | | 76.0 | 1.979 | 0.881 | CT | 1.029 | 0.50 | 34.20 | | | 1978 | MPC01 |
| | | 0.87 | | | 76.1 | 2.014 | 0.870 | CT | 1.047 | 0.57 | 36.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 76.1 | 1.998 | 0.982 | CT | 1.079 | 0.44 | 32.40 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T651 Cont'd | Plate Cont'd | 1.00 | R.T. Cont'd | T-L Cont'd | 76.5 | 2.018 | 1.006 | CT | 1.029 | 0.40 | 30.70 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 1.00 | | | 76.5 | 1.985 | 1.006 | CT | 1.052 | 0.42 | 31.80 | | | 1978 | MPC01 |
| | | 1.00 | | | 76.5 | 1.996 | 1.004 | CT | 1.038 | 0.38 | 30.50 | | | 1978 | MPC01 |
| | | 0.75 | | | 76.6 | 4.969 | 0.741 | CT | 2.534 | 0.67 | 40.50 | | | 1978 | MPC01 |
| | | 0.87 | | | 76.7 | 1.989 | 0.876 | CT | 1.034 | 0.48 | 34.50 | | | 1978 | MPC01 |
| | | 0.92 | | | 76.8 | 1.994 | 0.950 | CT | 1.017 | 0.34 | 28.70 | | | 1978 | MPC01 |
| | | 0.92 | | | 76.9 | 2.011 | 0.905 | CT | 1.086 | 0.40 | 31.10 | | | 1978 | MPC01 |
| | | 0.92 | | | 77.1 | 1.988 | 0.932 | CT | 0.994 | 0.38 | 30.30 | | | 1978 | MPC01 |
| | | 1.00 | | | 77.3 | 1.996 | 1.005 | CT | 1.038 | 0.30 | 27.20 | | | 1978 | MPC01 |
| T651 | Plate | 2.62 | R.T. | S-L | 61.7 | 2.000 | 1.001 | CT | 0.976 | 0.73 | 33.30 | 32.9 | 2.5 | 1973 | 86213 |
| | | 2.62 | | | 61.8 | 2.000 | 1.001 | CT | 0.981 | 0.66 | 31.80 | | | 1973 | 86213 |
| | | 2.62 | | | 62.2 | 2.000 | 1.001 | CT | 0.990 | 0.63 | 31.30 | | | 1973 | 86213 |
| | | 2.62 | | | 62.2 | 2.000 | 1.001 | CT | 0.985 | 0.52 | 28.40 | | | 1973 | 86213 |
| | | 2.62 | | | 62.2 | 2.000 | 1.001 | CT | 1.015 | 0.76 | 34.40 | | | 1973 | 86213 |
| | | 2.62 | | | 62.6 | 2.000 | 1.000 | CT | 1.010 | 0.85 | 36.50 | | | 1973 | 86213 |
| | | 2.62 | | | 62.7 | 2.000 | 1.001 | CT | 1.011 | 0.78 | 35.10 | | | 1973 | 86213 |
| | | 2.62 | | | 63.8 | 2.000 | 1.001 | CT | 1.002 | 0.64 | 32.30 | | | 1973 | 86213 |
| T651 | Plate | 1.62 | 83 | T-L | 73.0 | 1.490 | 0.750 | CT | 0.747 | 0.49 | 32.40 | 31.5 | 1.9 | 1973 | 86213 |
| | | 1.62 | | | 73.0 | 1.490 | 0.739 | CT | 0.737 | 0.53 | 33.70 | | | 1973 | 86213 |
| | | 1.62 | | | 74.6 | 1.490 | 0.750 | CT | 0.755 | 0.41 | 30.30 | | | 1973 | 86213 |
| | | 1.62 | | | 74.6 | 1.490 | 0.750 | CT | 0.738 | 0.39 | 29.50 | | | 1973 | 86213 |
| T651 | Plate | 1.62 | 83 | S-L | 68.1 | 1.000 | 0.499 | CT | 0.499 | 0.32 | 24.50 | --- | --- | 1973 | 86213 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPECIMEN ORIENTATION | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 (SP) | Plate | 1.30 | R.T. | L-T | 75.0 | 3.000 | 1.281 | CT | 1.603 | 0.63 | 37.70 | 35.3 | 1.9 | 1973 | 86213 |
| | | 1.30 | | | 75.0 | 3.000 | 1.282 | CT | 1.595 | 0.60 | 36.60 | | | 1973 | 86213 |
| | | 1.30 | | | 77.4 | 3.000 | 1.305 | CT | 1.614 | 0.52 | 35.40 | | | 1973 | 86213 |
| | | 1.30 | | | 77.4 | 3.000 | 1.304 | CT | 1.600 | 0.50 | 34.50 | | | 1973 | 86213 |
| | | 1.30 | | | 78.5 | 3.000 | 1.293 | CT | 1.611 | 0.57 | 37.40 | | | 1973 | 86213 |
| | | 1.30 | | | 79.0 | 3.000 | 1.314 | CT | 1.608 | 0.50 | 35.20 | | | 1973 | 86213 |
| | | 1.30 | | | 81.3 | 3.000 | 1.277 | CT | 1.610 | 0.41 | 32.80 | | | 1973 | 86213 |
| | | 1.30 | | | 81.3 | 3.000 | 1.278 | CT | 1.607 | 0.41 | 32.90 | | | 1973 | 86213 |
| T651 (SP) | Plate | 2.00 | R.T. | T-L | 70.5 | 3.990 | 2.032 | CT | 2.110 | 0.62 | 35.10 | 34.4 | 2.1 | 1973 | 86213 |
| | | 2.00 | | | 70.5 | 4.000 | 2.030 | CT | 2.120 | 0.58 | 33.90 | | | 1973 | 86213 |
| | | 1.30 | | | 72.3 | 3.000 | 1.283 | CT | 1.584 | 0.65 | 36.90 | | | 1973 | 86213 |
| | | 1.30 | | | 72.3 | 3.000 | 1.281 | CT | 1.579 | 0.65 | 36.80 | | | 1973 | 86213 |
| | | 1.75 | | | 73.1 | 4.000 | 1.784 | CT | 2.182 | 0.41 | 29.60 | | | 1973 | 86213 |
| | | 1.30 | | | 74.9 | 3.000 | 1.305 | CT | 1.617 | 0.54 | 34.70 | | | 1973 | 86213 |
| | | 1.30 | | | 74.9 | 3.000 | 1.305 | CT | 1.584 | 0.51 | 33.70 | | | 1973 | 86213 |
| | | 1.30 | | | 75.5 | 3.000 | 1.336 | CT | 1.601 | 0.50 | 33.80 | | | 1973 | 86213 |
| | | 1.30 | | | 76.7 | 3.000 | 1.313 | CT | 1.599 | 0.51 | 34.70 | | | 1973 | 86213 |
| | | 1.30 | | | 77.3 | 3.000 | 1.290 | CT | 1.600 | 0.55 | 36.40 | | | 1973 | 86213 |
| | | 1.30 | | | 78.1 | 3.000 | 1.276 | CT | 1.613 | 0.45 | 33.20 | | | 1973 | 86213 |
| T651 (SP) | Plate | 1.30 | R.T. | S-L | 66.8 | 1.000 | 0.498 | CT | 0.496 | 0.48 | 29.20 | 27.3 | 1.6 | 1973 | 86213 |
| | | 1.30 | | | 67.2 | 1.000 | 0.499 | CT | 0.501 | 0.47 | 29.20 | | | 1973 | 86213 |
| | | 1.30 | | | 67.8 | 1.000 | 0.498 | CT | 0.489 | 0.41 | 27.30 | | | 1973 | 86213 |
| | | 1.30 | | | 67.8 | 1.000 | 0.498 | CT | 0.512 | 0.37 | 26.00 | | | 1973 | 86213 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ (Ksi√in.)) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T651 (SP) Cont'd | Plate Cont'd | 1.30 | R.T. Cont'd | S-L Cont'd | 68.0 | 1.000 | 0.498 | CT | 0.502 | 0.40 | 27.20 | Cont'd | Cont'd | 1973 | 86213 |
| | | 1.30 | | | 68.0 | 1.000 | 0.498 | CT | 0.506 | 0.48 | 29.80 | | | 1973 | 86213 |
| | | 1.30 | | | 68.4 | 1.000 | 0.498 | CT | 0.504 | 0.35 | 25.60 | | | 1973 | 86213 |
| | | 1.30 | | | 68.4 | 1.000 | 0.499 | CT | 0.500 | 0.34 | 25.30 | | | 1973 | 86213 |
| | | 1.30 | | | 70.8 | 1.000 | 0.499 | CT | 0.506 | 0.37 | 27.10 | | | 1973 | 86213 |
| | | 1.30 | | | 70.8 | 1.000 | 0.498 | CT | 0.513 | 0.36 | 26.70 | | | 1973 | 86213 |
| T651 (SP) | Plate | 1.30 | 82 | T-L | 75.5 | 5.000 | 1.343 | CT | 2.658 | 0.62 | 37.70 | 38.5 | 1.1 | 1973 | 86213 |
| | | 1.30 | | | 75.5 | 5.000 | 1.343 | CT | 2.704 | 0.67 | 39.20 | | | 1973 | 86213 |
| T651 (SP) | Plate | 2.00 | 82 | S-L | 62.6 | 1.490 | 0.748 | CT | 0.768 | 0.70 | 33.20 | 25.0 | 7.2 | 1973 | 86213 |
| | | 1.75 | | | 66.3 | 1.000 | 0.500 | CT | 0.478 | 0.23 | 19.90 | | | 1973 | 86213 |
| | | 1.75 | | | 66.3 | 1.000 | 0.499 | CT | 0.496 | 0.27 | 21.80 | | | 1973 | 86213 |
| T73 | Plate | 1.62 | 83 | T-L | 70.0 | 1.490 | 0.749 | CT | 0.783 | 0.66 | 36.00 | 36.7 | 0.8 | 1973 | 86213 |
| | | 1.62 | | | 70.4 | 1.490 | 0.750 | CT | 0.798 | 0.71 | 37.60 | | | 1973 | 86213 |
| | | 1.62 | | | 70.4 | 1.490 | 0.750 | CT | 0.774 | 0.68 | 36.60 | | | 1973 | 86213 |
| T73 | Plate | 1.62 | 83 | S-L | 68.9 | 1.000 | 0.500 | CT | 0.510 | 0.48 | 30.10 | 29.4 | 0.6 | 1973 | 86213 |
| | | 1.62 | | | 68.9 | 1.000 | 0.501 | CT | 0.490 | 0.45 | 29.20 | | | 1973 | 86213 |
| | | 1.62 | | | 69.1 | 1.000 | 0.499 | CT | 0.481 | 0.44 | 29.00 | | | 1973 | 86213 |
| T7351 | Plate | 3.00 | -72 | T-L | 61.3 | 4.998 | 2.505 | CT | 2.581 | 0.81 | 35.00 | 35.4 | 0.5 | 1978 | GD006 |
| | | 3.00 | | | 61.3 | 4.997 | 2.505 | CT | 2.612 | 0.84 | 35.70 | | | 1978 | GD006 |
| T7351 | Plate | 3.00 | -72 | S-L | 57.4 | 1.997 | 1.000 | CT | 1.046 | 0.76 | 31.79 | 31.0 | 1.1 | 1978 | GD006 |
| | | 3.00 | | | 57.4 | 2.004 | 1.000 | CT | 1.049 | 0.69 | 30.20 | | | 1978 | GD006 |
| T7351 | Plate | 1.75 | -65 | L-T | 67.6 | 3.000 | 1.501 | CT | 1.533 | 1.11 | 45.10 | --- | --- | 1987 | DA004 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 | Plate | 1.75 | -65 | T-L | 67.6 | 2.995 | 1.500 | CT | 1.508 | 1.07 | 44.30 | --- | --- | 1987 | DA004 |
| T7351 | Plate | 4.00 | R.T. | L-T | 55.2 | 3.003 | 1.498 | CT | 1.525 | 1.27 | 39.40 | 47.1 | 4.9 | 1977 | RA006 |
| | | 3.50 | | | 55.3 | 4.967 | 2.500 | CT | 2.583 | 1.76 | 47.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 55.8 | 5.014 | 2.500 | CT | 2.607 | 1.89 | 48.90 | | | 1978 | MPC01 |
| | | 3.54 | | | 56.5 | 3.000 | 1.500 | CT | 1.454 | 1.42 | 42.70 | | | 1977 | RA004 |
| | | 3.00 | | | 56.7 | 5.978 | 2.983 | CT | 3.049 | 2.50 | 56.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.7 | 5.982 | 3.000 | CT | 3.051 | 2.50 | 57.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.7 | 4.985 | 2.500 | CT | 2.592 | 2.07 | 51.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.7 | 5.035 | 2.501 | CT | 2.568 | 2.25 | 54.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.7 | 4.969 | 2.503 | CT | 2.584 | 2.30 | 54.80 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.7 | 5.049 | 2.500 | CT | 2.575 | 2.20 | 53.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.0 | 5.049 | 2.500 | CT | 2.575 | 2.02 | 51.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.1 | 5.035 | 2.499 | CT | 2.568 | 1.89 | 50.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 57.2 | 5.003 | 2.503 | CT | 2.677 | 1.74 | 47.80 | | | 1978 | RA003 |
| | | 3.50 | | | 57.3 | 5.024 | 2.500 | CT | 2.562 | 1.72 | 47.60 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.3 | 5.039 | 2.500 | CT | 2.620 | 1.98 | 51.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 57.4 | 4.999 | 2.499 | CT | 2.663 | 1.72 | 47.70 | | | 1978 | RA003 |
| | | 2.80 | | | 57.5 | 4.982 | 2.500 | CT | 2.541 | 1.72 | 47.90 | | | 1978 | MPC01 |
| | | 3.62 | | | 57.6 | 3.005 | 1.487 | CT | 1.485 | 1.36 | 42.59 | | | 1977 | RA006 |
| | | 3.00 | | | 57.8 | 5.000 | 2.501 | CT | 2.597 | 1.28 | 41.50 | | | 1978 | RA003 |
| | | 2.75 | | | 57.9 | 5.026 | 2.500 | CT | 2.563 | 1.80 | 49.50 | | | 1978 | MPC01 |
| | | 2.75 | | | 57.9 | 5.982 | 2.757 | CT | 2.991 | 1.84 | 50.20 | | | 1978 | MPC01 |
| | | 2.75 | | | 57.9 | 5.986 | 2.759 | CT | 2.993 | 1.80 | 49.60 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



| ALUMINUM 7475 $K_{Ic}$ | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 Cont'd | Plate Cont'd | 3.50 | R.T. Cont'd | L-T Cont'd | 58.1 | 4.996 | 2.500 | CT | 2.548 | 2.11 | 53.90 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 58.1 | 4.995 | 2.498 | CT | 2.577 | 1.11 | 38.80 | | | 1980 | RA005 |
| | | 3.00 | | | 58.1 | 4.997 | 2.493 | CT | 2.582 | 1.41 | 43.70 | | | 1978 | RA003 |
| | | 3.50 | | | 58.2 | 5.004 | 2.500 | CT | 2.602 | 1.48 | 45.10 | | | 1978 | MPC01 |
| | | 4.00 | | | 58.3 | 5.996 | 3.001 | CT | 3.178 | 2.35 | 57.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.3 | 4.966 | 2.500 | CT | 2.632 | 1.89 | 50.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 58.3 | 4.996 | 2.499 | CT | 2.635 | 1.54 | 45.80 | | | 1978 | RA003 |
| | | 3.00 | | | 58.3 | 4.997 | 2.499 | CT | 2.649 | 1.21 | 40.70 | | | 1978 | RA003 |
| | | 3.50 | | | 58.3 | 5.037 | 2.500 | CT | 2.619 | 1.80 | 50.10 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.5 | 4.964 | 2.500 | CT | 2.631 | 1.76 | 49.30 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.6 | 5.000 | 2.500 | CT | 2.600 | 1.44 | 44.60 | | | 1978 | MPC01 |
| | | 2.25 | | | 58.7 | 5.046 | 2.275 | CT | 2.523 | 1.93 | 51.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.8 | 6.015 | 3.002 | CT | 3.128 | 1.76 | 49.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.8 | 5.975 | 3.000 | CT | 3.107 | 1.72 | 49.20 | | | 1978 | MPC01 |
| | | 4.00 | | | 58.8 | 5.962 | 2.994 | CT | 3.160 | 1.76 | 49.50 | | | 1978 | MPC01 |
| | | 2.25 | | | 58.9 | 5.008 | 2.276 | CT | 2.554 | 1.89 | 51.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.1 | 4.996 | 2.494 | CT | 2.649 | 1.67 | 48.40 | | | 1978 | RA003 |
| | | 3.50 | | | 59.1 | 6.017 | 3.000 | CT | 3.129 | 1.84 | 51.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 59.1 | 5.951 | 3.000 | CT | 3.154 | 1.80 | 50.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.1 | 4.999 | 2.496 | CT | 2.664 | 1.38 | 44.00 | | | 1978 | RA003 |
| | | 2.25 | | | 59.2 | 6.036 | 2.252 | CT | 3.018 | 1.72 | 49.20 | | | 1978 | MPC01 |
| | | 2.25 | | | 59.2 | 6.042 | 2.253 | CT | 3.021 | 1.68 | 48.80 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{c}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{c}$ (Ksi√in.) | $K_{Ic}$ $K_{c}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 3.50 | R.T. Cont'd | L-T Cont'd | 59.3 | 5.029 | 2.500 | CT | 2.615 | 2.02 | 53.60 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 4.00 | | | 59.3 | 6.023 | 3.002 | CT | 3.192 | 2.40 | 58.20 | | | 1978 | MPC01 |
| | | 3.25 | | | 59.3 | 3.003 | 1.499 | CT | 1.500 | 0.91 | 35.80 | | | 1977 | RA006 |
| | | 2.40 | | | 59.5 | 5.977 | 2.385 | CT | 3.048 | 1.19 | 41.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.5 | 4.998 | 2.505 | CT | 2.572 | 1.68 | 48.90 | | | 1978 | GD006 |
| | | 3.00 | | | 59.5 | 5.002 | 2.502 | CT | 2.570 | 1.75 | 49.80 | | | 1978 | GD006 |
| | | 2.30 | | | 59.6 | 5.044 | 2.258 | CT | 2.522 | 1.60 | 47.80 | | | 1978 | MPC01 |
| | | 2.25 | | | 59.6 | 5.006 | 2.275 | CT | 2.553 | 1.89 | 52.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.7 | 5.040 | 2.502 | CT | 2.621 | 1.44 | 45.80 | | | 1978 | MPC01 |
| | | 2.25 | | | 59.7 | 5.020 | 2.270 | CT | 2.560 | 1.84 | 51.50 | | | 1978 | MPC01 |
| | | 4.00 | | | 59.9 | 6.000 | 3.001 | CT | 3.240 | 1.76 | 50.90 | | | 1978 | MPC01 |
| | | 4.00 | | | 60.0 | 4.959 | 2.500 | CT | 2.628 | 1.52 | 46.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.0 | 4.994 | 2.501 | CT | 2.647 | 1.60 | 48.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.0 | 4.977 | 2.502 | CT | 2.638 | 1.56 | 47.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.1 | 4.992 | 2.495 | CT | 2.582 | 1.22 | 42.09 | | | 1978 | RA003 |
| | | 3.00 | | | 60.1 | 4.957 | 2.501 | CT | 2.627 | 1.56 | 47.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 60.1 | 6.045 | 2.726 | CT | 3.083 | 2.16 | 56.20 | | | 1978 | MPC01 |
| | | 2.25 | | | 60.2 | 4.986 | 2.274 | CT | 2.543 | 1.76 | 51.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 60.2 | 4.960 | 2.500 | CT | 2.579 | 1.68 | 49.40 | | | 1978 | MPC01 |
| | | 2.75 | | | 60.4 | 6.018 | 2.740 | CT | 3.009 | 1.48 | 47.00 | | | 1978 | MPC01 |
| | | 2.75 | | | 60.4 | 4.980 | 1.750 | CT | 2.540 | 1.60 | 48.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 60.4 | 6.032 | 2.735 | CT | 3.016 | 1.48 | 46.70 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ (Ksi√in.)) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 2.75 | R.T. Cont'd | L-T Cont'd | 60.4 | 4.958 | 2.500 | CT | 2.578 | 1.48 | 46.60 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 2.25 | | | 60.5 | 5.012 | 2.275 | CT | 2.556 | 1.76 | 51.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.5 | 5.027 | 2.502 | CT | 2.614 | 1.48 | 46.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 60.5 | 5.012 | 2.499 | CT | 2.606 | 1.64 | 49.40 | | | 1978 | MPC01 |
| | | 2.50 | | | 60.5 | 5.049 | 2.500 | CT | 2.575 | 1.68 | 49.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.5 | 4.998 | 2.495 | CT | 2.575 | 1.02 | 38.70 | | | 1978 | RA003 |
| | | 3.50 | | | 60.6 | 5.015 | 2.500 | CT | 2.608 | 1.68 | 49.70 | | | 1978 | MPC01 |
| | | 3.25 | | | 60.6 | 3.004 | 1.478 | CT | 1.586 | 1.13 | 40.90 | | | 1977 | RA006 |
| | | 2.50 | | | 60.6 | 5.012 | 2.500 | CT | 2.606 | 1.72 | 50.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.6 | 4.991 | 2.501 | CT | 2.645 | 1.68 | 49.70 | | | 1978 | MPC01 |
| | | 2.50 | | | 60.7 | 5.004 | 2.500 | CT | 2.552 | 1.68 | 50.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.8 | 5.000 | 2.502 | CT | 2.650 | 1.76 | 51.10 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.8 | 5.019 | 2.502 | CT | 2.660 | 1.33 | 44.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.9 | 4.999 | 2.488 | CT | 2.604 | 0.77 | 33.80 | | | 1978 | RA003 |
| | | 2.50 | | | 60.9 | 5.008 | 2.500 | CT | 2.554 | 1.22 | 43.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.9 | 4.966 | 2.501 | CT | 2.632 | 1.15 | 41.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 60.9 | 5.033 | 2.501 | CT | 2.567 | 1.76 | 51.30 | | | 1978 | MPC01 |
| | | 2.40 | | | 60.9 | 5.031 | 2.383 | CT | 2.566 | 1.60 | 48.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.1 | 4.999 | 2.501 | CT | 2.625 | 1.00 | 38.80 | | | 1978 | RA003 |
| | | 2.00 | | | 61.1 | 5.056 | 2.088 | CT | 2.528 | 1.93 | 54.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.2 | 5.033 | 2.488 | CT | 2.617 | 2.30 | 58.90 | | | 1978 | MPC01 |
| | | 2.40 | | | 61.2 | 5.004 | 2.379 | CT | 2.552 | 1.89 | 53.50 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 2.50 | R.T. Cont'd | L-T Cont'd | 61.4 | 4.967 | 2.500 | CT | 2.583 | 1.44 | 47.20 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 61.5 | 4.998 | 2.496 | CT | 2.627 | 0.98 | 38.70 | | | 1978 | RA003 |
| | | 2.50 | | | 61.5 | 4.958 | 2.500 | CT | 2.578 | 1.26 | 44.10 | | | 1978 | MPC01 |
| | | 2.75 | | | 61.6 | 5.963 | 2.726 | CT | 3.041 | 1.52 | 48.60 | | | 1978 | MPC01 |
| | | 2.30 | | | 61.6 | 4.951 | 2.263 | CT | 2.525 | 1.48 | 47.50 | | | 1978 | MPC01 |
| | | 2.50 | | | 61.6 | 5.026 | 2.500 | CT | 2.563 | 1.60 | 49.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.8 | 5.012 | 2.501 | CT | 2.556 | 1.22 | 43.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.8 | 4.999 | 2.491 | CT | 2.628 | 1.06 | 40.40 | | | 1978 | RA003 |
| | | 3.00 | | | 61.9 | 4.987 | 2.502 | CT | 2.643 | 1.19 | 42.90 | | | 1978 | MPC01 |
| | | 2.40 | | | 61.9 | 5.000 | 2.333 | CT | 2.550 | 1.44 | 47.20 | | | 1978 | MPC01 |
| | | 2.25 | | | 61.9 | 6.008 | 2.261 | CT | 3.004 | 1.52 | 48.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 61.9 | 4.992 | 2.499 | CT | 2.596 | 1.52 | 48.30 | | | 1978 | MPC01 |
| | | 2.25 | | | 61.9 | 5.996 | 2.263 | CT | 2.998 | 1.52 | 48.30 | | | 1978 | MPC01 |
| | | 1.25 | | | 62.0 | 3.996 | 1.995 | CT | 1.990 | 1.21 | 43.30 | | | 1977 | MA005 |
| | | 3.00 | | | 62.0 | 4.996 | 2.497 | CT | 2.639 | 1.15 | 42.20 | | | 1978 | RA003 |
| | | 1.25 | | | 62.0 | 3.996 | 1.994 | CT | 2.021 | 1.28 | 44.09 | | | 1977 | MA005 |
| | | 2.50 | | | 62.2 | 3.003 | 1.497 | CT | 1.557 | 0.64 | 39.50 | | | 1977 | RA006 |
| | | 2.40 | | | 62.4 | 5.986 | 2.364 | CT | 3.053 | 1.44 | 47.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.4 | 5.041 | 2.500 | CT | 2.571 | 1.05 | 41.10 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.4 | 4.999 | 2.493 | CT | 2.597 | 0.94 | 38.40 | | | 1978 | RA003 |
| | | 1.75 | | | 62.4 | 5.040 | 1.750 | CT | 2.520 | 1.60 | 50.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.4 | 5.322 | 2.500 | CT | 2.661 | 1.19 | 43.10 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 1.75 | R.T. Cont'd | L-T Cont'd | 62.6 | 5.028 | 1.748 | CT | 2.514 | 1.68 | 51.90 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 1.75 | | | 62.6 | 5.030 | 1.774 | CT | 2.515 | 1.33 | 45.90 | | | 1978 | MPC01 |
| | | 2.70 | | | 62.6 | 5.017 | 2.500 | CT | 2.609 | 2.25 | 60.00 | | | 1978 | MPC01 |
| | | 1.75 | | | 62.8 | 4.955 | 1.760 | CT | 2.527 | 1.52 | 49.50 | | | 1978 | MPC01 |
| | | 1.77 | | | 62.8 | 2.999 | 1.499 | CT | 1.587 | 1.01 | 39.90 | | | 1977 | RA004 |
| | | 1.77 | | | 62.8 | 2.999 | 1.499 | CT | 1.618 | 1.00 | 39.80 | | | 1977 | RA004 |
| | | 3.00 | | | 63.0 | 4.997 | 2.498 | CT | 2.650 | 1.26 | 44.80 | | | 1980 | RA005 |
| | | 3.00 | | | 63.0 | 5.025 | 2.501 | CT | 2.663 | 1.22 | 44.50 | | | 1978 | MPC01 |
| | | 2.40 | | | 63.3 | 5.028 | 2.380 | CT | 2.514 | 1.08 | 42.40 | | | 1978 | MPC01 |
| | | 2.75 | | | 63.4 | 5.949 | 2.726 | CT | 3.034 | 1.36 | 47.20 | | | 1978 | MPC01 |
| | | 1.75 | | | 63.4 | 4.985 | 1.751 | CT | 2.592 | 1.44 | 48.40 | | | 1978 | MPC01 |
| | | 2.00 | | | 63.4 | 4.994 | 2.075 | CT | 2.547 | 1.98 | 56.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 63.4 | 4.960 | 2.502 | CT | 2.579 | 1.08 | 42.20 | | | 1978 | MPC01 |
| | | 2.40 | | | 63.4 | 6.049 | 2.367 | CT | 3.085 | 1.12 | 42.70 | | | 1978 | MPC01 |
| | | 2.40 | | | 63.5 | 4.994 | 2.383 | CT | 2.497 | 1.02 | 41.10 | | | 1978 | MPC01 |
| | | 1.75 | | | 63.5 | 5.004 | 1.741 | CT | 2.552 | 1.52 | 50.10 | | | 1978 | MPC01 |
| | | 2.50 | | | 63.6 | 3.002 | 1.503 | CT | 1.634 | 1.10 | 42.30 | | | 1977 | RA006 |
| | | 1.75 | | | 63.7 | 5.006 | 1.793 | CT | 2.553 | 1.68 | 52.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 63.7 | 5.998 | 2.726 | CT | 3.059 | 1.60 | 51.00 | | | 1978 | MPC01 |
| | | 2.40 | | | 63.7 | 4.965 | 2.353 | CT | 2.532 | 1.22 | 45.00 | | | 1978 | MPC01 |
| | | 2.40 | | | 63.7 | 5.980 | 2.364 | CT | 3.050 | 1.22 | 44.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 63.7 | 4.995 | 2.484 | CT | 2.615 | 0.89 | 38.09 | | | 1978 | RA003 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 Cont'd | Plate Cont'd | 2.40 | R.T. Cont'd | L-T Cont'd | 64.0 | 4.994 | 2.365 | CT | 2.547 | 1.12 | 42.90 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 2.40 | | | 64.2 | 4.978 | 2.378 | CT | 2.489 | 0.93 | 39.50 | | | 1978 | MPC01 |
| | | 1.25 | | | 64.5 | 3.001 | 1.271 | CT | 1.549 | 0.89 | 38.50 | | | 1977 | RA006 |
| | | 2.40 | | | 64.7 | 6.049 | 2.364 | CT | 3.085 | 1.08 | 42.90 | | | 1978 | MPC01 |
| | | 1.75 | | | 64.7 | 4.984 | 1.795 | CT | 2.542 | 1.26 | 46.40 | | | 1978 | MPC01 |
| | | 1.75 | | | 64.7 | 4.982 | 1.755 | CT | 2.541 | 1.44 | 49.20 | | | 1978 | MPC01 |
| | | 2.40 | | | 64.7 | 5.042 | 2.364 | CT | 2.521 | 0.99 | 40.90 | | | 1978 | MPC01 |
| | | 2.25 | | | 64.8 | 2.997 | 1.499 | CT | 1.605 | 1.04 | 41.80 | | | 1977 | RA004 |
| | | 1.75 | | | 64.8 | 4.980 | 1.746 | CT | 2.540 | 1.15 | 44.50 | | | 1978 | MPC01 |
| | | 1.75 | | | 65.1 | 4.977 | 1.753 | CT | 2.538 | 1.19 | 45.40 | | | 1978 | MPC01 |
| | | 1.75 | | | 65.2 | 4.965 | 1.753 | CT | 2.532 | 1.44 | 50.20 | | | 1978 | MPC01 |
| | | 1.75 | | | 65.2 | 4.967 | 1.758 | CT | 2.533 | 1.33 | 47.80 | | | 1978 | MPC01 |
| | | 1.75 | | | 65.3 | 4.975 | 1.755 | CT | 2.537 | 1.36 | 48.70 | | | 1978 | MPC01 |
| | | 1.75 | | | 65.6 | 4.965 | 1.755 | CT | 2.532 | 1.22 | 46.00 | | | 1978 | MPC01 |
| | | 2.40 | | | 65.7 | 5.004 | 2.378 | CT | 2.552 | 1.08 | 43.80 | | | 1978 | MPC01 |
| | | 1.75 | | | 66.0 | 5.000 | 1.742 | CT | 2.550 | 1.15 | 45.40 | | | 1978 | MPC01 |
| | | 1.75 | | | 66.0 | 5.029 | 1.761 | CT | 2.565 | 1.22 | 46.20 | | | 1978 | MPC01 |
| | | 1.75 | | | 67.0 | 4.992 | 1.750 | CT | 2.546 | 1.05 | 43.80 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 | Plate | 4.00 | R.T. | T-L | 54.6 | 3.005 | 1.497 | CT | 1.574 | 0.82 | 31.40 | 37.2 | 4.0 | 1977 | RA006 |
| | | 3.50 | | | 55.2 | 5.014 | 2.500 | CT | 2.607 | 1.22 | 39.10 | | | 1978 | MPC01 |
| | | 3.50 | | | 55.8 | 4.971 | 2.500 | CT | 2.585 | 1.29 | 40.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 55.8 | 4.973 | 2.498 | CT | 2.586 | 1.84 | 48.30 | | | 1978 | MPC01 |
| | | 3.50 | | | 55.8 | 5.041 | 2.500 | CT | 2.571 | 1.33 | 41.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 55.9 | 5.019 | 2.499 | CT | 2.610 | 1.19 | 38.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.0 | 5.000 | 2.499 | CT | 2.657 | 0.83 | 32.40 | | | 1978 | RA003 |
| | | 3.50 | | | 56.0 | 5.039 | 2.500 | CT | 2.620 | 1.08 | 37.10 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.0 | 4.985 | 2.500 | CT | 2.592 | 1.02 | 35.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.3 | 4.970 | 2.500 | CT | 2.634 | 1.12 | 37.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.5 | 4.998 | 2.494 | CT | 2.640 | 0.87 | 33.50 | | | 1978 | RA003 |
| | | 3.50 | | | 56.5 | 5.012 | 2.500 | CT | 2.556 | 1.12 | 38.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.5 | 5.000 | 2.500 | CT | 2.600 | 1.12 | 38.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.6 | 5.033 | 2.500 | CT | 2.617 | 1.29 | 41.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.9 | 4.997 | 2.497 | CT | 2.698 | 0.80 | 32.20 | | | 1978 | RA003 |
| | | 3.50 | | | 57.0 | 5.987 | 3.000 | CT | 3.173 | 1.02 | 36.80 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.0 | 6.047 | 2.998 | CT | 3.205 | 1.05 | 37.40 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.0 | 4.964 | 2.500 | CT | 2.631 | 0.93 | 35.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.0 | 6.021 | 3.001 | CT | 3.191 | 1.06 | 37.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.0 | 5.979 | 3.000 | CT | 3.169 | 0.99 | 36.20 | | | 1978 | MPC01 |
| | | 3.25 | | | 57.1 | 2.003 | 1.002 | CT | 1.017 | 0.63 | 28.79 | | | 1977 | RA006 |
| | | 3.00 | | | 57.1 | 4.996 | 2.500 | CT | 2.656 | 0.94 | 35.09 | | | 1978 | RA003 |
| | | 3.50 | | | 57.1 | 4.989 | 2.500 | CT | 2.594 | 1.44 | 43.50 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 3.00 | R.T. Cont'd | T-L Cont'd | 57.2 | 4.996 | 2.494 | CT | 2.623 | 1.05 | 37.20 | Cont'd | Cont'd | 1978 | RA003 |
| | | 3.00 | | | 57.2 | 4.998 | 2.498 | CT | 2.653 | 0.79 | 32.20 | | | 1978 | RA003 |
| | | 3.50 | | | 57.4 | 5.006 | 2.500 | CT | 2.603 | 1.48 | 44.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 57.5 | 4.999 | 2.496 | CT | 2.592 | 0.81 | 32.80 | | | 1978 | RA003 |
| | | 3.54 | | | 57.6 | 2.994 | 1.499 | CT | 1.488 | 1.01 | 36.70 | | | 1977 | RA004 |
| | | 2.75 | | | 57.6 | 6.039 | 2.756 | CT | 3.080 | 1.05 | 37.50 | | | 1978 | MPC01 |
| | | 2.75 | | | 57.6 | 5.036 | 1.250 | CT | 2.518 | 1.02 | 37.00 | | | 1978 | MPC01 |
| | | 2.75 | | | 57.6 | 5.049 | 1.750 | CT | 2.575 | 1.02 | 37.40 | | | 1978 | MPC01 |
| | | 2.75 | | | 57.6 | 6.049 | 2.755 | CT | 3.085 | 1.02 | 37.40 | | | 1978 | MPC01 |
| | | 2.75 | | | 57.6 | 5.052 | 2.500 | CT | 2.627 | 1.05 | 37.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 57.9 | 4.987 | 2.500 | CT | 2.593 | 1.33 | 42.50 | | | 1978 | MPC01 |
| | | 2.25 | | | 58.0 | 2.998 | 1.499 | CT | 1.559 | 1.14 | 39.20 | | | 1977 | RA004 |
| | | 3.62 | | | 58.3 | 3.002 | 1.498 | CT | 1.528 | 0.76 | 32.20 | | | 1977 | RA006 |
| | | 3.50 | | | 58.3 | 5.017 | 2.497 | CT | 2.609 | 0.96 | 36.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 58.7 | 6.042 | 2.725 | CT | 3.142 | 0.87 | 35.00 | | | 1978 | MPC01 |
| | | 2.75 | | | 58.7 | 6.057 | 2.744 | CT | 3.089 | 0.87 | 35.00 | | | 1978 | MPC01 |
| | | 2.75 | | | 58.7 | 4.971 | 1.249 | CT | 2.535 | 0.93 | 35.90 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.7 | 4.981 | 2.499 | CT | 2.590 | 0.93 | 36.20 | | | 1978 | MPC01 |
| | | 2.75 | | | 58.7 | 4.985 | 2.500 | CT | 2.642 | 0.90 | 35.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 58.9 | 4.966 | 2.500 | CT | 2.632 | 1.80 | 50.10 | | | 1978 | MPC01 |
| | | 2.25 | | | 59.0 | 5.969 | 2.249 | CT | 3.104 | 0.96 | 36.60 | | | 1978 | MPC01 |
| | | 2.25 | | | 59.0 | 6.035 | 2.257 | CT | 3.078 | 0.93 | 36.50 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ ($K_{Ic}$ Ksi√in.) | $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 3.50 | R.T. Cont'd | T-L Cont'd | 59.1 | 5.005 | 2.498 | CT | 2.608 | 1.44 | 45.00 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.75 | | | 59.1 | 5.031 | 2.501 | CT | 2.566 | 0.87 | 35.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.2 | 4.999 | 2.496 | CT | 2.591 | 0.80 | 33.59 | | | 1978 | RA003 |
| | | 3.00 | | | 59.5 | 4.983 | 2.502 | CT | 2.641 | 1.05 | 38.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.6 | 4.972 | 2.500 | CT | 2.635 | 1.12 | 40.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.6 | 4.974 | 2.502 | CT | 2.636 | 1.12 | 40.20 | | | 1978 | MPC01 |
| | | 3.50 | | | 59.6 | 4.977 | 2.498 | CT | 2.638 | 0.90 | 36.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 59.7 | 4.970 | 2.501 | CT | 2.534 | 1.15 | 40.80 | | | 1978 | MPC01 |
| | | 3.25 | | | 59.7 | 3.003 | 1.499 | CT | 1.592 | 0.64 | 30.40 | | | 1977 | RA006 |
| | | 2.25 | | | 59.9 | 2.998 | 1.499 | CT | 1.560 | 1.03 | 38.59 | | | 1977 | RA004 |
| | | 3.00 | | | 59.9 | 5.015 | 2.498 | CT | 2.658 | 0.99 | 38.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.1 | 5.026 | 2.501 | CT | 2.664 | 1.05 | 39.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.1 | 5.001 | 2.495 | CT | 2.552 | 0.78 | 33.59 | | | 1978 | RA003 |
| | | 3.00 | | | 60.1 | 5.038 | 2.502 | CT | 2.670 | 1.15 | 41.00 | | | 1978 | MPC01 |
| | | 3.50 | | | 60.2 | 5.027 | 2.500 | CT | 2.614 | 1.68 | 49.50 | | | 1978 | MPC01 |
| | | 3.25 | | | 60.4 | 4.977 | 2.500 | CT | 2.588 | 0.81 | 34.90 | | | 1978 | MPC01 |
| | | 2.25 | | | 60.4 | 2.997 | 1.499 | CT | 1.648 | 1.04 | 39.00 | | | 1977 | RA004 |
| | | 1.75 | | | 60.4 | 4.982 | 1.747 | CT | 2.541 | 1.02 | 39.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.5 | 4.995 | 2.498 | CT | 2.591 | 0.80 | 34.40 | | | 1980 | RA005 |
| | | 3.00 | | | 60.5 | 4.983 | 2.502 | CT | 2.641 | 1.19 | 42.20 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.9 | 4.998 | 2.500 | CT | 2.599 | 0.62 | 30.60 | | | 1978 | MPC01 |
| | | 2.25 | | | 60.9 | 6.008 | 2.262 | CT | 3.064 | 0.93 | 37.60 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 2.25 | R.T. Cont'd | T-L Cont'd | 60.9 | 6.045 | 2.260 | CT | 3.083 | 0.96 | 38.10 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 60.9 | 4.992 | 2.500 | CT | 2.596 | 0.65 | 31.30 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.9 | 5.037 | 2.501 | CT | 2.619 | 0.96 | 37.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 60.9 | 5.002 | 2.500 | CT | 2.601 | 0.62 | 31.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.0 | 5.032 | 2.501 | CT | 2.667 | 1.19 | 42.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.0 | 4.997 | 2.499 | CT | 2.626 | 1.00 | 38.59 | | | 1980 | RA005 |
| | | 3.00 | | | 61.0 | 5.042 | 2.502 | CT | 2.622 | 0.75 | 33.80 | | | 1978 | MPC01 |
| | | 1.75 | | | 61.2 | 6.052 | 1.760 | CT | 3.026 | 0.99 | 38.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.3 | 5.036 | 2.500 | CT | 2.669 | 0.93 | 37.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.3 | 4.997 | 2.505 | CT | 2.610 | 0.91 | 37.09 | | | 1978 | GD006 |
| | | 3.00 | | | 61.3 | 4.998 | 2.503 | CT | 2.620 | 1.00 | 38.80 | | | 1978 | GD006 |
| | | 3.00 | | | 61.3 | 4.993 | 2.504 | CT | 2.626 | 0.94 | 37.70 | | | 1978 | GD006 |
| | | 3.00 | | | 61.4 | 4.998 | 2.495 | CT | 2.562 | 0.70 | 32.70 | | | 1978 | RA003 |
| | | 1.75 | | | 61.5 | 4.971 | 1.750 | CT | 2.535 | 0.99 | 39.10 | | | 1978 | MPC01 |
| | | 2.75 | | | 61.5 | 4.987 | 2.501 | CT | 2.593 | 1.64 | 50.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.6 | 4.989 | 2.502 | CT | 2.694 | 1.19 | 42.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.8 | 5.019 | 2.501 | CT | 2.710 | 0.99 | 39.10 | | | 1978 | MPC01 |
| | | 3.00 | | | 61.9 | 5.001 | 2.491 | CT | 2.647 | 0.96 | 38.50 | | | 1978 | RA003 |
| | | 2.50 | | | 61.9 | 4.967 | 2.499 | CT | 2.583 | 0.70 | 33.10 | | | 1978 | MPC01 |
| | | 2.75 | | | 61.9 | 4.968 | 2.500 | CT | 2.633 | 0.81 | 35.60 | | | 1978 | MPC01 |
| | | 1.75 | | | 62.0 | 5.996 | 1.752 | CT | 3.058 | 1.02 | 39.70 | | | 1978 | MPC01 |
| | | 1.75 | | | 62.0 | 5.965 | 1.755 | CT | 3.042 | 1.02 | 40.20 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 Cont'd | Plate Cont'd | 3.00 | R.T. Cont'd | T-L Cont'd | 62.1 | 5.039 | 2.500 | CT | 2.620 | 0.78 | 34.80 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 2.50 | | | 62.1 | 3.004 | 1.496 | CT | 1.587 | 0.71 | 33.09 | | | 1977 | RA006 |
| | | 3.00 | | | 62.3 | 5.000 | 2.500 | CT | 2.682 | 0.81 | 35.59 | | | 1978 | RA003 |
| | | 3.00 | | | 62.3 | 4.997 | 2.498 | CT | 2.647 | 0.90 | 37.50 | | | 1978 | RA003 |
| | | 2.50 | | | 62.3 | 4.964 | 2.500 | CT | 2.581 | 0.78 | 35.10 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.6 | 4.998 | 2.500 | CT | 2.649 | 0.84 | 36.40 | | | 1978 | MPC01 |
| | | 2.37 | | | 62.6 | 4.971 | 2.363 | CT | 2.585 | 0.93 | 38.50 | | | 1978 | MPC01 |
| | | 3.00 | | | 62.7 | 4.999 | 2.490 | CT | 2.571 | 0.70 | 33.30 | | | 1978 | RA003 |
| | | 2.00 | | | 62.9 | 5.031 | 1.974 | CT | 2.566 | 0.87 | 37.30 | | | 1978 | MPC01 |
| | | 2.50 | | | 62.9 | 5.012 | 2.500 | CT | 2.606 | 0.75 | 34.90 | | | 1978 | MPC01 |
| | | 2.40 | | | 63.2 | 6.043 | 2.365 | CT | 3.082 | 0.81 | 36.60 | | | 1978 | MPC01 |
| | | 2.00 | | | 63.2 | 3.004 | 1.498 | CT | 1.586 | 0.65 | 32.30 | | | 1977 | RA006 |
| | | 2.00 | | | 63.2 | 5.031 | 1.972 | CT | 2.566 | 0.87 | 37.30 | | | 1978 | MPC01 |
| | | 1.25 | | | 63.6 | 3.002 | 1.270 | CT | 1.506 | 0.61 | 31.60 | | | 1977 | RA006 |
| | | 2.00 | | | 63.6 | 5.041 | 1.996 | CT | 2.571 | 0.70 | 33.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 64.5 | 4.998 | 2.489 | CT | 2.611 | 0.68 | 33.80 | | | 1978 | RA003 |
| | | 1.75 | | | 65.2 | 5.018 | 1.738 | CT | 2.559 | 0.81 | 37.60 | | | 1978 | MPC01 |
| | | 1.77 | | | 66.0 | 2.997 | 1.498 | CT | 1.509 | 0.58 | 31.79 | | | 1977 | RA004 |
| | | 1.77 | | | 66.0 | 2.997 | 1.497 | CT | 1.556 | 0.60 | 32.59 | | | 1977 | RA004 |
| | | 1.75 | | | 66.3 | 5.041 | 1.760 | CT | 2.571 | 0.75 | 37.00 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 | Plate | 1.25 | R.T. | S-L | --- | 1.003 | 0.501 | CT | 0.526 | --- | 28.10 | 30.6 | 2.7 | 1977 | RA006 |
| | | 3.00 | | | 53.3 | 2.003 | 0.999 | CT | 1.067 | 0.79 | 30.10 | | | 1978 | RA003 |
| | | 3.50 | | | 53.9 | 2.000 | 1.000 | CT | 1.020 | 0.96 | 33.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 53.9 | 2.010 | 1.000 | CT | 1.005 | 0.93 | 33.40 | | | 1978 | MPC01 |
| | | 3.50 | | | 54.2 | 2.528 | 1.251 | CT | 1.264 | 0.84 | 31.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 54.2 | 2.480 | 1.250 | CT | 1.265 | 0.87 | 32.20 | | | 1978 | MPC01 |
| | | 2.75 | | | 54.3 | 2.014 | 1.000 | CT | 1.007 | 0.87 | 32.10 | | | 1978 | MPC01 |
| | | 3.00 | | | 54.3 | 2.003 | 0.999 | CT | 1.050 | 0.87 | 32.20 | | | 1978 | RA003 |
| | | 3.00 | | | 54.3 | 2.010 | 0.999 | CT | 1.005 | 0.96 | 33.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 54.3 | 1.994 | 1.001 | CT | 1.017 | 0.81 | 31.30 | | | 1978 | MPC01 |
| | | 3.50 | | | 54.4 | 2.516 | 1.250 | CT | 1.258 | 0.93 | 33.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 54.4 | 2.510 | 1.249 | CT | 1.255 | 0.87 | 32.50 | | | 1978 | MPC01 |
| | | 3.50 | | | 54.4 | 2.014 | 1.000 | CT | 1.007 | 0.87 | 32.40 | | | 1978 | MPC01 |
| | | 3.00 | | | 54.5 | 1.986 | 1.001 | CT | 1.013 | 0.90 | 32.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 54.6 | 2.003 | 1.000 | CT | 1.046 | 0.69 | 28.79 | | | 1978 | RA003 |
| | | 3.00 | | | 54.7 | 1.999 | 1.000 | CT | 0.967 | 0.79 | 30.79 | | | 1978 | RA003 |
| | | 4.00 | | | 54.9 | 3.002 | 1.498 | CT | 1.566 | 0.71 | 29.40 | | | 1977 | RA006 |
| | | 3.00 | | | 55.0 | 2.008 | 0.999 | CT | 1.004 | 0.90 | 33.50 | | | 1978 | MPC01 |
| | | 3.00 | | | 55.0 | 2.006 | 1.001 | CT | 1.003 | 0.87 | 32.70 | | | 1978 | MPC01 |
| | | 2.75 | | | 55.3 | 2.018 | 1.000 | CT | 1.009 | 0.99 | 35.00 | | | 1978 | MPC01 |
| | | 2.75 | | | 55.3 | 1.992 | 1.000 | CT | 1.016 | 0.99 | 34.90 | | | 1978 | MPC01 |
| | | 2.50 | | | 55.7 | 1.999 | 1.002 | CT | 1.024 | 0.67 | 28.90 | | | 1977 | RA006 |
| | | 3.00 | | | 55.8 | 1.990 | 1.001 | CT | 1.015 | 0.81 | 31.90 | | | 1978 | MPC01 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 Cont'd | Plate Cont'd | 3.62 | R.T. Cont'd | S-L Cont'd | 55.8 | 2.002 | 0.999 | CT | 0.984 | 0.67 | 29.10 | Cont'd | Cont'd | 1977 | RA006 |
| | | 3.00 | | | 56.0 | 2.006 | 1.001 | CT | 1.003 | 0.78 | 31.80 | | | 1978 | MPC01 |
| | | 3.25 | | | 56.0 | 1.998 | 1.002 | CT | 0.947 | 0.53 | 25.90 | | | 1977 | RA006 |
| | | 3.50 | | | 56.2 | 1.992 | 1.000 | CT | 1.015 | 0.84 | 32.70 | | | 1978 | MPC01 |
| | | 3.50 | | | 56.2 | 2.000 | 1.000 | CT | 1.020 | 0.81 | 32.50 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.4 | 2.000 | 1.000 | CT | 1.000 | 0.87 | 33.70 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.6 | 2.010 | 0.999 | CT | 1.005 | 0.84 | 32.90 | | | 1978 | MPC01 |
| | | 3.00 | | | 56.7 | 1.999 | 1.006 | CT | 1.001 | 0.53 | 26.20 | | | 1978 | RA003 |
| | | 3.00 | | | 56.8 | 1.998 | 0.999 | CT | 1.009 | 0.59 | 27.70 | | | 1978 | RA003 |
| | | 3.54 | | | 56.9 | 2.000 | 0.998 | CT | 0.982 | 0.69 | 30.00 | | | 1977 | RA004 |
| | | 3.54 | | | 56.9 | 2.000 | 0.999 | CT | 0.963 | 0.71 | 30.40 | | | 1977 | RA004 |
| | | 3.00 | | | 57.0 | 1.996 | 0.998 | CT | 1.025 | 0.63 | 28.79 | | | 1978 | RA003 |
| | | 3.00 | | | 57.2 | 2.006 | 1.001 | CT | 1.003 | 0.78 | 32.60 | | | 1978 | MPC01 |
| | | 3.00 | | | 57.2 | 2.000 | 0.998 | CT | 0.965 | 0.59 | 28.00 | | | 1978 | RA003 |
| | | 3.00 | | | 57.2 | 1.996 | 1.001 | CT | 0.998 | 0.75 | 32.00 | | | 1978 | MPC01 |
| | | 3.00 | | | 57.3 | 1.001 | 1.001 | CT | 1.074 | 0.67 | 29.70 | | | 1978 | RA003 |
| | | 3.00 | | | 57.3 | 2.000 | 0.998 | CT | 0.988 | 0.61 | 28.40 | | | 1980 | RA005 |
| | | 3.00 | | | 57.4 | 2.001 | 1.000 | CT | 1.033 | 0.87 | 33.90 | | | 1978 | GD006 |
| | | 3.00 | | | 57.4 | 1.999 | 0.999 | CT | 1.053 | 0.87 | 34.00 | | | 1978 | GD006 |
| | | 3.50 | | | 57.4 | 2.010 | 1.000 | CT | 1.005 | 0.75 | 31.80 | | | 1978 | MPC01 |
| | | 3.00 | | | 57.4 | 2.002 | 1.000 | CT | 1.039 | 0.99 | 36.30 | | | 1978 | GD006 |
| | | 3.00 | | | 57.6 | 2.000 | 1.008 | CT | 1.043 | 0.50 | 25.79 | | | 1978 | RA003 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 Cont'd | Plate Cont'd | 3.00 | R.T. Cont'd | S-L Cont'd | 57.6 | 1.990 | 1.000 | CT | 0.995 | 0.70 | 31.00 | Cont'd | Cont'd | 1978 | MPC01 |
| | | 3.00 | | | 57.7 | 1.999 | 0.999 | CT | 0.967 | 0.67 | 30.00 | | | 1978 | RA003 |
| | | 3.00 | | | 57.9 | 1.999 | 1.005 | CT | 1.032 | 0.55 | 27.29 | | | 1978 | RA003 |
| | | 3.00 | | | 58.0 | 1.992 | 1.000 | CT | 1.016 | 0.57 | 28.00 | | | 1978 | MPC01 |
| | | 1.77 | | | 58.1 | 1.498 | 0.747 | CT | 0.771 | 0.48 | 25.50 | | | 1977 | RA004 |
| | | 3.00 | | | 58.1 | 2.000 | 1.000 | CT | 1.056 | 0.67 | 30.29 | | | 1978 | RA003 |
| | | 1.77 | | | 58.1 | 1.498 | 0.746 | CT | 0.766 | 0.47 | 25.20 | | | 1977 | RA004 |
| | | 3.00 | | | 58.6 | 1.999 | 0.999 | CT | 0.975 | 0.58 | 28.29 | | | 1978 | RA003 |
| | | 3.00 | | | 59.4 | 2.000 | 1.007 | CT | 1.027 | 0.61 | 29.50 | | | 1978 | RA003 |
| | | 3.00 | | | 59.7 | 2.001 | 1.000 | CT | 1.075 | 0.59 | 29.10 | | | 1978 | RA003 |
| | | 3.00 | | | 59.9 | 2.000 | 0.998 | CT | 0.985 | 0.54 | 28.00 | | | 1980 | RA005 |
| | | 3.00 | | | 60.0 | 2.001 | 1.001 | CT | 1.055 | 0.47 | 26.20 | | | 1978 | RA003 |
| | | 2.50 | | | 60.7 | 1.999 | 1.001 | CT | 1.013 | 0.61 | 30.00 | | | 1977 | RA006 |
| | | 3.00 | | | 60.8 | 2.001 | 1.000 | CT | 1.053 | 0.58 | 29.29 | | | 1978 | RA003 |
| | | 2.00 | | | 63.2 | 1.503 | 0.750 | CT | 0.790 | 0.51 | 28.70 | | | 1977 | RA006 |
| T7351 | Plate | 1.62 | 83 | T-L | 65.2 | 1.490 | 0.750 | CT | 0.728 | 0.64 | 33.00 | 32.5 | 0.4 | 1973 | 86213 |
| | | 1.62 | | | 65.8 | 1.490 | 0.750 | CT | 0.730 | 0.61 | 32.40 | | | 1973 | 86213 |
| | | 1.62 | | | 65.8 | 1.490 | 0.749 | CT | 0.727 | 0.60 | 32.20 | | | 1973 | 86213 |
| T7351 | Plate | 1.62 | 83 | S-L | 60.6 | 1.000 | 0.500 | CT | 0.484 | 0.43 | 25.00 | 25.4 | 0.5 | 1973 | 86213 |
| | | 1.62 | | | 60.9 | 1.000 | 0.499 | CT | 0.487 | 0.45 | 25.70 | | | 1973 | 86213 |
| T7351 (SP) | Plate | 1.75 | R.T. | L-T | 59.9 | 4.000 | 1.798 | CT | 2.195 | 1.63 | 48.30 | --- | --- | 1973 | 86213 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7351 (SP) | Plate | 3.25 | R.T. | T-L | 54.2 | 4.000 | 2.002 | CT | 2.177 | 1.40 | 40.50 | 37.6 | 2.5 | 1973 | 86213 |
| | | 3.25 | | | 54.2 | 4.000 | 2.001 | CT | 2.156 | 1.34 | 39.70 | | | 1973 | 86213 |
| | | 3.25 | | | 56.2 | 3.990 | 2.001 | CT | 2.152 | 1.12 | 37.60 | | | 1973 | 86213 |
| | | 3.25 | | | 56.2 | 6.000 | 1.999 | CT | 3.161 | 1.16 | 38.20 | | | 1973 | 86213 |
| | | 3.25 | | | 56.2 | 4.000 | 2.000 | CT | 2.187 | 1.08 | 37.00 | | | 1973 | 86213 |
| | | 3.25 | | | 56.7 | 4.000 | 2.000 | CT | 2.197 | 1.12 | 37.90 | | | 1973 | 86213 |
| | | 3.25 | | | 56.7 | 6.000 | 2.000 | CT | 3.216 | 1.08 | 37.20 | | | 1973 | 86213 |
| | | 2.50 | | | 57.4 | 2.500 | 1.252 | CT | 1.329 | 1.06 | 37.40 | | | 1973 | 86213 |
| | | 2.50 | | | 57.4 | 2.500 | 1.251 | CT | 1.296 | 1.10 | 38.10 | | | 1973 | 86213 |
| | | 2.50 | | | 57.6 | 2.500 | 1.249 | CT | 1.312 | 1.24 | 40.50 | | | 1973 | 86213 |
| | | 2.50 | | | 57.6 | 2.500 | 1.251 | CT | 1.294 | 1.09 | 38.10 | | | 1973 | 86213 |
| | | 3.00 | | | 58.0 | 6.010 | 2.000 | CT | 3.176 | 0.99 | 36.50 | | | 1973 | 86213 |
| | | 3.00 | | | 60.3 | 6.000 | 2.003 | CT | 3.221 | 1.16 | 41.10 | | | 1973 | 86213 |
| | | 2.50 | | | 60.4 | 1.490 | 0.752 | CT | 0.736 | 0.71 | 32.10 | | | 1973 | 86213 |
| | | 2.50 | | | 60.6 | 1.490 | 0.748 | CT | 0.756 | 0.69 | 31.80 | | | 1973 | 86213 |
| | | 1.75 | | | 60.9 | 4.000 | 1.796 | CT | 2.188 | 0.94 | 37.30 | | | 1973 | 86213 |
| | | 1.75 | | | 60.9 | 4.000 | 1.796 | CT | 2.160 | 0.96 | 37.70 | | | 1973 | 86213 |
| T7351 (SP) | Plate | 3.25 | 82 | S-L | 54.7 | 1.990 | 1.002 | CT | 0.982 | 0.86 | 32.00 | 31.9 | 1.7 | 1973 | 86213 |
| | | 3.25 | | | 54.7 | 2.000 | 1.002 | CT | 1.004 | 0.93 | 33.40 | | | 1973 | 86213 |
| | | 3.25 | | | 55.0 | 1.990 | 1.002 | CT | 1.006 | 0.88 | 32.60 | | | 1973 | 86213 |
| | | 3.25 | | | 55.0 | 1.990 | 1.001 | CT | 1.011 | 0.77 | 30.60 | | | 1973 | 86213 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7351 (SP) Cont'd | Plate Cont'd | 3.00 | 82 Cont'd | S-L Cont'd | 55.8 | 1.990 | 1.001 | CT | 0.985 | 0.74 | 30.30 | Cont'd | Cont'd | 1973 | 86213 |
| | | 3.00 | | | 55.8 | 1.990 | 1.002 | CT | 0.976 | 0.72 | 30.00 | | | 1973 | 86213 |
| | | 3.00 | | | 57.0 | 1.990 | 1.003 | CT | 0.979 | 0.76 | 31.50 | | | 1973 | 86213 |
| | | 3.00 | | | 57.0 | 1.990 | 1.003 | CT | 0.992 | 0.94 | 35.00 | | | 1973 | 86213 |
| T736 | Forging | 2.00 | 82 | S-T | 68.9 | 2.000 | 0.999 | CT | 1.053 | 0.72 | 37.10 | --- | --- | 1973 | 86213 |
| T7651 | Plate | 1.75 | -65 | L-T | 72.7 | 3.000 | 1.488 | CT | 1.546 | 0.89 | 43.30 | 39.3 | 3.7 | 1987 | DA005 |
| | | 1.75 | | | 72.7 | 3.001 | 1.489 | CT | 1.534 | 0.80 | 41.10 | | | 1987 | DA005 |
| | | 1.75 | | | 73.1 | 3.011 | 1.599 | CT | 1.545 | 0.56 | 34.72 | | | 1987 | DA004 |
| | | 1.75 | | | 73.1 | 3.008 | 1.499 | CT | 1.564 | 0.67 | 37.95 | | | 1987 | DA004 |
| T7651 | Plate | 2.00 | R.T. | L-T | 60.8 | 2.998 | 1.500 | CT | 1.581 | 1.25 | 43.00 | 42.1 | 3.7 | 1977 | RA007 |
| | | 2.00 | | | 61.7 | 3.001 | 1.498 | CT | 1.612 | 1.19 | 42.70 | | | 1977 | RA007 |
| | | 2.00 | | | 62.0 | 3.000 | 1.497 | CT | 1.547 | 1.06 | 40.40 | | | 1977 | RA007 |
| | | 2.00 | | | 67.6 | 3.000 | 1.498 | CT | 1.609 | 0.89 | 40.40 | | | 1977 | RA001 |
| | | 1.75 | | | 68.3 | 3.011 | 1.505 | CT | 1.545 | 0.91 | 41.19 | | | 1987 | DA004 |
| | | 1.75 | | | 68.3 | 3.012 | 1.504 | CT | 1.577 | 0.94 | 41.86 | | | 1987 | DA004 |
| | | 2.00 | | | 68.7 | 3.000 | 1.498 | CT | 1.575 | 0.68 | 35.90 | | | 1977 | RA007 |
| | | 1.75 | | | 69.3 | 3.001 | 1.488 | CT | 1.553 | 1.25 | 49.10 | | | 1987 | DA005 |
| | | 1.75 | | | 69.3 | 3.004 | 1.488 | CT | 1.584 | 1.21 | 48.20 | | | 1987 | DA005 |
| | | 1.00 | | | 71.0 | 2.490 | 0.950 | CT | 1.297 | 0.80 | 40.30 | | | 1973 | 86574 |
| | | 1.00 | | | 71.0 | 2.490 | 0.950 | CT | 1.268 | 0.80 | 40.10 | | | 1973 | 86574 |

# TABLE 8.19.2.1 (CONTINUED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT | | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T7651 | Plate | 2.00 | R.T. | T-L | 62.3 | 2.998 | 1.500 | CT | 1.512 | 0.78 | 34.90 | 34.0 | 2.9 | 1977 | RA007 |
| | | 2.00 | | | 63.7 | 3.001 | 1.498 | CT | 1.576 | 0.71 | 34.00 | | | 1977 | RA007 |
| | | 2.00 | | | 64.7 | 3.000 | 1.499 | CT | 1.564 | 0.69 | 34.09 | | | 1977 | RA007 |
| | | 2.00 | | | 67.7 | 3.000 | 1.499 | CT | 1.582 | 0.63 | 34.09 | | | 1977 | RA007 |
| | | 0.87 | | | 69.5 | 3.000 | 0.892 | CT | 1.523 | 0.50 | 31.00 | | | 1973 | 86213 |
| | | 2.00 | | | 69.8 | 3.000 | 1.498 | CT | 1.612 | 0.43 | 29.10 | | | 1977 | RA007 |
| | | 1.00 | | | 70.2 | 2.000 | 0.965 | CT | 0.991 | 0.71 | 37.40 | | | 1973 | 86213 |
| | | 1.00 | | | 70.2 | 2.000 | 0.965 | CT | 1.048 | 0.72 | 37.70 | | | 1973 | 86213 |
| T7651 | Plate | 2.00 | R.T. | S-L | 60.5 | 1.499 | 0.749 | CT | 0.770 | 0.50 | 27.29 | 27.6 | 0.8 | 1977 | RA007 |
| | | 2.00 | | | 60.9 | 1.498 | 0.750 | CT | 0.775 | 0.51 | 27.60 | | | 1977 | RA007 |
| | | 2.00 | | | 61.1 | 1.499 | 0.750 | CT | 0.766 | 0.48 | 27.00 | | | 1977 | RA007 |
| | | 2.00 | | | 65.7 | 1.499 | 0.752 | CT | 0.802 | 0.42 | 27.00 | | | 1977 | RA007 |
| | | 2.00 | | | 66.1 | 1.500 | 0.749 | CT | 0.798 | 0.47 | 28.90 | | | 1977 | RA007 |
| T7651 (SP) | Plate | 1.75 | R.T. | L-T | 64.2 | 4.000 | 1.789 | CT | 2.208 | 1.27 | 45.80 | 42.4 | 2.9 | 1973 | 86213 |
| | | 2.00 | | | 66.0 | 3.990 | 2.016 | CT | 2.109 | 0.95 | 40.60 | | | 1973 | 86213 |
| | | 2.00 | | | 66.0 | 4.000 | 2.017 | CT | 2.096 | 0.96 | 40.90 | | | 1973 | 86213 |
| T7651 (SP) | Plate | 2.00 | R.T. | T-L | 66.4 | 3.000 | 0.998 | CT | 1.499 | 0.70 | 35.20 | 35.7 | 0.4 | 1973 | 86213 |
| | | 2.00 | | | 66.7 | 4.000 | 2.018 | CT | 2.093 | 0.72 | 35.80 | | | 1973 | 86213 |
| | | 2.00 | | | 66.7 | 4.000 | 2.017 | CT | 2.105 | 0.73 | 36.00 | | | 1973 | 86213 |

# TABLE 8.19.2.1 (CONCLUDED)



## ALUMINUM 7475 $K_{Ic}$

| CONDITION | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | SPECIMEN DESIGN | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ $K_{Ic}$ (Ksi√in.) | $K_{Ic}$ $K_{Ic}$ MEAN | $K_{Ic}$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7651 (SP) | Plate | 2.00 | R.T. | S-T | 60.2 | 1.500 | 0.748 | CT | 0.793 | 0.63 | 30.30 | 28.8 | 1.1 | 1973 | 86213 |
| | | 2.00 | | | 61.0 | 1.500 | 0.748 | CT | 0.776 | 0.56 | 28.90 | | | 1973 | 86213 |
| | | 2.00 | | | 62.3 | 1.490 | 0.748 | CT | 0.765 | 0.50 | 27.80 | | | 1973 | 86213 |
| | | 2.00 | | | 62.4 | 1.490 | 0.748 | CT | 0.759 | 0.49 | 27.70 | | | 1973 | 86213 |
| | | 2.00 | | | 63.4 | 1.500 | 0.748 | CT | 0.787 | 0.54 | 29.40 | | | 1973 | 86213 |
| T7651 (SP) | Plate | 2.00 | R.T. | S-L | 60.2 | 1.500 | 0.747 | CT | 0.779 | 0.60 | 29.60 | 27.3 | 2.1 | 1973 | 86213 |
| | | 2.00 | | | 61.0 | 1.500 | 0.746 | CT | 0.765 | 0.48 | 26.60 | | | 1973 | 86213 |
| | | 2.00 | | | 61.5 | 1.500 | 0.747 | CT | 0.746 | 0.41 | 24.90 | | | 1973 | 86213 |
| | | 2.00 | | | 62.3 | 1.500 | 0.747 | CT | 0.744 | 0.54 | 28.90 | | | 1973 | 86213 |
| | | 2.00 | | | 62.4 | 1.500 | 0.747 | CT | 0.755 | 0.40 | 25.10 | | | 1973 | 86213 |
| | | 2.00 | | | 63.4 | 1.500 | 0.747 | CT | 0.756 | 0.52 | 28.80 | | | 1973 | 86213 |
| T7651 (SP) | Plate | 1.75 | 82 | S-L | 61.6 | 1.000 | 0.500 | CT | 0.492 | 0.37 | 23.70 | 27.4 | 3.2 | 1973 | 86213 |
| | | 2.00 | | | 63.8 | 1.490 | 0.749 | CT | 0.752 | 0.54 | 29.60 | | | 1973 | 86213 |
| | | 2.00 | | | 63.8 | 1.490 | 0.749 | CT | 0.756 | 0.51 | 28.90 | | | 1973 | 86213 |

# TABLE 8.19.2.2



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.09 | R.T. | L-T | 76.0 | 3.000 | 0.090 | 1.027 | 2.111 | --- | 48.00 | 65.74* | --- | --- | 130.37* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 76.0 | 3.000 | 0.090 | 1.280 | 2.237 | --- | 41.30 | 66.15* | | | 124.03* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | R.T. | L-T | 78.4 | 3.000 | 0.127 | 1.177 | 2.252 | --- | 41.30 | 62.13* | --- | --- | 125.72* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 78.4 | 3.000 | 0.127 | 1.117 | 2.146 | --- | 43.10 | 62.48* | | | 120.34* | | | 1973 | 86213 |
| T61 | Sheet | 0.04 | R.T. | L-T | 77.1 | 16.000 | 0.039 | 4.000 | 4.340 | --- | 29.20 | 76.15 | 77.5 | 1.8 | 79.90 | 80.9 | 1.4 | 1973 | 86842 |
| | | 0.04 | | | 76.2 | 16.000 | 0.040 | 4.000 | 4.280 | --- | 30.20 | 78.76 | | | 81.95 | | | 1973 | 86842 |
| T61 | Sheet | 0.06 | R.T. | L-T | 75.7 | 16.000 | 0.062 | 4.000 | 4.280 | --- | 30.50 | 79.54 | 84.1 | 3.9 | 82.76 | 89.4 | 5.1 | 1972 | 84368 |
| | | 0.06 | | | 74.1 | 16.000 | 0.063 | 6.000 | 6.600 | --- | 23.60 | 79.46 | | | 85.10 | | | 1972 | 84368 |
| | | 0.06 | | | 74.1 | 16.000 | 0.063 | 3.000 | 3.460 | --- | 39.80 | 88.32 | | | 95.56 | | | 1972 | 84368 |
| | | 0.06 | | | 74.1 | 16.000 | 0.063 | 2.000 | 2.320 | --- | 49.00 | 87.70 | | | 94.77 | | | 1972 | 84368 |
| | | 0.06 | | | 74.1 | 16.000 | 0.063 | 5.000 | 5.400 | --- | 28.40 | 84.75 | | | 89.05 | | | 1972 | 84368 |
| | | 0.06 | | | 74.1 | 16.000 | 0.063 | 1.000 | 1.520 | --- | 61.90 | 77.77* | | | 96.18* | | | 1972 | 84368 |
| | | 0.06 | | | 74.1 | 16.000 | 0.063 | 4.000 | 4.320 | --- | 32.60 | 85.02 | | | 88.95 | | | 1972 | 84368 |
| T61 | Sheet | 0.09 | R.T. | L-T | 73.7 | 16.000 | 0.089 | 4.000 | 4.620 | 23.90 | 38.30 | 99.88 | 99.8 | 0.7 | 108.82 | 112.1 | 3.2 | 1973 | 86842 |
| | | 0.09 | | | 76.4 | 15.880 | 0.090 | 3.980 | 4.700 | --- | 38.70 | 100.69 | | | 111.22 | | | 1973 | 86213 |
| | | 0.09 | | | 76.4 | 15.880 | 0.090 | 4.000 | 4.850 | --- | 38.20 | 99.68 | | | 111.95 | | | 1973 | 86213 |
| | | 0.09 | | | 74.2 | 16.000 | 0.091 | 4.000 | 5.220 | --- | 38.00 | 99.10 | | | 116.56 | | | 1973 | 86842 |
| T61 | Sheet | 0.09 | R.T. | L-T | 75.8 | 15.880 | 0.100 | 4.000 | 4.300 | --- | 32.90 | 85.85 | 83.0 | 4.1 | 89.59 | 87.2 | 3.4 | 1973 | 86213 |
| | | 0.09 | | | 75.8 | 15.880 | 0.100 | 4.000 | 4.400 | --- | 30.70 | 80.11 | | | 84.76 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{si}\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_{si}\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.12 | R.T. | L-T | 74.5 | 16.000 | 0.110 | 4.000 | 4.780 | 18.20 | 38.60 | 100.66 | --- | --- | 112.00 | --- | --- | 1973 | 86842 |
| T61 | Sheet | 0.12 | R.T. | L-T | 76.8 | 16.000 | 0.125 | 4.000 | 4.900 | 20.00 | 36.20 | 94.40 | --- | --- | 106.67 | --- | --- | 1973 | 86842 |
| T61 | Sheet | 0.18 | R.T. | L-T | 75.0 | 16.000 | 0.182 | 4.000 | 5.400 | --- | 36.70 | 95.71 | 90.8 | 7.0 | 115.08 | 106.6 | 12.0 | 1973 | 86842 |
| | | 0.18 | | | 75.6 | 16.000 | 0.186 | 4.000 | 5.000 | --- | 32.90 | 85.80 | | | 98.18 | | | 1973 | 86842 |
| T61 | Plate | 0.25 | R.T. | L-T | 74.8 | 3.000 | 0.242 | 1.160 | 2.082 | --- | 39.90 | 59.44* | --- | --- | 106.12* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 74.8 | 3.000 | 0.242 | 1.190 | 2.206 | --- | 39.70 | 60.23* | | | 116.29* | | | 1973 | 86213 |
| T61 | Sheet | 0.18 | 82 | L-T | 77.3 | 3.000 | 0.178 | 1.190 | 2.202 | --- | 43.40 | 65.84* | --- | --- | 126.71* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 77.3 | 3.000 | 0.178 | 1.110 | 2.111 | --- | 45.70 | 66.01* | | | 124.12* | | | 1973 | 86213 |
| T61 | Plate | 0.25 | 82 | L-T | 77.0 | 3.000 | 0.250 | 1.210 | 2.046 | --- | 28.10 | 43.15 | 45.4 | 3.2 | 72.79* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 77.0 | 3.000 | 0.250 | 1.193 | 2.231 | --- | 31.40 | 47.70 | | | 93.82* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | 84 | L-T | 75.6 | 16.000 | 0.063 | 3.000 | 3.560 | 26.80 | 34.20 | 75.89 | --- | --- | 83.44 | --- | --- | 1973 | 86213 |
| T61 | Sheet | 0.09 | 85 | L-T | 75.9 | 3.000 | 0.089 | 1.220 | 2.093 | --- | 41.10 | 63.50* | --- | --- | 110.12* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 75.9 | 3.000 | 0.089 | 1.235 | 2.070 | --- | 40.60 | 63.26* | | | 107.02* | | | 1973 | 86213 |
| | | 0.09 | | | 76.4 | 3.000 | 0.091 | 1.160 | 1.915 | --- | 44.70 | 66.59* | | | 105.62* | | | 1973 | 86213 |
| | | 0.09 | | | 76.4 | 3.000 | 0.091 | 1.145 | 2.006 | --- | 44.90 | 66.23* | | | 113.02* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 85 | L-T | 75.8 | 3.000 | 0.101 | 1.185 | 2.030 | --- | 40.10 | 60.62* | --- | --- | 102.68* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 75.8 | 3.000 | 0.101 | 1.190 | 2.072 | --- | 39.40 | 59.78* | | | 104.01* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | 86 | L-T | 73.4 | 3.000 | 0.115 | 1.172 | 1.955 | --- | 41.60 | 62.42* | --- | --- | 101.00* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 73.4 | 3.000 | 0.115 | 1.208 | 2.012 | --- | 40.60 | 62.27* | | | 102.63* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.18 | 86 | L-T | 76.5 | 3.000 | 0.186 | 1.160 | 2.053 | --- | 39.70 | 59.14* | --- | --- | 103.28* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 76.5 | 3.000 | 0.186 | 1.153 | 2.081 | --- | 39.70 | 58.85* | | | 105.43* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | 88 | L-T | 75.6 | 16.000 | 0.062 | 6.000 | 6.920 | 13.30 | 21.70 | 73.06 | 72.9 | 6.1 | 81.11 | 78.6 | 6.9 | 1973 | 86213 |
| | | 0.06 | | | 75.6 | 16.000 | 0.063 | 4.000 | 4.410 | 15.90 | 25.60 | 66.76 | | | 70.72 | | | 1973 | 86213 |
| | | 0.06 | | | 75.6 | 16.000 | 0.063 | 1.000 | 1.380 | 41.70 | 61.50 | 77.26* | | | 90.96* | | | 1973 | 86213 |
| | | 0.06 | | | 75.6 | 16.000 | 0.063 | 4.000 | 4.420 | 18.70 | 30.30 | 79.02 | | | 83.82 | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | R.T. | T-L | 72.5 | 3.000 | 0.090 | 1.157 | 2.147 | --- | 43.50 | 64.64* | --- | --- | 121.46* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 72.5 | 3.000 | 0.090 | 1.113 | 2.116 | --- | 44.60 | 64.50* | | | 121.68* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | R.T. | T-L | 73.6 | 3.000 | 0.127 | 1.180 | 2.124 | --- | 37.40 | 56.40* | --- | --- | 102.67* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 73.6 | 3.000 | 0.127 | 1.137 | 2.122 | --- | 40.10 | 58.86* | | | 109.91* | | | 1973 | 86213 |
| T61 | Sheet | 0.18 | R.T. | T-L | 74.2 | 3.000 | 0.181 | 1.223 | 2.164 | --- | 42.10 | 65.12* | --- | --- | 119.22* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 74.2 | 3.000 | 0.182 | 1.150 | 2.234 | --- | 43.70 | 64.70* | | | 131.02* | | | 1973 | 86213 |
| T61 | Sheet | 0.04 | R.T. | T-L | 72.9 | 16.000 | 0.040 | 4.000 | 4.520 | --- | 30.30 | 79.02 | 80.8 | 2.6 | 84.96 | 86.0 | 1.4 | 1973 | 86842 |
| | | 0.04 | | | 72.1 | 16.000 | 0.042 | 4.000 | 4.360 | --- | 31.70 | 82.67 | | | 86.97 | | | 1973 | 86842 |
| T61 | Sheet | 0.06 | R.T. | T-L | 73.8 | 16.000 | 0.062 | 4.000 | 4.380 | --- | 29.30 | 76.41 | 80.4 | 3.9 | 80.61 | 85.8 | 4.8 | 1972 | 84368 |
| | | 0.06 | | | 72.6 | 16.000 | 0.063 | 3.000 | 3.600 | --- | 38.10 | 84.55 | | | 93.54 | | | 1972 | 84368 |
| | | 0.06 | | | 72.6 | 16.000 | 0.063 | 2.000 | 2.050 | --- | 45.90 | 82.15 | | | 83.21 | | | 1972 | 84368 |
| | | 0.06 | | | 72.6 | 16.000 | 0.063 | 6.000 | 6.800 | --- | 22.20 | 74.74 | | | 81.87 | | | 1972 | 84368 |
| | | 0.06 | | | 72.6 | 16.000 | 0.063 | 5.000 | 5.480 | --- | 27.80 | 82.96 | | | 88.02 | | | 1972 | 84368 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ ($K_{ef}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_c$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 Cont'd | Sheet Cont'd | 0.06 | R.T. Cont'd | T-L Cont'd | 72.6 | 16.000 | 0.063 | 1.000 | 1.640 | --- | 60.70 | 76.26* | Cont'd | Cont'd | 98.06* | Cont'd | Cont'd | 1972 | 84368 |
| | | 0.06 | | | 72.6 | 16.000 | 0.063 | 4.000 | 4.520 | --- | 31.20 | 81.36 | | | 87.48 | | | 1972 | 84368 |
| T61 | Sheet | 0.09 | R.T. | T-L | 71.9 | 16.000 | 0.090 | 4.000 | 5.120 | --- | 36.80 | 95.97 | 90.6 | 4.2 | 111.48 | 100.9 | 7.5 | 1973 | 86842 |
| | | 0.09 | | | 73.1 | 15.880 | 0.091 | 3.980 | 4.750 | --- | 33.00 | 85.86 | | | 95.46 | | | 1973 | 86213 |
| | | 0.09 | | | 73.1 | 15.880 | 0.091 | 3.980 | 4.320 | --- | 35.10 | 91.32 | | | 95.84 | | | 1973 | 86213 |
| | | 0.09 | | | 72.1 | 16.000 | 0.091 | 4.000 | 4.880 | --- | 34.30 | 89.45 | | | 100.81 | | | 1973 | 86842 |
| T61 | Sheet | 0.09 | R.T. | T-L | 74.1 | 15.880 | 0.100 | 4.000 | 4.300 | --- | 29.30 | 76.46 | 79.7 | 4.6 | 79.79 | 83.5 | 5.2 | 1973 | 86213 |
| | | 0.09 | | | 74.1 | 15.880 | 0.101 | 4.000 | 4.350 | --- | 31.80 | 82.98 | | | 87.19 | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | R.T. | T-L | 72.6 | 16.000 | 0.110 | 4.000 | 5.360 | 19.30 | 35.60 | 92.84 | --- | --- | 111.09 | --- | --- | 1973 | 86842 |
| T61 | Sheet | 0.12 | R.T. | T-L | 73.1 | 16.000 | 0.126 | 4.000 | 4.600 | 18.80 | 29.70 | 77.45 | --- | --- | 84.17 | --- | --- | 1973 | 86842 |
| T61 | Sheet | 0.18 | R.T. | T-L | 72.3 | 16.000 | 0.181 | 4.000 | 5.000 | --- | 30.90 | 80.58 | 76.4 | 5.9 | 92.21 | 86.8 | 7.7 | 1973 | 86842 |
| | | 0.18 | | | 72.6 | 16.000 | 0.186 | 4.000 | 4.870 | --- | 27.70 | 72.24 | | | 81.31 | | | 1973 | 86842 |
| T61 | Plate | 0.25 | R.T. | T-L | 75.2 | 3.000 | 0.250 | 1.140 | 1.863 | --- | 27.90 | 41.05 | 40.9 | 0.2 | 63.69* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 75.2 | 3.000 | 0.250 | 1.130 | 1.592 | --- | 27.90 | 40.80 | | | 53.81 | | | 1973 | 86213 |
| T61 | Plate | 0.25 | 82 | T-L | 72.4 | 3.000 | 0.243 | 1.243 | 2.152 | --- | 37.50 | 58.71* | --- | --- | 105.20* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 72.4 | 3.000 | 0.243 | 1.220 | 2.113 | --- | 37.10 | 57.32* | | | 100.91* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | 84 | T-L | 71.6 | 16.000 | 0.063 | 1.000 | 1.530 | 44.20 | 58.60 | 73.62* | --- | --- | 91.36* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 71.6 | 16.000 | 0.064 | 3.000 | 3.480 | 25.40 | 36.50 | 81.00 | | | 87.92 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.09 | 85 | T-L | 74.5 | 3.000 | 0.089 | 1.165 | 2.029 | --- | 40.40 | 60.33* | --- | --- | 103.30* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 74.5 | 3.000 | 0.089 | 1.150 | 2.020 | --- | 43.10 | 63.81* | | | 109.57* | | | 1973 | 86213 |
| | | 0.09 | | | 73.1 | 3.000 | 0.091 | 1.145 | 1.880 | --- | 44.30 | 65.34* | | | 102.34* | | | 1973 | 86213 |
| | | 0.09 | | | 73.1 | 3.000 | 0.091 | 1.160 | 1.932 | --- | 44.00 | 65.54* | | | 105.24* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 85 | T-L | 74.1 | 3.000 | 0.101 | 1.180 | 1.956 | --- | 40.40 | 60.92* | --- | --- | 98.22* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 74.1 | 3.000 | 0.101 | 1.220 | 2.064 | --- | 40.30 | 62.26* | | | 105.76* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | 86 | T-L | 71.8 | 3.000 | 0.115 | 1.157 | 1.967 | --- | 40.10 | 59.59* | --- | --- | 98.16* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 71.8 | 3.000 | 0.115 | 1.133 | 1.919 | --- | 41.40 | 60.62* | | | 98.09* | | | 1973 | 86213 |
| T61 | Sheet | 0.18 | 86 | T-L | 73.5 | 3.000 | 0.186 | 1.162 | 2.018 | --- | 38.30 | 57.12* | --- | --- | 97.23* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 73.5 | 3.000 | 0.186 | 1.168 | 2.117 | --- | 38.10 | 57.03* | | | 103.95* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | 88 | T-L | 71.6 | 16.000 | 0.062 | 4.000 | 4.510 | 17.60 | 31.20 | 81.36 | 79.9 | 5.6 | 87.36 | 85.0 | 6.7 | 1973 | 86213 |
| | | 0.06 | | | 71.6 | 16.000 | 0.062 | 4.000 | 4.440 | 15.50 | 32.50 | 84.75 | | | 90.15 | | | 1973 | 86213 |
| | | 0.06 | | | 71.6 | 16.000 | 0.063 | 6.000 | 6.430 | 10.10 | 21.90 | 73.73 | | | 77.46 | | | 1973 | 86213 |
| T7351 | Plate | 3.00 | R.T. | L-S | 59.5 | 2.009 | 0.303 | 0.744 | --- | --- | 44.57 | 52.80* | --- | --- | 87.20* | --- | --- | 1979 | GD011 |
| | | 3.00 | | | 59.5 | 2.009 | 0.303 | 0.750 | --- | --- | 43.20 | 51.40* | | | 85.10* | | | 1979 | GD011 |
| | | 3.00 | | | 59.5 | 2.009 | 0.303 | 0.750 | --- | --- | 39.10 | 46.50* | | | 80.10* | | | 1979 | GD011 |
| T7351 | Plate | 0.50 | -80 | L-T | 64.9 | 16.000 | 0.266 | 4.000 | --- | --- | 36.89 | 96.20 | --- | --- | 160.30 | --- | --- | 1978 | GD005 |
| T7351 | Plate | 0.50 | -80 | L-T | 64.9 | 16.000 | 0.364 | 4.000 | --- | --- | 36.37 | 94.80 | --- | --- | 150.50 | --- | --- | 1978 | GD005 |
| T7351 | Plate | 0.50 | -80 | L-T | 64.9 | 16.000 | 0.508 | 4.010 | --- | --- | 37.21 | 97.30 | --- | --- | 129.30 | --- | --- | 1978 | GD005 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 6.000 | 0.255 | 2.822 | --- | --- | 33.85 | 82.90* | --- | --- | 120.70* | --- | --- | 1978 | GD005 |
| | | 0.50 | | | 64.9 | 6.004 | 0.256 | 2.004 | --- | --- | 41.77 | 79.70* | | | 116.40* | | | 1978 | GD005 |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 6.013 | 0.350 | 1.980 | --- | --- | 42.55 | 80.50* | --- | --- | 116.60* | --- | --- | 1978 | GD005 |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 6.080 | 0.507 | 2.008 | --- | --- | 41.59 | 79.30* | --- | --- | 117.30* | --- | --- | 1978 | GD005 |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 6.070 | 0.514 | 2.032 | --- | --- | 38.34 | 73.70* | --- | --- | 106.20* | --- | --- | 1978 | GD005 |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 16.000 | 0.253 | 4.020 | --- | --- | 44.47 | 116.30* | --- | --- | 166.30* | --- | --- | 1978 | GD005 |
| | | 0.50 | | | 64.9 | 16.000 | 0.256 | 4.030 | --- | --- | 44.68 | 117.00* | | | 177.70* | | | 1978 | GD005 |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 16.000 | 0.355 | 4.020 | --- | --- | 47.84 | 125.10* | --- | --- | 198.90* | --- | --- | 1978 | GD005 |
| | | 0.50 | | | 64.9 | 16.020 | 0.358 | 4.000 | --- | --- | 46.31 | 120.80* | | | 186.20* | | | 1978 | GD005 |
| T7351 | Plate | 0.50 | R.T. | L-T | 64.9 | 16.000 | 0.507 | 3.980 | --- | --- | 46.28 | 120.30* | --- | --- | 193.70* | --- | --- | 1978 | GD005 |
| | | 0.50 | | | 64.9 | 15.970 | 0.511 | 4.000 | --- | --- | 45.00 | 117.40* | | | 178.30* | | | 1978 | GD005 |
| | | 0.50 | | | 64.9 | 15.990 | 0.514 | 4.010 | --- | --- | 45.93 | 120.00* | | | 193.90* | | | 1978 | GD005 |
| T761 | Sheet | 0.03 | R.T. | L-T | 72.8 | 16.000 | 0.032 | 4.000 | 4.460 | --- | 27.00 | 70.41 | --- | --- | 75.09 | --- | --- | 1973 | 86842 |
| T761 | Sheet | 0.04 | R.T. | L-T | 73.7 | 16.000 | 0.041 | 4.000 | 4.640 | 13.10 | 31.10 | 81.10 | 79.1 | 2.8 | 88.60 | 85.3 | 4.6 | 1973 | 86842 |
| | | 0.04 | | | 74.3 | 16.000 | 0.041 | 4.000 | 4.440 | --- | 29.60 | 77.19 | | | 82.10 | | | 1973 | 86842 |
| T761 | Sheet | 0.06 | R.T. | L-T | 66.4 | 16.000 | 0.061 | 4.000 | 4.720 | --- | 35.70 | 93.10 | 86.9 | 4.9 | 102.78 | 95.9 | 5.9 | 1972 | 84368 |
| | | 0.06 | | | 70.5 | 16.000 | 0.061 | 5.000 | 5.740 | --- | 27.40 | 81.77 | | | 89.48 | | | 1972 | 84368 |
| | | 0.06 | | | 70.5 | 16.000 | 0.061 | 6.000 | 6.800 | --- | 24.40 | 82.15 | | | 89.99 | | | 1972 | 84368 |
| | | 0.06 | | | 70.5 | 16.000 | 0.061 | 2.000 | 2.480 | --- | 49.70 | 88.95* | | | 99.57* | | | 1972 | 84368 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T761 Cont'd | Sheet Cont'd | 0.06 | R.T. Cont'd | L-T Cont'd | 70.5 | 16.000 | 0.062 | 1.000 | 1.660 | --- | 61.40 | 77.14* | Cont'd | Cont'd | 99.81* | Cont'd | Cont'd | 1972 | 84368 |
| | | 0.06 | | | 70.5 | 16.000 | 0.062 | 4.000 | 4.880 | --- | 33.90 | 88.41 | | | 99.63 | | | 1972 | 84368 |
| | | 0.06 | | | 70.5 | 16.000 | 0.062 | 3.000 | 3.520 | --- | 40.20 | 89.21 | | | 97.45 | | | 1972 | 84368 |
| T761 | Sheet | 0.09 | R.T. | L-T | 69.8 | 16.000 | 0.089 | 4.000 | 4.900 | 19.70 | 39.70 | 103.53 | 100.4 | 2.1 | 116.98* | 114.2 | 2.9 | 1973 | 86842 |
| | | 0.09 | | | 66.7 | 15.880 | 0.090 | 4.000 | 5.050 | --- | 38.90 | 101.51 | | | 116.94* | | | 1973 | 86213 |
| | | 0.09 | | | 66.7 | 15.880 | 0.090 | 4.000 | 4.920 | --- | 37.70 | 98.38 | | | 111.48* | | | 1973 | 86213 |
| | | 0.09 | | | 70.7 | 15.880 | 0.090 | 3.980 | 4.970 | --- | 37.70 | 98.09 | | | 112.19 | | | 1973 | 86213 |
| | | 0.09 | | | 70.7 | 15.880 | 0.090 | 3.970 | 5.150 | --- | 38.20 | 99.25 | | | 116.28 | | | 1973 | 86213 |
| | | 0.09 | | | 67.3 | 16.000 | 0.091 | 4.000 | 5.240 | 18.50 | 38.90 | 101.44 | | | 119.61* | | | 1973 | 86842 |
| T761 | Sheet | 0.12 | R.T. | L-T | 66.4 | 16.000 | 0.125 | 4.000 | 5.300 | 17.50 | 41.30 | 107.70* | --- | --- | 127.93* | --- | --- | 1973 | 86842 |
| | | 0.12 | | | 66.8 | 16.000 | 0.125 | 4.000 | 5.240 | 16.00 | 39.70 | 103.53 | | | 122.07* | | | 1973 | 86842 |
| T761 | Sheet | 0.18 | R.T. | L-T | 66.4 | 16.000 | 0.185 | 4.000 | 6.000 | 17.60 | 42.00 | 109.53* | --- | --- | 141.40* | --- | --- | 1973 | 86842 |
| T761 | Sheet | 0.18 | R.T. | L-T | 69.3 | 16.000 | 0.192 | 4.000 | 5.880 | 17.80 | 46.20 | 120.48* | --- | --- | 153.38* | --- | --- | 1973 | 86842 |
| T761 | Plate | 0.25 | R.T. | L-T | 67.0 | 16.000 | 0.245 | 4.000 | 5.120 | --- | 42.70 | 111.35* | --- | --- | 129.36* | --- | --- | 1973 | 86842 |
| | | 0.25 | | | 67.8 | 16.000 | 0.249 | 4.000 | 4.970 | --- | 27.90 | 72.76 | | | 82.94 | | | 1973 | 86842 |
| T761 | Plate | 0.25 | 82 | L-T | 66.6 | 3.000 | 0.240 | 1.130 | 2.209 | --- | 39.80 | 58.20* | --- | --- | 116.77* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 66.6 | 3.000 | 0.240 | 1.183 | 2.234 | --- | 39.20 | 59.18* | | | 117.52* | | | 1973 | 86213 |
| T761 | Plate | 0.25 | 82 | L-T | 72.2 | 3.000 | 0.250 | 1.150 | 1.743 | --- | 34.20 | 50.63 | 51.1 | 0.6 | 72.31* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 72.2 | 3.000 | 0.250 | 1.133 | 2.302 | --- | 35.20 | 51.54 | | | 111.97* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)

## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T761 | Sheet | 0.12 | 83 | L-T | 75.2 | 3.000 | 0.129 | 1.230 | 2.278 | --- | 40.10 | 62.33* | --- | --- | 124.86* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 75.2 | 3.000 | 0.129 | 1.117 | 2.158 | --- | 43.20 | 62.63* | | | 121.76* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | 84 | L-T | 73.6 | 16.000 | 0.063 | 3.000 | 3.630 | 28.10 | 37.00 | 82.11 | --- | --- | 91.27 | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 73.6 | 16.000 | 0.063 | 1.000 | 1.740 | 52.70 | 60.40 | 75.88* | | | 100.59* | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | 86 | L-T | 66.7 | 3.000 | 0.090 | 1.150 | 1.988 | --- | 40.70 | 60.26* | --- | --- | 101.17* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 66.7 | 3.000 | 0.090 | 1.170 | 1.988 | --- | 40.70 | 61.00* | | | 101.17* | | | 1973 | 86213 |
| | | 0.09 | | | 70.7 | 3.000 | 0.095 | 1.185 | 1.981 | --- | 40.90 | 61.83* | | | 101.10* | | | 1973 | 86213 |
| | | 0.09 | | | 70.7 | 3.000 | 0.095 | 1.160 | 1.972 | --- | 40.00 | 59.58* | | | 98.33* | | | 1973 | 86213 |
| T761 | Sheet | 0.12 | 86 | L-T | 67.1 | 3.000 | 0.115 | 1.180 | 2.014 | --- | 40.00 | 60.32* | --- | --- | 101.26* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 67.1 | 3.000 | 0.115 | 1.200 | 2.027 | --- | 40.00 | 61.06* | | | 102.13* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | 88 | L-T | 73.6 | 16.000 | 0.063 | 4.000 | 4.170 | 19.40 | 28.90 | 75.37 | 74.0 | 8.7 | 77.22 | 75.8 | 9.5 | 1973 | 86213 |
| | | 0.06 | | | 73.6 | 16.000 | 0.063 | 6.000 | 6.140 | 9.00 | 19.20 | 64.64 | | | 65.70 | | | 1973 | 86213 |
| | | 0.06 | | | 73.6 | 16.000 | 0.064 | 4.000 | 4.230 | 15.70 | 31.40 | 81.89 | | | 84.62 | | | 1973 | 86213 |
| T761 | Sheet | 0.12 | R.T. | T-L | 72.2 | 3.000 | 0.129 | 1.133 | 2.164 | --- | 42.60 | 62.37* | --- | --- | 120.63* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 72.2 | 3.000 | 0.129 | 1.193 | 2.251 | --- | 41.70 | 63.34* | | | 126.73* | | | 1973 | 86213 |
| T761 | Sheet | 0.03 | R.T. | T-L | 69.4 | 16.000 | 0.032 | 4.000 | 4.840 | --- | 29.70 | 77.45 | --- | --- | 86.84 | --- | --- | 1973 | 86842 |
| T761 | Sheet | 0.04 | R.T. | T-L | 70.8 | 16.000 | 0.041 | 4.000 | 4.420 | 15.20 | 30.60 | 79.80 | 82.1 | 3.3 | 84.65 | 87.1 | 3.5 | 1973 | 86842 |
| | | 0.04 | | | 71.1 | 16.000 | 0.042 | 4.000 | 4.420 | 11.60 | 32.40 | 84.49 | | | 89.63 | | | 1973 | 86842 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONTINUED)

## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T761 | Sheet | 0.06 | R.T. | T-L | 69.0 | 16.000 | 0.061 | 3.000 | 3.460 | --- | 40.50 | 89.87 | 86.4 | 3.1 | 97.24 | 94.5 | 3.1 | 1972 | 84368 |
| | | 0.06 | | | 69.0 | 16.000 | 0.061 | 5.000 | 5.840 | --- | 28.10 | 83.86 | | | 92.86 | | | 1972 | 84368 |
| | | 0.06 | | | 65.0 | 16.000 | 0.062 | 4.000 | 4.560 | --- | 33.10 | 86.32 | | | 93.30 | | | 1972 | 84368 |
| | | 0.06 | | | 69.0 | 16.000 | 0.062 | 6.000 | 6.800 | --- | 24.60 | 82.82 | | | 90.72 | | | 1972 | 84368 |
| | | 0.06 | | | 69.0 | 16.000 | 0.062 | 1.000 | 1.520 | --- | 61.00 | 76.64* | | | 94.78* | | | 1972 | 84368 |
| | | 0.06 | | | 69.0 | 16.000 | 0.062 | 2.000 | 2.500 | --- | 50.80 | 90.92* | | | 102.21* | | | 1972 | 84368 |
| | | 0.06 | | | 69.0 | 16.000 | 0.063 | 4.000 | 4.720 | --- | 34.10 | 88.93 | | | 98.17 | | | 1972 | 84368 |
| T761 | Sheet | 0.09 | R.T. | T-L | 68.3 | 16.000 | 0.089 | 4.000 | 4.660 | 19.70 | 37.20 | 97.01 | 93.4 | 4.0 | 106.26 | 103.1 | 4.4 | 1973 | 86842 |
| | | 0.09 | | | 65.3 | 15.880 | 0.090 | 4.000 | 4.950 | --- | 34.50 | 90.03 | | | 102.41 | | | 1973 | 86213 |
| | | 0.09 | | | 65.3 | 15.880 | 0.090 | 4.000 | 4.920 | --- | 35.20 | 91.85 | | | 104.08 | | | 1973 | 86213 |
| | | 0.09 | | | 68.9 | 15.880 | 0.090 | 3.990 | 4.620 | --- | 37.60 | 97.97 | | | 106.93 | | | 1973 | 86213 |
| | | 0.09 | | | 68.9 | 15.880 | 0.090 | 3.990 | 4.600 | --- | 33.80 | 88.07 | | | 95.86 | | | 1973 | 86213 |
| | | 0.09 | | | 64.6 | 16.000 | 0.090 | 4.000 | 4.920 | 17.40 | 36.60 | 95.45 | | | 108.12* | | | 1973 | 86842 |
| T761 | Sheet | 0.12 | R.T. | T-L | 64.9 | 16.000 | 0.125 | 4.000 | 5.240 | 17.00 | 37.40 | 97.53 | 94.7 | 4.1 | 115.00* | --- | --- | 1973 | 86842 |
| | | 0.12 | | | 65.6 | 16.000 | 0.125 | 4.000 | 5.240 | 17.00 | 35.20 | 91.80 | | | 108.23 | | | 1973 | 86842 |
| T761 | Sheet | 0.18 | R.T. | T-L | 65.3 | 16.000 | 0.185 | 4.000 | 5.660 | 18.20 | 39.80 | 103.79* | --- | --- | 128.75* | --- | --- | 1973 | 86842 |
| T761 | Sheet | 0.18 | R.T. | T-L | 67.0 | 16.000 | 0.193 | 4.000 | 5.700 | --- | 38.50 | 100.40 | --- | --- | 125.14* | --- | --- | 1973 | 86842 |
| T761 | Plate | 0.25 | R.T. | T-L | 65.9 | 16.000 | 0.245 | 4.000 | 5.660 | --- | 40.60 | 105.88* | --- | --- | 131.34* | --- | --- | 1973 | 86842 |
| | | 0.25 | | | 68.3 | 16.000 | 0.249 | 4.000 | 4.550 | --- | 25.60 | 66.76 | | | 72.07 | | | 1973 | 86842 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.19.2.2 (CONCLUDED)



## ALUMINUM 7475 $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{si}\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_{si}\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T761 | Plate | 0.25 | 82 | T-L | 64.5 | 3.000 | 0.240 | 1.203 | 2.220 | --- | 37.50 | 57.31* | --- | --- | 111.12* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 64.5 | 3.000 | 0.240 | 1.157 | 2.276 | --- | 38.50 | 57.21* | | | 119.66* | | | 1973 | 86213 |
| T761 | Plate | 0.25 | 82 | T-L | 70.6 | 3.000 | 0.250 | 1.147 | 2.146 | --- | 34.60 | 51.10 | --- | --- | 96.61* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 70.6 | 3.000 | 0.250 | 1.127 | 2.288 | --- | 35.50 | 51.79* | | | 111.51* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | 84 | T-L | 71.4 | 16.000 | 0.064 | 1.000 | 1.840 | 43.90 | 58.60 | 73.62* | --- | --- | 100.45* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 71.4 | 16.000 | 0.064 | 3.000 | 3.460 | 23.00 | 34.20 | 75.89 | | | 82.11 | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | 86 | T-L | 65.3 | 3.000 | 0.090 | 1.155 | 1.952 | --- | 39.40 | 58.48* | --- | --- | 95.53* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 65.3 | 3.000 | 0.090 | 1.215 | 2.093 | --- | 38.50 | 59.27* | | | 103.16* | | | 1973 | 86213 |
| | | 0.09 | | | 68.9 | 3.000 | 0.095 | 1.185 | 1.980 | --- | 39.80 | 60.16* | | | 98.38* | | | 1973 | 86213 |
| | | 0.09 | | | 68.9 | 3.000 | 0.095 | 1.155 | 1.989 | --- | 40.70 | 60.41* | | | 101.17* | | | 1973 | 86213 |
| T761 | Sheet | 0.12 | 86 | T-L | 66.1 | 3.000 | 0.115 | 1.153 | 2.087 | --- | 40.00 | 59.29* | --- | --- | 106.70* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 66.1 | 3.000 | 0.115 | 1.198 | 2.012 | --- | 39.00 | 59.46* | | | 98.59* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | 88 | T-L | 71.4 | 16.000 | 0.063 | 6.000 | 6.510 | 7.70 | 23.40 | 78.78 | 84.6 | 5.0 | 83.52 | 90.2 | 6.0 | 1973 | 86213 |
| | | 0.06 | | | 71.4 | 16.000 | 0.064 | 4.000 | 4.580 | 18.70 | 33.70 | 87.88 | | | 95.25 | | | 1973 | 86213 |
| | | 0.06 | | | 71.4 | 16.000 | 0.064 | 4.000 | 4.380 | 13.70 | 33.40 | 87.10 | | | 91.89 | | | 1973 | 86213 |
| T7651 | Plate | 0.50 | R.T. | L-T | 70.6 | 16.000 | 0.258 | 4.020 | --- | --- | 40.80 | 106.70 | --- | --- | 168.00 | --- | --- | 1978 | GD005 |
| T7651 | Plate | 0.50 | R.T. | L-T | 70.6 | 16.000 | 0.355 | 4.010 | --- | --- | 50.49 | 131.90* | --- | --- | 217.20* | --- | --- | 1978 | GD005 |
| T7651 | Plate | 0.50 | R.T. | L-T | 70.6 | 15.900 | 0.512 | 4.000 | --- | --- | 40.98 | 106.90 | --- | --- | 130.20 | --- | --- | 1978 | GD005 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

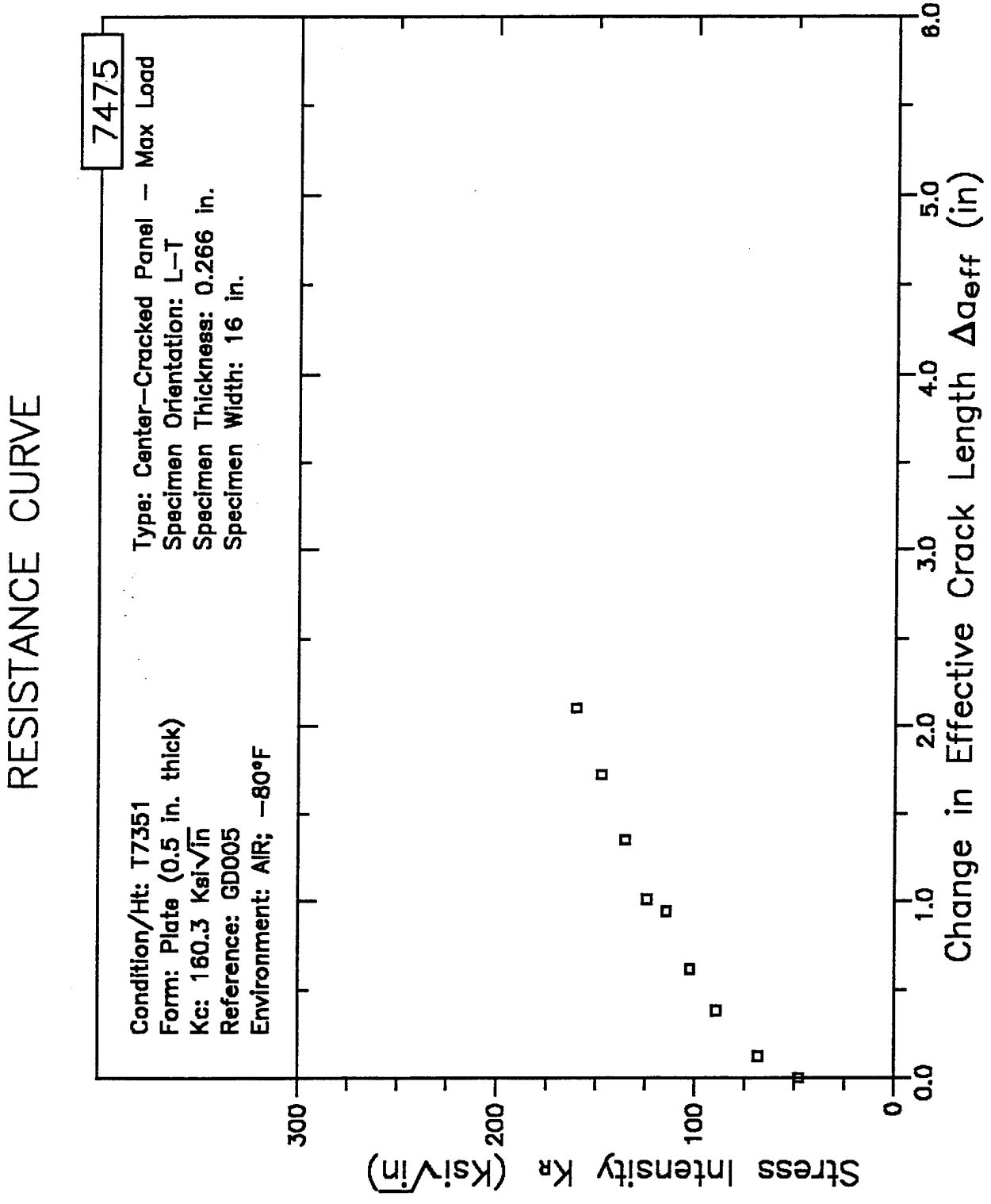



**Figure 8.19.2.3.1**

# RESISTANCE CURVE

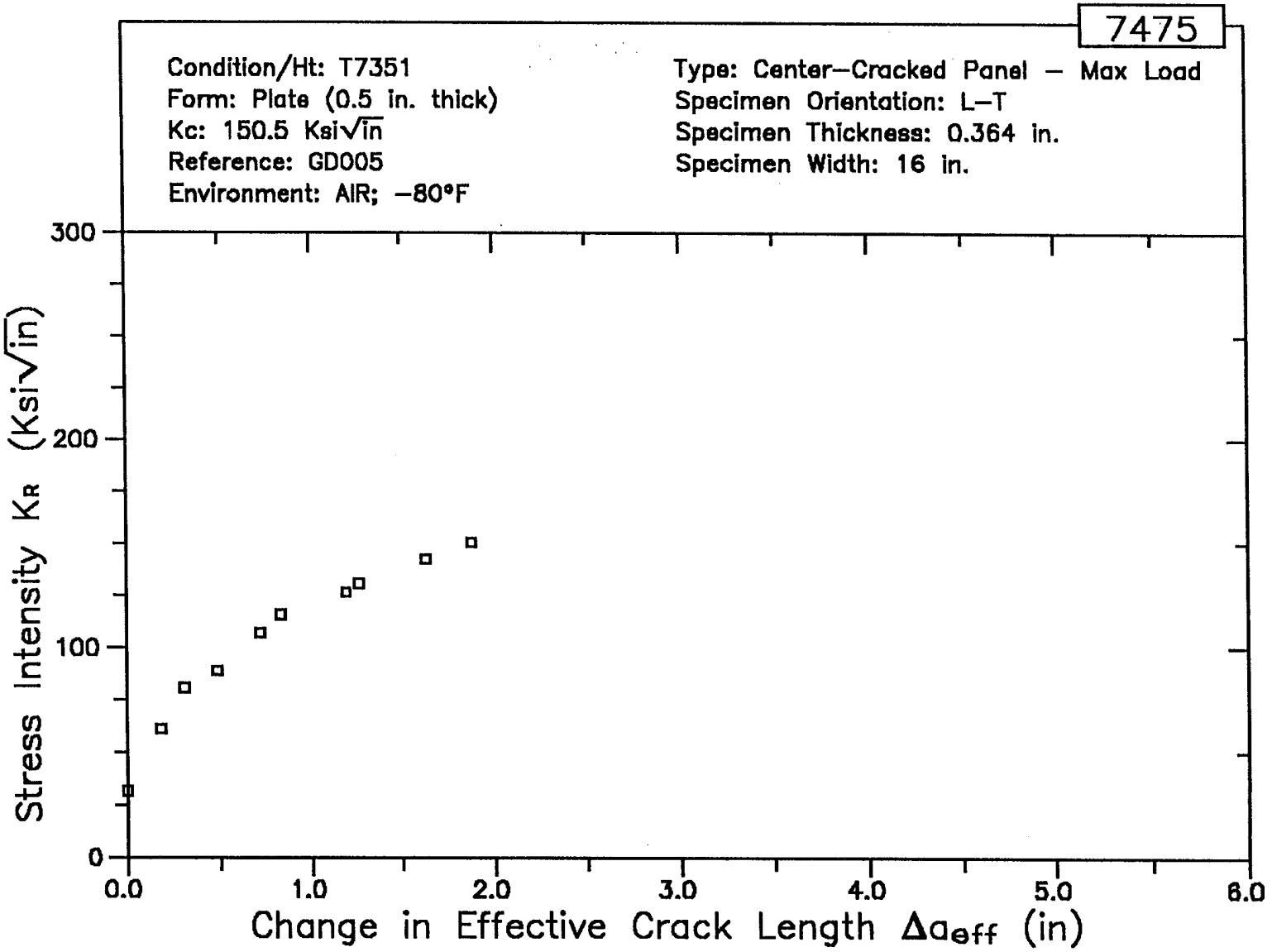



Figure 8.19.2.3.2

# RESISTANCE CURVE

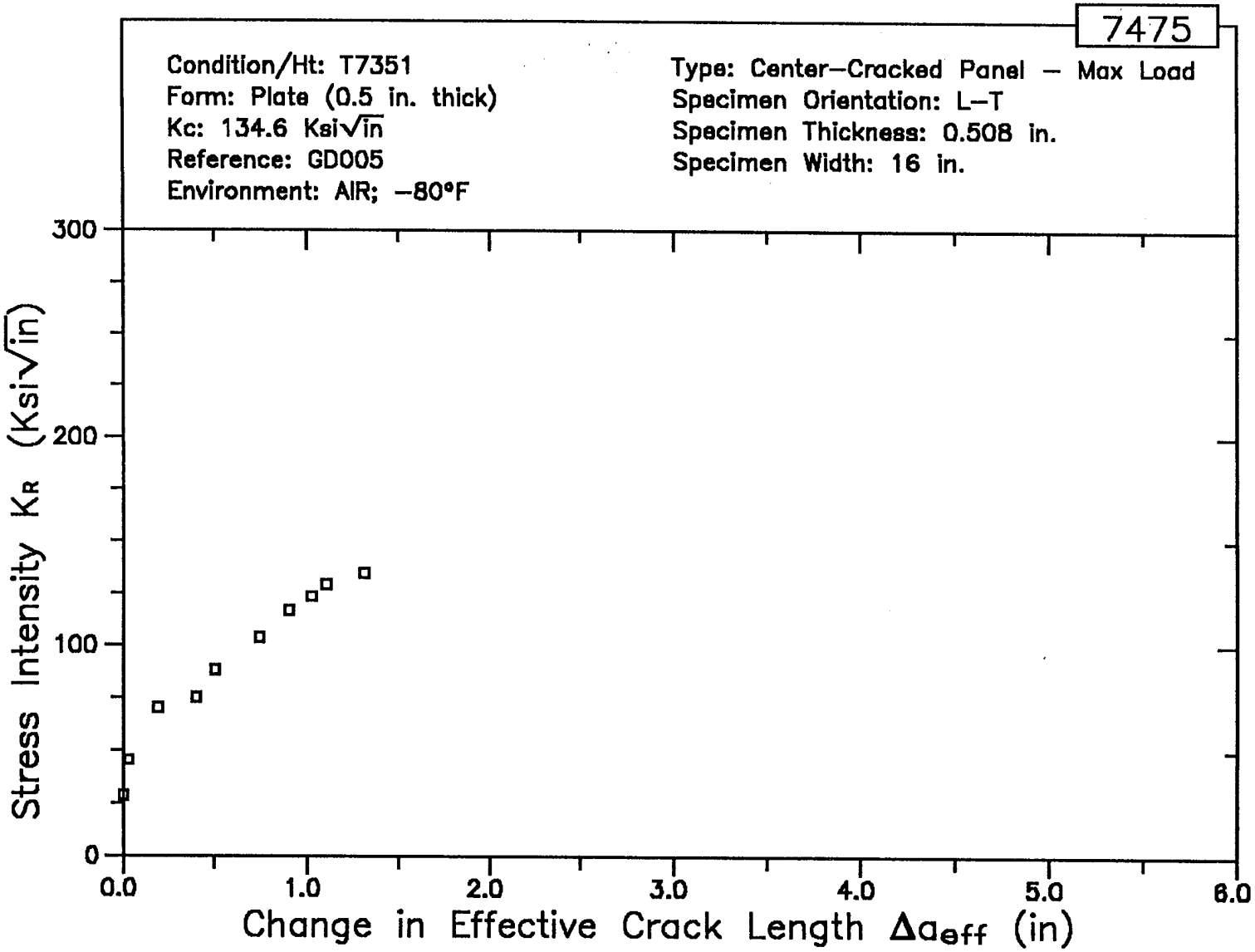



Figure 8.19.2.3.3

# RESISTANCE CURVE

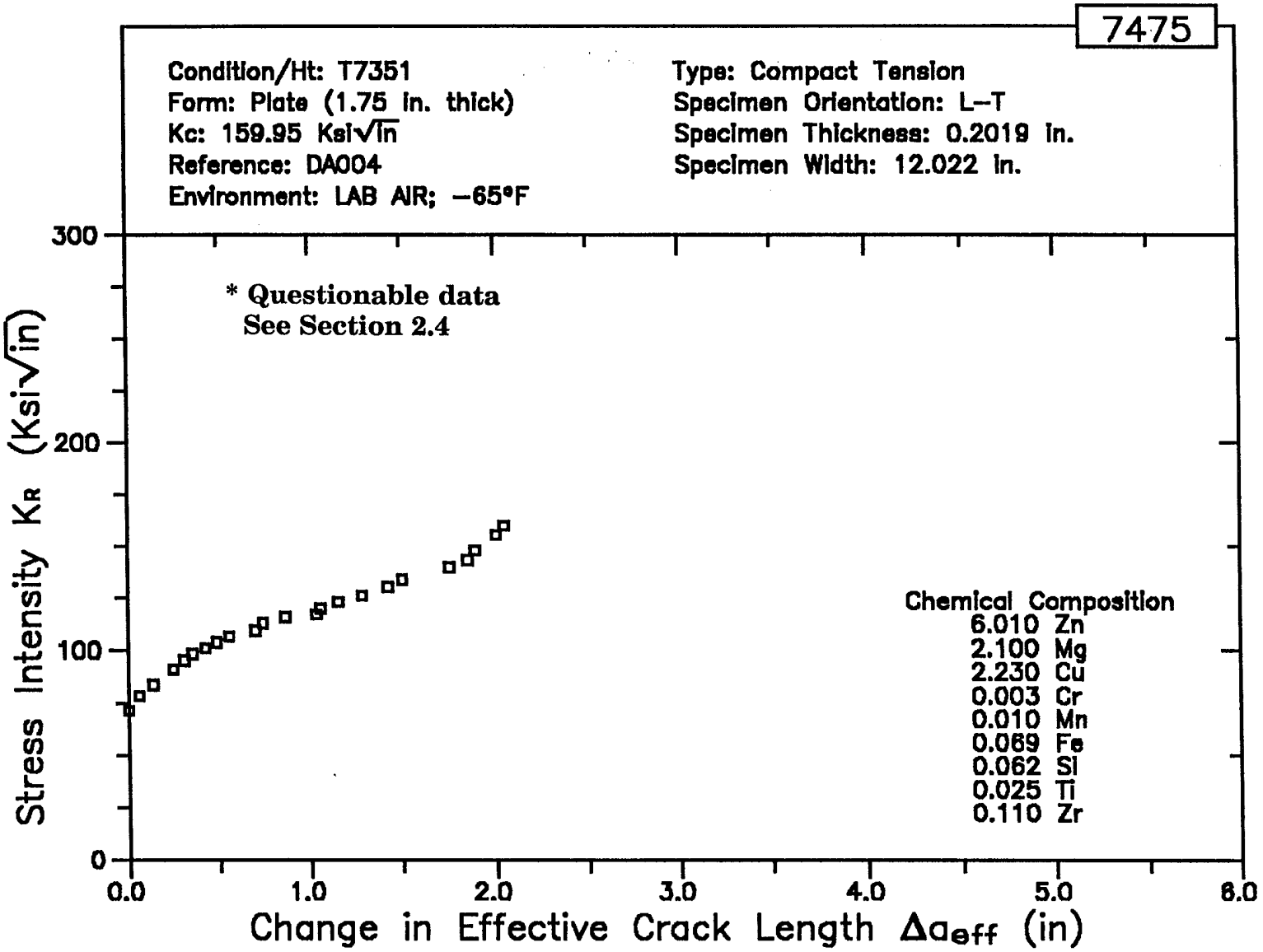



Figure 8.19.2.3.4

# RESISTANCE CURVE

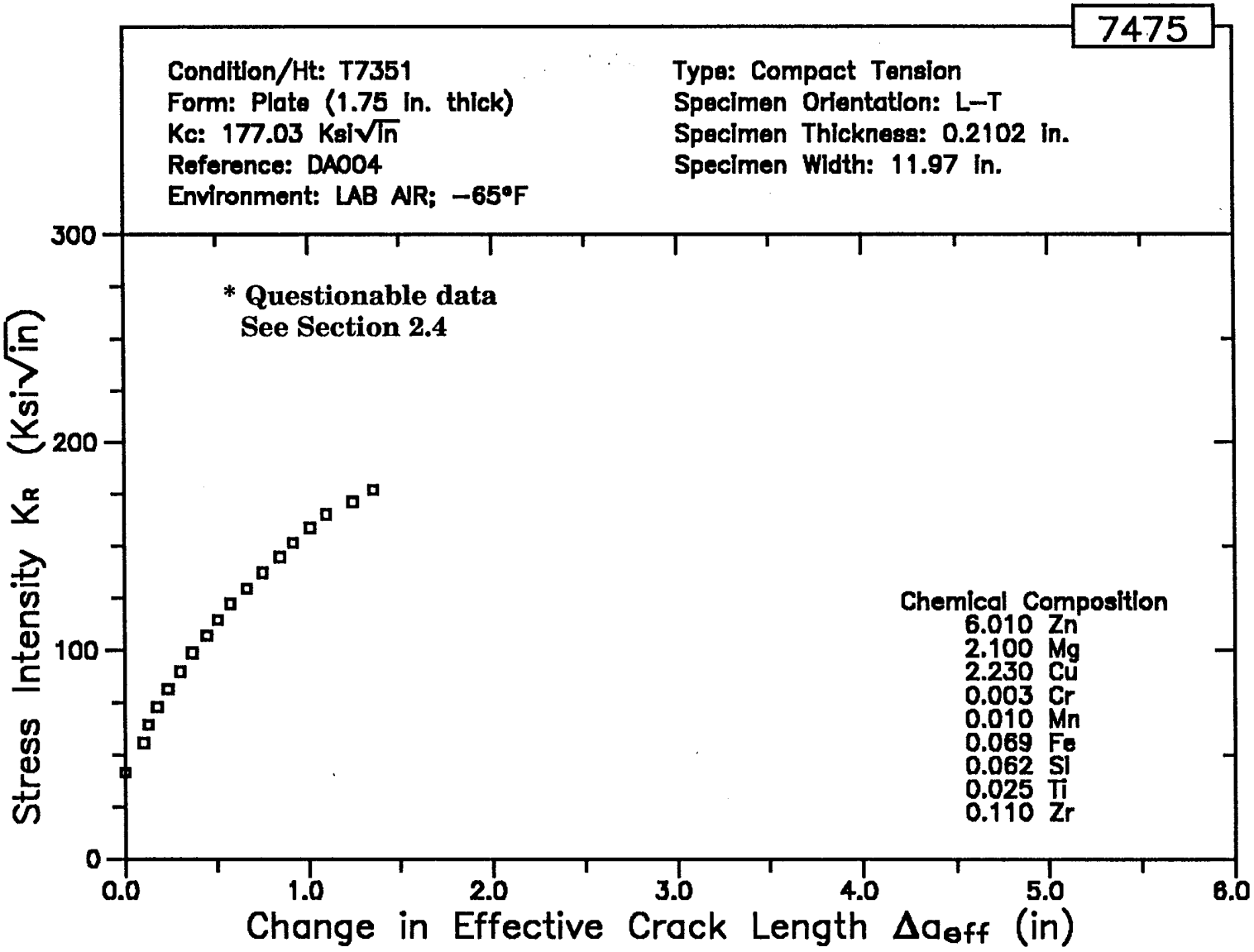



Figure 8.19.2.3.5

# RESISTANCE CURVE

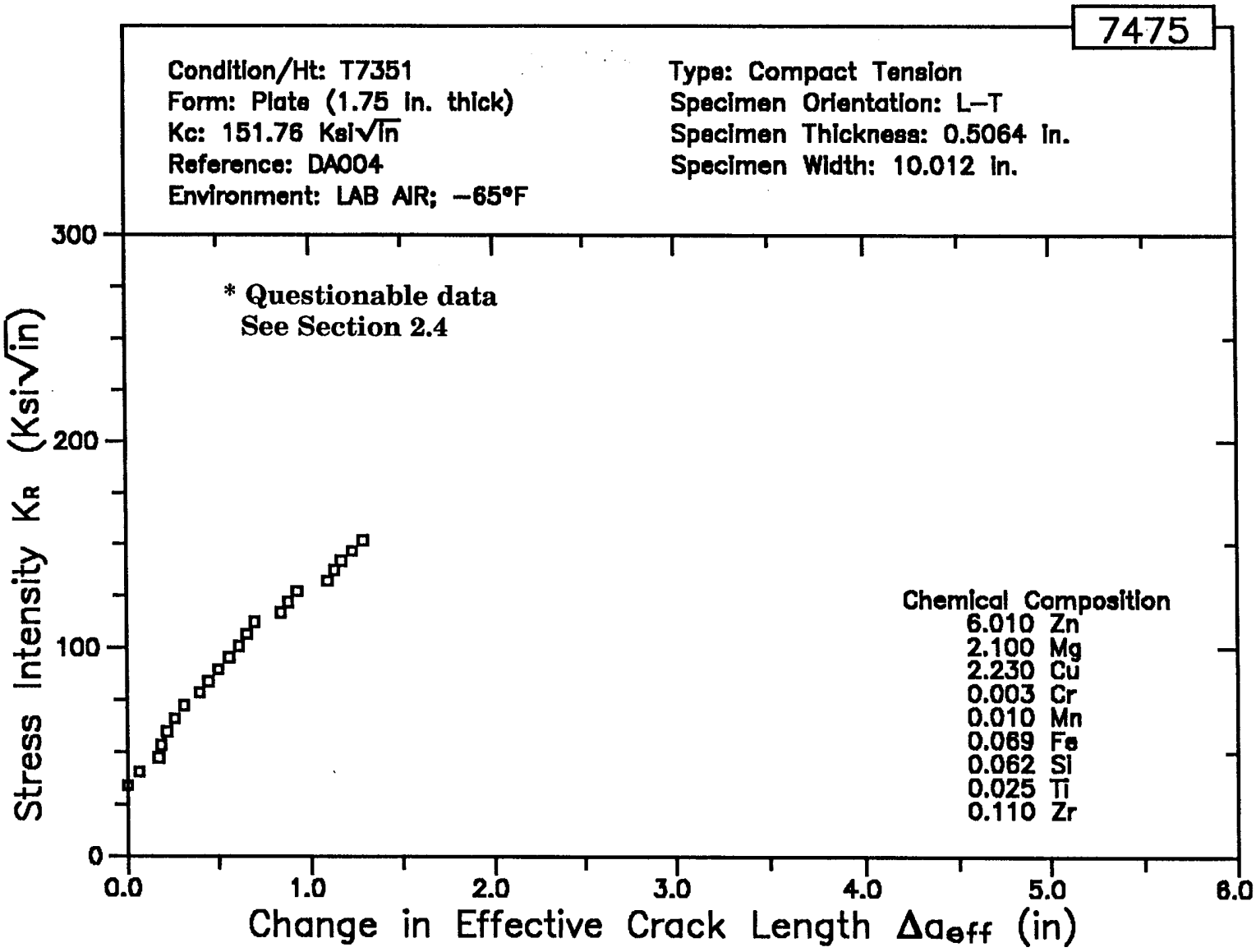



Figure 8.19.2.3.6

# RESISTANCE CURVE

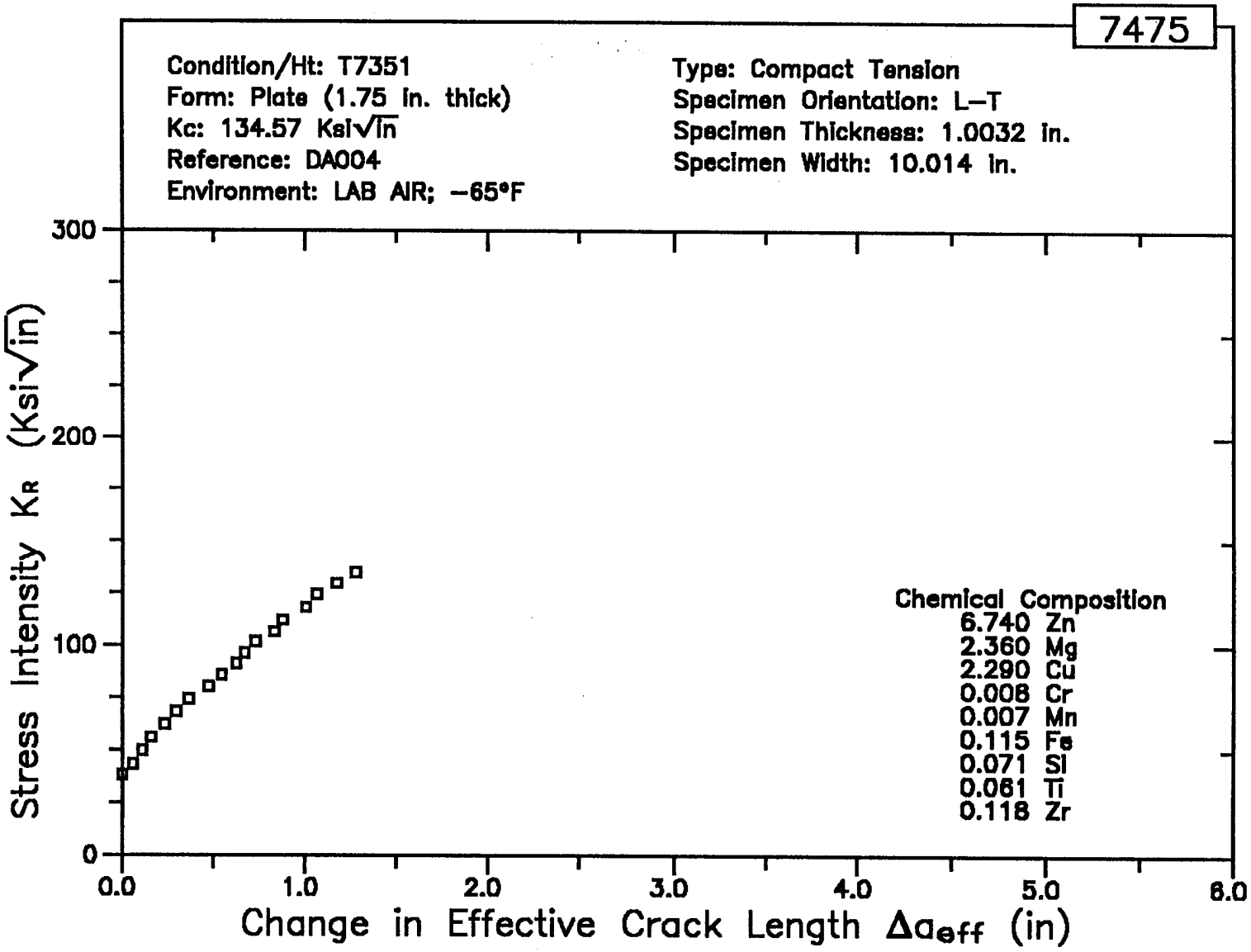



Figure 8.19.2.3.7

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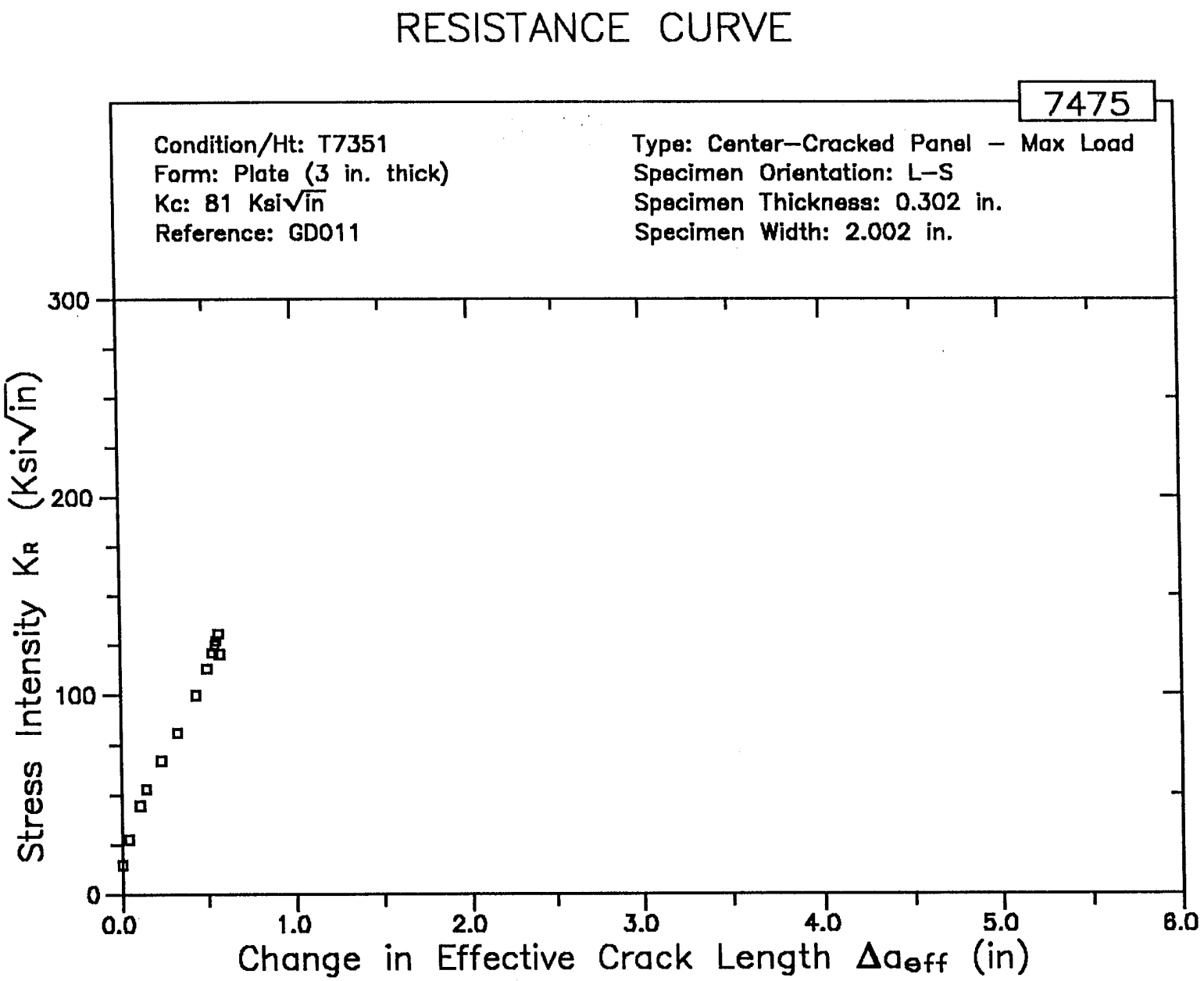



Figure 8.19.2.3.8

# RESISTANCE CURVE

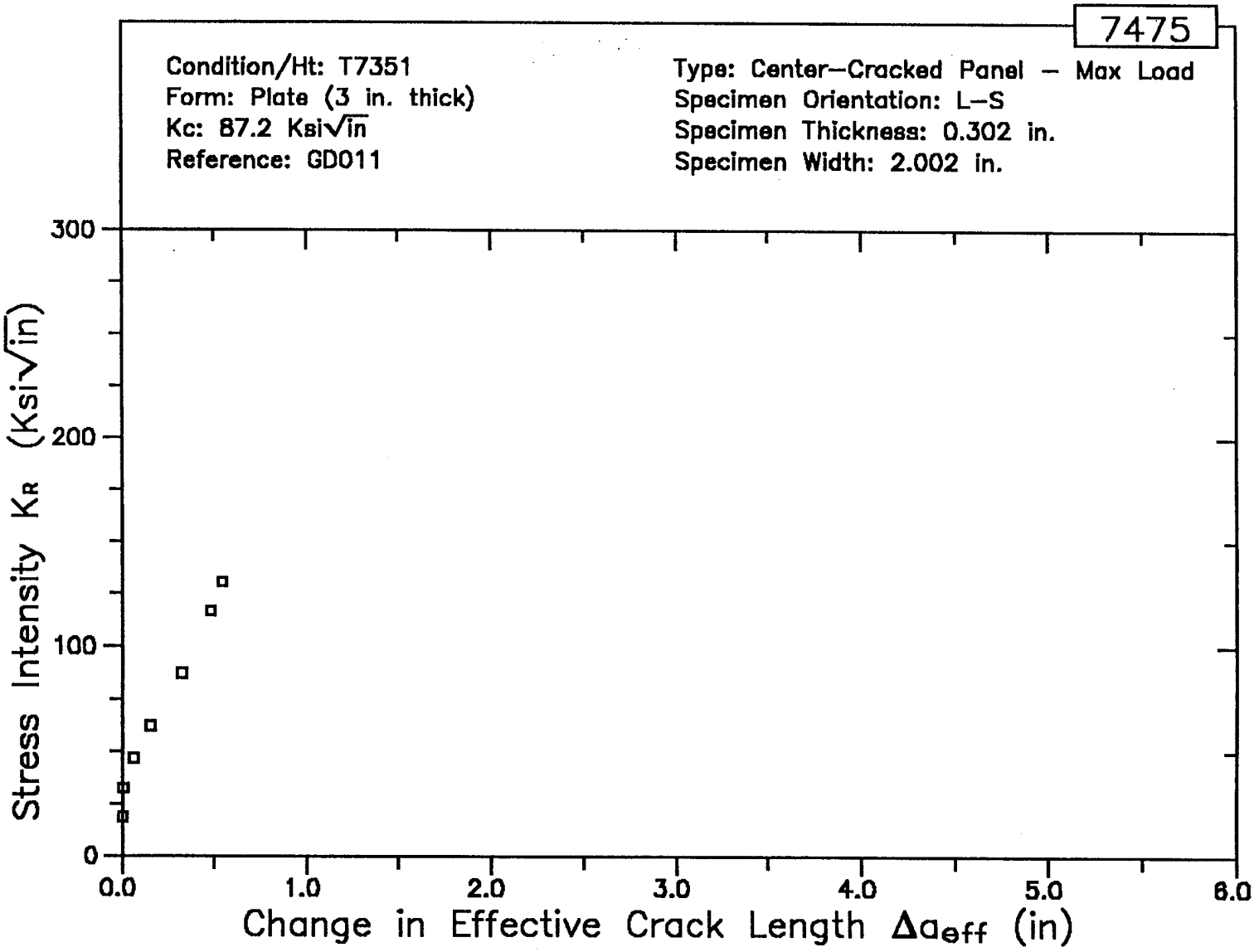



Figure 8.19.2.3.9

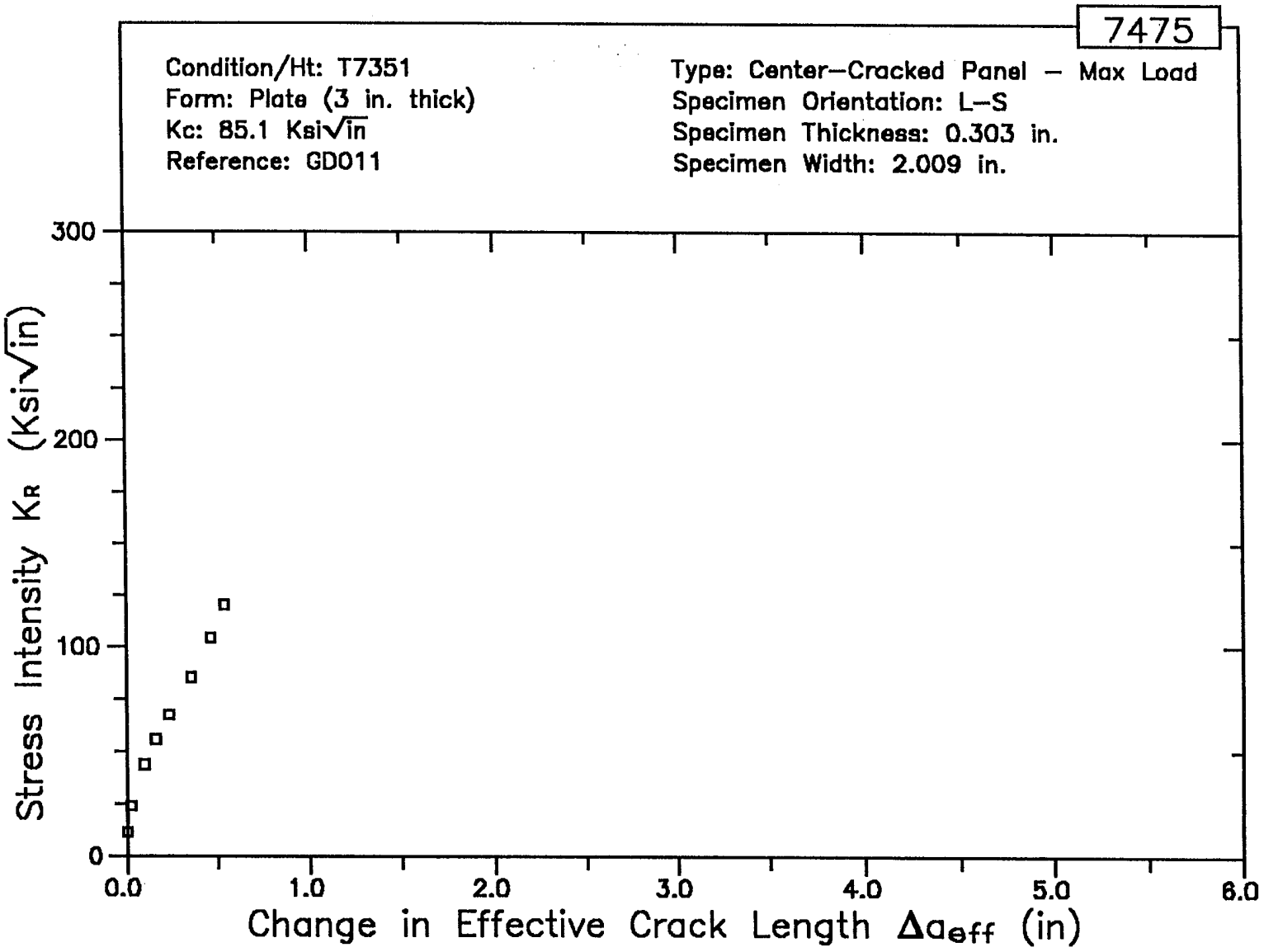



Figure 8.19.2.3.10

# RESISTANCE CURVE

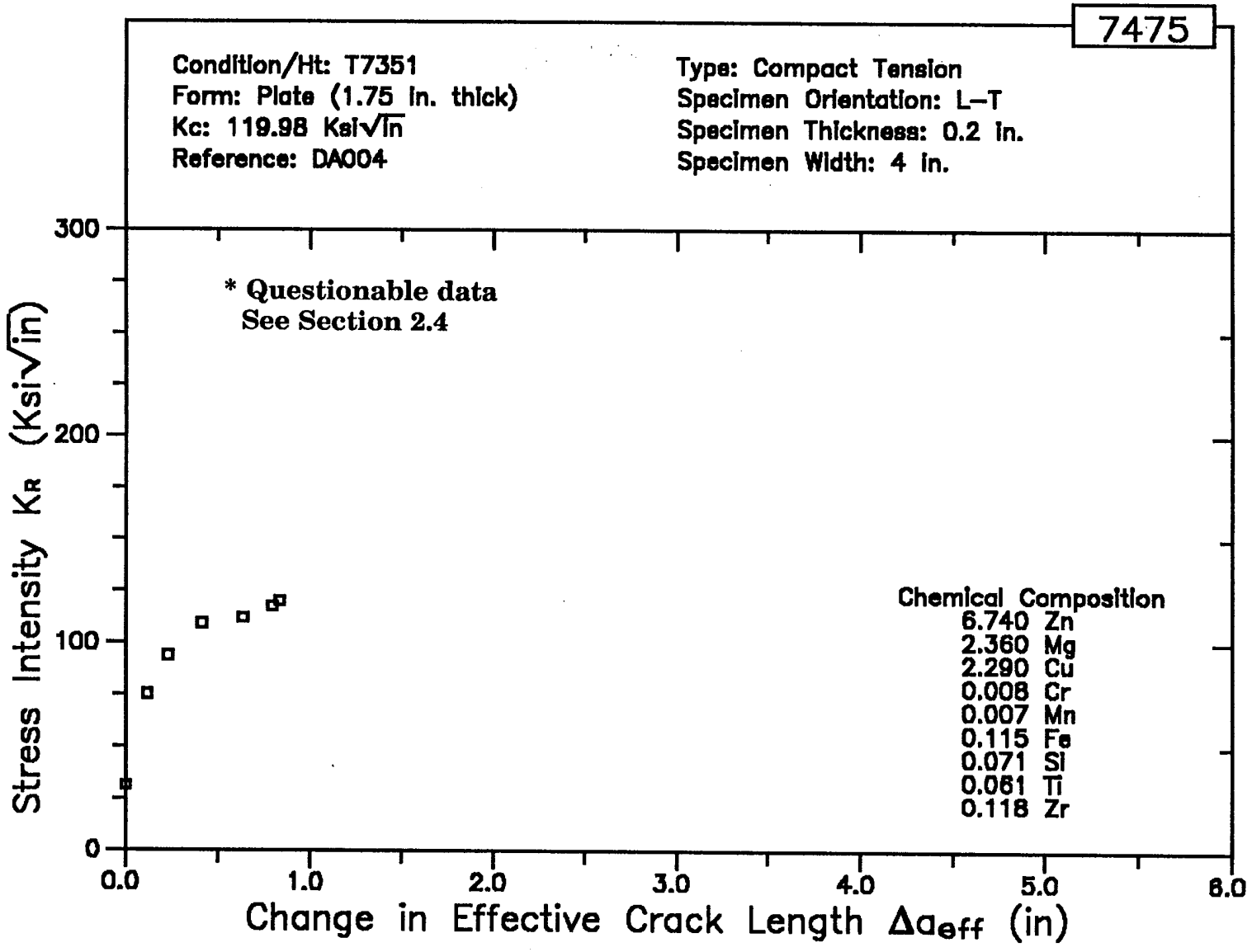



Figure 8.19.2.3.11

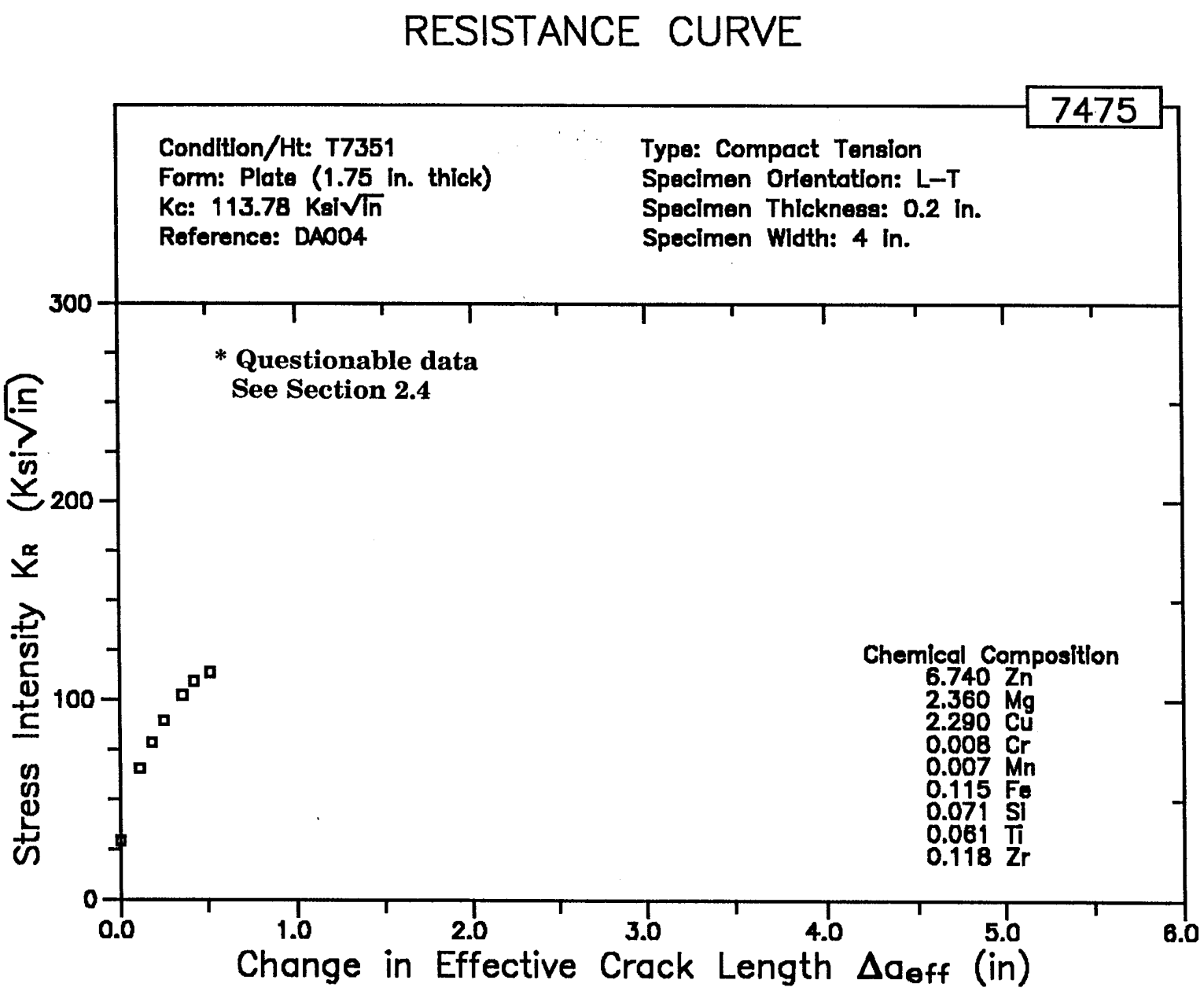



Figure 8.19.2.3.12

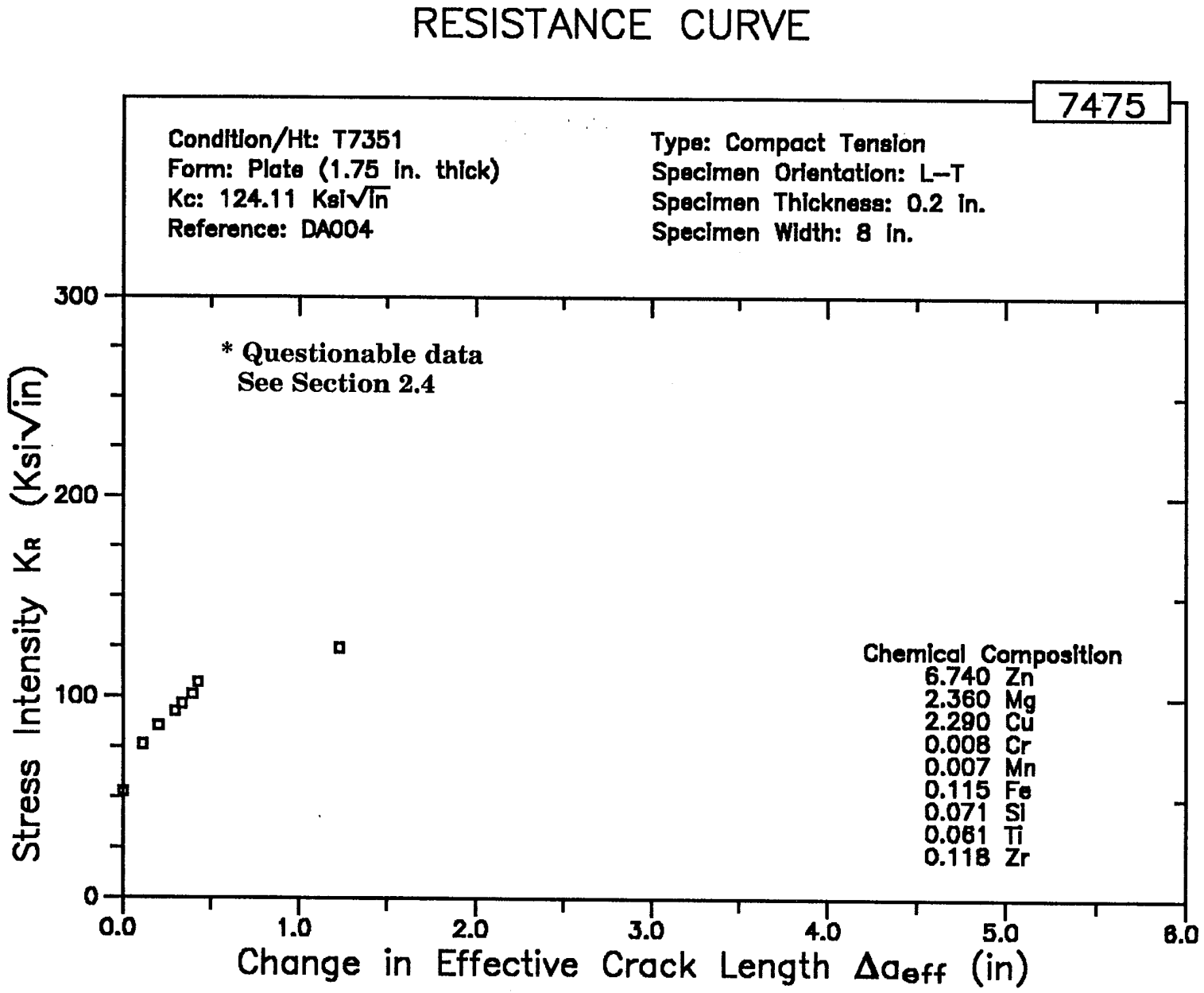



Figure 8.19.2.3.13

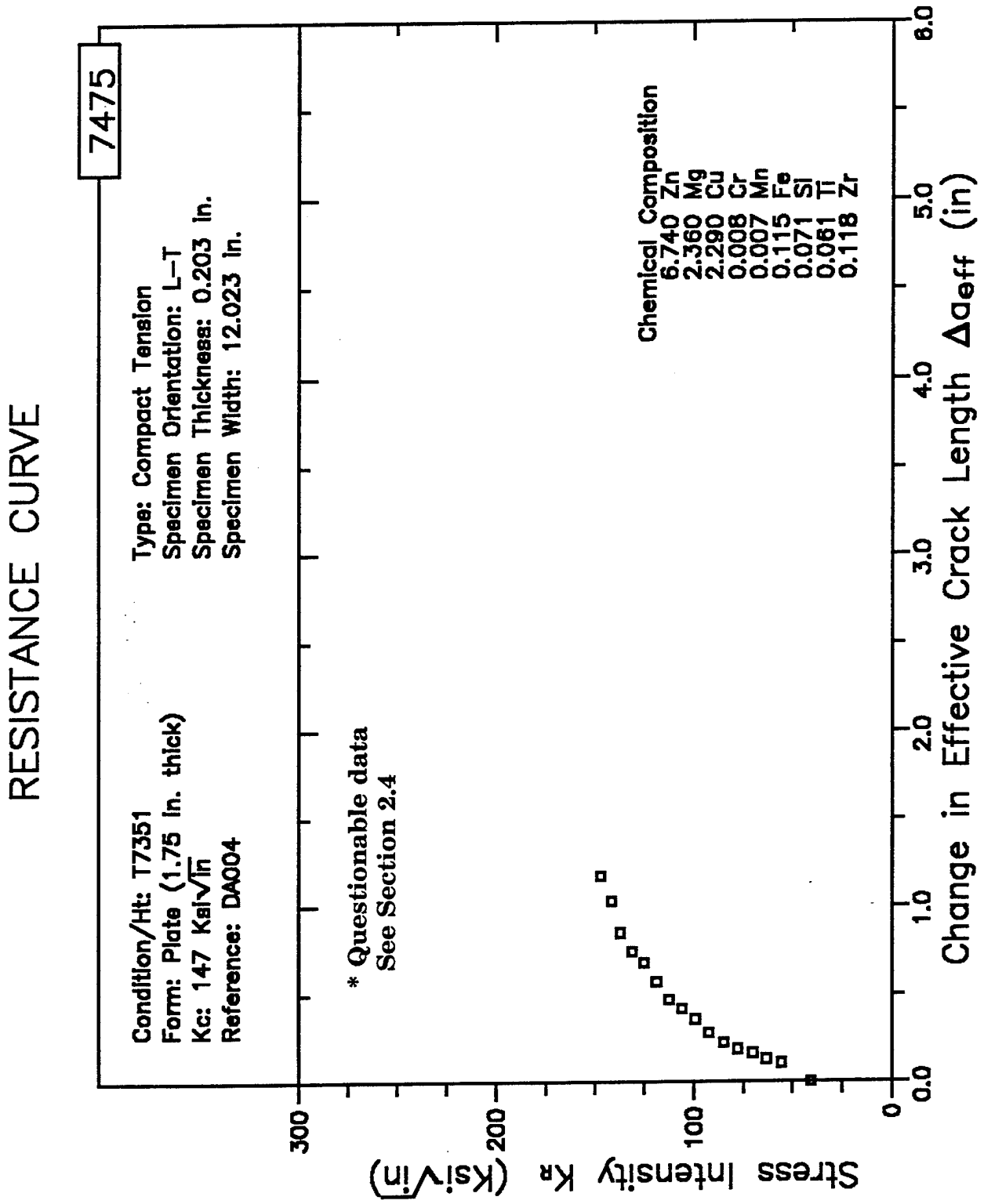



**Figure 8.19.2.3.14**

# RESISTANCE CURVE

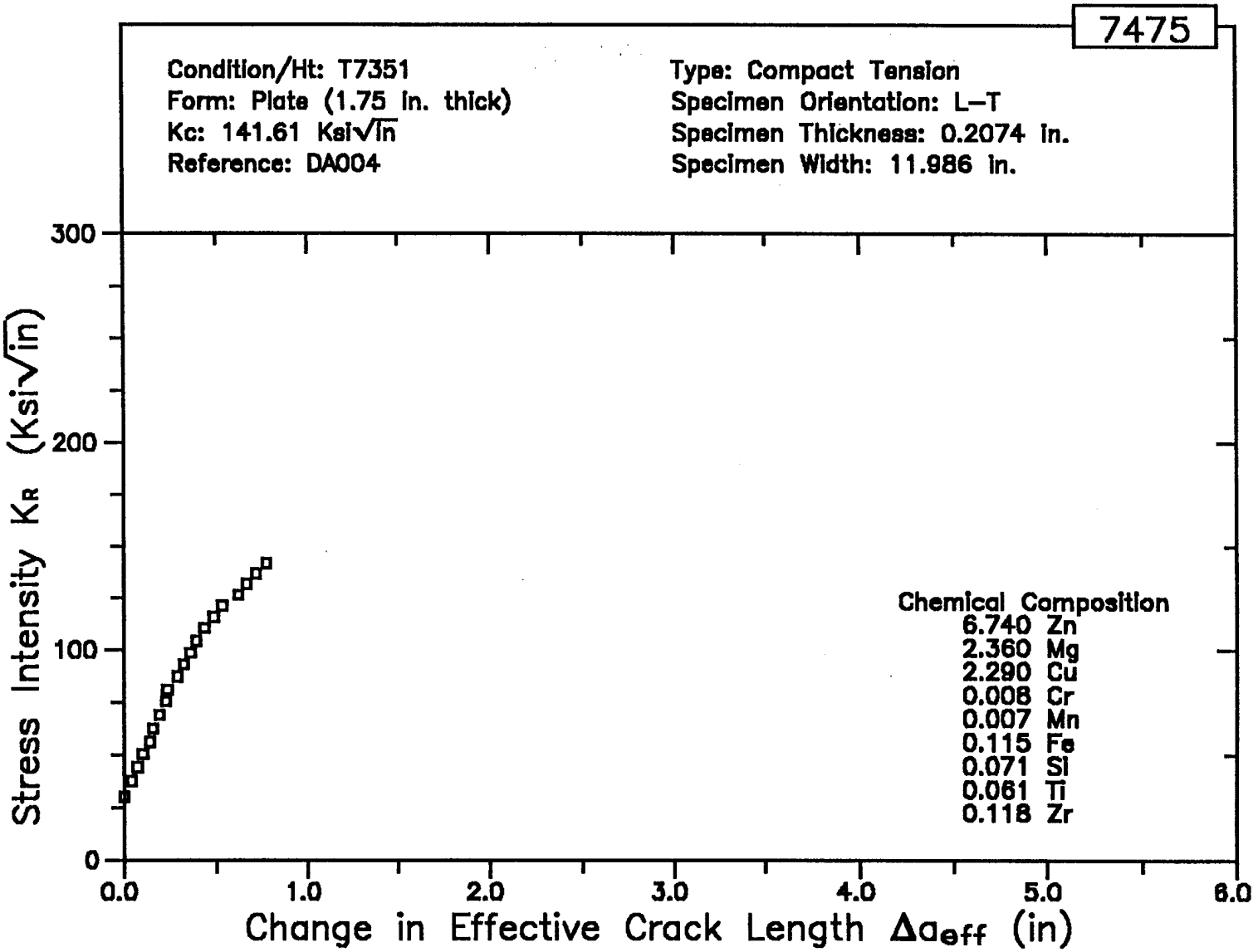



Figure 8.19.2.3.15

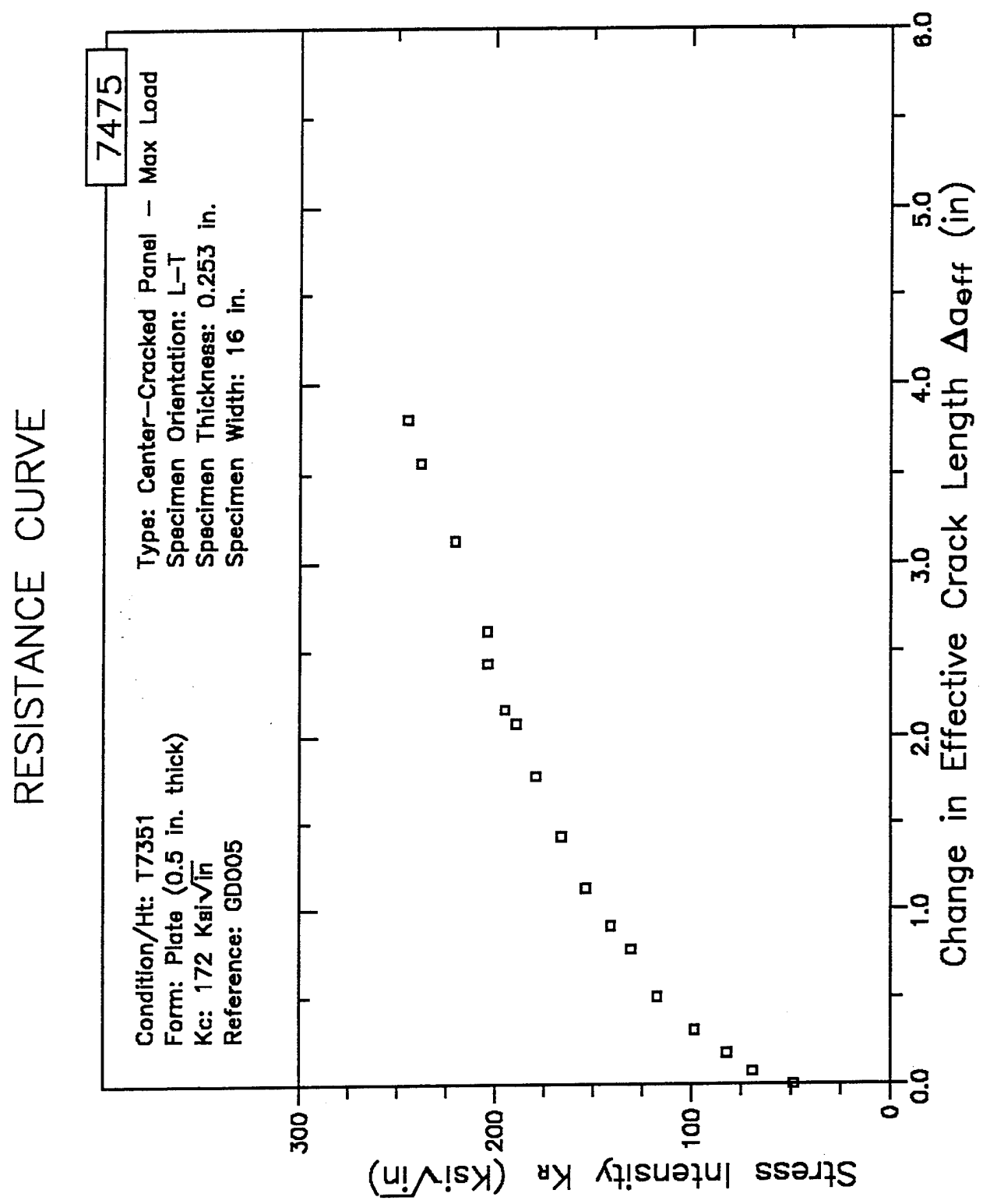



**Figure 8.19.2.3.16**

# RESISTANCE CURVE

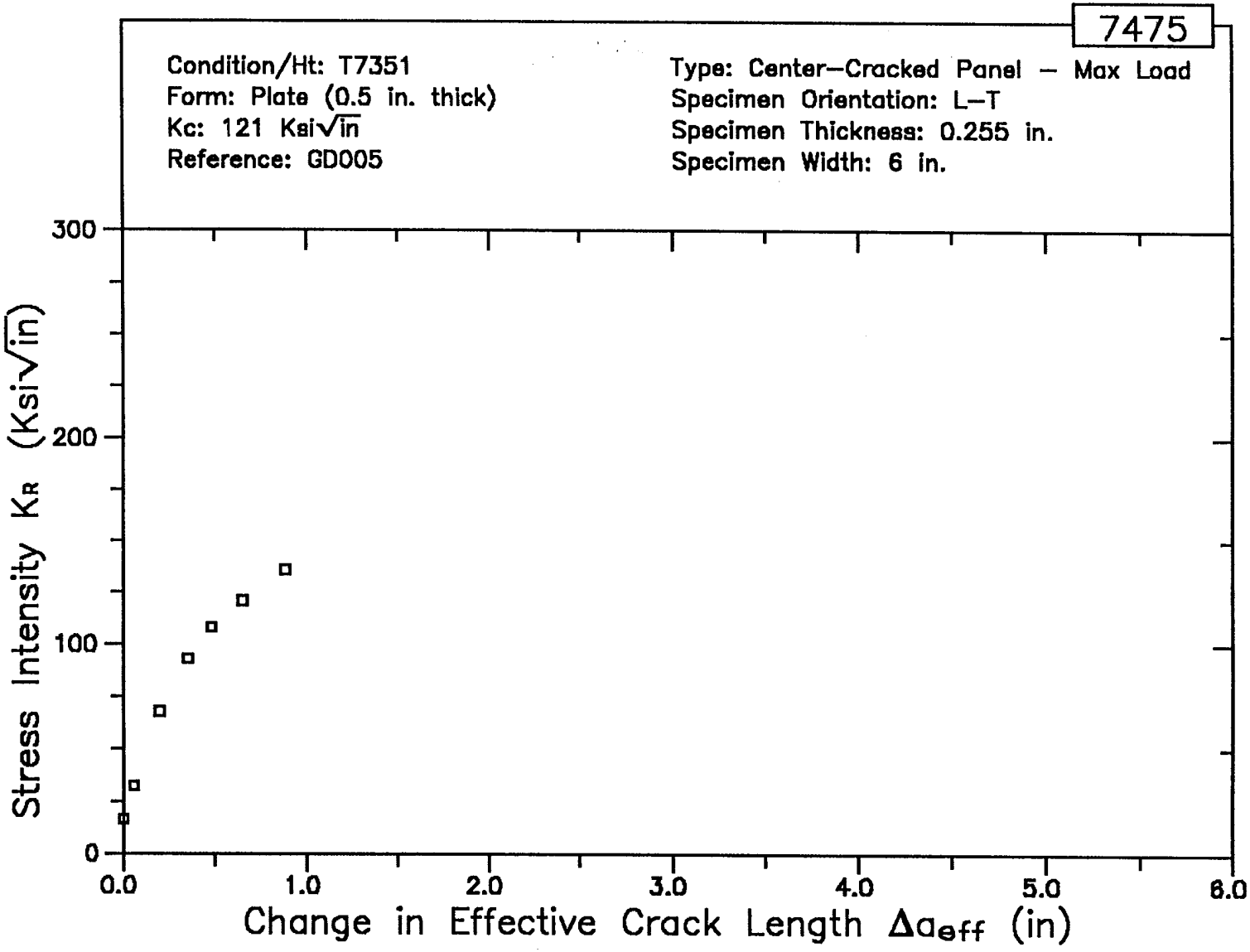



Figure 8.19.2.3.17

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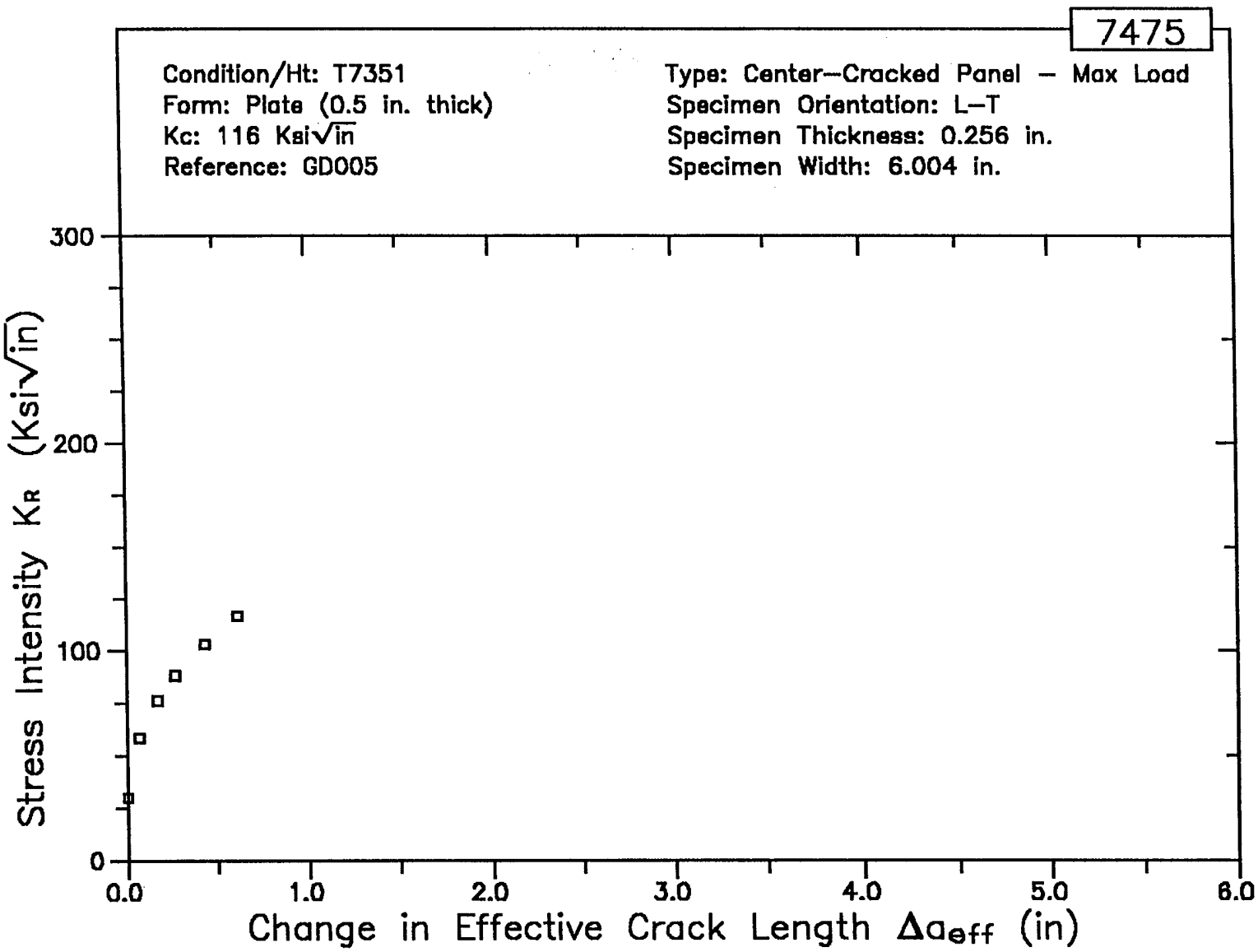



Figure 8.19.2.3.18

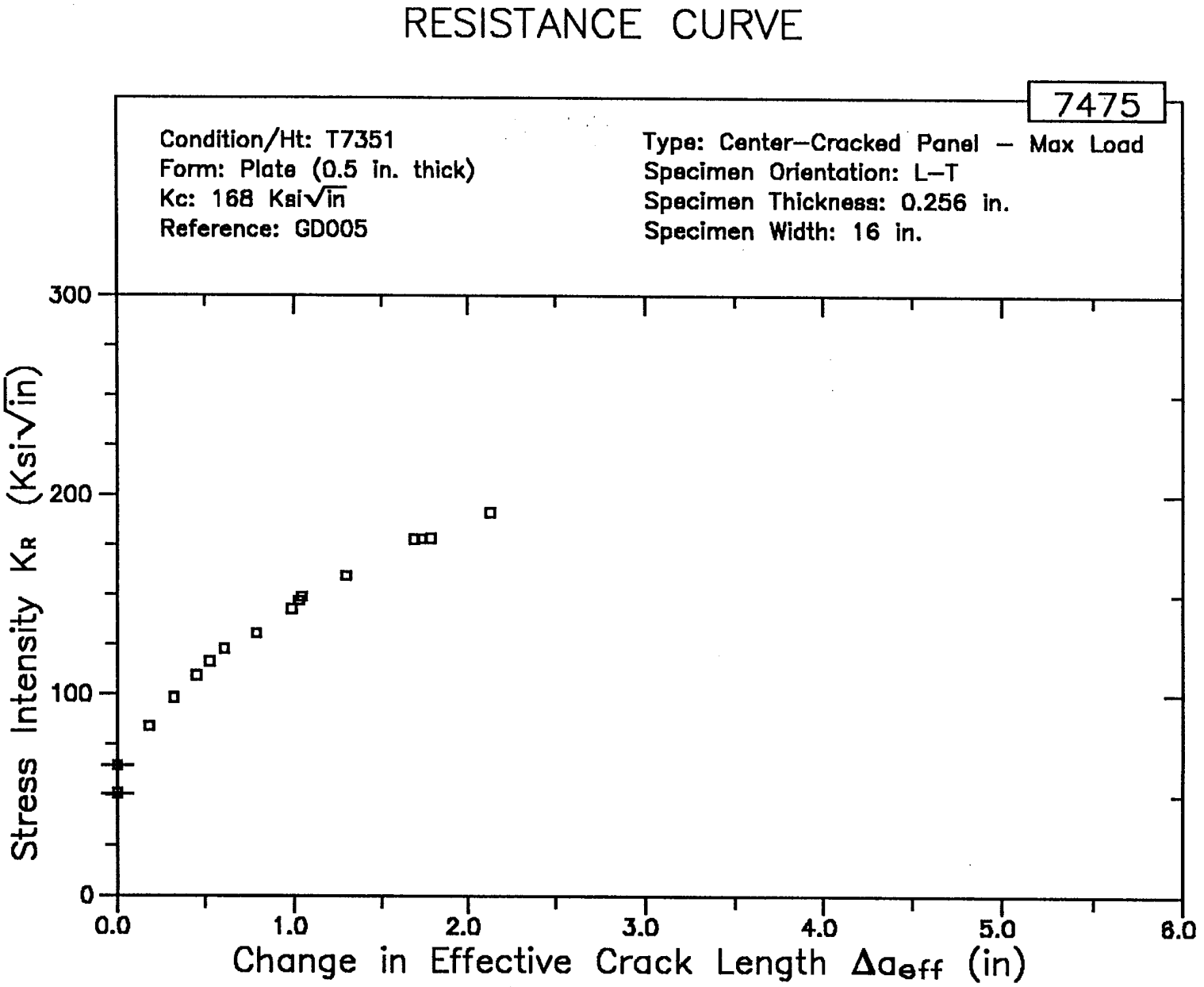



Figure 8.19.2.3.19

# RESISTANCE CURVE

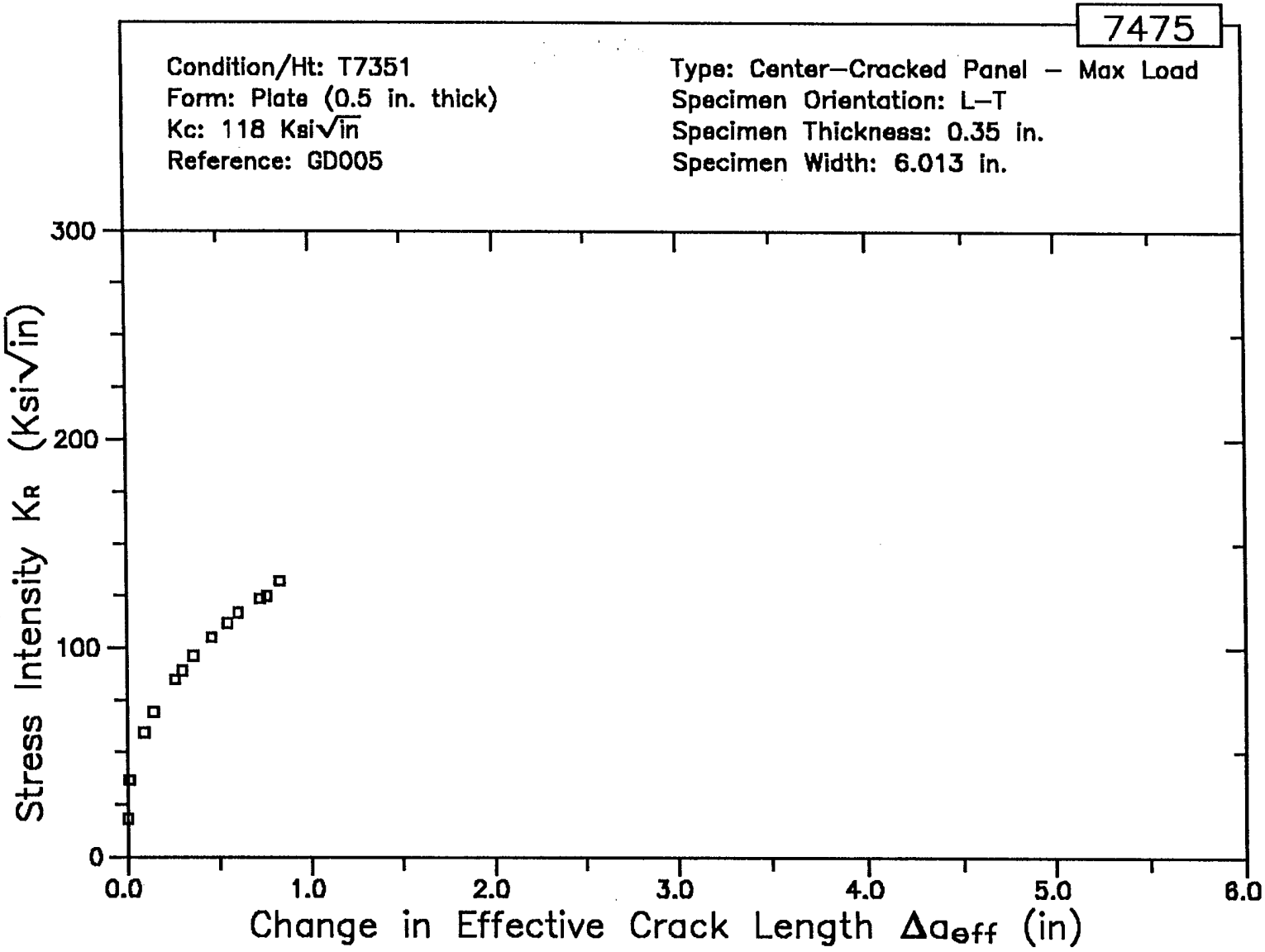



Figure 8.19.2.3.20

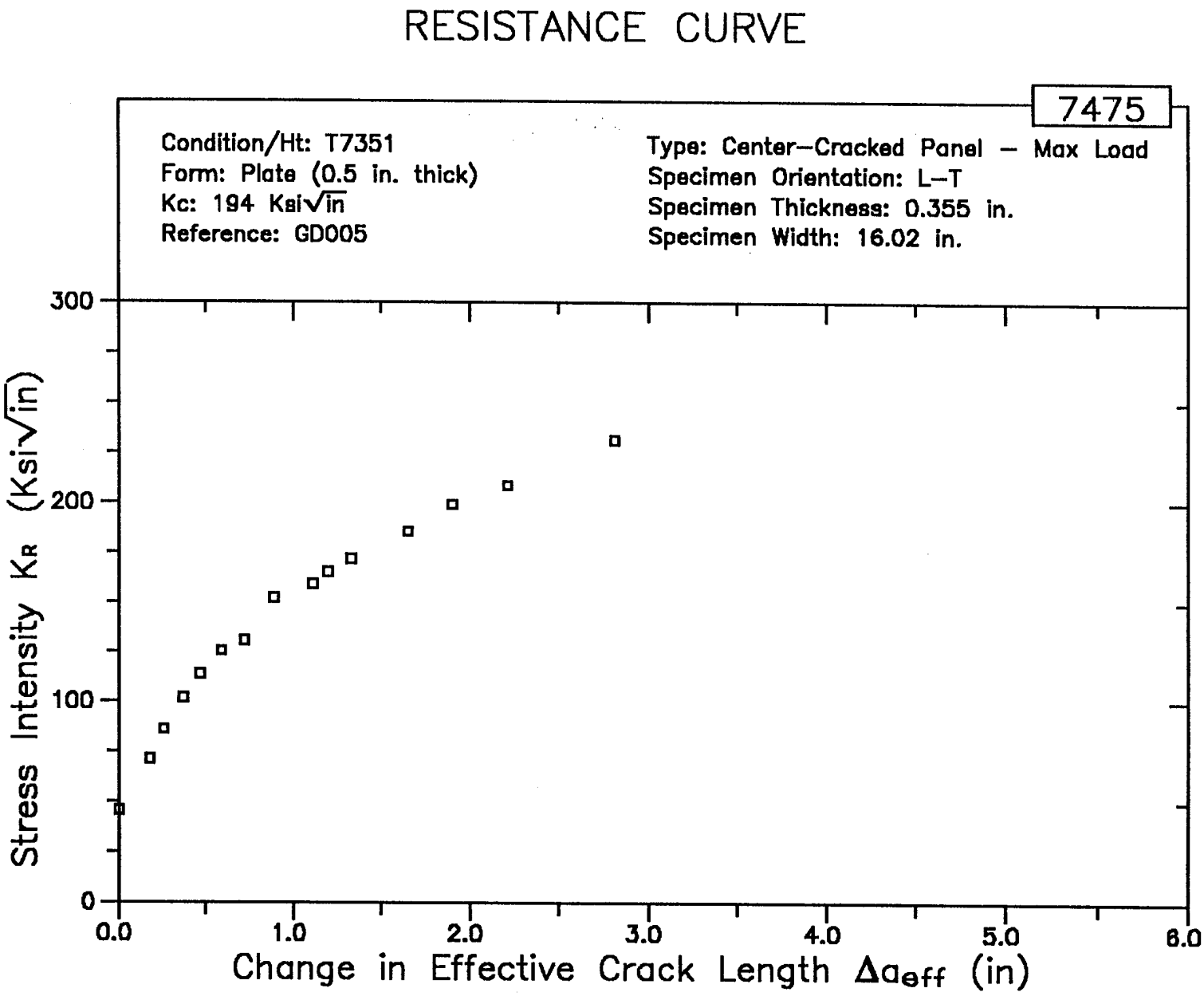



Figure 8.19.2.3.21

# RESISTANCE CURVE

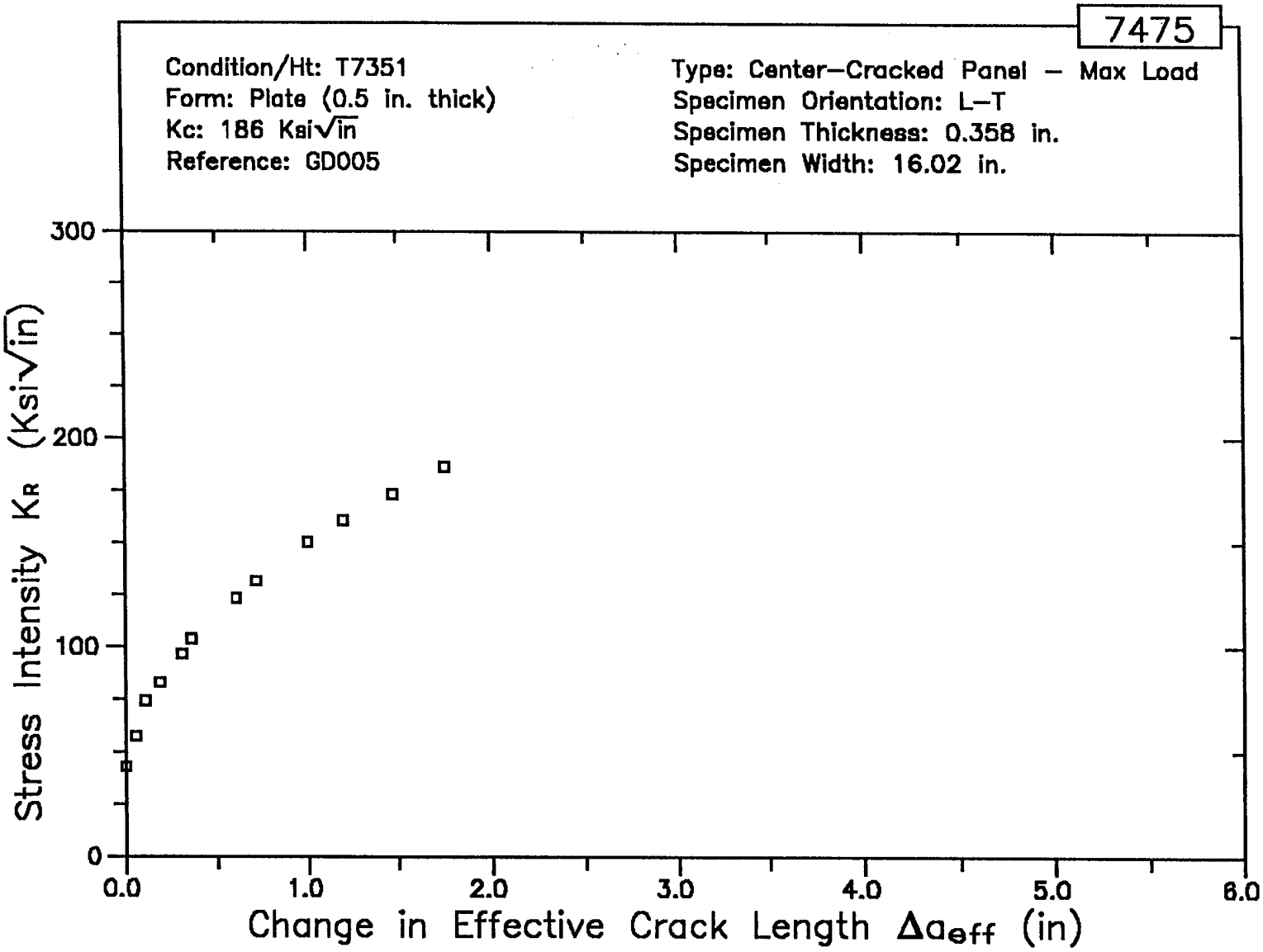



Figure 8.19.2.3.22

# RESISTANCE CURVE

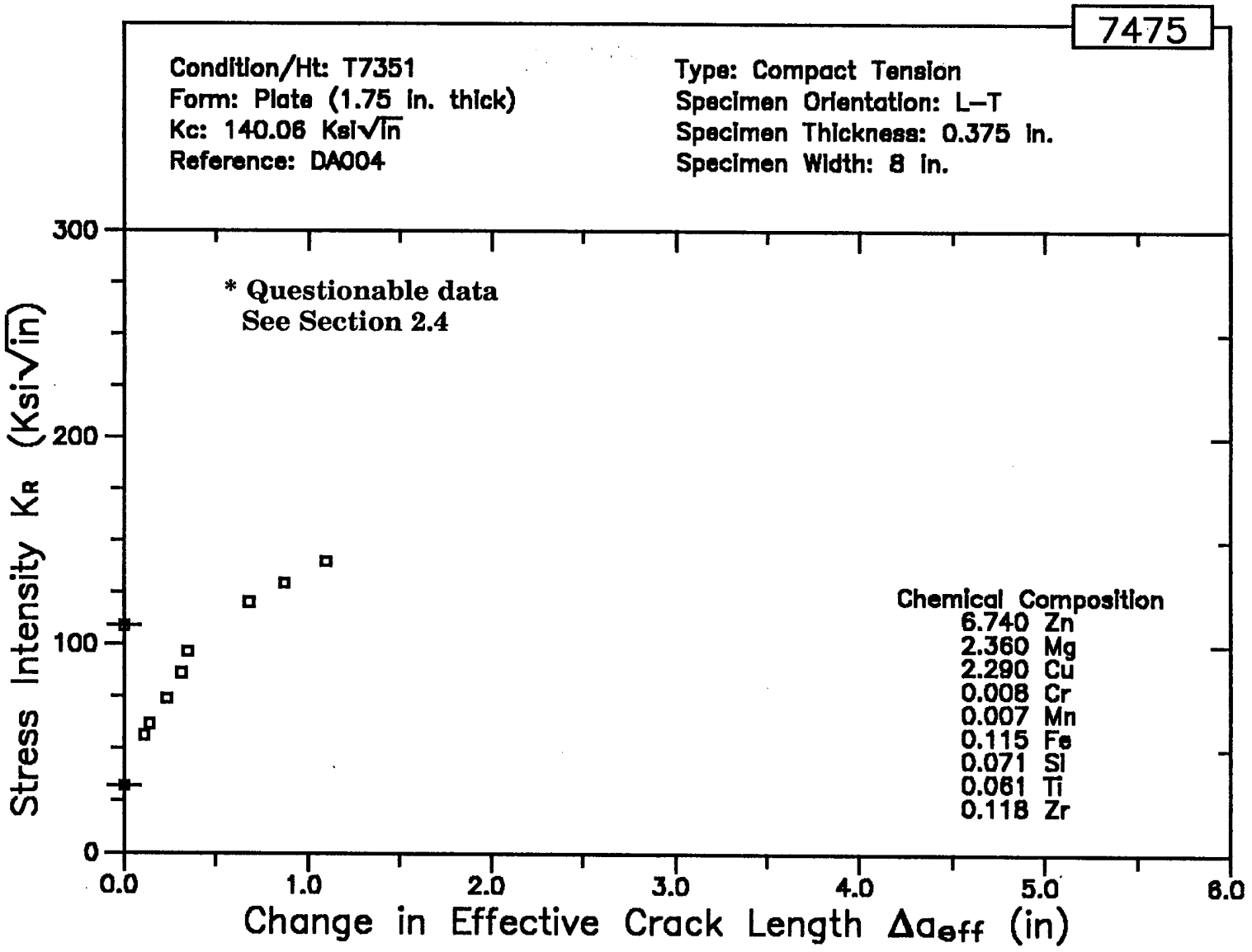



Figure 8.19.2.3.23

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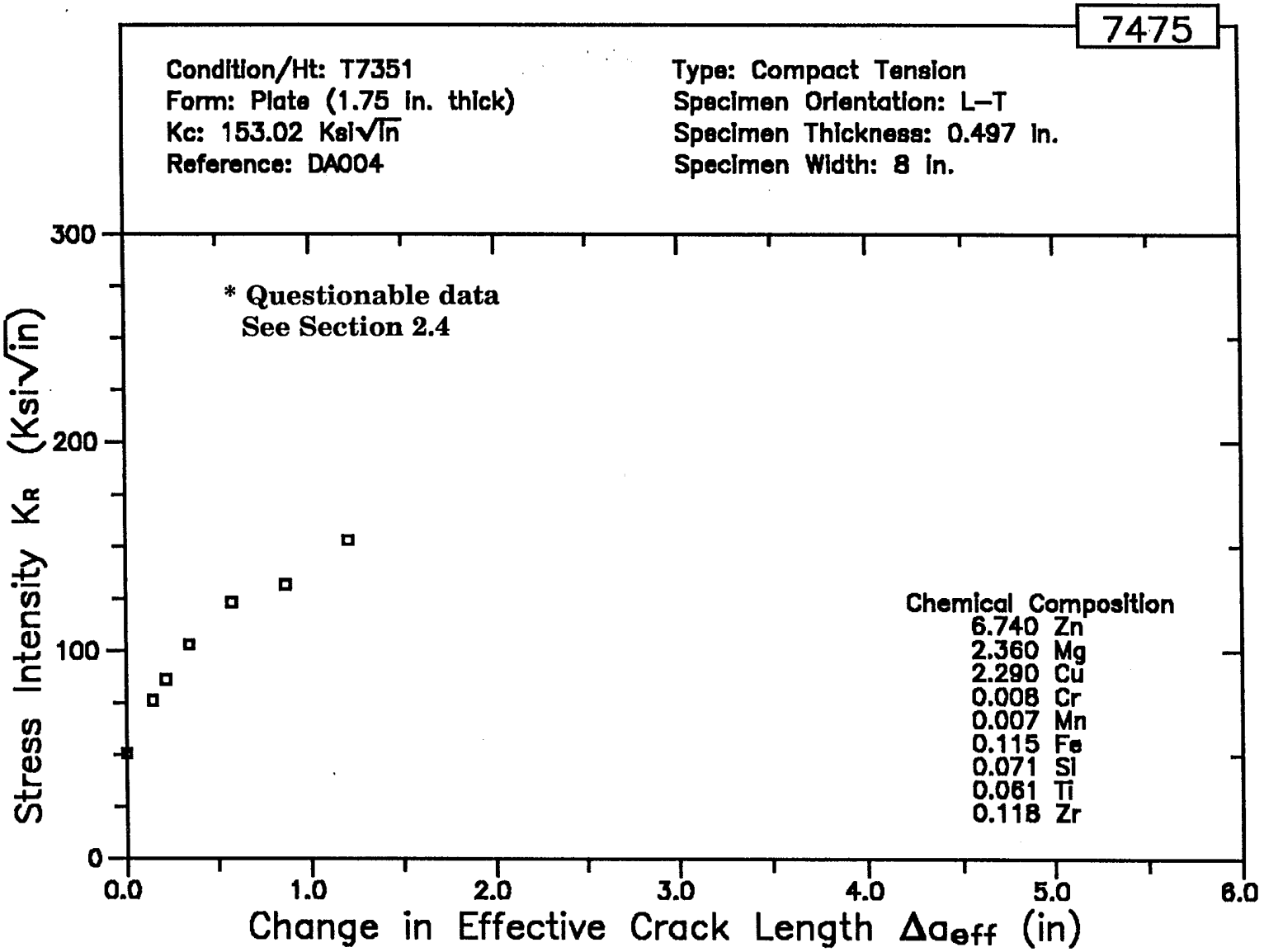



Figure 8.19.2.3.24

# RESISTANCE CURVE

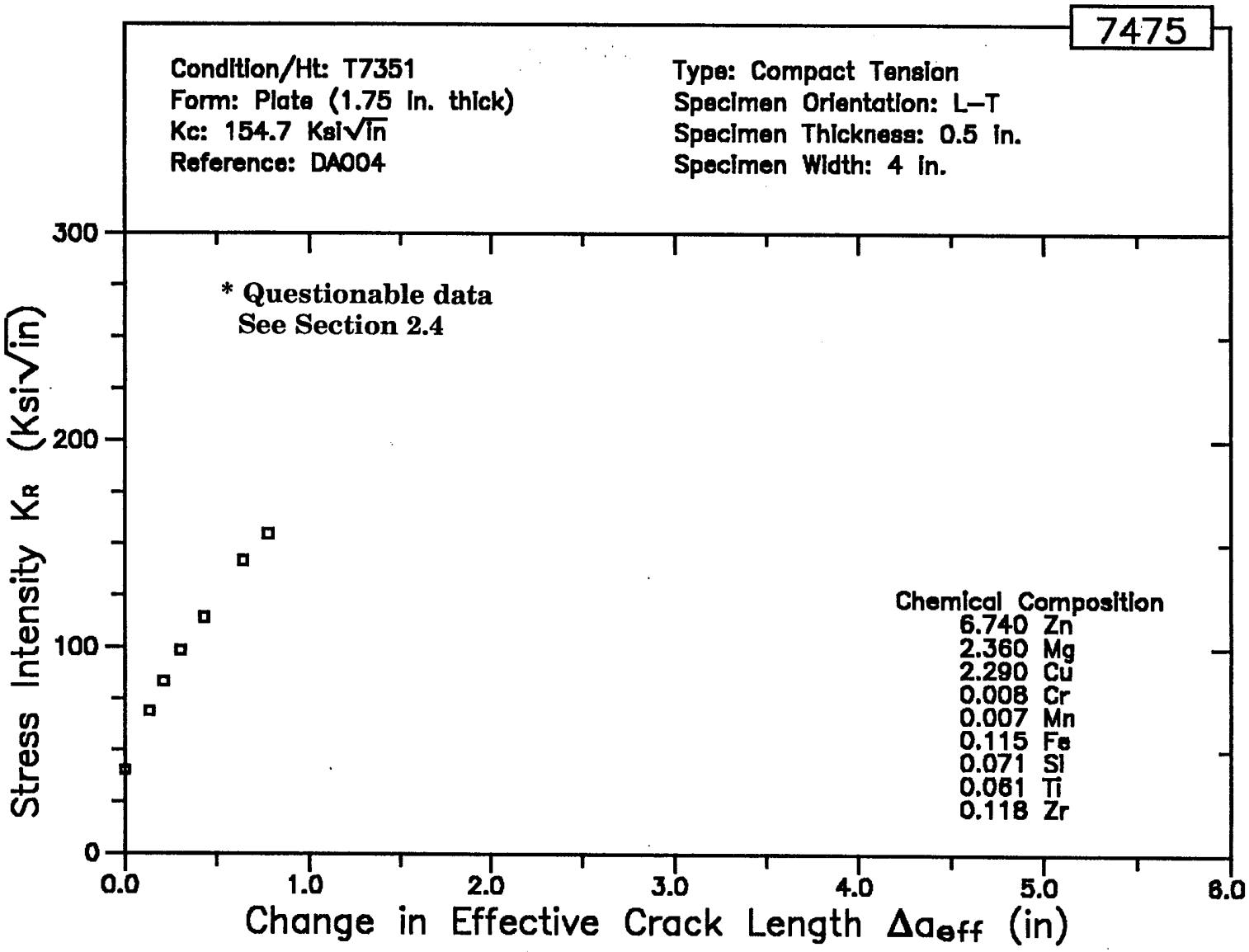



Figure 8.19.2.3.25

# RESISTANCE CURVE

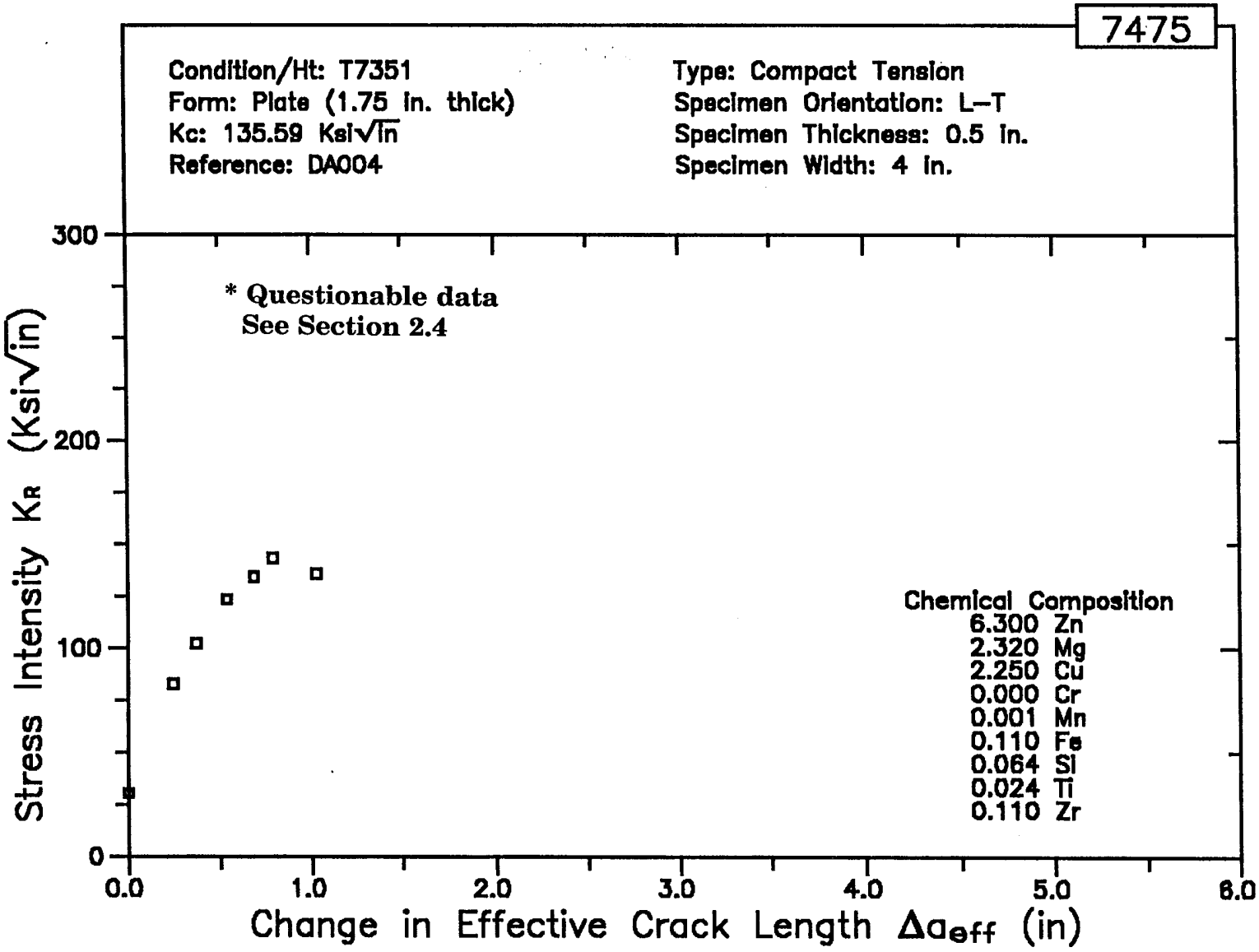



Figure 8.19.2.3.26

# RESISTANCE CURVE

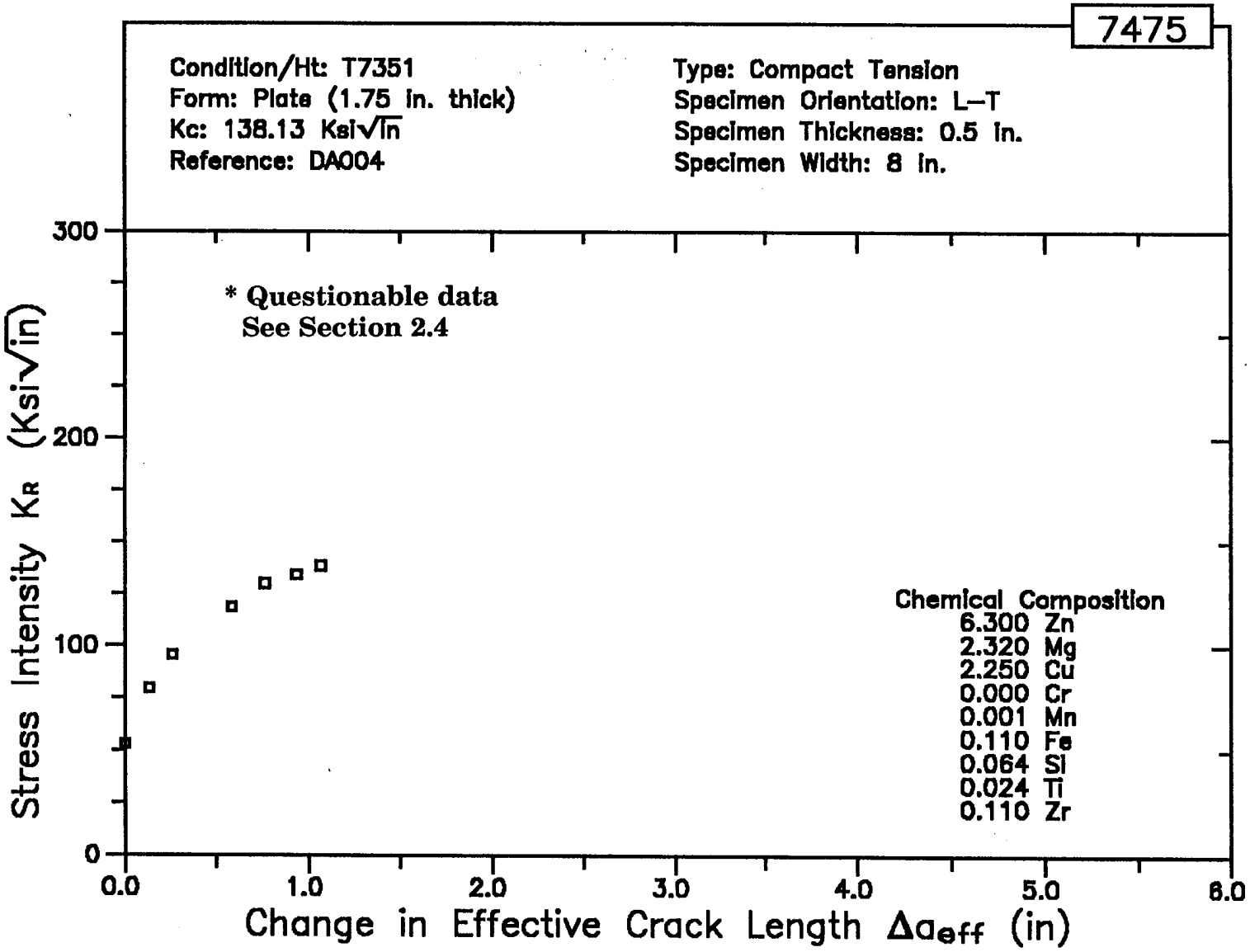



Figure 8.19.2.3.27

# RESISTANCE CURVE

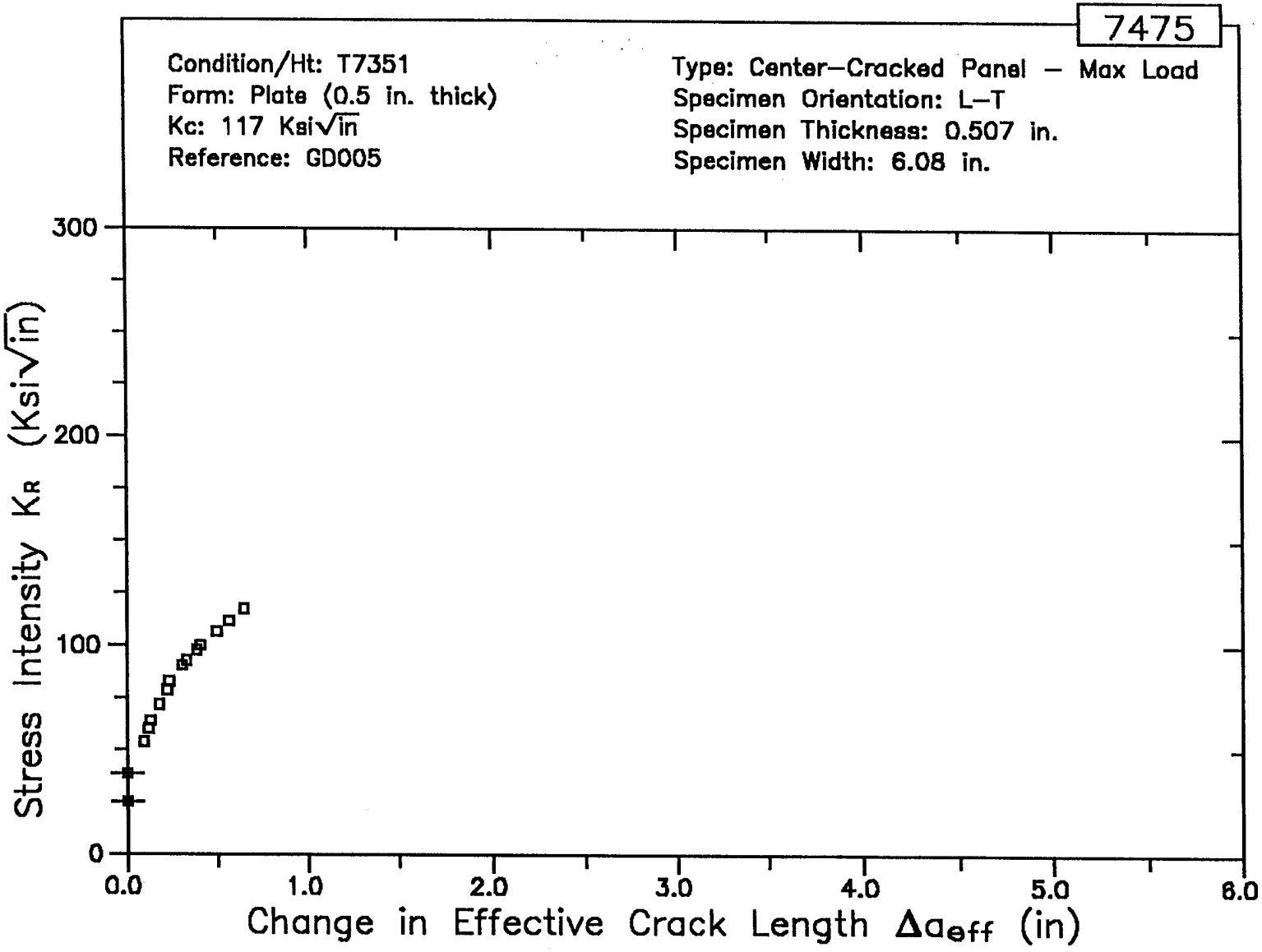



Figure 8.19.2.3.28

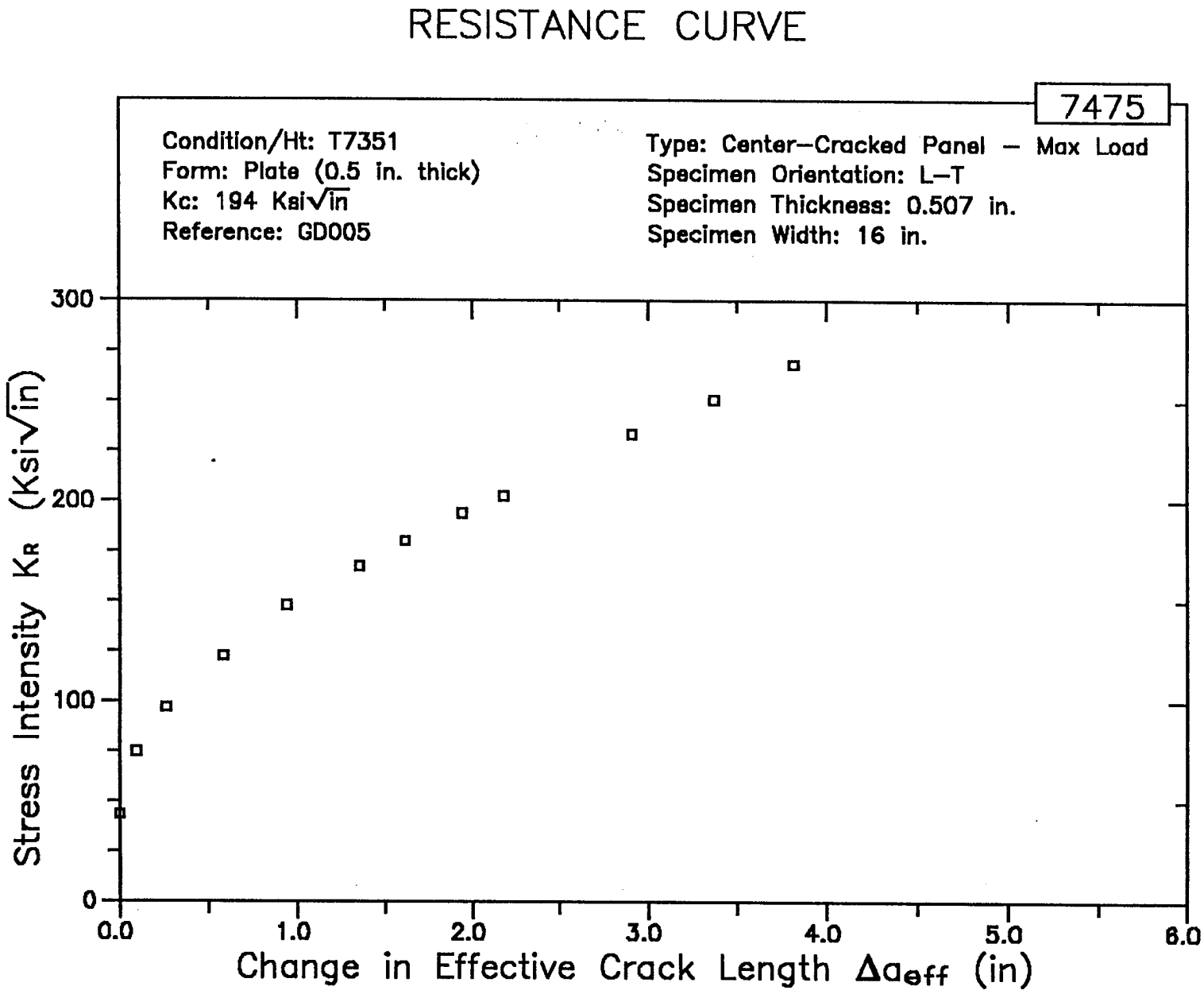



Figure 8.19.2.3.29

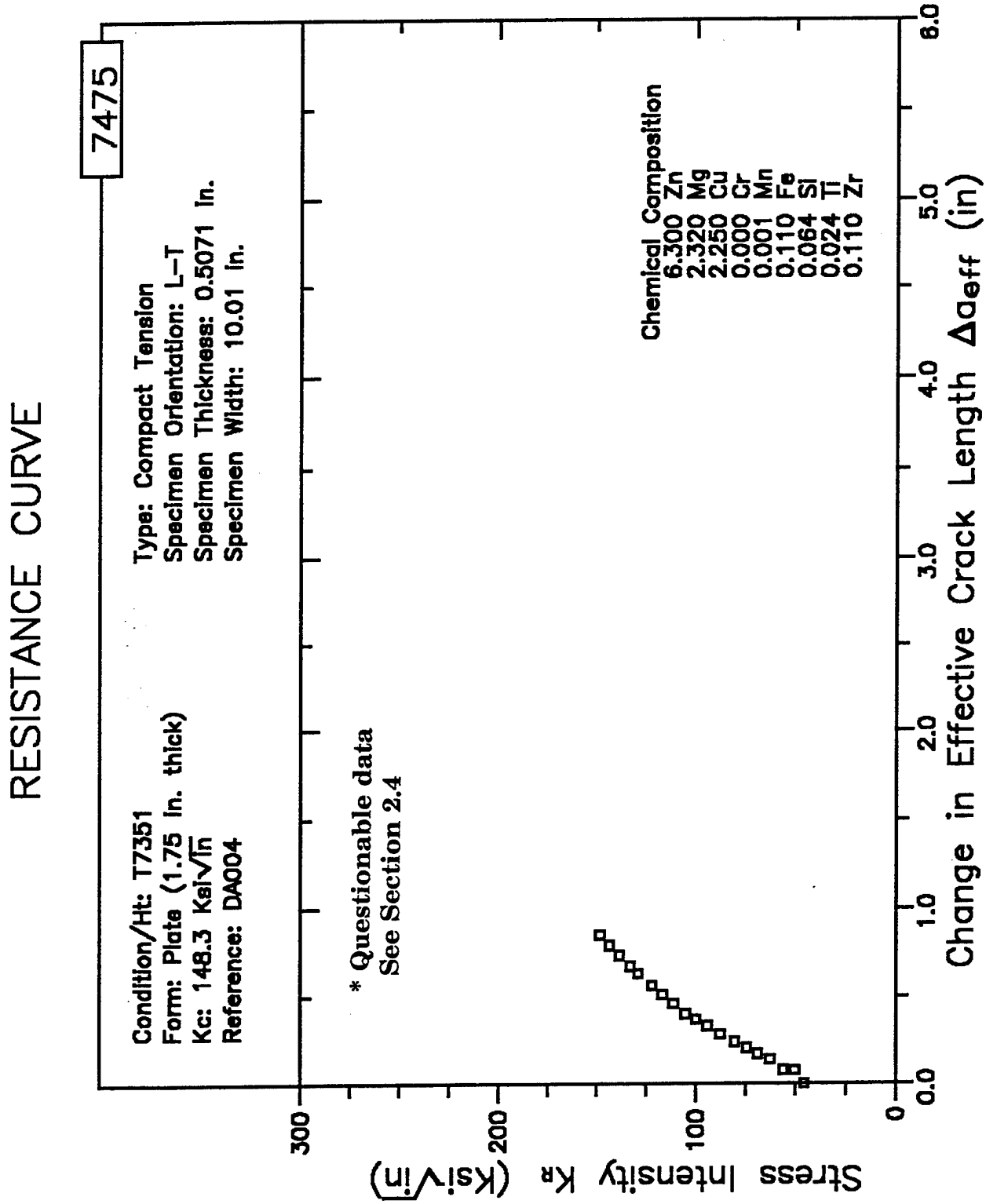



**Figure 8.19.2.3.30**

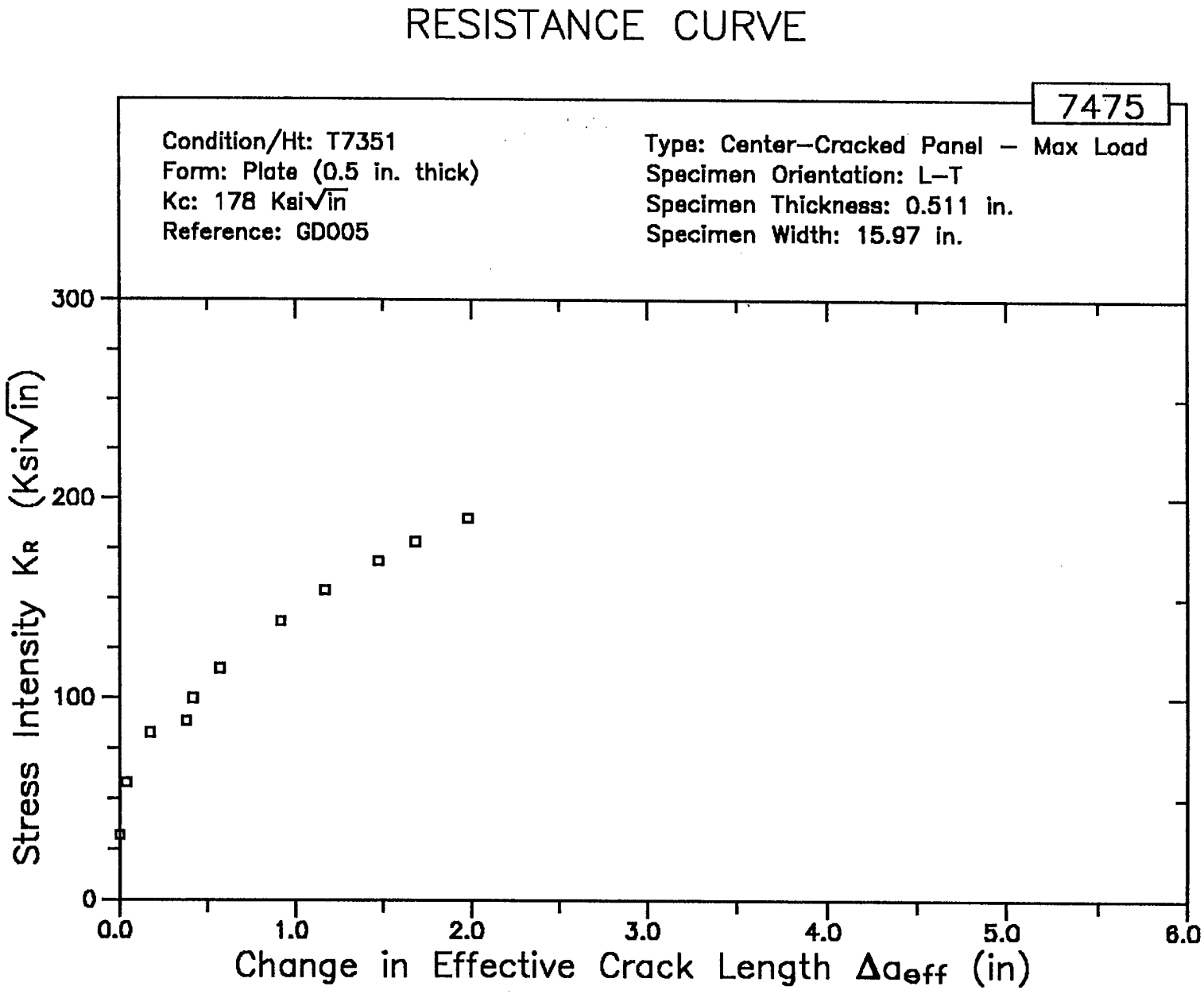



Figure 8.19.2.3.31

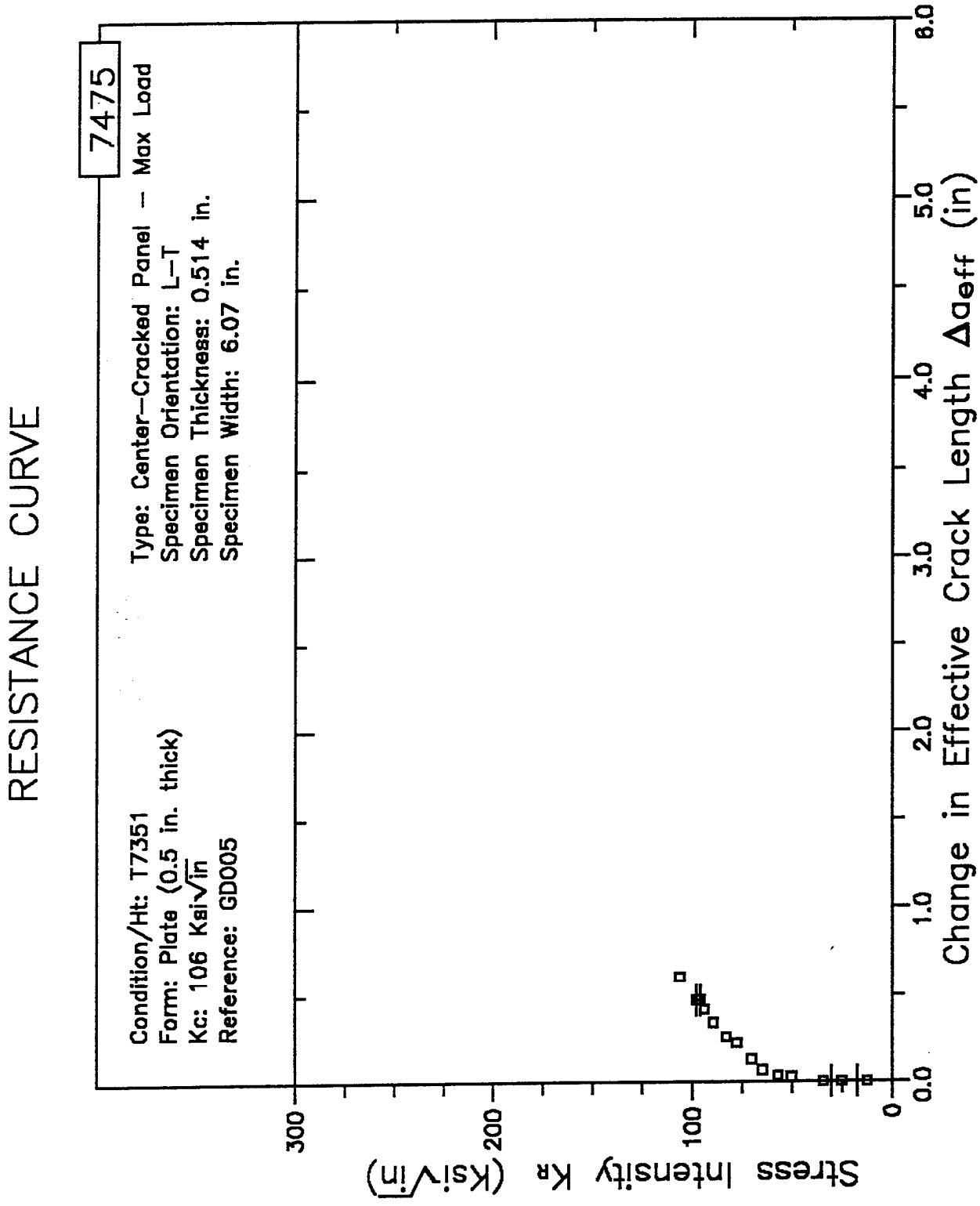



**Figure 8.19.2.3.32**

# RESISTANCE CURVE

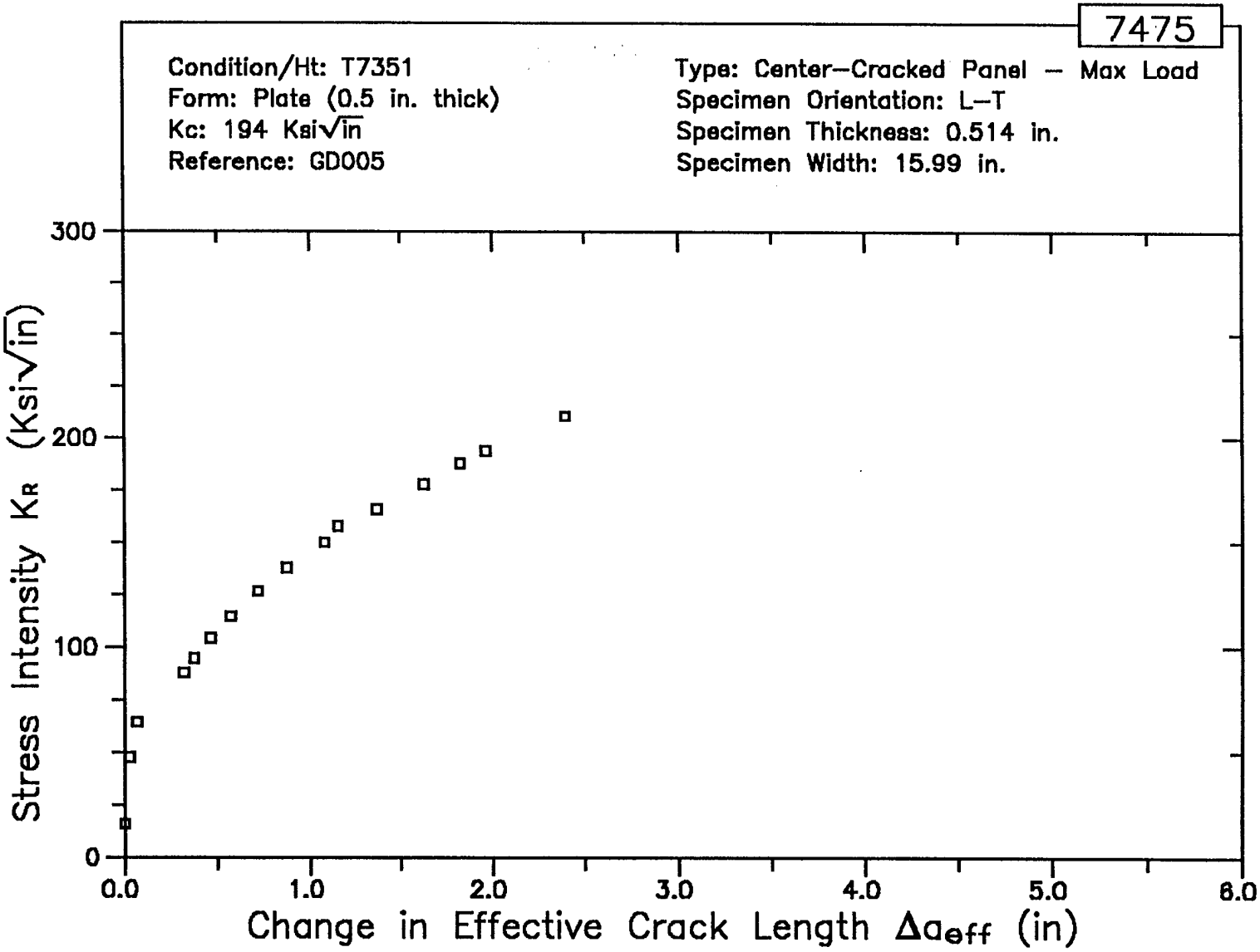



Figure 8.19.2.3.33

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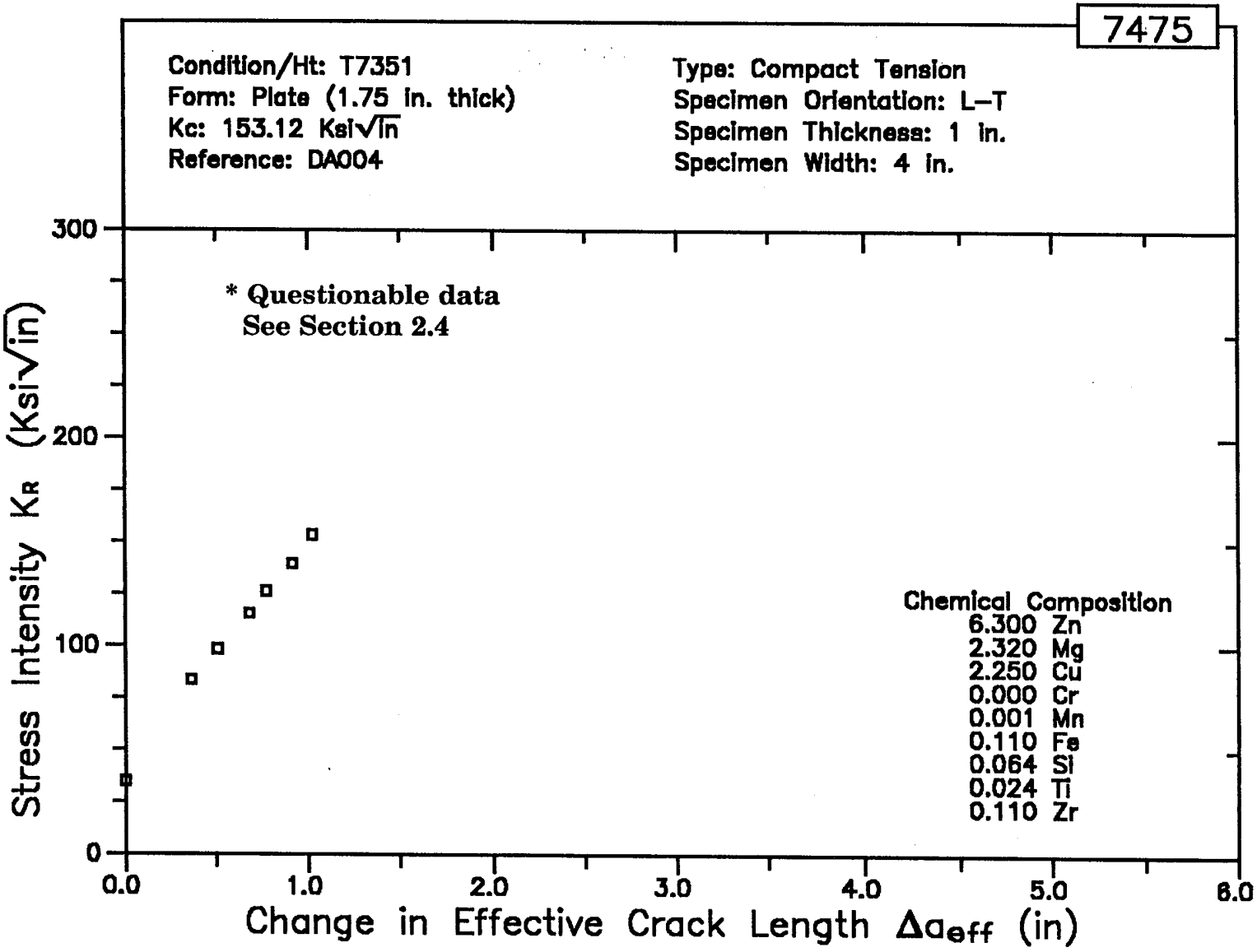



Figure 8.19.2.3.34

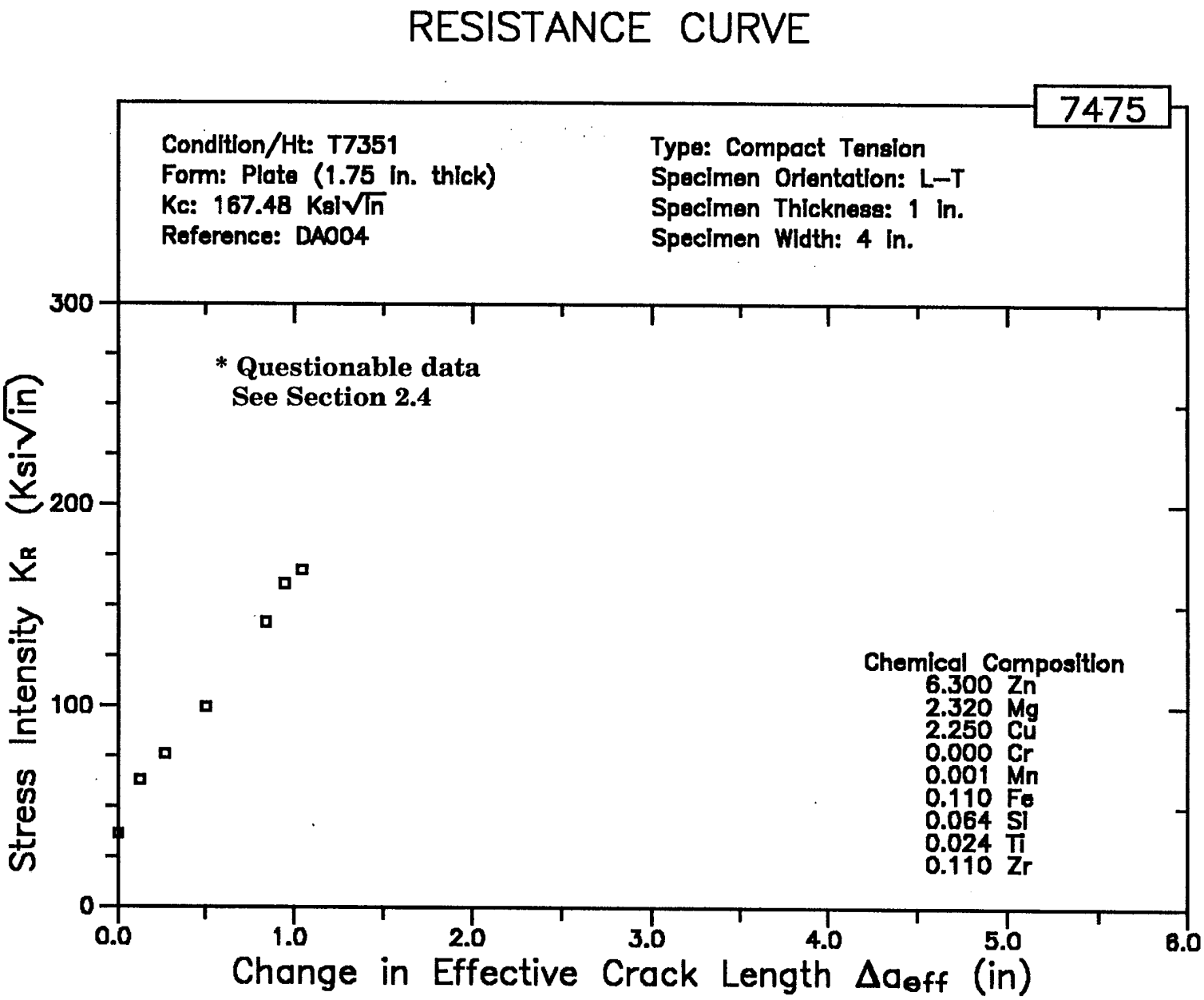



Figure 8.19.2.3.35

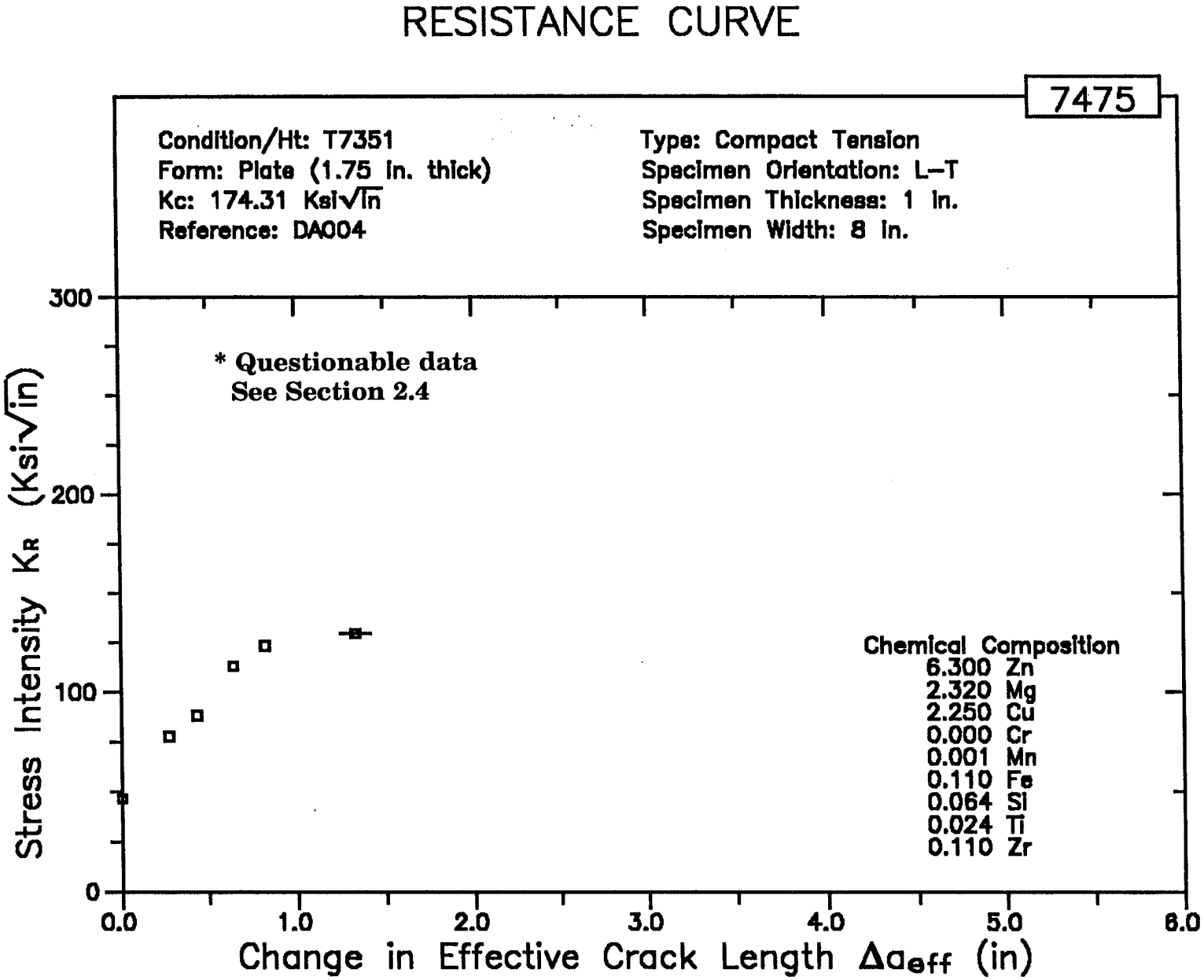



Figure 8.19.2.3.36

# RESISTANCE CURVE

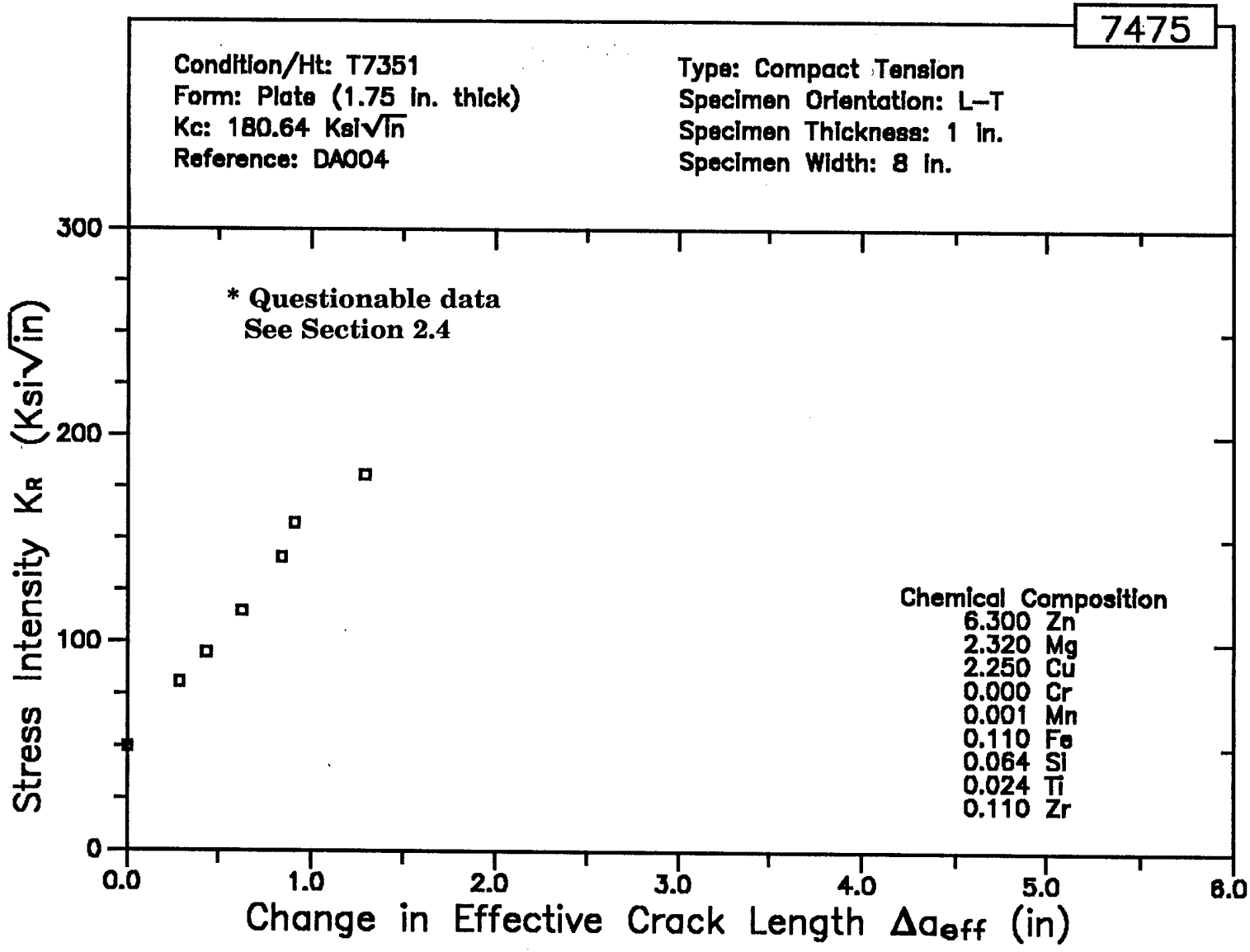



Figure 8.19.2.3.37

# RESISTANCE CURVE

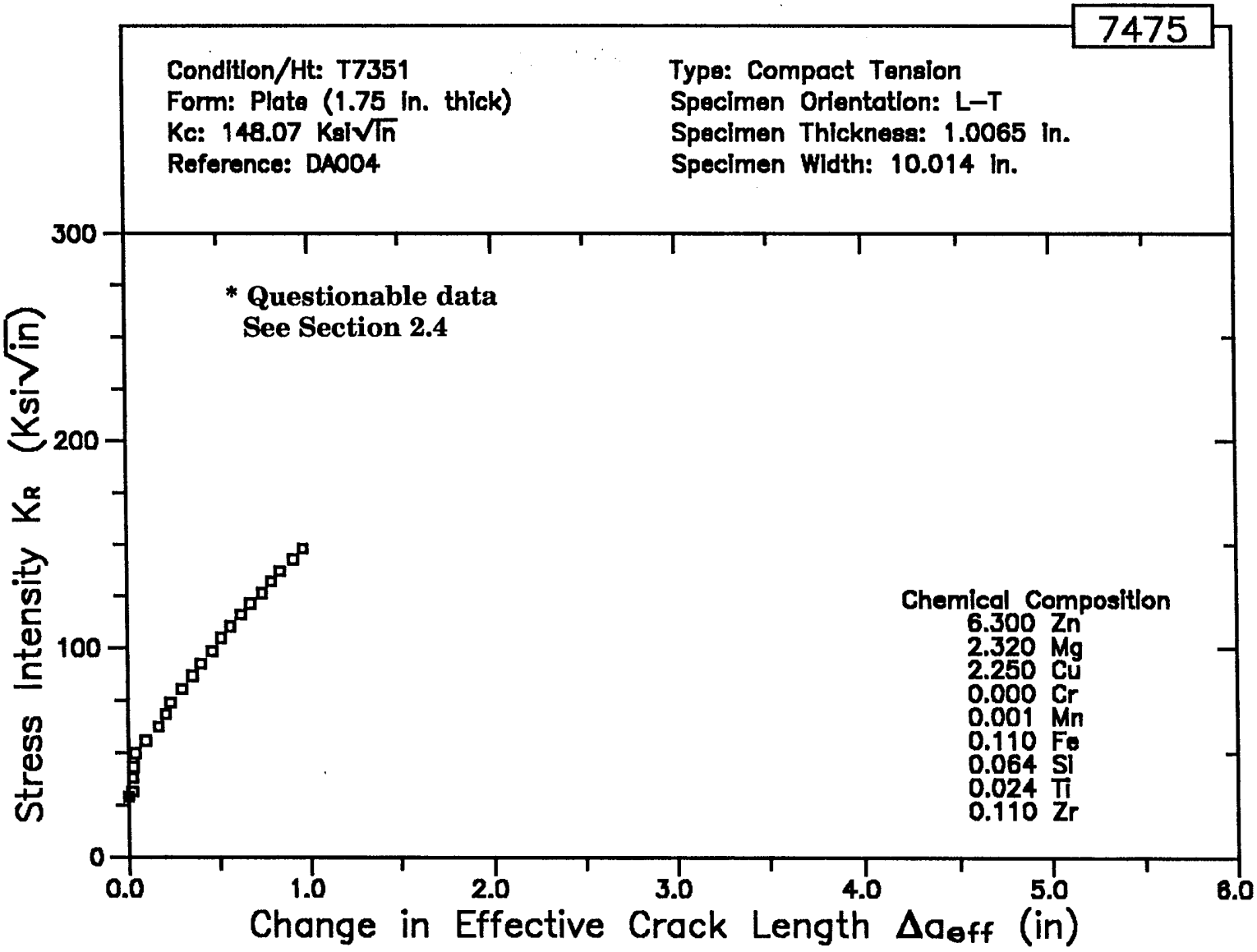



Figure 8.19.2.3.38

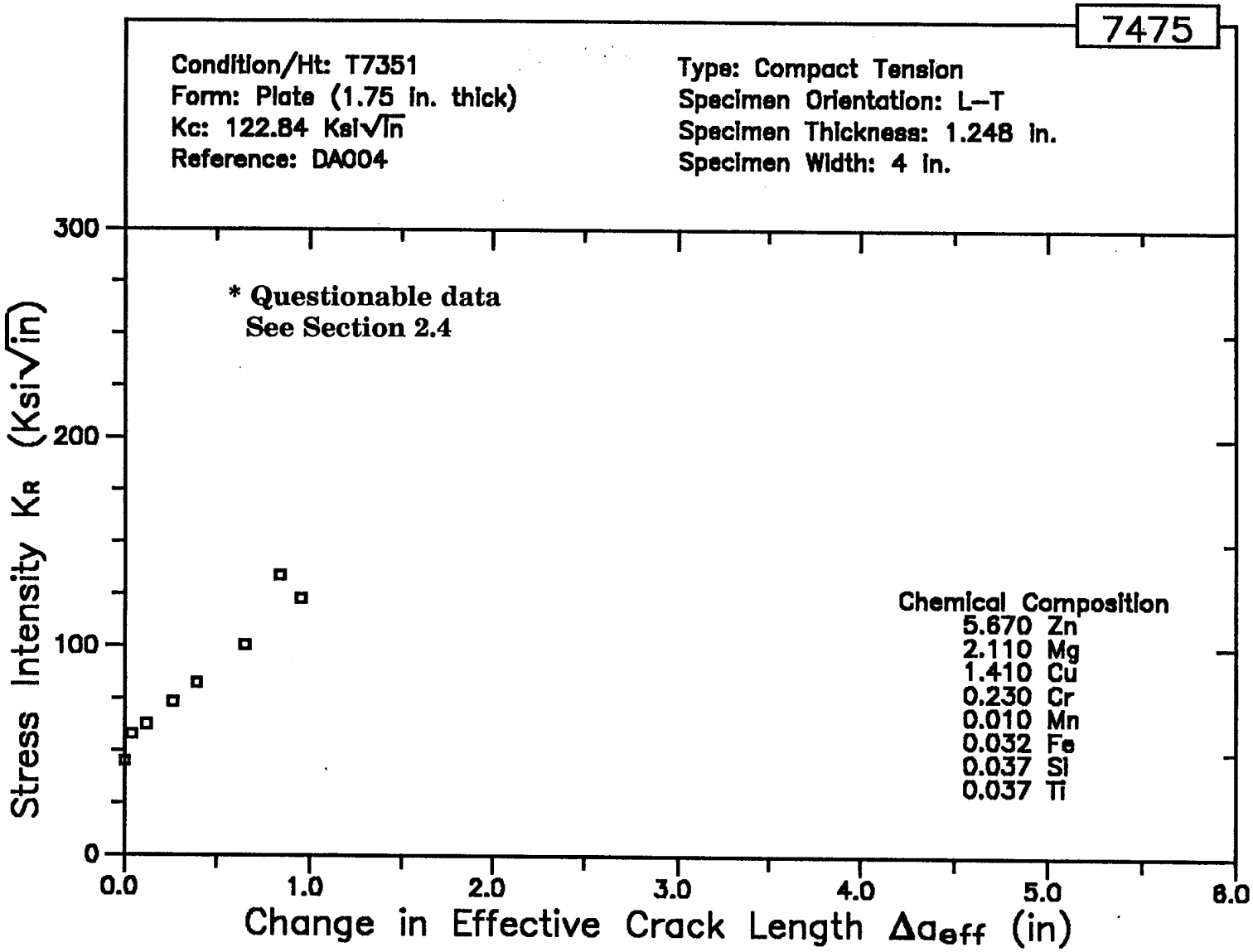



Figure 8.19.2.3.39

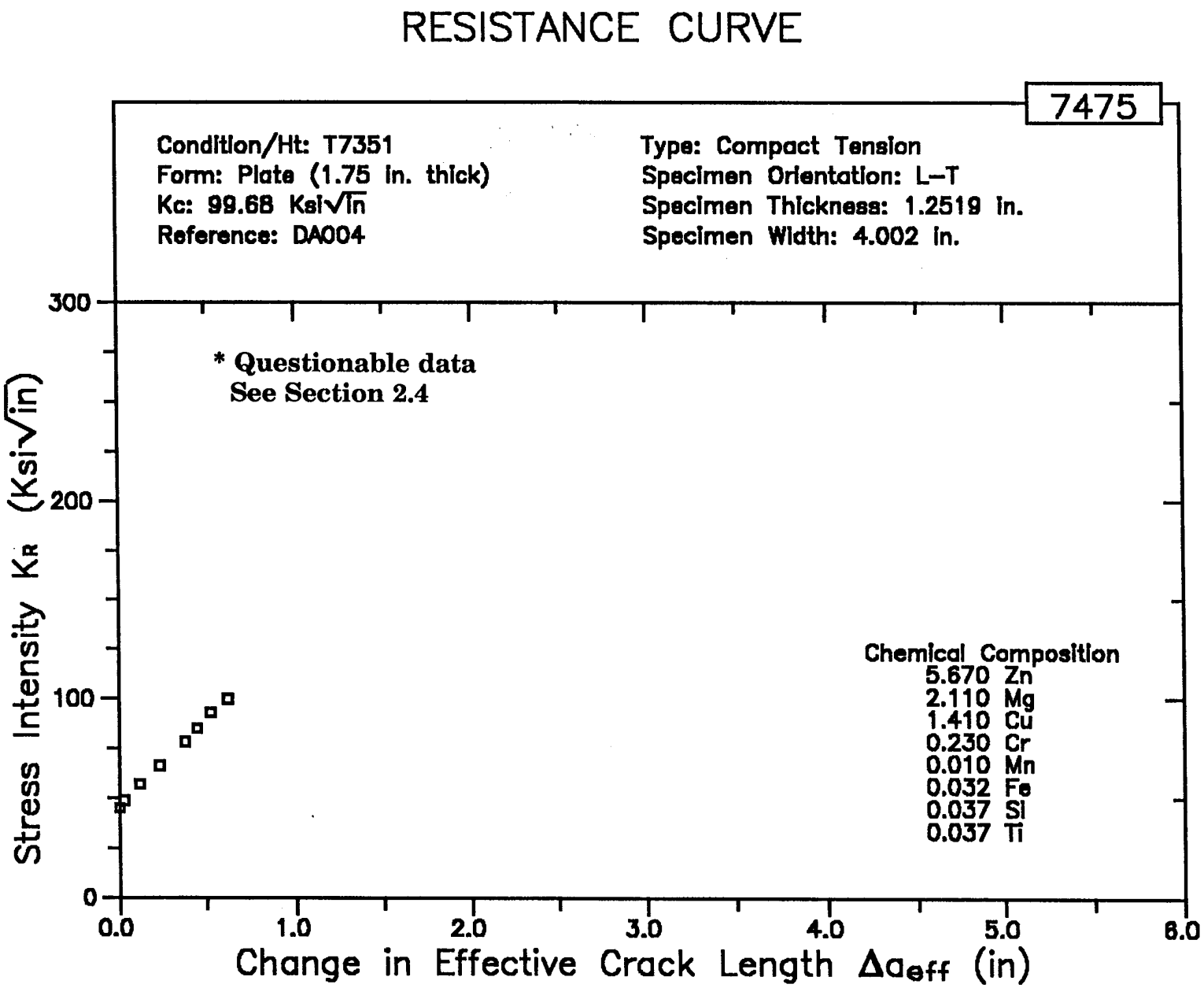



Figure 8.19.2.3.40

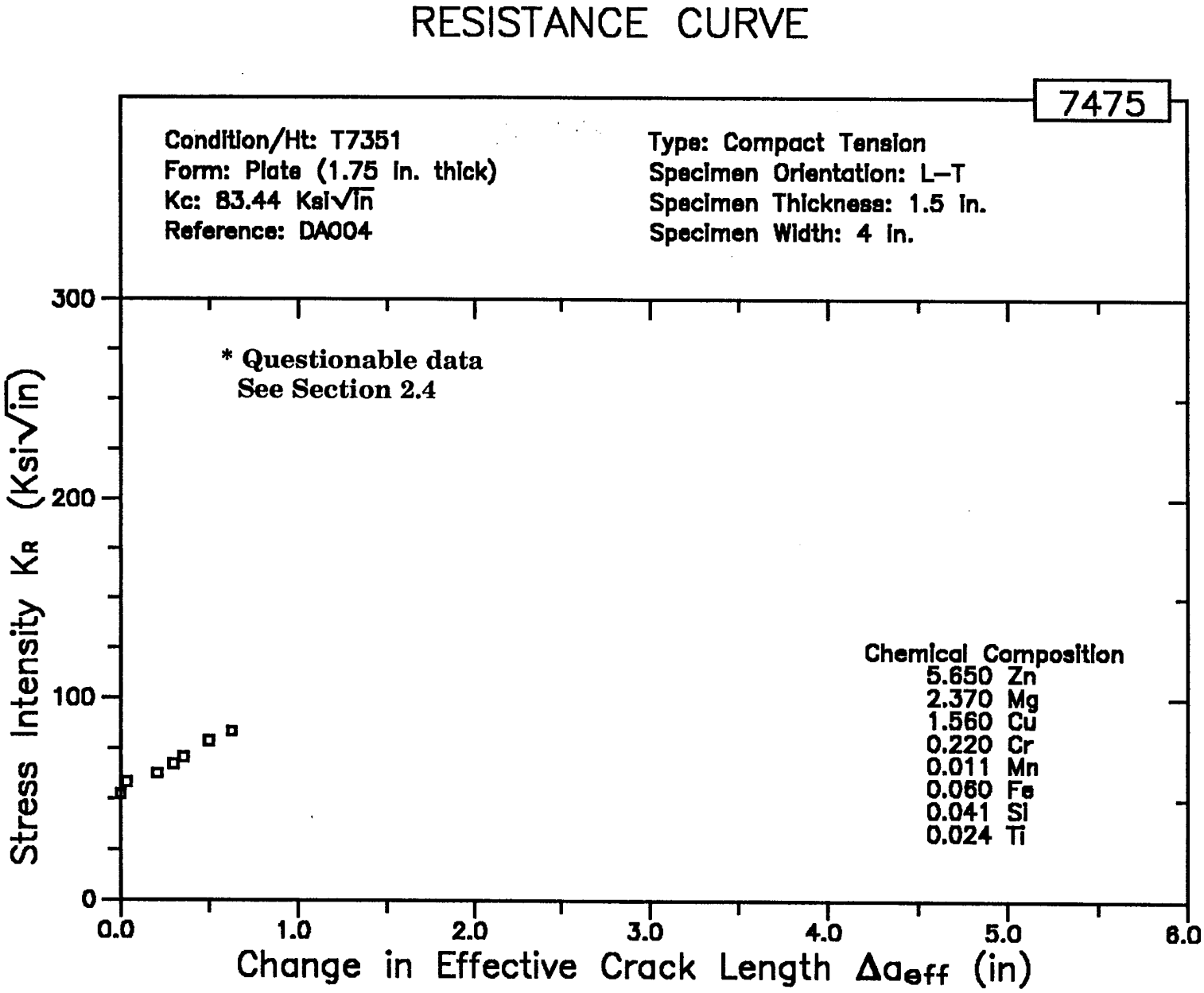



Figure 8.19.2.3.41

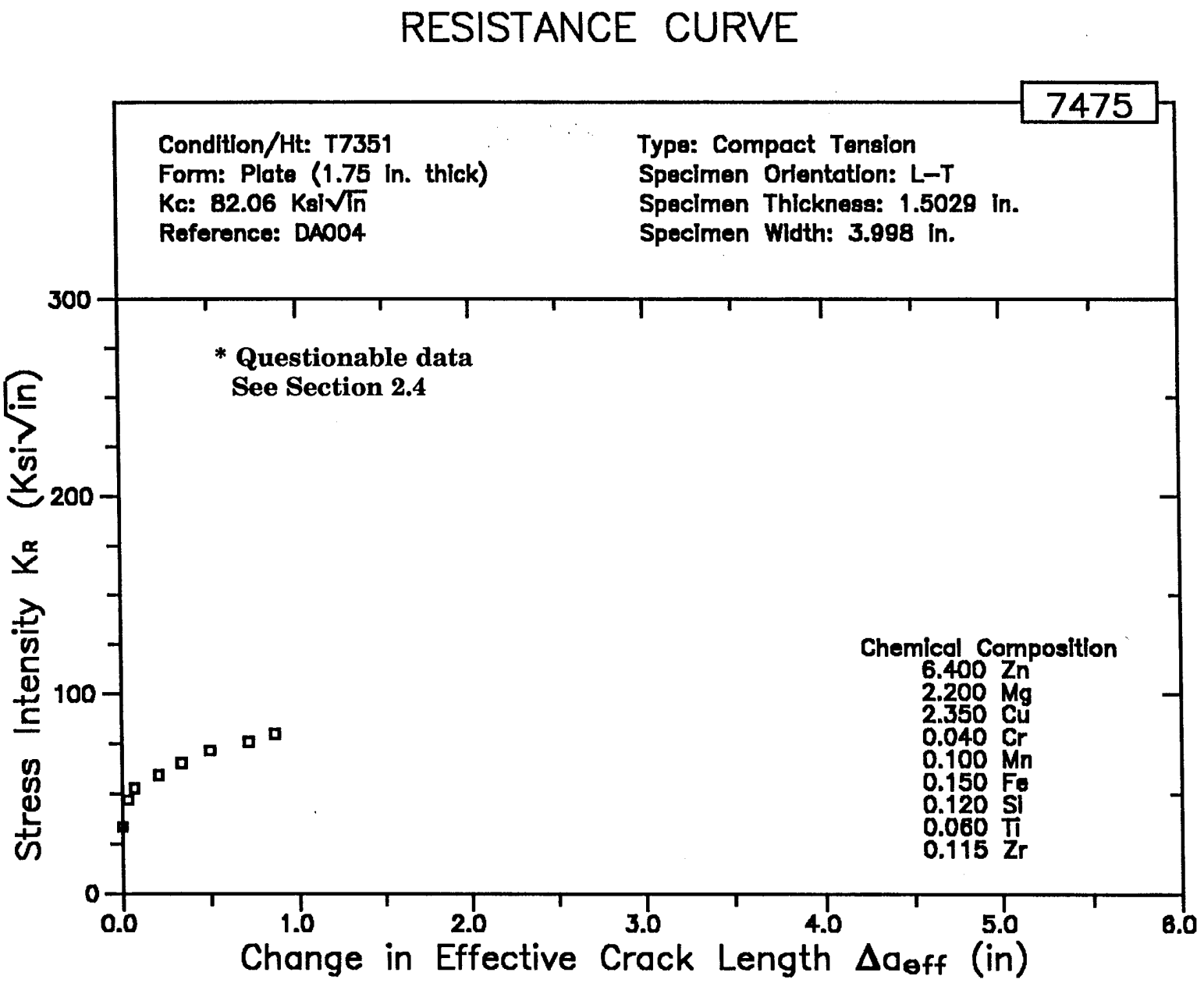



Figure 8.19.2.3.42

# RESISTANCE CURVE

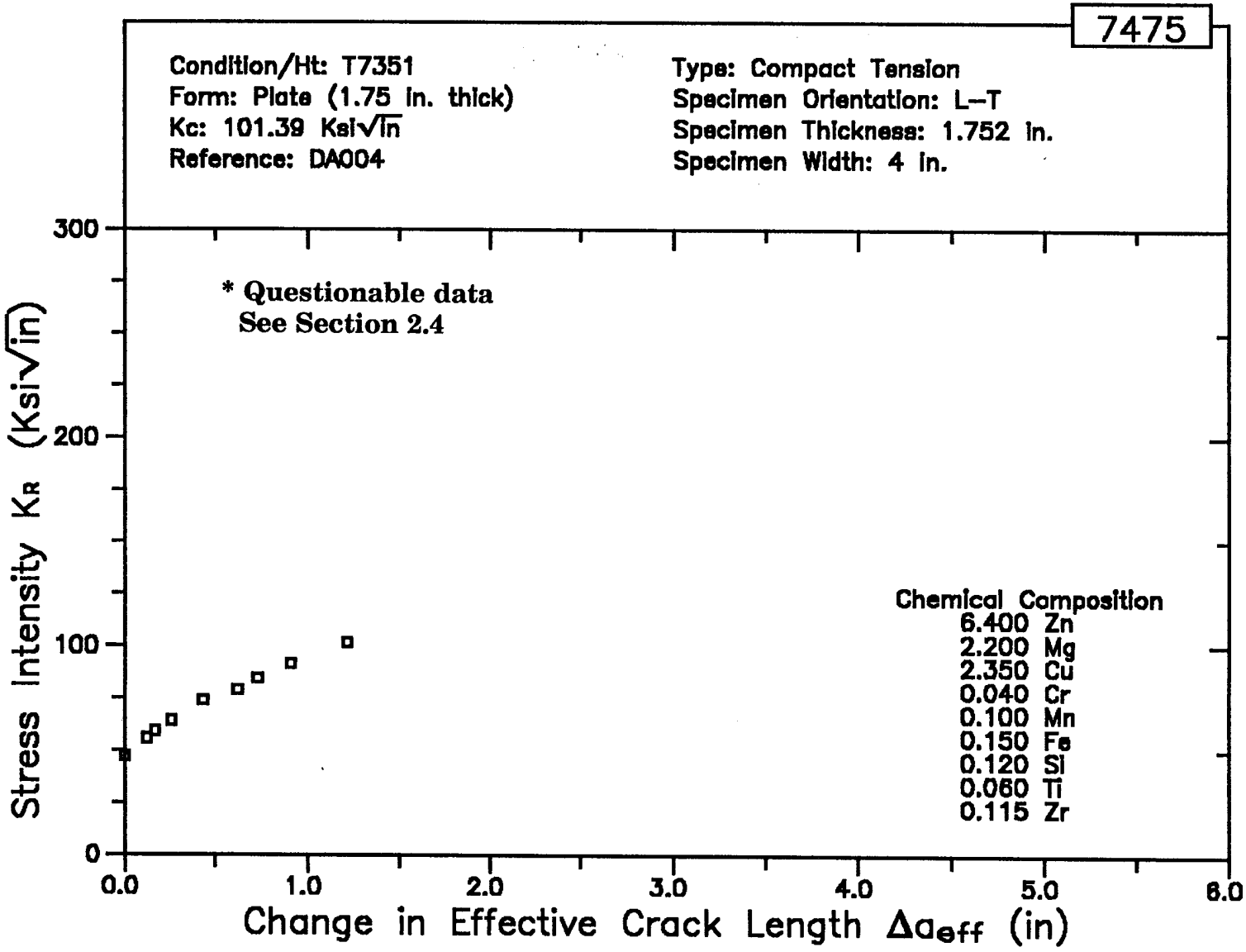



Figure 8.19.2.3.43

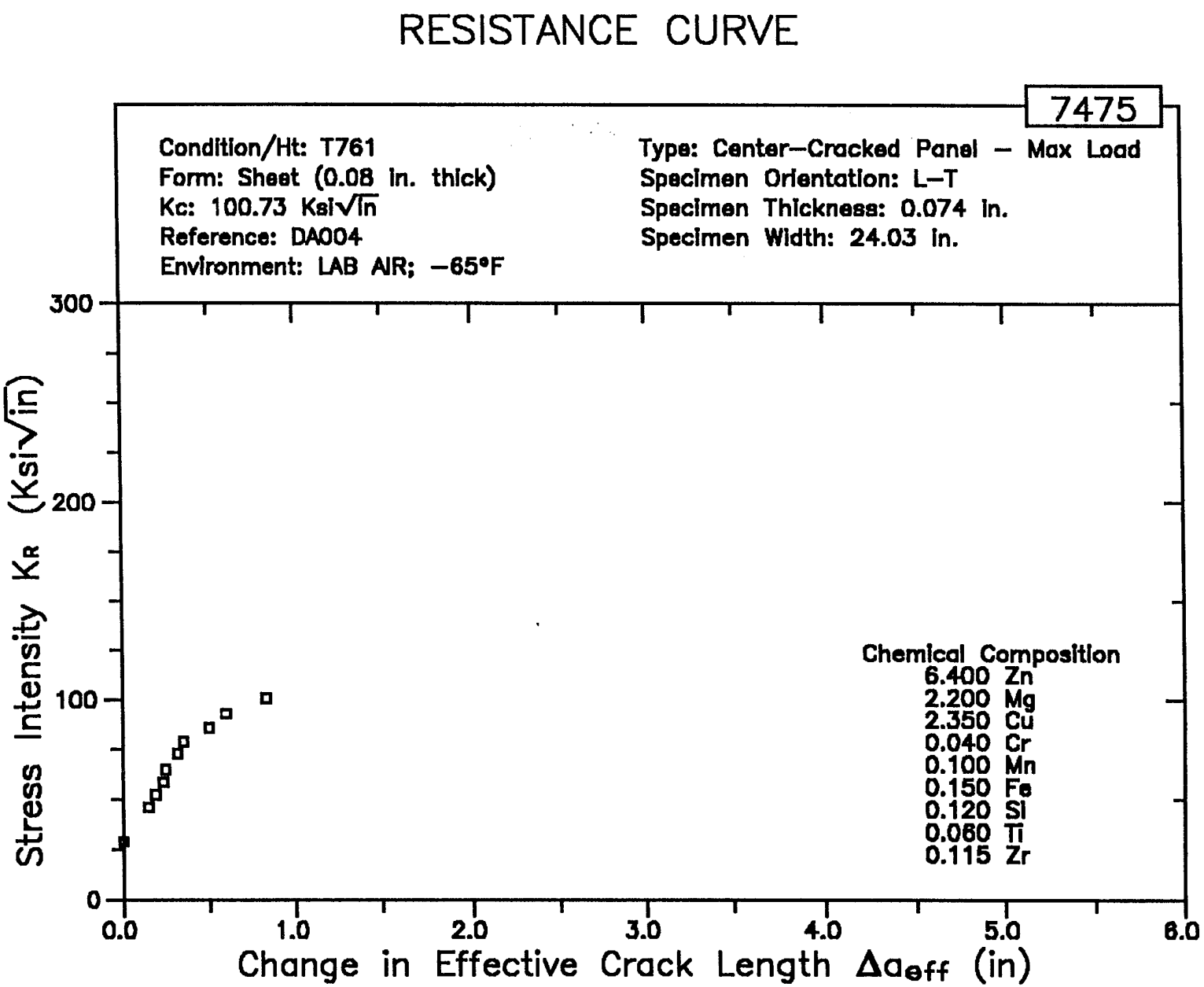



Figure 8.19.2.3.44

# RESISTANCE CURVE

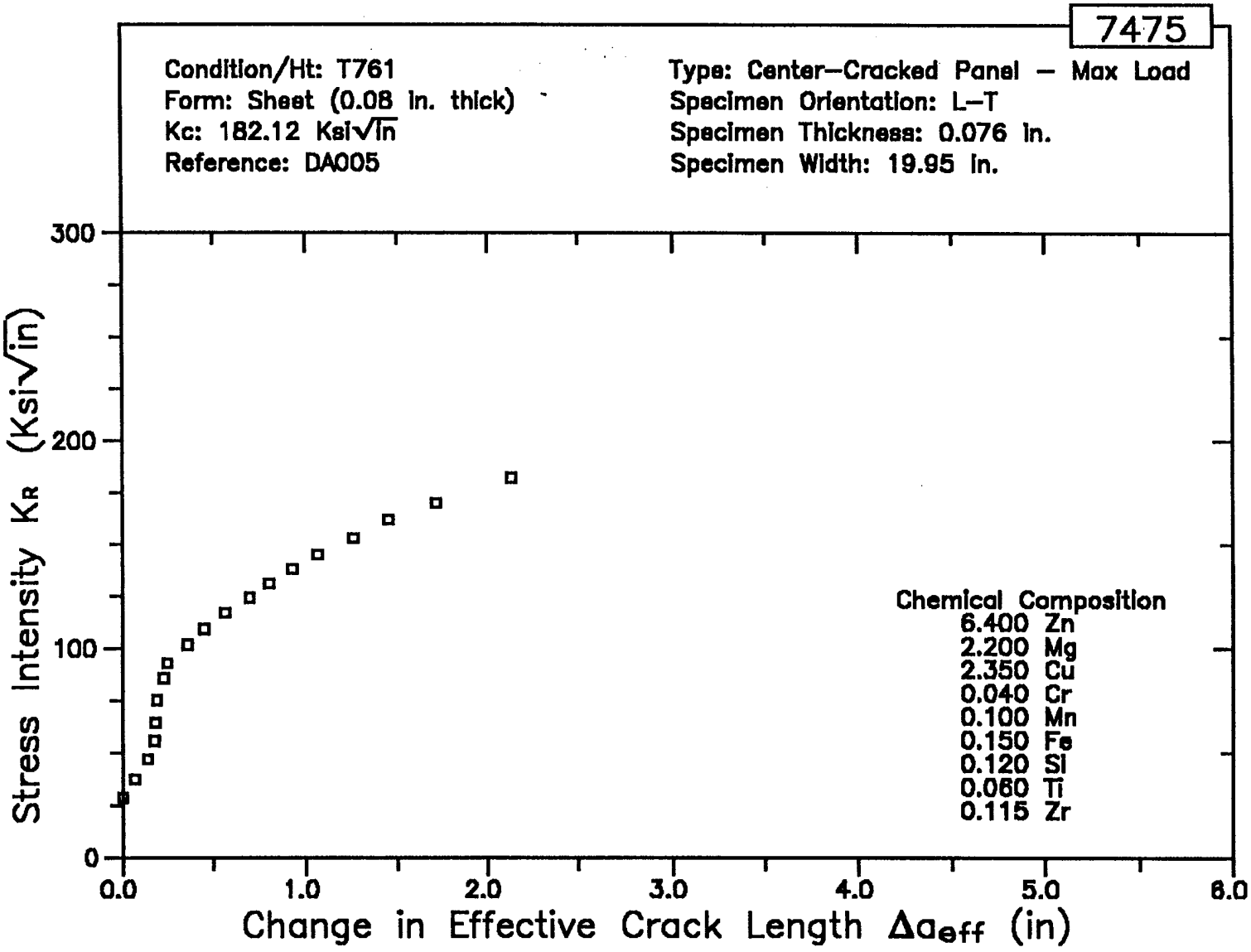



Figure 8.19.2.3.45

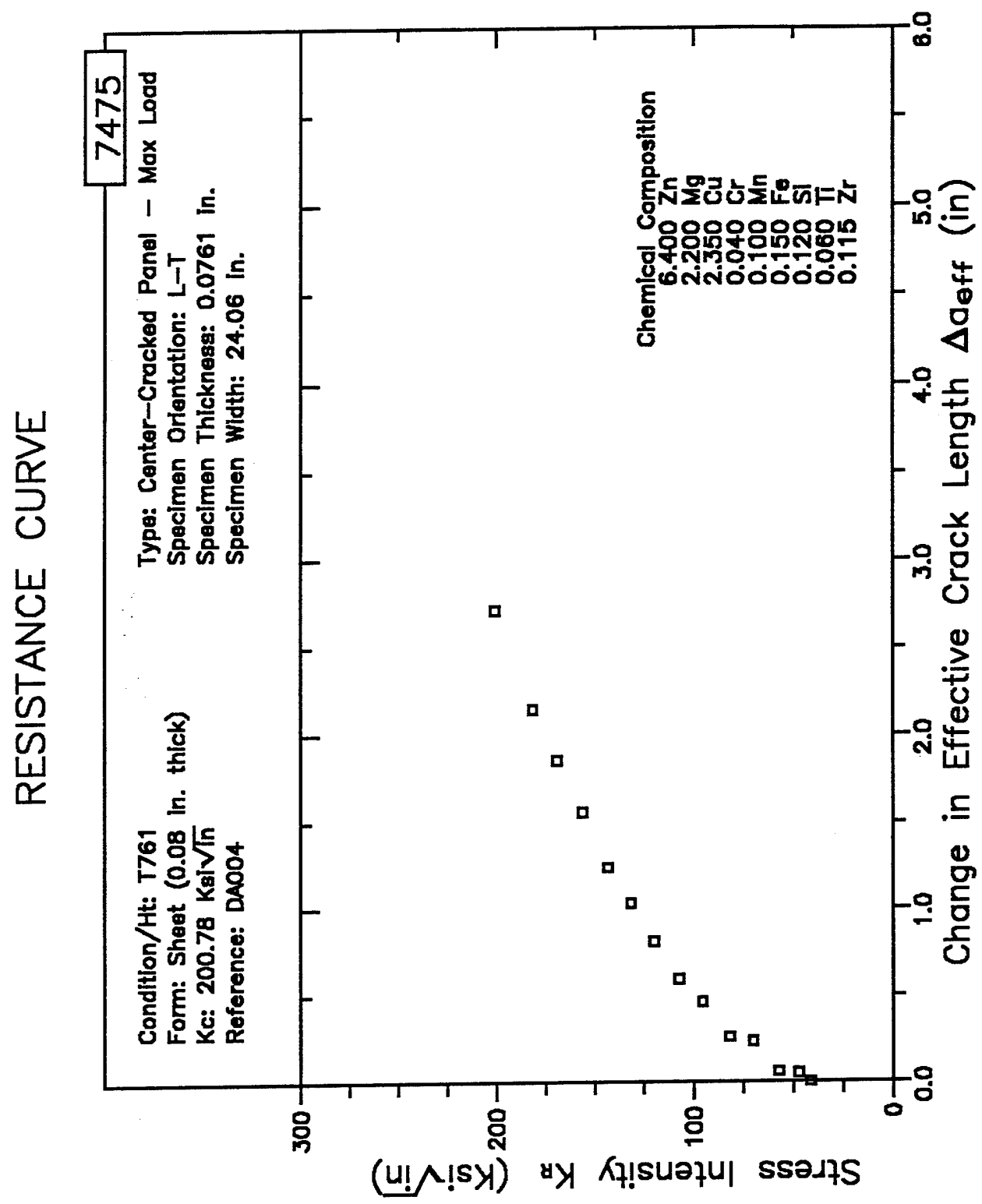



**Figure 8.19.2.3.46**

# RESISTANCE CURVE

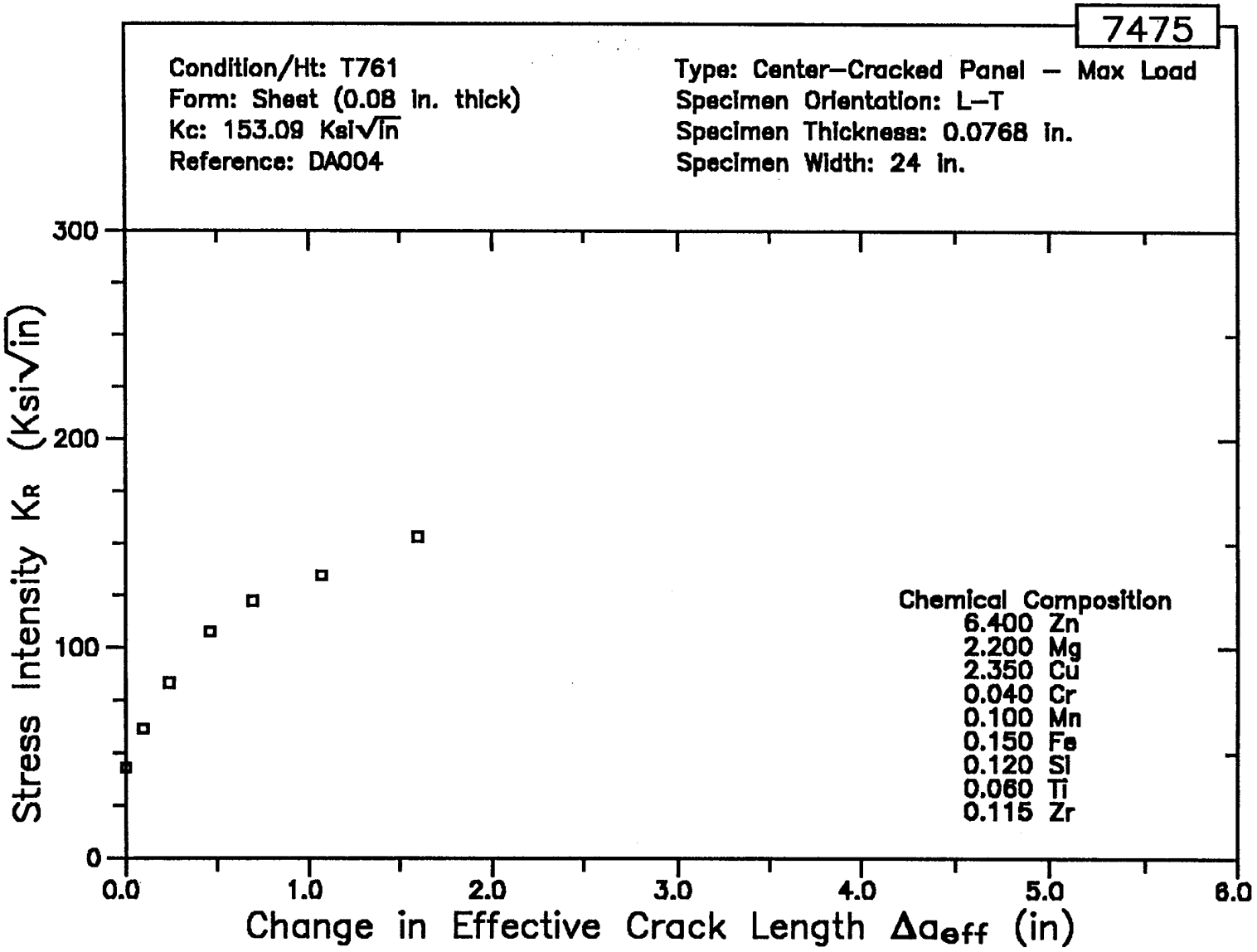



Figure 8.19.2.3.47

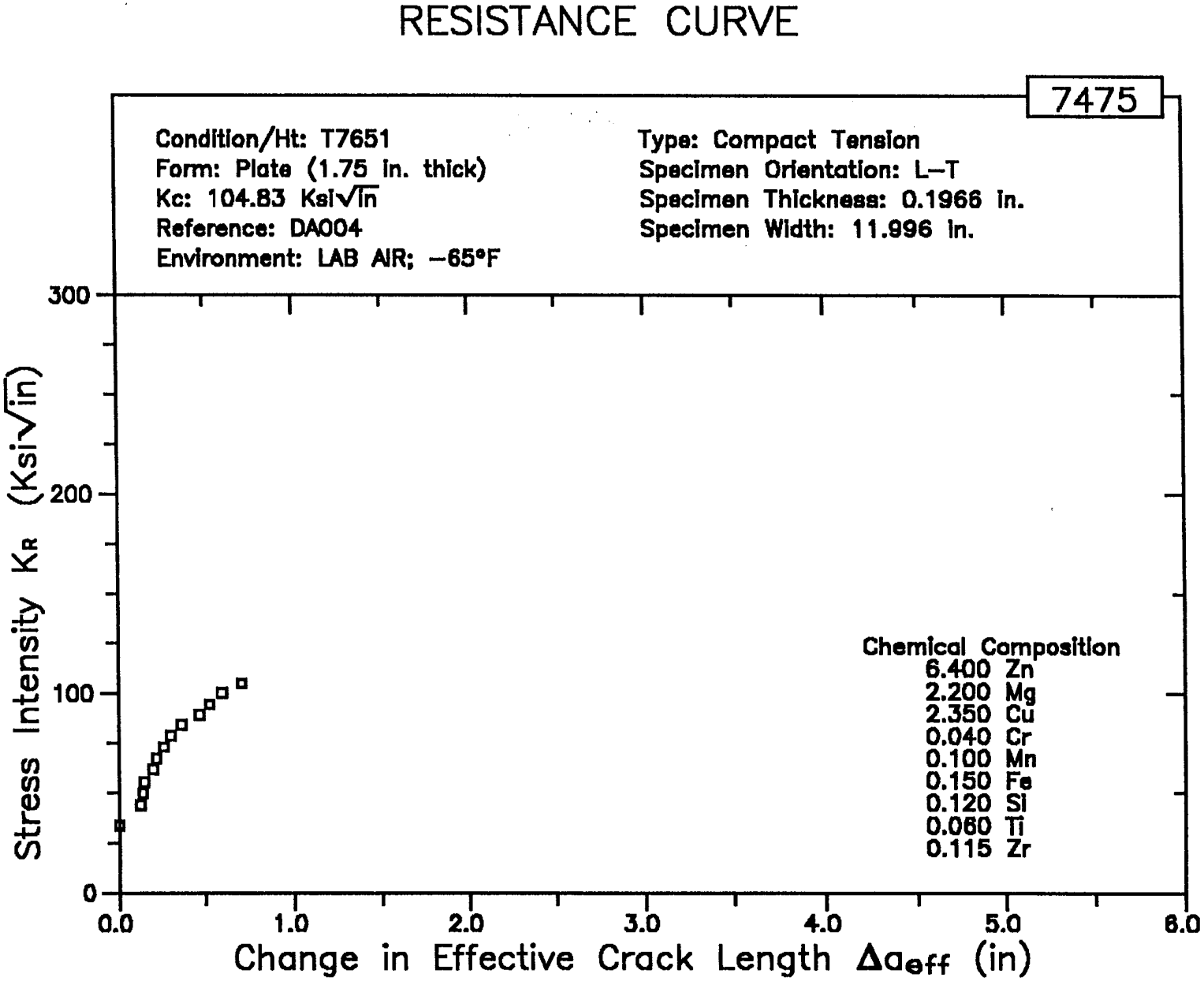



Figure 8.19.2.3.48

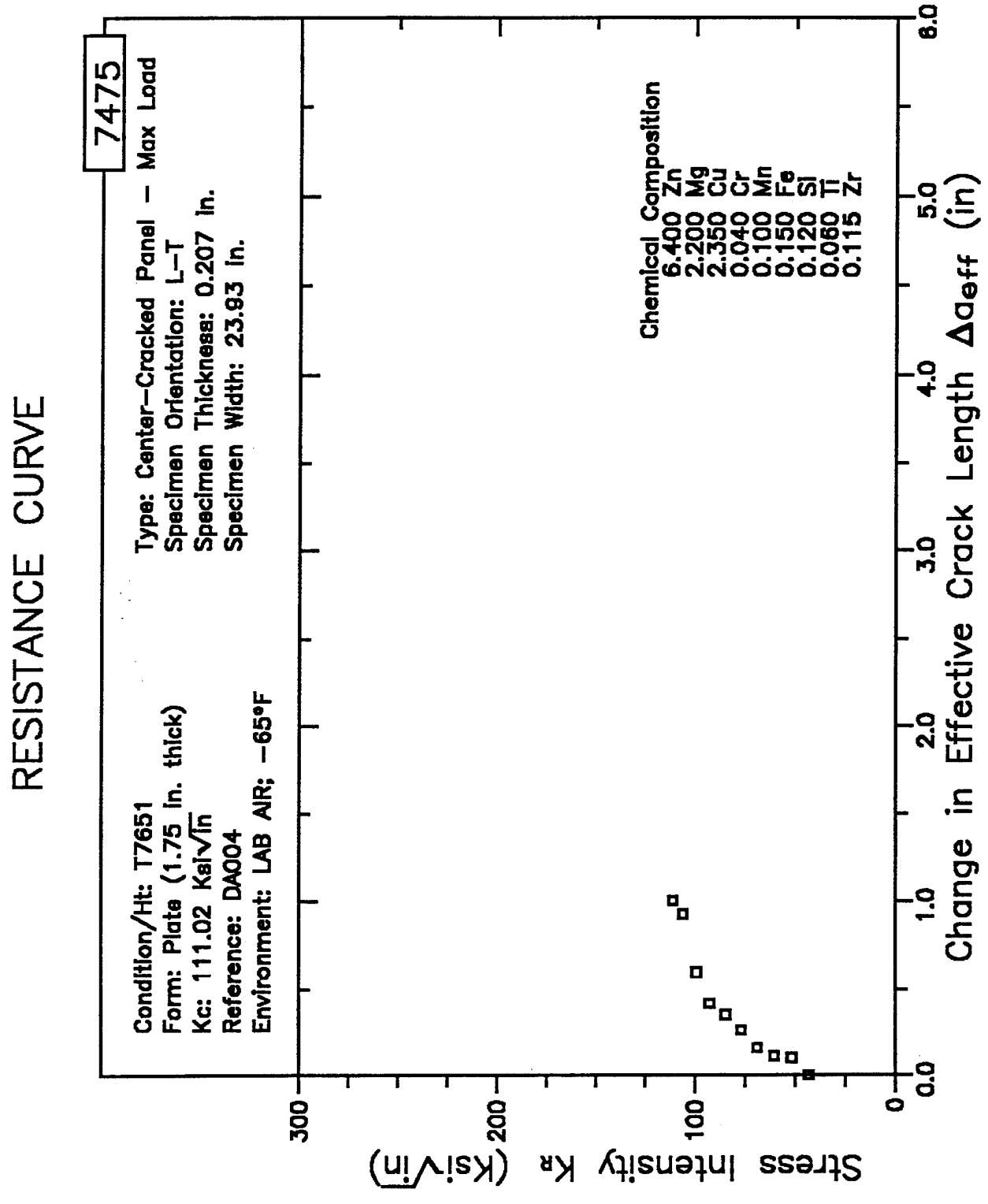



**Figure 8.19.2.3.49**

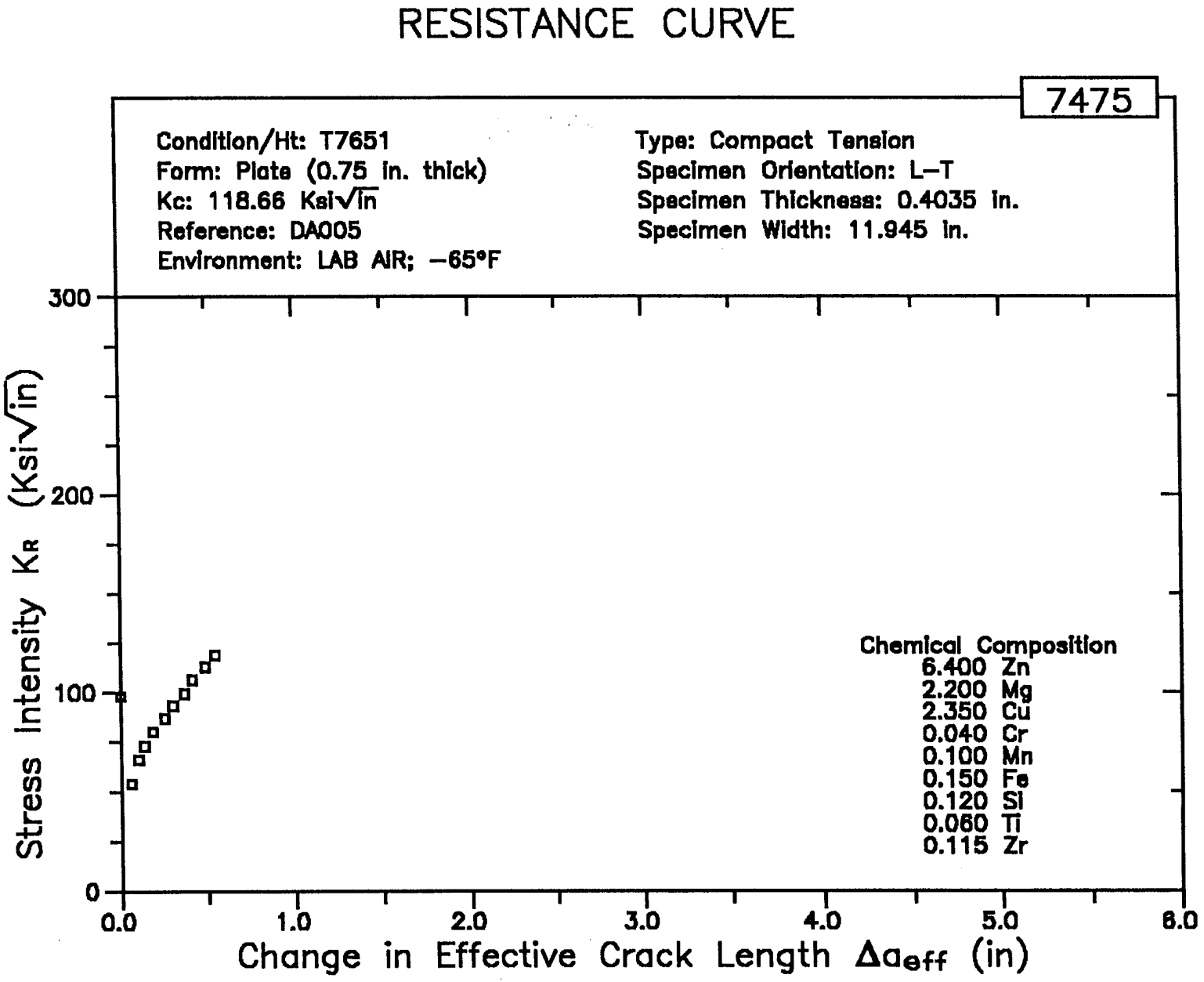



Figure 8.19.2.3.50

# RESISTANCE CURVE

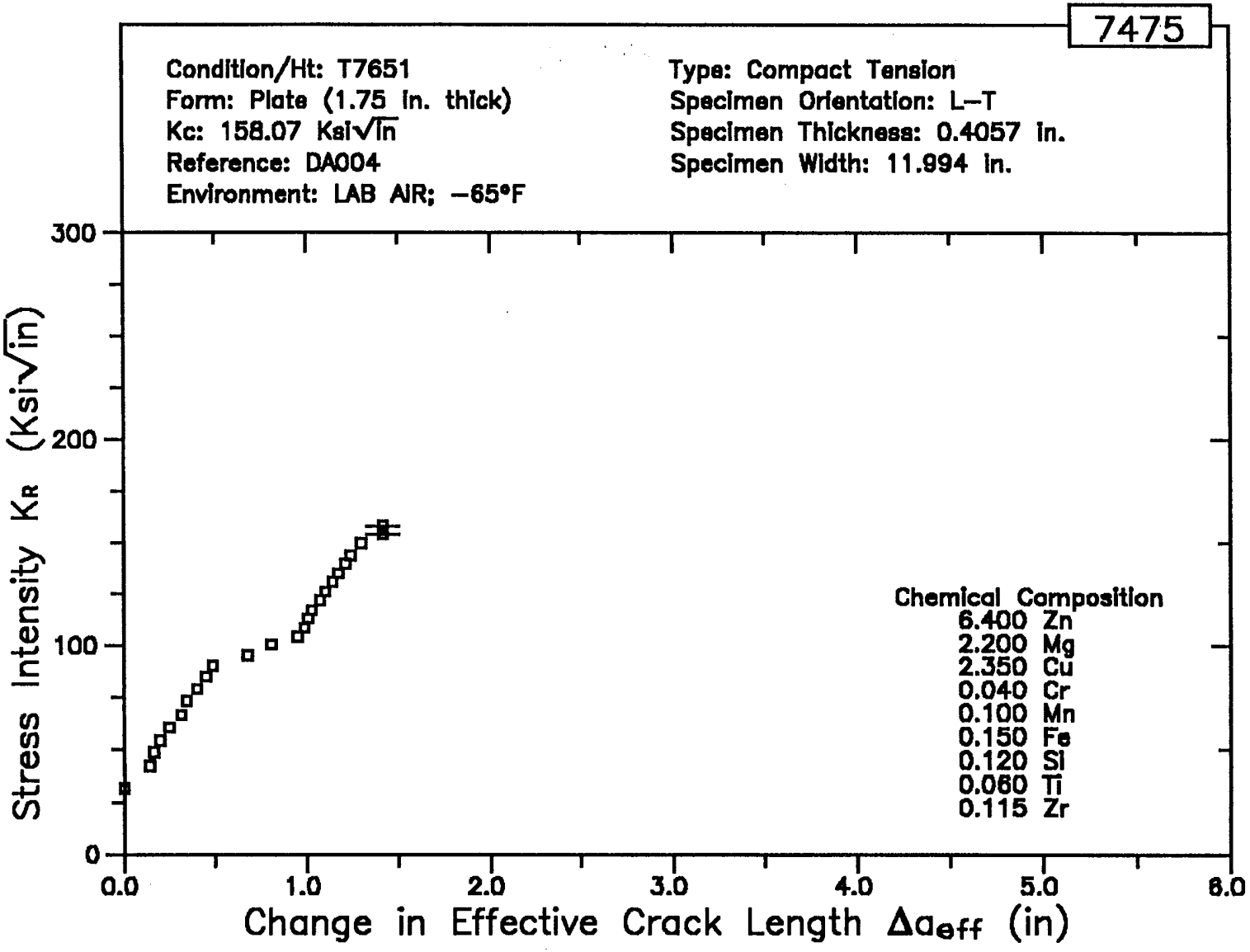



Figure 8.19.2.3.51

# RESISTANCE CURVE

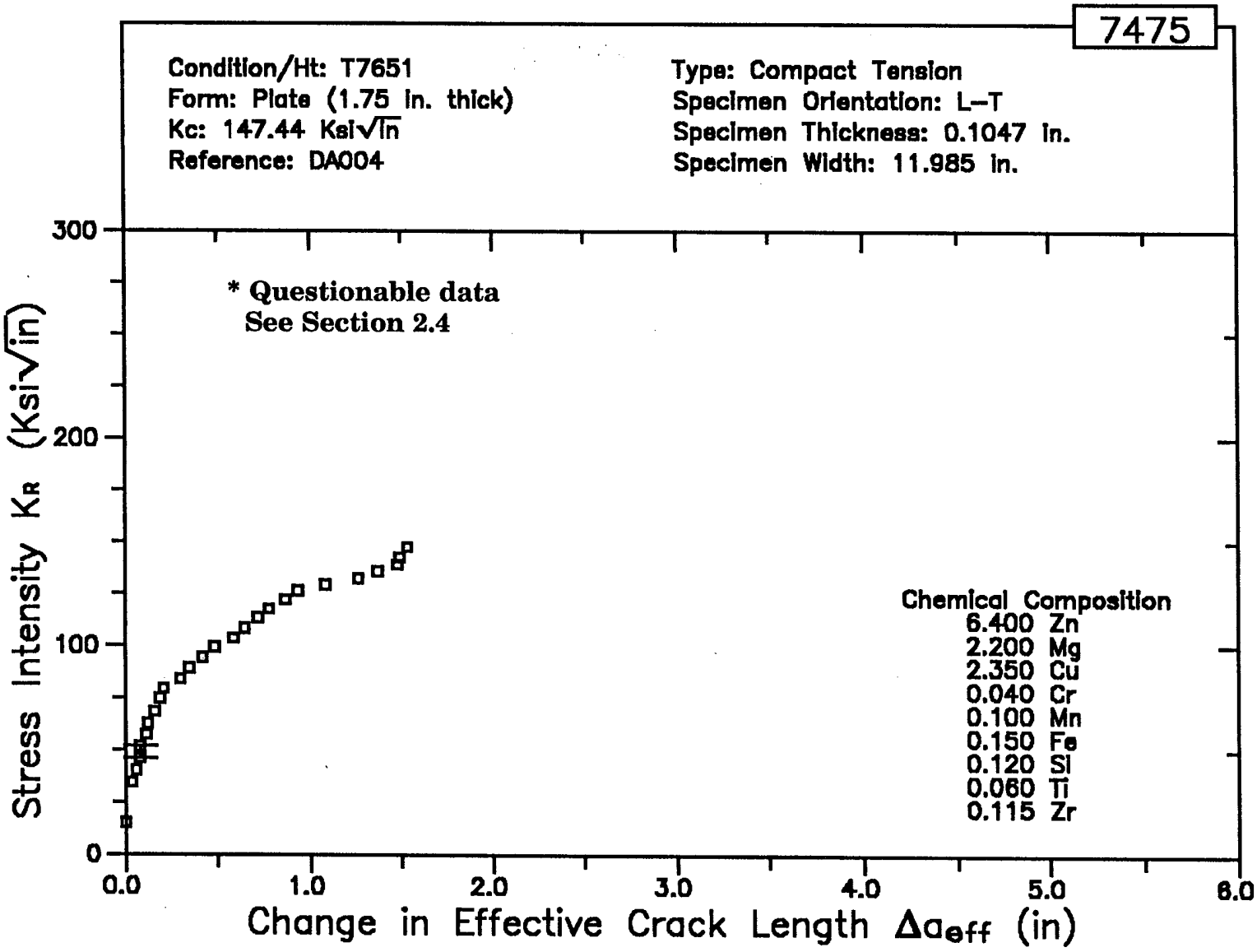



Figure 8.19.2.3.52

# RESISTANCE CURVE

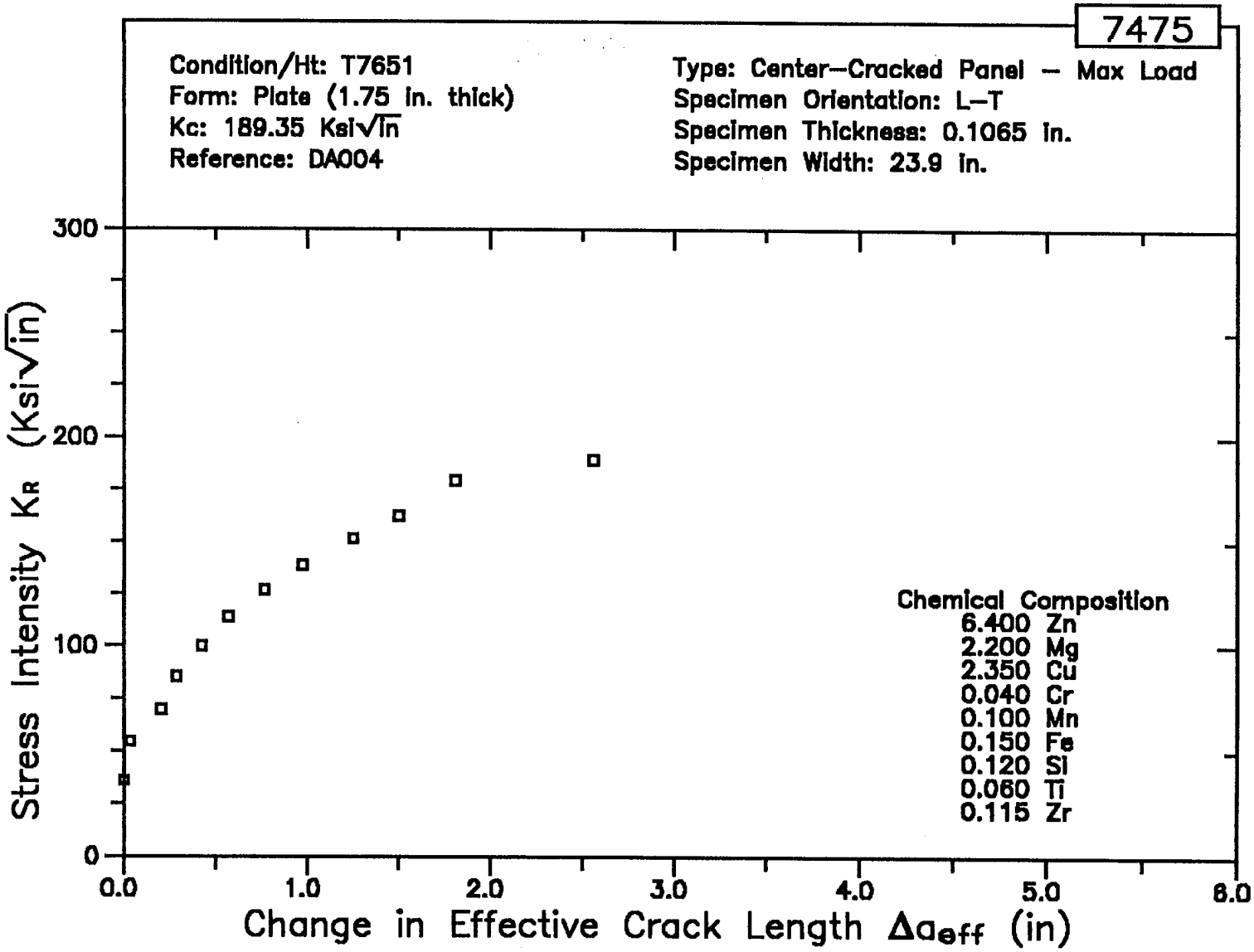



Figure 8.19.2.3.53

# RESISTANCE CURVE

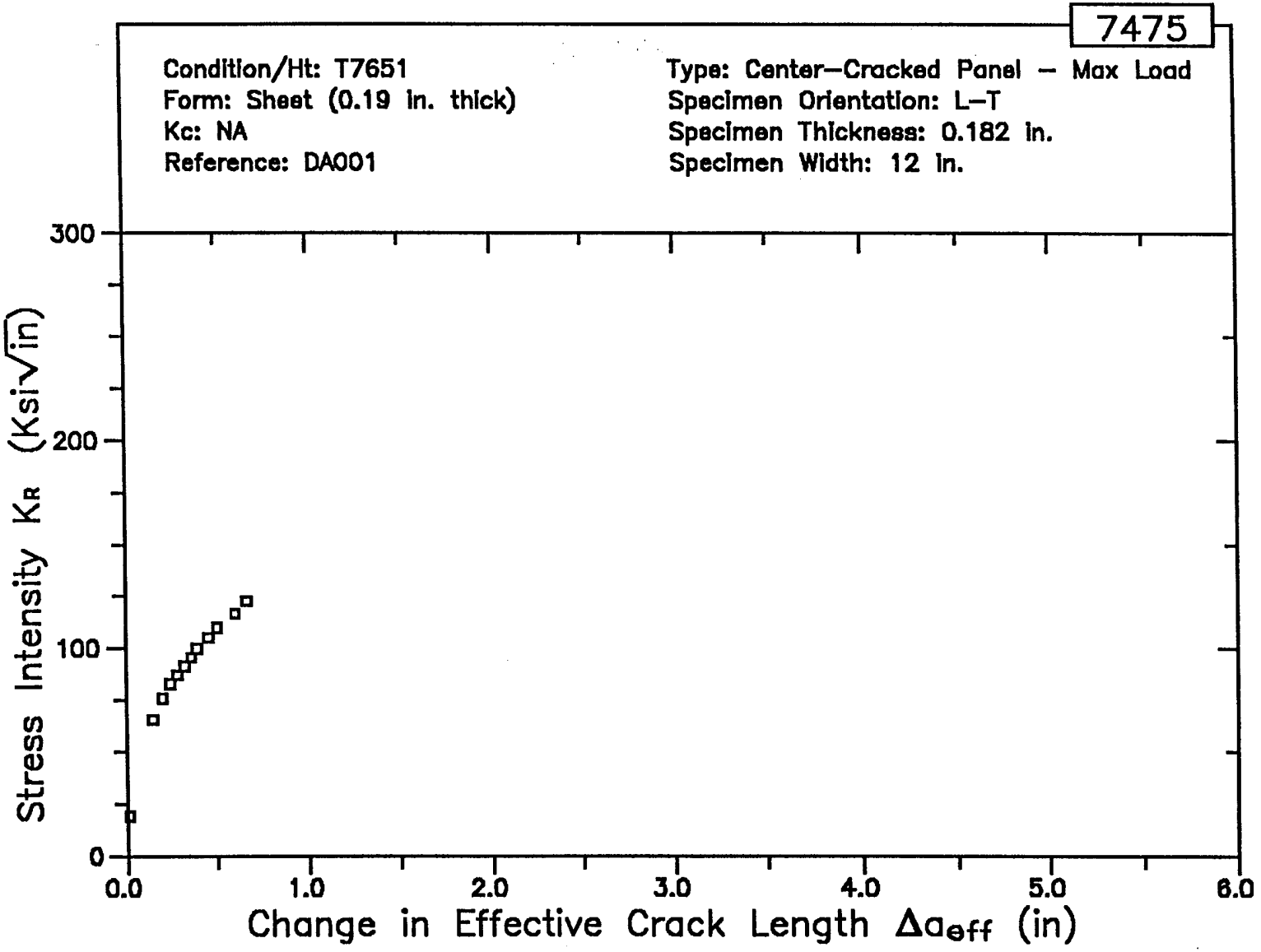



Figure 8.19.2.3.54

# RESISTANCE CURVE

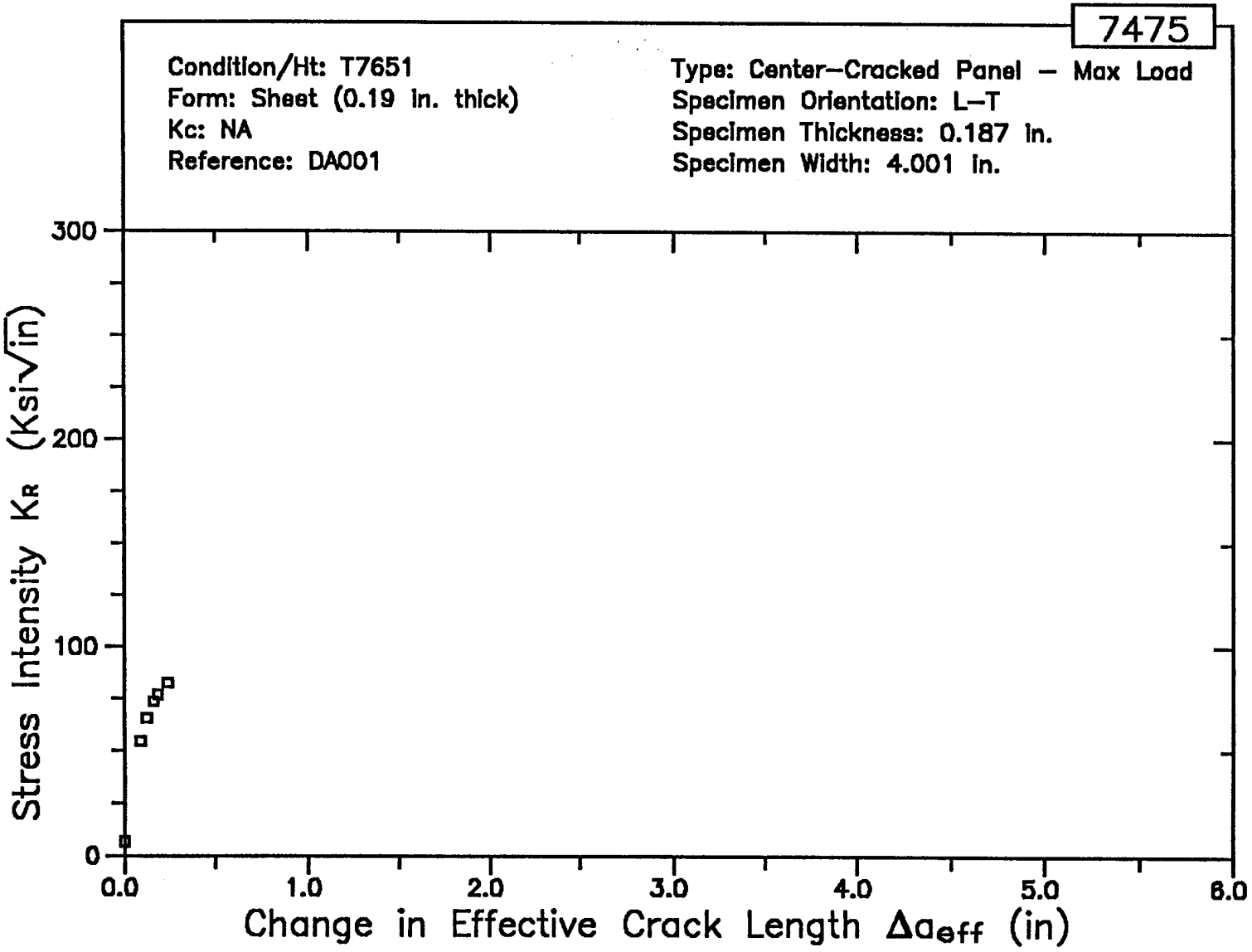



Figure 8.19.2.3.55

# RESISTANCE CURVE

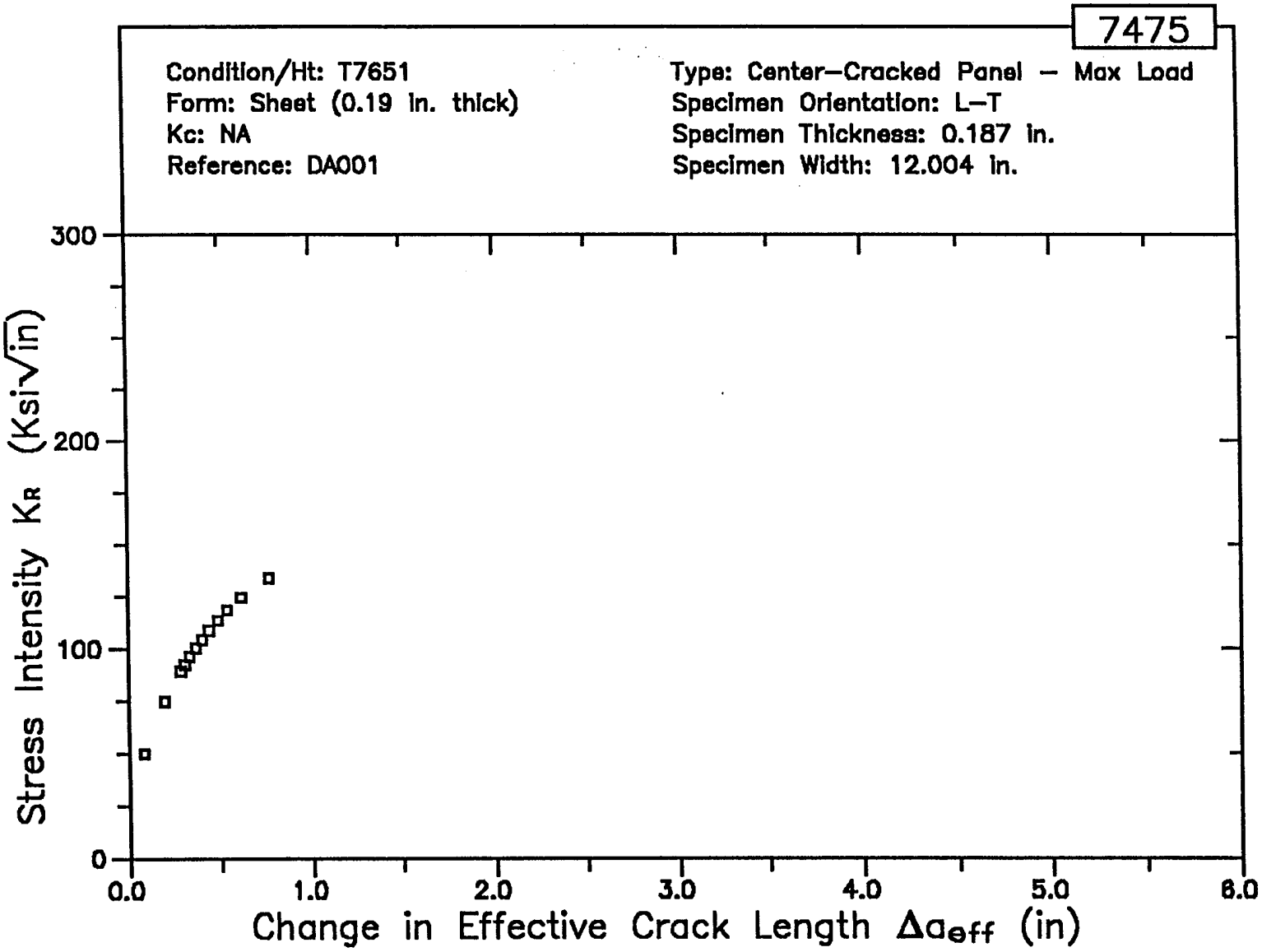



Figure 8.19.2.3.56

# RESISTANCE CURVE

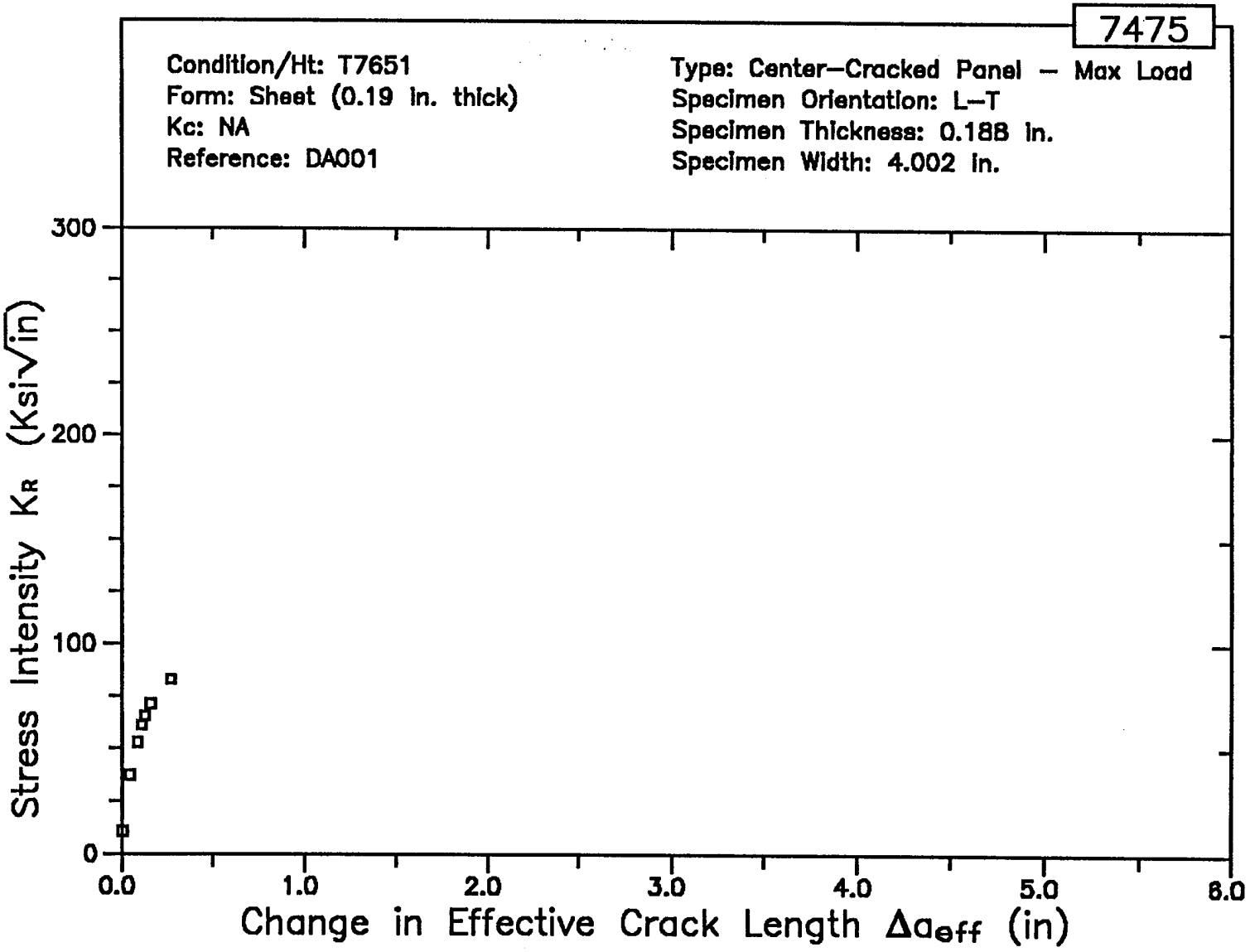



Figure 8.19.2.3.57

8-1139

# RESISTANCE CURVE

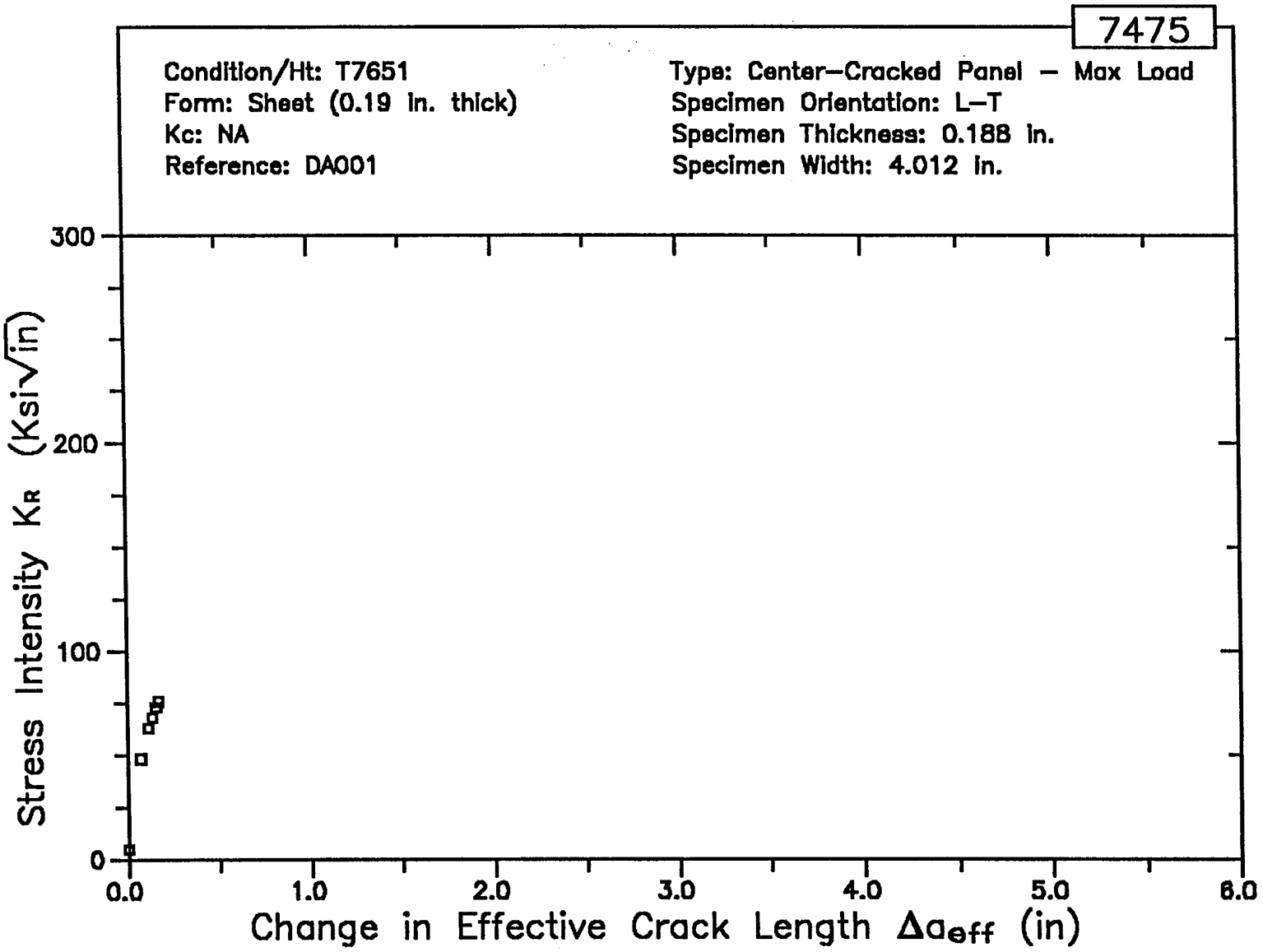



Figure 8.19.2.3.58

# RESISTANCE CURVE

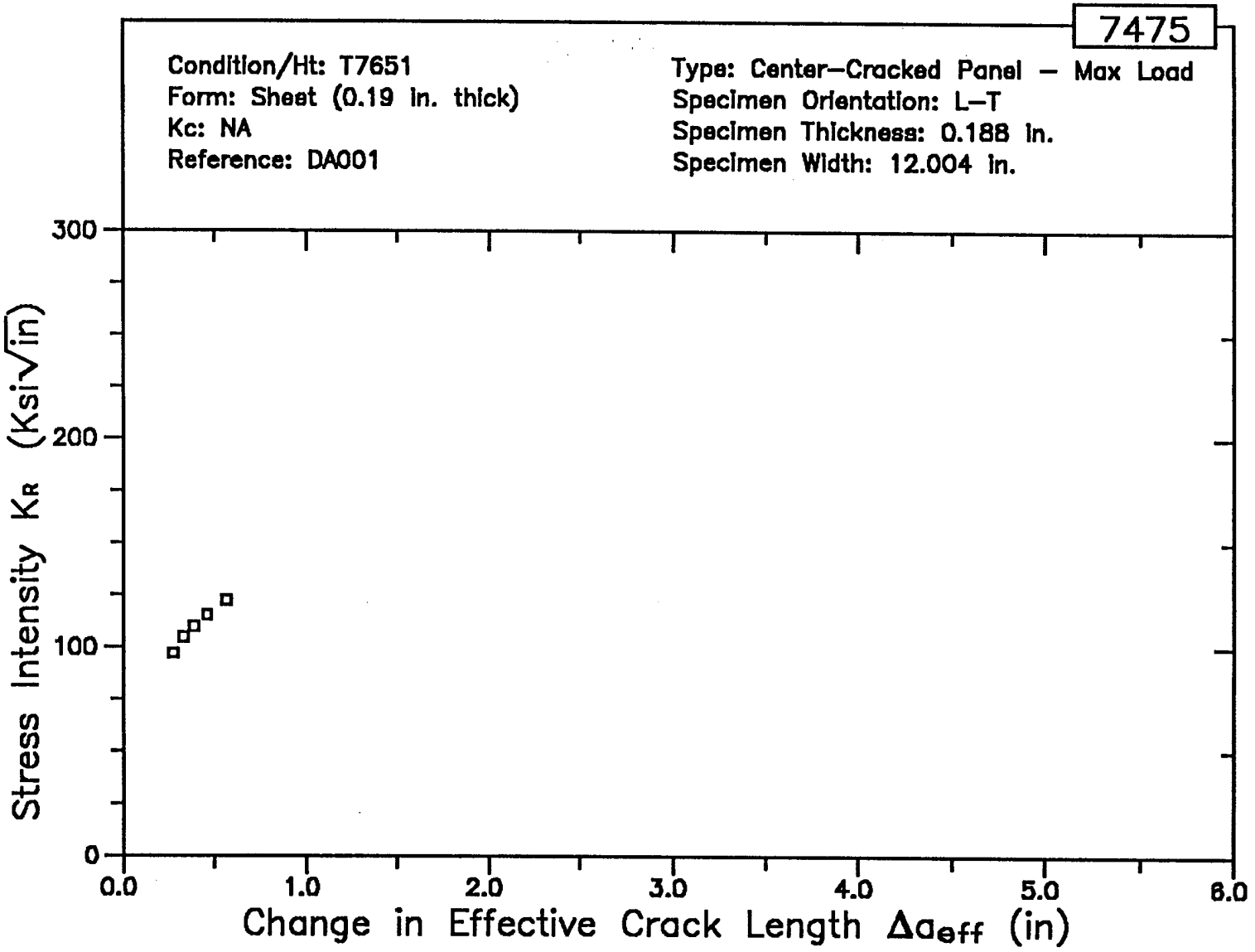



Figure 8.19.2.3.59

# RESISTANCE CURVE

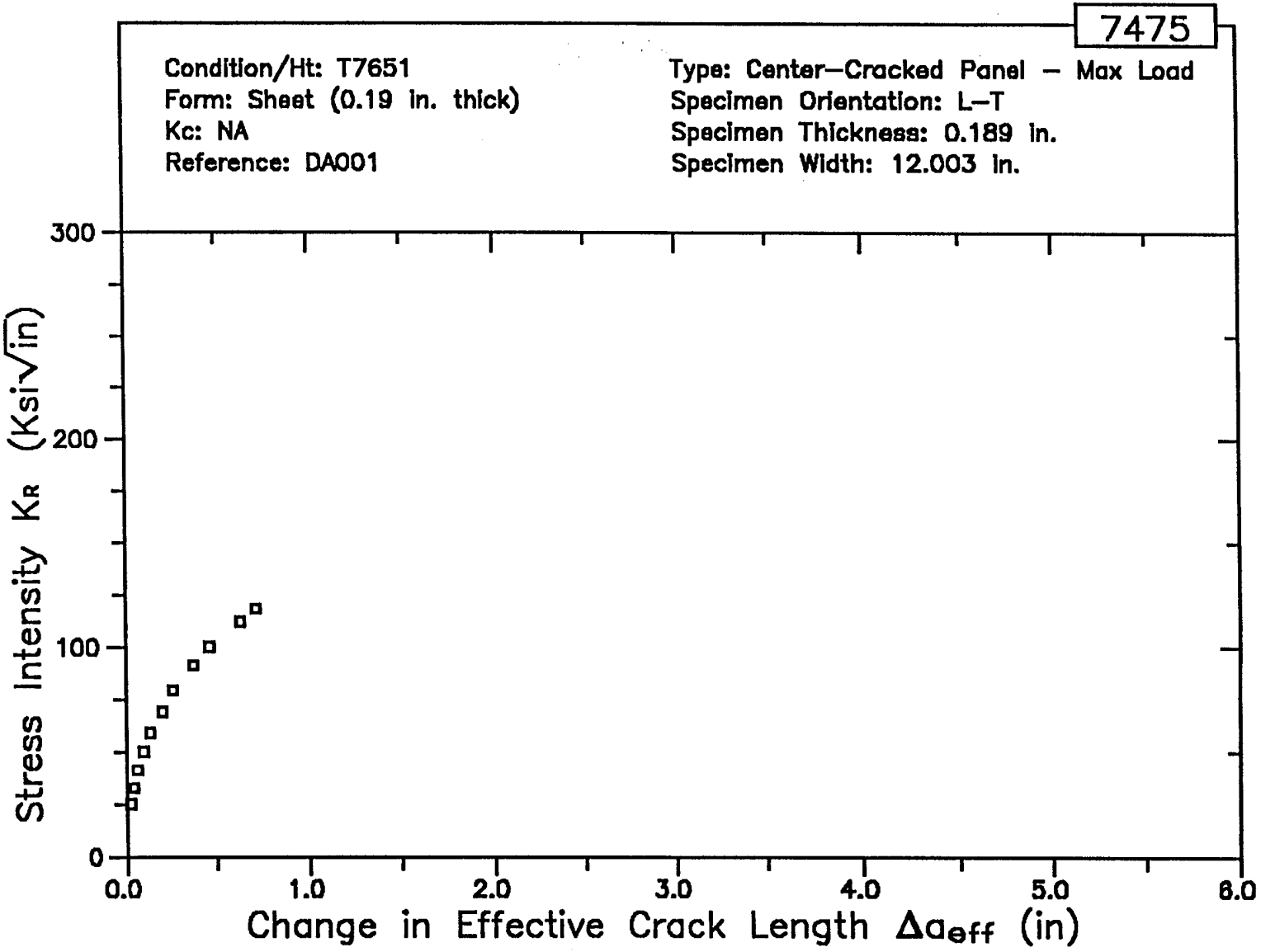



Figure 8.19.2.3.60

# RESISTANCE CURVE

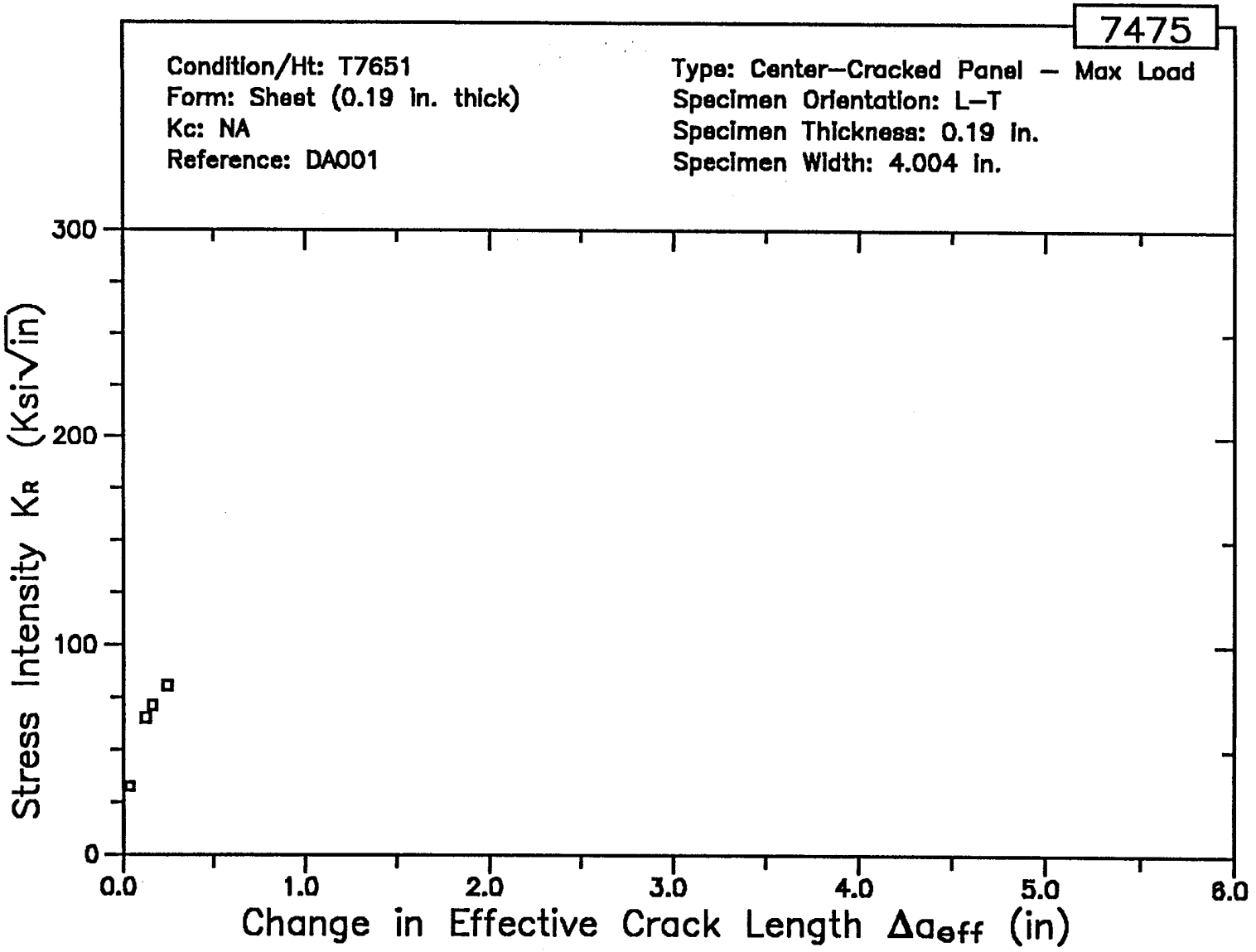



Figure 8.19.2.3.61

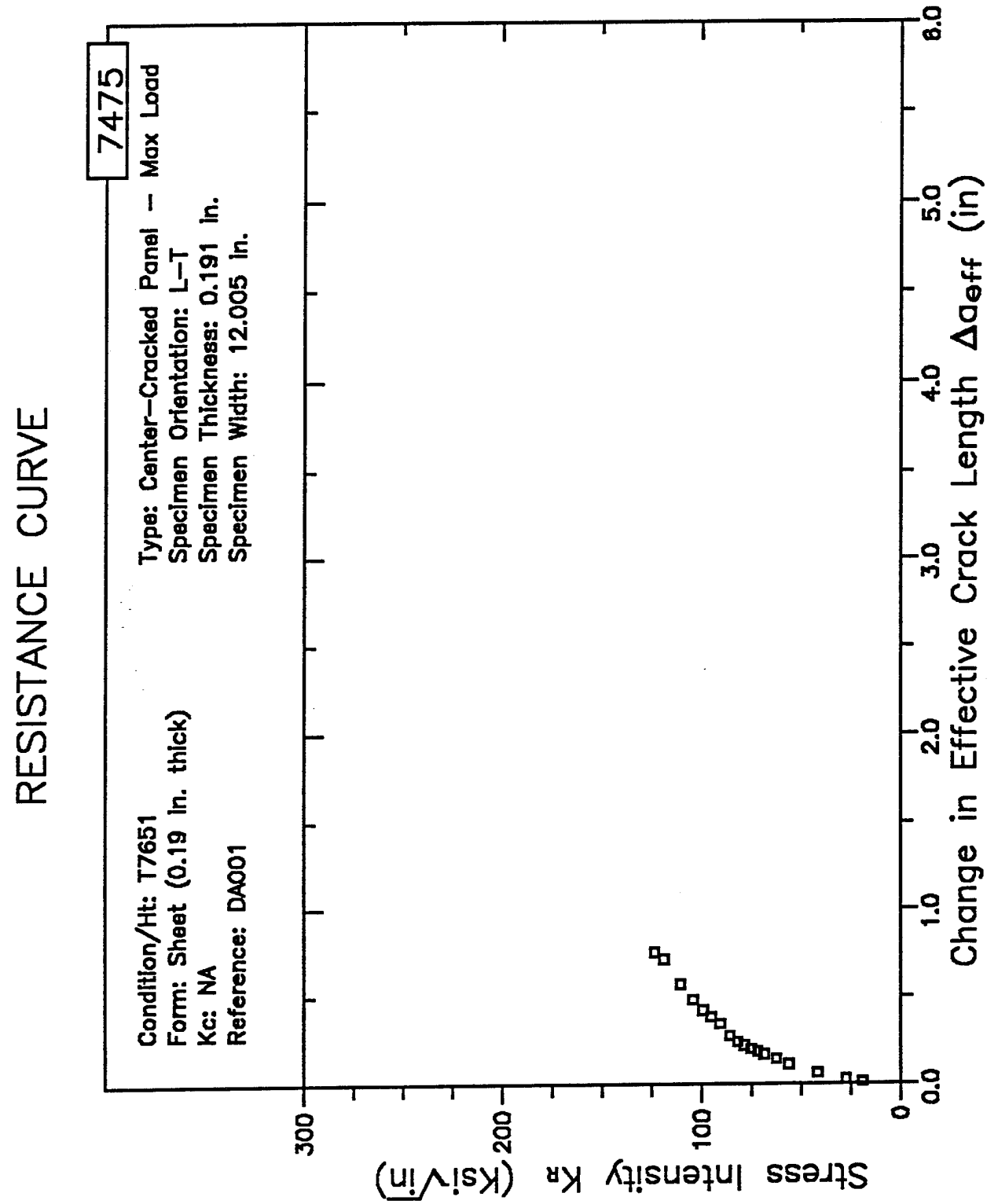



**Figure 8.19.2.3.62**

# RESISTANCE CURVE

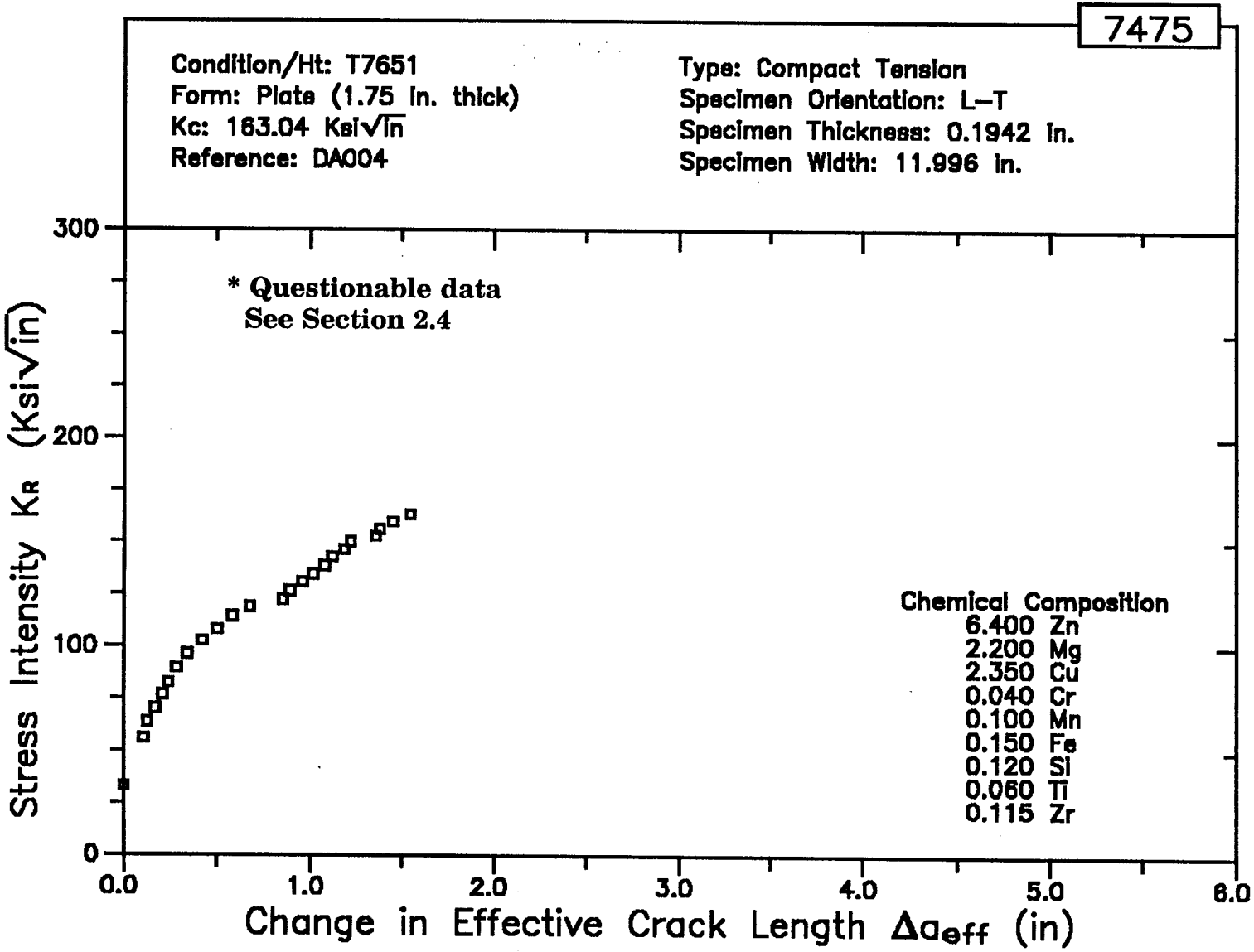



Figure 8.19.2.3.63

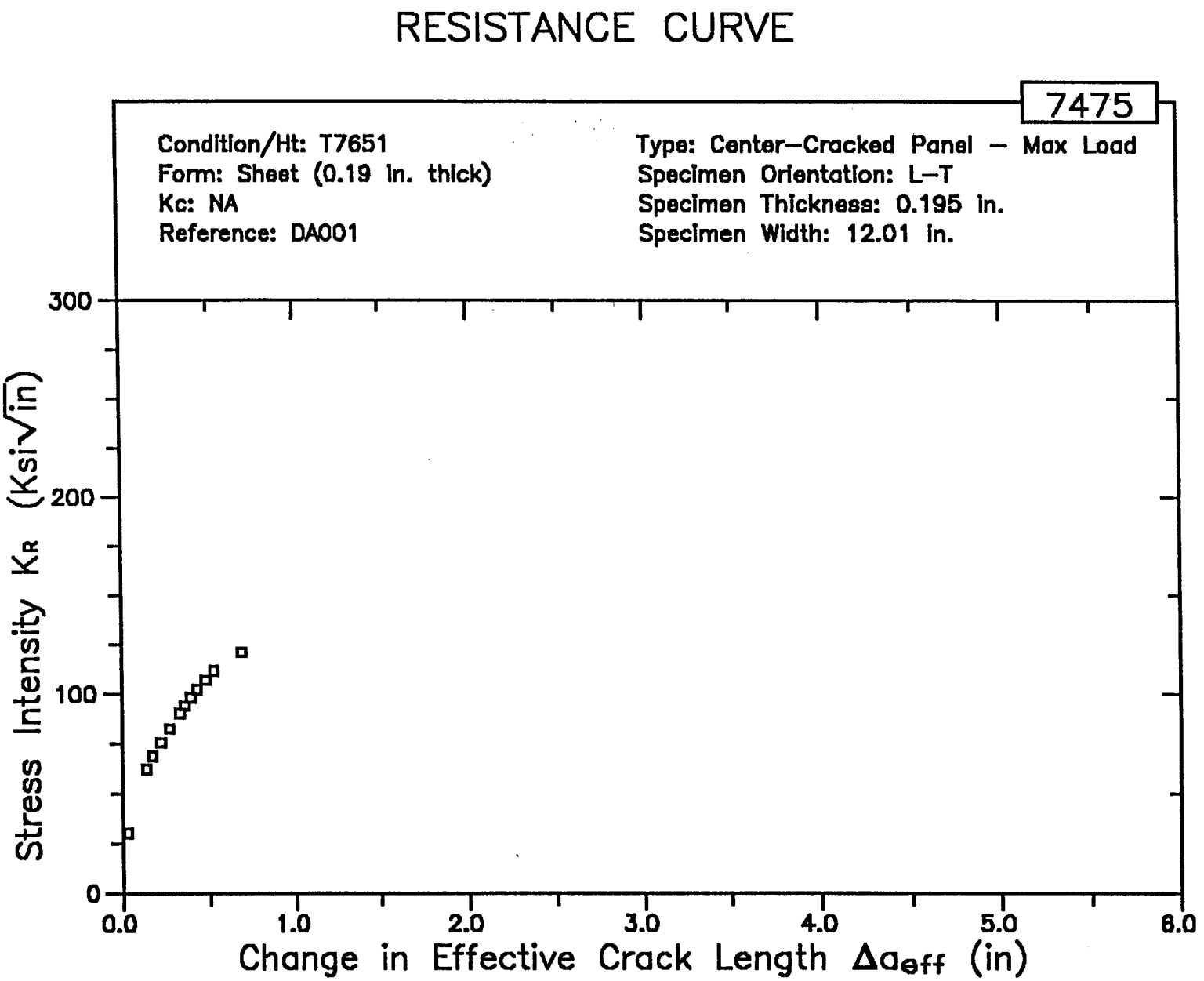



Figure 8.19.2.3.64

# RESISTANCE CURVE

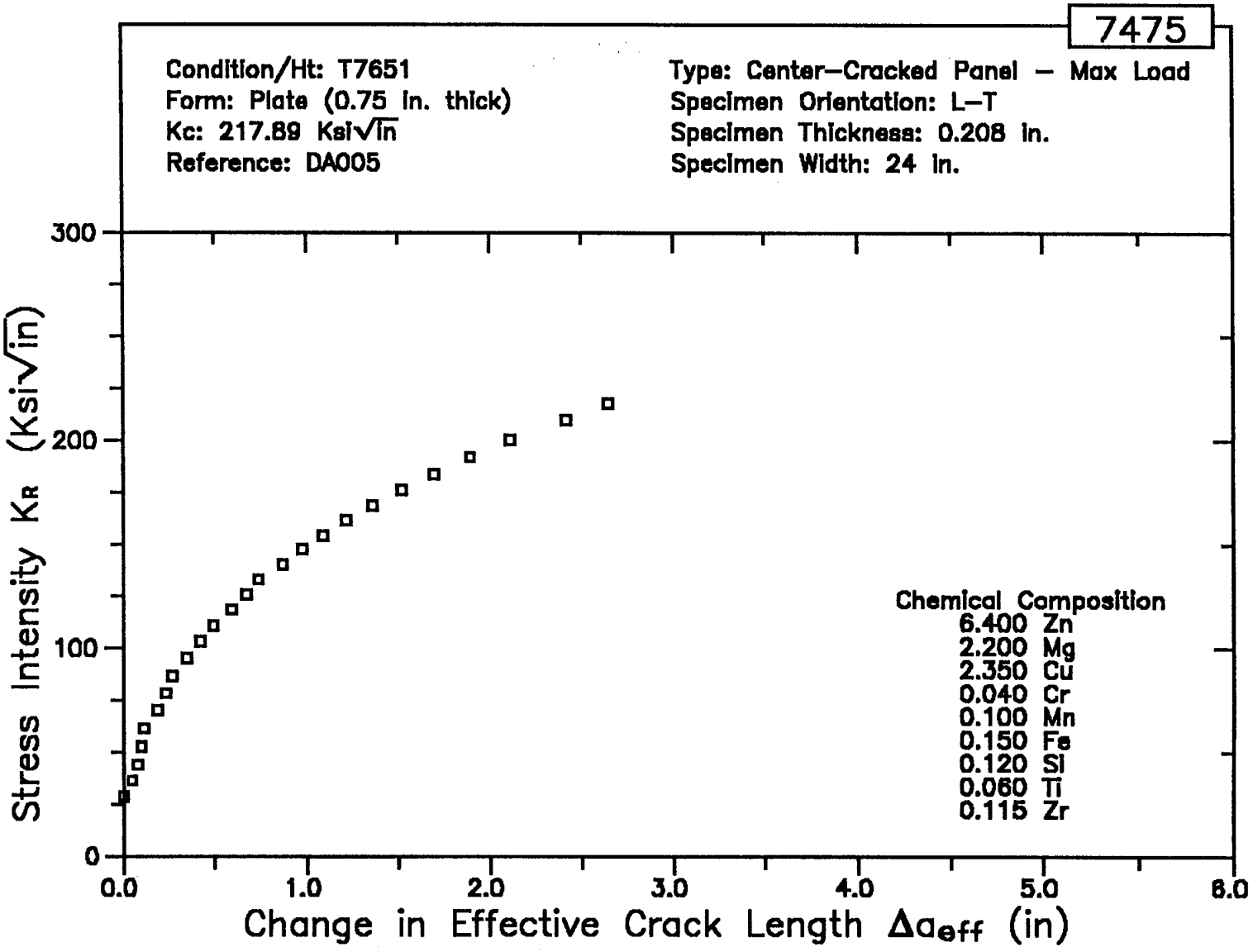



Figure 8.19.2.3.65

# RESISTANCE CURVE

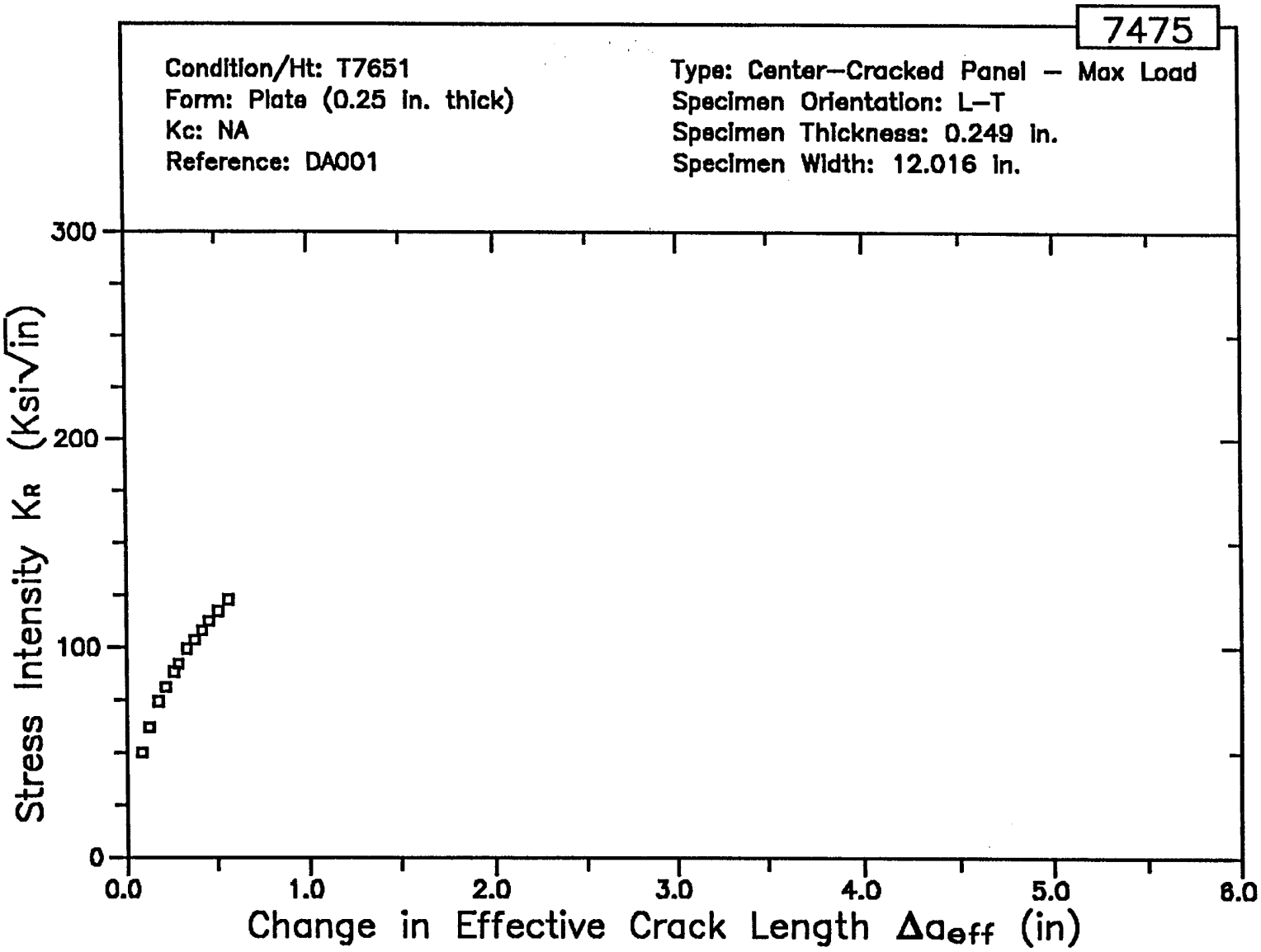



Figure 8.19.2.3.66

# RESISTANCE CURVE

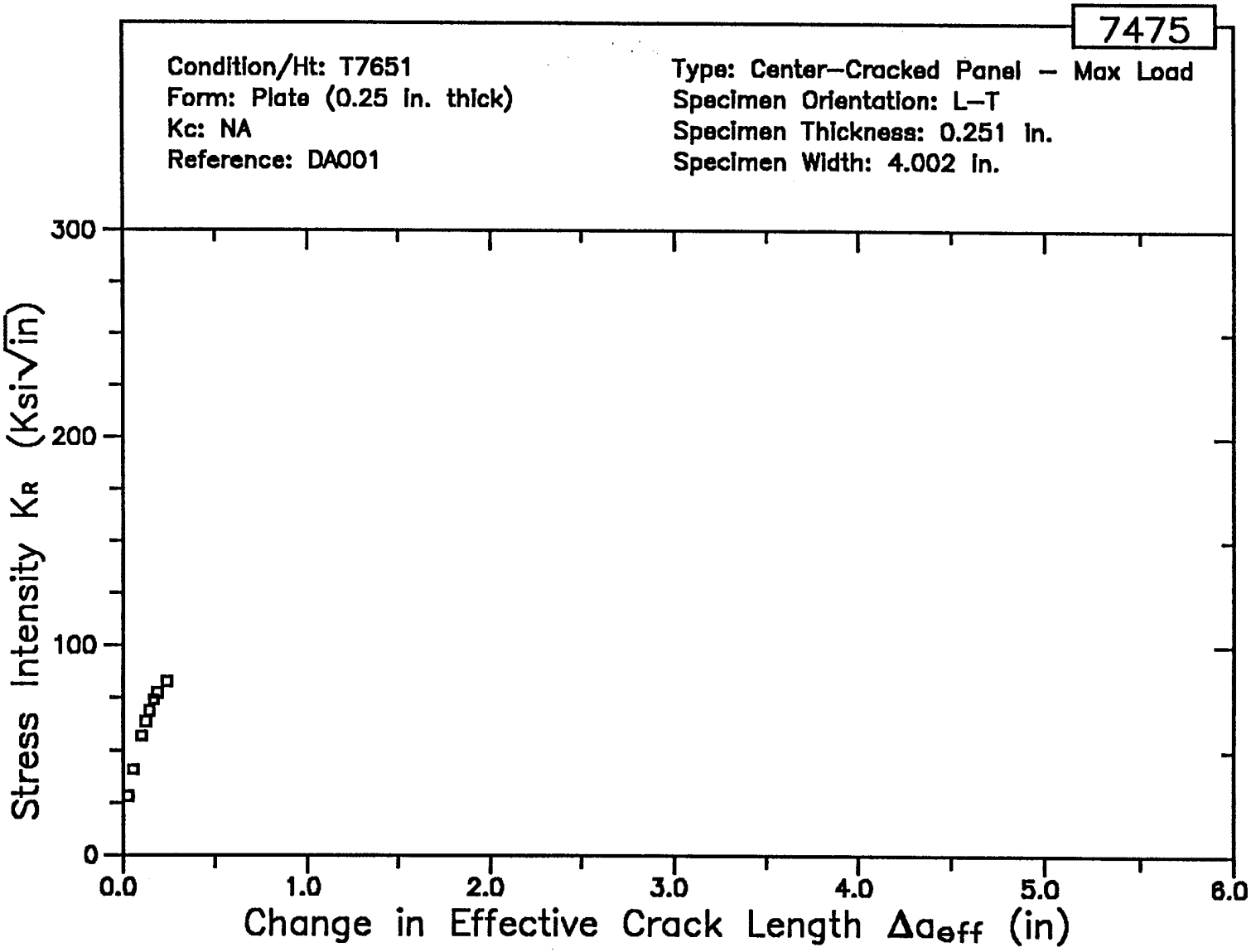



Figure 8.19.2.3.67

# RESISTANCE CURVE

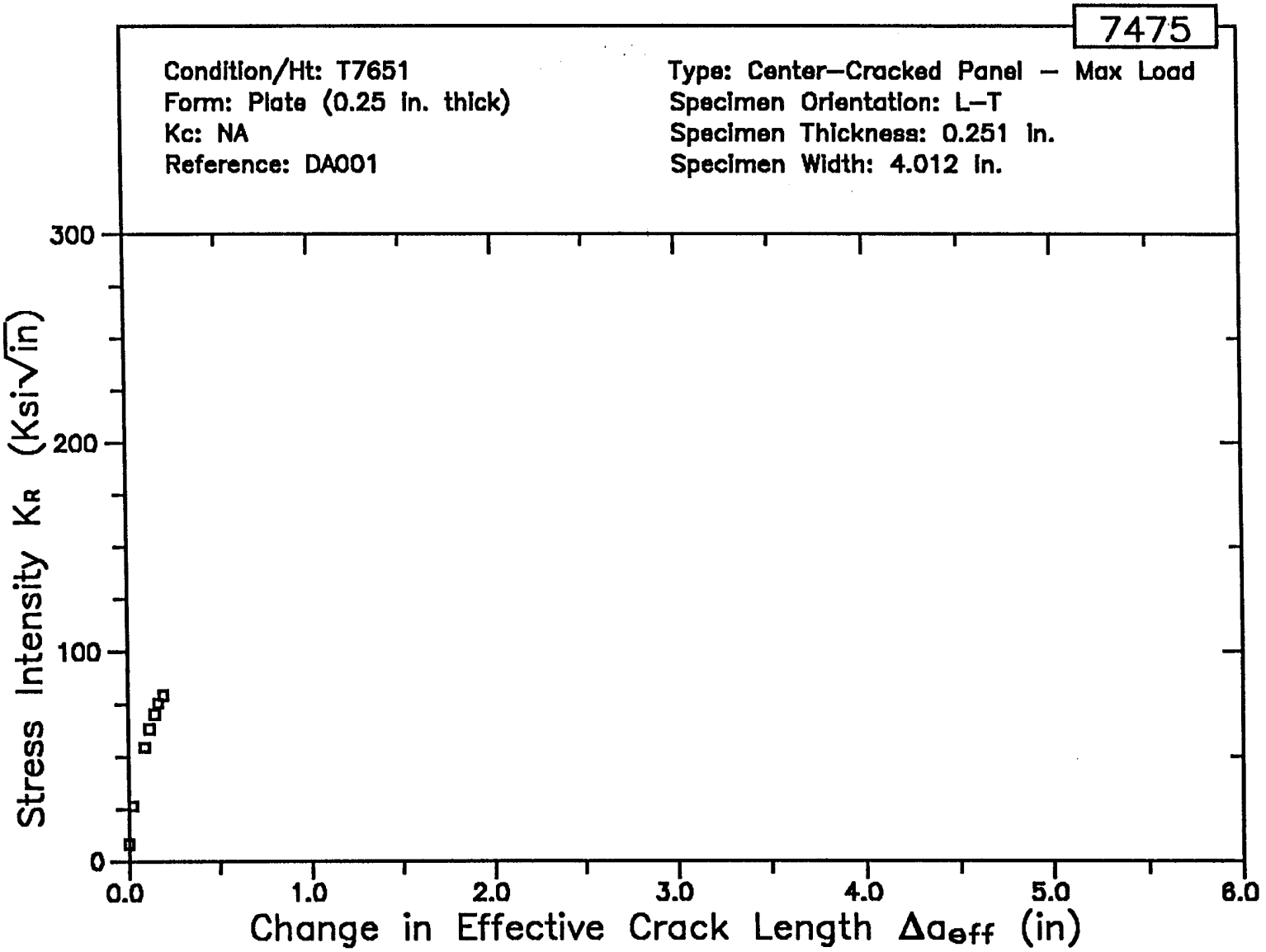



Figure 8.19.2.3.68

# RESISTANCE CURVE

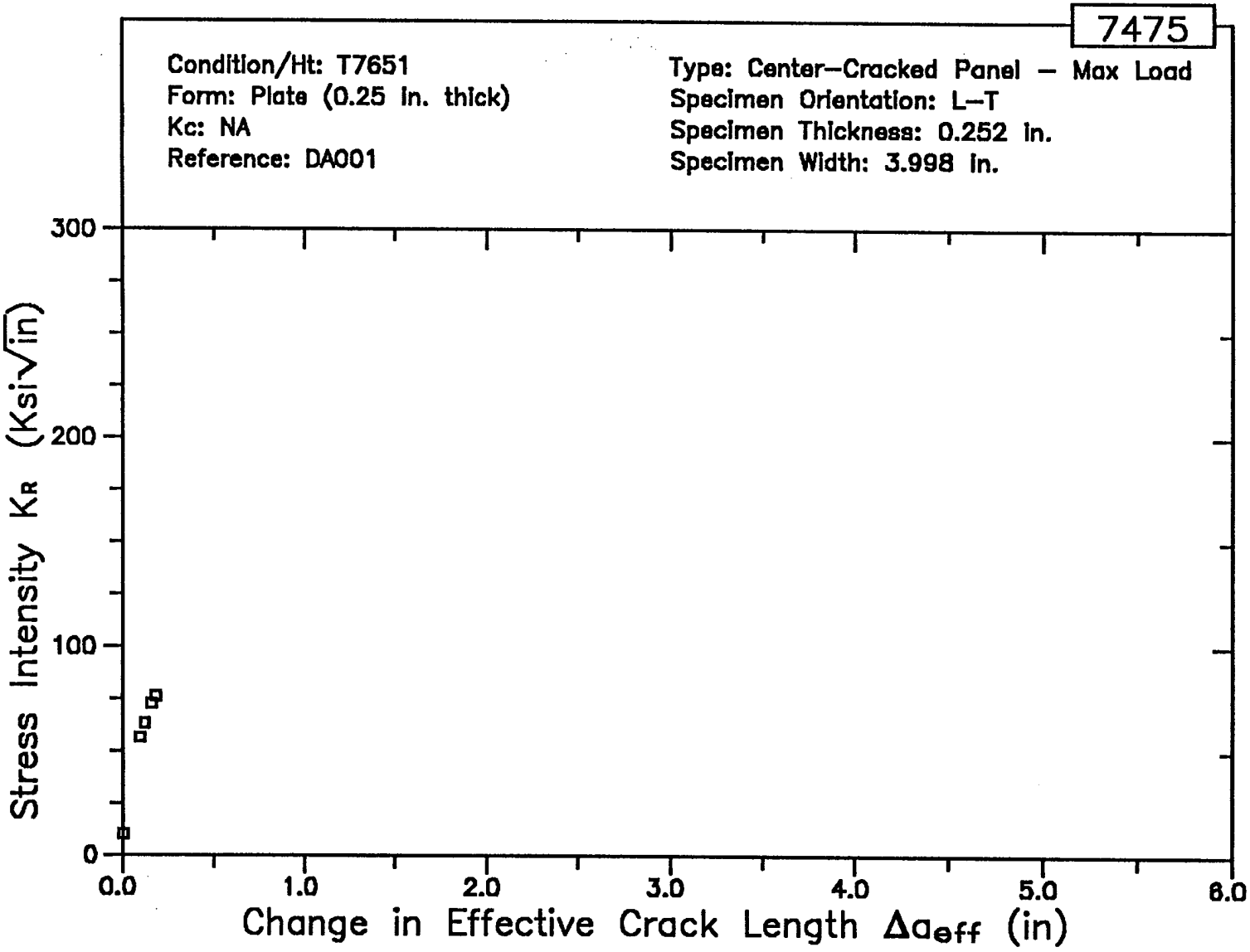



Figure 8.19.2.3.69

# RESISTANCE CURVE

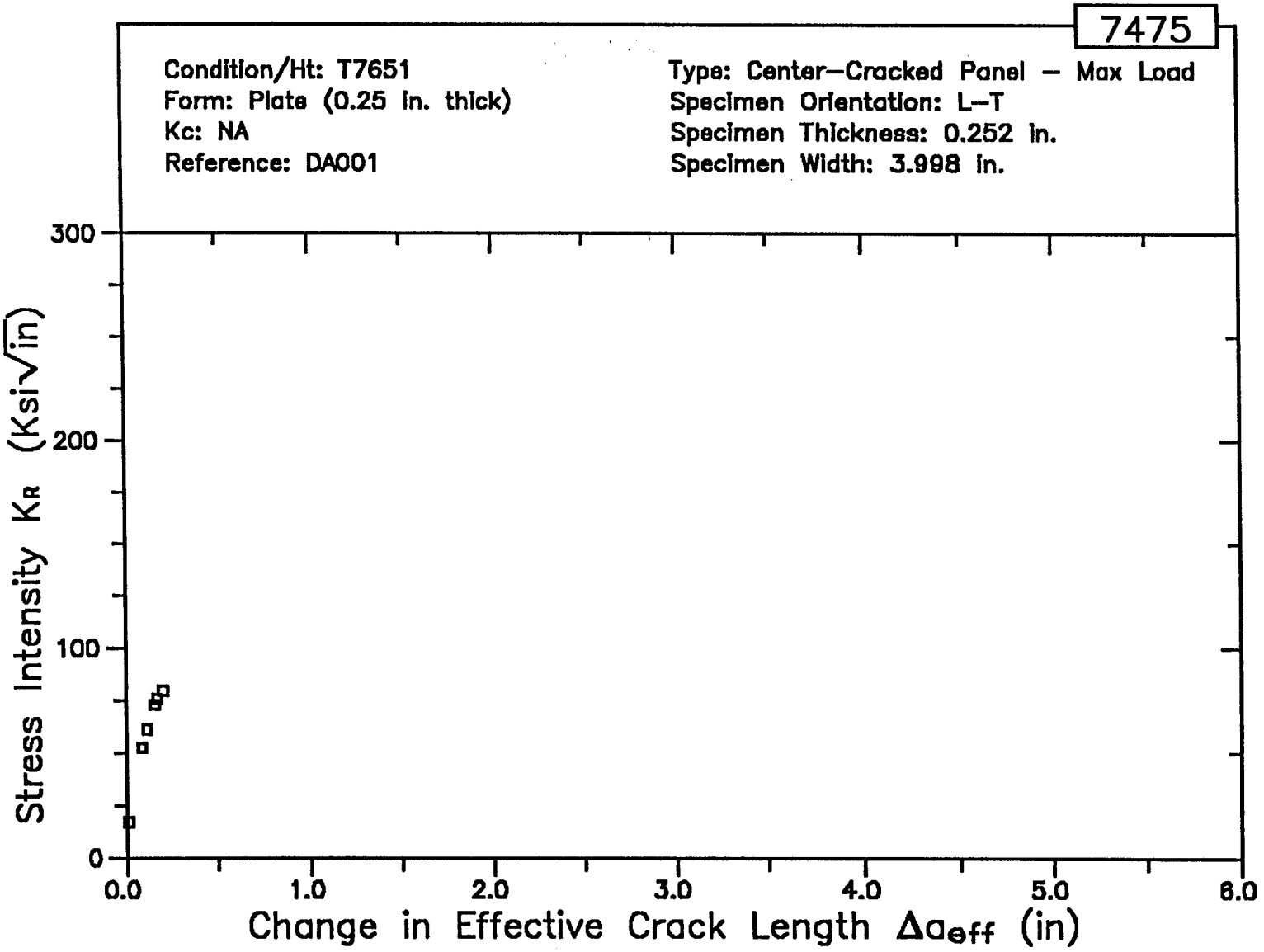



Figure 8.19.2.3.70

# RESISTANCE CURVE

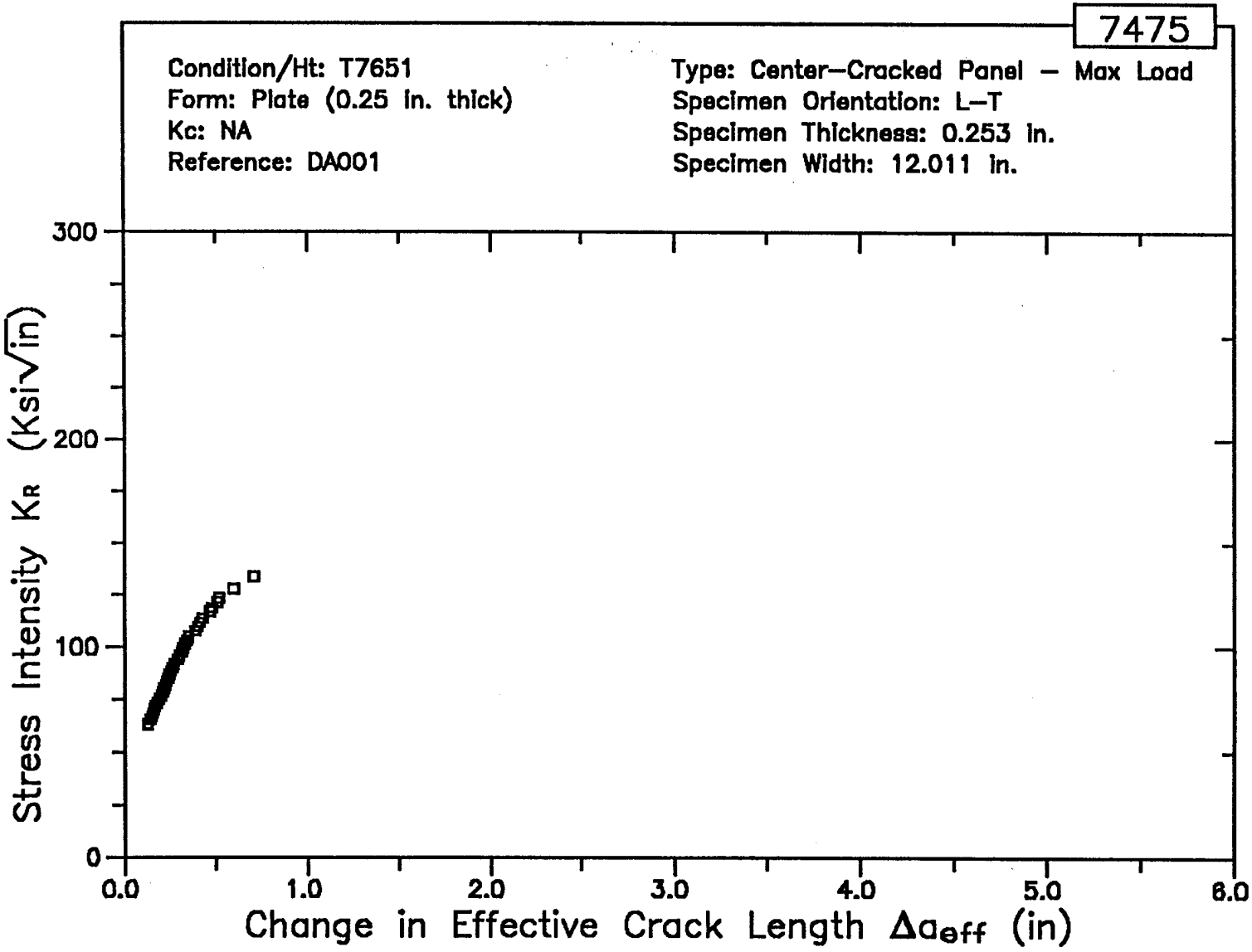



Figure 8.19.2.3.71

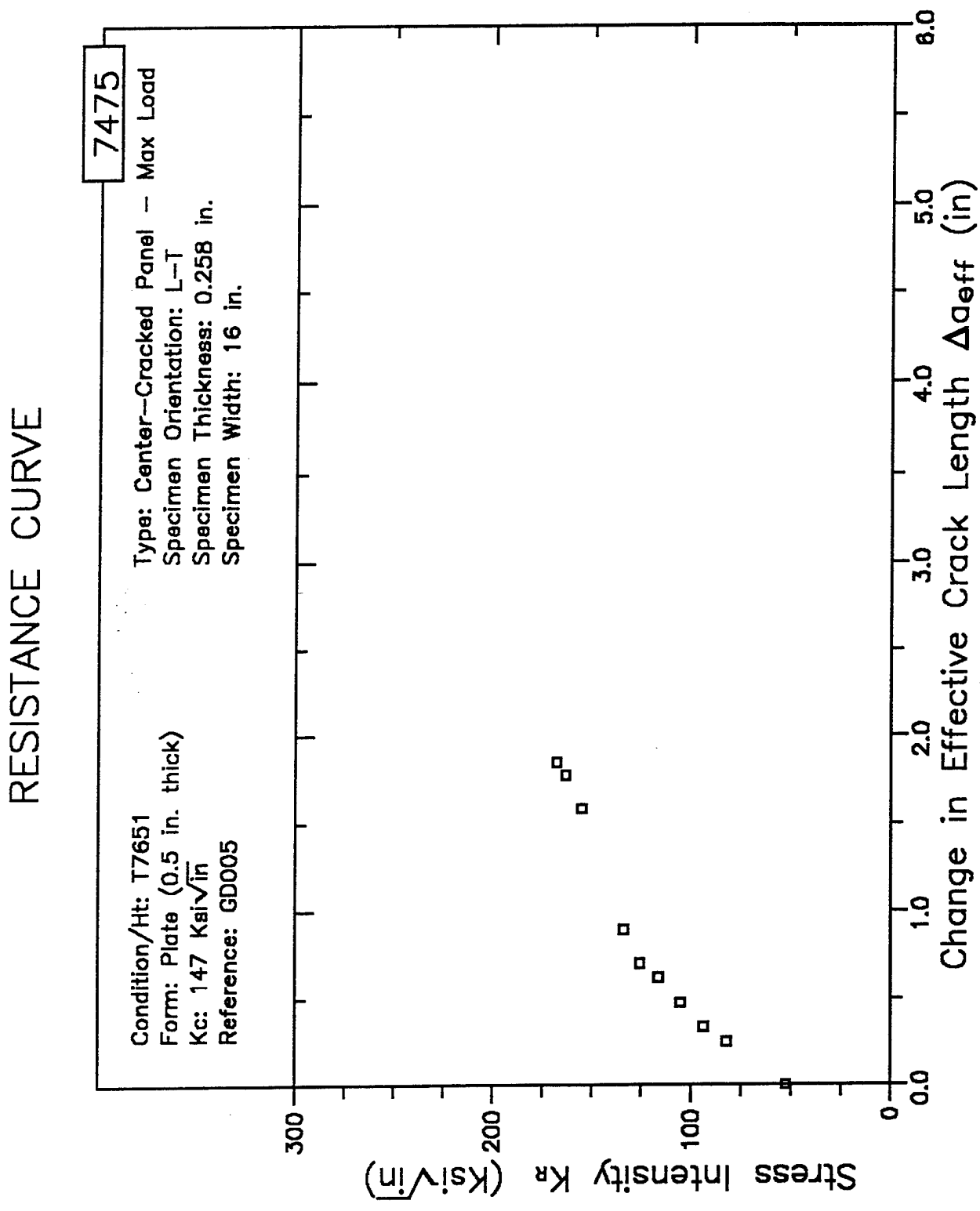



**Figure 8.19.2.3.72**

# RESISTANCE CURVE

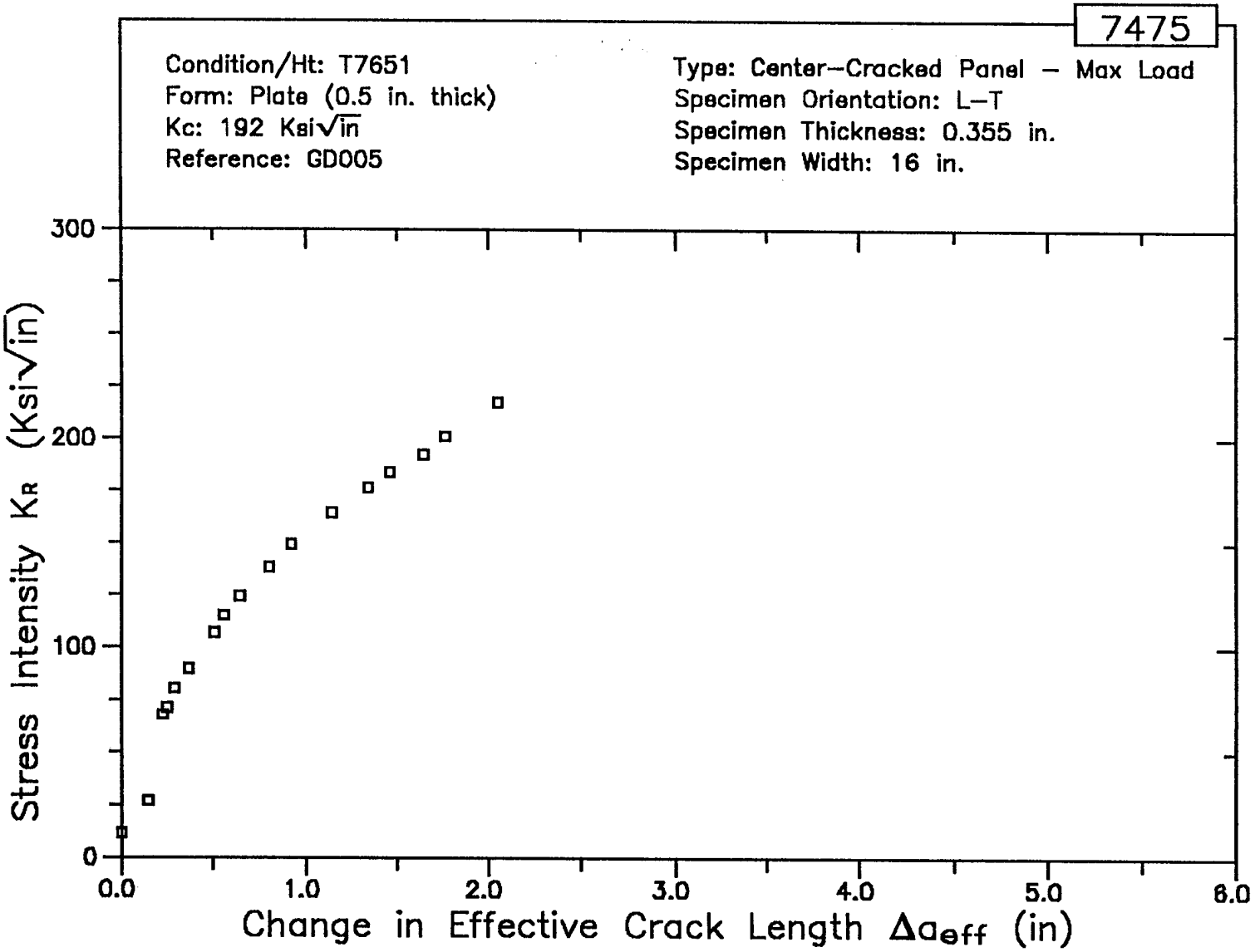



**Figure 8.19.2.3.73**

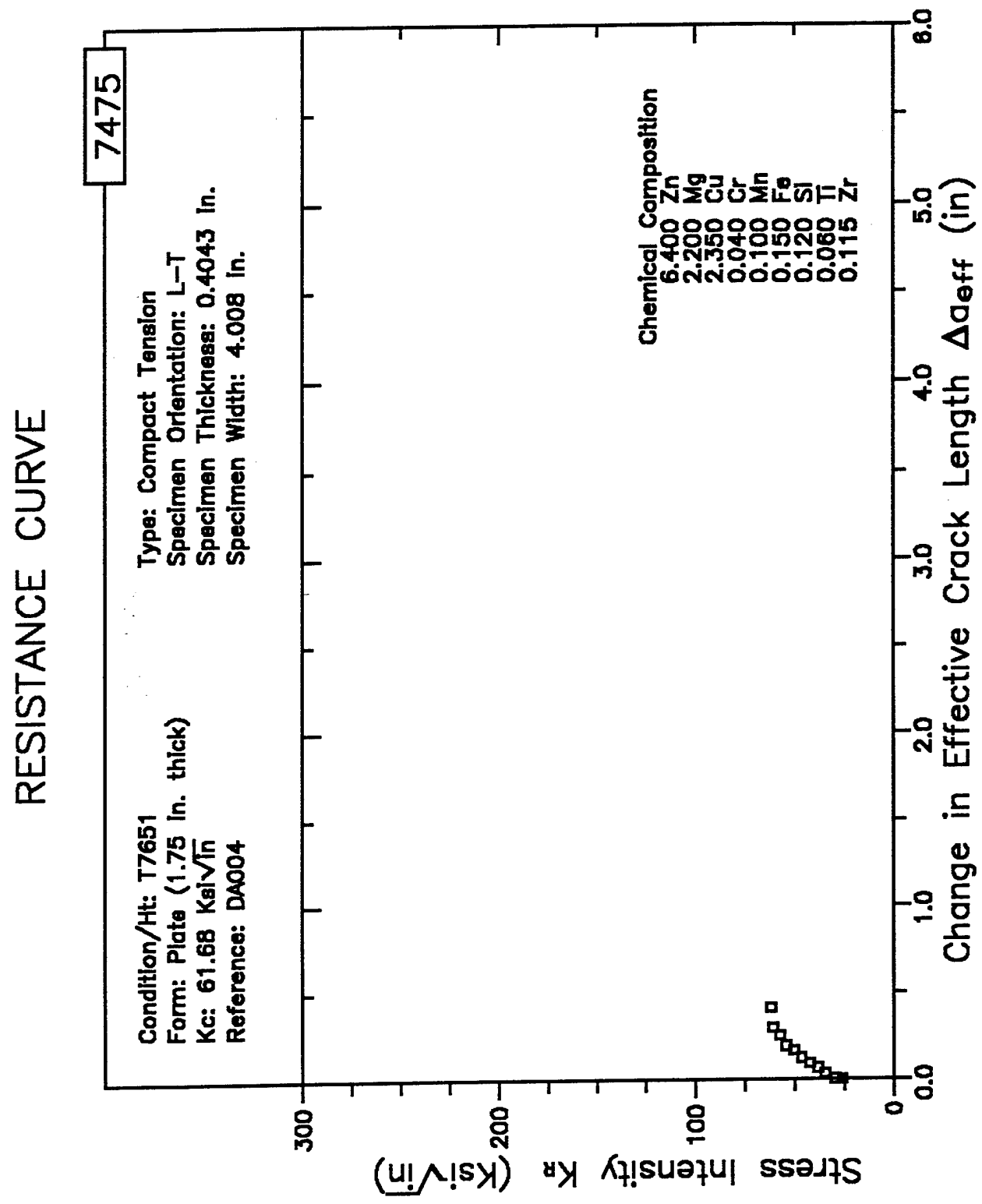



**Figure 8.19.2.3.74**

# RESISTANCE CURVE

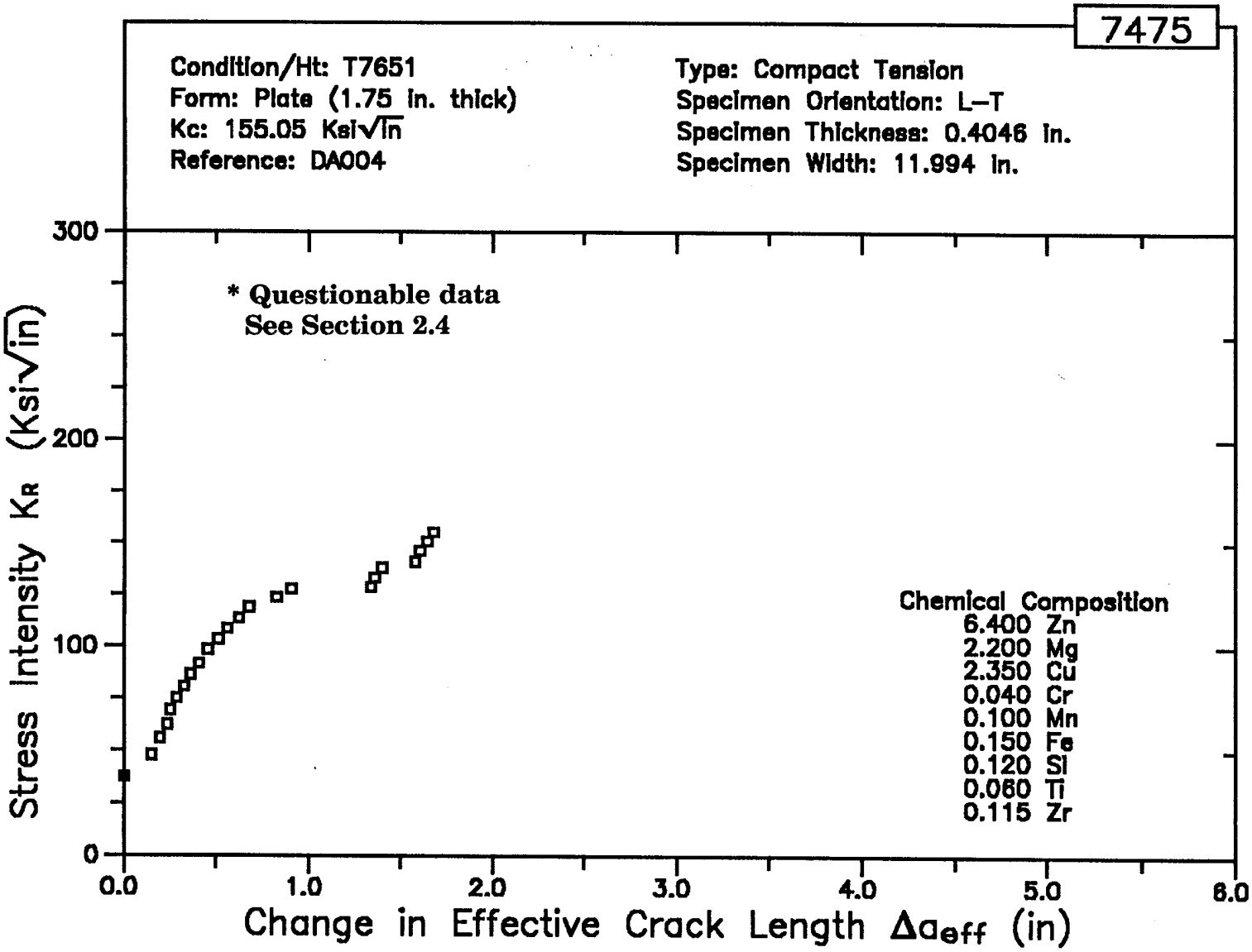



Figure 8.19.2.3.75

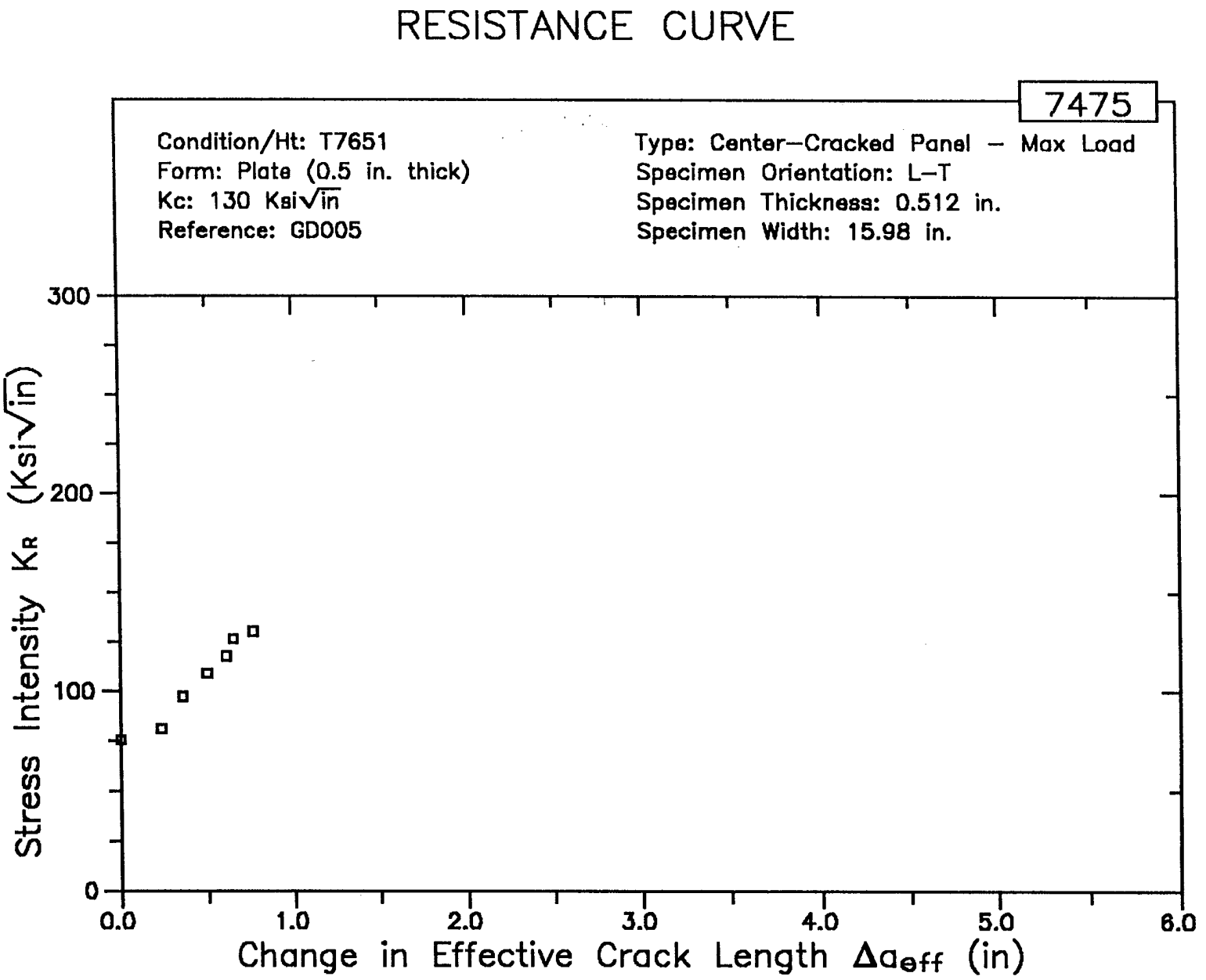


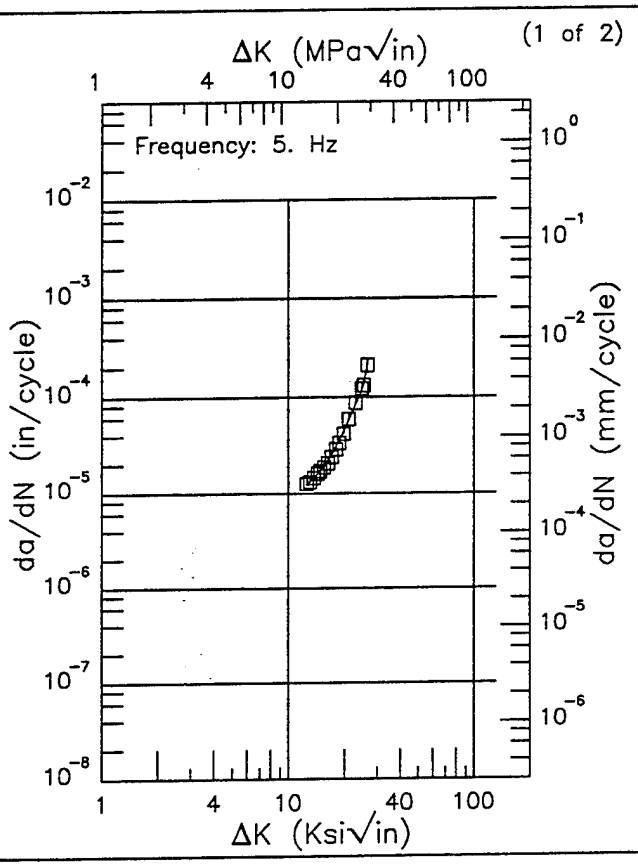

Figure 8.19.2.3.76

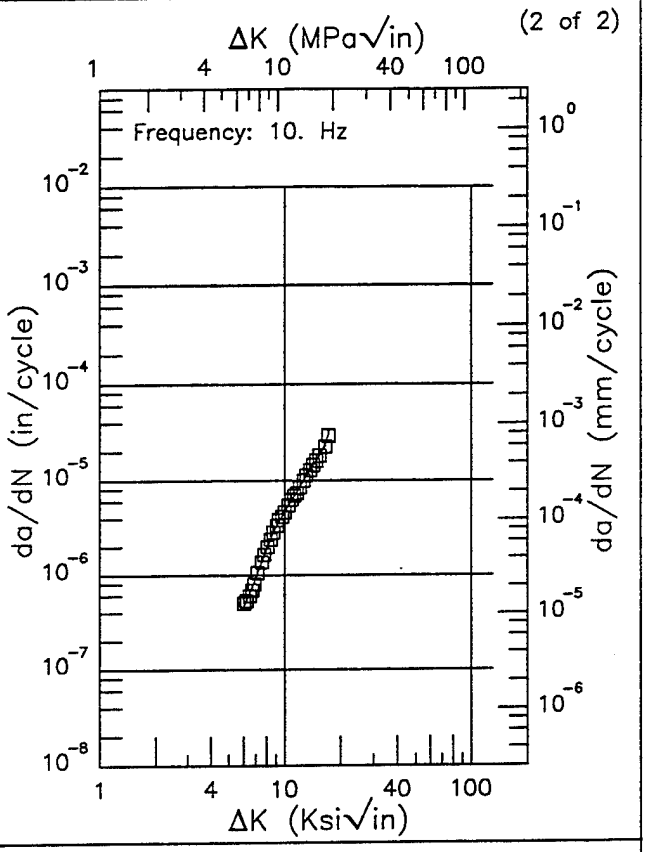
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F 7475

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 71 ksi
Ult. Strength:
Specimen Thk: 0.06 in.
Specimen Width: 3.999 – 4 in.
Ref: RI008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 12.44 (min) | 12.2 |
| 13. | 13.2 |
| 16. | 20.1 |
| 20. | 45.6 |
| 25. | 124. |
| 26.43 (max) | 209. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.05 (min) | 0.469 |
| 7. | 0.923 |
| 8. | 1.89 |
| 9. | 3.27 |
| 10. | 4.74 |
| 13. | 10.9 |
| 16. | 20.1 |
| 17.10 (max) | 28.7 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.56 | 0. .5 .8 1.25 2. |

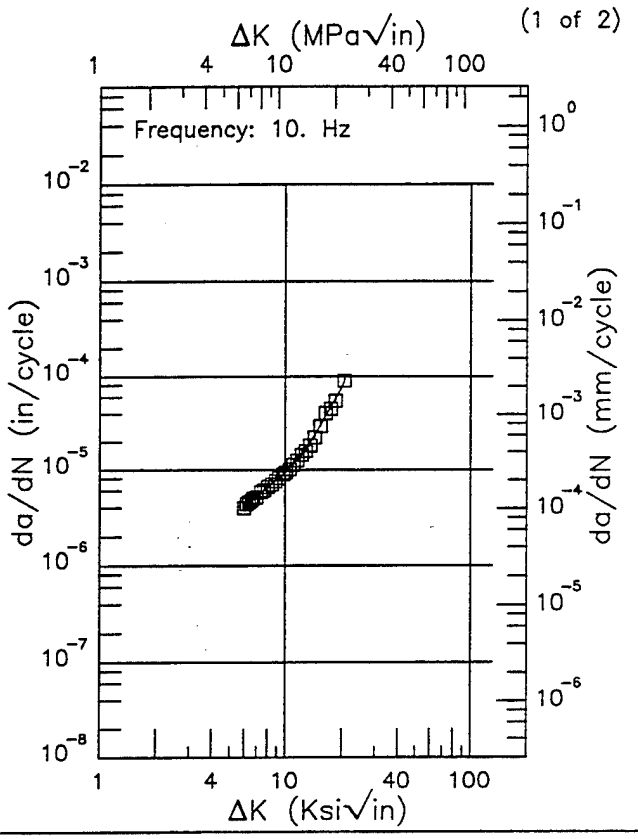
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.85 | 0. .5 .8 1.25 2. |

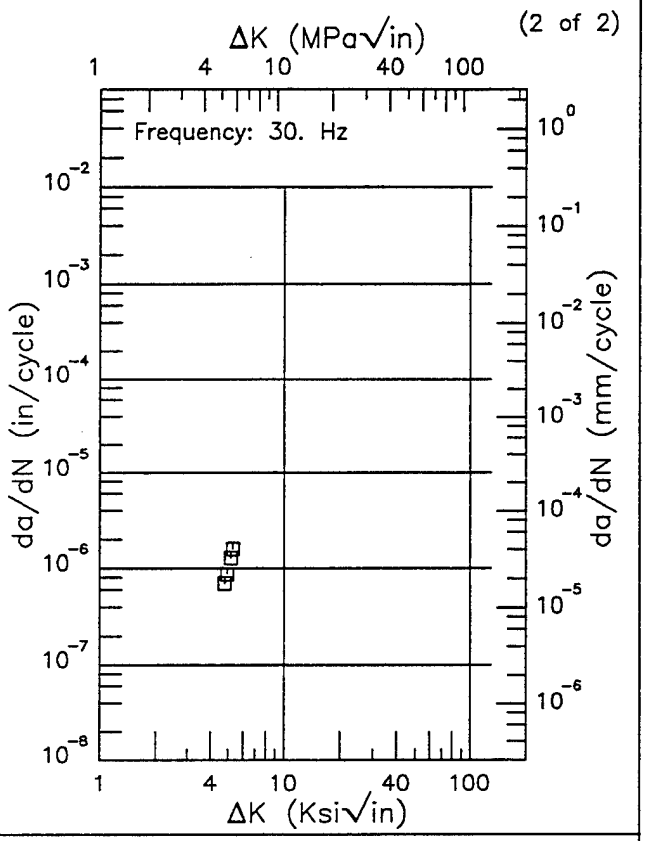
**Figure 8.19.3.1.1**

7475 F

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.3
Environment: LAB AIR; RT

Yield Strength: 71 ksi
Ult. Strength:
Specimen Thk: 0.06 in.
Specimen Width: 3.999 – 4.002 in.
Ref: RI008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.99 (min) | 4.10 |
| 6. | 4.11 |
| 7. | 5.21 |
| 8. | 6.47 |
| 9. | 7.86 |
| 10. | 9.35 |
| 13. | 16.5 |
| 16. | 35.1 |
| 20. | 77.1 |
| 20.54 (max) | 89.6 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.74 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

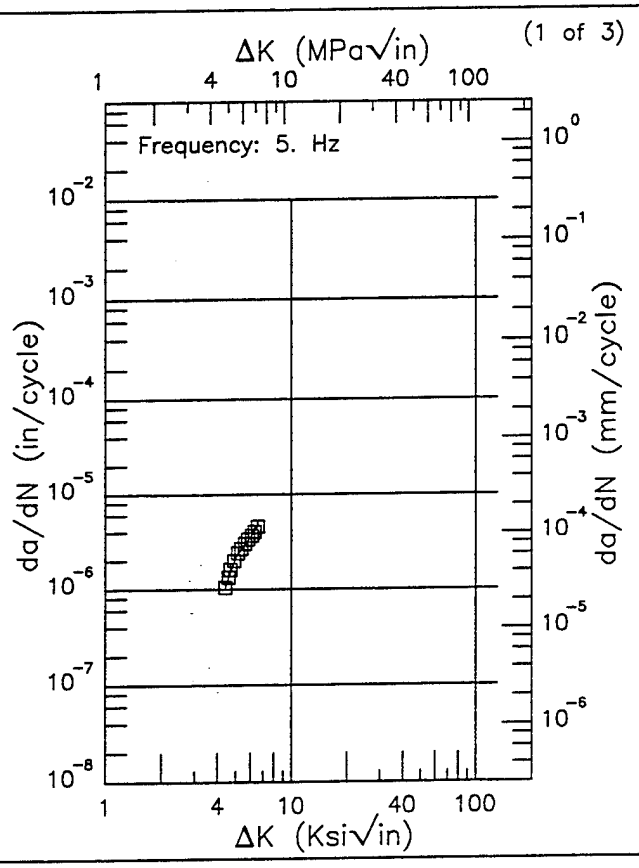
**Figure 8.19.3.1.2**

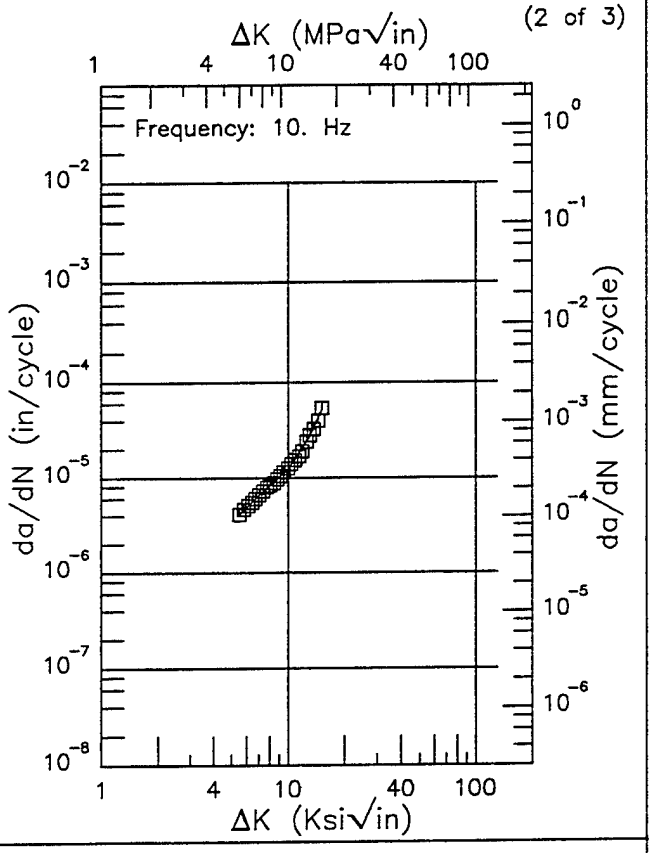
## 7475

F

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.5
Environment: LAB AIR; RT

Yield Strength: 71 ksi
Ult. Strength:
Specimen Thk: 0.06 – 0.061 in.
Specimen Width: 3.999 – 4 in.
Ref: RI008




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.41 (min) | 1.05 |
| 5. | 2.14 |
| 6. | 3.50 |
| 6.57 (max) | 4.56 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.50 (min) | 4.07 |
| 6. | 4.85 |
| 7. | 6.53 |
| 8. | 8.30 |
| 9. | 10.2 |
| 10. | 12.4 |
| 13. | 26.6 |
| 15.18 (max) | 52.2 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.44 | 0. .5 .8 1.25 2. |

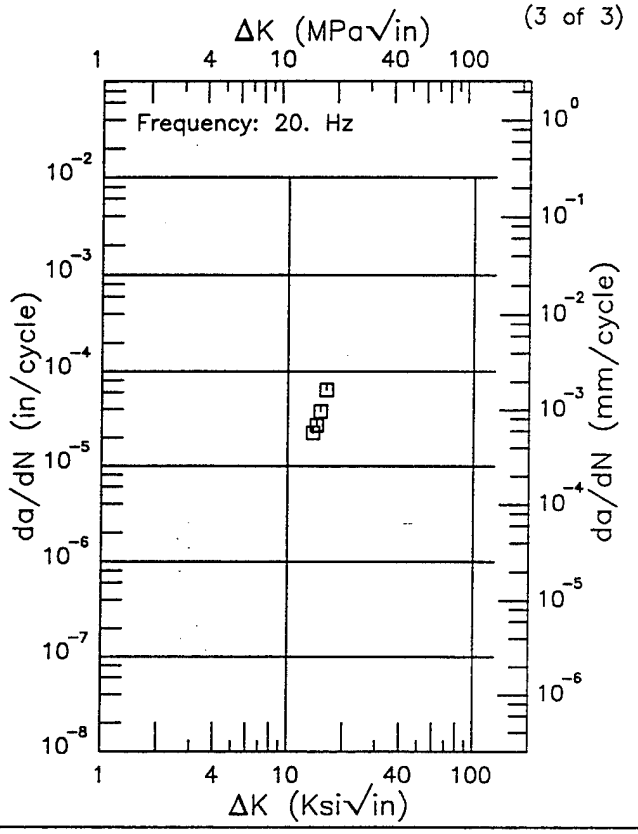
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.23 | 0. .5 .8 1.25 2. |

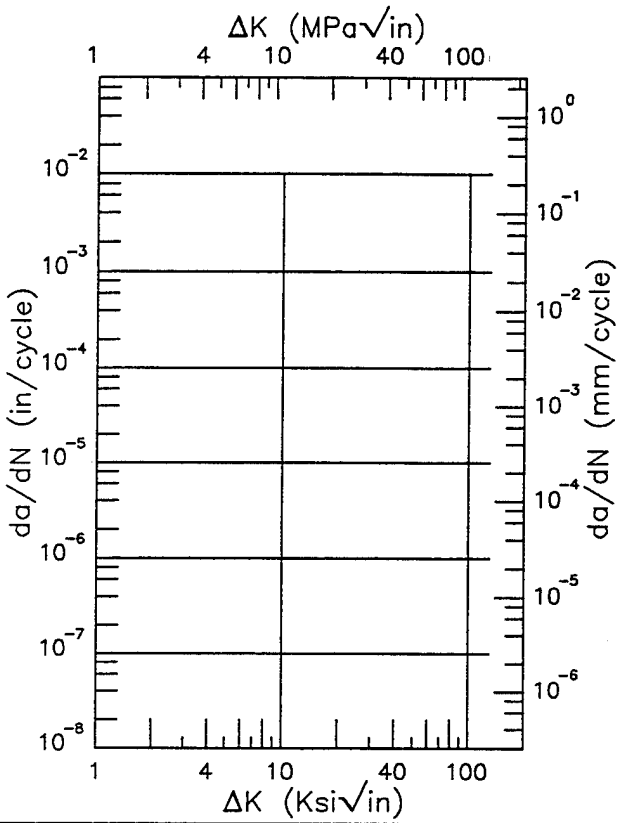
**Figure 8.19.3.1.3**

7475 F

Condition/Ht: T6
Form: Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.5
Environment: LAB AIR; RT

Yield Strength: 71 ksi
Ult. Strength:
Specimen Thk: 0.06 – 0.061 in.
Specimen Width: 3.999 – 4 in.
Ref: RI008




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

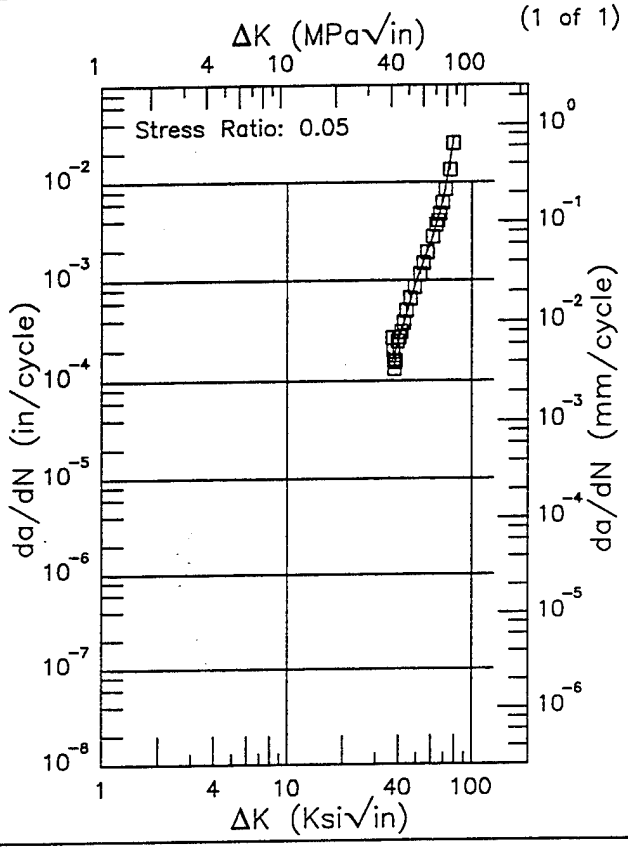
**Figure 8.19.3.1.3 (Concluded)**

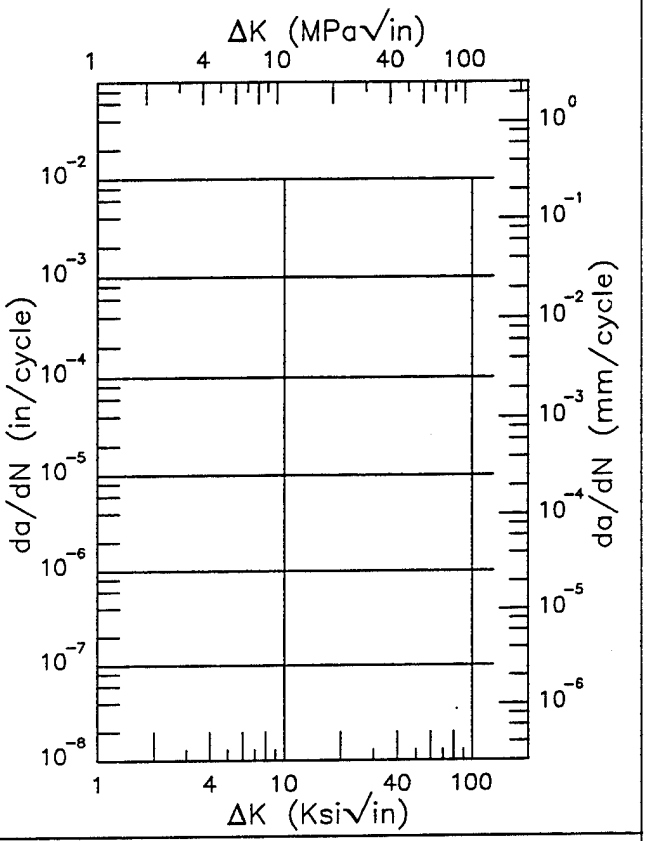
7475

R

Condition/Ht: T61
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 75.3 ksi
Ult. Strength: 80.1 ksi
Specimen Thk: 0.111 in.
Specimen Width: 12 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 37.09 (min) | 157. |
| 40. | 242. |
| 50. | 962. |
| 60. | 2377. |
| 70. | 6621. |
| 79.11 (max) | 23897. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.50 | 0. .5 .8 1.25 2. |

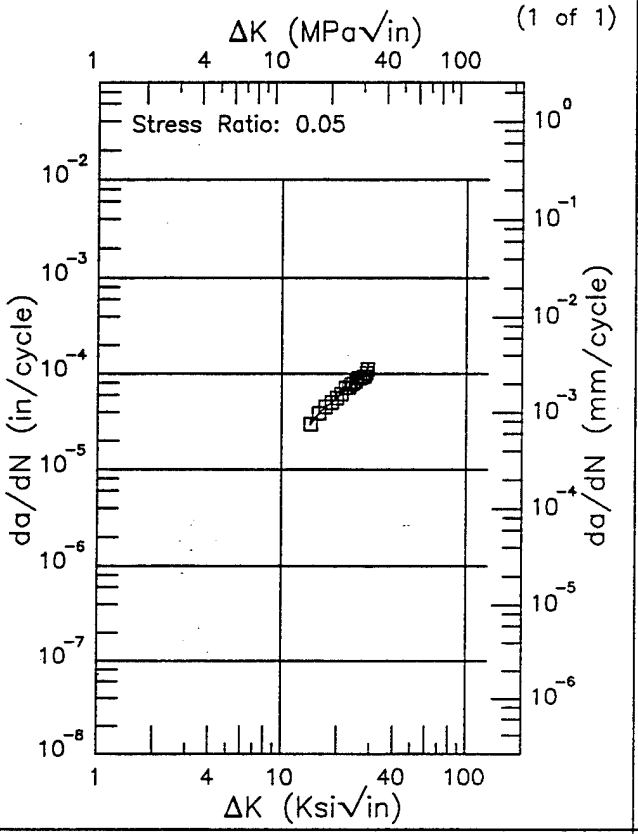
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

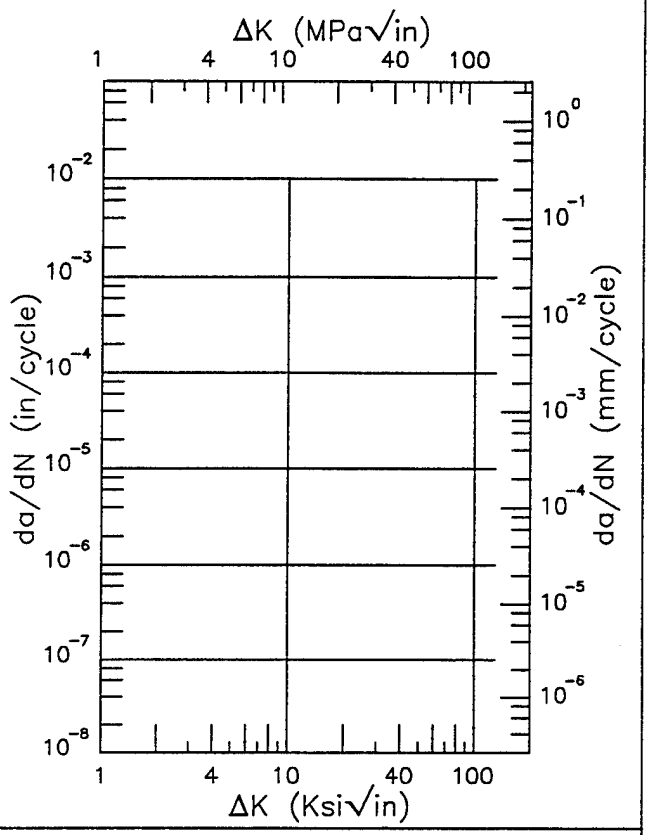
**Figure 8.19.3.1.4**

7475 R

Condition/Ht: T61
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 75.3 ksi
Ult. Strength: 80.1 ksi
Specimen Thk: 0.112 in.
Specimen Width: 23.98 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 14.23 (min) | 29.6 |
| 16. | 39.6 |
| 20. | 57.0 |
| 25. | 83.3 |
| 28.96 (max) | 104. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.78 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.5**

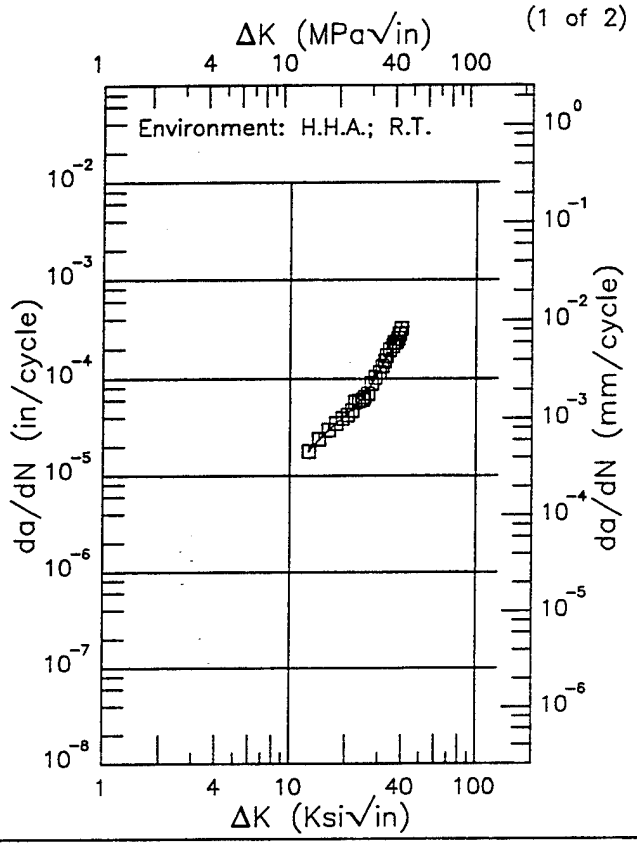
7475

E

Condition/Ht: T61
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.05
Frequency: 2 Hz

Yield Strength: 68.6 – 75.3 ksi
Ult. Strength: 74.5 – 80.1 ksi
Specimen Thk: 0.112 – 0.113 in.
Specimen Width: 36 in.
Ref: 86212

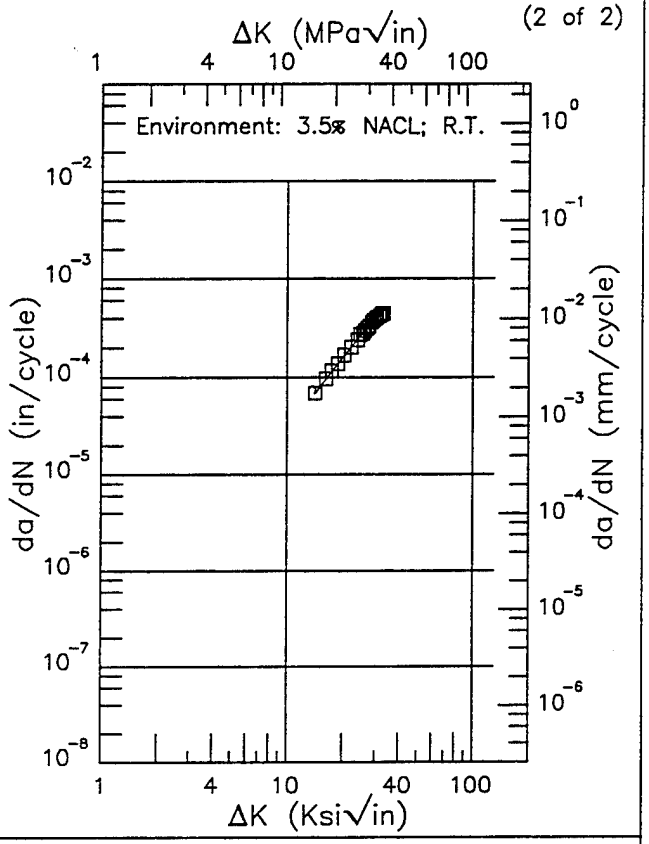
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 12.56 (min) | 17.8 |
| 13. | 19.4 |
| 16. | 29.5 |
| 20. | 42.3 |
| 25. | 66.4 |
| 30. | 116. |
| 35. | 199. |
| 39.58 (max) | 305. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.35 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 14.22 (min) | 68.2 |
| 16. | 91.8 |
| 20. | 159. |
| 25. | 264. |
| 30. | 391. |
| 33.00 (max) | 441. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.19 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.6**

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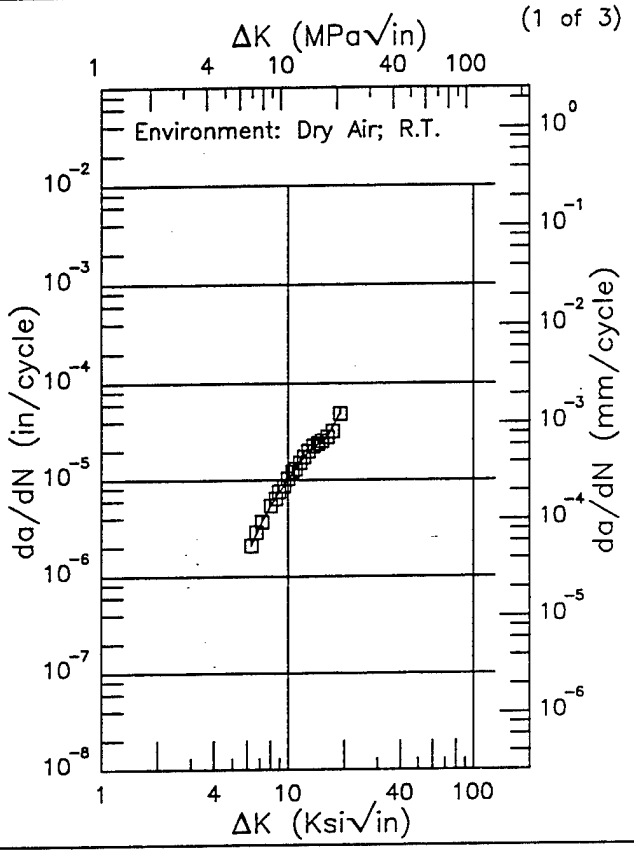
7475

E

Condition/Ht: T61
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 76.8 ksi
Ult. Strength: 82 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842

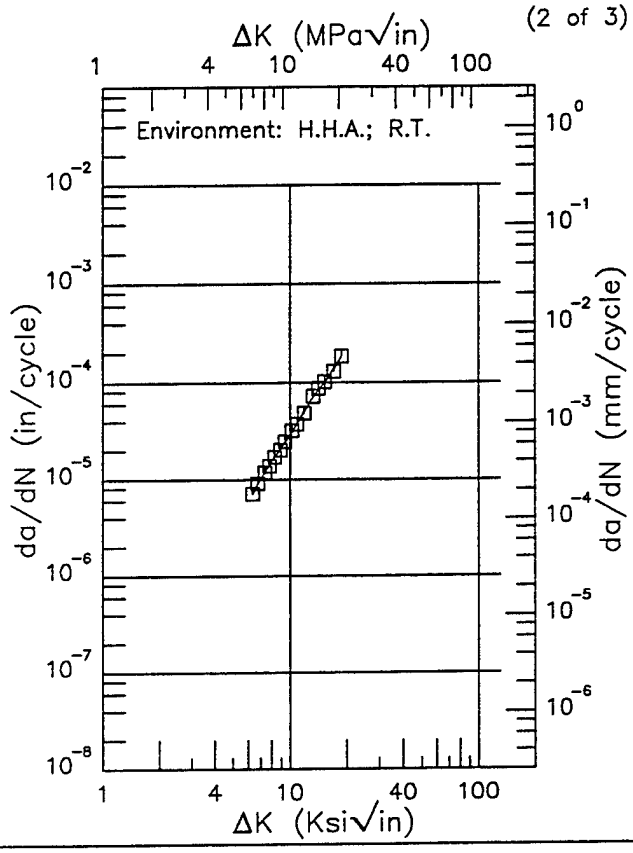
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.32 (min) | 2.13 |
| 7. | 3.30 |
| 8. | 5.31 |
| 9. | 7.61 |
| 10. | 10.2 |
| 13. | 20.2 |
| 16. | 27.2 |
| 18.93 (max) | 48.4 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.21 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.33 (min) | 7.10 |
| 7. | 10.2 |
| 8. | 15.3 |
| 9. | 21.3 |
| 10. | 28.7 |
| 13. | 67.3 |
| 16. | 112. |
| 18.76 (max) | 183. |

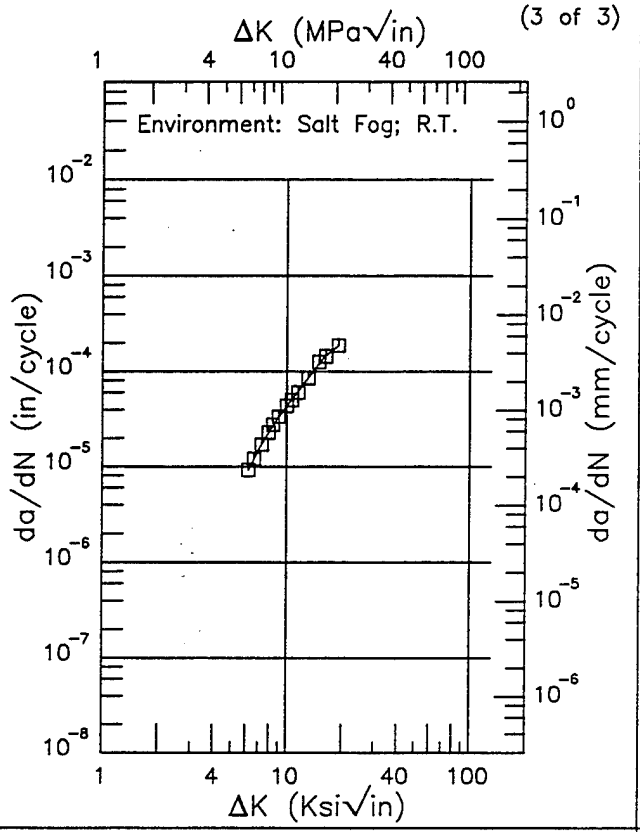
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.66 | 0. .5 .8 1.25 2. |

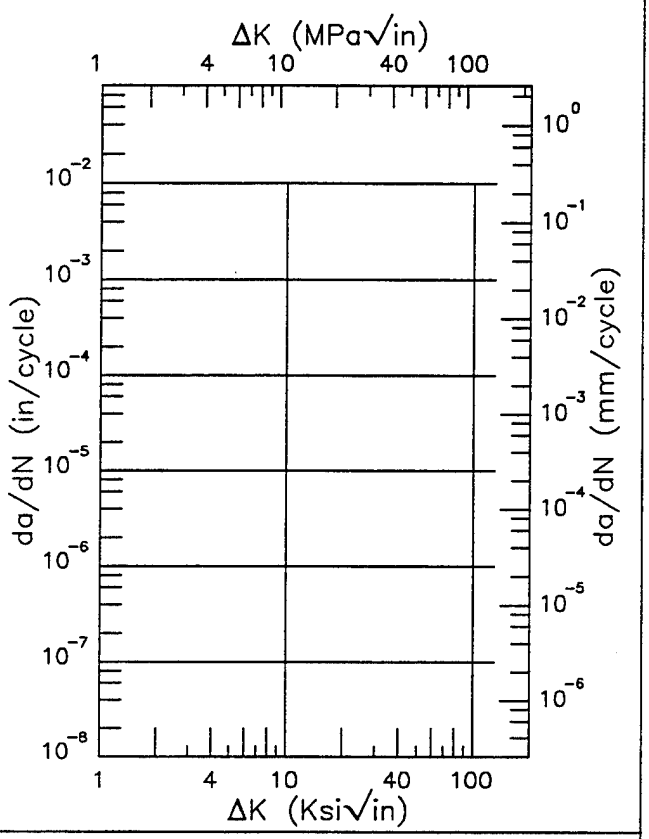
**Figure 8.19.3.1.7**

7475 E

Condition/Ht: T61
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 76.8 ksi
Ult. Strength: 82 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.18 (min) | 9.09 |
| 7. | 15.1 |
| 8. | 23.7 |
| 9. | 33.3 |
| 10. | 43.8 |
| 13. | 85.2 |
| 16. | 144. |
| 18.95 (max) | 185. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.71 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.7 (Concluded)**

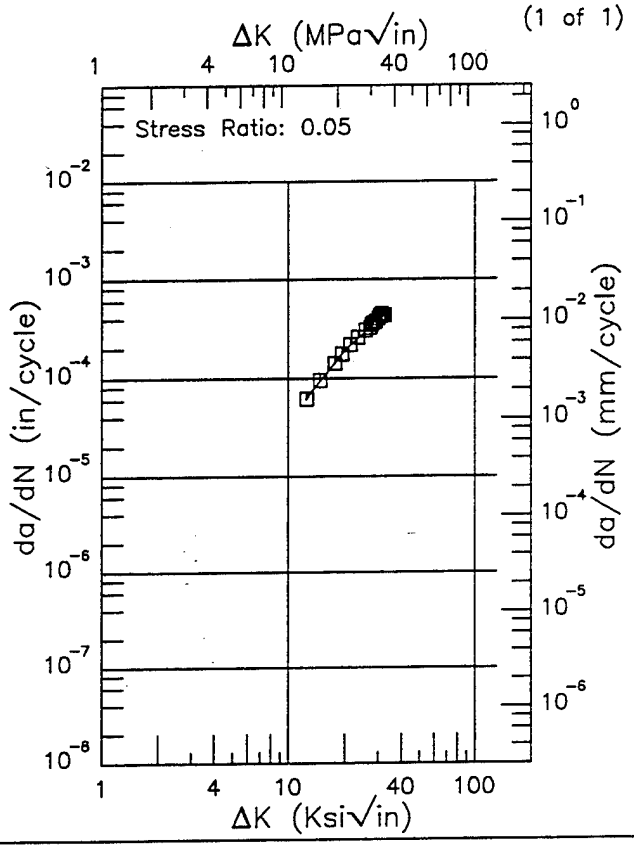
7475

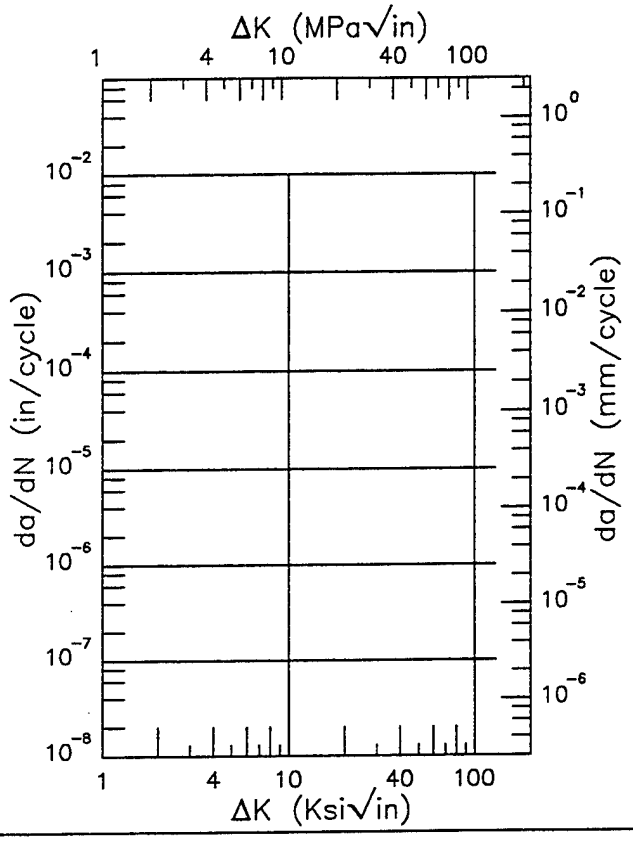
R

Condition/Ht: T61
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T-L
Frequency: 2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 73.1 ksi
Ult. Strength: 80.6 ksi
Specimen Thk: 0.112 in.
Specimen Width: 35.98 in.
Ref: 86212

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 12.45 (min) | 61.3 |
| 13. | 68.7 |
| 16. | 114. |
| 20. | 191. |
| 25. | 286. |
| 30. | 404. |
| 32.47 (max) | 435. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.90 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.8**

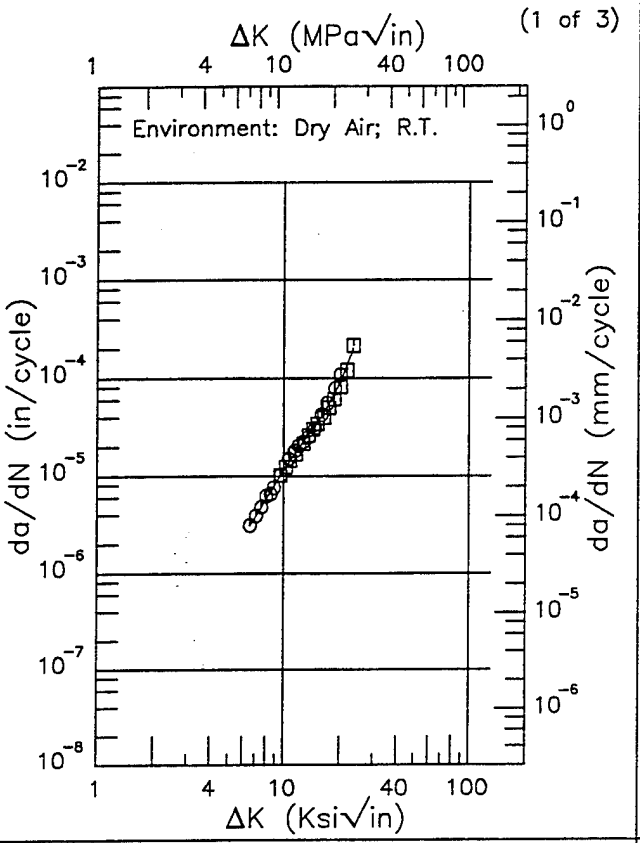
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7475

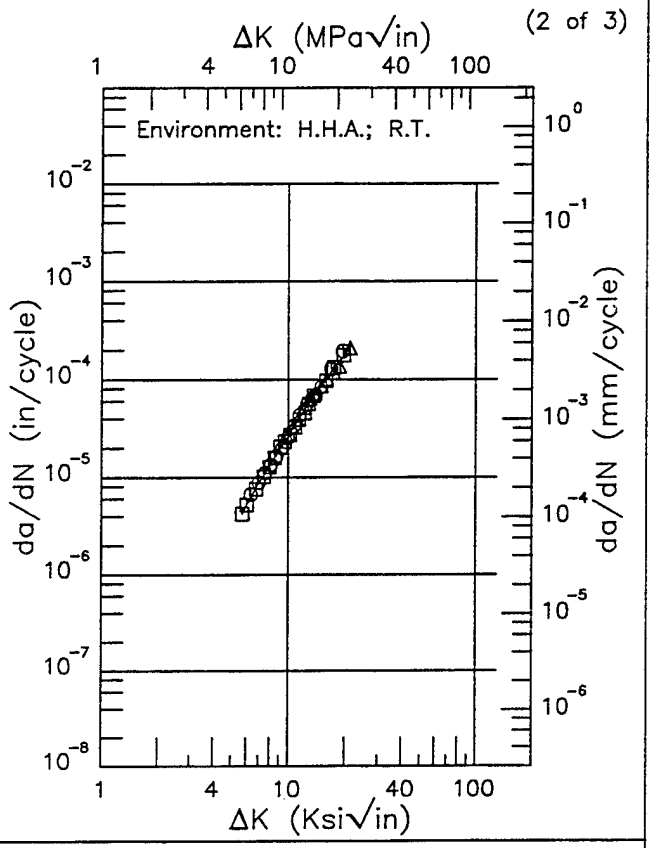
E

Condition/Ht: T61
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 73.1 ksi
Ult. Strength: 76.8 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.57 (min) | 3.08 |
| 7. | 3.76 |
| 8. | 5.74 |
| 9. | 8.31 |
| 10. | 11.5 |
| 13. | 23.8 |
| 16. | 41.1 |
| 20. | 89.7 |
| 23.38 (max) | 201. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.72 (min) | 4.34 |
| 6. | 5.17 |
| 7. | 8.72 |
| 8. | 13.2 |
| 9. | 19.0 |
| 10. | 26.3 |
| 13. | 58.8 |
| 16. | 101. |
| 20. | 181. |
| 21.13 (max) | 208. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.28 | 0. .5 .8 1.25 2. |

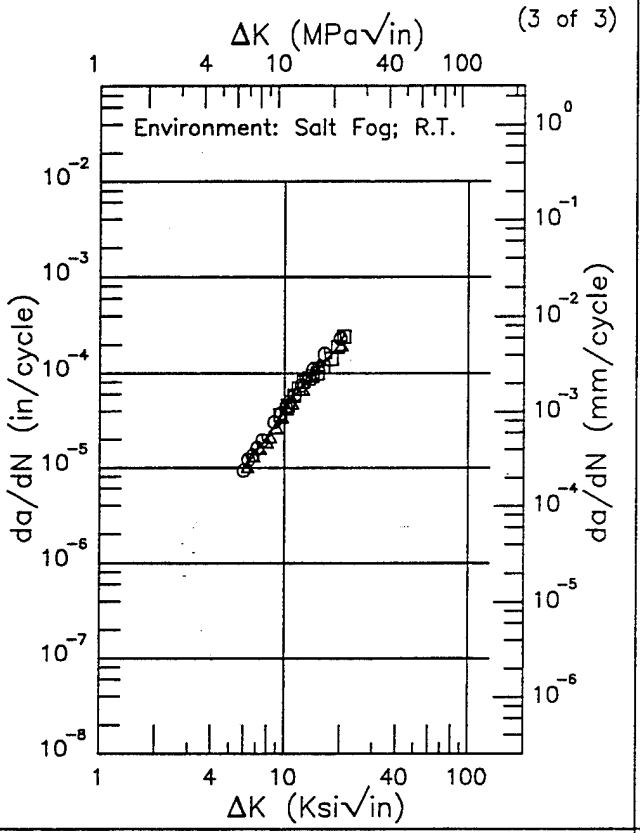
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.82 | 0. .5 .8 1.25 2. |

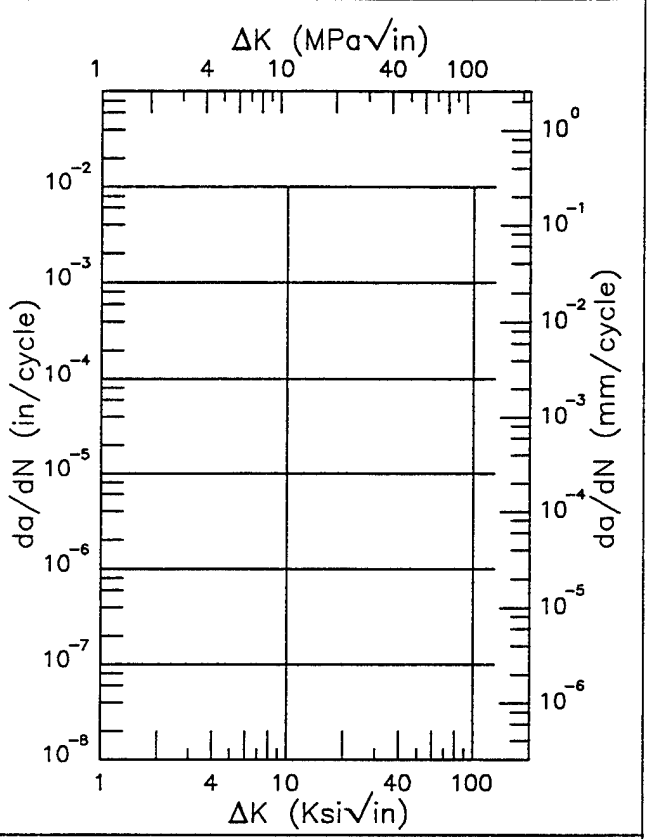
**Figure 8.19.3.1.9**

7475 E

Condition/Ht: T61
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 73.1 ksi
Ult. Strength: 76.8 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.95 (min) | 9.67 |
| 6. | 9.88 |
| 7. | 14.7 |
| 8. | 21.1 |
| 9. | 29.3 |
| 10. | 40.2 |
| 13. | 85.9 |
| 16. | 127. |
| 20. | 209. |
| 20.82 (max) | 251. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.49 | ΔK 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.9 (Concluded)**

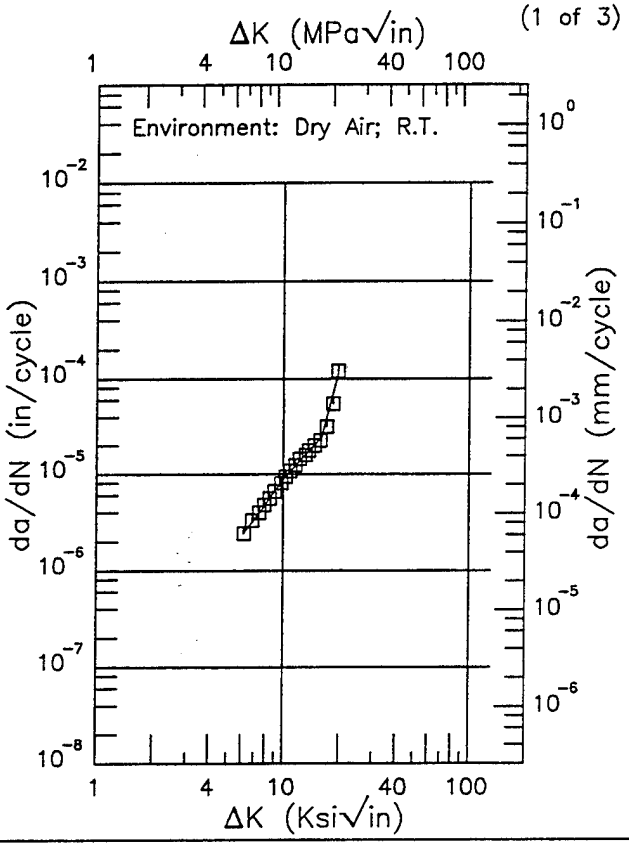
7475

E

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 72.1 ksi
Ult. Strength: 70.8 – 79.8 ksi
Specimen Thk: 0.042 – 0.045 in.
Specimen Width: 4 in.
Ref: 86842

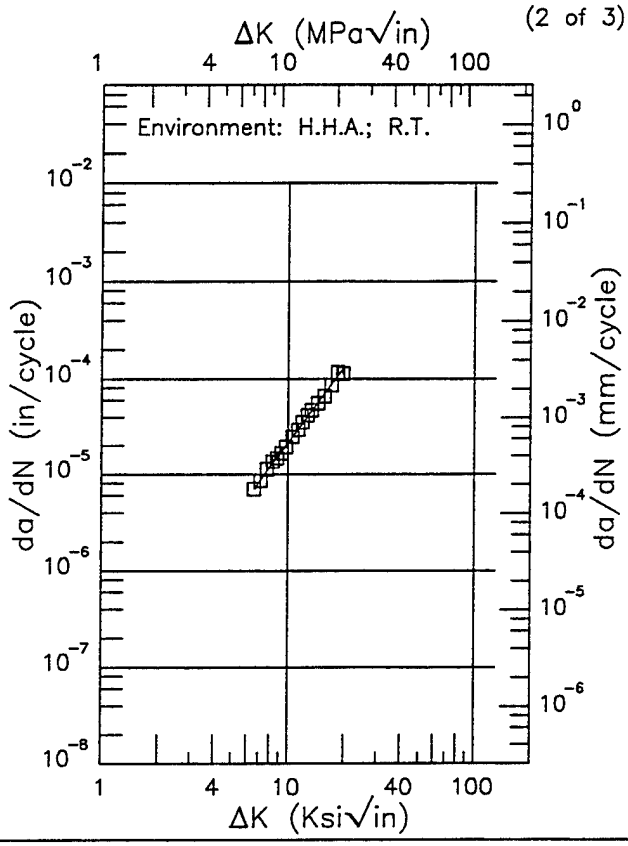
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.16 (min) | 2.49 |
| 7. | 3.36 |
| 8. | 4.80 |
| 9. | 6.67 |
| 10. | 8.87 |
| 13. | 15.6 |
| 16. | 24.6 |
| 19.58 (max) | 115. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.67 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.60 (min) | 7.03 |
| 7. | 8.26 |
| 8. | 11.8 |
| 9. | 16.2 |
| 10. | 21.3 |
| 13. | 42.4 |
| 16. | 73.3 |
| 19.57 (max) | 125. |

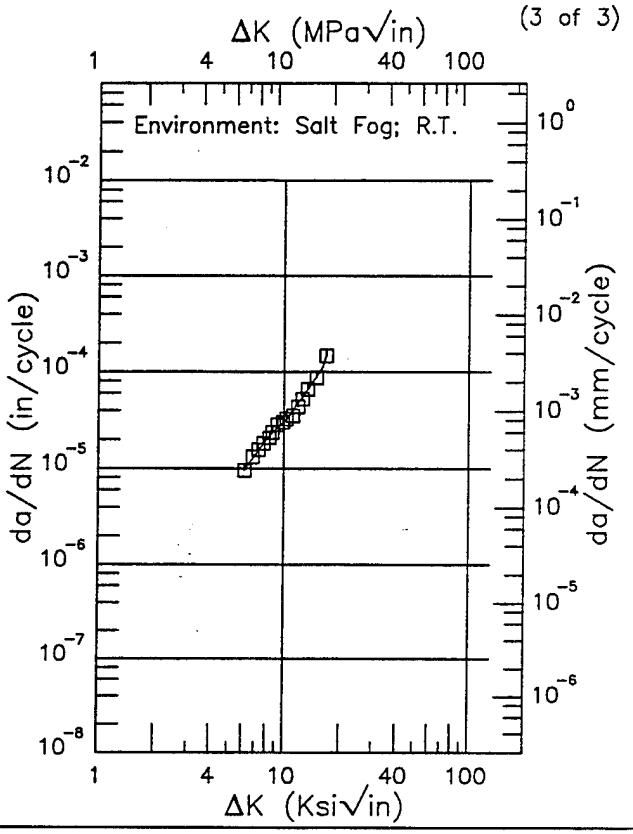
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.38 | 0. .5 .8 1.25 2. |

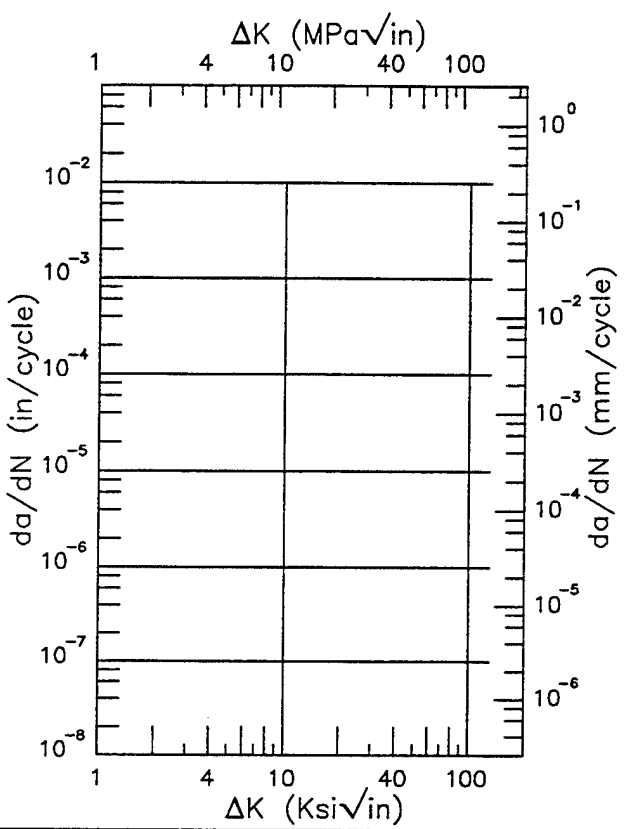
**Figure 8.19.3.1.10**

7475 E

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 72.1 ksi
Ult. Strength: 70.8 – 79.8 ksi
Specimen Thk: 0.042 – 0.045 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.08 (min) | 9.66 |
| 7. | 13.9 |
| 8. | 19.9 |
| 9. | 25.6 |
| 10. | 30.0 |
| 13. | 60.1 |
| 16. | 112. |
| 16.67 (max) | 144. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.60 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

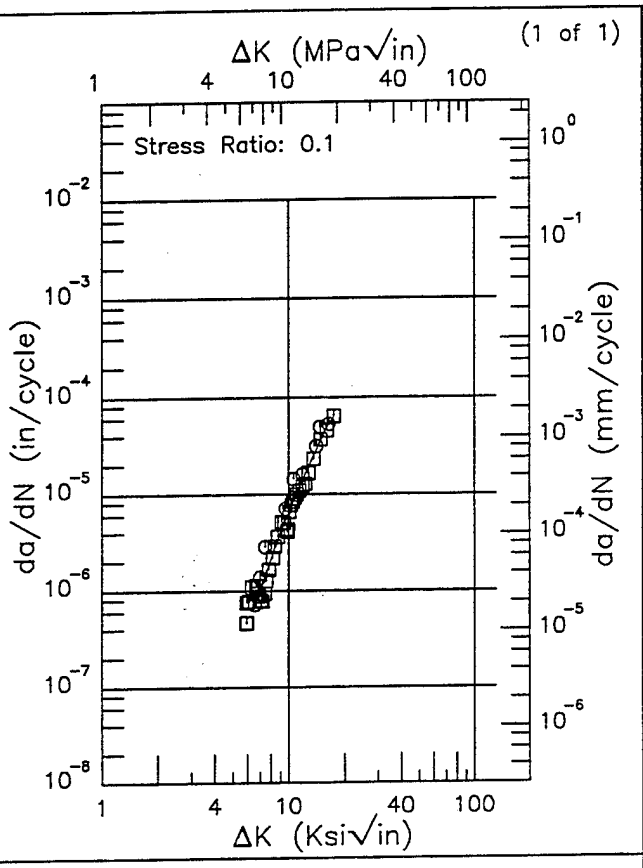
**Figure 8.19.3.1.10 (Concluded)**

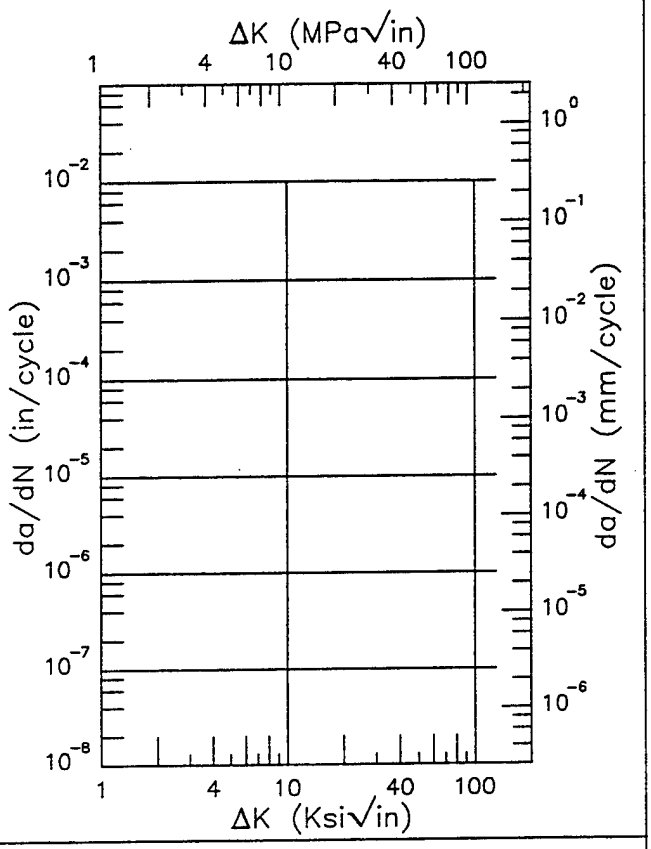
7475

R

Condition/Ht: T61
Form: 1.5 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 73.9 ksi
Ult. Strength: 78.5 ksi
Specimen Thk: 0.65 in.
Specimen Width: 1.49 – 1.5 in.
Ref: 85363




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.90 (min) | 0.790 |
| 6. | 0.765 |
| 7. | 1.01 |
| 8. | 2.09 |
| 9. | 4.07 |
| 10. | 6.53 |
| 13. | 20.6 |
| 16. | 50.6 |
| 17.32 (max) | 61.6 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.97 | 0. .5 .8 1.25 2. |

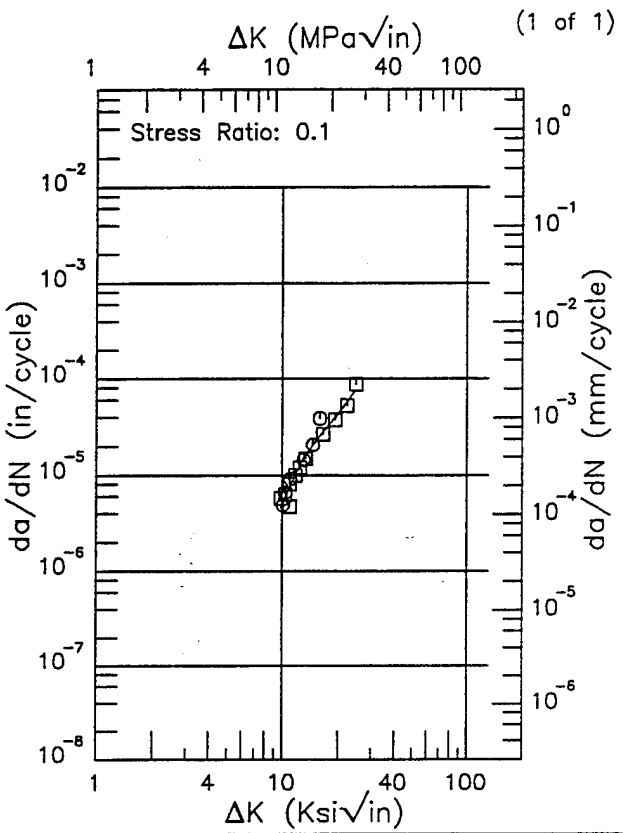
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

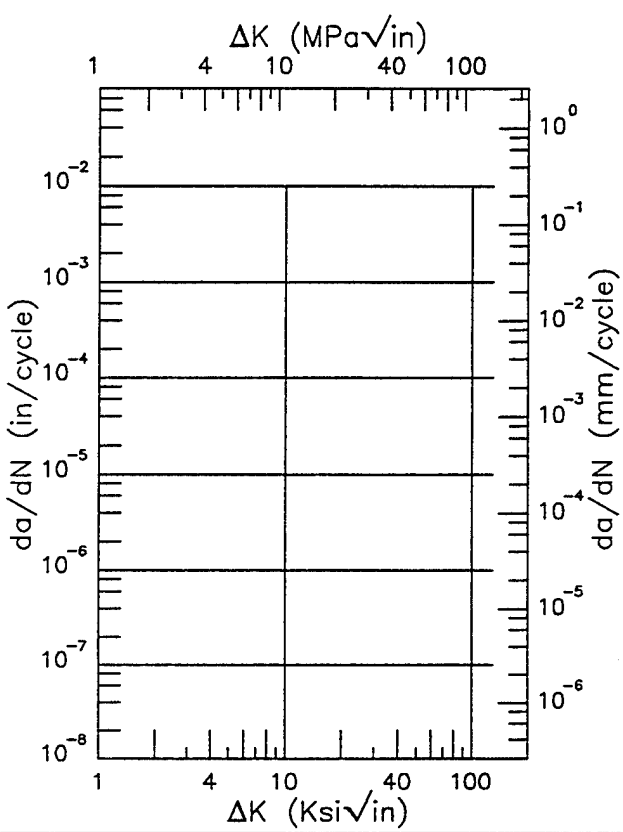
**Figure 8.19.3.1.11**

7475 R

Condition/Ht: T6151
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 62.2 ksi
Ult. Strength: 70.2 ksi
Specimen Thk: 0.089 in.
Specimen Width: 1.496 – 1.498 in.
Ref: 85363




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.79 (min) | 4.55 |
| 10. | 5.12 |
| 13. | 15.2 |
| 16. | 26.3 |
| 20. | 43.2 |
| 24.63 (max) | 76.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.18 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

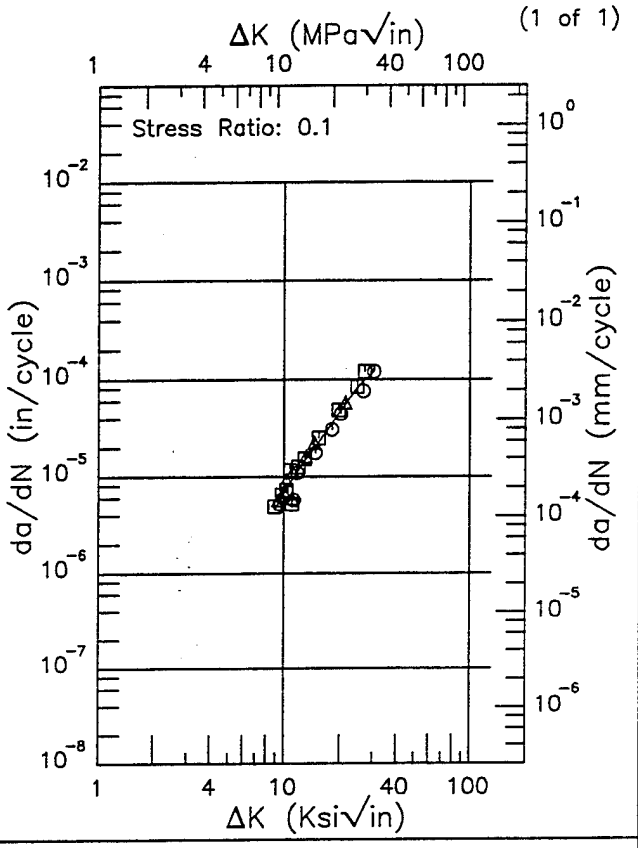
**Figure 8.19.3.1.12**

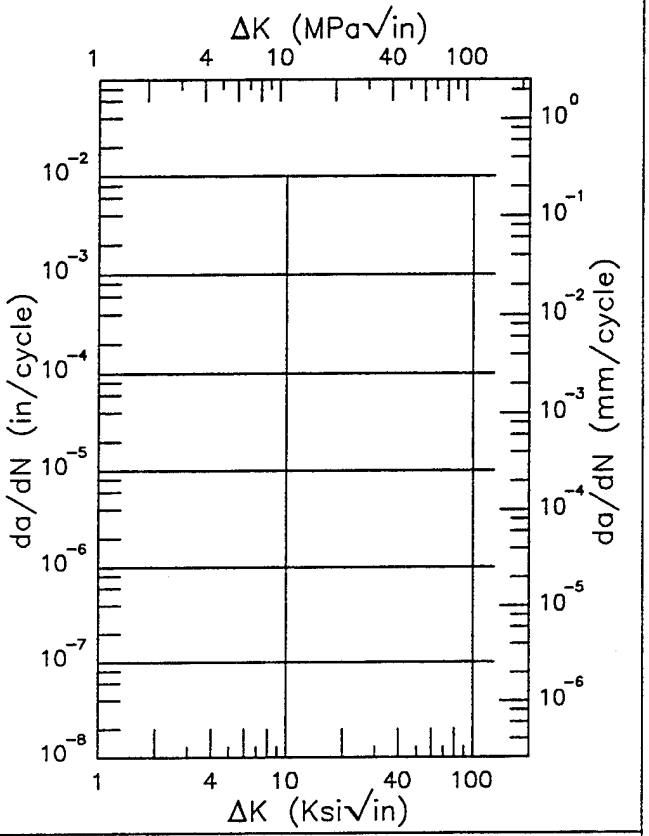
7475

R

Condition/Ht: T6151
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: T–L
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 62.2 ksi
Ult. Strength: 70.2 ksi
Specimen Thk: 0.089 in.
Specimen Width: 1.478 – 1.498 in.
Ref: 85363




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.91 (min) | 4.56 |
| 9. | 4.73 |
| 10. | 6.79 |
| 13. | 14.8 |
| 16. | 25.6 |
| 20. | 46.3 |
| 25. | 84.2 |
| 30. | 119. |
| 30.31 (max) | 121. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.21 | 0. .5 .8 1.25 2. |

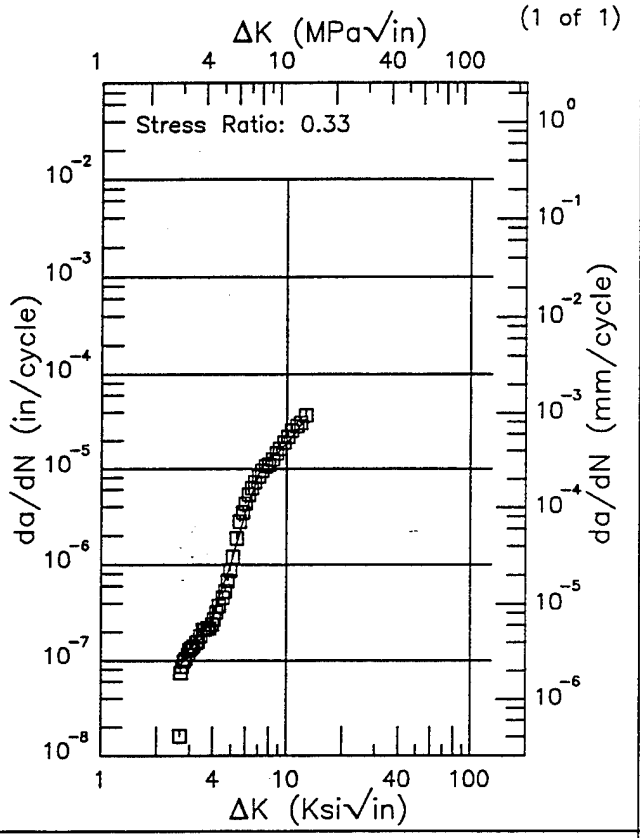
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

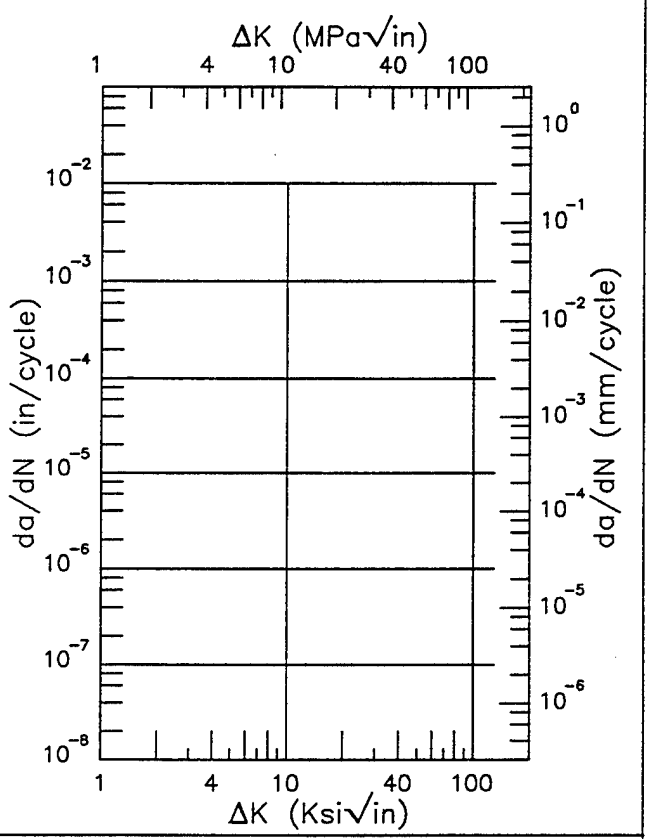
**Figure 8.19.3.1.13**

7475 R

Condition/Ht: T651
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 25 Hz
Environment: LAB AIR; RT

Yield Strength: 79.6 ksi
Ult. Strength: 87.7 ksi
Specimen Thk: 0.248 in.
Specimen Width: 2.5 in.
Ref: AL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.66 (min) | 0.0878 |
| 3. | 0.111 |
| 3.5 | 0.175 |
| 4. | 0.302 |
| 5. | 1.03 |
| 6. | 3.52 |
| 7. | 8.72 |
| 8. | 13.3 |
| 9. | 15.2 |
| 10. | 18.7 |
| 12.54 (max) | 33.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.31 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.14**

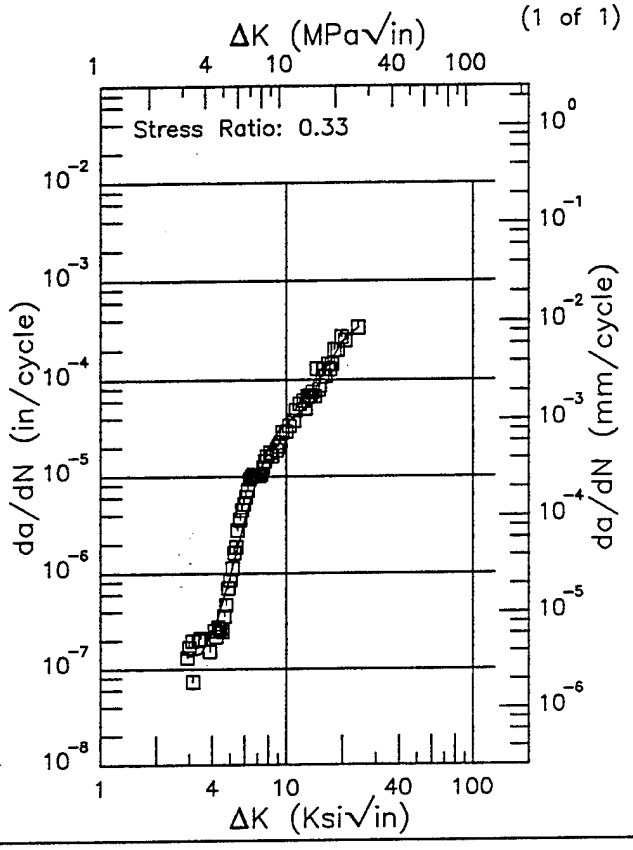
7475

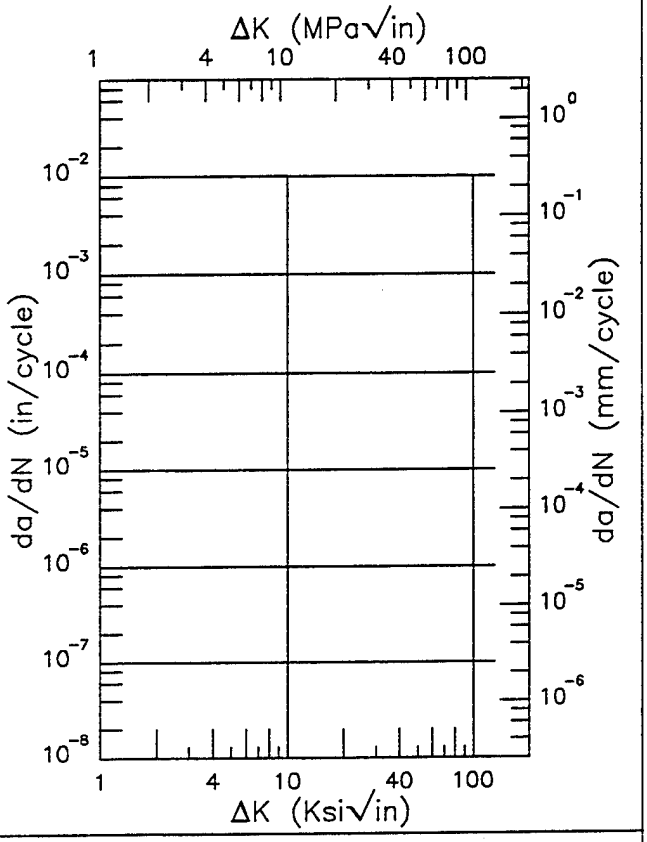
R

Condition/Ht: T651
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency:
Environment: H.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.248 in.
Specimen Width: 2.55 in.
Ref: AL002

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.91 (min) | 0.145 |
| 3. | 0.136 |
| 3.5 | 0.146 |
| 4. | 0.236 |
| 5. | 0.931 |
| 6. | 3.51 |
| 7. | 9.93 |
| 8. | 19.9 |
| 9. | 29.2 |
| 10. | 35.5 |
| 13. | 55.0 |
| 16. | 123. |
| 20. | 242. |
| 24.13 (max) | 333. |

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 31.66 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

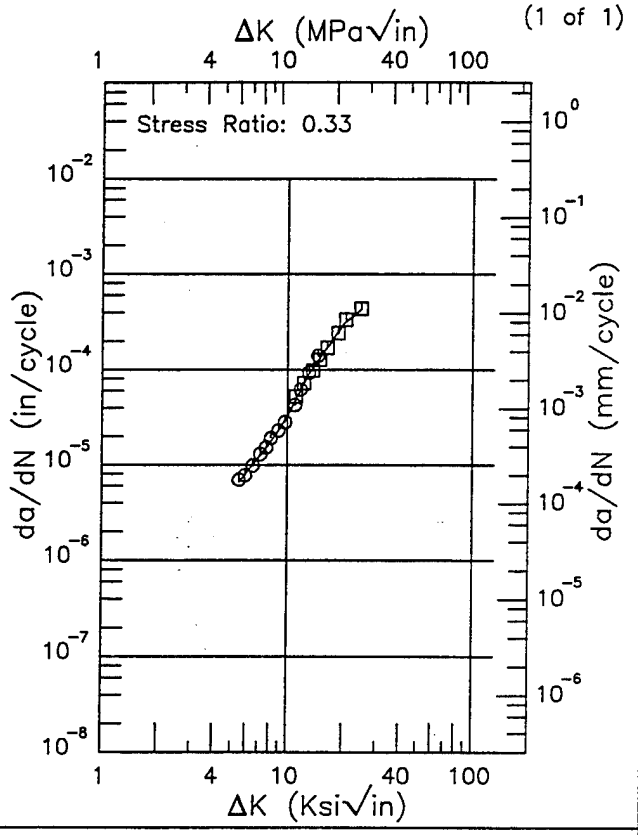
**Figure 8.19.3.1.15**

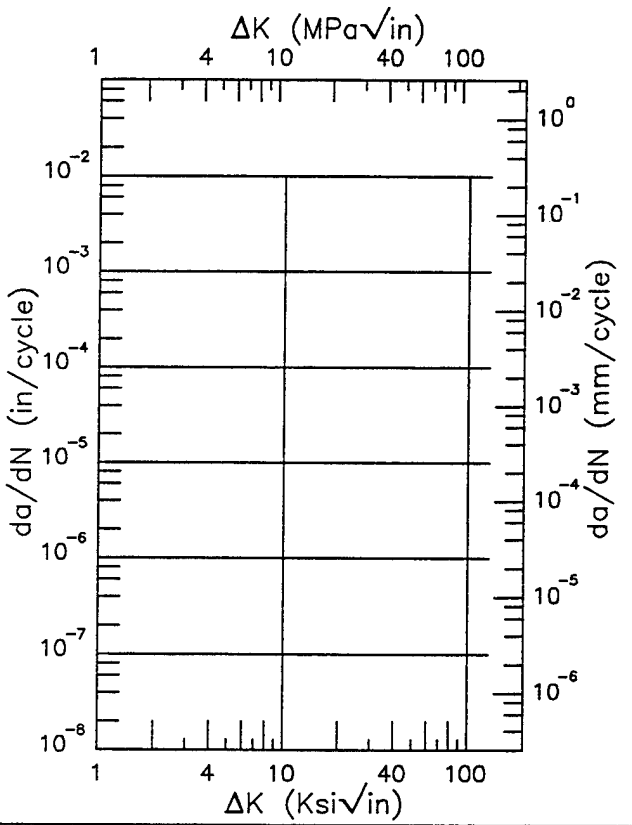
7475 R

Condition/Ht: T651
Form: 0.51 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5.2 Hz
Environment: H.H.A.; RT

Yield Strength: 74.5 ksi
Ult. Strength: 80 ksi
Specimen Thk: 0.508 in.
Specimen Width: 3.025 – 3.026 in.
Ref: 86213

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.49 (min) | 6.57 |
| 6. | 8.23 |
| 7. | 12.0 |
| 8. | 17.0 |
| 9. | 23.8 |
| 10. | 33.3 |
| 13. | 88.7 |
| 16. | 164. |
| 20. | 302. |
| 24.79 (max) | 430. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.45 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

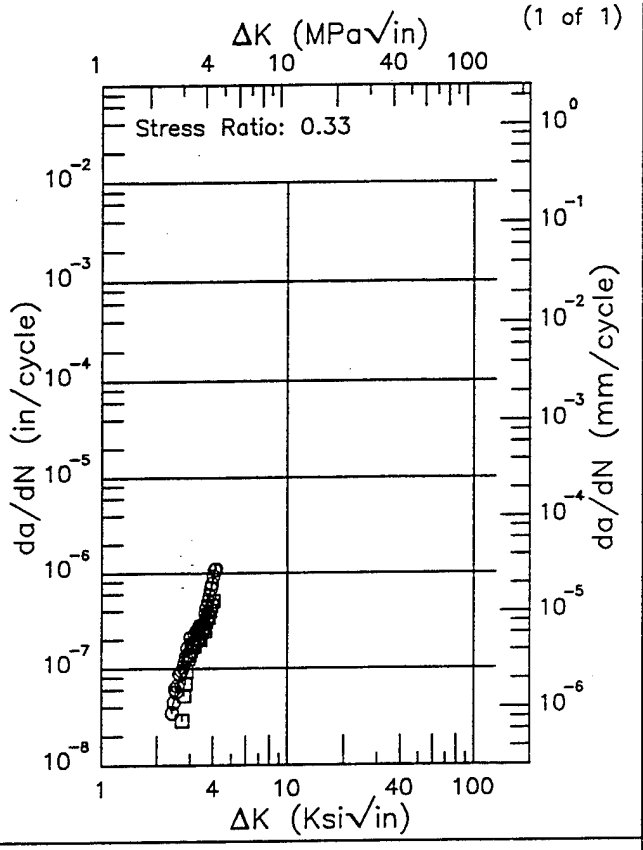
**Figure 8.19.3.1.16**

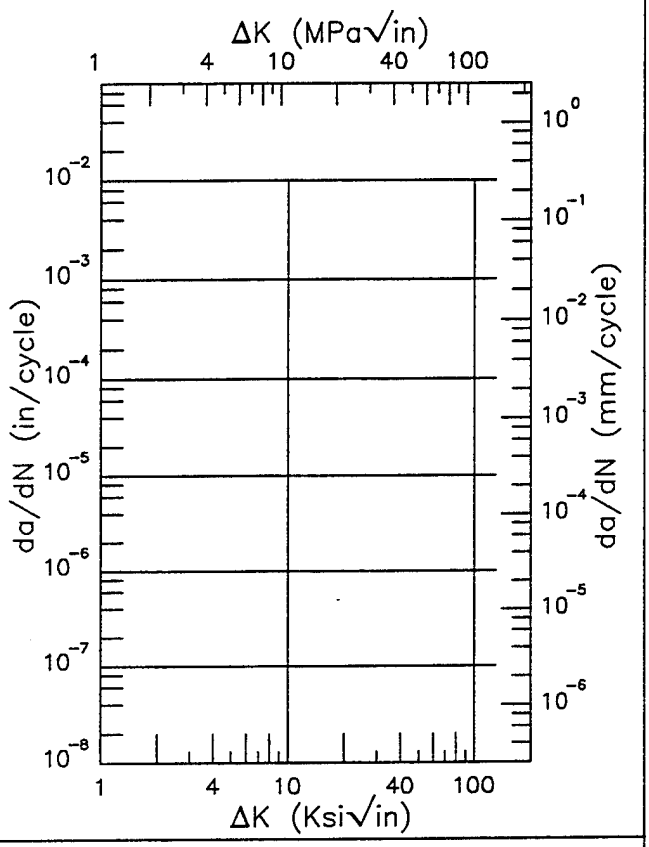
7475

R

Condition/Ht: T651
Form: 0.75 in. Plate
Specimen Type: WOL
Orientation: L–T
Frequency: 25 Hz
Environment: H.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.242 – 0.25 in.
Specimen Width: 2.546 – 2.552 in.
Ref: AL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 2.40 (min) | 0.0365 |
| 2.5 | 0.0547 |
| 3. | 0.140 |
| 3.5 | 0.273 |
| 4. | 0.795 |
| 4.13 (max) | 1.16 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

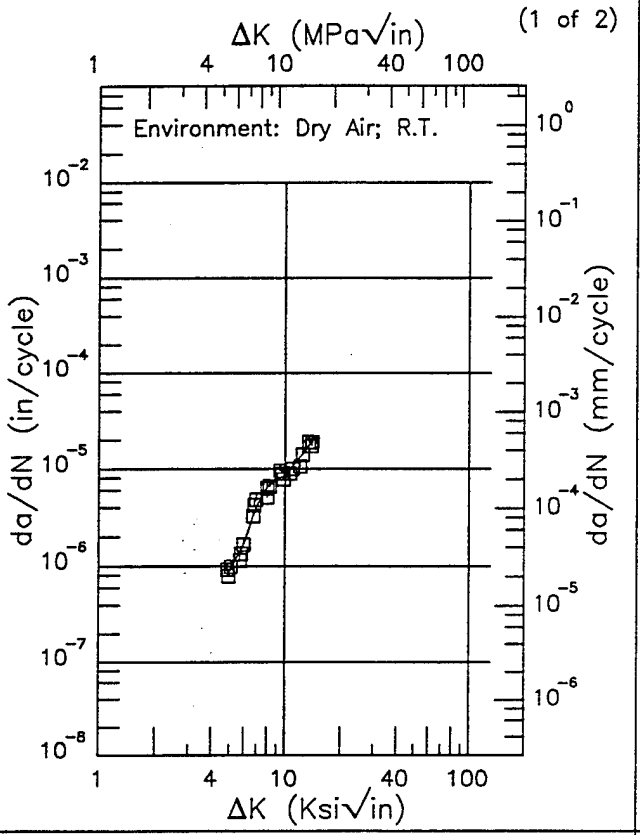
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 21.42 | 0. .5 .8 1.25 2. |

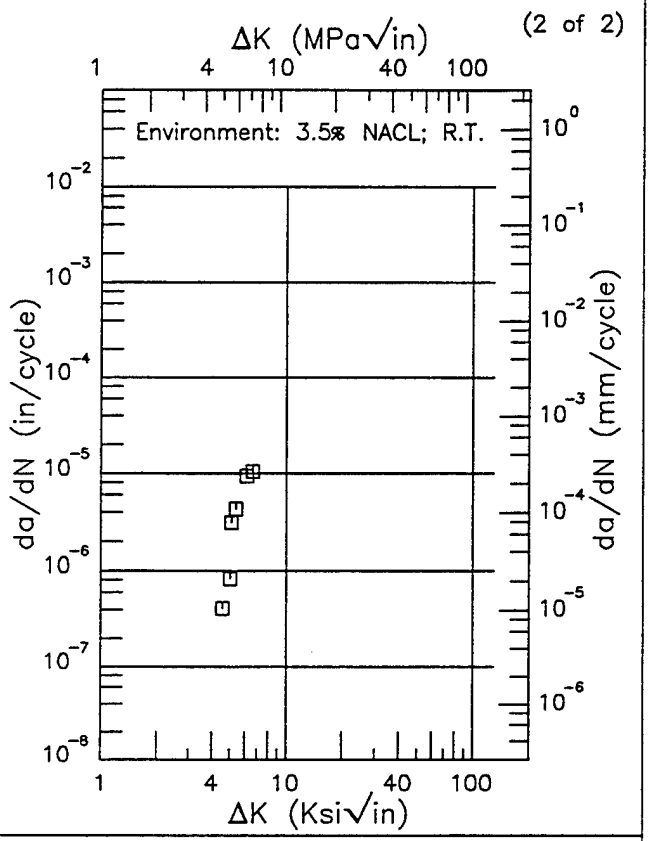
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.17**

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type: DCB
Orientation: T–L
Stress Ratio: 0.1
Frequency: 1 Hz

Yield Strength:
Ult. Strength:
Specimen Thk:
Specimen Width:
Ref: 88140




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.87 (min) | 0.899 |
| 5. | 0.888 |
| 6. | 1.69 |
| 7. | 4.08 |
| 8. | 6.51 |
| 9. | 7.78 |
| 10. | 8.52 |
| 13. | 15.9 |
| 13.95 (max) | 19.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.70 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

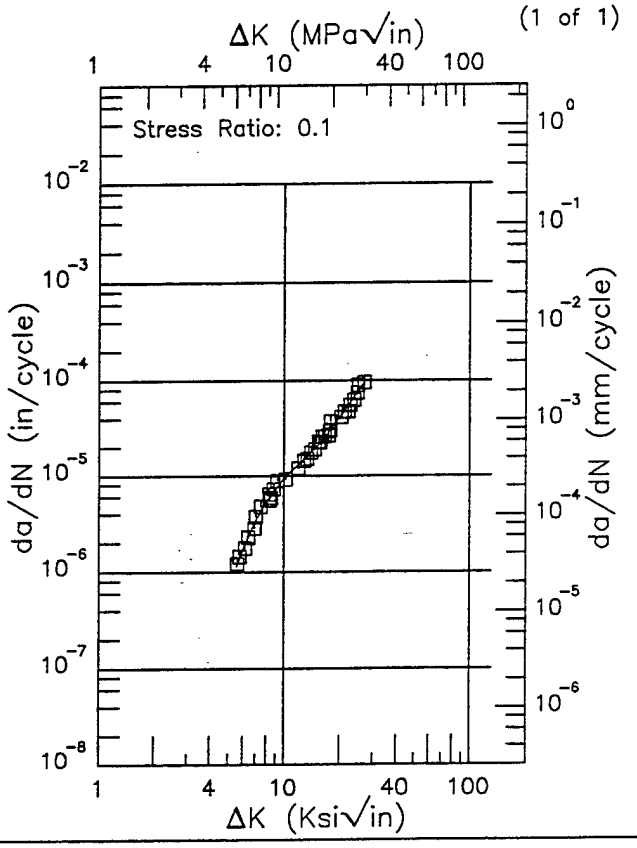
**Figure 8.19.3.1.18**

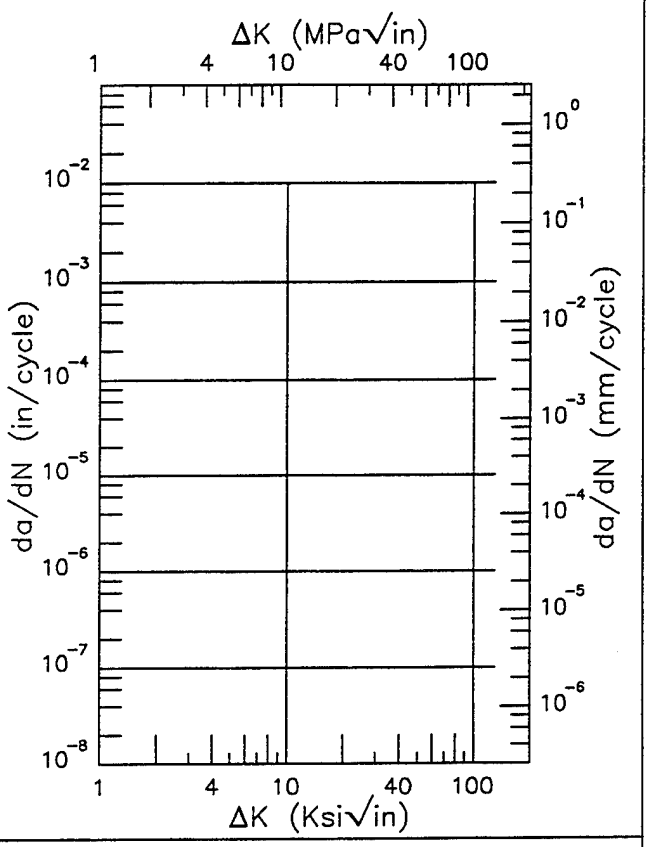
7475

R

Condition/Ht: T651
Form: 1 in. Plate
Specimen Type:
Orientation:
Frequency: 20 Hz
Environment: DRY AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 1 in.
Specimen Width:
Ref: 91332




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.60 (min) | 1.15 |
| 6. | 1.68 |
| 7. | 3.37 |
| 8. | 5.32 |
| 9. | 7.34 |
| 10. | 9.31 |
| 13. | 15.3 |
| 16. | 23.2 |
| 20. | 41.2 |
| 25. | 77.6 |
| 26.91 (max) | 94.6 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.92 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

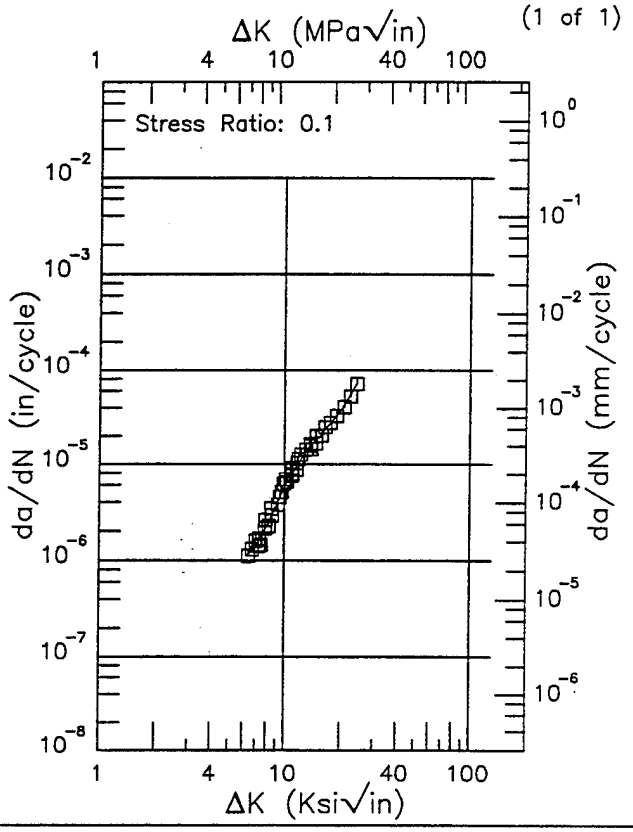
**Figure 8.19.3.1.19**

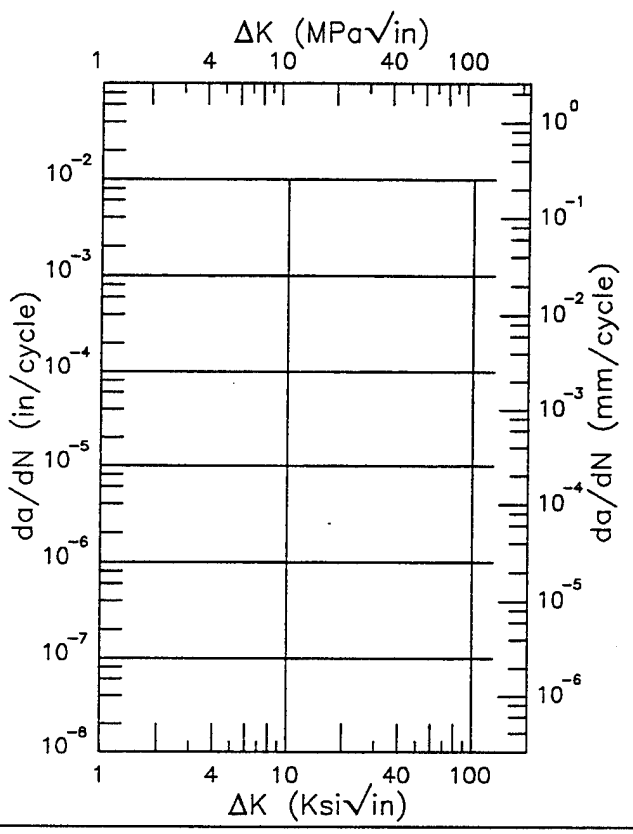
7475 R

Condition/Ht: T651
Form: 0.5 in. Plate
Specimen Type:
Orientation:
Frequency: 20 Hz
Environment: DRY AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.5 in.
Specimen Width:
Ref: 91332

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.40 (min) | 1.14 |
| 7. | 1.38 |
| 8. | 2.20 |
| 9. | 3.64 |
| 10. | 5.76 |
| 13. | 13.6 |
| 16. | 21.9 |
| 20. | 37.2 |
| 24.37 (max) | 70.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.95 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

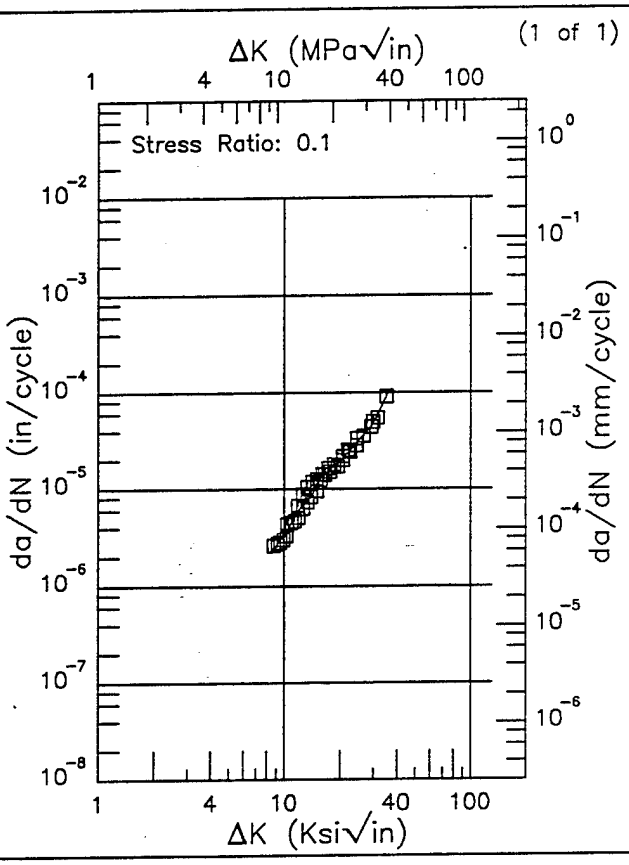
**Figure 8.19.3.1.20**

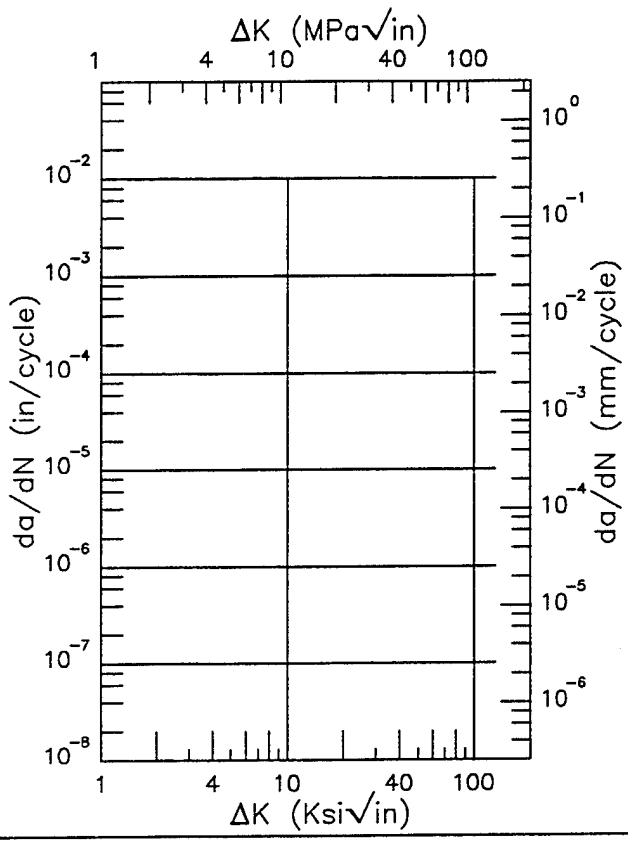
7475

R

Condition/Ht: T651
Form: 1.25 in. Plate
Specimen Type:
Orientation:
Frequency: 20 Hz
Environment: DRY AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.125 in.
Specimen Width:
Ref: 91332




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.74 (min) | 2.42 |
| 9. | 2.57 |
| 10. | 3.36 |
| 13. | 7.68 |
| 16. | 13.3 |
| 20. | 19.3 |
| 25. | 31.4 |
| 30. | 48.0 |
| 35. | 89.8 |
| 35.06 (max) | 90.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.62 | 0. .5 .8 1.25 2. |

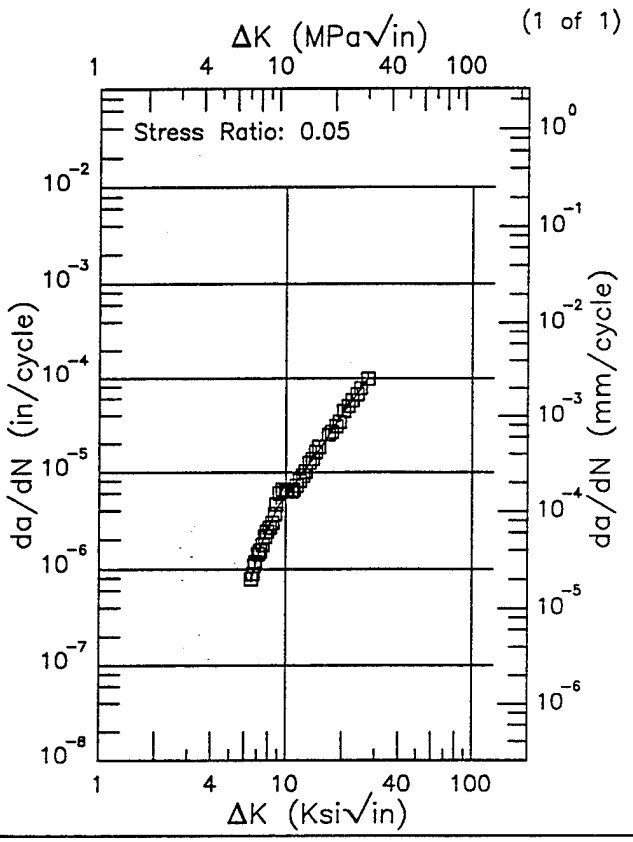
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

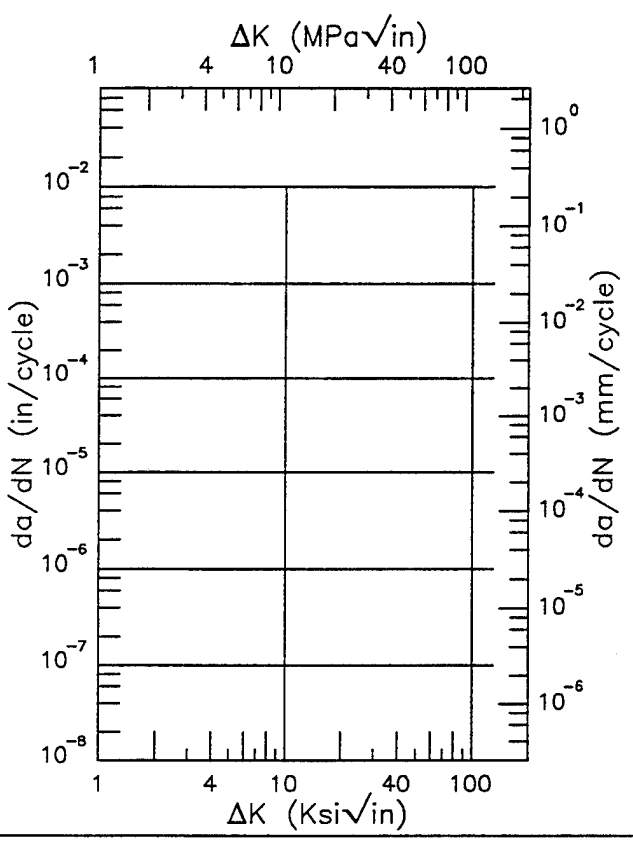
**Figure 8.19.3.1.21**

7475 R

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 63.2 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.246 in.
Specimen Width: 2 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.52 (min) | 0.745 |
| 7. | 1.25 |
| 8. | 2.68 |
| 9. | 4.32 |
| 10. | 5.97 |
| 13. | 11.3 |
| 16. | 20.5 |
| 20. | 41.0 |
| 25. | 75.5 |
| 27.27 (max) | 99.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.17 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

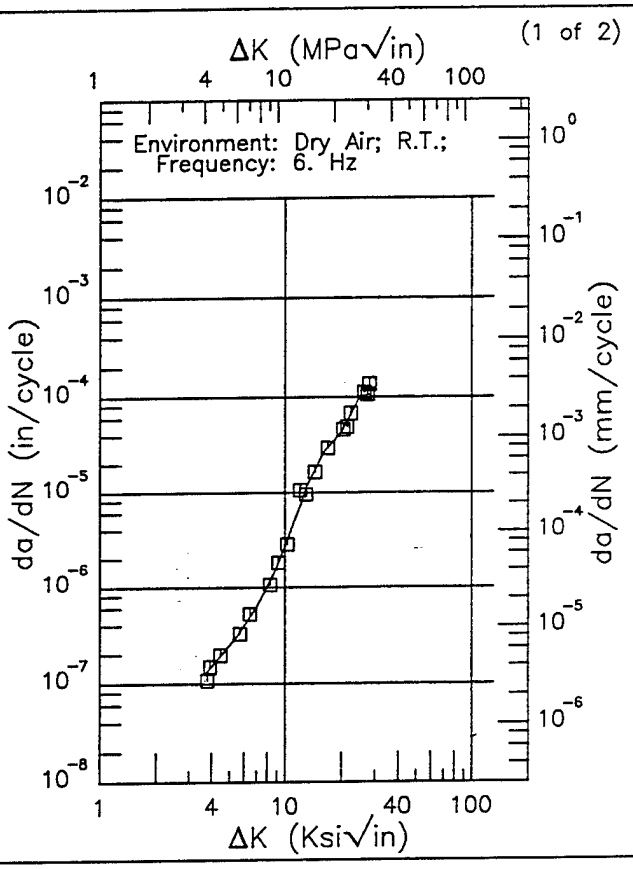
**Figure 8.19.3.1.22**

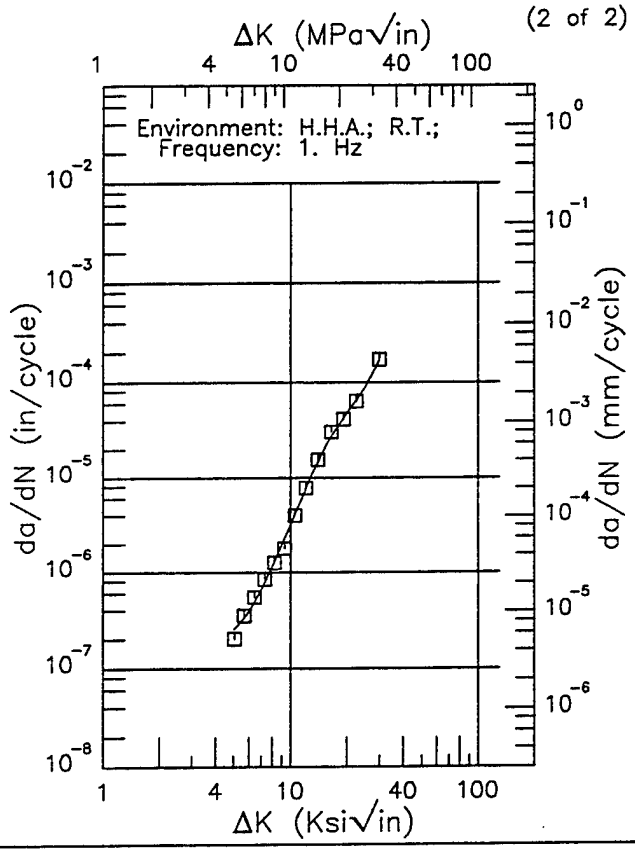
7475

EF

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.1

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.744 – 0.748 in.
Specimen Width: 5.006 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.78 (min) | 0.131 |
| 4. | 0.149 |
| 5. | 0.247 |
| 6. | 0.391 |
| 7. | 0.618 |
| 8. | 0.993 |
| 9. | 1.63 |
| 10. | 2.71 |
| 13. | 11.3 |
| 16. | 26.9 |
| 20. | 43.5 |
| 25. | 102. |
| 28.02 (max) | 106. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.04 (min) | 0.255 |
| 6. | 0.384 |
| 7. | 0.653 |
| 8. | 1.13 |
| 9. | 1.93 |
| 10. | 3.17 |
| 13. | 10.7 |
| 16. | 24.8 |
| 20. | 48.1 |
| 25. | 87.0 |
| 29.75 (max) | 169. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.76 | 0. .5 .8 1.25 2. |

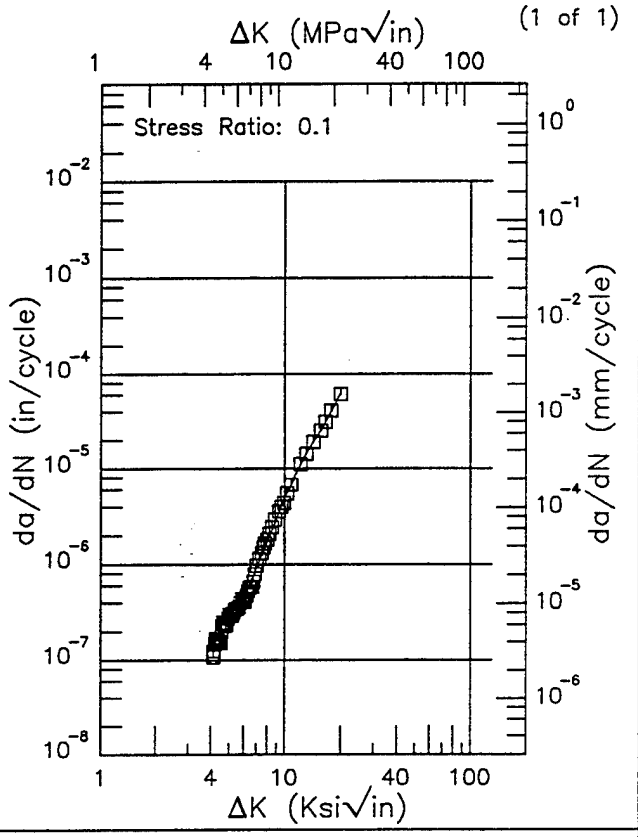
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.38 | 0. .5 .8 1.25 2. |

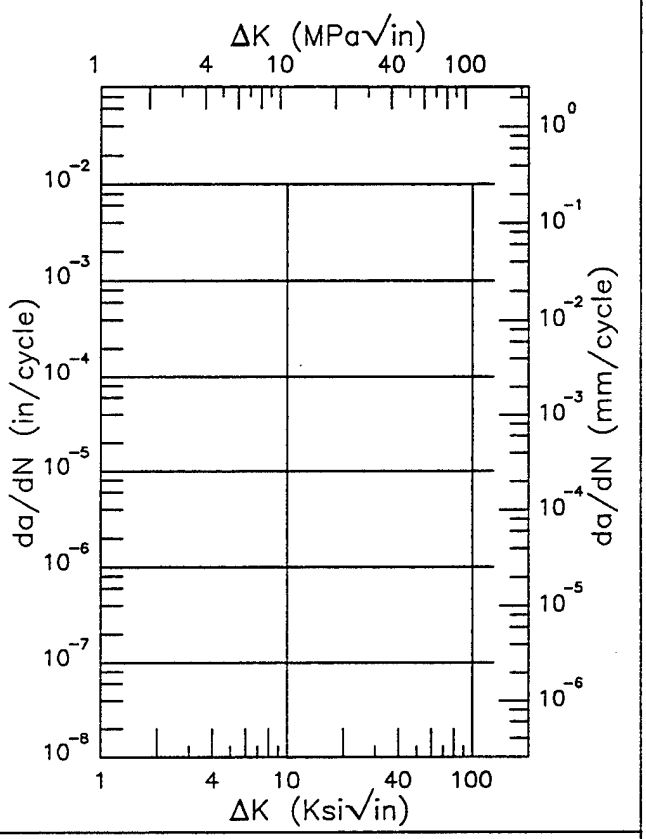
**Figure 8.19.3.1.23**

7475 R

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 63.2 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.498 in.
Specimen Width: 1.998 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.08 (min) | 0.139 |
| 5. | 0.247 |
| 6. | 0.475 |
| 7. | 0.903 |
| 8. | 1.67 |
| 9. | 2.99 |
| 10. | 4.99 |
| 13. | 14.2 |
| 16. | 27.7 |
| 19.79 (max) | 60.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.67 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

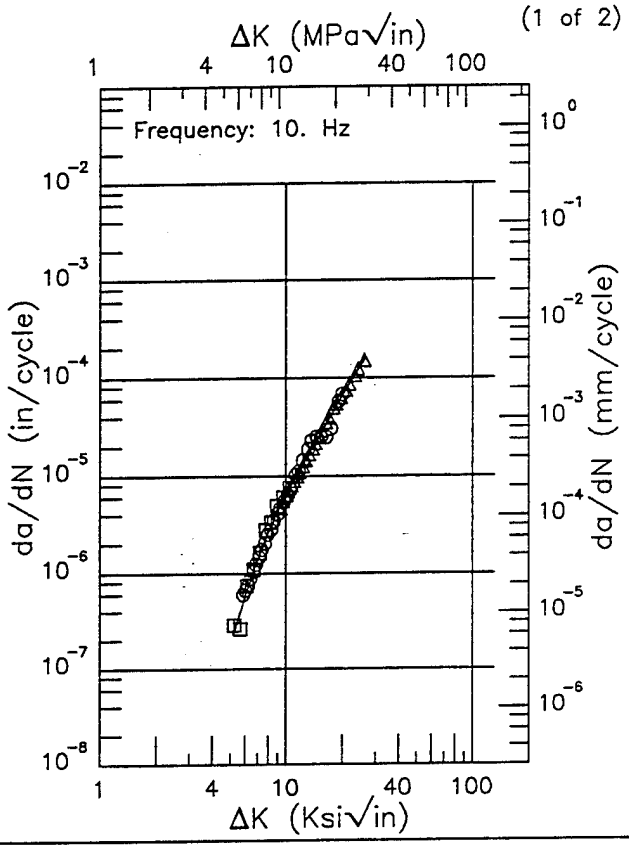
**Figure 8.19.3.1.24**

F 7475

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 63.2 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.24 – 0.251 in.
Specimen Width: 1.999 – 2 in.
Ref: DA004;NC005

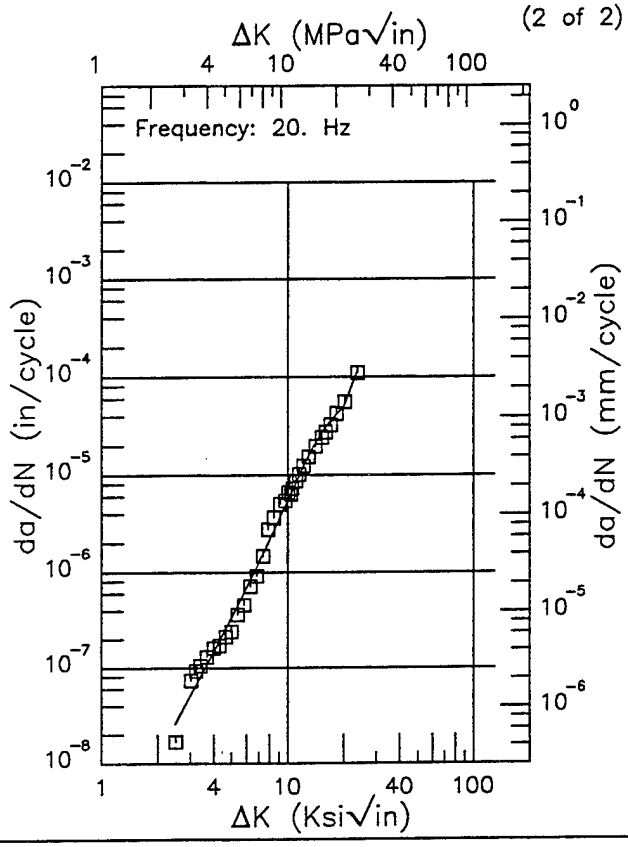
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.21 (min) | 0.231 |
| 6. | 0.577 |
| 7. | 1.36 |
| 8. | 2.59 |
| 9. | 4.28 |
| 10. | 6.44 |
| 13. | 16.0 |
| 16. | 31.5 |
| 20. | 66.0 |
| 25. | 134. |
| 26.12 (max) | 149. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.63 | △ ⊙ 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.49 (min) | 0.0260 |
| 2.5 | 0.0265 |
| 3. | 0.0519 |
| 3.5 | 0.0915 |
| 4. | 0.150 |
| 5. | 0.343 |
| 6. | 0.688 |
| 7. | 1.26 |
| 8. | 2.15 |
| 9. | 3.51 |
| 10. | 5.49 |
| 13. | 16.2 |
| 16. | 31.2 |
| 20. | 49.7 |
| 23.67 (max) | 111. |

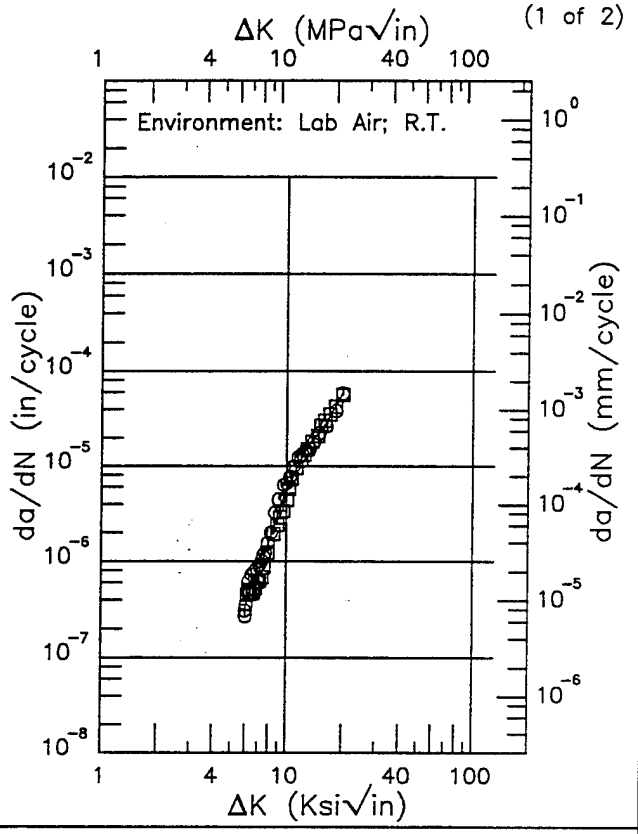
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 20.79 | □ 0. .5 .8 1.25 2. |

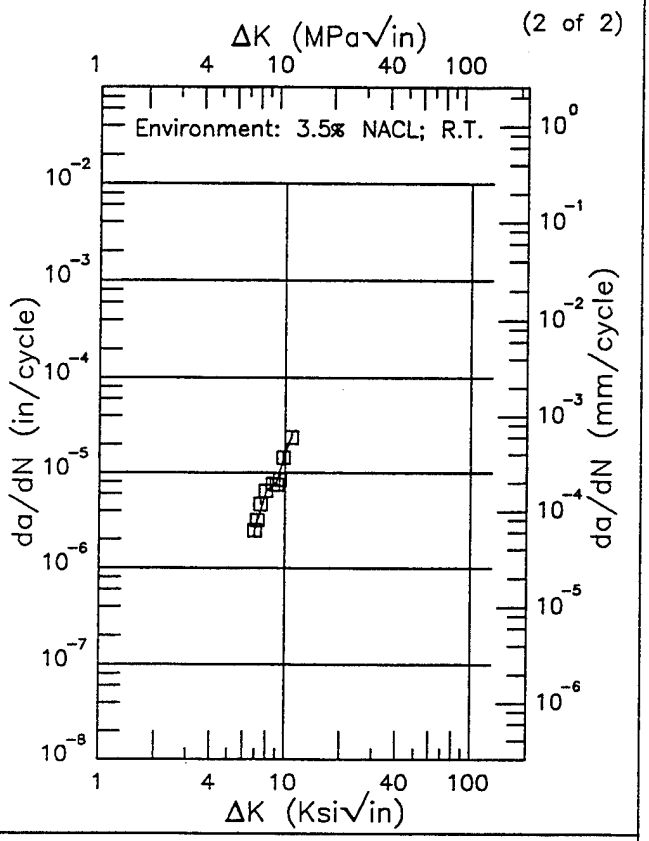
**Figure 8.19.3.1.25**

7475 E

Condition/Ht: T7351
Form: 1.5 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.1
Frequency: 20 Hz

Yield Strength: 62.2 ksi
Ult. Strength: 70.2 ksi
Specimen Thk: 0.65 in.
Specimen Width: 1.5 in.
Ref: 85363




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.95 (min) | 0.383 |
| 6. | 0.390 |
| 7. | 0.707 |
| 8. | 1.53 |
| 9. | 3.15 |
| 10. | 5.65 |
| 13. | 16.0 |
| 16. | 27.7 |
| 19.80 (max) | 57.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.90 (min) | 2.14 |
| 7. | 2.70 |
| 8. | 6.38 |
| 9. | 8.00 |
| 10. | 15.9 |
| 10.75 (max) | 23.7 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.70 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.75 | 0. .5 .8 1.25 2. |

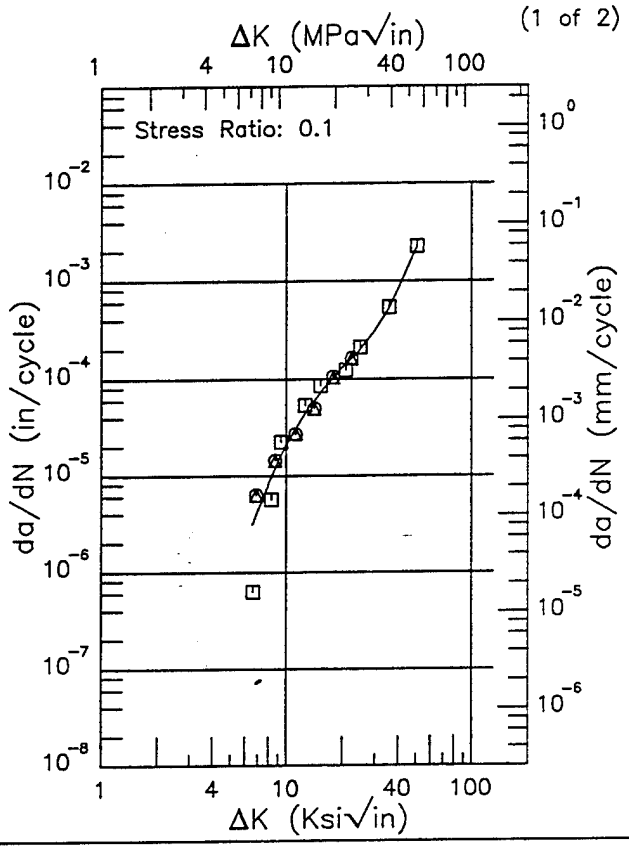
**Figure 8.19.3.1.26**

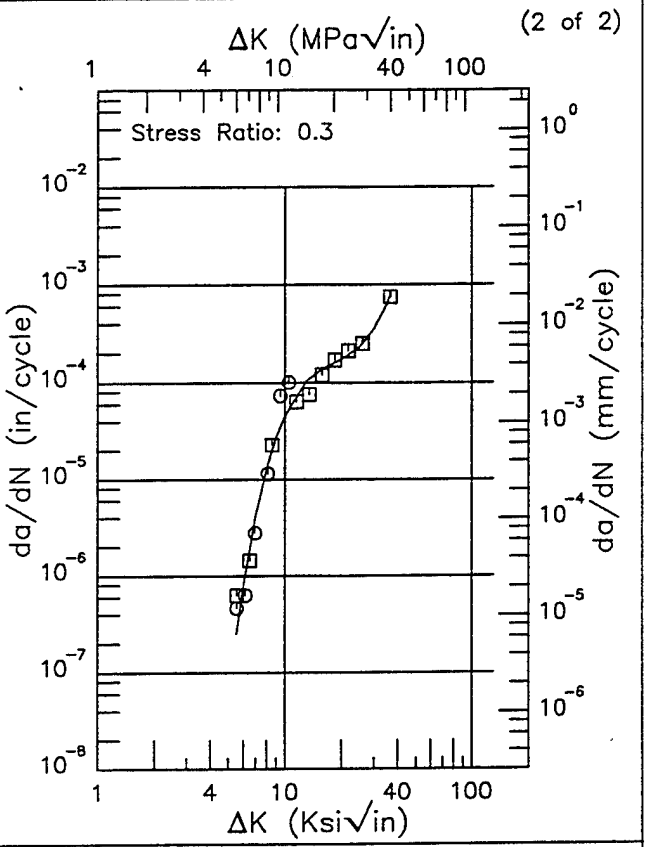
7475

R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.751 – 0.759 in.
Specimen Width: 4.991 – 4.999 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.61 (min) | 3.14 |
| 7. | 4.30 |
| 8. | 8.37 |
| 9. | 14.0 |
| 10. | 21.1 |
| 13. | 48.6 |
| 16. | 82.1 |
| 20. | 132. |
| 25. | 205. |
| 30. | 310. |
| 35. | 494. |
| 40. | 828. |
| 50. | 2119. |
| 50.66 (max) | 2230. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.51 (min) | 0.252 |
| 6. | 0.783 |
| 7. | 4.20 |
| 8. | 12.8 |
| 9. | 27.3 |
| 10. | 46.0 |
| 13. | 103. |
| 16. | 141. |
| 20. | 174. |
| 25. | 230. |
| 30. | 350. |
| 35. | 621. |
| 36.44 (max) | 753. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 30.67 | 0. .5 .8 1.25 2. |

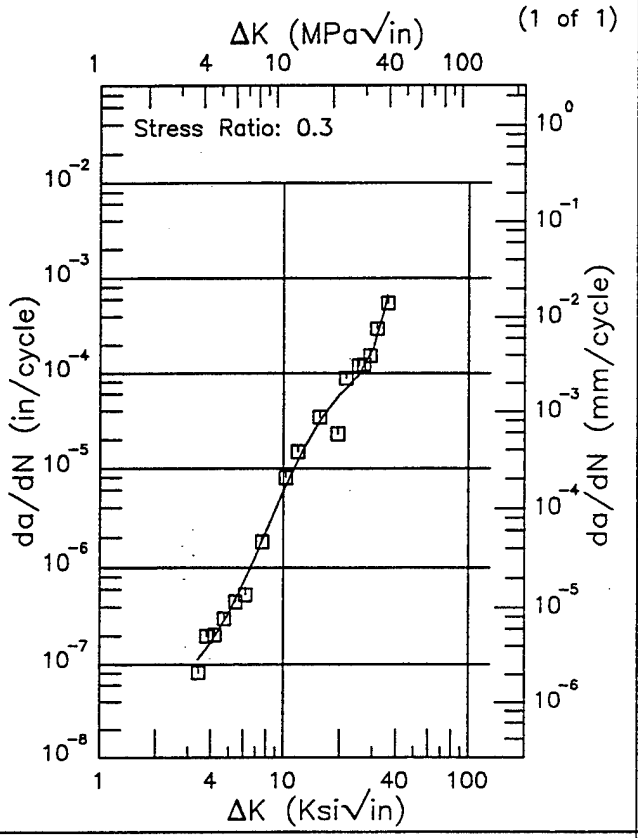
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 56.66 | 0. .5 .8 1.25 2. |

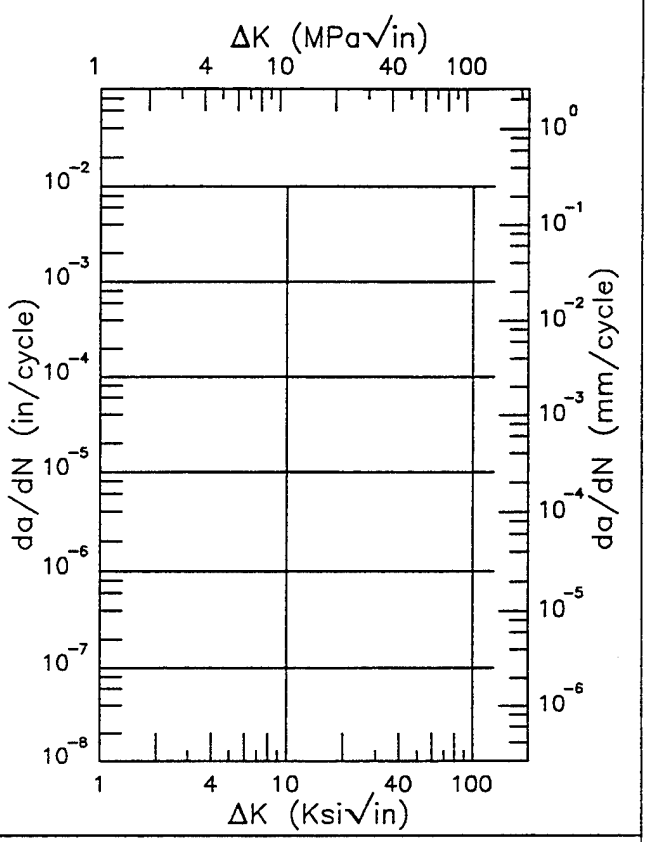
**Figure 8.19.3.1.27**

7475 R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 6 Hz
Environment: DRY AIR; RT

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.75 in.
Specimen Width: 5 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 3.40 (min) | 0.114 |
| 3.5 | 0.121 |
| 4. | 0.169 |
| 5. | 0.344 |
| 6. | 0.688 |
| 7. | 1.30 |
| 8. | 2.28 |
| 9. | 3.78 |
| 10. | 5.89 |
| 13. | 16.6 |
| 16. | 33.5 |
| 20. | 59.1 |
| 25. | 93.6 |
| 30. | 183. |
| 35. | 521. |
| 35.96 (max) | 666. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

RMS % Error
24.06

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

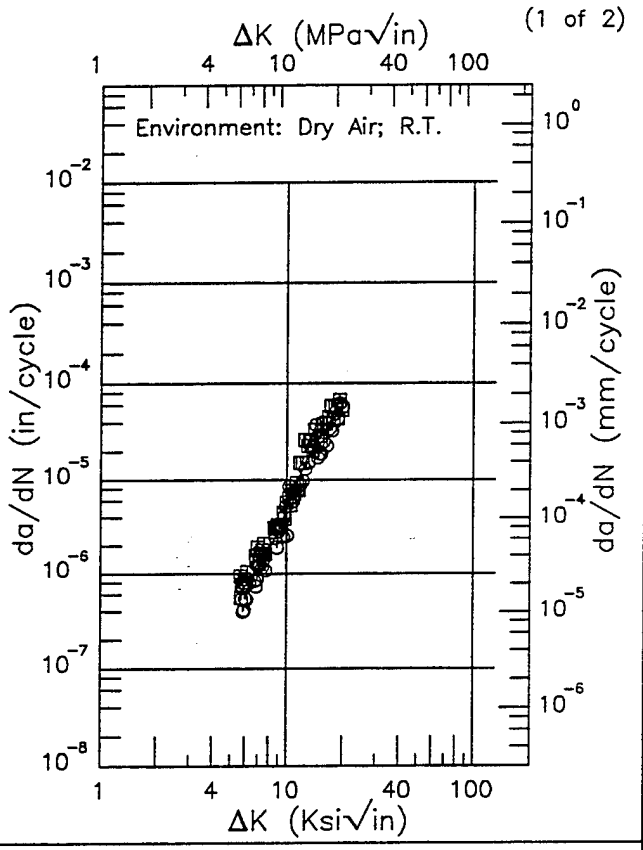
**Figure 8.19.3.1.28**

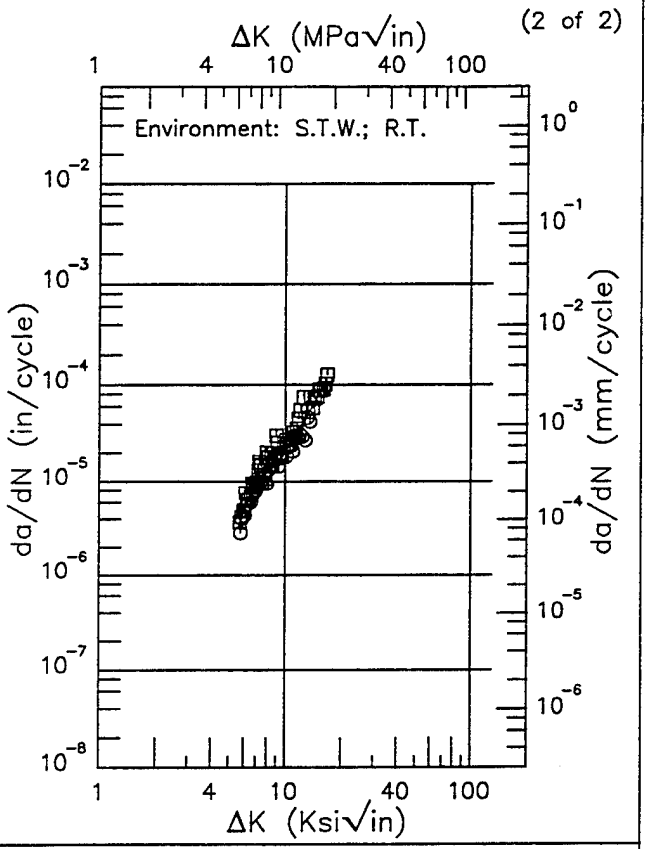
7475

E

Condition/Ht: T7351
Form: 1 – 4 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.33
Frequency: 2 – 20 Hz

Yield Strength: 52.6 – 59.6 ksi
Ult. Strength: 63.8 – 70 ksi
Specimen Thk: 1 in.
Specimen Width: 3.805 in.
Ref: AL001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.63 (min) | 0.611 |
| 6. | 0.732 |
| 7. | 1.14 |
| 8. | 1.78 |
| 9. | 2.89 |
| 10. | 4.94 |
| 13. | 18.0 |
| 16. | 33.2 |
| 19.79 (max) | 58.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.70 (min) | 3.43 |
| 6. | 4.76 |
| 7. | 9.70 |
| 8. | 14.2 |
| 9. | 18.1 |
| 10. | 22.2 |
| 13. | 46.5 |
| 16. | 97.7 |
| 16.77 (max) | 113. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 25.15 | 0. .5 .8 1.25 2. |

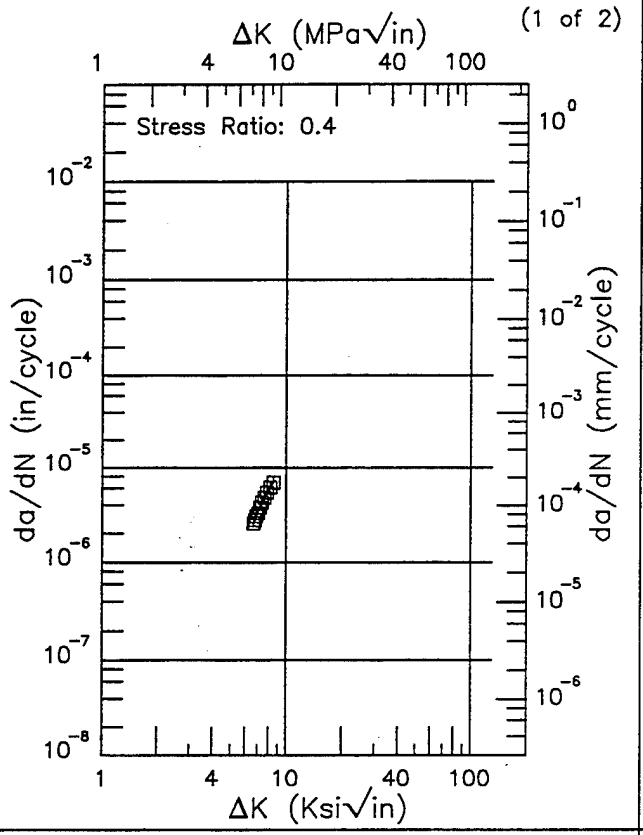
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 20.35 | 0. .5 .8 1.25 2. |

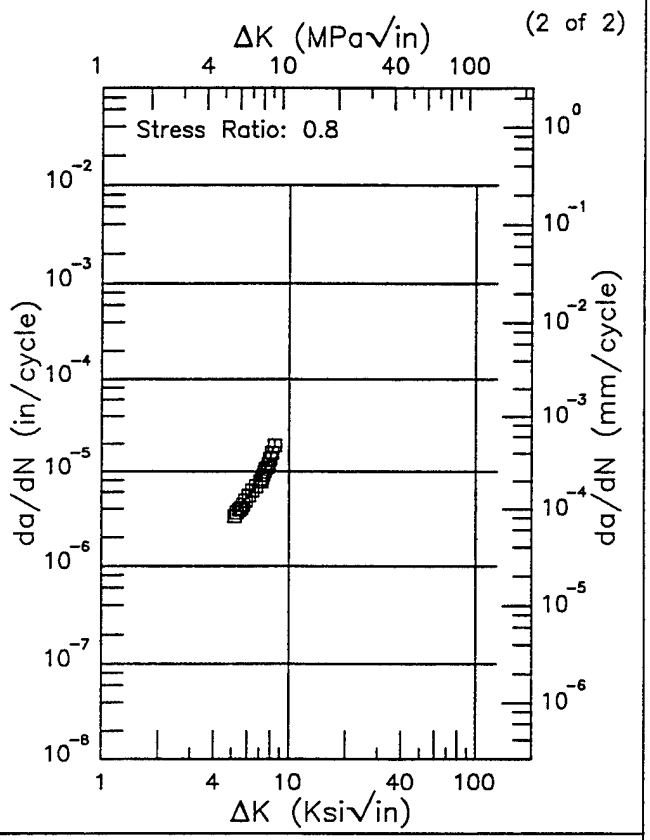
**Figure 8.19.3.1.29**

7475 R

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR; RT

Yield Strength: 63.2 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.499 in.
Specimen Width: 1.999 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.64 (min) | 2.48 |
| 7. | 3.23 |
| 8. | 5.71 |
| 8.48 (max) | 6.79 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.17 (min) | 3.40 |
| 6. | 5.13 |
| 7. | 7.72 |
| 8. | 14.0 |
| 8.37 (max) | 18.6 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.84 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.26 | 0. .5 .8 1.25 2. |

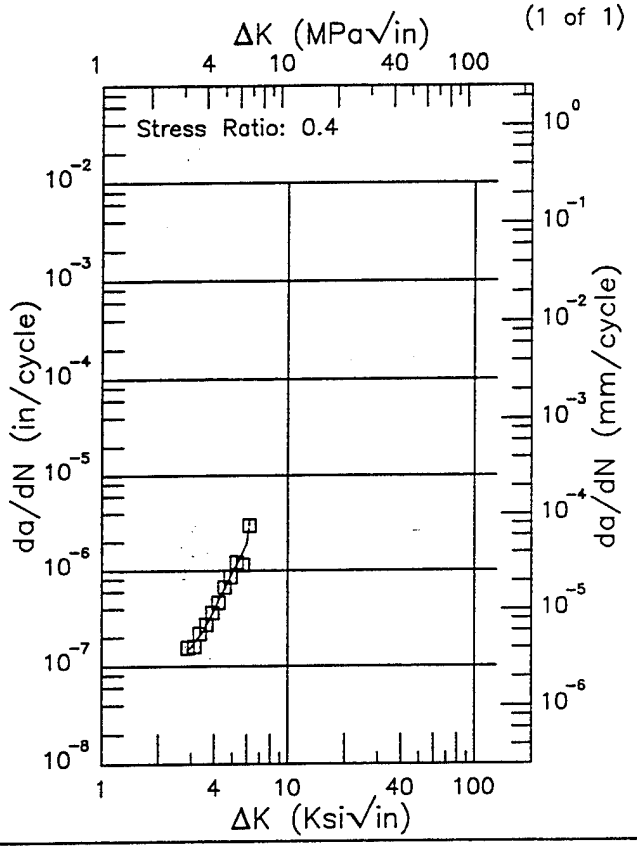
**Figure 8.19.3.1.30**

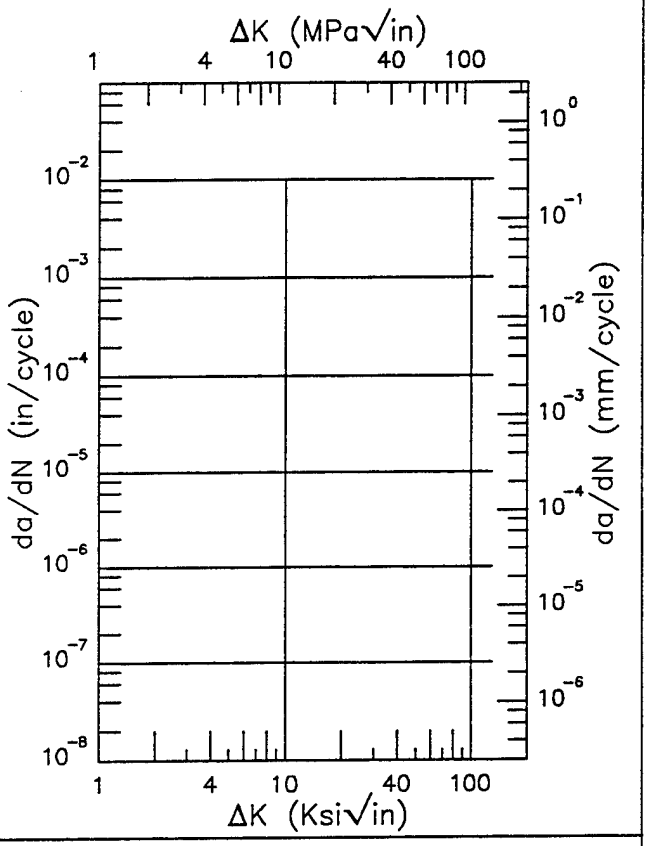
7475

R

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 5 – 15 Hz
Environment: LAB AIR; RT

Yield Strength: 63.2 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 1.502 in.
Specimen Width: 2.999 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.87 (min) | 0.146 |
| 3. | 0.159 |
| 3.5 | 0.234 |
| 4. | 0.383 |
| 5. | 0.949 |
| 6. | 1.93 |
| 6.16 (max) | 2.81 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.59 | 0. .5 .8 1.25 2. |

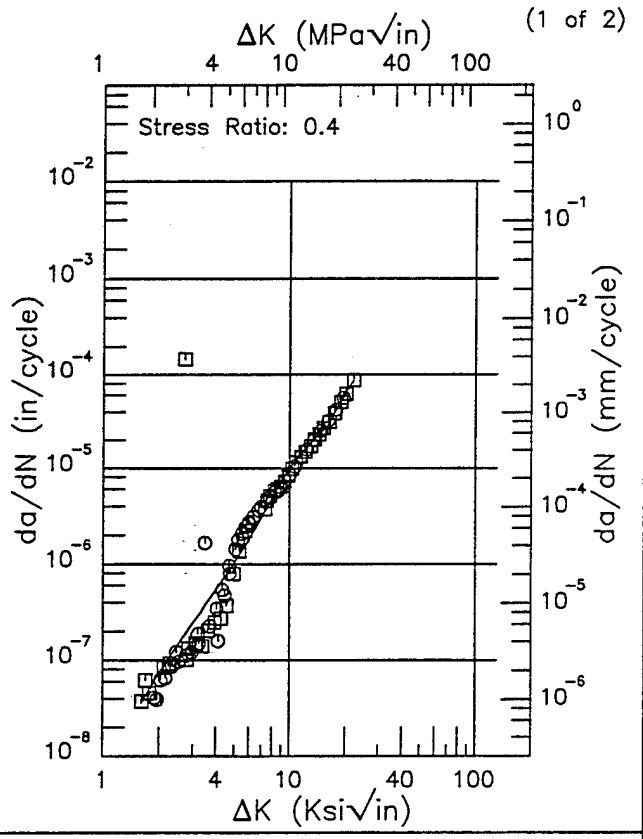
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

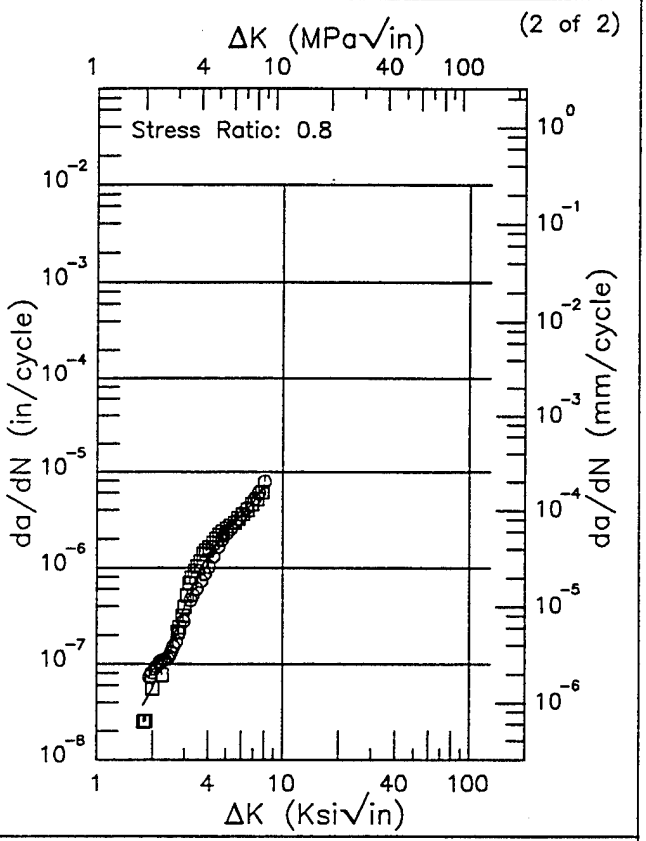
**Figure 8.19.3.1.31**

7475 R

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 68.8 ksi
Ult. Strength:
Specimen Thk: 0.248 – 0.25 in.
Specimen Width: 1.993 – 2.005 in.
Ref: DA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.61 (min) | 0.0359 |
| 2. | 0.0742 |
| 2.5 | 0.145 |
| 3. | 0.244 |
| 3.5 | 0.375 |
| 4. | 0.544 |
| 5. | 1.03 |
| 6. | 1.82 |
| 7. | 3.04 |
| 8. | 4.85 |
| 9. | 7.25 |
| 10. | 10.1 |
| 13. | 18.5 |
| 16. | 28.3 |
| 20. | 64.8 |
| 21.97 (max) | 84.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.78 (min) | 0.0375 |
| 2. | 0.0566 |
| 2.5 | 0.157 |
| 3. | 0.392 |
| 3.5 | 0.804 |
| 4. | 1.34 |
| 5. | 2.43 |
| 6. | 3.47 |
| 7. | 4.77 |
| 7.99 (max) | 7.22 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| >100.0 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 20.94 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.32**

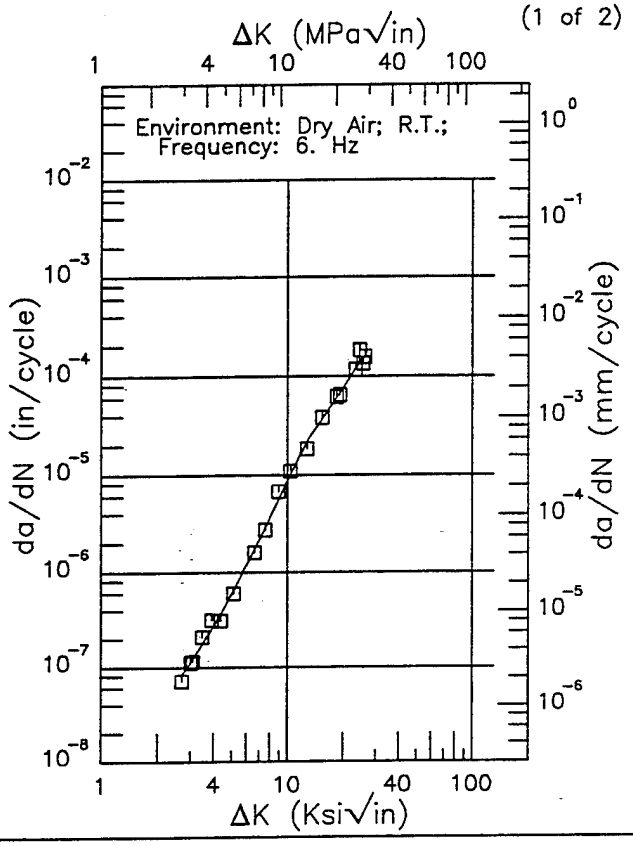
7475

EF

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.5

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.747 – 0.75 in.
Specimen Width: 4.998 – 5.005 in.
Ref: GD006

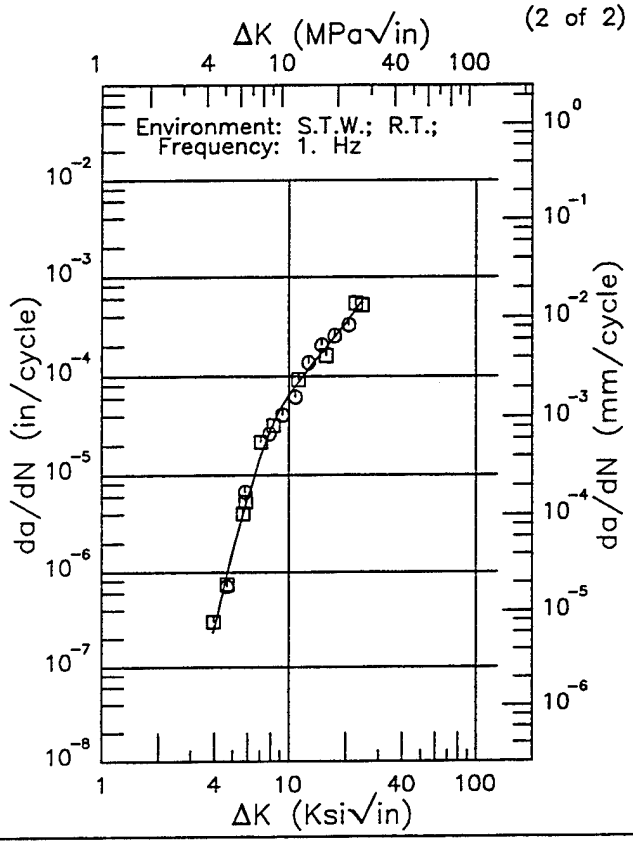
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.69 (min) | 0.0820 |
| 3. | 0.111 |
| 3.5 | 0.177 |
| 4. | 0.273 |
| 5. | 0.595 |
| 6. | 1.18 |
| 7. | 2.13 |
| 8. | 3.62 |
| 9. | 5.80 |
| 10. | 8.83 |
| 13. | 23.1 |
| 16. | 41.8 |
| 20. | 75.5 |
| 25. | 147. |
| 26.23 (max) | 155. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.49 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.94 (min) | 0.233 |
| 4. | 0.266 |
| 5. | 1.63 |
| 6. | 5.86 |
| 7. | 14.7 |
| 8. | 28.6 |
| 9. | 46.3 |
| 10. | 65.3 |
| 13. | 124. |
| 16. | 200. |
| 20. | 339. |
| 24.36 (max) | 565. |

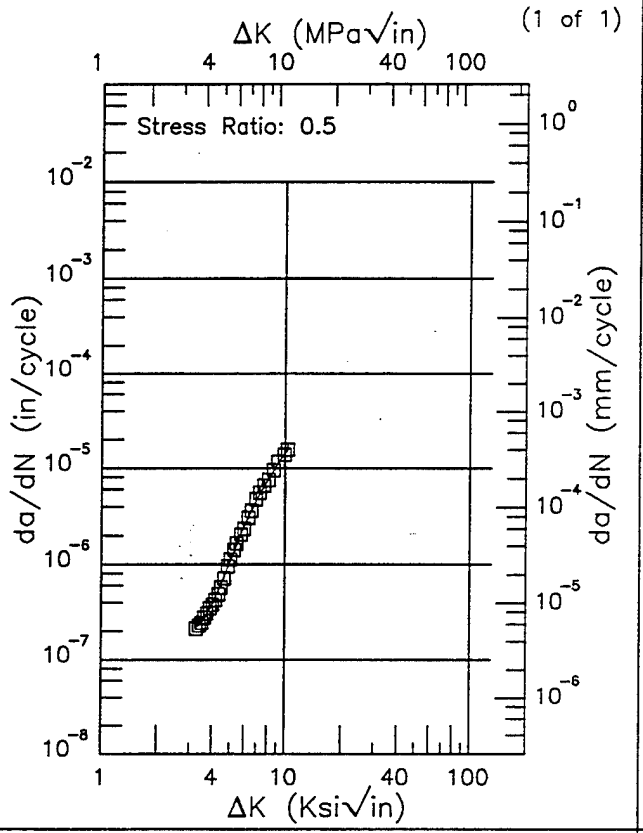
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.69 | 0. .5 .8 1.25 2. |

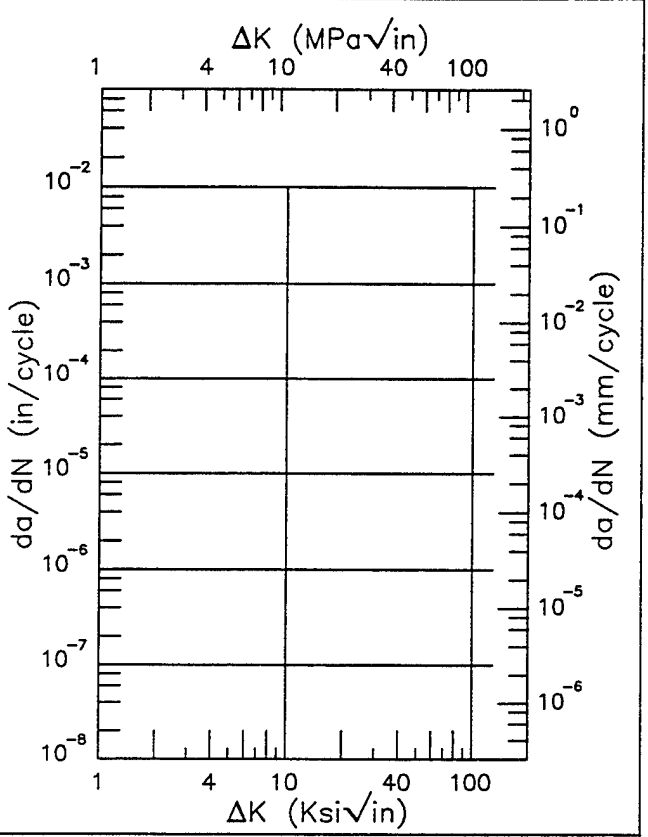
**Figure 8.19.3.1.33**

7475 R

Condition/Ht: T7351
Form: Plate
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.24 in.
Specimen Width: 2 in.
Ref: NC005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.27 (min) | 0.217 |
| 3.5 | 0.243 |
| 4. | 0.371 |
| 5. | 1.05 |
| 6. | 2.54 |
| 7. | 4.74 |
| 8. | 7.38 |
| 9. | 10.9 |
| 10. | 14.5 |
| 10.26 (max) | 15.1 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.88 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.34**

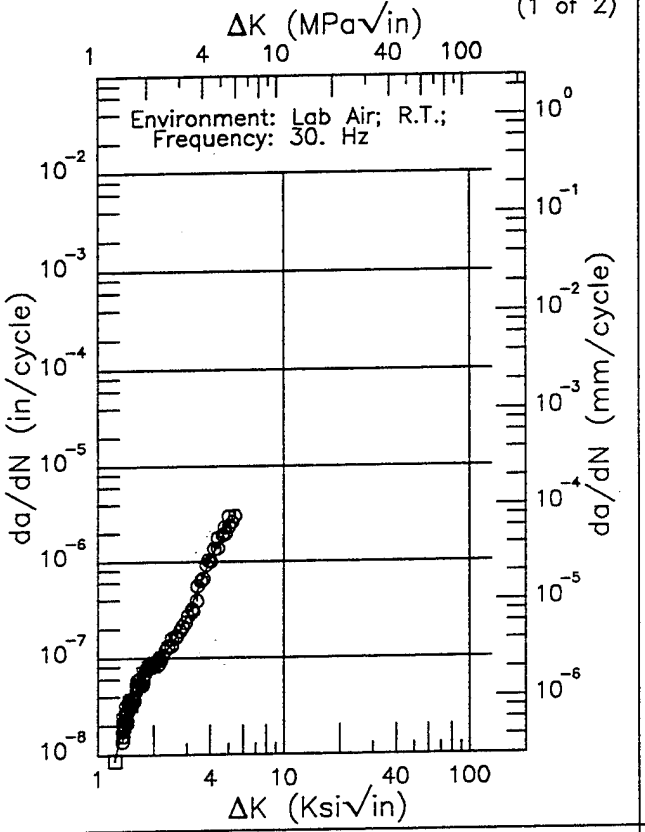
7475

EF

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L-T
Stress Ratio: 0.8

Yield Strength: 63.2 – 68.8 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.25 in.
Specimen Width: 1.994 – 2.001 in.
Ref: DA005;DA004

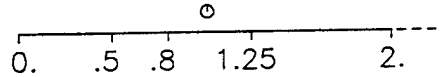
(1 of 2)



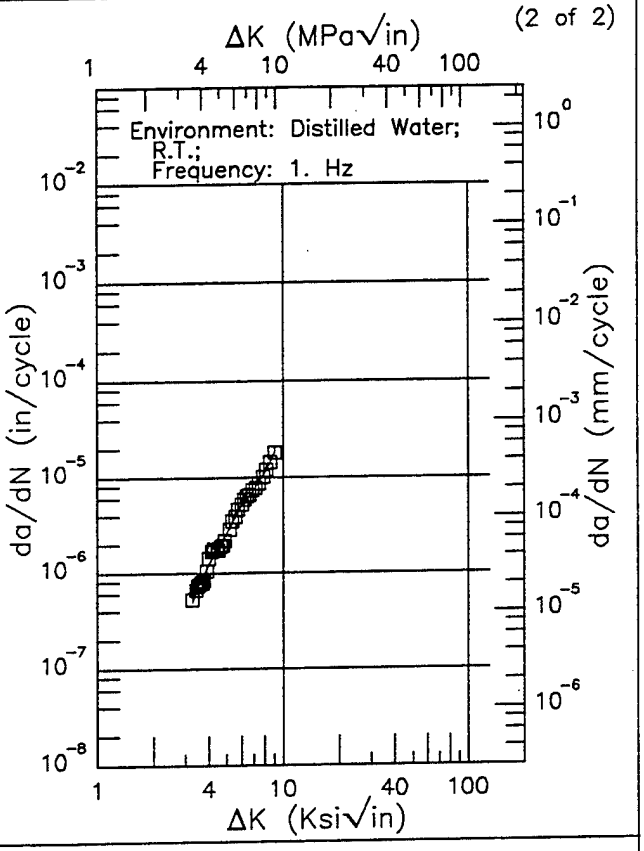

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.23 (min) | 0.00875 |
| 1.3 | 0.0140 |
| 1.6 | 0.0473 |
| 2. | 0.0872 |
| 2.5 | 0.138 |
| 3. | 0.261 |
| 3.5 | 0.537 |
| 4. | 1.03 |
| 5. | 2.46 |
| 5.42 (max) | 2.84 |

RMS % Error
11.89

Life Prediction Ratio Summary




(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.25 (min) | 0.485 |
| 3.5 | 0.732 |
| 4. | 1.24 |
| 5. | 2.64 |
| 6. | 5.20 |
| 7. | 7.53 |
| 8. | 11.1 |
| 9. | 18.0 |
| 9.03 (max) | 18.2 |

RMS % Error
7.57

Life Prediction Ratio Summary

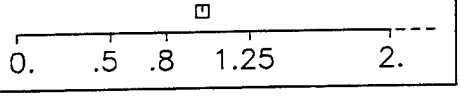
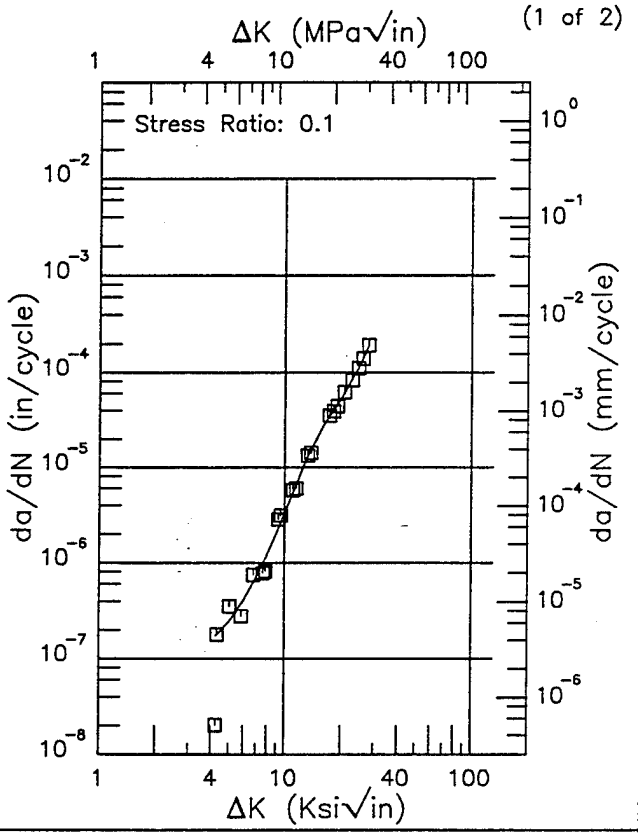


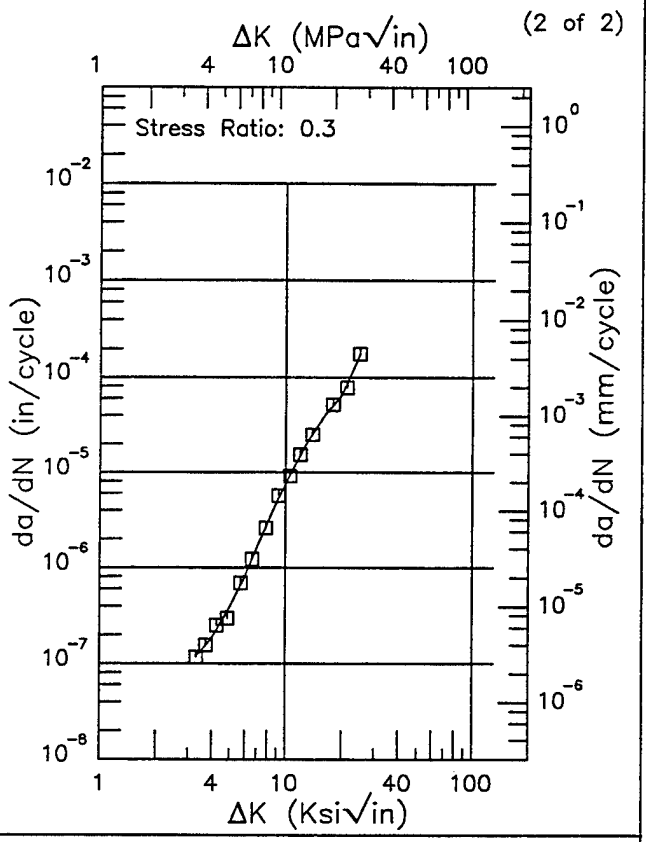

**Figure 8.19.3.1.35**

7475 R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: T-L
Frequency: 6 Hz
Environment: DRY AIR; RT

Yield Strength: 61.3 ksi
Ult. Strength: 72.1 ksi
Specimen Thk: 0.751 - 0.755 in.
Specimen Width: 5.005 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.24 (min) | 0.175 |
| 5. | 0.242 |
| 6. | 0.405 |
| 7. | 0.700 |
| 8. | 1.20 |
| 9. | 2.03 |
| 10. | 3.33 |
| 13. | 11.8 |
| 16. | 27.7 |
| 20. | 53.5 |
| 25. | 120. |
| 27.78 (max) | 187. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.30 (min) | 0.121 |
| 3.5 | 0.134 |
| 4. | 0.184 |
| 5. | 0.386 |
| 6. | 0.808 |
| 7. | 1.59 |
| 8. | 2.90 |
| 9. | 4.88 |
| 10. | 7.64 |
| 13. | 20.4 |
| 16. | 38.3 |
| 20. | 66.0 |
| 24.91 (max) | 174. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 24.91 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.77 | 0. .5 .8 1.25 2. |

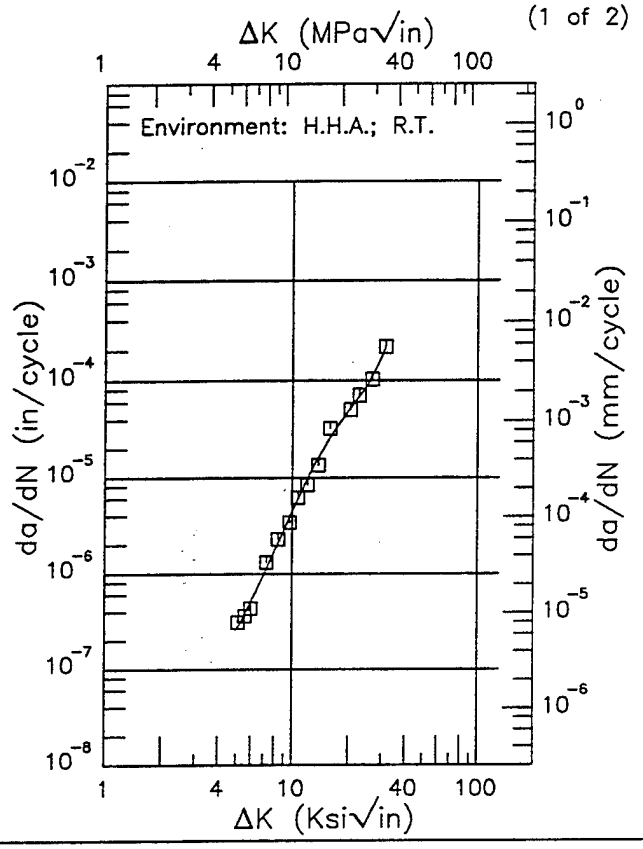
**Figure 8.19.3.1.36**

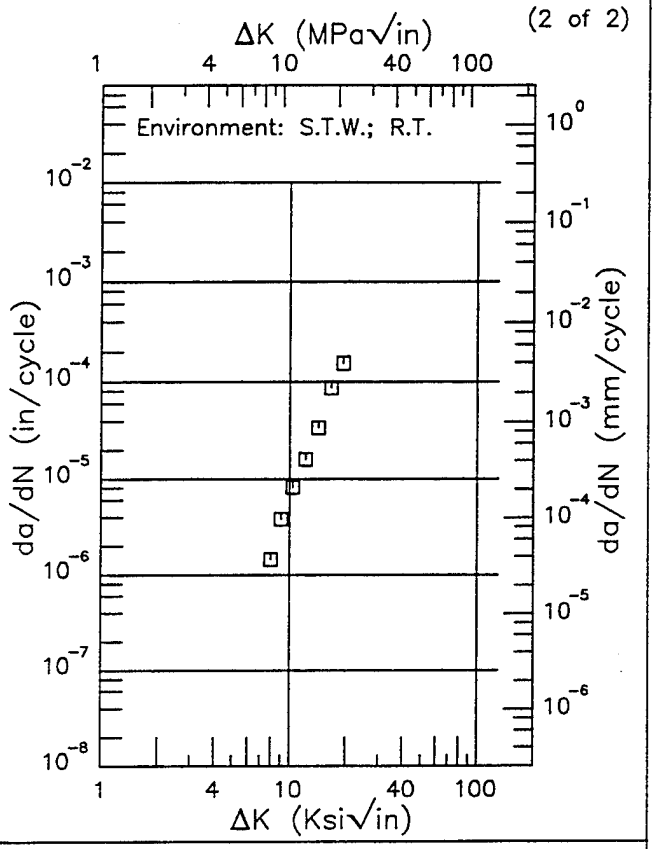
7475

E

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.1
Frequency: 0.1 Hz

Yield Strength: 61.3 ksi
Ult. Strength: 72.1 ksi
Specimen Thk: 0.748 – 0.751 in.
Specimen Width: 4.998 – 5.002 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.10 (min) | 0.274 |
| 6. | 0.509 |
| 7. | 0.963 |
| 8. | 1.71 |
| 9. | 2.86 |
| 10. | 4.50 |
| 13. | 13.2 |
| 16. | 27.3 |
| 20. | 50.4 |
| 25. | 88.6 |
| 30. | 174. |
| 31.22 (max) | 211. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error
11.27

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

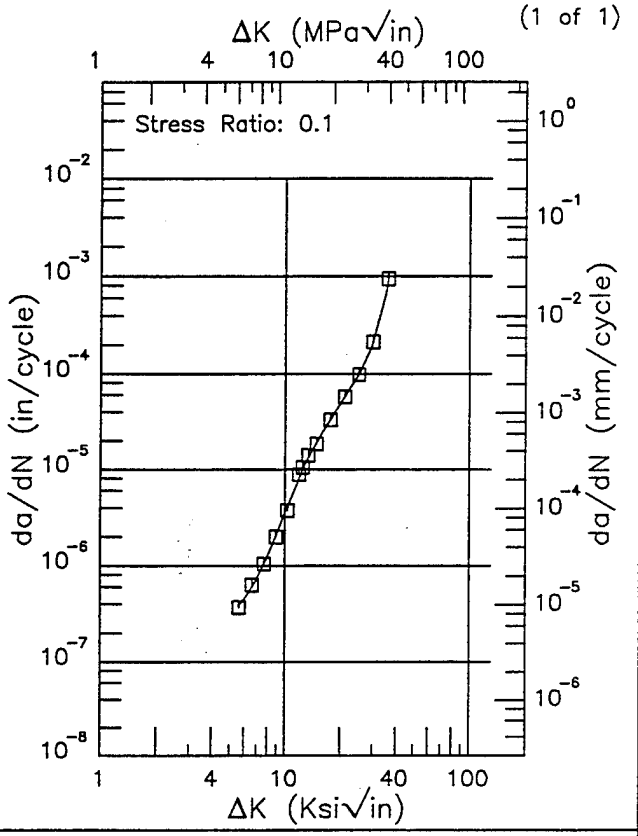
Life Prediction Ratio Summary
0. .5 .8 1.25 2.

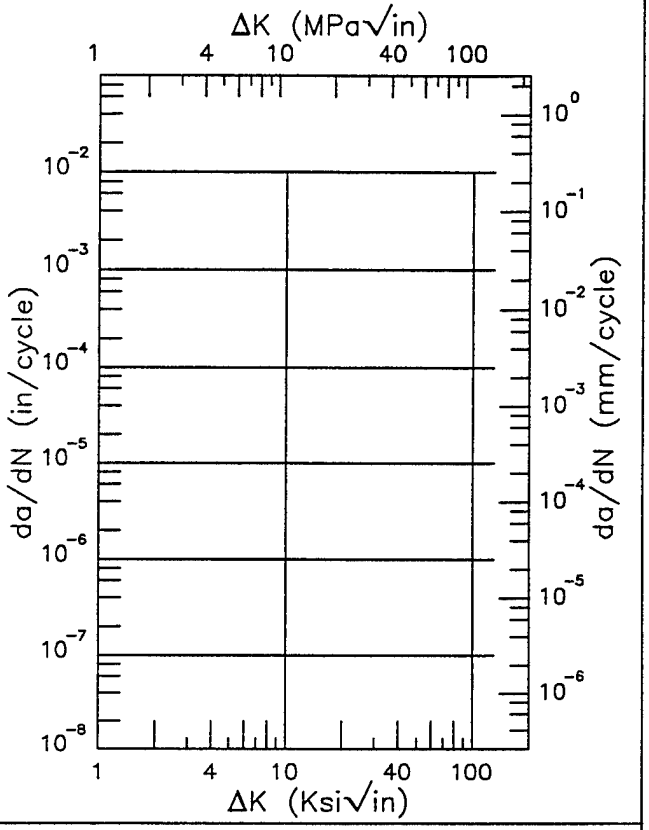
**Figure 8.19.3.1.37**

7475 R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 1 Hz
Environment: H.H.A.; RT

Yield Strength: 61.3 ksi
Ult. Strength: 72.1 ksi
Specimen Thk: 0.75 in.
Specimen Width: 4.995 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.59 (min) | 0.383 |
| 6. | 0.445 |
| 7. | 0.721 |
| 8. | 1.25 |
| 9. | 2.15 |
| 10. | 3.58 |
| 13. | 11.9 |
| 16. | 25.3 |
| 20. | 49.2 |
| 25. | 98.5 |
| 30. | 215. |
| 35. | 665. |
| 36.11 (max) | 925. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

RMS % Error
5.58

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

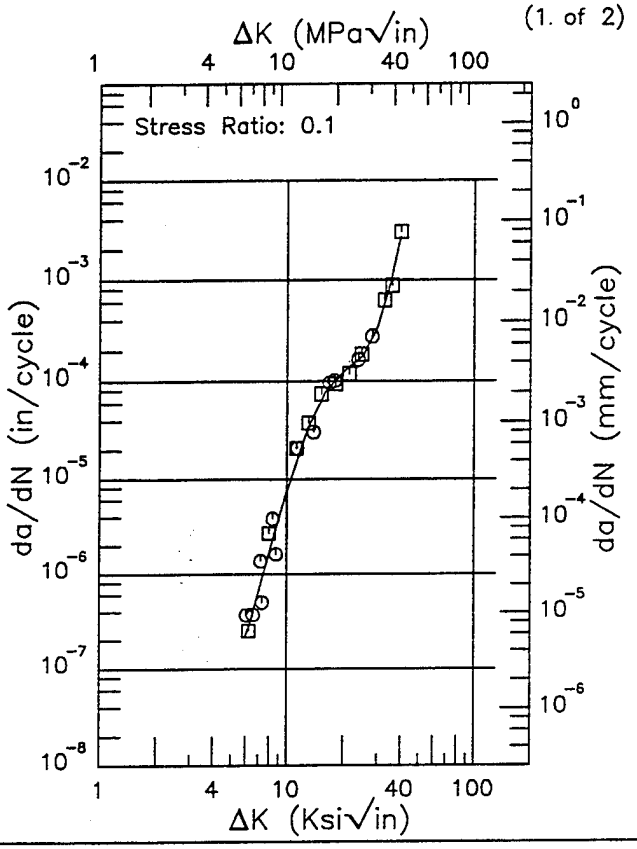
**Figure 8.19.3.1.38**

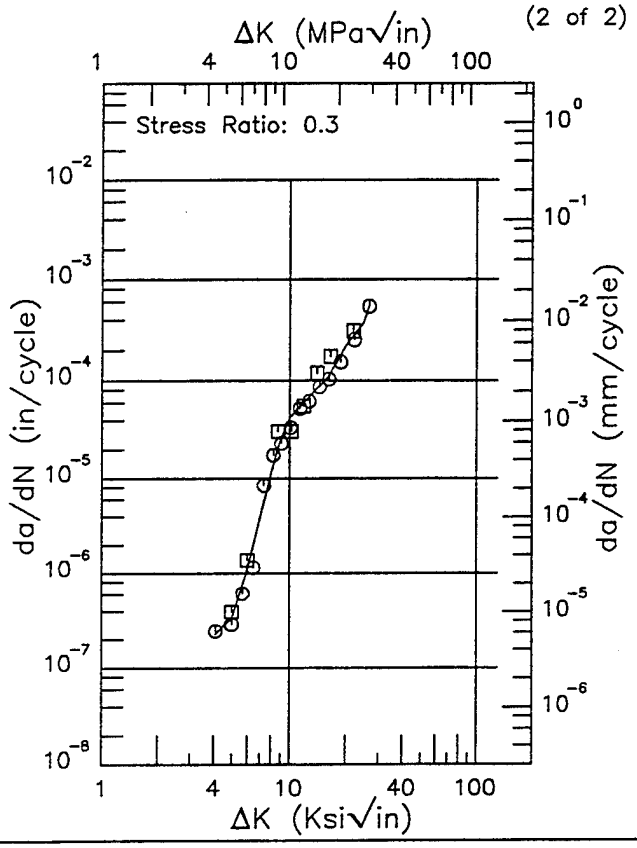
7475

R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 61.3 ksi
Ult. Strength: 72.1 ksi
Specimen Thk: 0.75 – 0.752 in.
Specimen Width: 4.997 – 5 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.02 (min) | 0.217 |
| 7. | 0.643 |
| 8. | 1.67 |
| 9. | 3.80 |
| 10. | 7.62 |
| 13. | 34.0 |
| 16. | 78.3 |
| 20. | 124. |
| 25. | 177. |
| 30. | 343. |
| 35. | 916. |
| 39.82 (max) | 2659. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.08 (min) | 0.226 |
| 5. | 0.343 |
| 6. | 1.10 |
| 7. | 3.86 |
| 8. | 11.4 |
| 9. | 25.5 |
| 10. | 42.7 |
| 13. | 72.2 |
| 16. | 106. |
| 20. | 221. |
| 25. | 374. |
| 26.55 (max) | 536. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 35.44 | 0. .5 .8 1.25 2. |

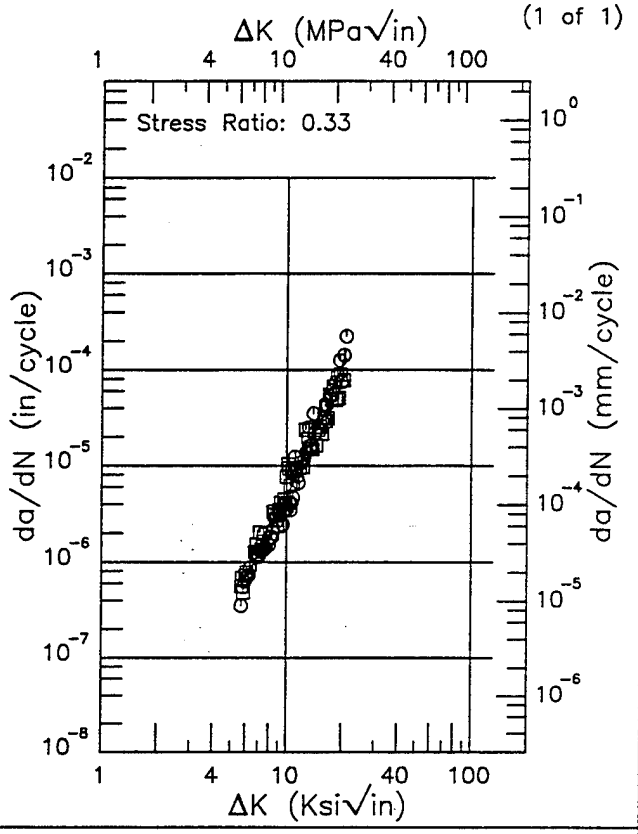
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.64 | 0. .5 .8 1.25 2. |

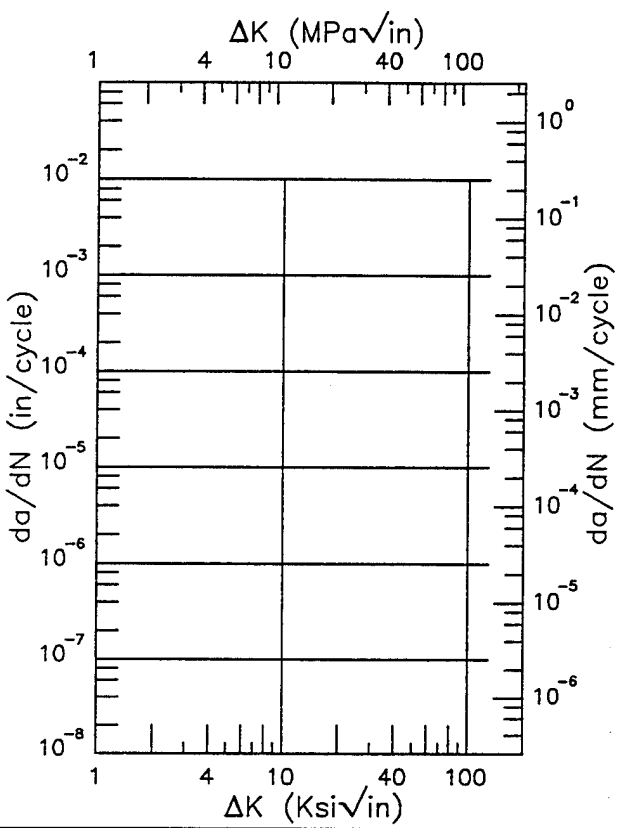
**Figure 8.19.3.1.39**

7475 R

Condition/Ht: T7351
Form: 1 – 4 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 2 – 20 Hz
Environment: L.H.A.; RT

Yield Strength: 54.2 – 59.4 ksi
Ult. Strength: 66 – 70 ksi
Specimen Thk: 1 in.
Specimen Width: 3.805 in.
Ref: AL001




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.68 (min) | 0.558 |
| 6. | 0.693 |
| 7. | 1.21 |
| 8. | 1.92 |
| 9. | 3.00 |
| 10. | 4.72 |
| 13. | 15.7 |
| 16. | 34.0 |
| 20. | 115. |
| 20.85 (max) | 166. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.43 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.40**

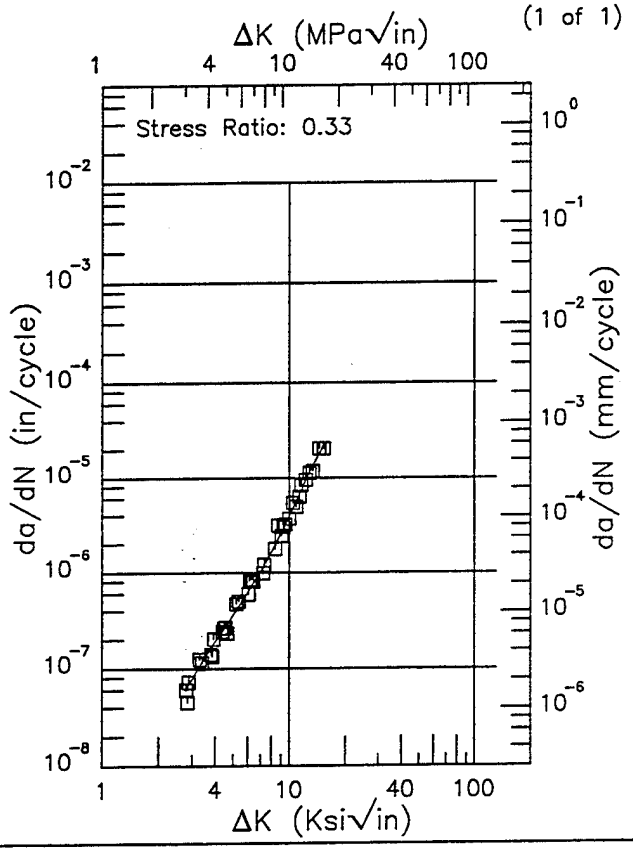
7475

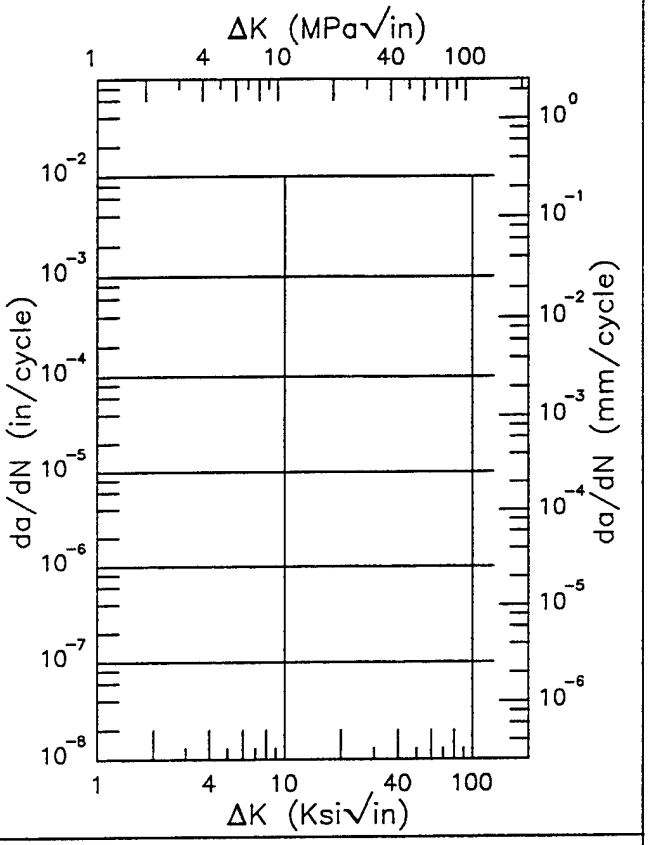
R

Condition/Ht: T7351
Form: 4 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 2 – 30 Hz
Environment: L.H.A.; RT

Yield Strength: 54.2 ksi
Ult. Strength: 66 ksi
Specimen Thk: 0.25 in.
Specimen Width: 3.805 in.
Ref: AL001

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.78 (min) | 0.0607 |
| 3. | 0.0785 |
| 3.5 | 0.128 |
| 4. | 0.189 |
| 5. | 0.361 |
| 6. | 0.622 |
| 7. | 1.02 |
| 8. | 1.64 |
| 9. | 2.57 |
| 10. | 3.93 |
| 13. | 12.1 |
| 15.21 (max) | 22.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.33 | 0. .5 .8 1.25 2. |

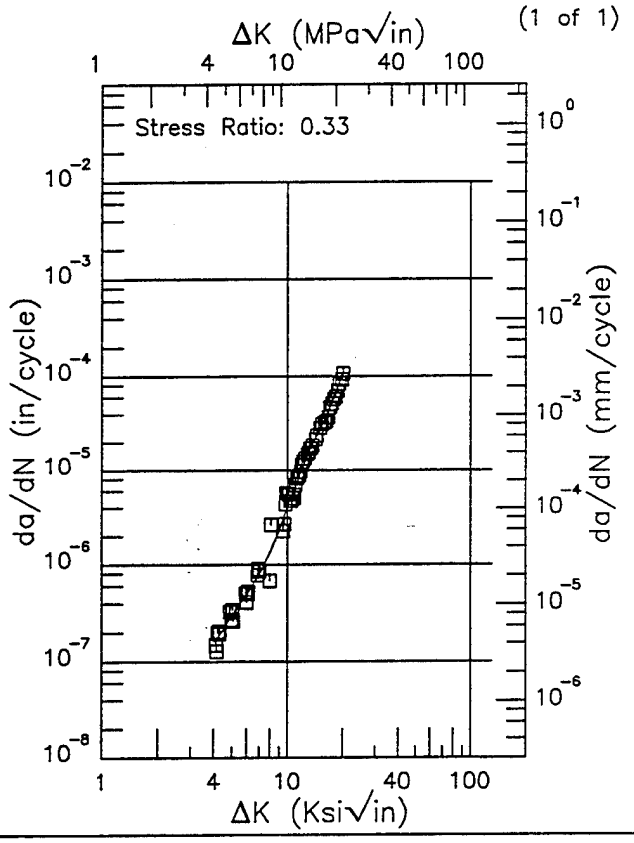
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

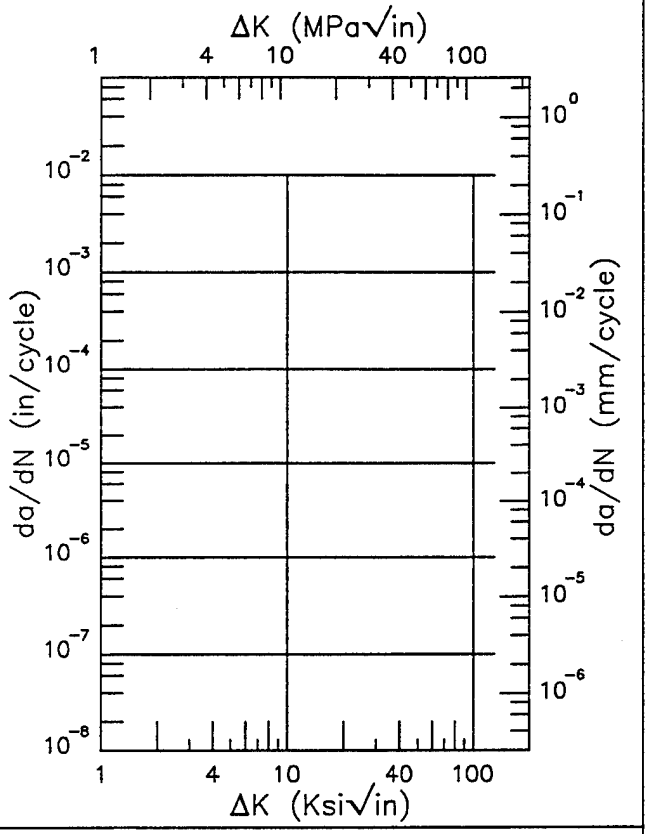
**Figure 8.19.3.1.41**

7475 R

Condition/Ht: T7351
Form: 3.5 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 2 – 30 Hz
Environment: L.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.999 in.
Specimen Width: 3.805 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.08 (min) | 0.160 |
| 5. | 0.302 |
| 6. | 0.495 |
| 7. | 0.790 |
| 8. | 1.32 |
| 9. | 2.32 |
| 10. | 4.08 |
| 13. | 15.4 |
| 16. | 35.7 |
| 20.00 (max) | 106. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.01 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

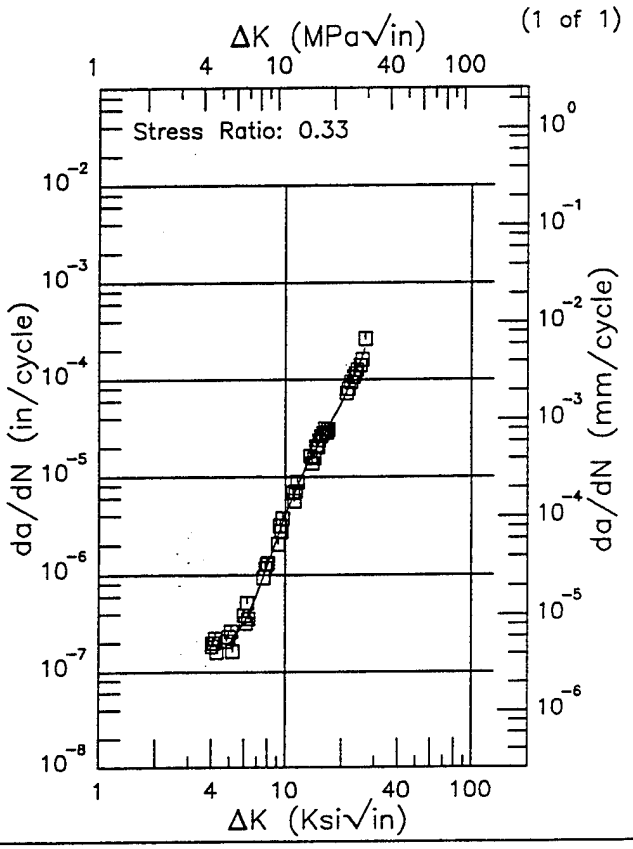
**Figure 8.19.3.1.42**

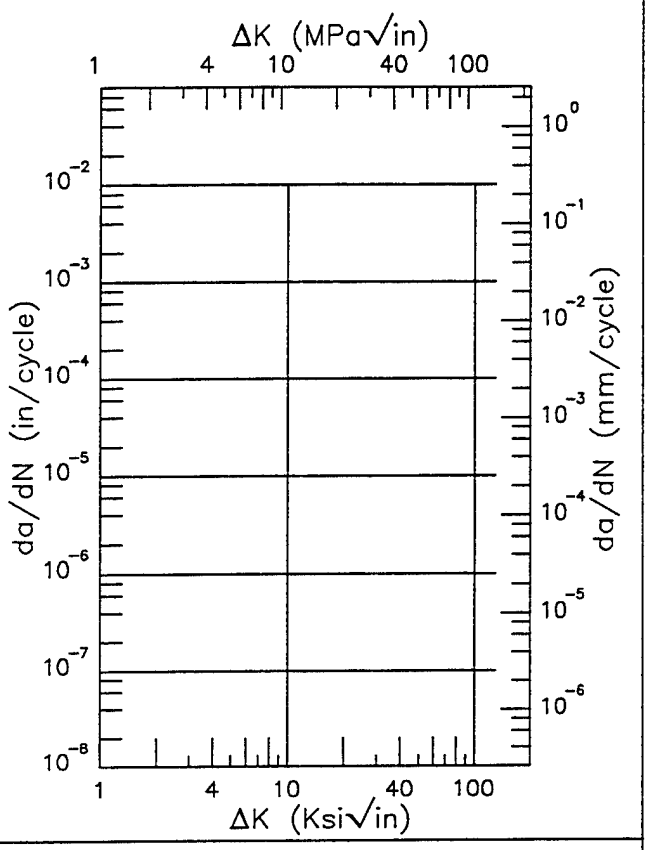
7475

R

Condition/Ht: T7351
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 2 – 30 Hz
Environment: L.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3.08 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.01 (min) | 0.193 |
| 5. | 0.195 |
| 6. | 0.323 |
| 7. | 0.629 |
| 8. | 1.24 |
| 9. | 2.34 |
| 10. | 4.08 |
| 13. | 13.3 |
| 16. | 27.1 |
| 20. | 57.6 |
| 25. | 150. |
| 26.73 (max) | 213. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.68 | 0. .5 .8 1.25 2. |

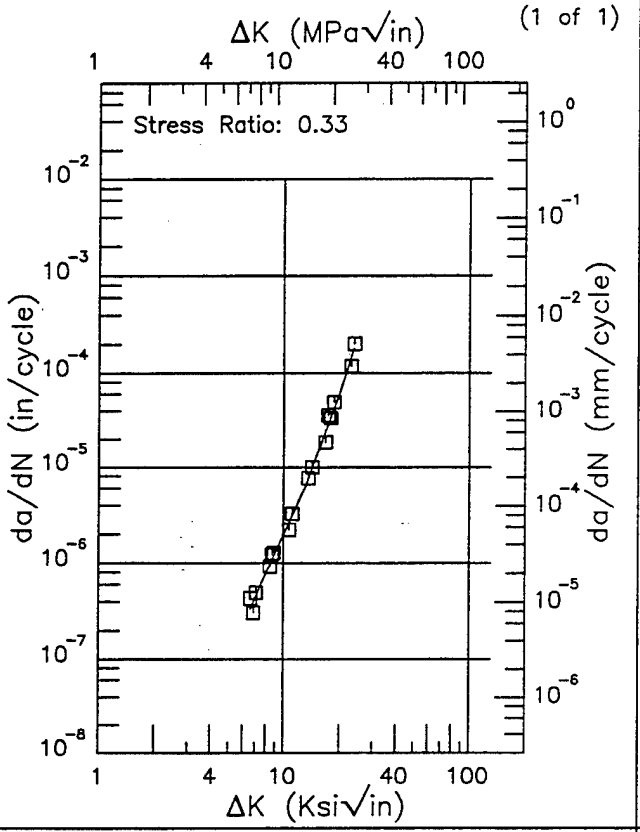
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

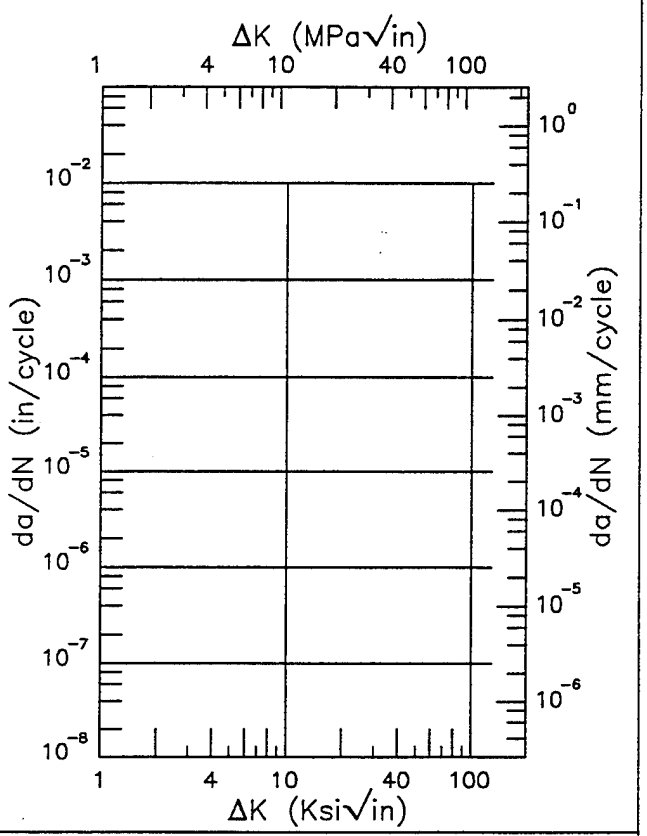
**Figure 8.19.3.1.43**

7475 R

Condition/Ht: T7351
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 30 Hz
Environment: L.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.25 in.
Specimen Width: 2.55 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.63 (min) | 0.335 |
| 7. | 0.433 |
| 8. | 0.782 |
| 9. | 1.28 |
| 10. | 1.96 |
| 13. | 6.04 |
| 16. | 18.7 |
| 20. | 62.0 |
| 23.76 (max) | 181. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 15.33 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.44**

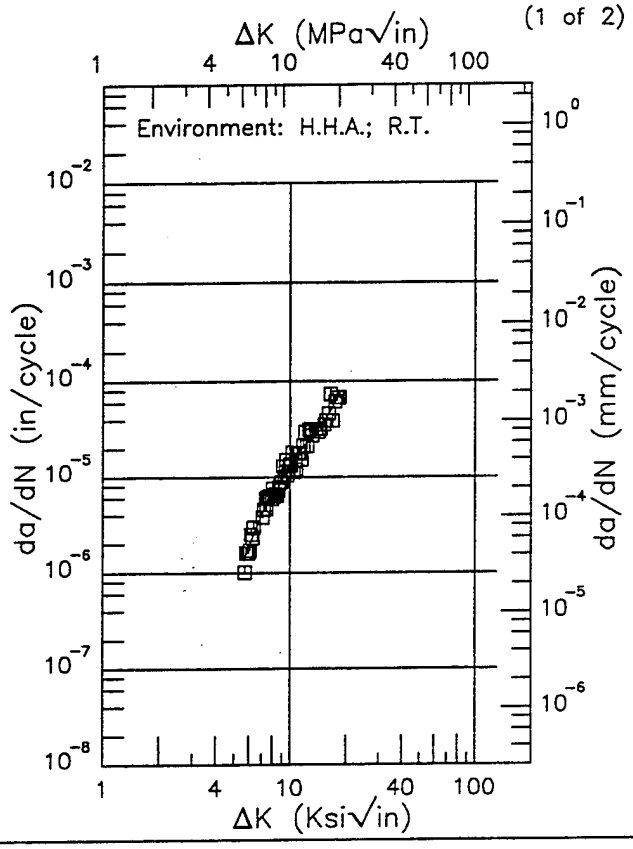
7475

E

Condition/Ht: T7351
Form: 1 – 4 in. Plate
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.33
Frequency: 2 – 20 Hz

Yield Strength: 54.2 – 59.4 ksi
Ult. Strength: 66 – 70 ksi
Specimen Thk: 1 in.
Specimen Width: 3.805 in.
Ref: AL001;AL009

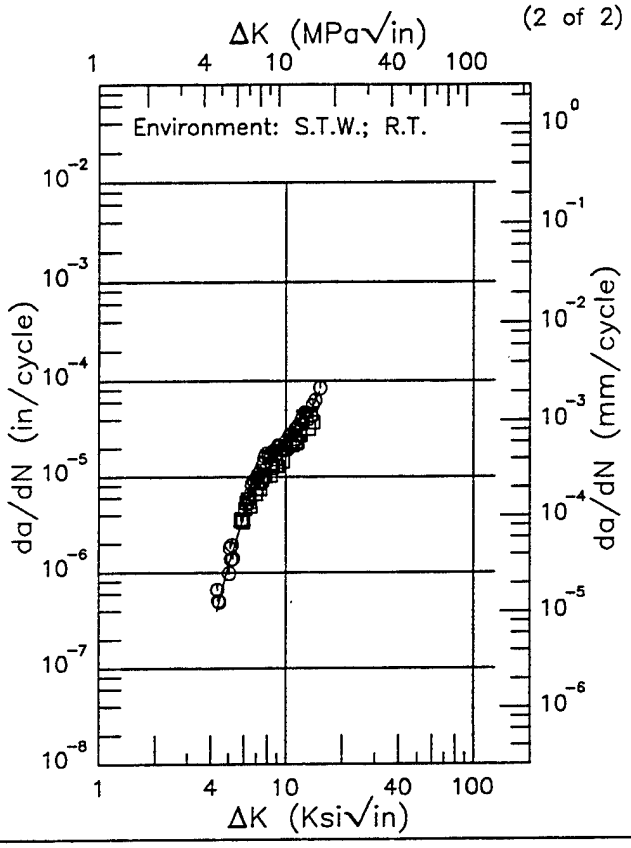
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.70 (min) | 1.37 |
| 6. | 1.89 |
| 7. | 4.04 |
| 8. | 6.54 |
| 9. | 9.29 |
| 10. | 12.6 |
| 13. | 27.5 |
| 16. | 44.0 |
| 18.33 (max) | 74.0 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.82 | 0. .5 .8 1.25 2. |

(2 of 2)



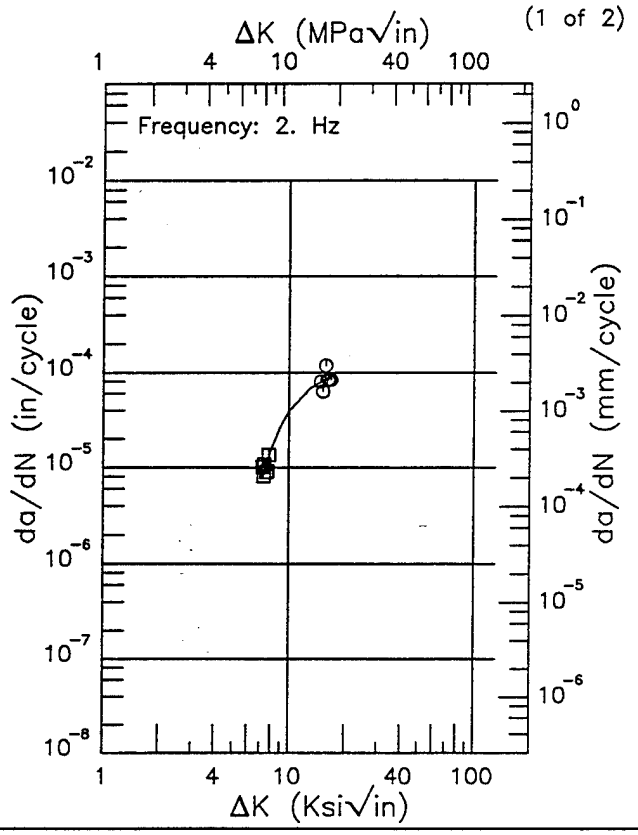

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.33 (min) | 0.400 |
| 5. | 1.18 |
| 6. | 3.93 |
| 7. | 8.78 |
| 8. | 14.3 |
| 9. | 18.6 |
| 10. | 21.9 |
| 13. | 40.7 |
| 15.20 (max) | 78.2 |

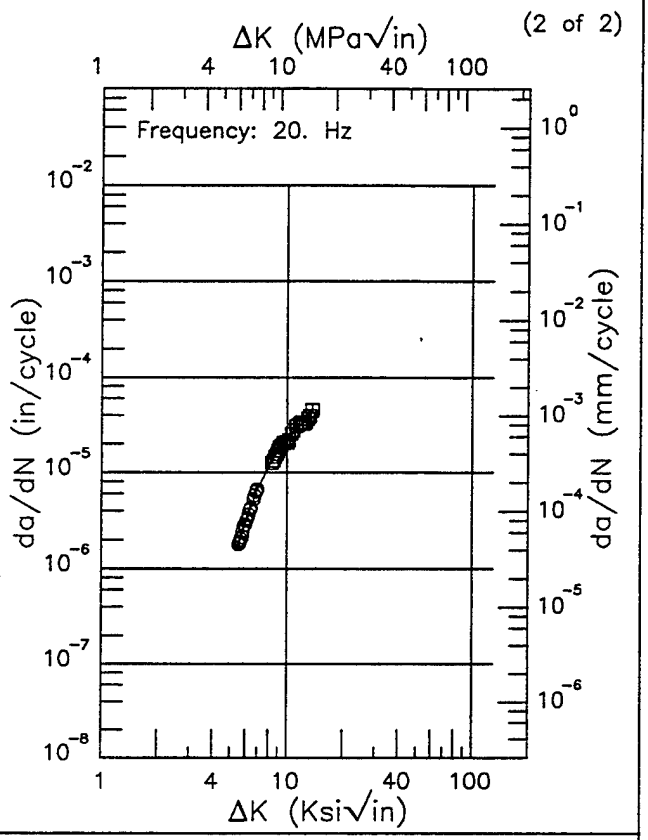
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.23 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.45**

Condition/Ht: T7351
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.33
Environment: S.T.W.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.75 in.
Specimen Width: 3.08 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.18 (min) | 7.92 |
| 8. | 15.5 |
| 9. | 27.0 |
| 10. | 39.2 |
| 13. | 68.2 |
| 16. | 87.2 |
| 16.67 (max) | 91.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.51 (min) | 1.69 |
| 6. | 2.97 |
| 7. | 6.75 |
| 8. | 11.6 |
| 9. | 16.8 |
| 10. | 22.1 |
| 13. | 38.1 |
| 13.68 (max) | 42.1 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.79 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.77 | 0. .5 .8 1.25 2. |

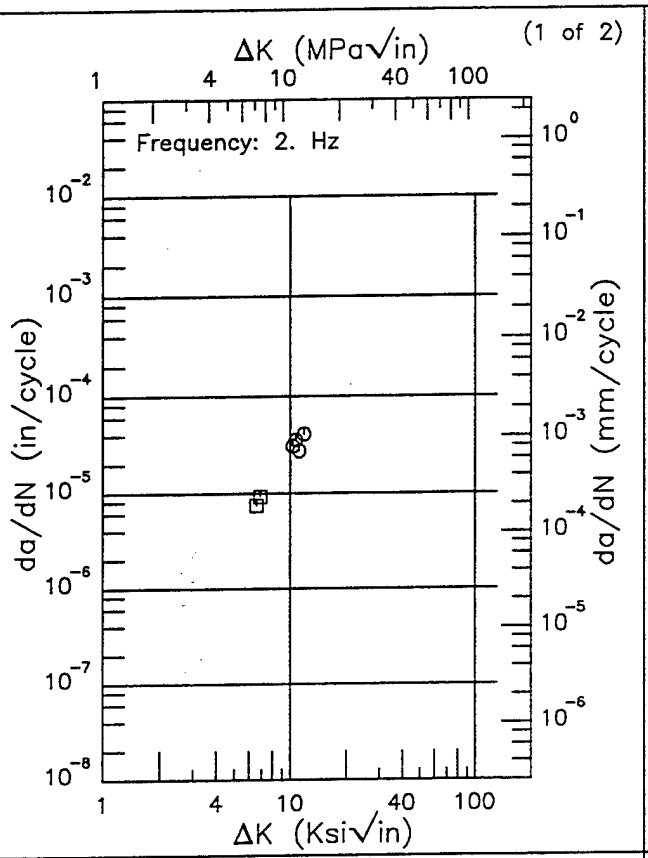
**Figure 8.19.3.1.46**

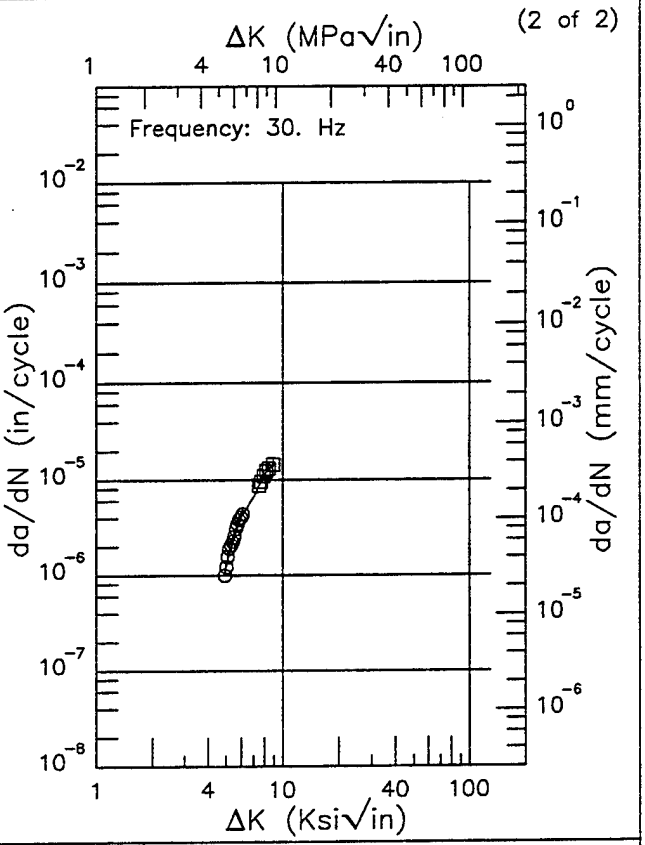
7475

F

Condition/Ht: T7351
Form: 3.5 in. Plate
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.33
Environment: S.T.W.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 0.25 in.
Specimen Width: 2.55 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.90 (min) | 1.03 |
| 5. | 1.27 |
| 6. | 4.09 |
| 7. | 6.65 |
| 8. | 11.5 |
| 8.83 (max) | 14.3 |

RMS % Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS % Error
8.57

Life Prediction Ratio Summary

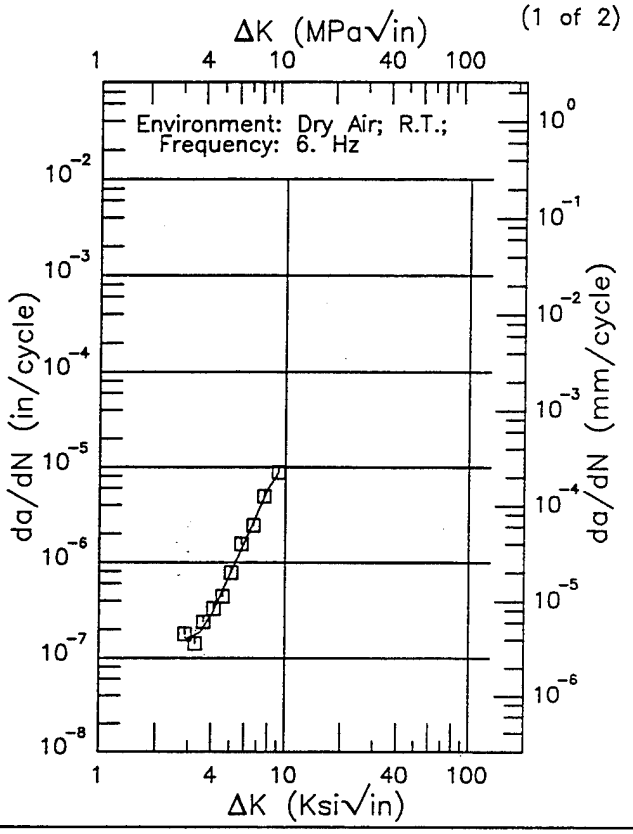
0. .5 .8 1.25 2.

**Figure 8.19.3.1.47**

7475 EF

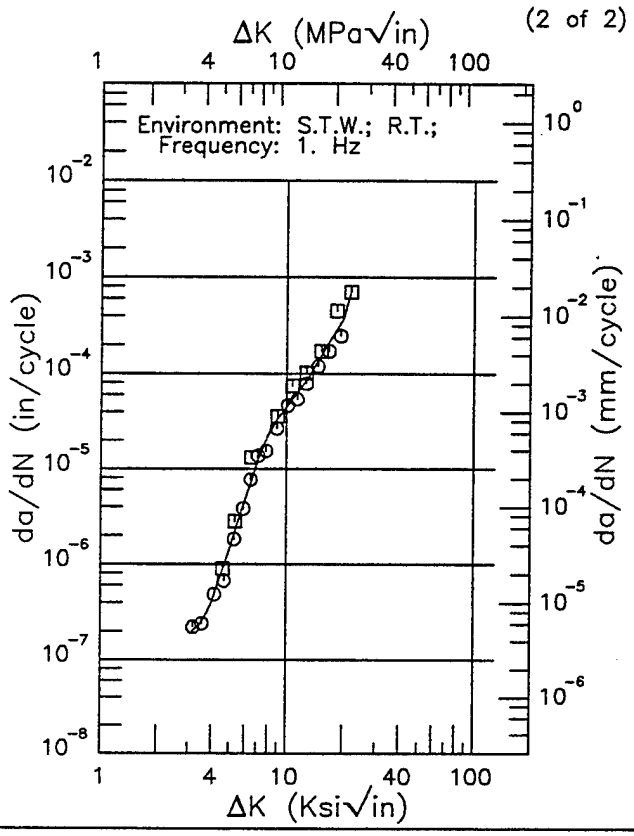
Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: T–L
Stress Ratio: 0.5

Yield Strength: 61.3 ksi
Ult. Strength: 72.1 ksi
Specimen Thk: 0.75 in.
Specimen Width: 4.998 – 5.003 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.88 (min) | 0.165 |
| 3. | 0.159 |
| 3.5 | 0.186 |
| 4. | 0.285 |
| 5. | 0.748 |
| 6. | 1.65 |
| 7. | 3.26 |
| 8. | 5.98 |
| 9. | 8.59 |
| 9.11 (max) | 8.76 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.92 | 0. .5 .8 1.25 2. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.17 (min) | 0.199 |
| 3.5 | 0.241 |
| 4. | 0.399 |
| 5. | 1.41 |
| 6. | 4.62 |
| 7. | 11.7 |
| 8. | 22.4 |
| 9. | 33.8 |
| 10. | 44.9 |
| 13. | 88.1 |
| 16. | 176. |
| 20. | 371. |
| 21.86 (max) | 671. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 25.85 | 0. .5 .8 1.25 2. |

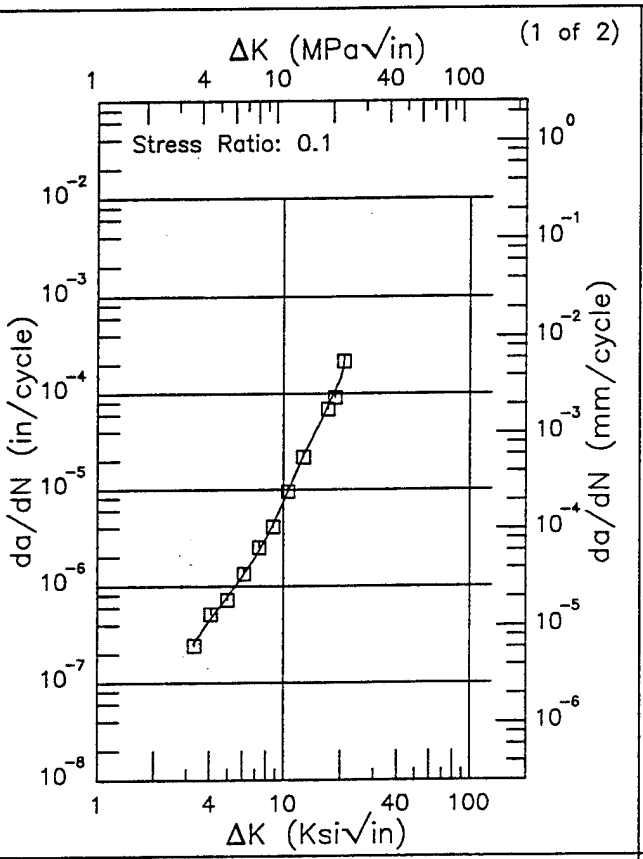
**Figure 8.19.3.1.48**

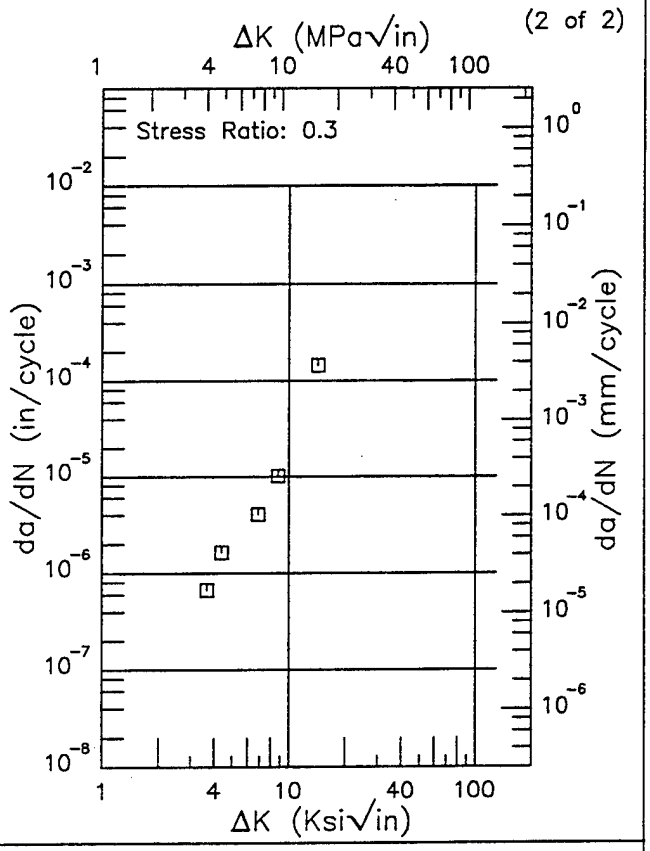
7475

R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: S–L
Frequency: 6 Hz
Environment: DRY AIR; RT

Yield Strength: 57.4 ksi
Ult. Strength: 70.6 ksi
Specimen Thk: 0.502 – 0.503 in.
Specimen Width: 2.553 – 2.554 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.31 (min) | 0.255 |
| 3.5 | 0.304 |
| 4. | 0.445 |
| 5. | 0.789 |
| 6. | 1.26 |
| 7. | 1.97 |
| 8. | 3.08 |
| 9. | 4.83 |
| 10. | 7.48 |
| 13. | 24.2 |
| 16. | 55.8 |
| 20. | 142. |
| 20.84 (max) | 212. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.26 | 0. .5 .8 1.25 2. |

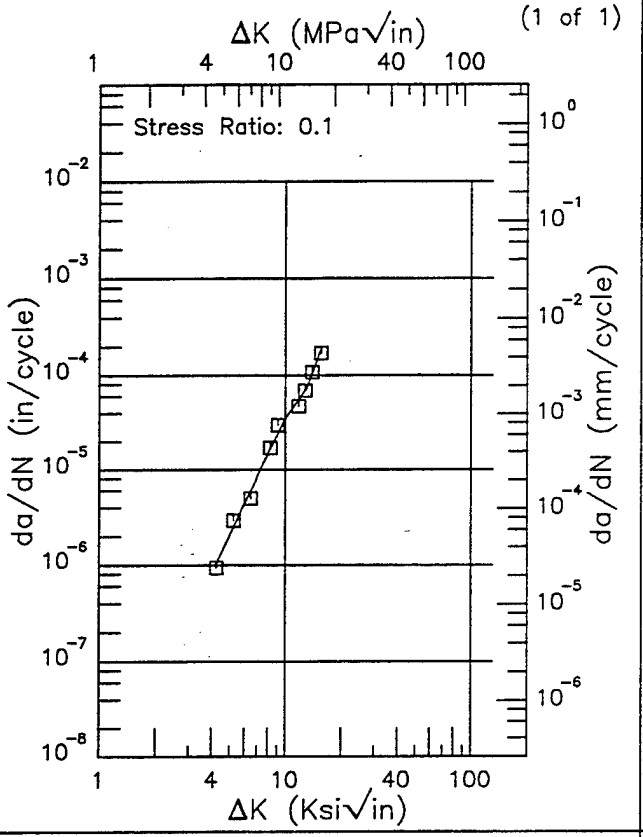
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

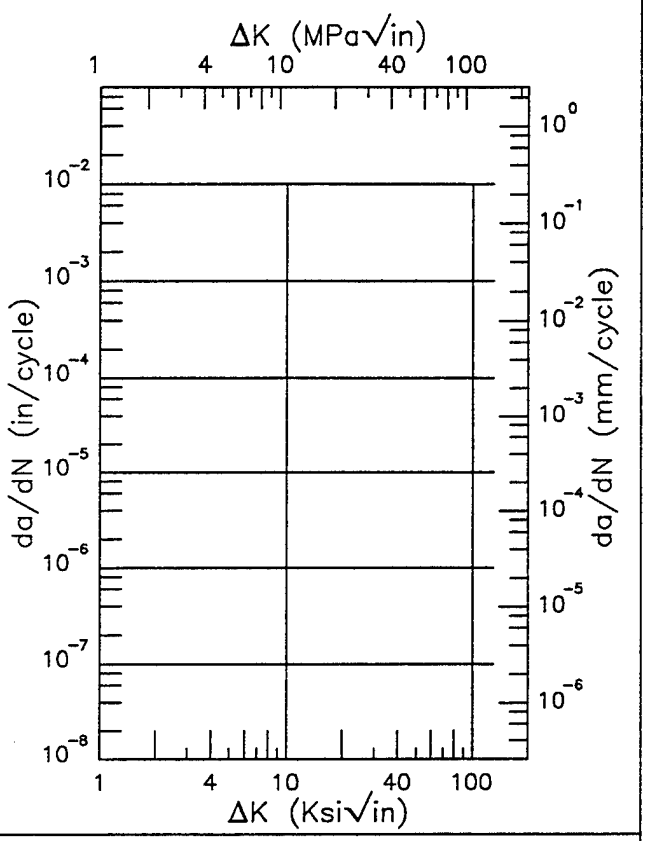
**Figure 8.19.3.1.49**

7475 R

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: S-L
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 57.4 ksi
Ult. Strength: 70.6 ksi
Specimen Thk: 0.518 in.
Specimen Width: 2.555 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.23 (min) | 1.02 |
| 5. | 2.07 |
| 6. | 4.44 |
| 7. | 8.40 |
| 8. | 14.6 |
| 9. | 23.7 |
| 10. | 35.3 |
| 13. | 72.0 |
| 15.42 (max) | 181. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.09 | 0. .5 .8 1.25 2. |

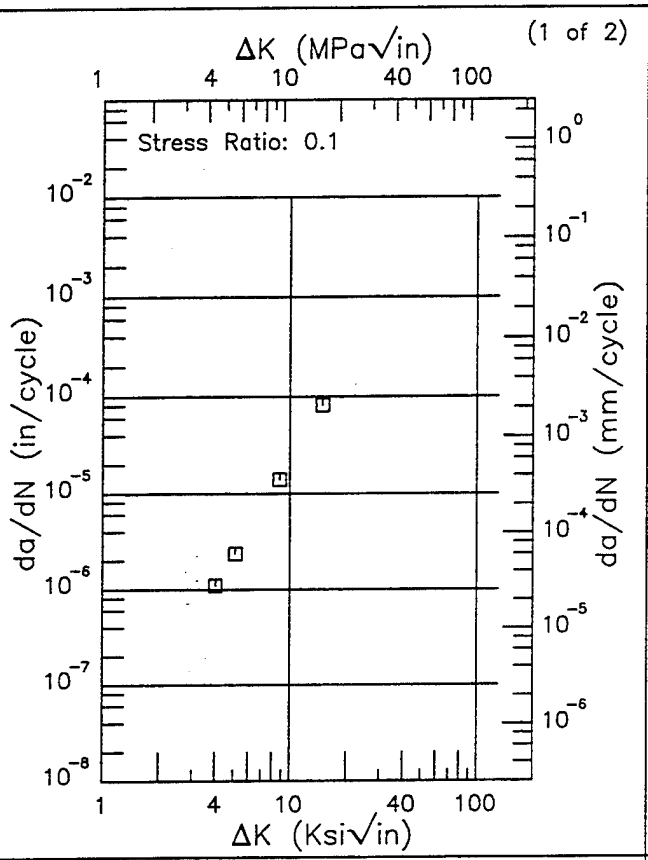
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

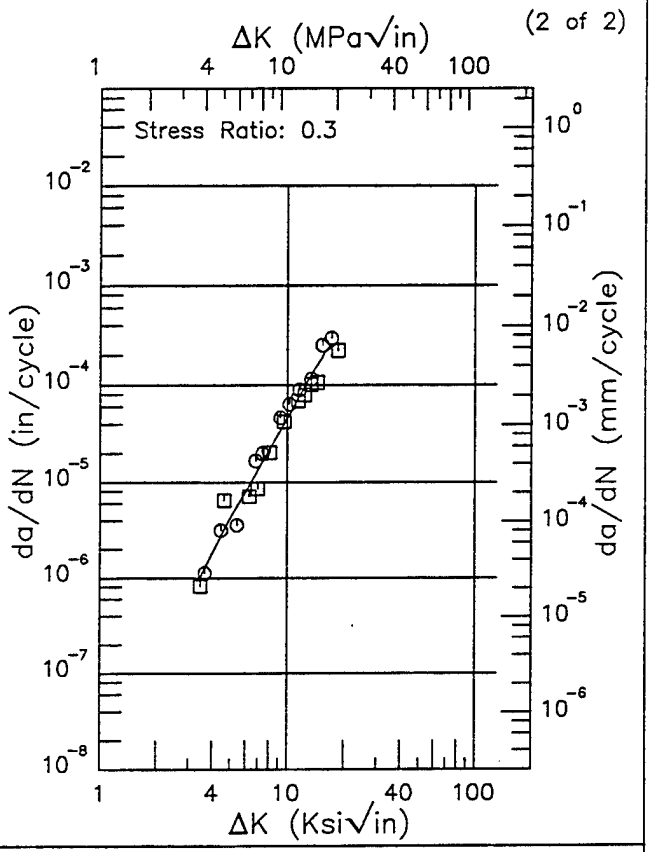
**Figure 8.19.3.1.50**

R | 7475 |

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: S–L
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 57.4 ksi
Ult. Strength: 70.6 ksi
Specimen Thk: 0.502 in.
Specimen Width: 2.554 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| | |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.44 (min) | 0.990 |
| 3.5 | 1.06 |
| 4. | 1.83 |
| 5. | 4.21 |
| 6. | 7.96 |
| 7. | 13.4 |
| 8. | 21.1 |
| 9. | 31.7 |
| 10. | 45.7 |
| 13. | 115. |
| 16. | 219. |
| 18.55 (max) | 265. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 32.11 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.51**

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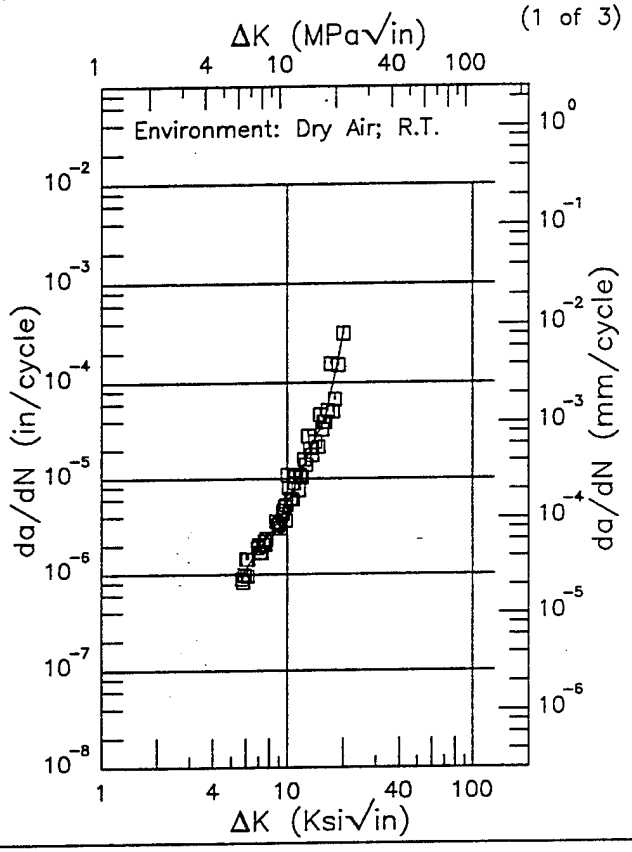
7475

E

Condition/Ht: T7351
Form: 4 in. Plate
Specimen Type: CT
Orientation: S-L
Stress Ratio: 0.33
Frequency: 2 - 20 Hz

Yield Strength: 52.5 ksi
Ult. Strength: 65 ksi
Specimen Thk: 1 in.
Specimen Width: 3.805 in.
Ref: AL001

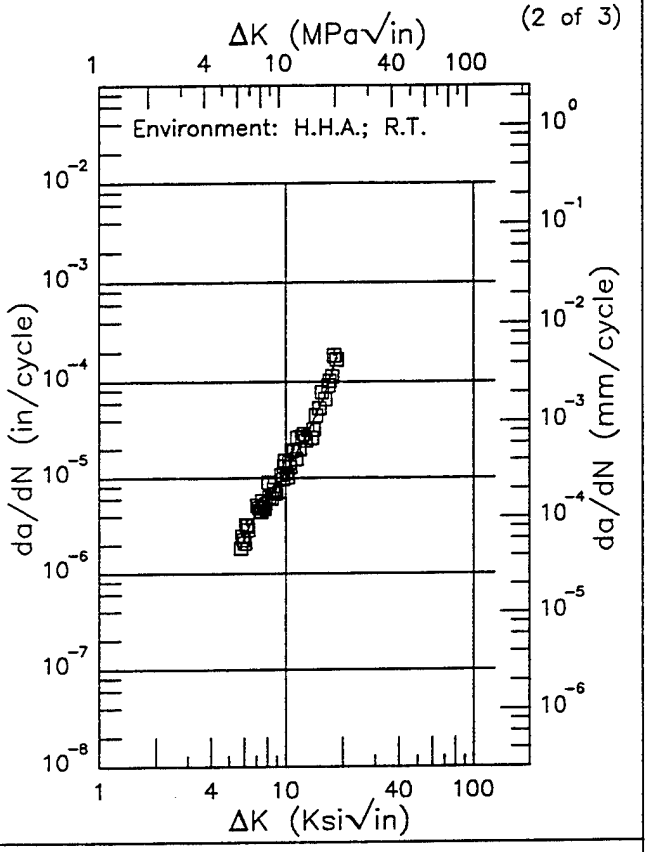
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.68 (min) | 0.911 |
| 6. | 1.14 |
| 7. | 1.84 |
| 8. | 2.61 |
| 9. | 3.70 |
| 10. | 5.52 |
| 13. | 18.0 |
| 16. | 44.8 |
| 19.93 (max) | 312. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 27.07 | 0. .5 .8 1.25 2. |

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.74 (min) | 1.85 |
| 6. | 2.45 |
| 7. | 4.52 |
| 8. | 6.07 |
| 9. | 8.05 |
| 10. | 11.6 |
| 13. | 28.8 |
| 16. | 69.4 |
| 18.53 (max) | 175. |

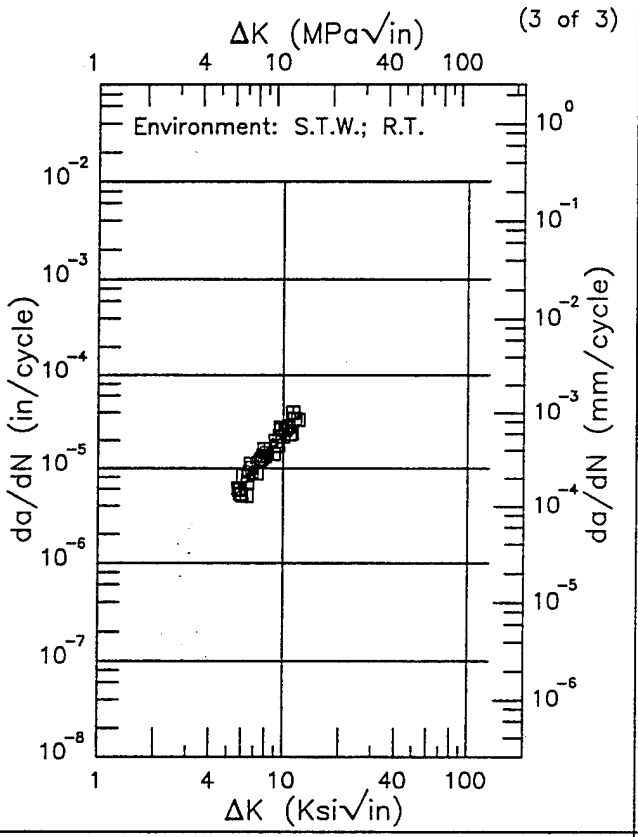
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.43 | 0. .5 .8 1.25 2. |

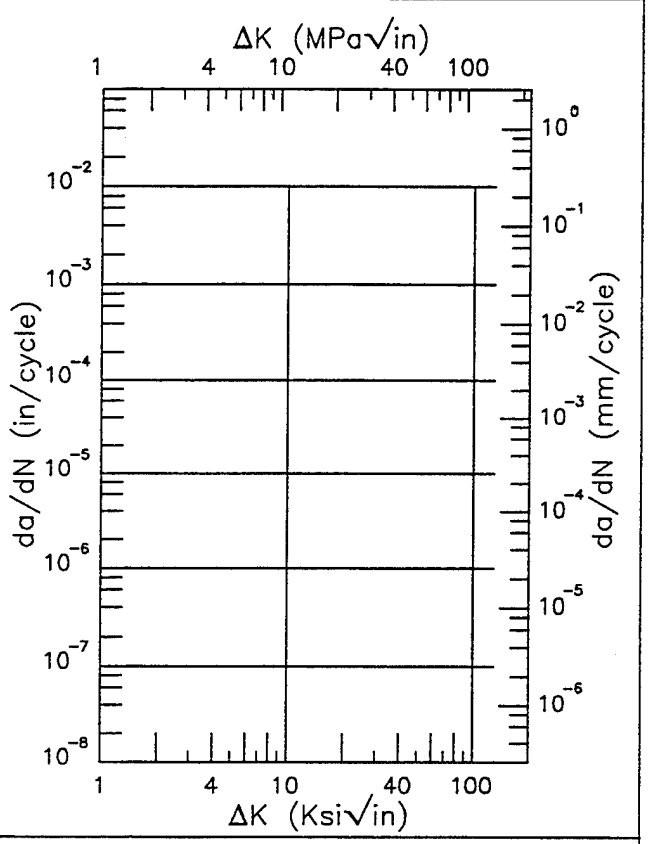
**Figure 8.19.3.1.52**

7475 E

Condition/Ht: T7351
Form: 4 in. Plate
Specimen Type: CT
Orientation: S-L
Stress Ratio: 0.33
Frequency: 2 – 20 Hz

Yield Strength: 52.5 ksi
Ult. Strength: 65 ksi
Specimen Thk: 1 in.
Specimen Width: 3.805 in.
Ref: AL001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.70 (min) | 5.48 |
| 6. | 6.36 |
| 7. | 9.63 |
| 8. | 13.4 |
| 9. | 17.9 |
| 10. | 23.1 |
| 11.87 (max) | 36.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.60 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

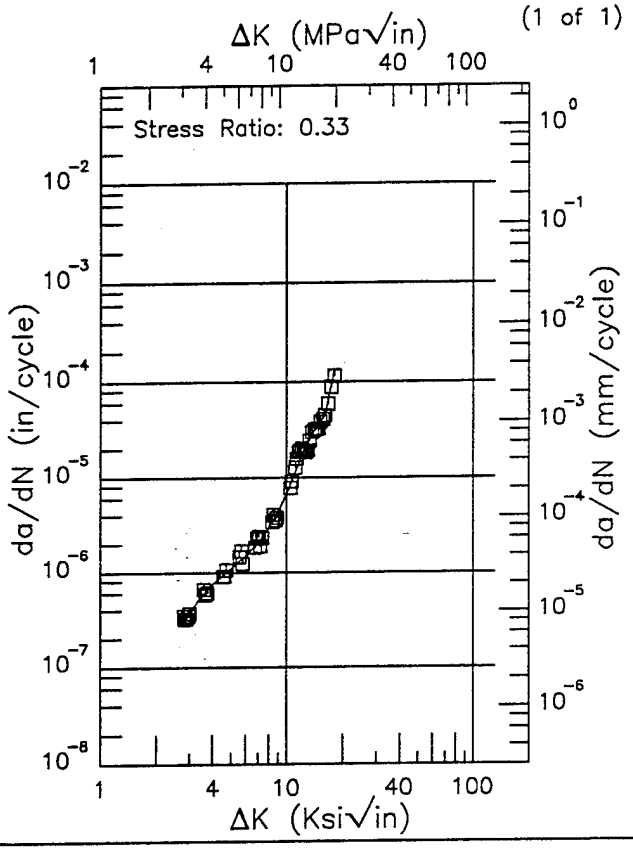
**Figure 8.19.3.1.52 (Concluded)**

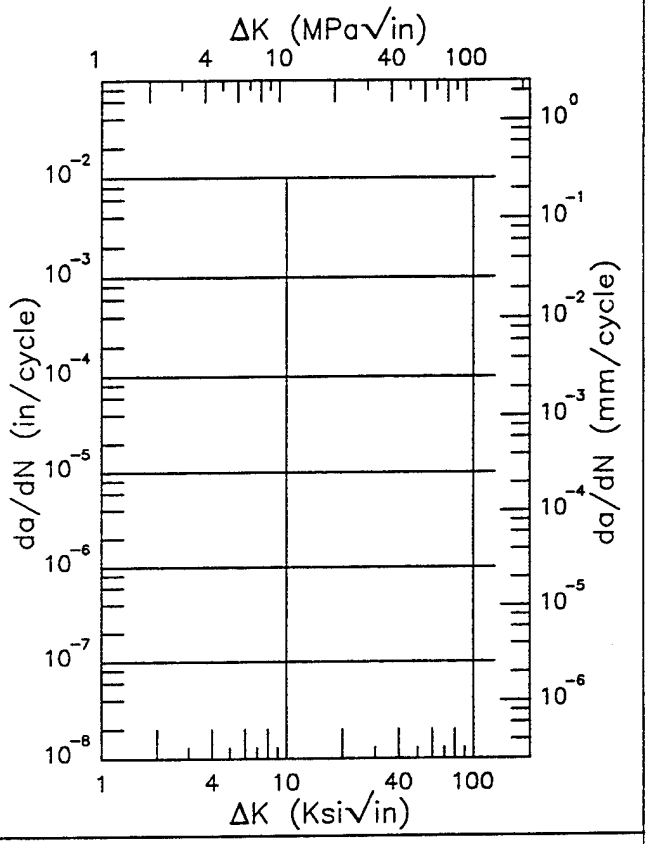
7475

R

Condition/Ht: T7351
Form: 3.5 in. Plate
Specimen Type: CT
Orientation: S–L
Frequency: 2 – 30 Hz
Environment: L.H.A.; RT

Yield Strength:
Ult. Strength:
Specimen Thk: 1 in.
Specimen Width: 3.546 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.80 (min) | 0.290 |
| 3. | 0.368 |
| 3.5 | 0.565 |
| 4. | 0.751 |
| 5. | 1.10 |
| 6. | 1.49 |
| 7. | 2.05 |
| 8. | 2.92 |
| 9. | 4.36 |
| 10. | 6.79 |
| 13. | 24.9 |
| 16. | 45.3 |
| 17.86 (max) | 129. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.84 | 0. .5 .8 1.25 2. |

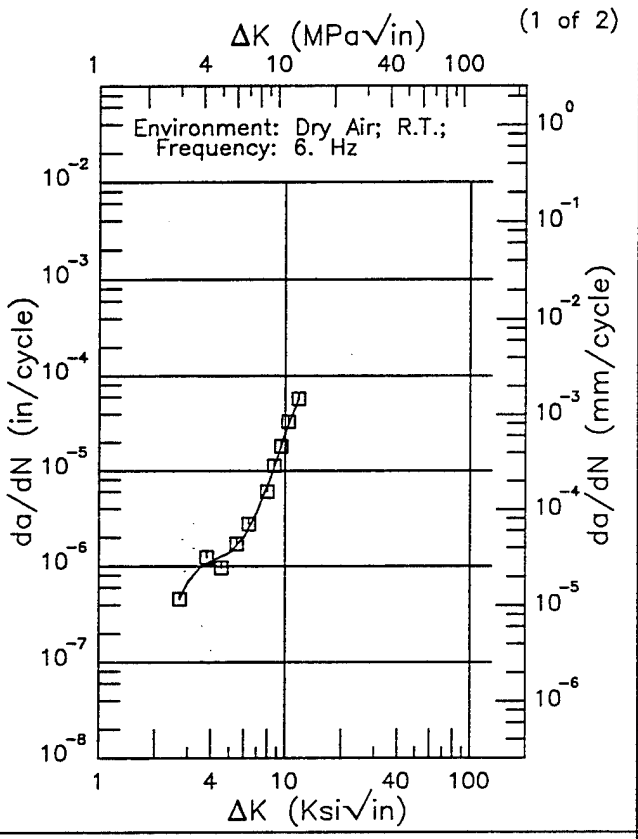
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.53**

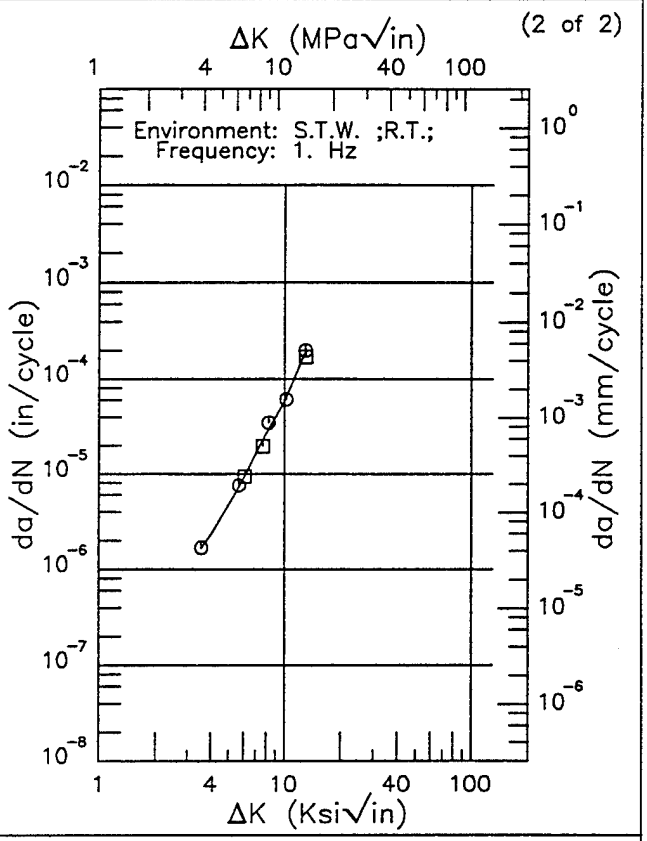
7475 EF

Condition/Ht: T7351
Form: 3 in. Plate
Specimen Type: CT
Orientation: S-L
Stress Ratio: 0.5

Yield Strength: 57.4 ksi
Ult. Strength: 70.6 ksi
Specimen Thk: 0.502 - 0.503 in.
Specimen Width: 2.552 - 2.555 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.73 (min) | 0.461 |
| 3. | 0.677 |
| 3.5 | 0.974 |
| 4. | 1.13 |
| 5. | 1.37 |
| 6. | 1.98 |
| 7. | 3.55 |
| 8. | 6.89 |
| 9. | 13.5 |
| 10. | 25.1 |
| 11.73 (max) | 57.7 |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.55 (min) | 1.67 |
| 4. | 2.29 |
| 5. | 4.71 |
| 6. | 9.18 |
| 7. | 16.4 |
| 8. | 26.7 |
| 9. | 40.1 |
| 10. | 58.2 |
| 13. | 200. |
| 13.03 (max) | 203. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.62 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.59 | 0. .5 .8 1.25 2. |

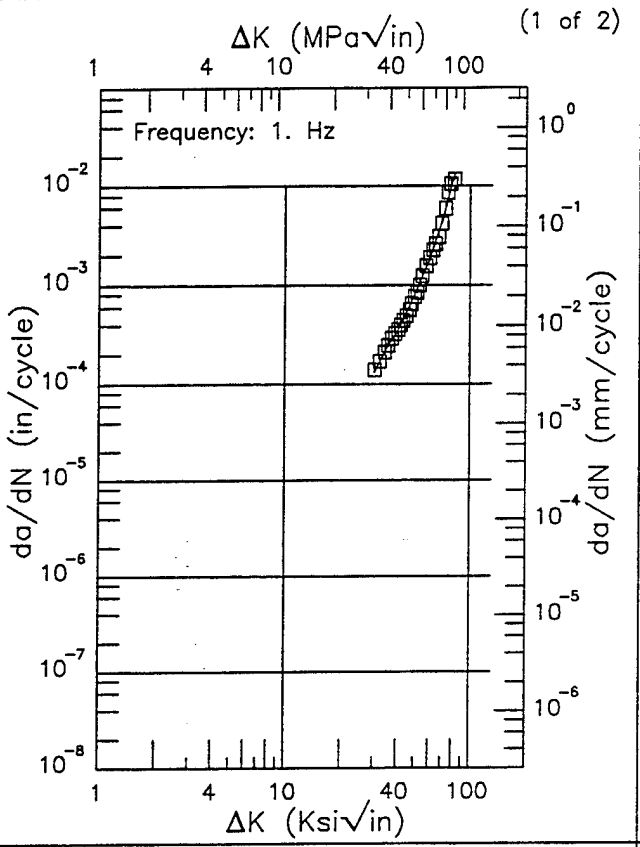
**Figure 8.19.3.1.54**

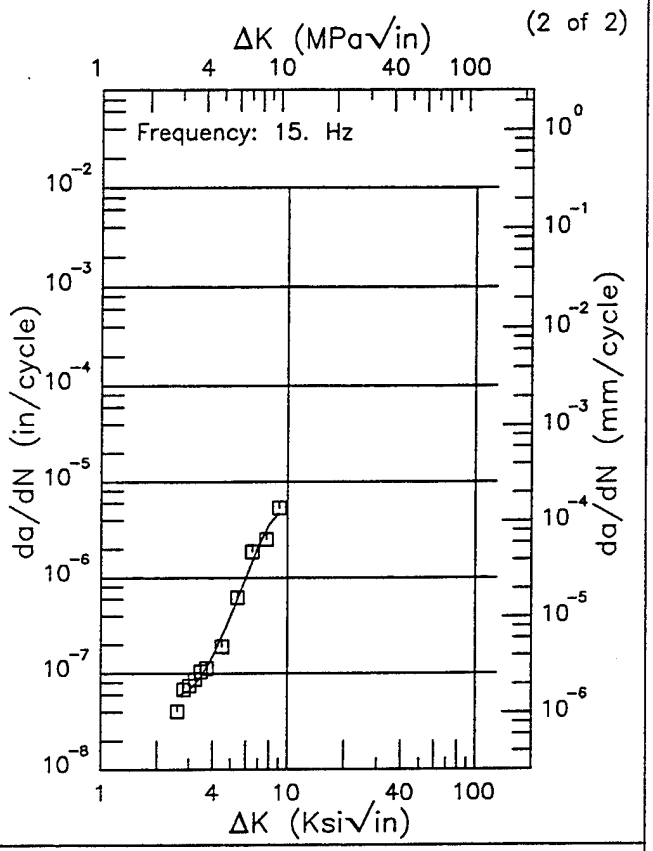
## 7475

F

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: –1
Environment: LAB AIR; RT

Yield Strength: 63.2 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.202 in.
Specimen Width: 12.025 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 30.23 (min) | 132. |
| 35. | 230. |
| 40. | 335. |
| 50. | 802. |
| 60. | 1793. |
| 70. | 4378. |
| 80. | 11260. |
| 81.40 (max) | 11916. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.59 (min) | 0.0584 |
| 3. | 0.0662 |
| 3.5 | 0.0948 |
| 4. | 0.150 |
| 5. | 0.401 |
| 6. | 0.999 |
| 7. | 2.12 |
| 8. | 3.56 |
| 8.98 (max) | 4.64 |

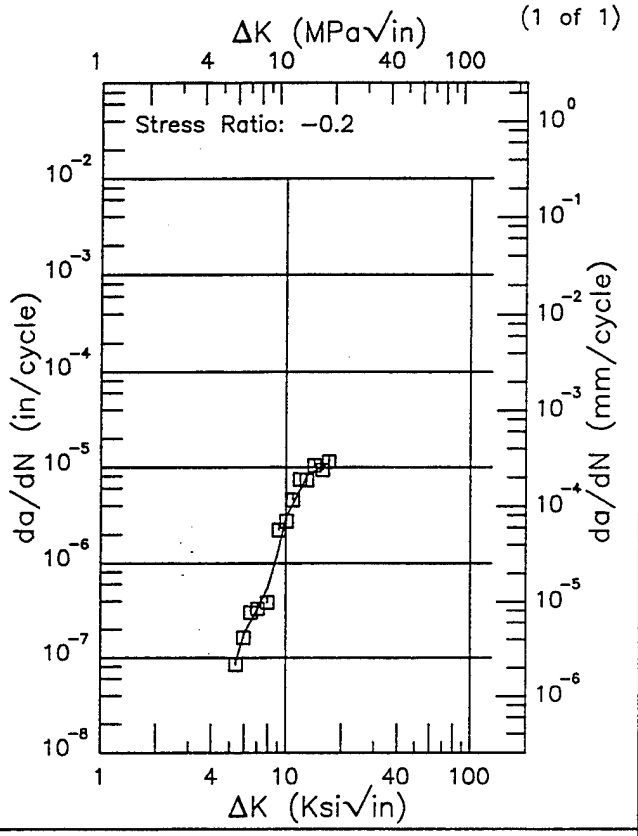
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.19 | 0. .5 .8 1.25 2. |

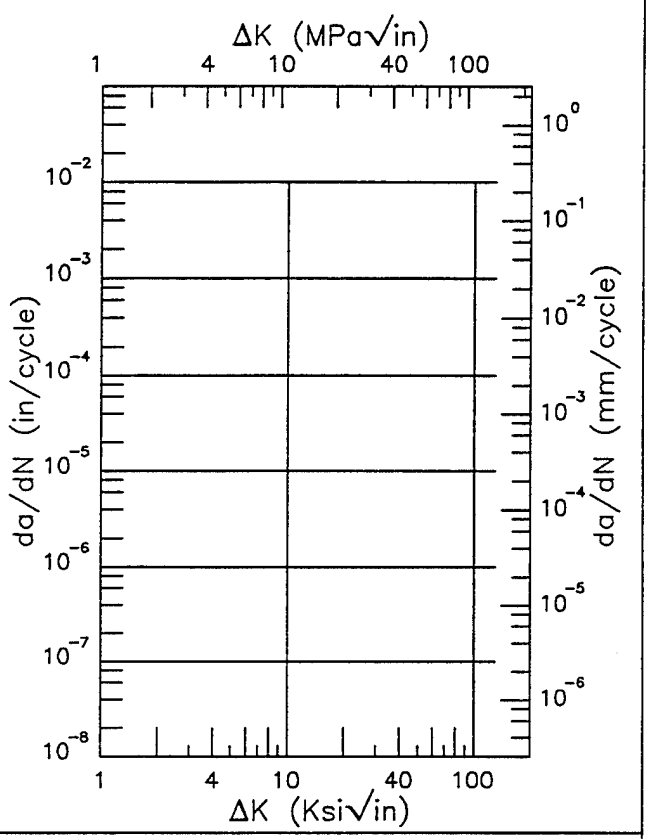
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.74 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.55**

Condition/Ht: T7351
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.2 in.
Specimen Width: 5.99 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.37 (min) | 0.0873 |
| 6. | 0.181 |
| 7. | 0.327 |
| 8. | 0.566 |
| 9. | 1.28 |
| 10. | 3.02 |
| 13. | 8.15 |
| 16. | 10.4 |
| 16.99 (max) | 11.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 22.40 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

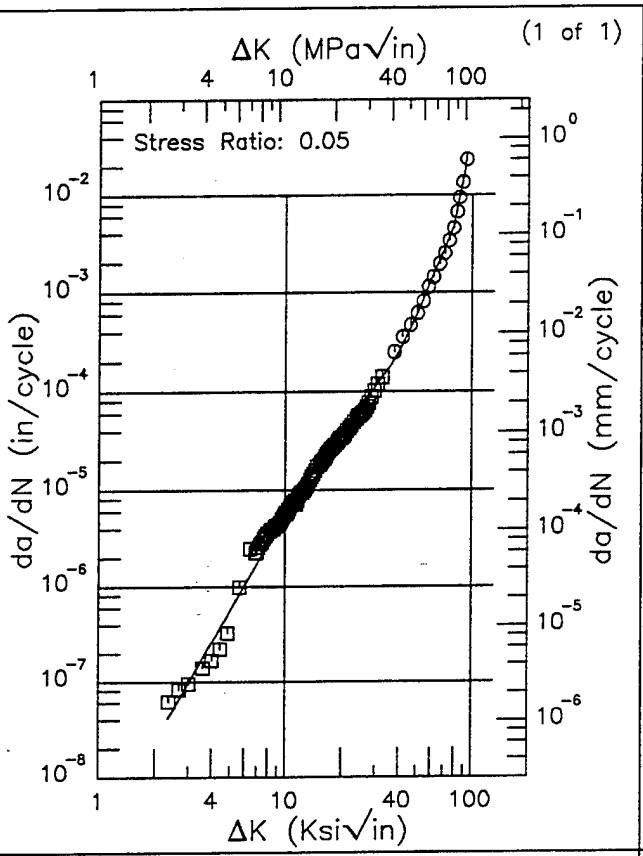
**Figure 8.19.3.1.56**

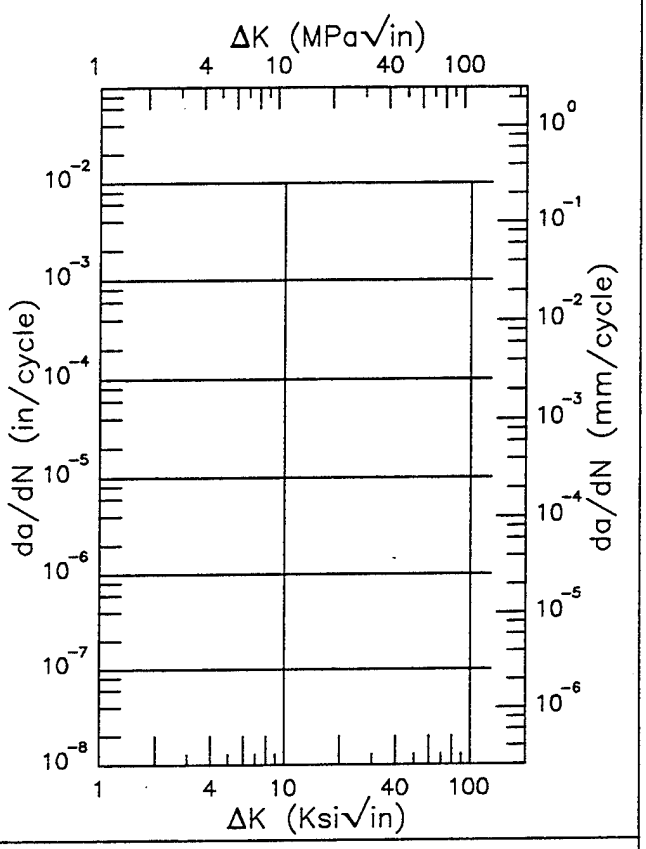
7475

R

Condition/Ht: T7351
Form: 1.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR; RT

Yield Strength: 63.2–68.8 ksi
Ult. Strength: 73.7 ksi
Specimen Thk: 0.201–0.202 in.
Specimen Width: 12.033–12.063 in.
Ref: DA005;DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.36 (min) | 0.0415 |
| 3. | 0.0953 |
| 4. | 0.258 |
| 5. | 0.552 |
| 6. | 1.02 |
| 7. | 1.70 |
| 8. | 2.62 |
| 9. | 3.81 |
| 10. | 5.31 |
| 16. | 21.6 |
| 20. | 39.9 |
| 30. | 112. |
| 40. | 251. |
| 60. | 1312. |
| 80. | 5120. |
| 92.52 (max) | 26086. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.40 | 0. .5 .8 1.25 2. |

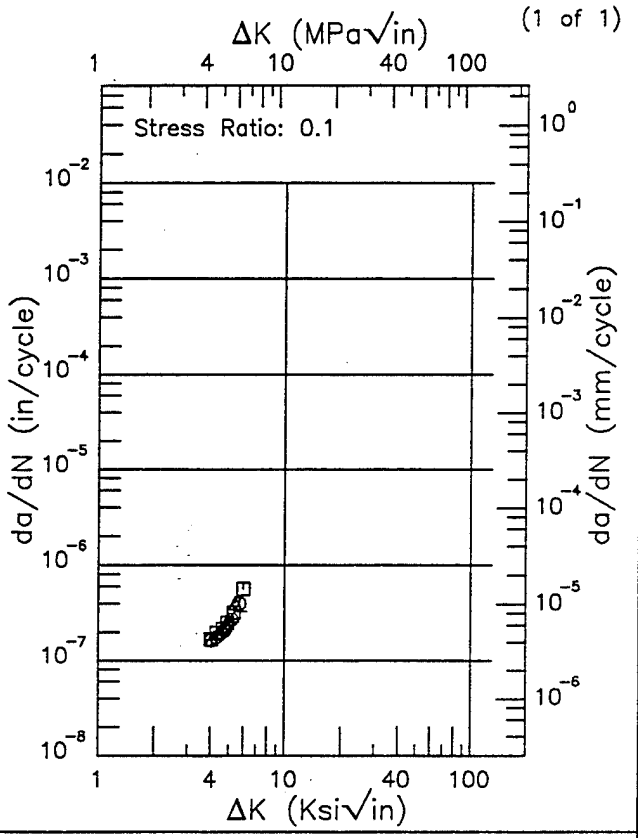
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

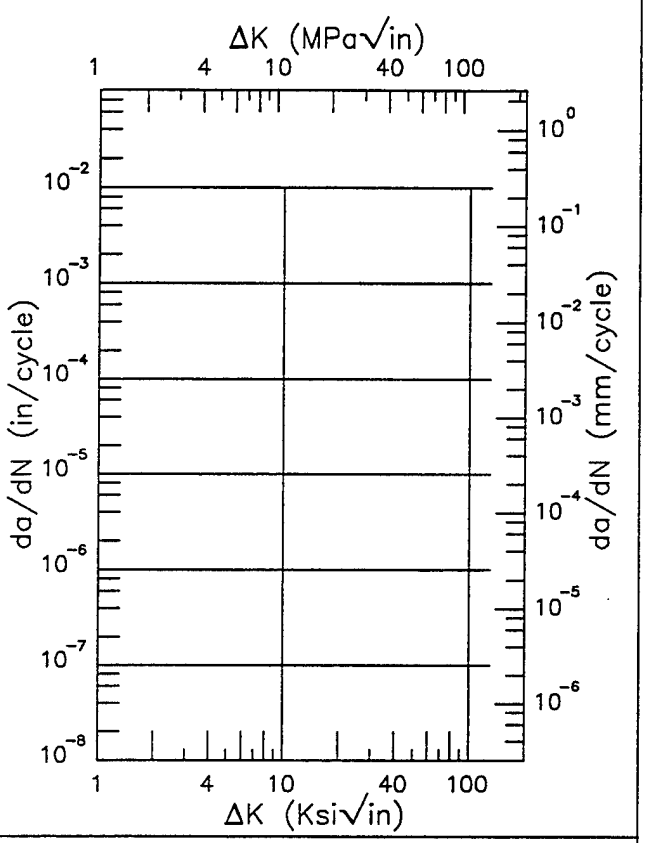
**Figure 8.19.3.1.57**

7475 R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 9 – 30 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.52 in.
Specimen Width: 6 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.99 (min) | 0.166 |
| 4. | 0.166 |
| 5. | 0.257 |
| 5.96 (max) | 0.494 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.45 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

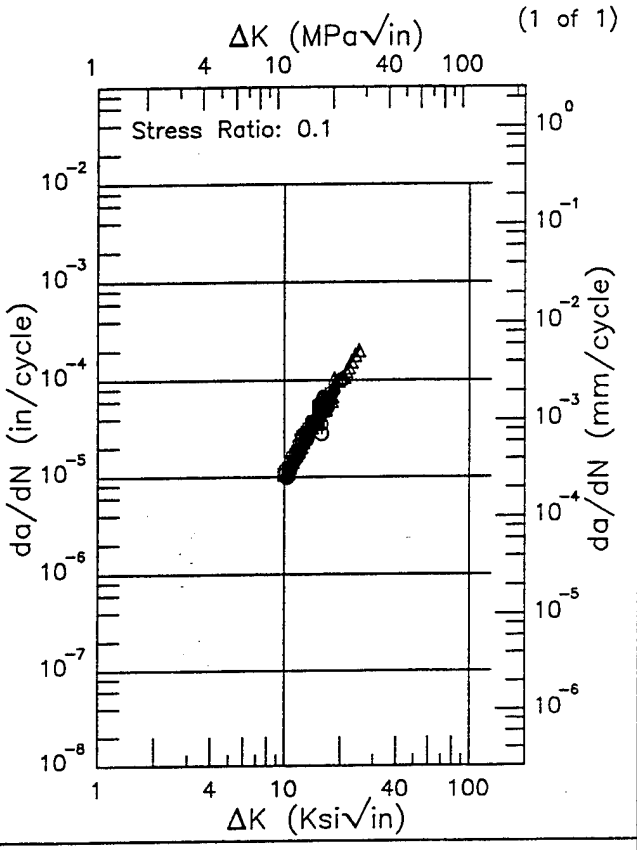
**Figure 8.19.3.1.58**

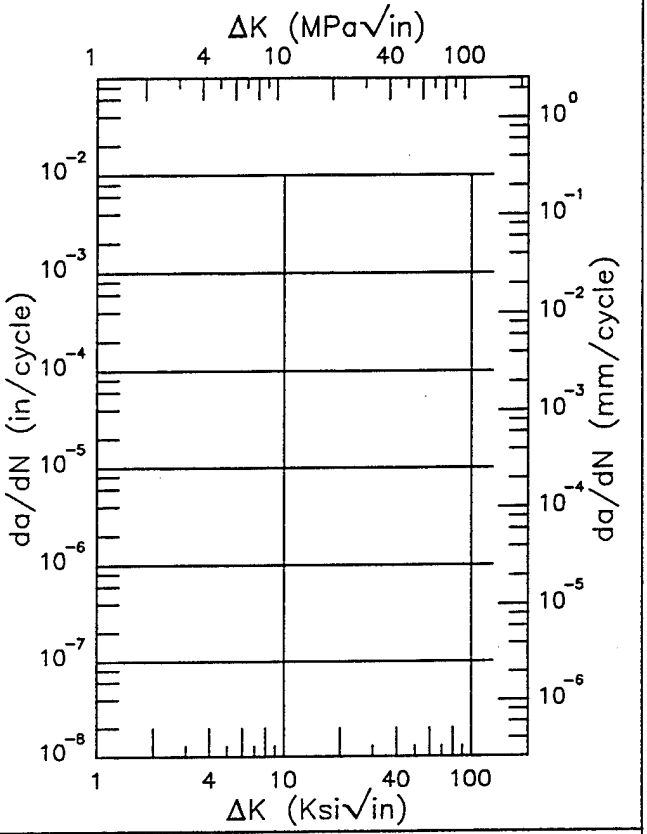
7475

R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 9 – 30 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.5 in.
Specimen Width: 4 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 9.92 (min) | 9.94 |
| 10. | 10.2 |
| 13. | 25.5 |
| 16. | 51.1 |
| 20. | 100. |
| 25. | 204. |
| 25.08 (max) | 206. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.16 | 0. .5 .8 1.25 2. |

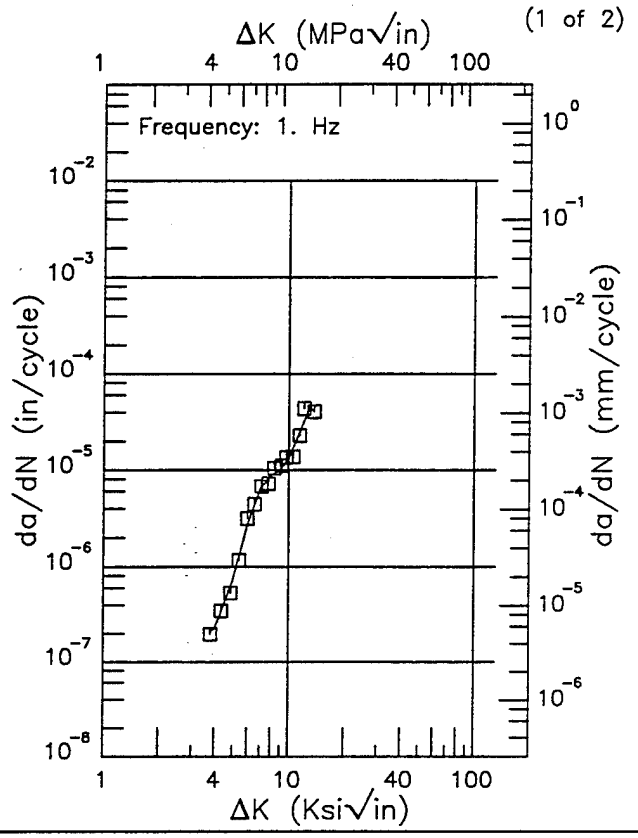
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

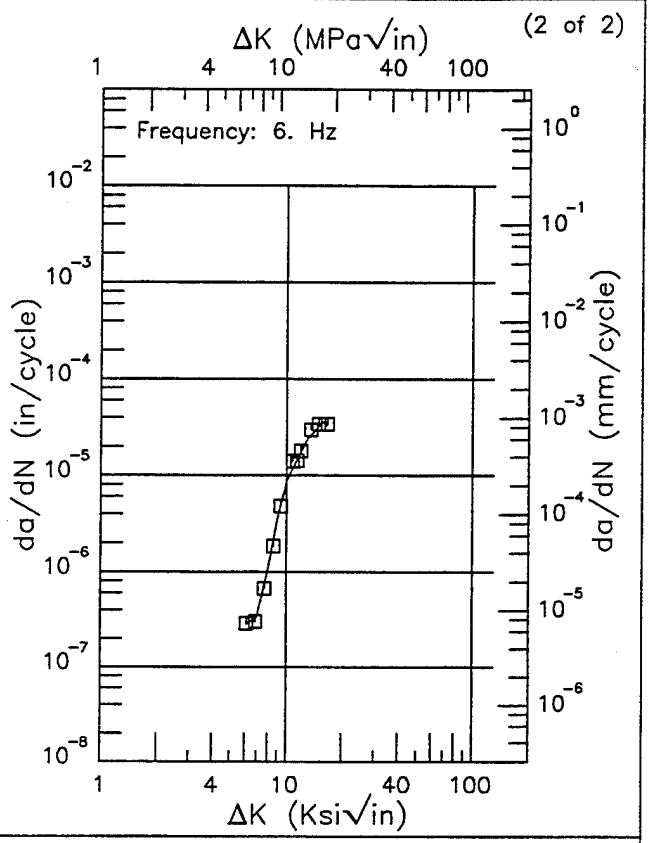
**Figure 8.19.3.1.59**

7475 F

Condition/Ht: T7351
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.1
Environment: S.T.W.; RT

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.199 – 0.205 in.
Specimen Width: 5.99 – 6 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.77 (min) | 0.208 |
| 4. | 0.225 |
| 5. | 0.720 |
| 6. | 2.72 |
| 7. | 6.44 |
| 8. | 8.78 |
| 9. | 10.2 |
| 10. | 13.3 |
| 13. | 45.2 |
| 13.62 (max) | 41.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.13 (min) | 0.285 |
| 7. | 0.336 |
| 8. | 1.03 |
| 9. | 3.52 |
| 10. | 8.55 |
| 13. | 24.1 |
| 16. | 36.2 |
| 16.61 (max) | 33.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.08 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.39 | 0. .5 .8 1.25 2. |

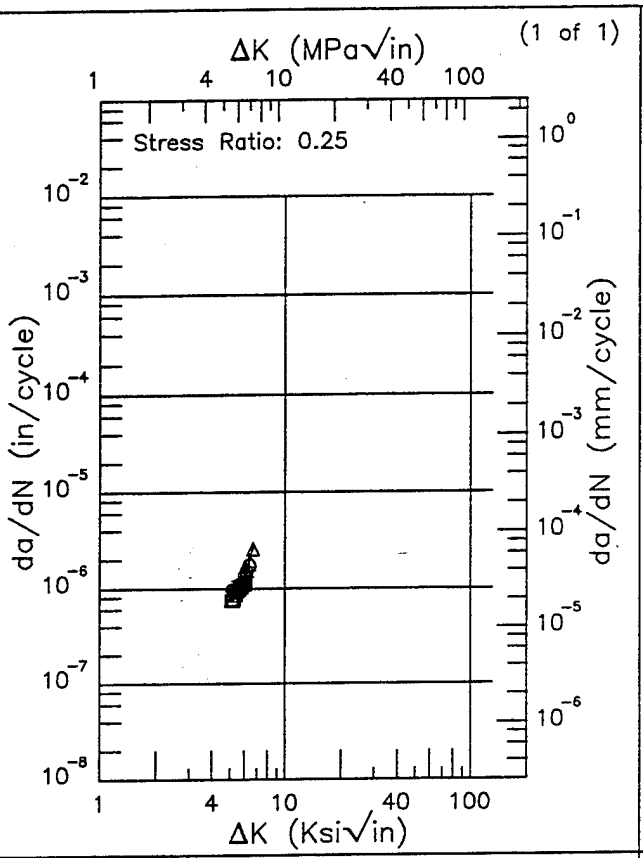
**Figure 8.19.3.1.60**

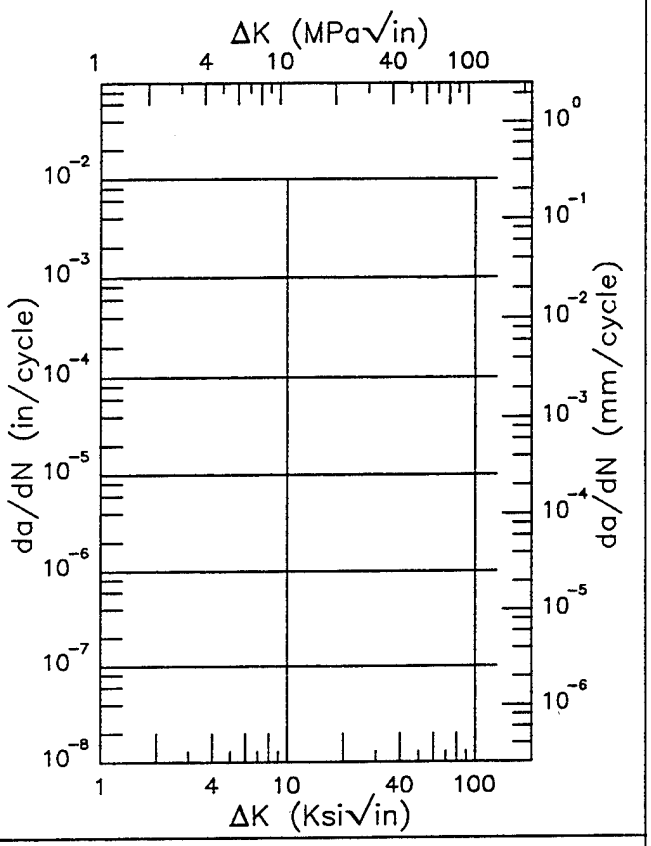
7475

R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 5.5 – 33 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.524 in.
Specimen Width: 4 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.05 (min) | 0.853 |
| 6. | 1.23 |
| 6.65 (max) | 2.56 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

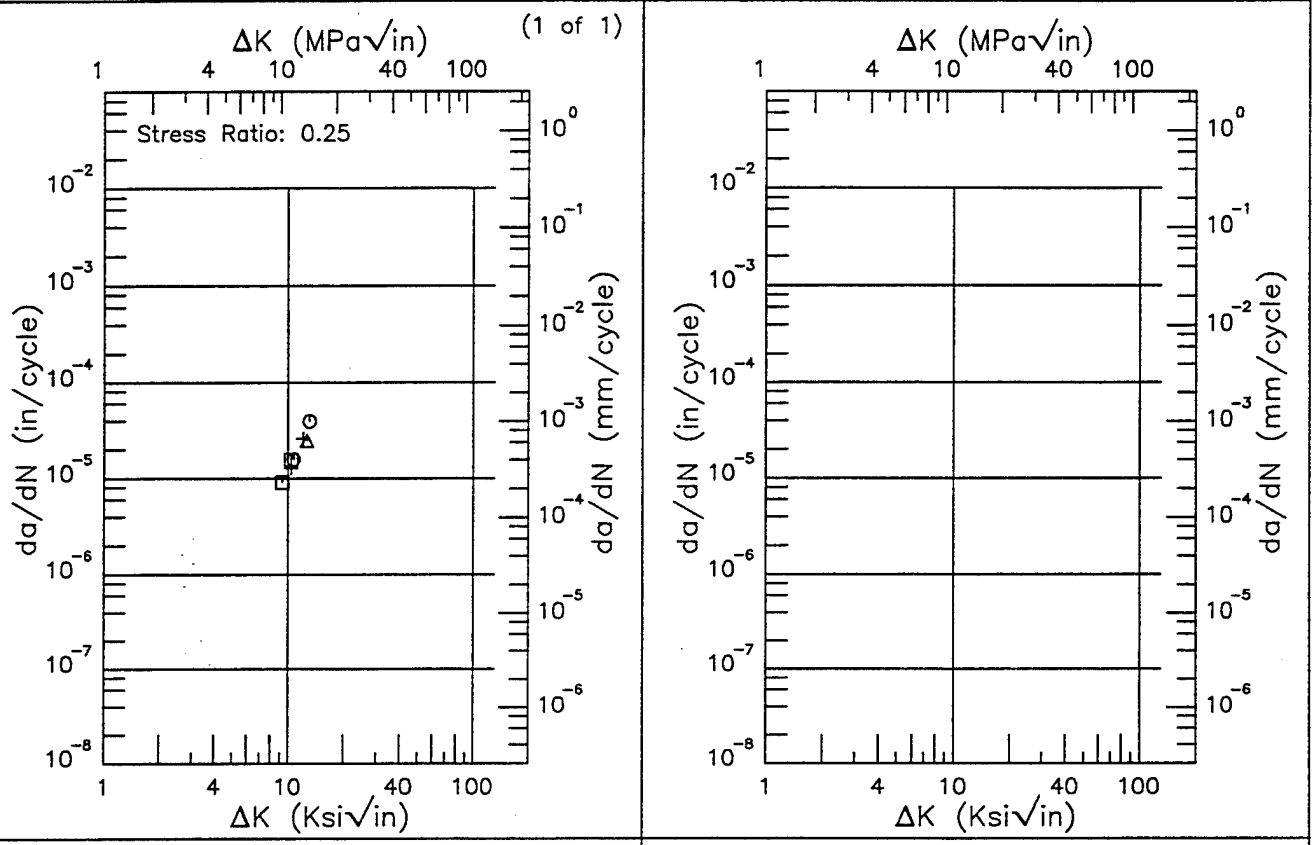
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.97 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.61**

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 5.5 – 33 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.528 in.
Specimen Width: 4 in.
Ref: BL002




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

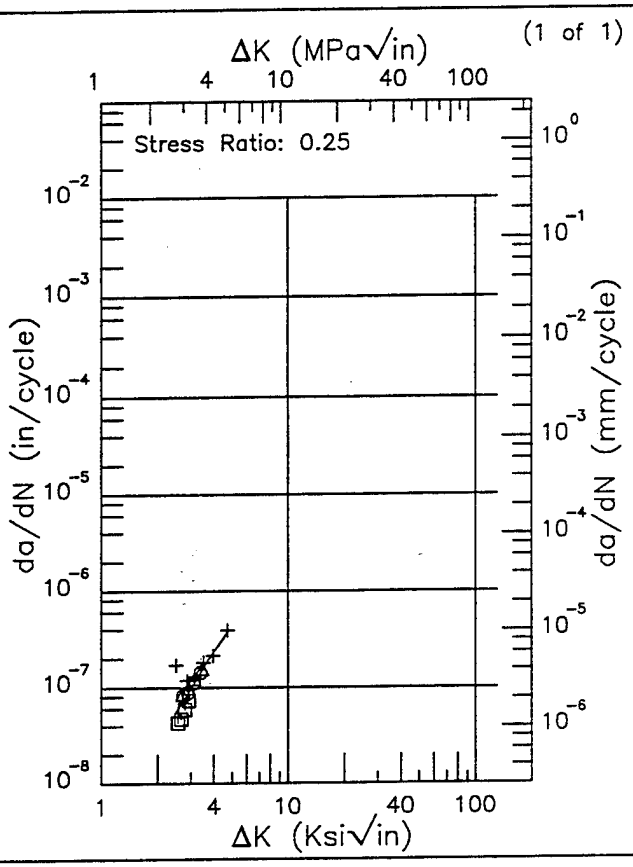
**Figure 8.19.3.1.62**

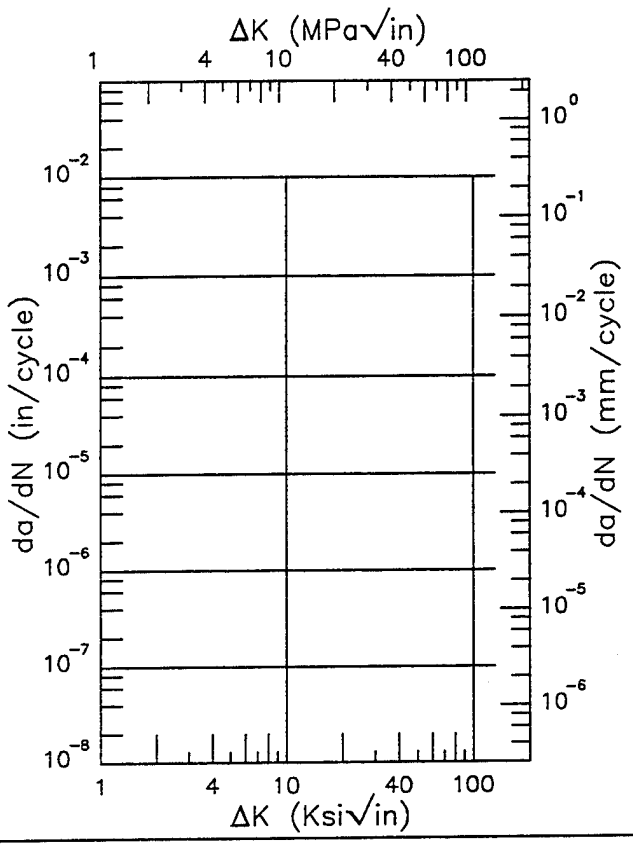
7475

R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 5.5 – 33 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.52 in.
Specimen Width: 6 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.50 (min) | 0.0554 |
| 3. | 0.0973 |
| 3.5 | 0.158 |
| 4. | 0.237 |
| 4.73 (max) | 0.378 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 51.17 | 0. .5 .8 1.25 2. |

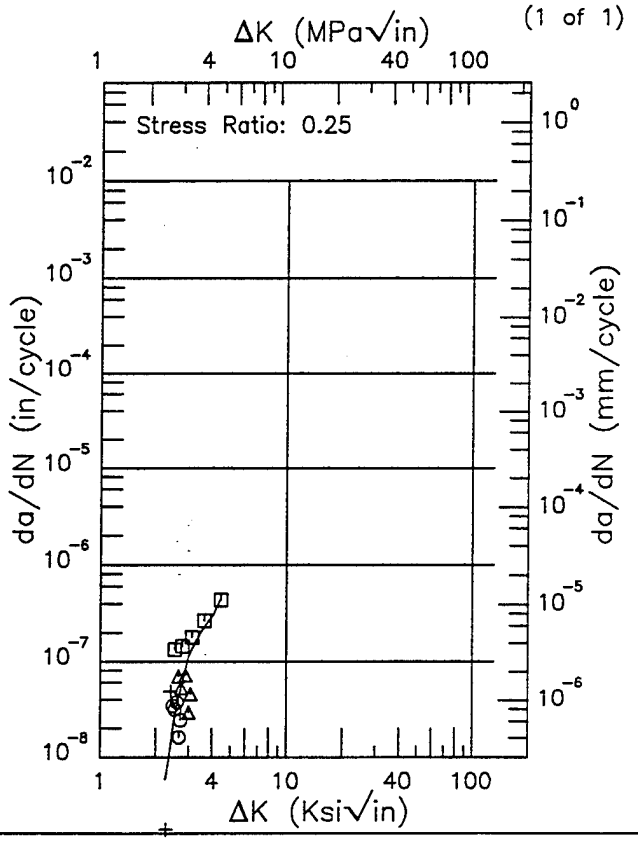
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

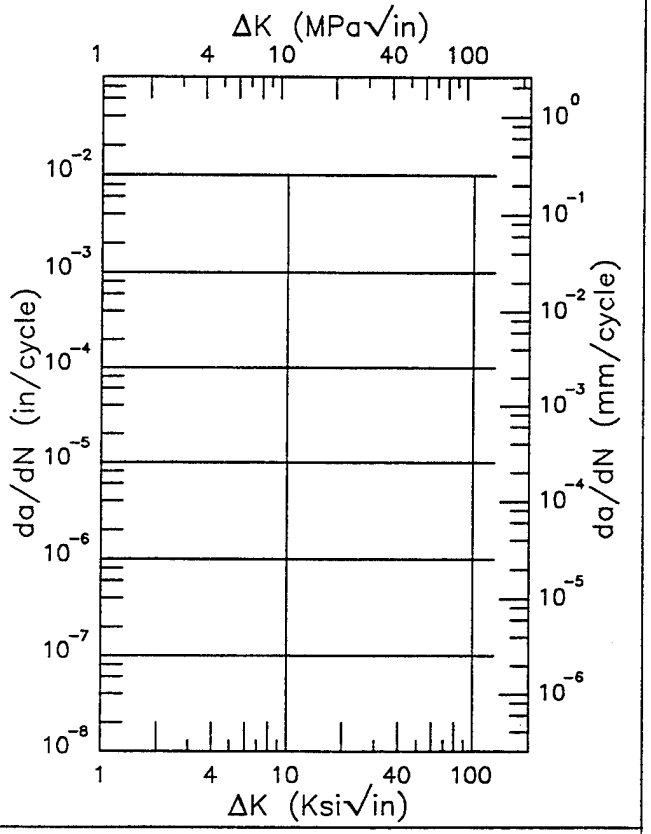
**Figure 8.19.3.1.63**

7475 R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 5.5 – 33 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.53 in.
Specimen Width: 6 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 2.27 (min) | 0.00595 |
| 2.5 | 0.0253 |
| 3. | 0.116 |
| 3.5 | 0.206 |
| 4. | 0.298 |
| 4.44 (max) | 0.459 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| >100.0 | Δ ⊙ ⊡ + <br> 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

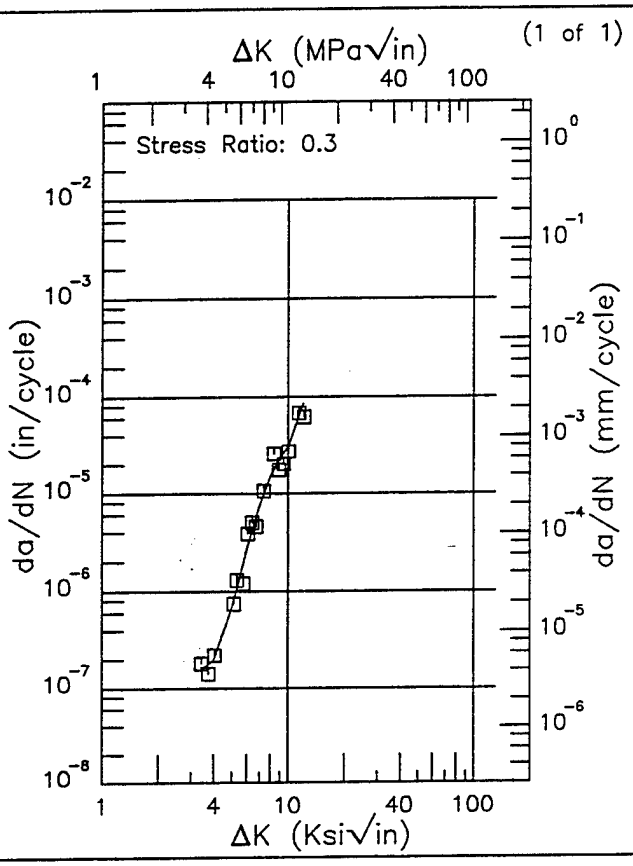
**Figure 8.19.3.1.64**

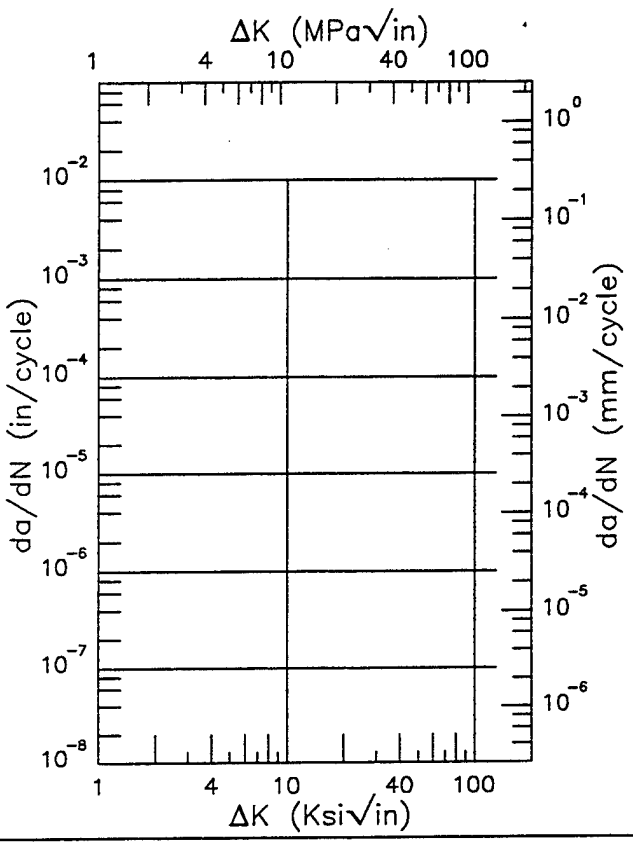
7475

R

Condition/Ht: T7351
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.202 in.
Specimen Width: 6 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.42 (min) | 0.168 |
| 3.5 | 0.163 |
| 4. | 0.197 |
| 5. | 0.677 |
| 6. | 2.64 |
| 7. | 7.45 |
| 8. | 15.0 |
| 9. | 23.2 |
| 10. | 30.2 |
| 12.09 (max) | 86.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 23.07 | 0. .5 .8 1.25 2. |

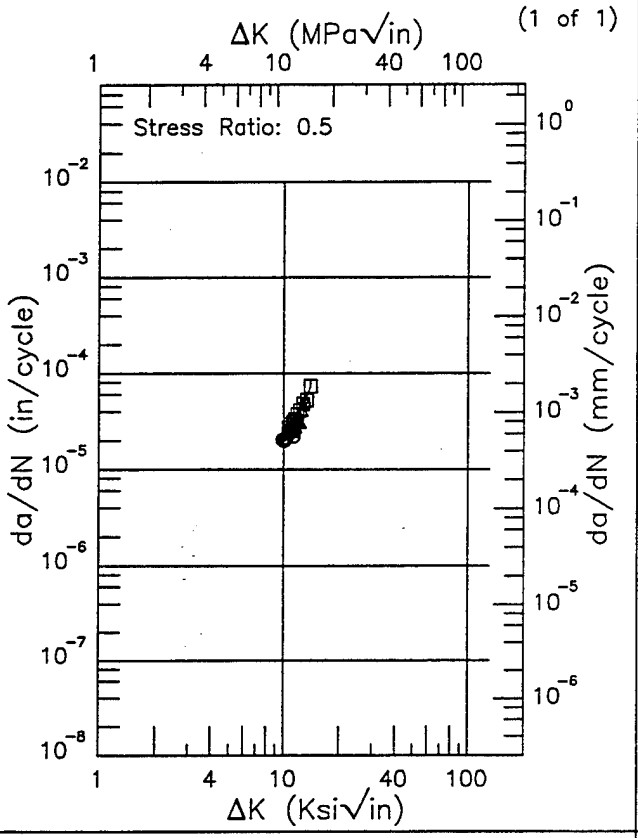
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

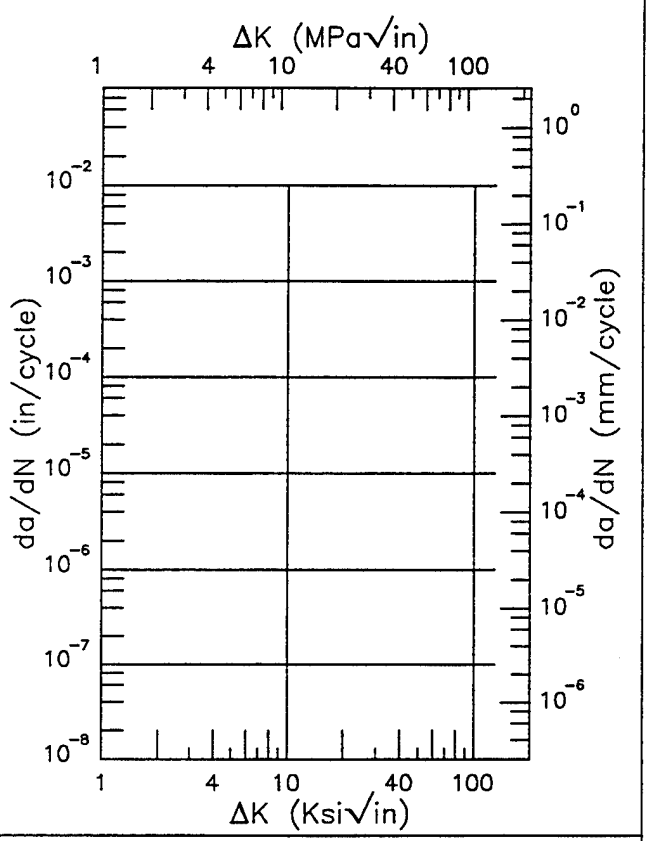
**Figure 8.19.3.1.65**

7475 R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 6 – 33 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.525 in.
Specimen Width: 4 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.78 (min) | 18.9 |
| 10. | 20.6 |
| 13. | 48.9 |
| 13.90 (max) | 71.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.45 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

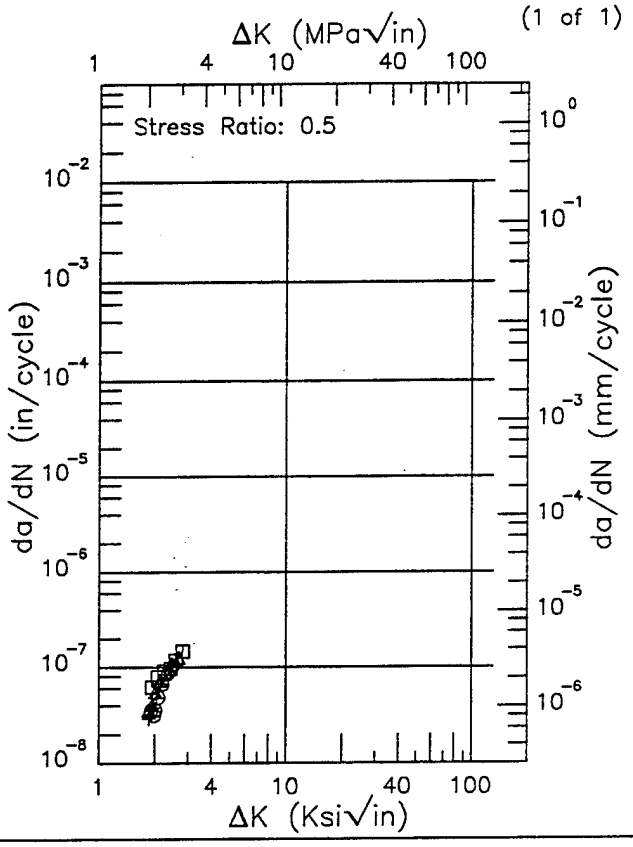
**Figure 8.19.3.1.66**

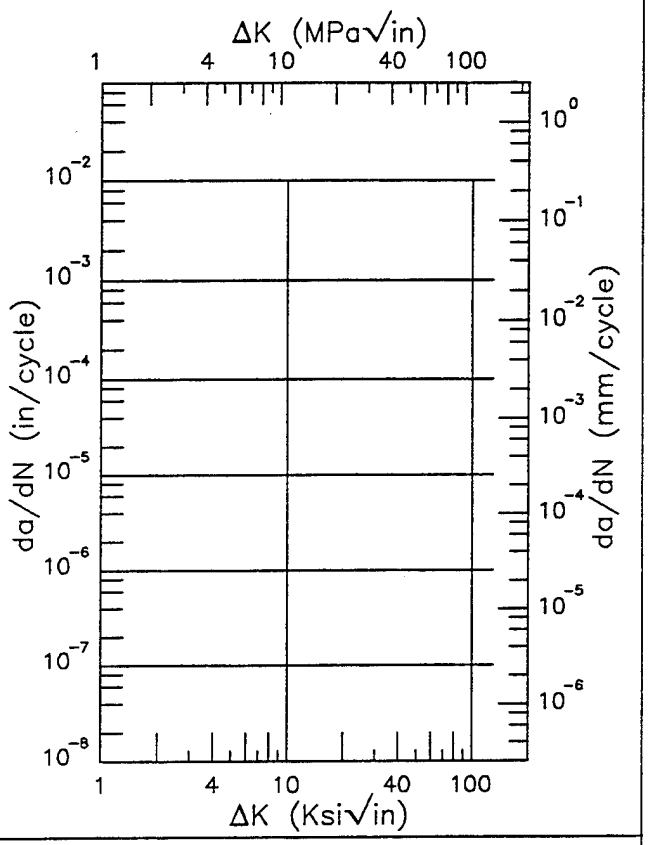
7475

R

Condition/Ht: T7351
Form: 0.52 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 6 – 33 Hz
Environment: H.H.A.; RT

Yield Strength: 57 ksi
Ult. Strength:
Specimen Thk: 0.53 in.
Specimen Width: 6 in.
Ref: BL002




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.84 (min) | 0.0310 |
| 2. | 0.0473 |
| 2.5 | 0.106 |
| 2.80 (max) | 0.145 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.64 | 0. .5 .8 1.25 2. |

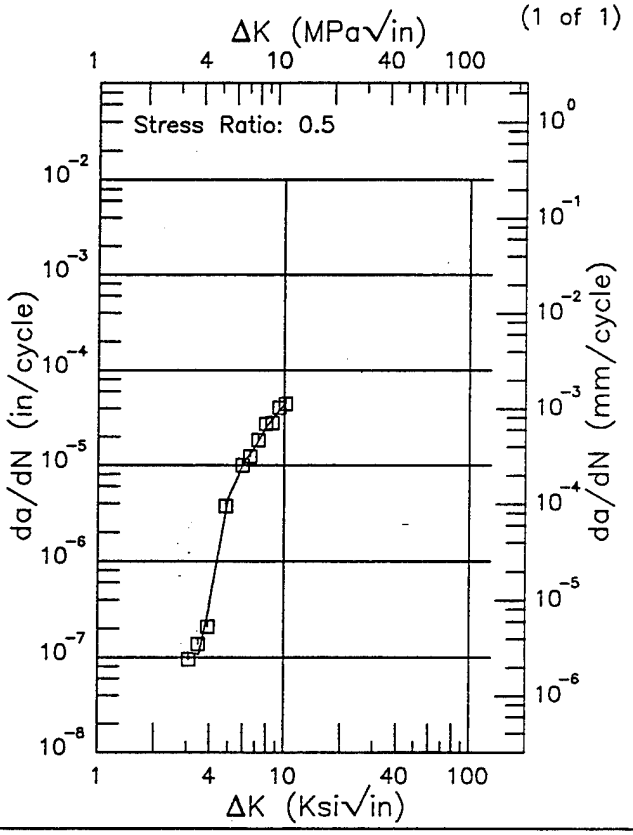
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

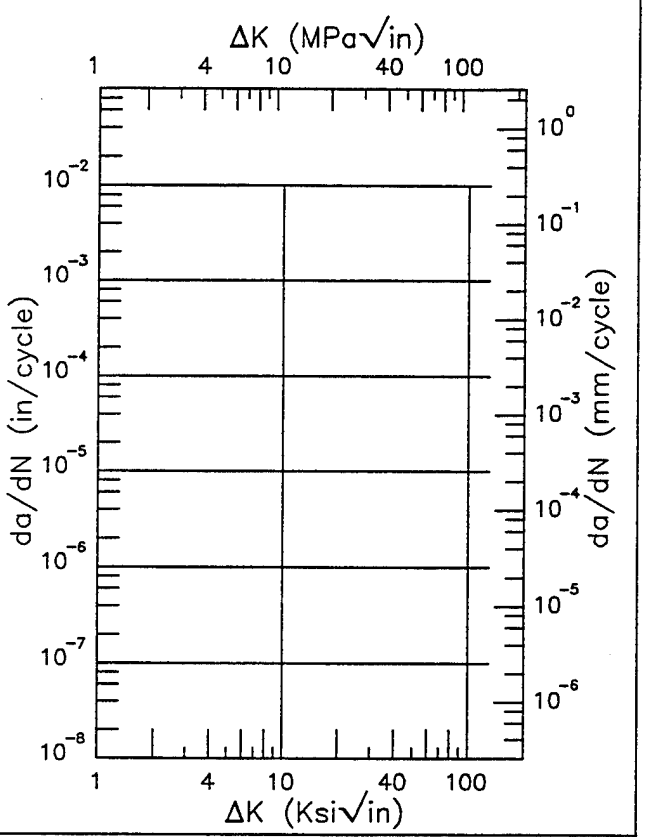
**Figure 8.19.3.1.67**

7475 R

Condition/Ht: T7351
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 59.5 ksi
Ult. Strength: 69.1 ksi
Specimen Thk: 0.201 in.
Specimen Width: 5.99 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 3.05 (min) | 0.113 |
| 3.5 | 0.108 |
| 4. | 0.383 |
| 5. | 4.57 |
| 6. | 10.4 |
| 7. | 16.2 |
| 8. | 25.6 |
| 9. | 34.9 |
| 10. | 43.7 |
| 10.13 (max) | 45.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.74 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.68**

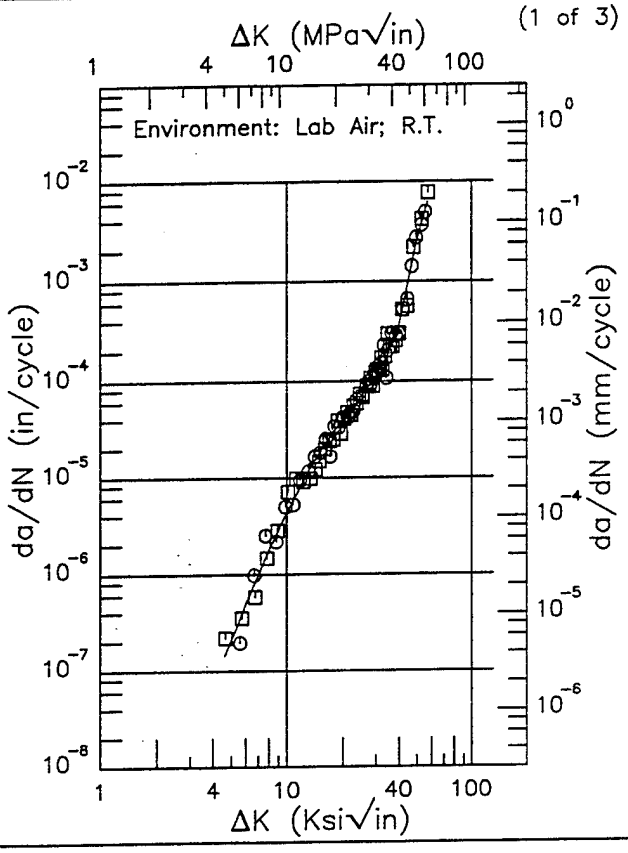
7475

E

Condition/Ht: T7351
Form: 1.25 in. Plate
Specimen Type: WOL
Orientation: L–T
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 62 ksi
Ult. Strength: 70.3 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA005

(1 of 3)



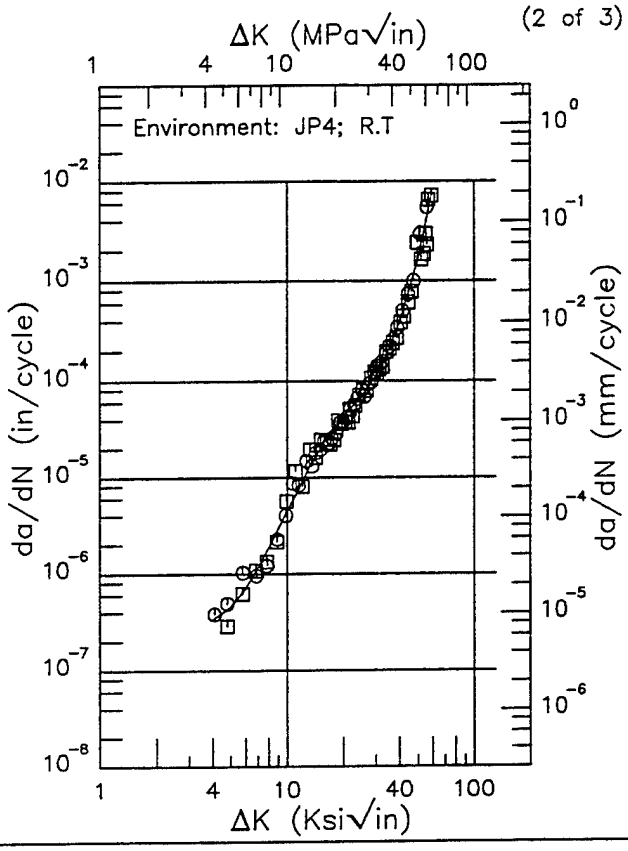

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.63 (min) | 0.145 |
| 5. | 0.209 |
| 6. | 0.490 |
| 7. | 0.982 |
| 8. | 1.76 |
| 9. | 2.88 |
| 10. | 4.39 |
| 13. | 11.6 |
| 16. | 22.5 |
| 20. | 41.0 |
| 25. | 70.3 |
| 30. | 114. |
| 35. | 189. |
| 40. | 370. |
| 50. | 2576. |
| 57.16 (max) | 6220. |

RMS % Error
21.07

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

(2 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.07 (min) | 0.345 |
| 5. | 0.456 |
| 6. | 0.715 |
| 7. | 1.17 |
| 8. | 1.88 |
| 9. | 2.95 |
| 10. | 4.46 |
| 13. | 12.2 |
| 16. | 24.4 |
| 20. | 43.1 |
| 25. | 69.3 |
| 30. | 113. |
| 35. | 201. |
| 40. | 388. |
| 50. | 1633. |
| 58.69 (max) | 6795. |

RMS % Error
22.05

Life Prediction Ratio Summary

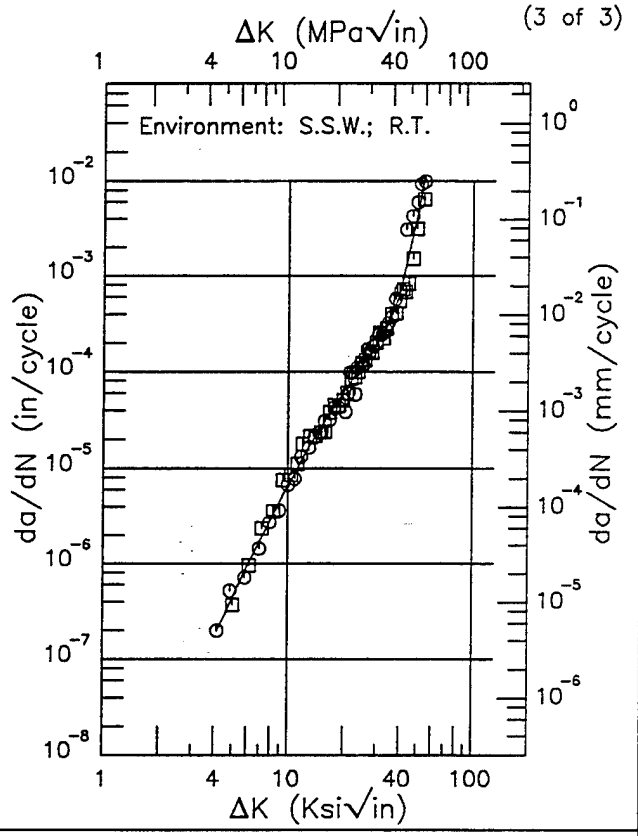
0. .5 .8 1.25 2.

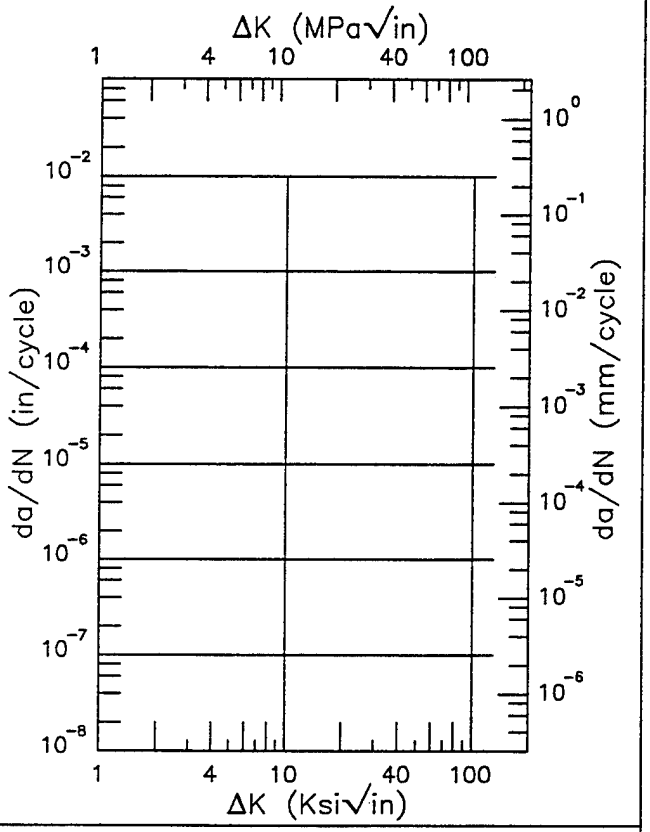
**Figure 8.19.3.1.69**

7475 E

Condition/Ht: T7351
Form: 1.25 in. Plate
Specimen Type: WOL
Orientation: L–T
Stress Ratio: 0.02
Frequency: 0.1 – 20 Hz

Yield Strength: 62 ksi
Ult. Strength: 70.3 ksi
Specimen Thk: 1.25 in.
Specimen Width: 5 in.
Ref: MA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.14 (min) | 0.195 |
| 5. | 0.433 |
| 6. | 0.921 |
| 7. | 1.72 |
| 8. | 2.90 |
| 9. | 4.55 |
| 10. | 6.73 |
| 13. | 16.9 |
| 16. | 32.8 |
| 20. | 62.6 |
| 25. | 116. |
| 30. | 193. |
| 35. | 327. |
| 40. | 649. |
| 50. | 4415. |
| 54.23 (max) | 10659. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.38 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

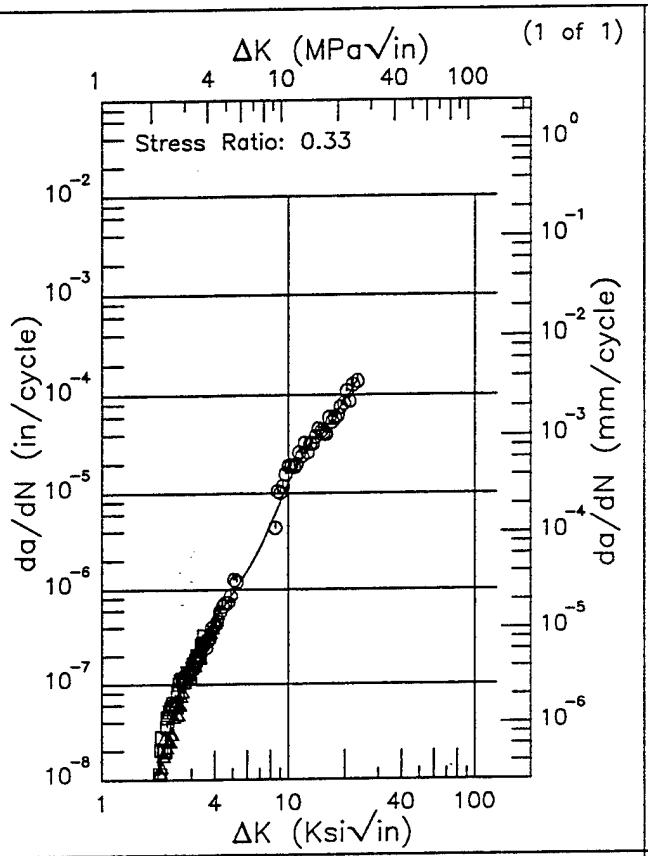
**Figure 8.19.3.1.69 (Concluded)**

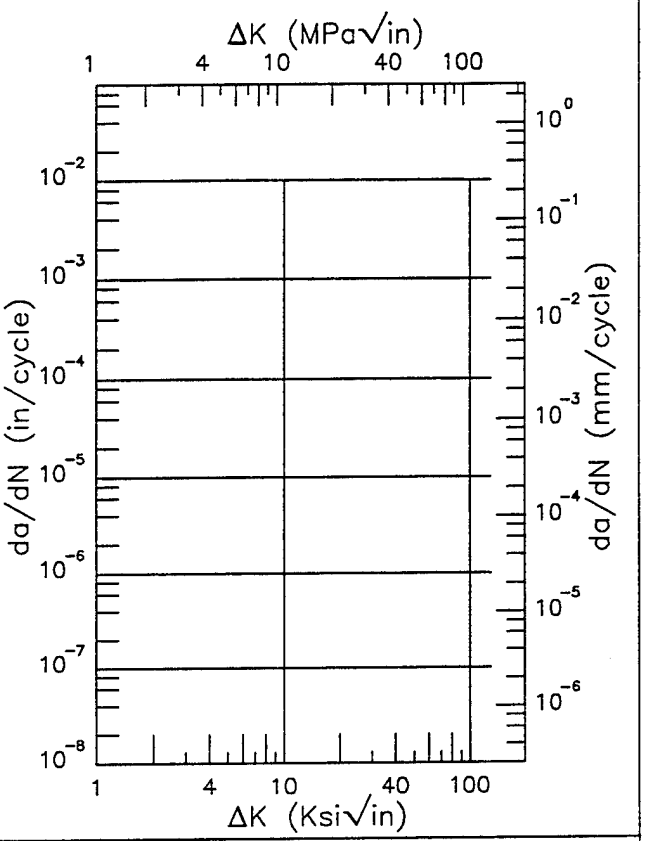
7475

R

Condition/Ht: T7351
Form: 1.5 – 4 in. Plate
Specimen Type: WOL
Orientation: L–T
Frequency: 25 Hz
Environment: H.H.A.; RT

Yield Strength: 64 ksi
Ult. Strength: 74 ksi
Specimen Thk: 0.245 – 0.251 in.
Specimen Width: 2.548 – 2.553 in.
Ref: AL009




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.03 (min) | 0.0140 |
| 2.5 | 0.0627 |
| 3. | 0.164 |
| 3.5 | 0.306 |
| 4. | 0.478 |
| 5. | 0.915 |
| 6. | 1.57 |
| 7. | 2.68 |
| 8. | 4.68 |
| 9. | 8.05 |
| 10. | 13.0 |
| 13. | 33.1 |
| 16. | 48.6 |
| 20. | 87.6 |
| 23.17 (max) | 138. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error
19.84

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

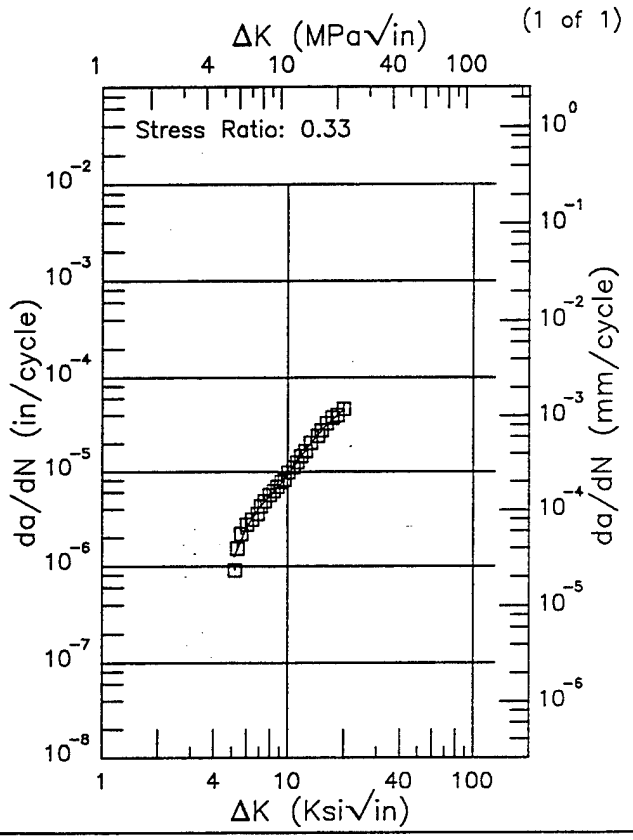
Life Prediction Ratio Summary
0. .5 .8 1.25 2.

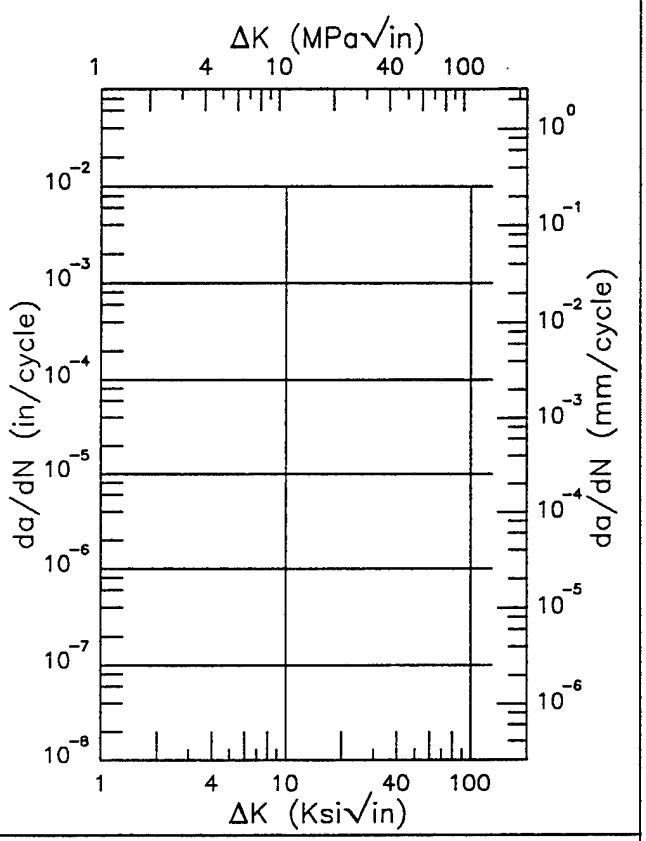
**Figure 8.19.3.1.70**

7475 R

Condition/Ht: T76
Form: 0.09 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 67 ksi
Ult. Strength: 76.2 ksi
Specimen Thk: 0.091 in.
Specimen Width: 4 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.18 (min) | 1.25 |
| 6. | 2.56 |
| 7. | 4.10 |
| 8. | 5.49 |
| 9. | 7.09 |
| 10. | 9.29 |
| 13. | 19.1 |
| 16. | 31.2 |
| 19.87 (max) | 45.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.11 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.71**

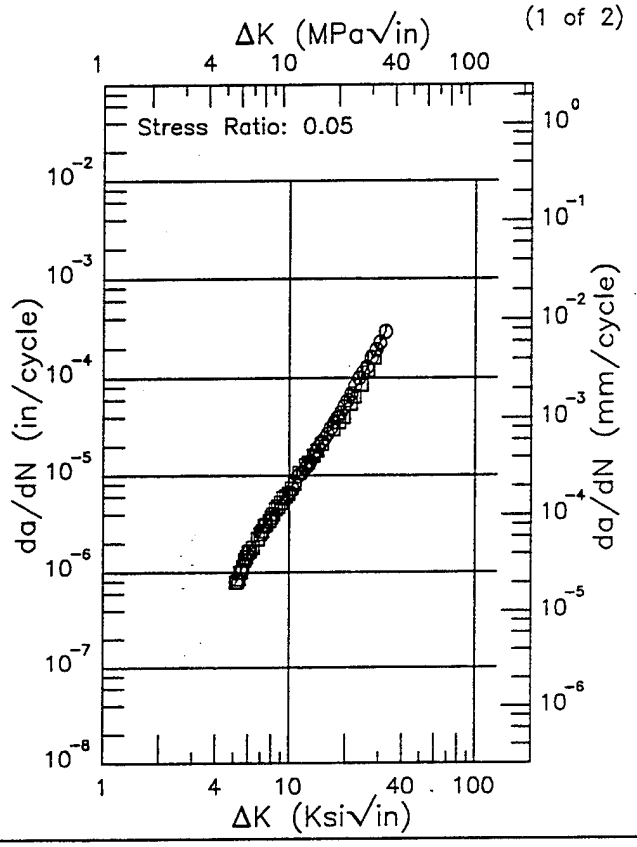
7475

R

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 63.2 – 63.7 ksi
Ult. Strength: 73.4 ksi
Specimen Thk: 0.074 – 0.077 in.
Specimen Width: 1.498 – 1.502 in.
Ref: DA004;DA005

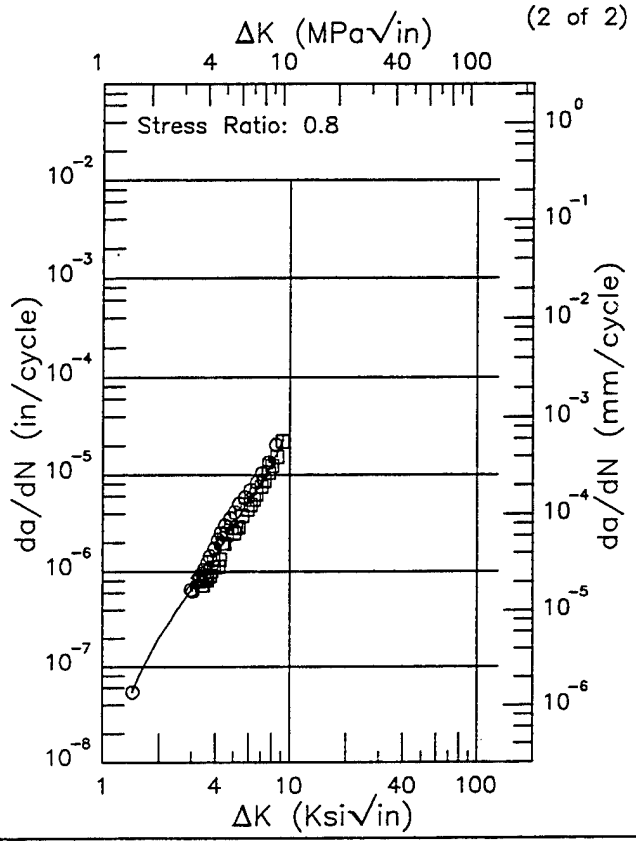
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.12 (min) | 0.770 |
| 6. | 1.46 |
| 7. | 2.49 |
| 8. | 3.76 |
| 9. | 5.27 |
| 10. | 7.04 |
| 13. | 14.5 |
| 16. | 26.7 |
| 20. | 52.9 |
| 25. | 110. |
| 30. | 217. |
| 32.45 (max) | 291. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.55 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.44 (min) | 0.0537 |
| 1.6 | 0.0867 |
| 2. | 0.201 |
| 2.5 | 0.396 |
| 3. | 0.651 |
| 3.5 | 0.991 |
| 4. | 1.46 |
| 5. | 3.02 |
| 6. | 5.44 |
| 7. | 8.44 |
| 8. | 12.6 |
| 9. | 21.0 |
| 9.16 (max) | 23.2 |

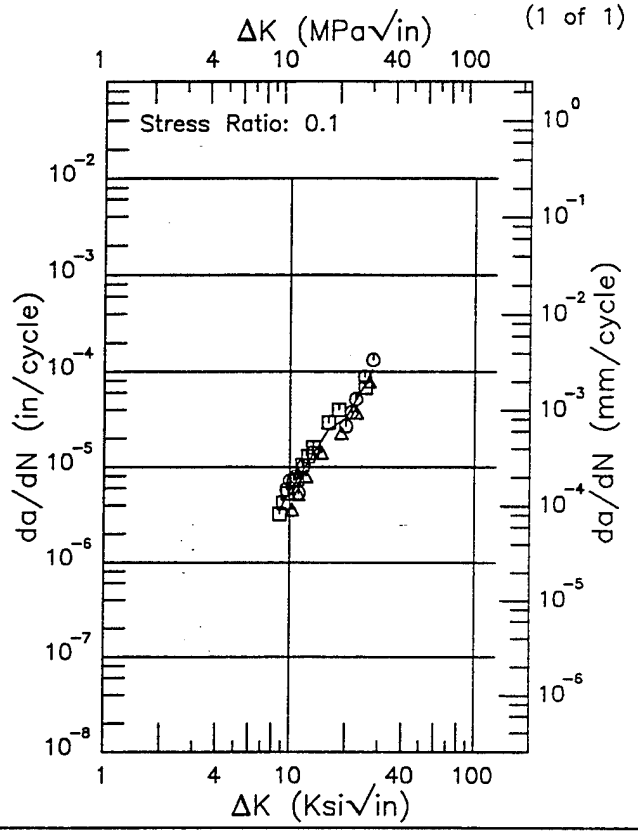
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.15 | 0. .5 .8 1.25 2. |

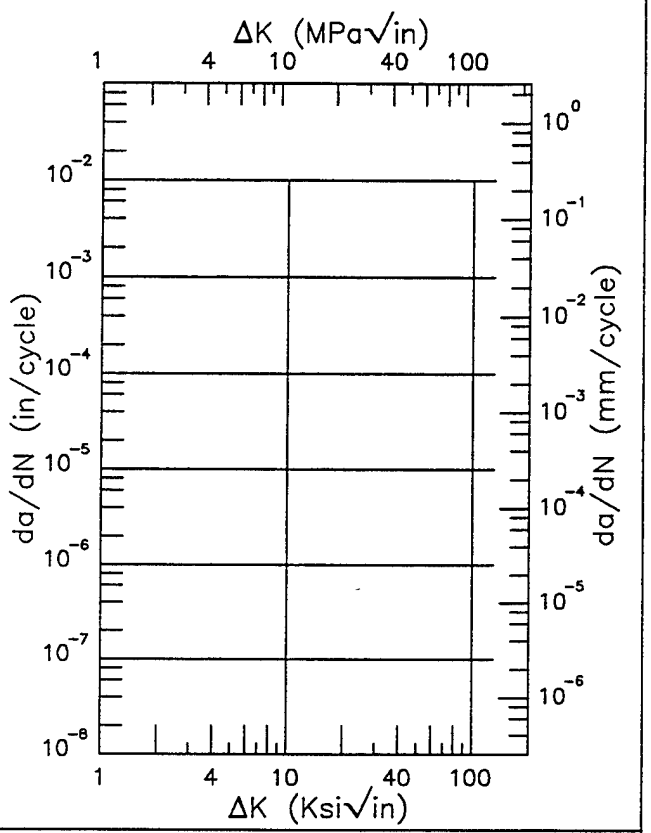
**Figure 8.19.3.1.72**

7475 R

Condition/Ht: T761
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 62.2 ksi
Ult. Strength: 70.2 ksi
Specimen Thk: 0.089 in.
Specimen Width: 1.493 – 1.499 in.
Ref: 85363




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.75 (min) | 3.53 |
| 9. | 3.93 |
| 10. | 5.65 |
| 13. | 12.4 |
| 16. | 24.3 |
| 20. | 32.5 |
| 25. | 71.5 |
| 27.73 (max) | 107. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 20.53 | AND<br>0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.73**

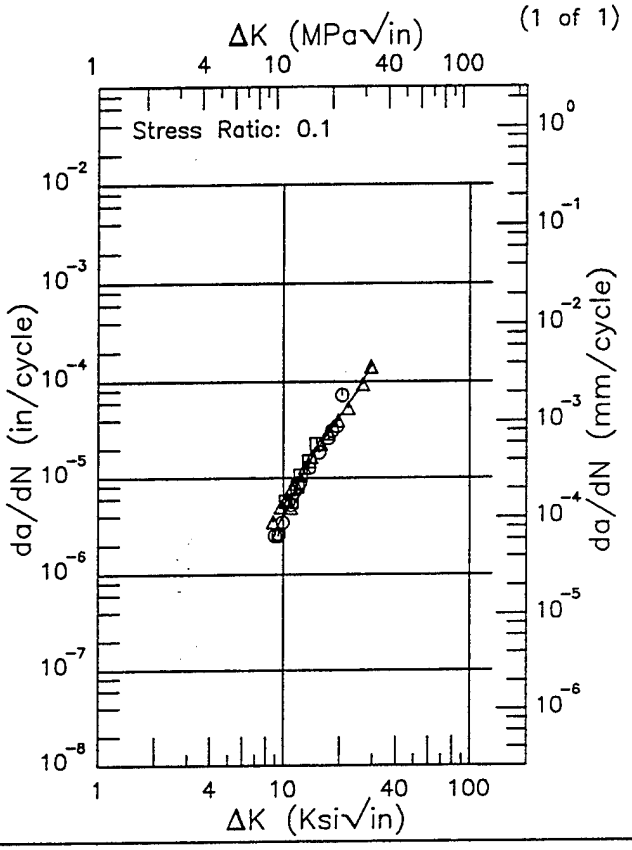
7475

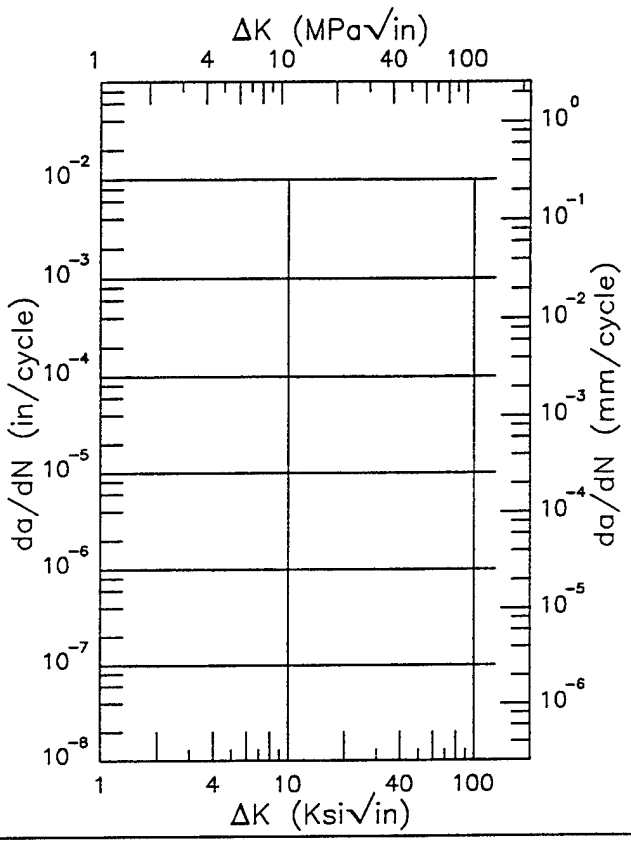
R

Condition/Ht: T761
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: T–L
Frequency: 20 Hz
Environment: LAB AIR; RT

Yield Strength: 62.2 ksi
Ult. Strength: 70.2 ksi
Specimen Thk: 0.089 in.
Specimen Width: 1.499 in.
Ref: 85363

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.76 (min) | 2.39 |
| 9. | 2.69 |
| 10. | 4.27 |
| 13. | 12.5 |
| 16. | 23.5 |
| 20. | 43.7 |
| 25. | 81.1 |
| 29.38 (max) | 142. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

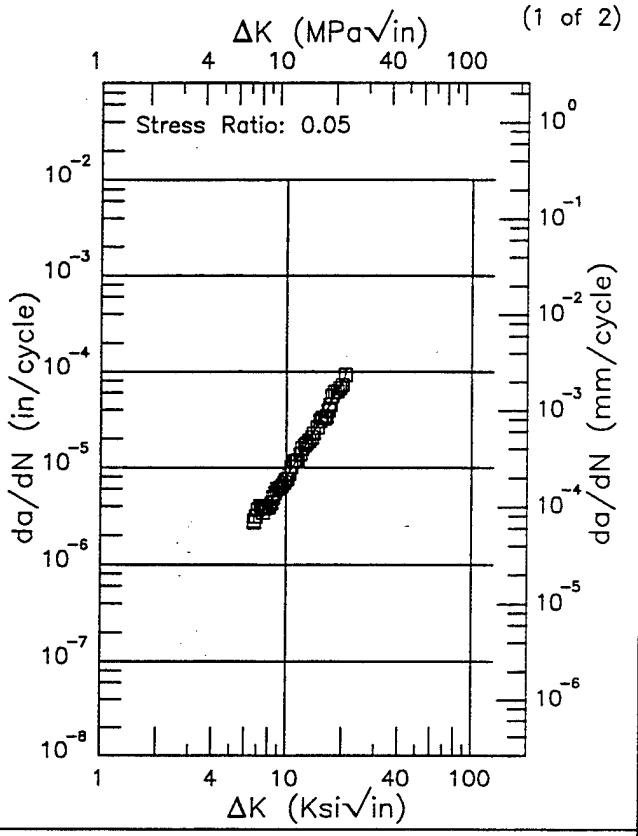
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.04 | 0. .5 .8 1.25 2. |

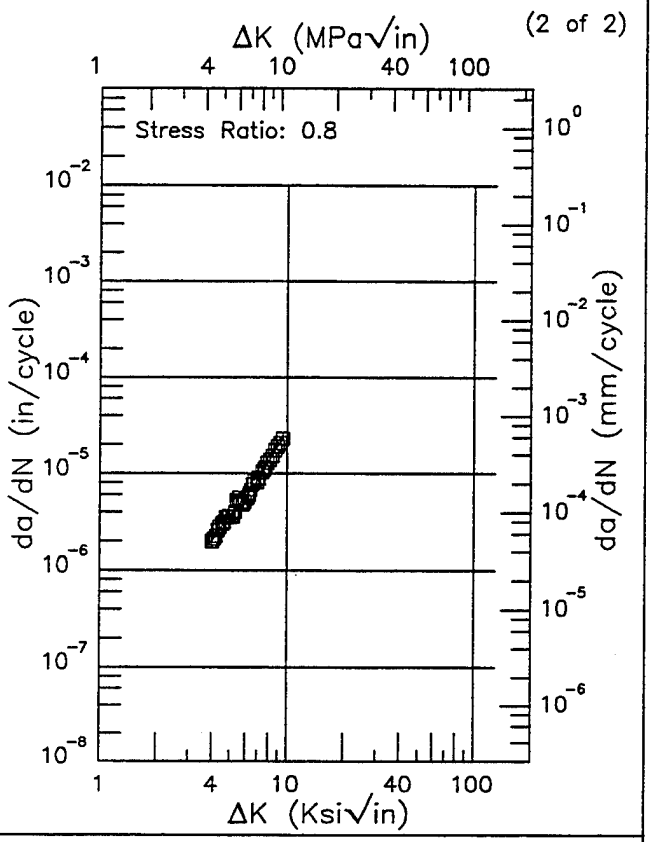
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.74**

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 63.7 ksi
Ult. Strength: 73.4 ksi
Specimen Thk: 0.076 in.
Specimen Width: 3.864 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.70 (min) | 3.11 |
| 7. | 3.29 |
| 8. | 4.25 |
| 9. | 5.74 |
| 10. | 7.85 |
| 13. | 18.6 |
| 16. | 36.1 |
| 20. | 79.1 |
| 20.63 (max) | 89.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.99 (min) | 1.99 |
| 4. | 2.02 |
| 5. | 3.74 |
| 6. | 5.63 |
| 7. | 8.60 |
| 8. | 13.5 |
| 9. | 19.7 |
| 9.40 (max) | 22.2 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.23 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.02 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.75**

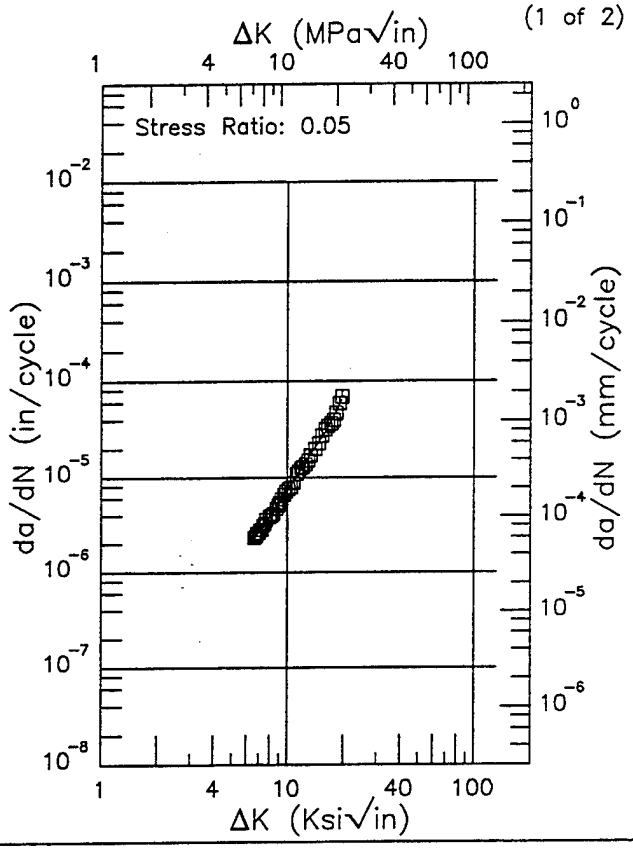
7475

R

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 63.2 ksi
Ult. Strength:
Specimen Thk: 0.077 in.
Specimen Width: 3.951 – 3.953 in.
Ref: DA005

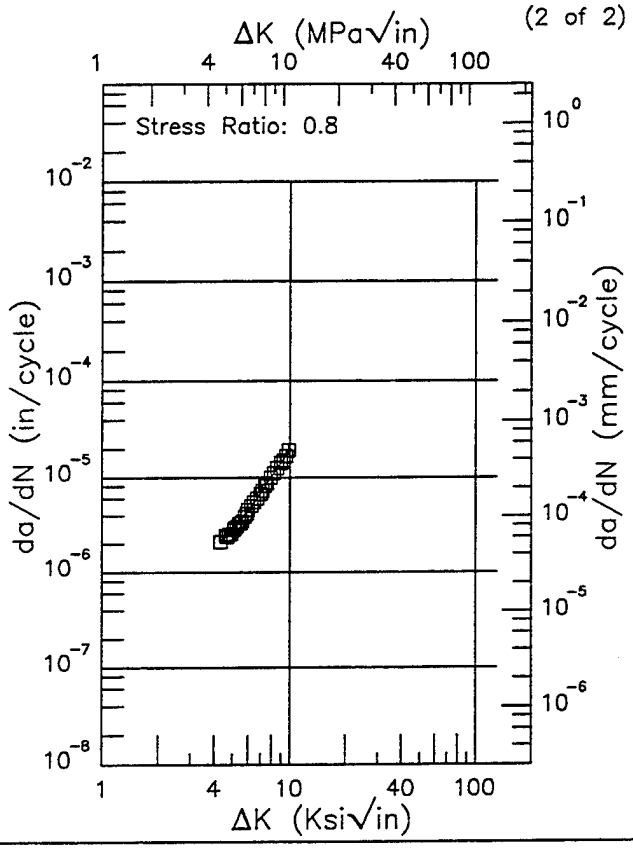
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.61 (min) | 2.29 |
| 7. | 2.65 |
| 8. | 3.79 |
| 9. | 5.32 |
| 10. | 7.27 |
| 13. | 16.0 |
| 16. | 30.1 |
| 19.49 (max) | 64.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.73 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.32 (min) | 2.10 |
| 5. | 2.72 |
| 6. | 4.35 |
| 7. | 6.91 |
| 8. | 10.3 |
| 9. | 14.3 |
| 9.85 (max) | 18.9 |

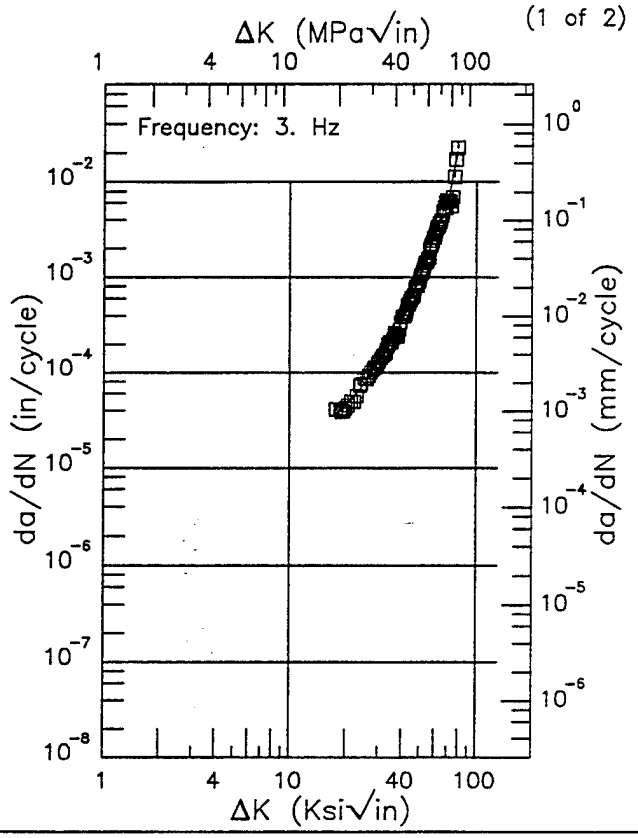
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.19 | 0. .5 .8 1.25 2. |

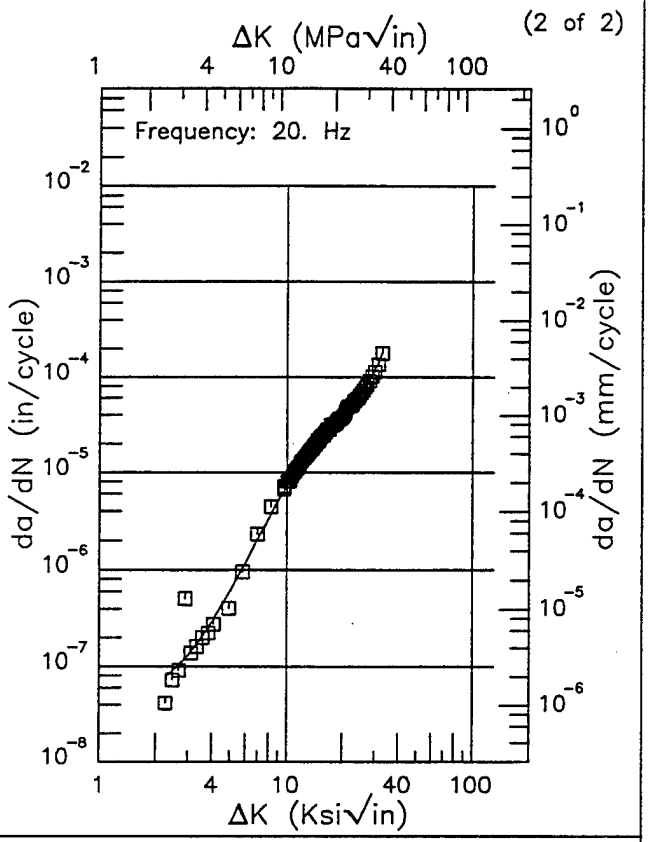
**Figure 8.19.3.1.76**

7475 F

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.1
Environment: LAB AIR; RT

Yield Strength: 63.7 ksi
Ult. Strength: 73.4 ksi
Specimen Thk: 0.073 – 0.074 in.
Specimen Width: 11.977 – 12.008 in.
Ref: DA004



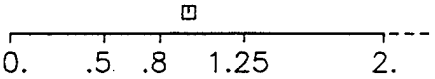




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 17.67 (min) | 36.5 |
| 20. | 44.0 |
| 25. | 75.0 |
| 30. | 131. |
| 35. | 216. |
| 40. | 347. |
| 50. | 994. |
| 60. | 2852. |
| 70. | 5560. |
| 79.15 (max) | 20744. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.27 (min) | 0.0793 |
| 2.5 | 0.0908 |
| 3. | 0.130 |
| 3.5 | 0.193 |
| 4. | 0.287 |
| 5. | 0.601 |
| 6. | 1.16 |
| 7. | 2.04 |
| 8. | 3.32 |
| 9. | 5.06 |
| 10. | 7.27 |
| 13. | 16.4 |
| 16. | 27.4 |
| 20. | 40.6 |
| 25. | 62.3 |
| 30. | 118. |
| 32.71 (max) | 186. |

RMS % Error: 8.69

Life Prediction Ratio Summary




RMS % Error: 33.04

Life Prediction Ratio Summary

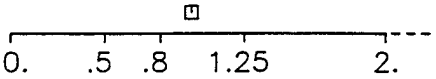


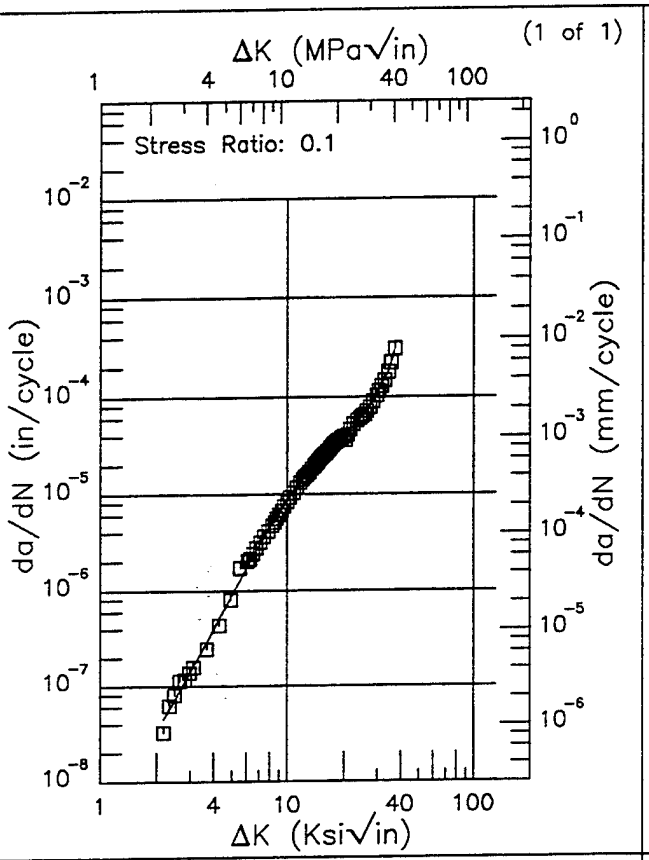

**Figure 8.19.3.1.77**

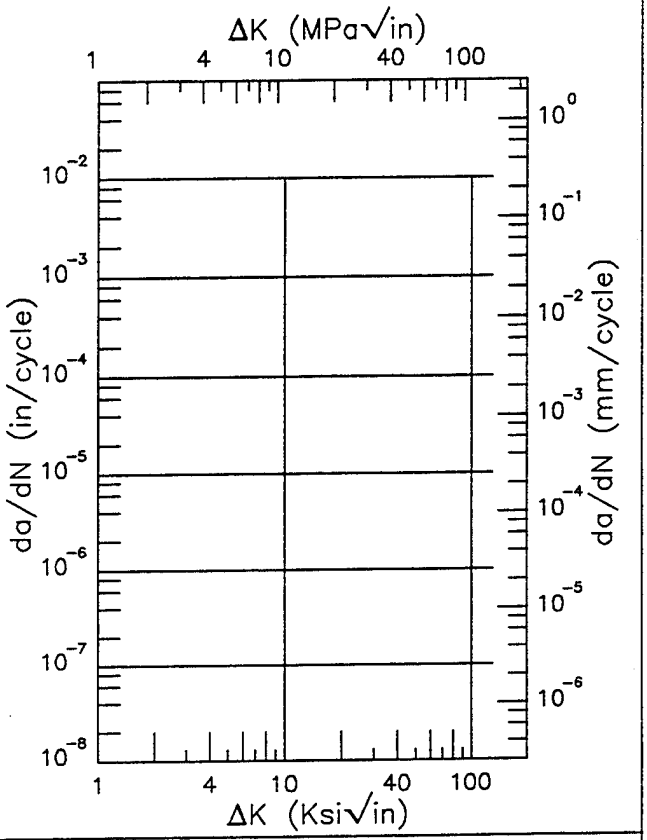
7475

R

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 7 Hz
Environment: LAB AIR; RT

Yield Strength: 63.7 ksi
Ult. Strength:
Specimen Thk: 0.074 in.
Specimen Width: 11.02 in.
Ref: DA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.17 (min) | 0.0451 |
| 2.5 | 0.0734 |
| 3. | 0.140 |
| 3.5 | 0.244 |
| 4. | 0.398 |
| 5. | 0.895 |
| 6. | 1.71 |
| 7. | 2.89 |
| 8. | 4.47 |
| 9. | 6.44 |
| 10. | 8.75 |
| 16. | 26.4 |
| 20. | 39.9 |
| 30. | 105. |
| 37.09 (max) | 293. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error: 7.43

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

RMS % Error

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

**Figure 8.19.3.1.78**

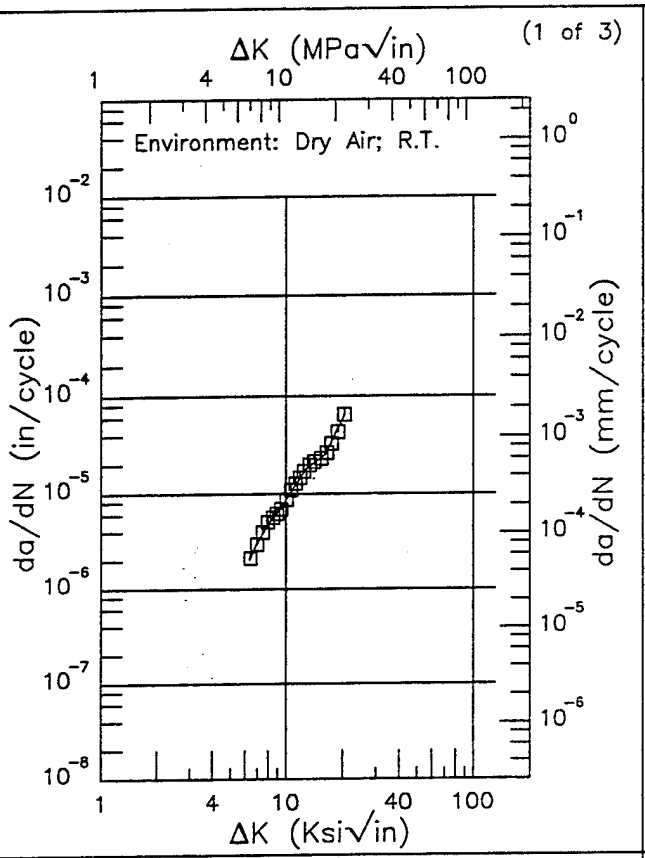
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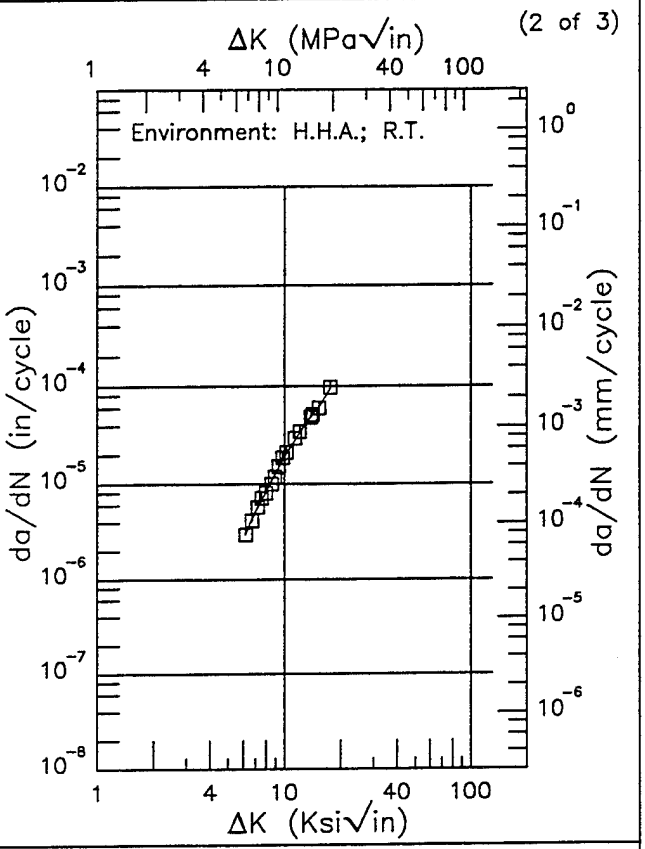
7475

E

Condition/Ht: T761
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 66.8 ksi
Ult. Strength: 74.8 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.38 (min) | 2.06 |
| 7. | 3.10 |
| 8. | 4.74 |
| 9. | 6.46 |
| 10. | 8.66 |
| 13. | 18.9 |
| 16. | 25.0 |
| 20. | 59.2 |
| 20.38 (max) | 64.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.18 (min) | 2.98 |
| 7. | 5.12 |
| 8. | 8.45 |
| 9. | 12.9 |
| 10. | 19.2 |
| 13. | 42.5 |
| 16. | 68.7 |
| 17.61 (max) | 95.5 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.98 | 0. .5 .8 1.25 2. |

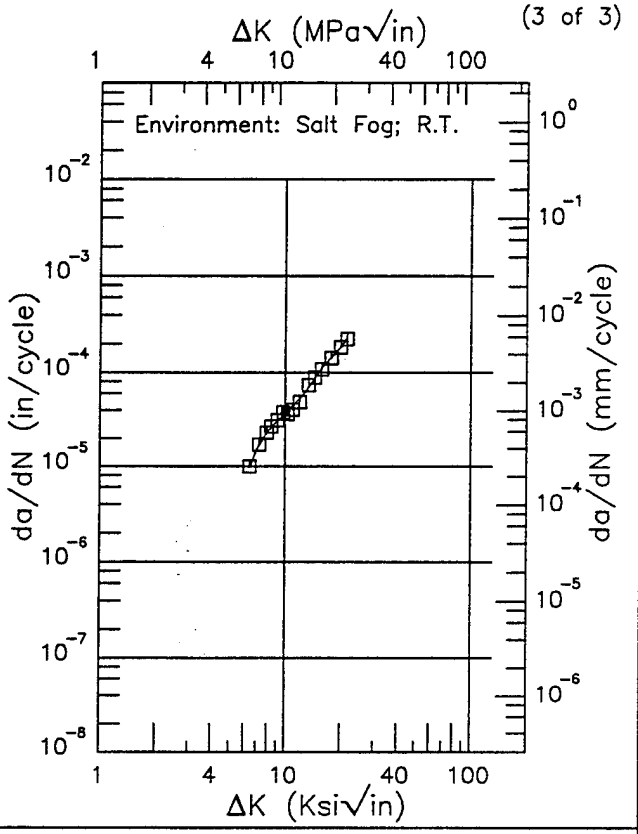
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.67 | 0. .5 .8 1.25 2. |

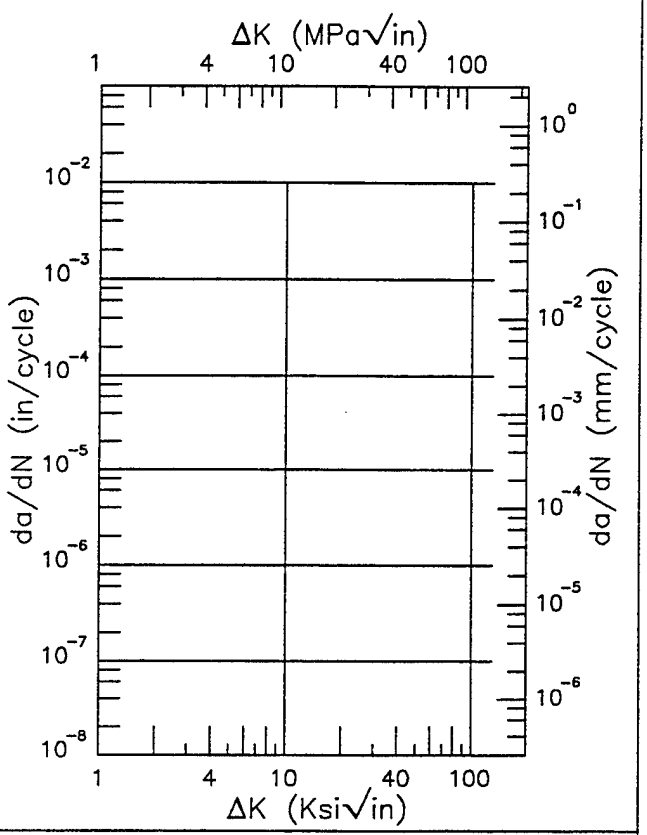
**Figure 8.19.3.1.79**

7475 E

Condition/Ht: T761
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 66.8 ksi
Ult. Strength: 74.8 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.42 (min) | 9.76 |
| 7. | 15.2 |
| 8. | 23.7 |
| 9. | 30.2 |
| 10. | 35.8 |
| 13. | 64.1 |
| 16. | 116. |
| 20. | 185. |
| 21.42 (max) | 225. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.78 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

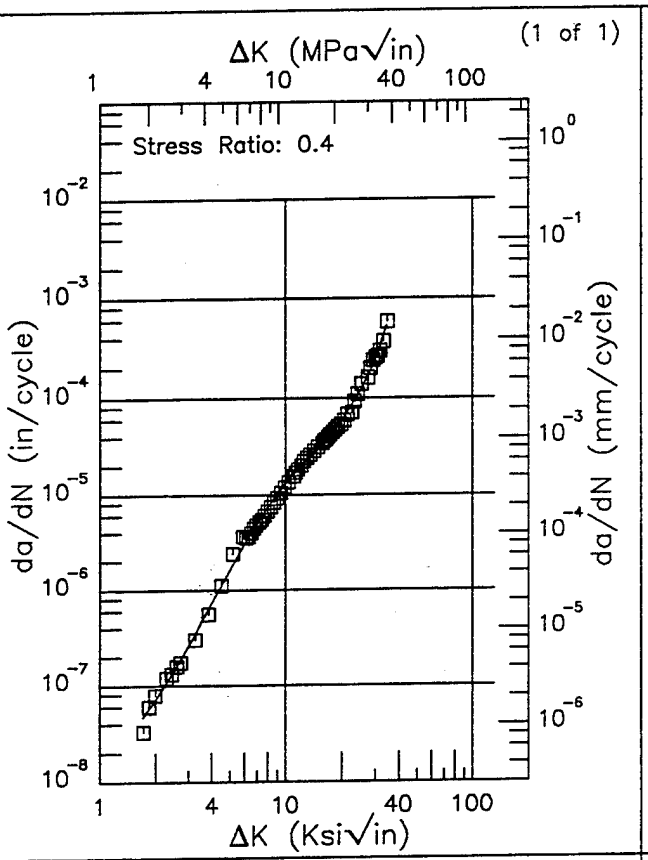
**Figure 8.19.3.1.79 (Concluded)**

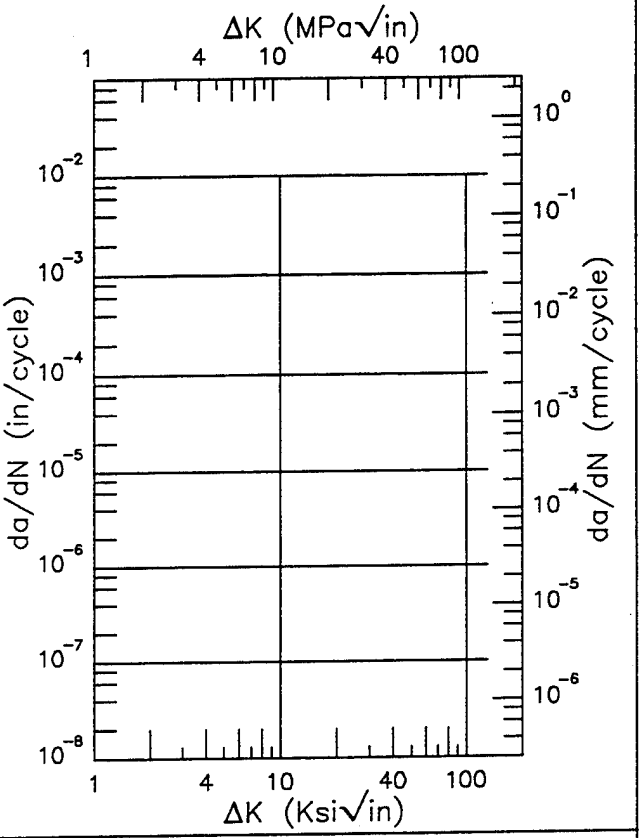
7475

R

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR; RT

Yield Strength: 63.7 ksi
Ult. Strength:
Specimen Thk: 0.076 in.
Specimen Width: 11.048 in.
Ref: DA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.71 (min) | 0.0467 |
| 2. | 0.0707 |
| 2.5 | 0.140 |
| 3. | 0.259 |
| 3.5 | 0.447 |
| 4. | 0.722 |
| 5. | 1.61 |
| 6. | 3.01 |
| 7. | 4.97 |
| 8. | 7.42 |
| 9. | 10.3 |
| 10. | 13.3 |
| 16. | 34.6 |
| 20. | 58.9 |
| 30. | 241. |
| 34.70 (max) | 531. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.58 | 0. .5 .8 1.25 2. |

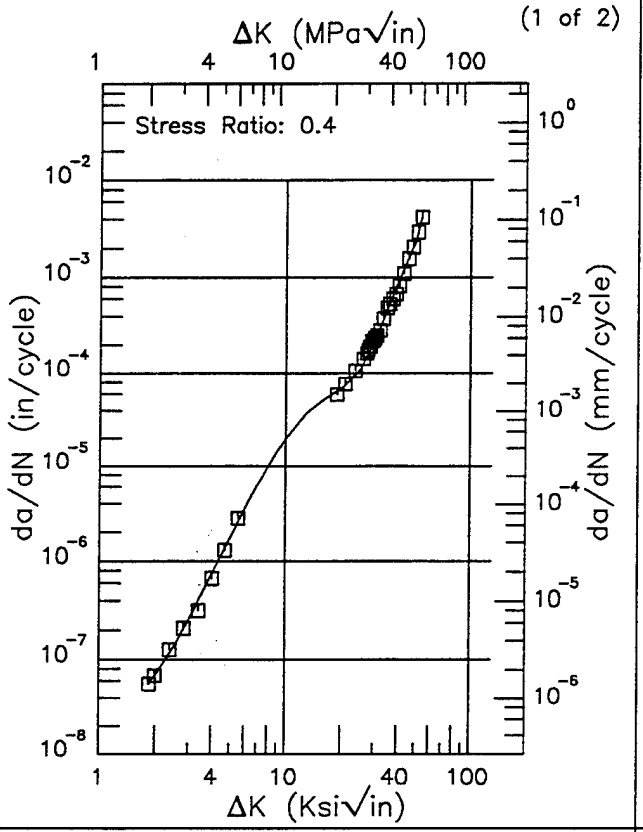
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

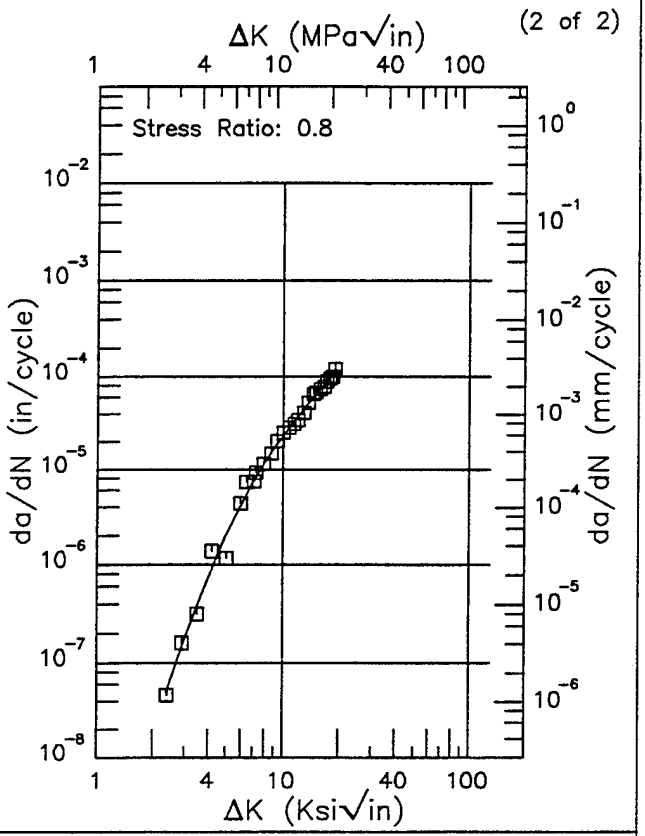
**Figure 8.19.3.1.80**

7475 R

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 3 – 15 Hz
Environment: LAB AIR; RT

Yield Strength: 63.7 ksi
Ult. Strength: 73.4 ksi
Specimen Thk: 0.072 in.
Specimen Width: 12 – 12.01 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.85 (min) | 0.0560 |
| 2. | 0.0685 |
| 3. | 0.250 |
| 4. | 0.733 |
| 5. | 1.74 |
| 6. | 3.50 |
| 7. | 6.17 |
| 8. | 9.81 |
| 9. | 14.4 |
| 10. | 19.6 |
| 16. | 52.3 |
| 20. | 69.1 |
| 30. | 216. |
| 40. | 877. |
| 53.82 (max) | 4347. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.39 (min) | 0.0507 |
| 2.5 | 0.0650 |
| 3. | 0.175 |
| 3.5 | 0.386 |
| 4. | 0.738 |
| 5. | 2.02 |
| 6. | 4.24 |
| 7. | 7.52 |
| 8. | 11.8 |
| 9. | 17.0 |
| 10. | 23.1 |
| 13. | 45.5 |
| 16. | 74.0 |
| 18.96 (max) | 110. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.53 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.72 | 0. .5 .8 1.25 2. |

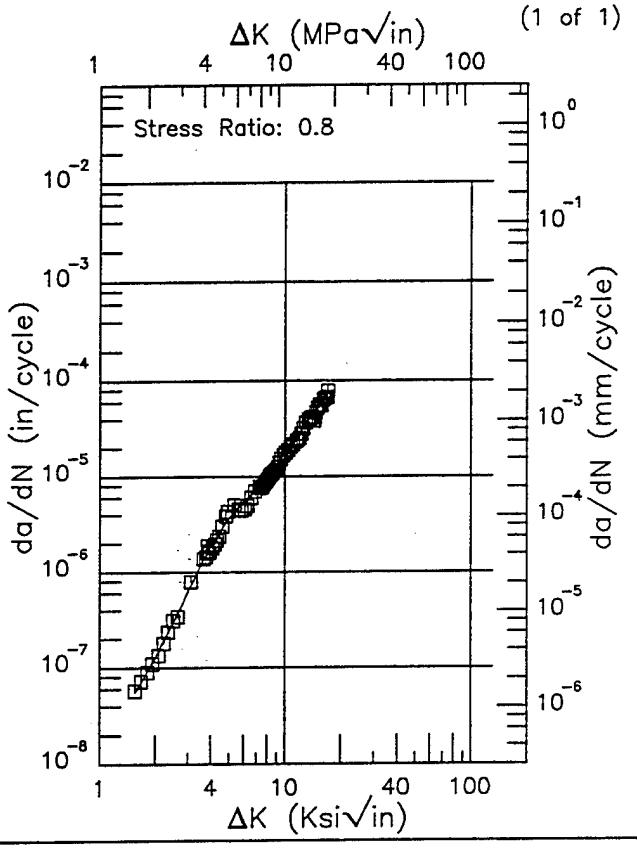
**Figure 8.19.3.1.81**

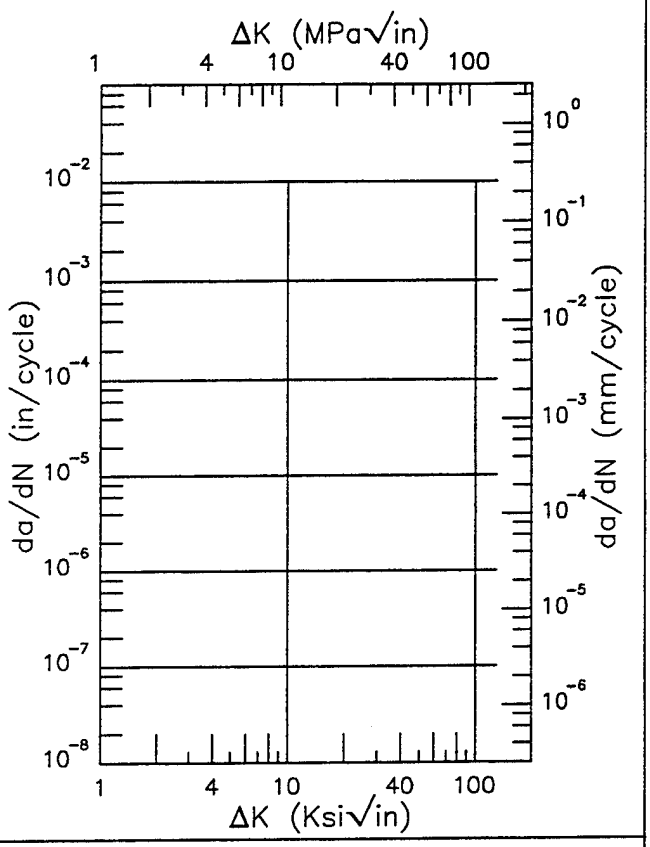
7475

R

Condition/Ht: T761
Form: 0.08 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 62.2 ksi
Ult. Strength:
Specimen Thk: 0.073 in.
Specimen Width: 11.09 in.
Ref: DA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.55 (min) | 0.0553 |
| 1.6 | 0.0607 |
| 2. | 0.126 |
| 2.5 | 0.296 |
| 3. | 0.615 |
| 3.5 | 1.13 |
| 4. | 1.84 |
| 5. | 3.67 |
| 6. | 5.48 |
| 7. | 7.12 |
| 8. | 9.03 |
| 9. | 11.8 |
| 10. | 16.0 |
| 13. | 36.3 |
| 16. | 59.8 |
| 17.01 (max) | 78.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.83 | 0. .5 .8 1.25 2. |

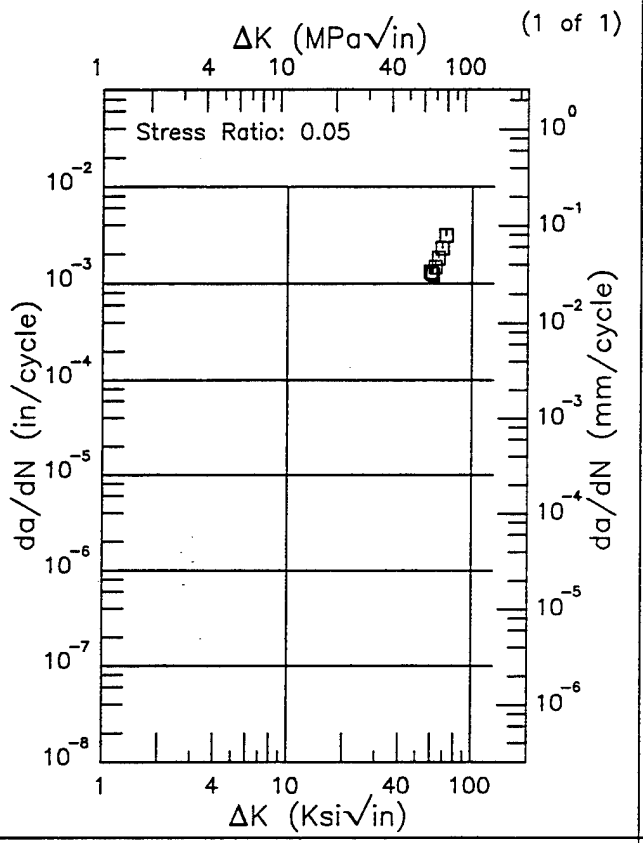
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

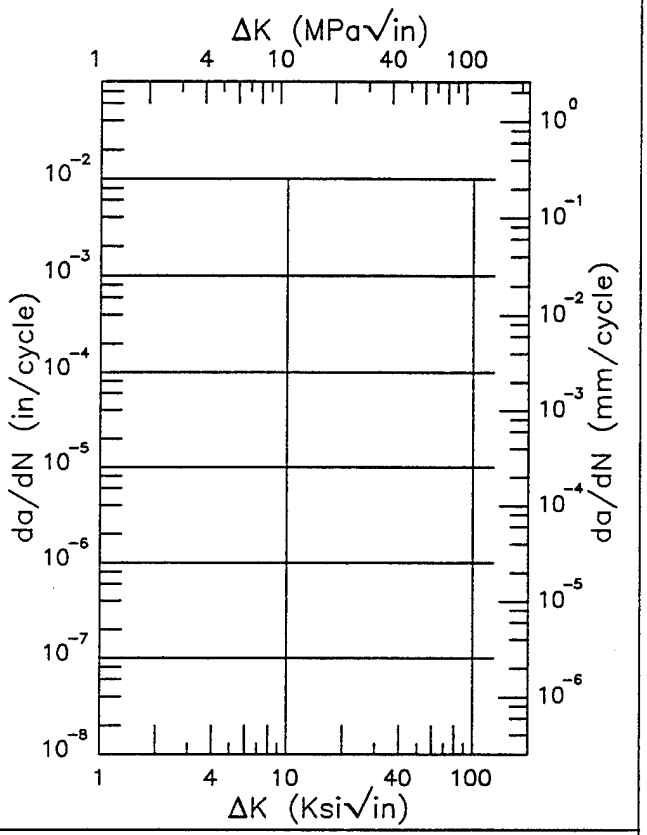
**Figure 8.19.3.1.82**

7475 R

Condition/Ht: T761
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 65.3 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.04 in.
Specimen Width: 12 in.
Ref: 86212




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

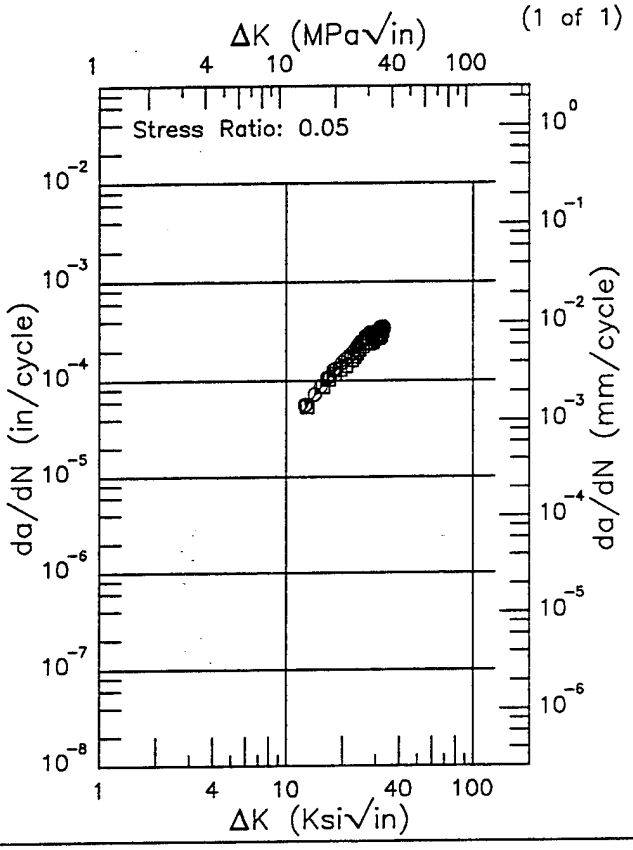
**Figure 8.19.3.1.83**

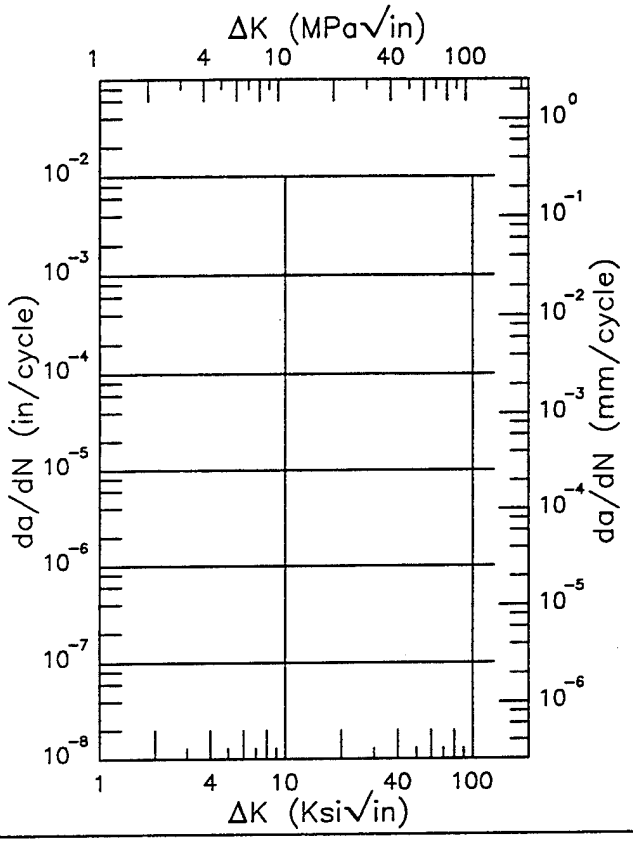
7475

R

Condition/Ht: T761
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T-L
Frequency: 2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 59.8 - 65.3 ksi
Ult. Strength: 68.7 - 74.5 ksi
Specimen Thk: 0.114 - 0.115 in.
Specimen Width: 36.07 - 36.08 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 12.56 (min) | 50.6 |
| 13. | 56.6 |
| 16. | 95.6 |
| 20. | 147. |
| 25. | 226. |
| 30. | 290. |
| 33.19 (max) | 329. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.92 | 0. .5 .8 1.25 2. |

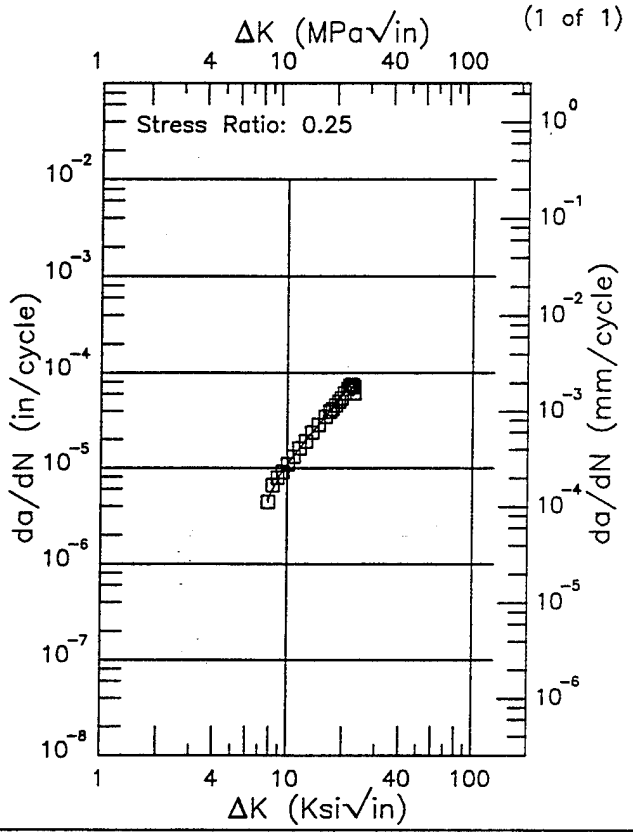
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

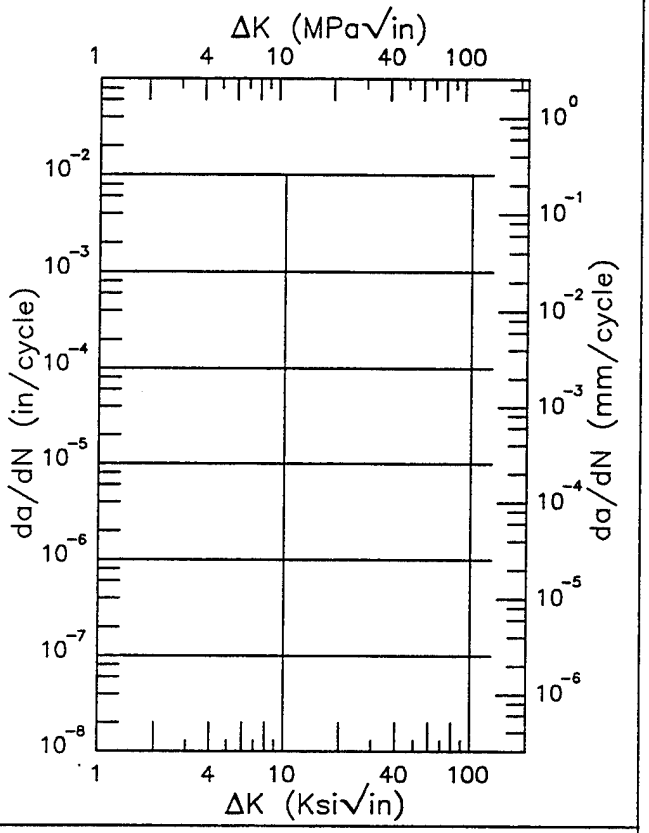
**Figure 8.19.3.1.84**

7475 R

Condition/Ht: T761
Form: 0.11 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 65.3 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.115 in.
Specimen Width: 24.03 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.84 (min) | 4.82 |
| 8. | 5.28 |
| 9. | 8.17 |
| 10. | 11.0 |
| 13. | 21.2 |
| 16. | 34.9 |
| 20. | 59.9 |
| 22.71 (max) | 71.1 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.57 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.85**

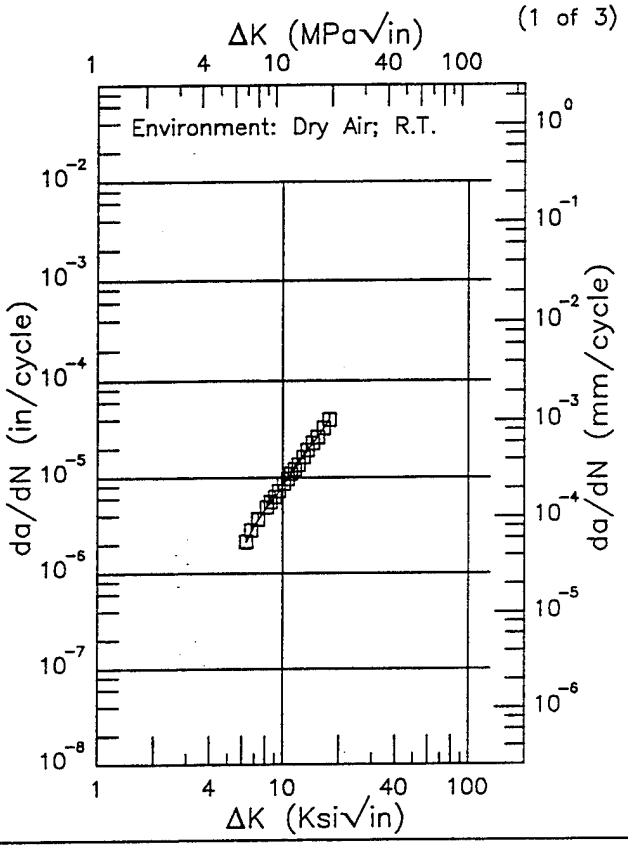
7475

E

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 71.1 ksi
Ult. Strength: 78.9 ksi
Specimen Thk: 0.042 in.
Specimen Width: 4 in.
Ref: 86842

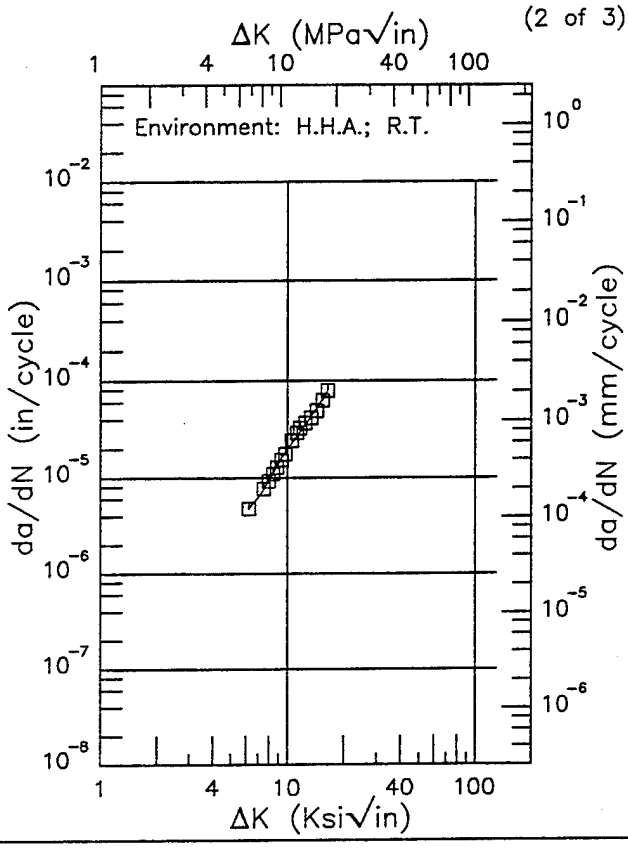
(1 of 3)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.32 (min) | 2.17 |
| 7. | 3.16 |
| 8. | 4.66 |
| 9. | 6.27 |
| 10. | 8.21 |
| 13. | 16.9 |
| 16. | 29.9 |
| 17.65 (max) | 39.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.29 | 0. .5 .8 1.25 2. |

(2 of 3)



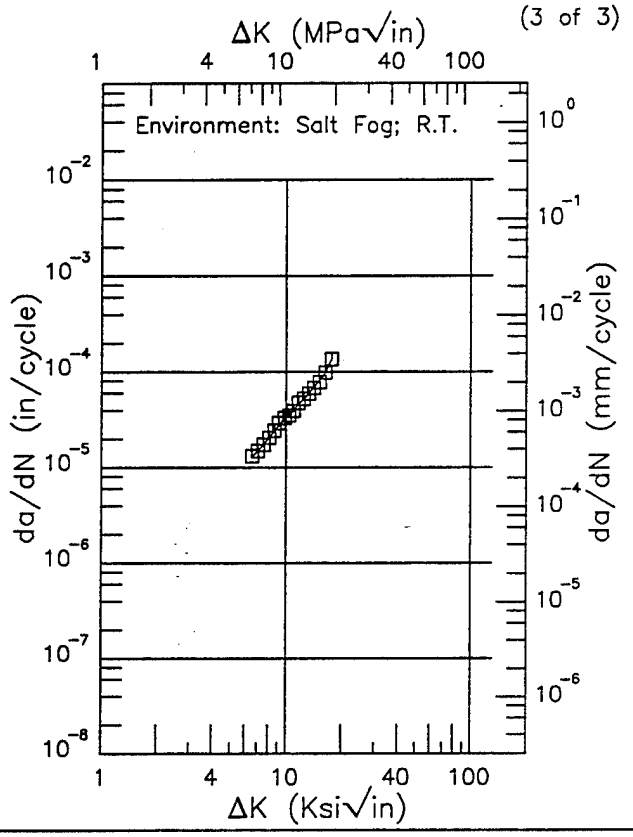

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.20 (min) | 4.79 |
| 7. | 6.22 |
| 8. | 9.32 |
| 9. | 14.0 |
| 10. | 19.9 |
| 13. | 39.5 |
| 16. | 71.1 |
| 16.34 (max) | 77.4 |

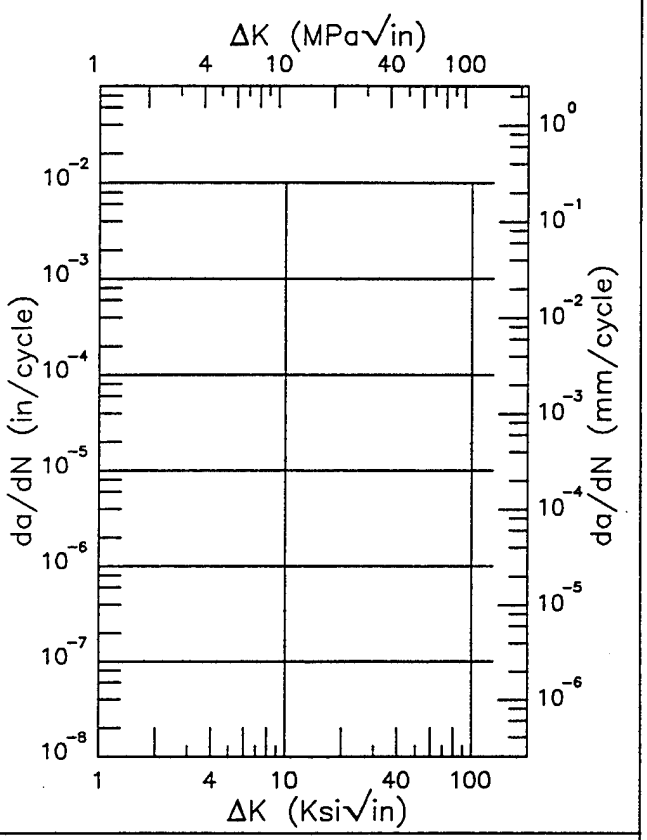
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.09 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.86**

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 71.1 ksi
Ult. Strength: 78.9 ksi
Specimen Thk: 0.042 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.53 (min) | 12.7 |
| 7. | 14.6 |
| 8. | 20.0 |
| 9. | 26.6 |
| 10. | 33.9 |
| 13. | 56.7 |
| 16. | 93.7 |
| 17.48 (max) | 134. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.92 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

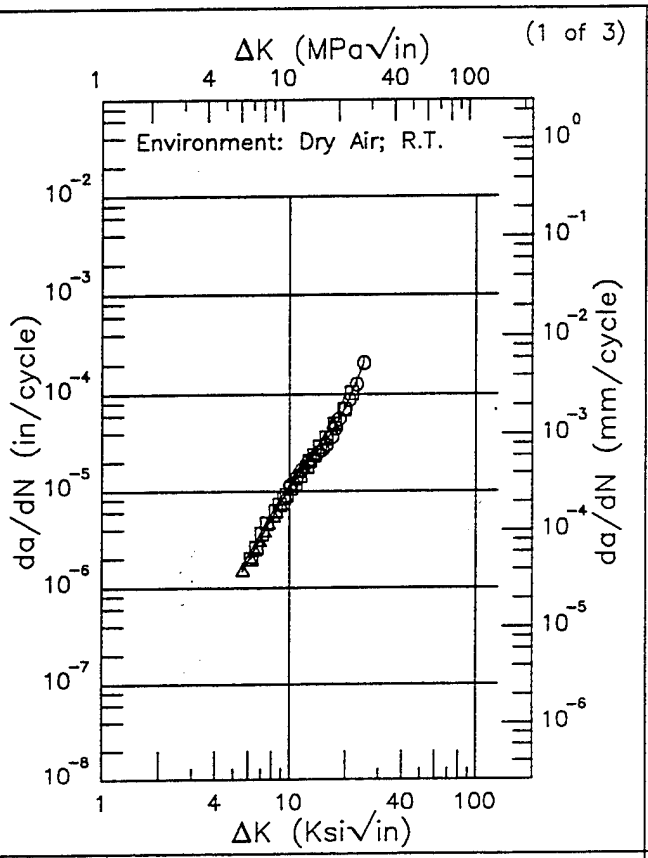
**Figure 8.19.3.1.86 (Concluded)**

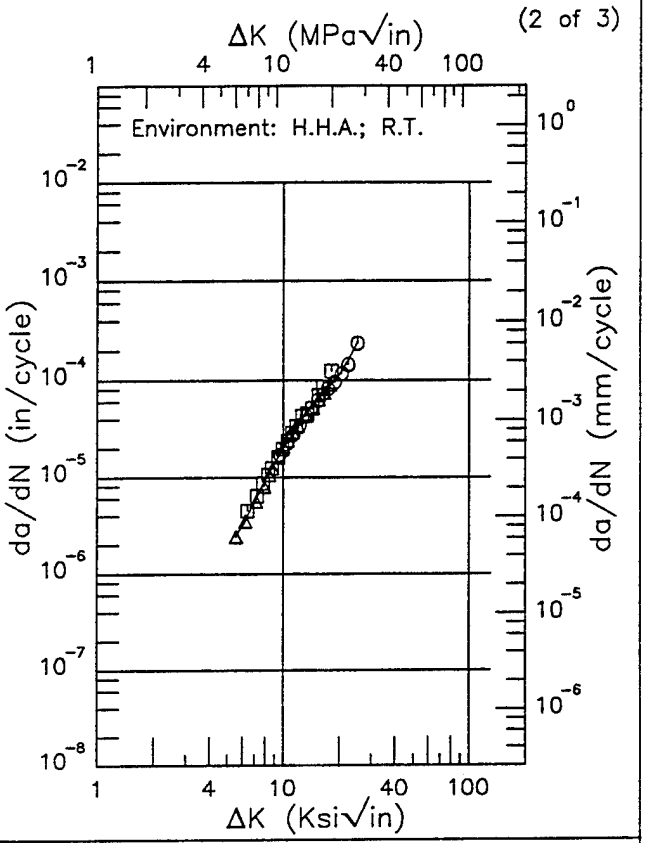
7475

E

Condition/Ht: T761
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T-L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 65.6 ksi
Ult. Strength: 76 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.60 (min) | 1.50 |
| 6. | 1.91 |
| 7. | 3.28 |
| 8. | 5.19 |
| 9. | 7.64 |
| 10. | 10.6 |
| 13. | 21.3 |
| 16. | 35.2 |
| 20. | 73.6 |
| 24.97 (max) | 202. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.54 (min) | 2.42 |
| 6. | 3.18 |
| 7. | 5.58 |
| 8. | 9.16 |
| 9. | 14.0 |
| 10. | 20.0 |
| 13. | 42.1 |
| 16. | 69.7 |
| 20. | 113. |
| 25. | 235. |
| 25.01 (max) | 236. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.68 | 0. .5 .8 1.25 2. |

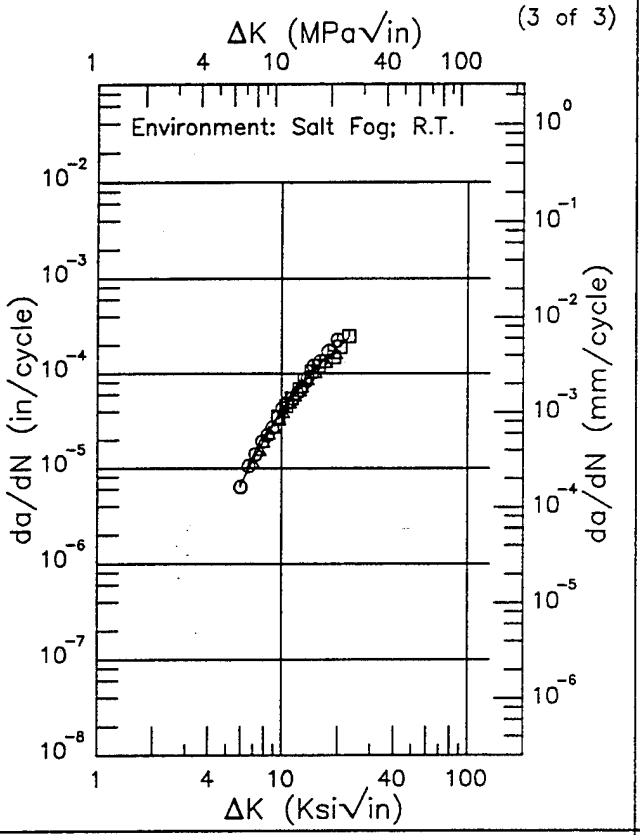
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.50 | 0. .5 .8 1.25 2. |

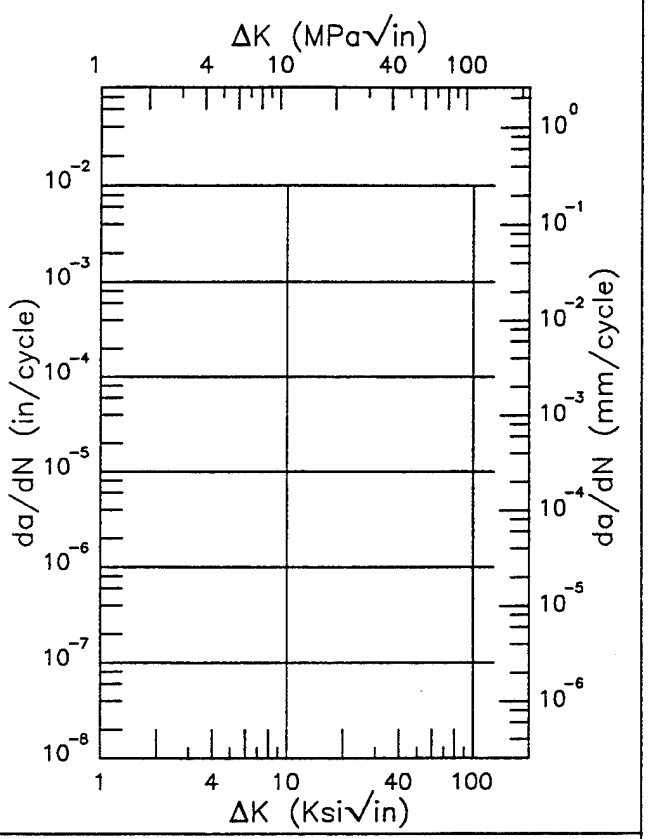
**Figure 8.19.3.1.87**

7475 E

Condition/Ht: T761
Form: 0.13 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Stress Ratio: 0.33
Frequency: 13.3 Hz

Yield Strength: 65.6 ksi
Ult. Strength: 76 ksi
Specimen Thk: 0.126 in.
Specimen Width: 4 in.
Ref: 86842




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.98 (min) | 6.66 |
| 6. | 6.76 |
| 7. | 12.2 |
| 8. | 19.6 |
| 9. | 28.6 |
| 10. | 39.3 |
| 13. | 78.7 |
| 16. | 125. |
| 20. | 191. |
| 22.77 (max) | 237. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.12 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

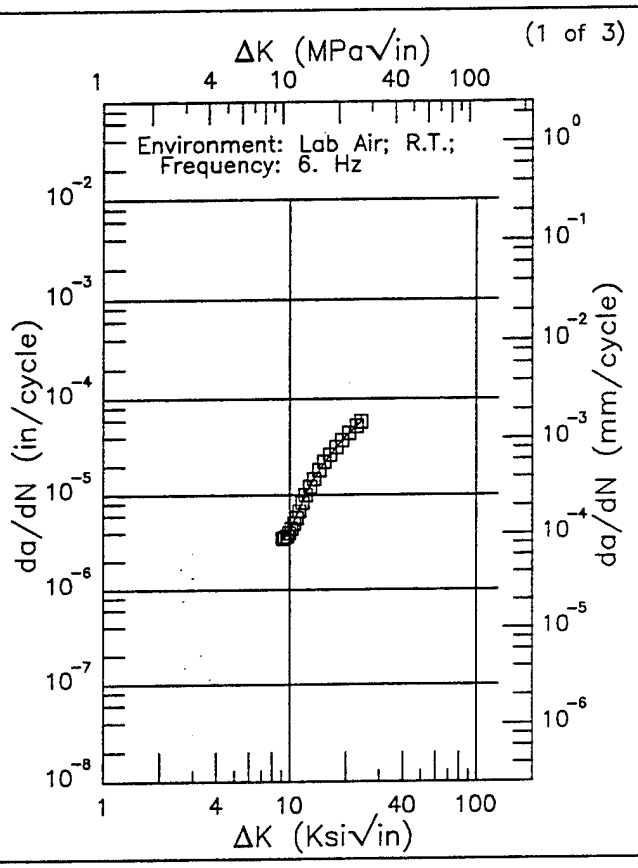
**Figure 8.19.3.1.87 (Concluded)**

## 7475

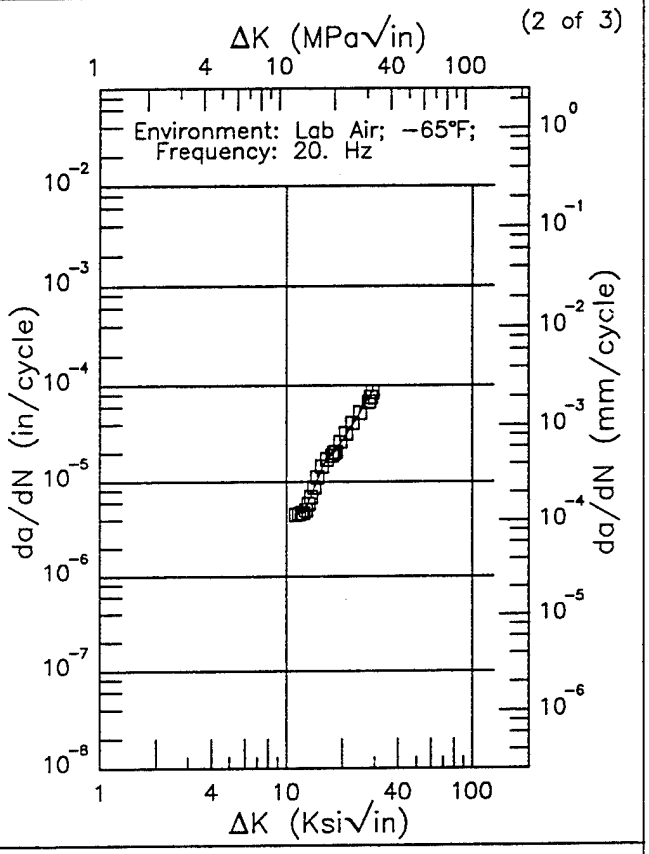
EF

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Stress Ratio: 0.

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.188 – 0.193 in.
Specimen Width: 11.995 – 12.007 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.10 (min) | 3.32 |
| 10. | 4.20 |
| 13. | 13.2 |
| 16. | 24.7 |
| 20. | 41.5 |
| 23.91 (max) | 57.7 |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.25 (min) | 4.54 |
| 13. | 5.72 |
| 16. | 15.4 |
| 20. | 26.5 |
| 25. | 53.4 |
| 29.01 (max) | 88.4 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.12 | 0. .5 .8 1.25 2. |

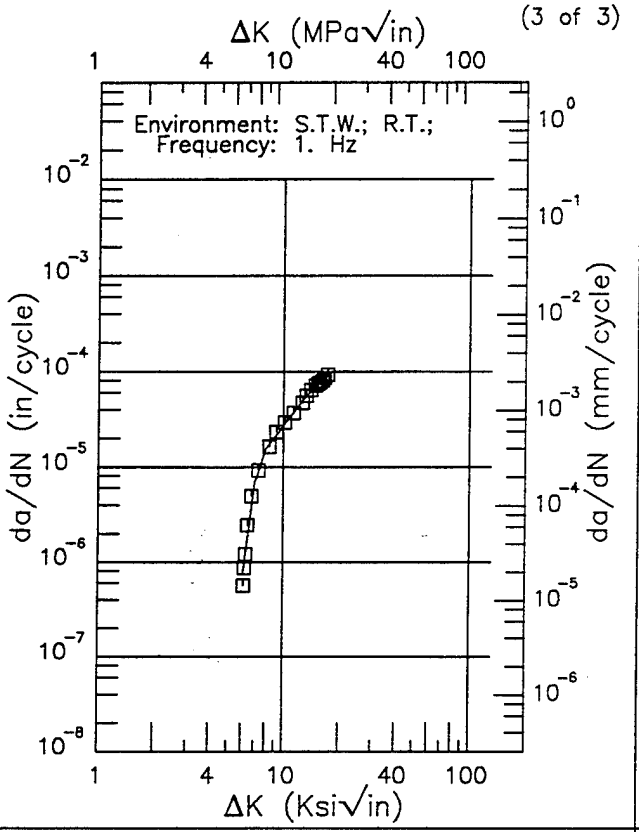
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.10 | 0. .5 .8 1.25 2. |

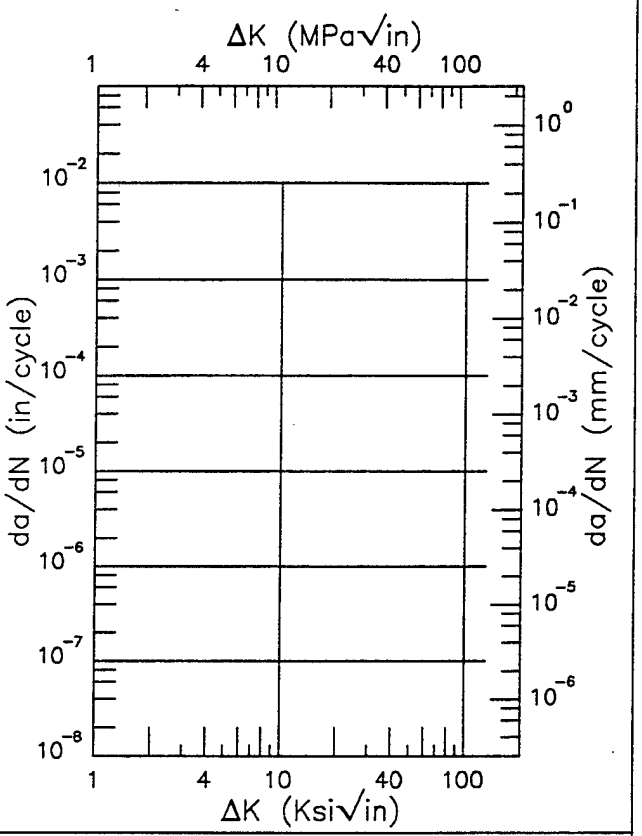
**Figure 8.19.3.1.88**

7475 EF

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Stress Ratio: 0.

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.188–0.193 in.
Specimen Width: 11.995–12.007 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.10 (min) | 0.772 |
| 7. | 6.94 |
| 8. | 15.5 |
| 9. | 20.7 |
| 10. | 27.1 |
| 13. | 52.6 |
| 16. | 81.9 |
| 17.02 (max) | 89.6 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.11 | 0. .5 .8 1.25 2. |

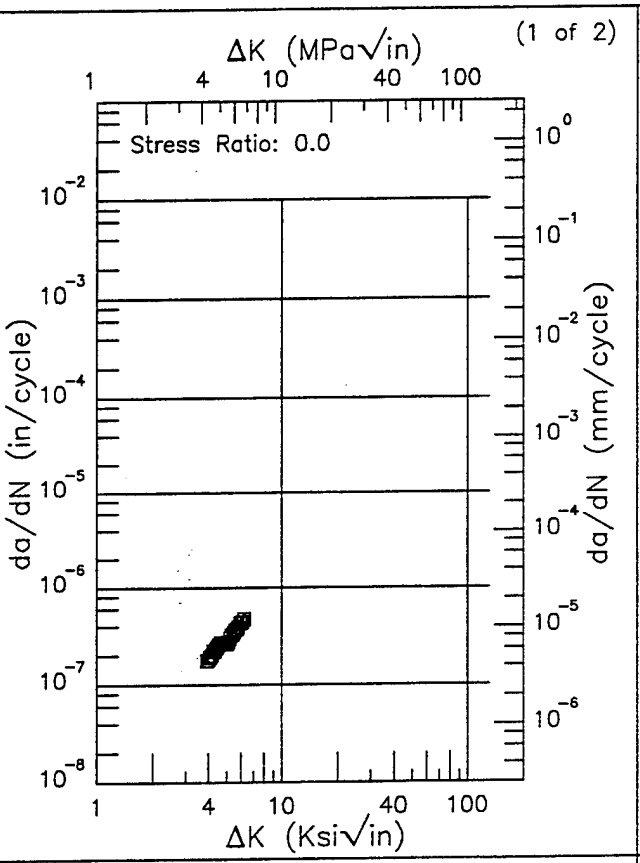
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

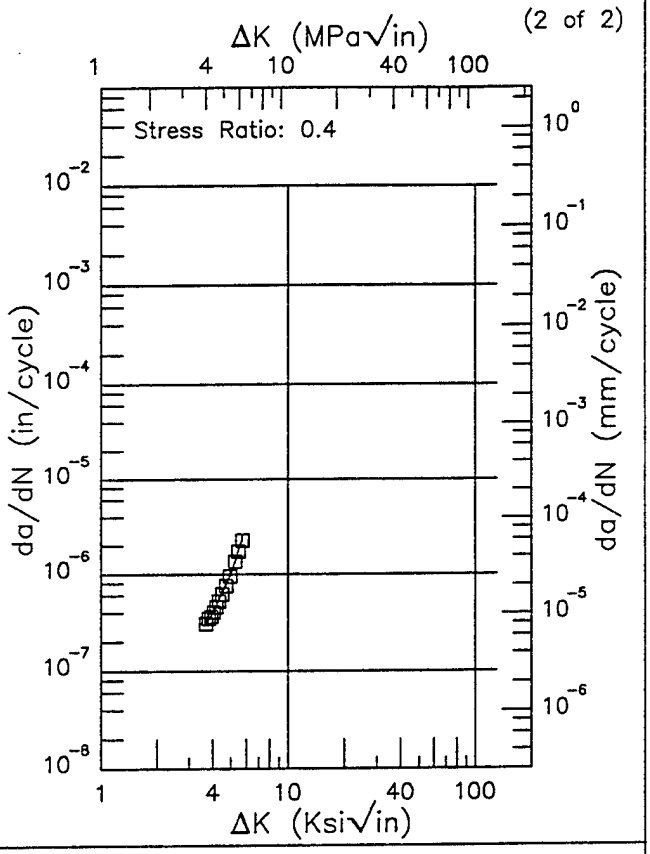
**Figure 8.19.3.1.88 (Concluded)**

R 7475

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 30 Hz
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.188 in.
Specimen Width: 4 – 4.002 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.89 (min) | 0.170 |
| 4. | 0.186 |
| 5. | 0.284 |
| 6. | 0.432 |
| 6.19 (max) | 0.487 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.68 (min) | 0.307 |
| 4. | 0.390 |
| 5. | 1.02 |
| 5.71 (max) | 2.24 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.52 | 0. .5 .8 1.25 2. |

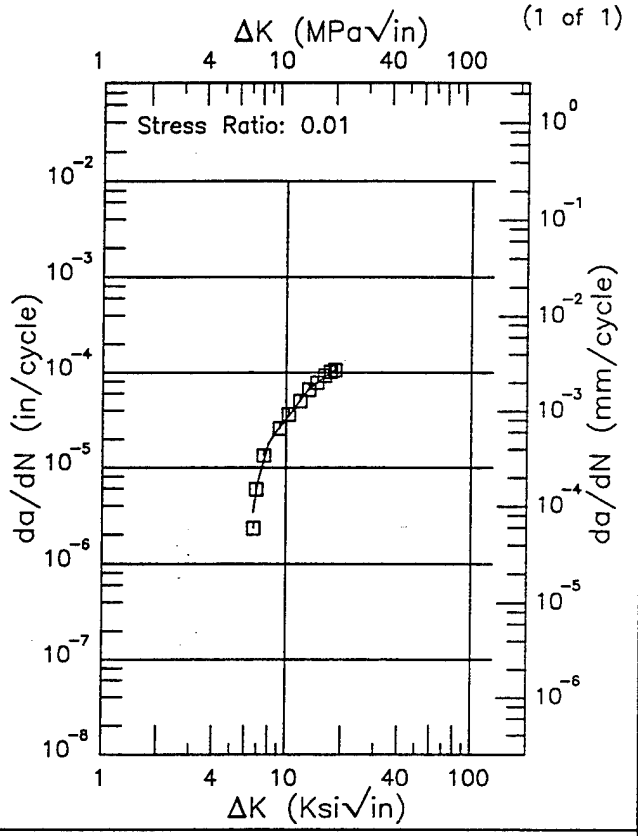
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.36 | 0. .5 .8 1.25 2. |

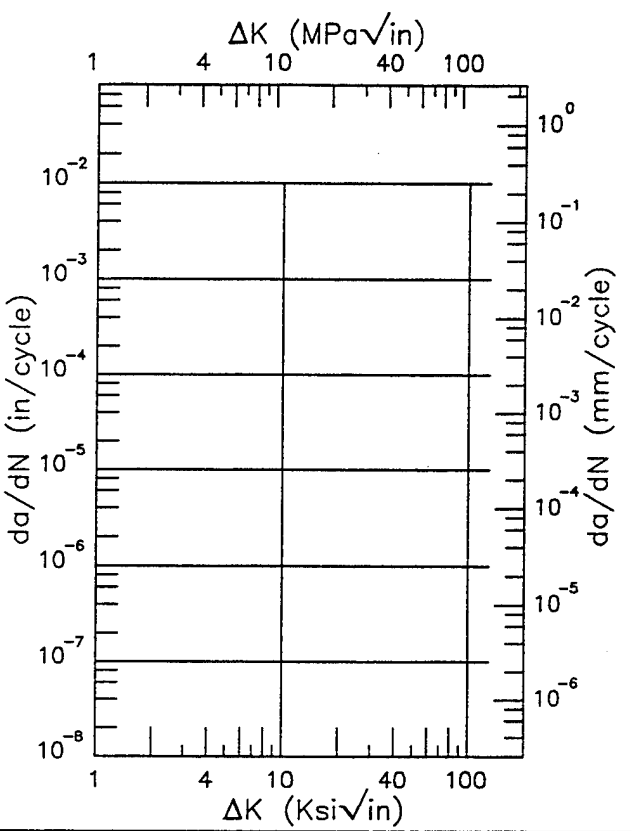
**Figure 8.19.3.1.89**

7475 R

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 1 – 5 Hz
Environment: S.T.W.; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.191 in.
Specimen Width: 12.005 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.64 (min) | 3.40 |
| 7. | 6.78 |
| 8. | 18.0 |
| 9. | 25.3 |
| 10. | 32.0 |
| 13. | 63.8 |
| 16. | 90.1 |
| 18.16 (max) | 105. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.57 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.90**

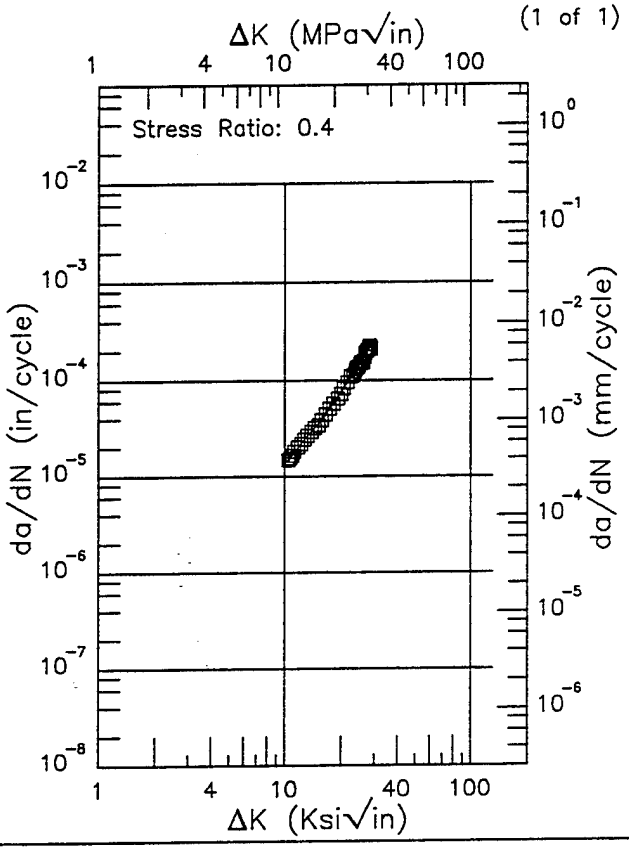
7475

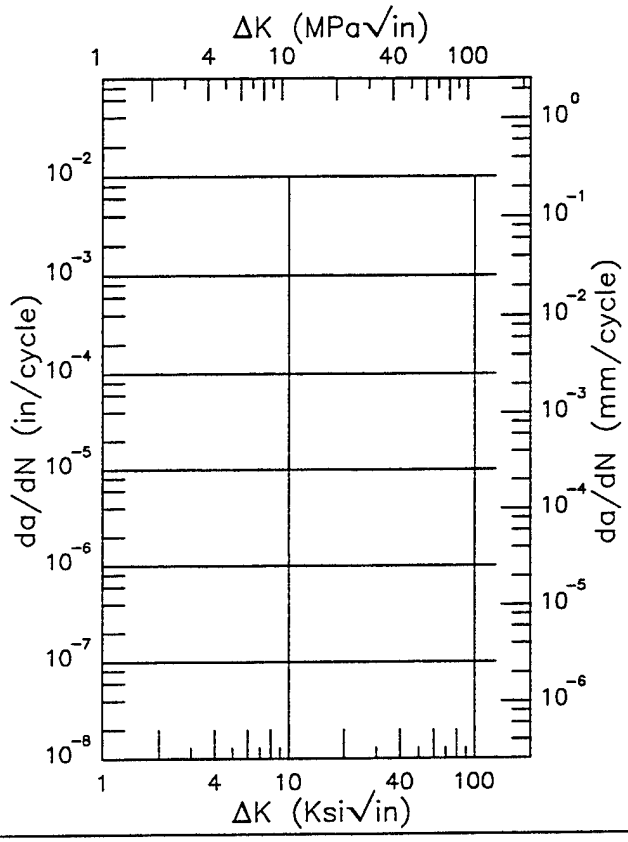
R

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency:
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.187 in.
Specimen Width: 12.004 in.
Ref: DA001

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 10.40 (min) | 14.5 |
| 13. | 25.3 |
| 16. | 40.5 |
| 20. | 76.2 |
| 25. | 146. |
| 28.77 (max) | 232. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

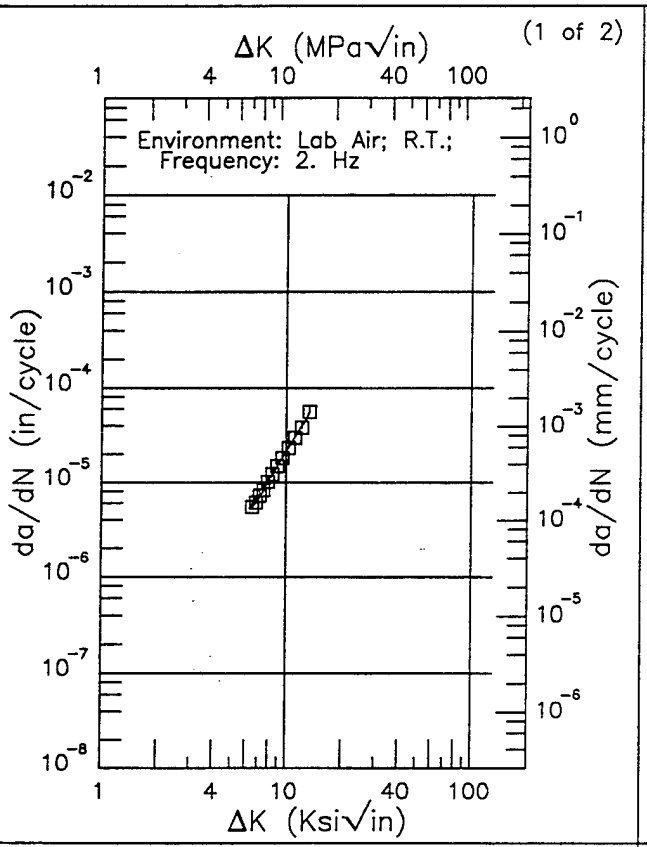
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.96 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

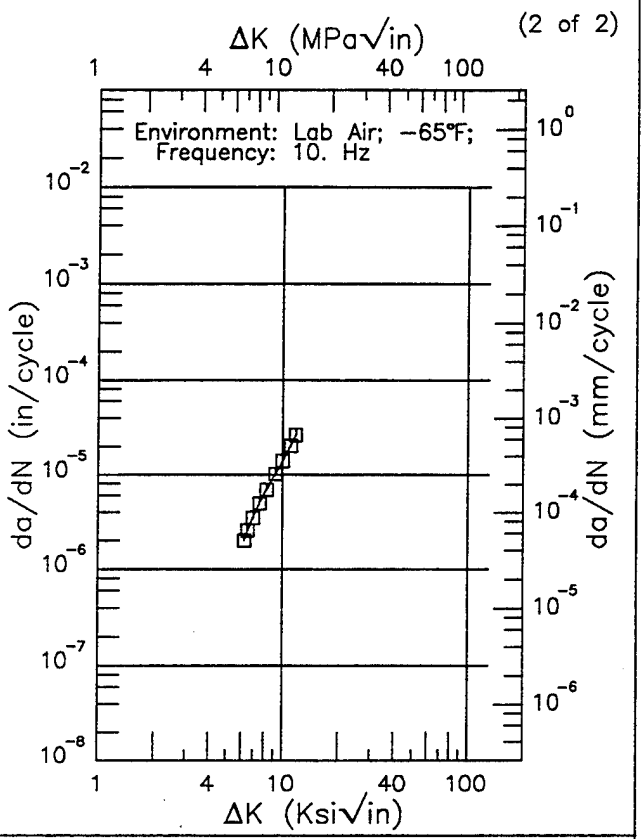
**Figure 8.19.3.1.91**

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Stress Ratio: 0.8

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.188–0.19 in.
Specimen Width: 12.002–12.004 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.52 (min) | 5.39 |
| 7. | 6.64 |
| 8. | 10.4 |
| 9. | 15.4 |
| 10. | 21.5 |
| 13. | 48.6 |
| 13.30 (max) | 55.1 |




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.25 (min) | 2.03 |
| 7. | 3.63 |
| 8. | 6.28 |
| 9. | 9.57 |
| 10. | 13.9 |
| 11.72 (max) | 26.0 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.28 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.80 | 0. .5 .8 1.25 2. |

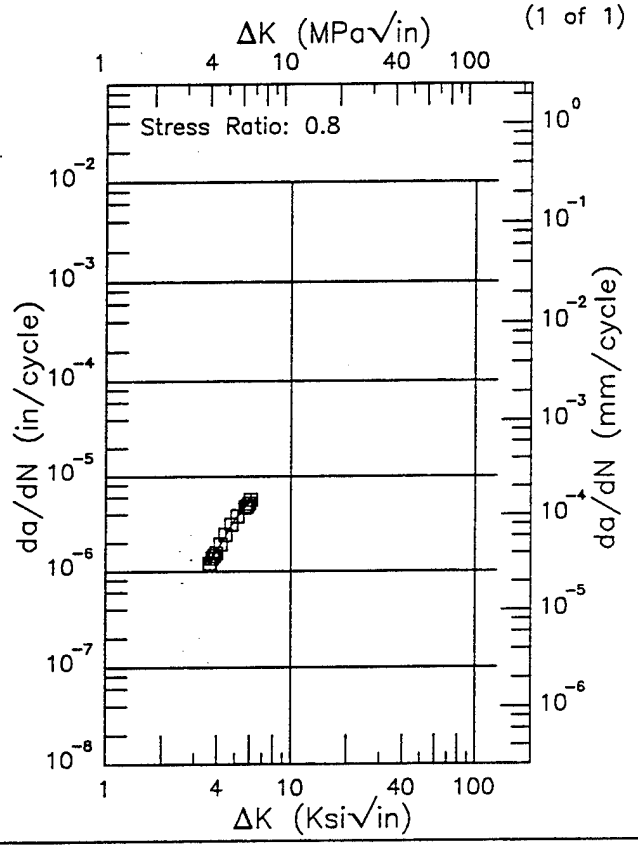
**Figure 8.19.3.1.92**

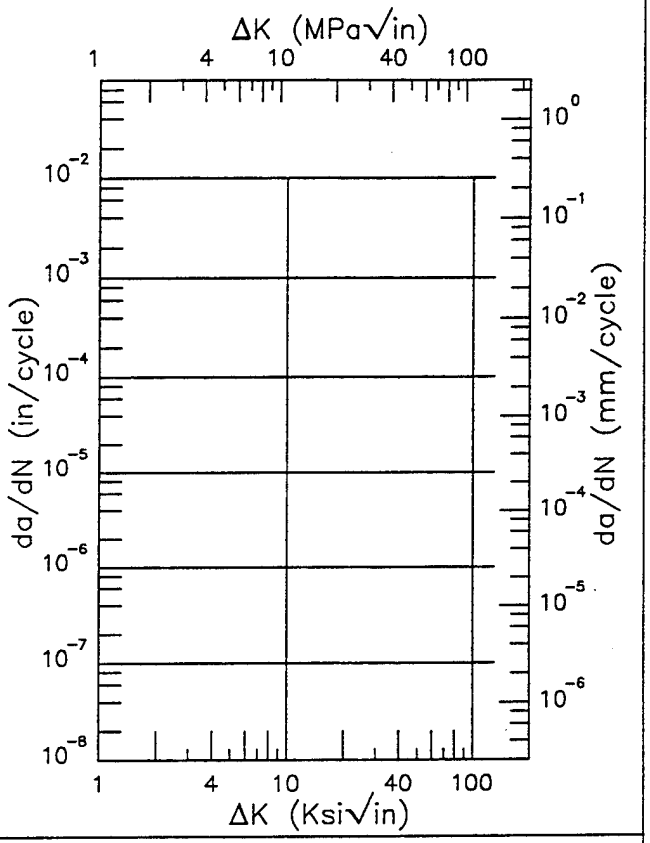
7475

R

Condition/Ht: T7651
Form: Sheet
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 5 – 10 Hz
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.19 in.
Specimen Width: 4.004 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.62 (min) | 1.19 |
| 4. | 1.66 |
| 5. | 3.51 |
| 6. | 5.38 |
| 6.07 (max) | 5.56 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.73 | 0. .5 .8 1.25 2. |

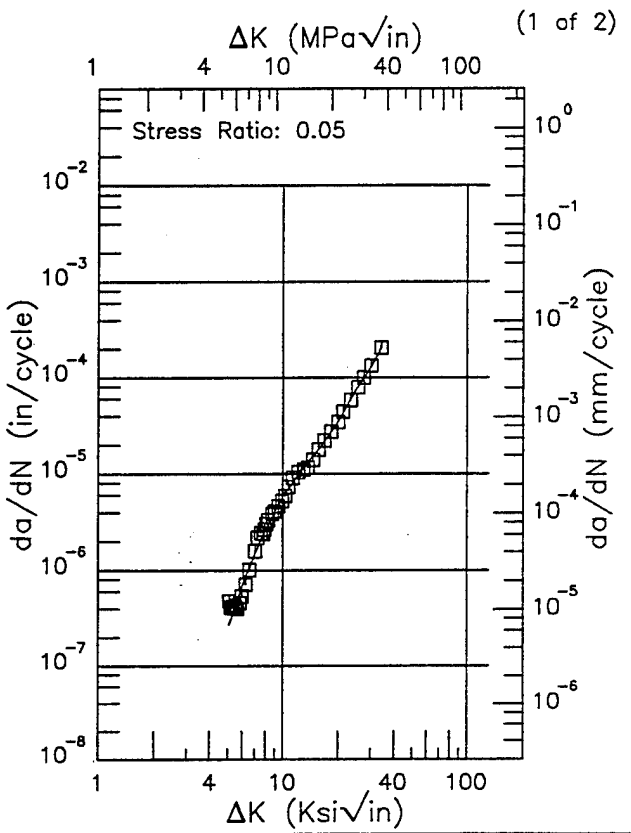
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

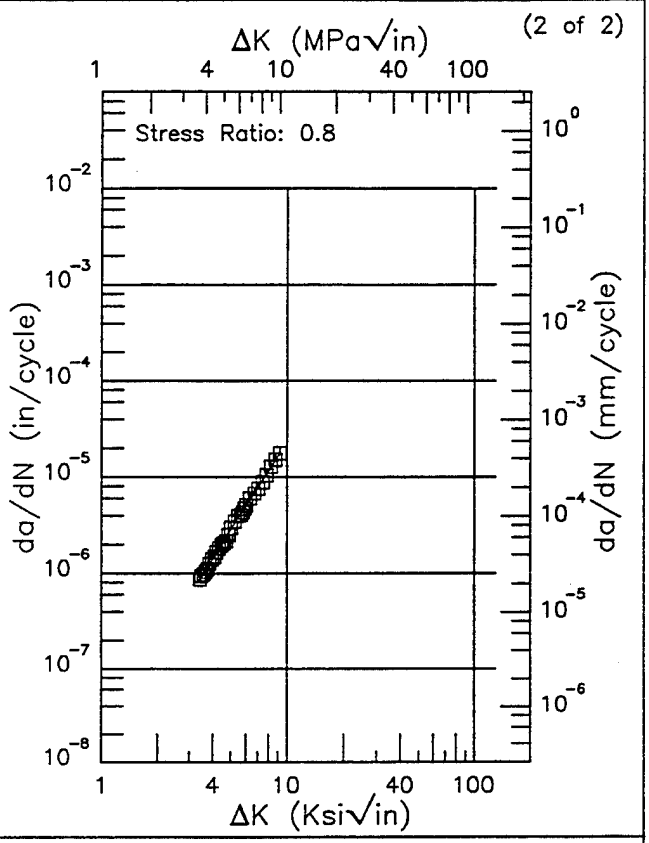
**Figure 8.19.3.1.93**

7475 R

Condition/Ht: T7651
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 67.7 – 69.3 ksi
Ult. Strength:
Specimen Thk: 0.248 in.
Specimen Width: 2.002 – 2.003 in.
Ref: DA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.10 (min) | 0.271 |
| 6. | 0.682 |
| 7. | 1.46 |
| 8. | 2.60 |
| 9. | 4.07 |
| 10. | 5.82 |
| 13. | 12.0 |
| 16. | 19.1 |
| 20. | 34.9 |
| 25. | 76.3 |
| 30. | 129. |
| 34.13 (max) | 205. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.41 (min) | 0.866 |
| 3.5 | 0.933 |
| 4. | 1.40 |
| 5. | 2.86 |
| 6. | 5.04 |
| 7. | 7.65 |
| 8. | 11.5 |
| 9. | 16.6 |
| 9.17 (max) | 17.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.61 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.94 | 0. .5 .8 1.25 2. |

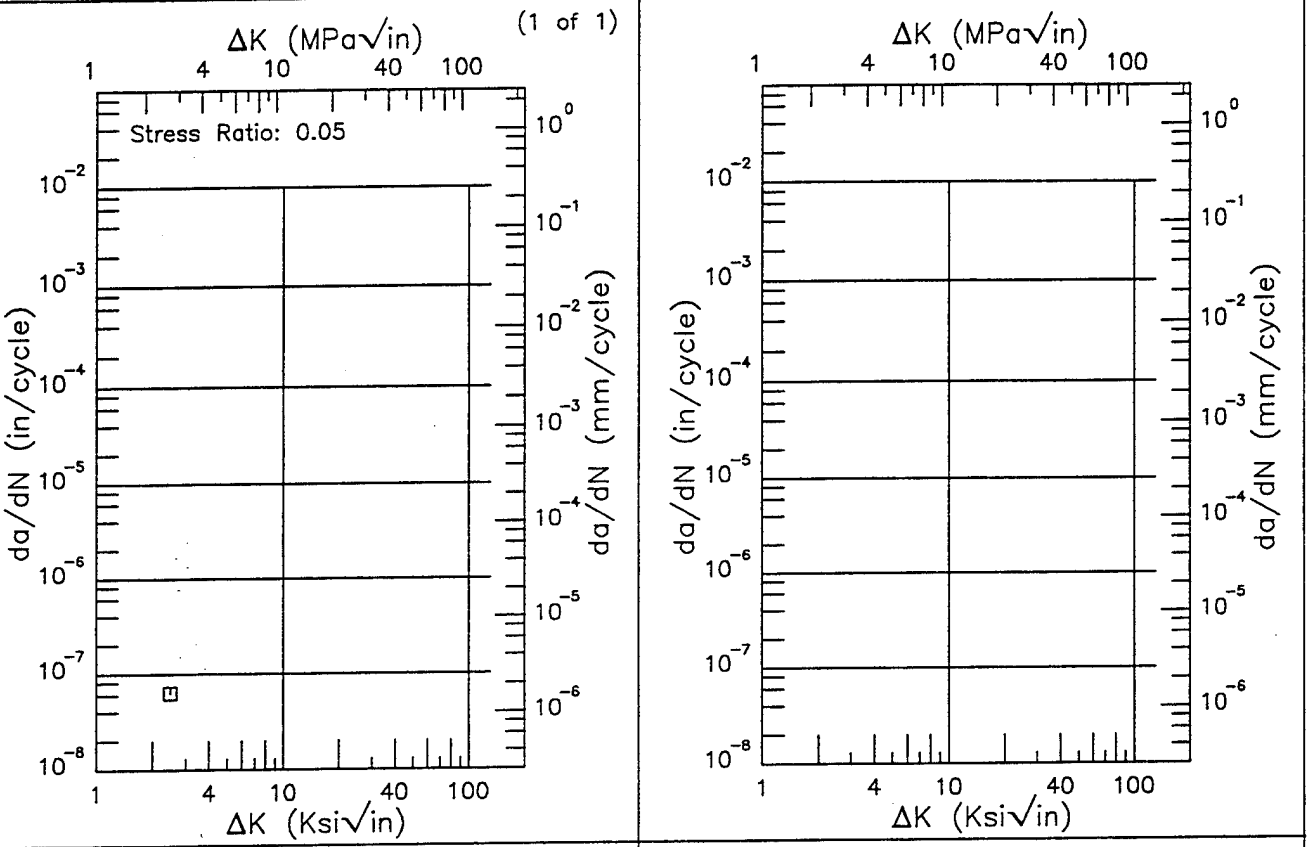
**Figure 8.19.3.1.94**

7475

R

Condition/Ht: T7651
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: DIST WATER; RT

Yield Strength: 69.3 ksi
Ult. Strength:
Specimen Thk: 0.248 in.
Specimen Width: 2.002 in.
Ref: DA005

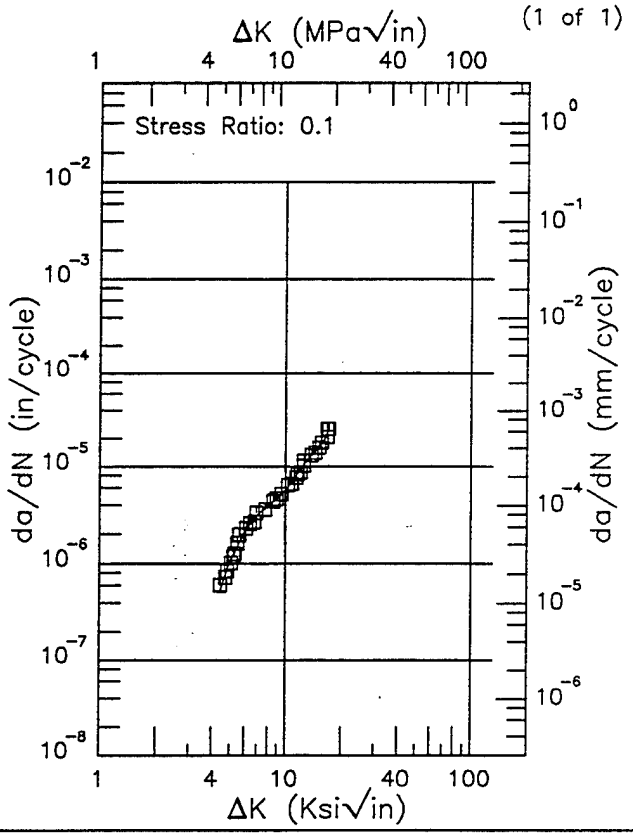


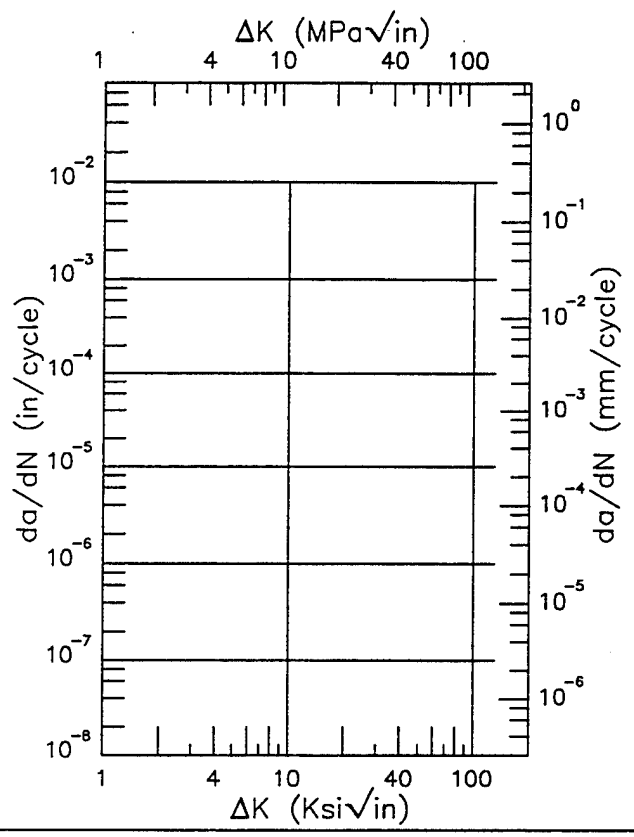

| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.95**

Condition/Ht: T7651
Form: 1 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 20 Hz
Environment: DRY AIR; RT

Yield Strength:
Ult. Strength:
Specimen Thk:
Specimen Width:
Ref: 91332




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.44 (min) | 0.529 |
| 5. | 1.04 |
| 6. | 2.13 |
| 7. | 3.10 |
| 8. | 3.89 |
| 9. | 4.66 |
| 10. | 5.63 |
| 13. | 11.6 |
| 16. | 18.5 |
| 16.94 (max) | 24.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.56 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.96**

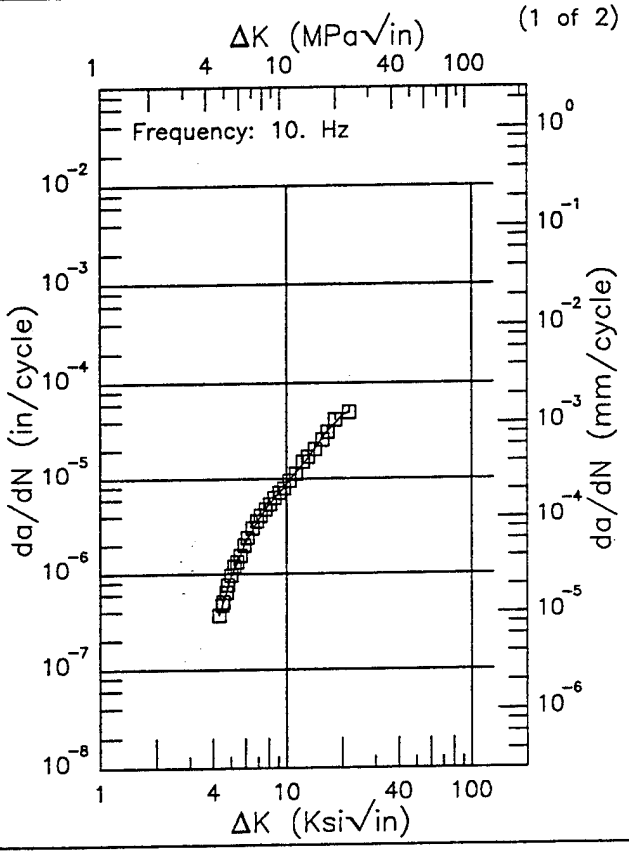
7475

F

Condition/Ht: T7651
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.4
Environment: LAB AIR; RT

Yield Strength: 69.3 ksi
Ult. Strength:
Specimen Thk: 0.247 in.
Specimen Width: 2.003 in.
Ref: DA005

(1 of 2)



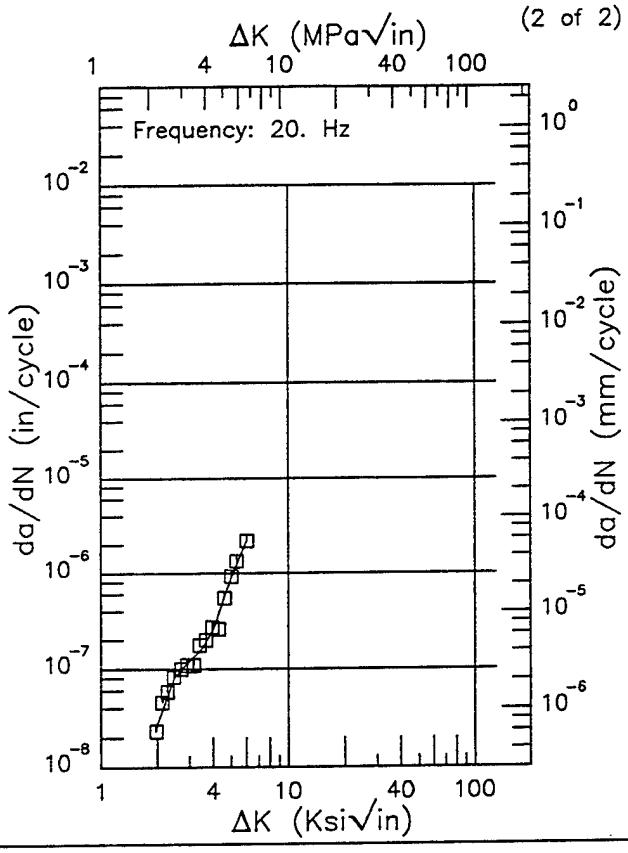

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.31 (min) | 0.371 |
| 5. | 0.929 |
| 6. | 2.17 |
| 7. | 3.70 |
| 8. | 5.33 |
| 9. | 7.03 |
| 10. | 8.86 |
| 13. | 16.3 |
| 16. | 29.2 |
| 20. | 46.9 |
| 21.54 (max) | 50.0 |

| RMS % Error |
|---|
| 3.72 |

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.97 (min) | 0.0241 |
| 2. | 0.0277 |
| 2.5 | 0.0847 |
| 3. | 0.121 |
| 3.5 | 0.163 |
| 4. | 0.254 |
| 5. | 0.883 |
| 6. | 2.14 |
| 6.05 (max) | 2.17 |

| RMS % Error |
|---|
| 12.32 |

Life Prediction Ratio Summary

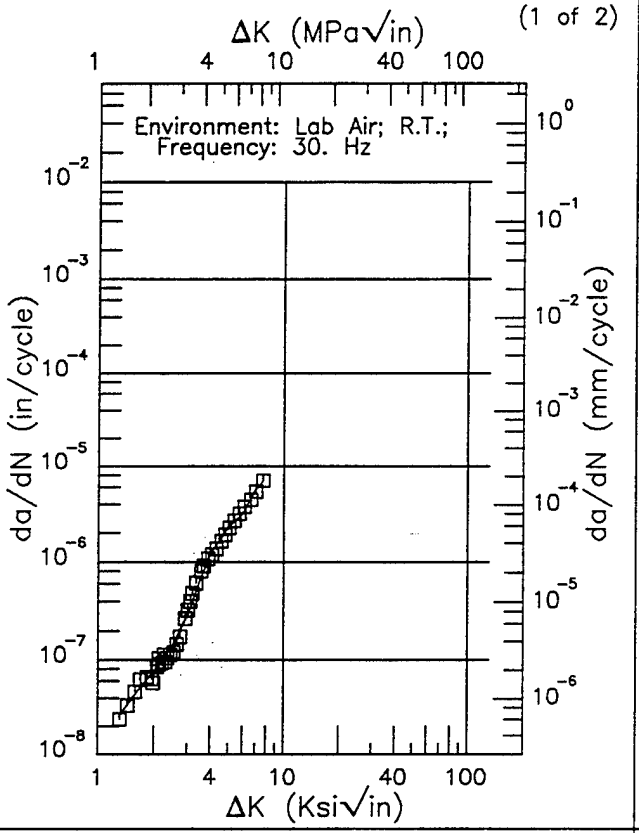
0. .5 .8 1.25 2.

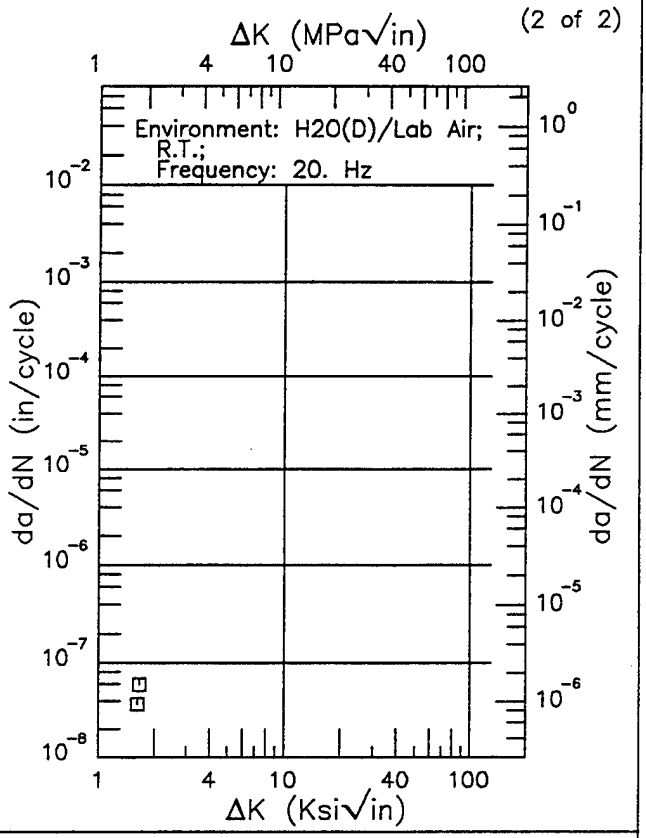
**Figure 8.19.3.1.97**

7475 EF

Condition/Ht: T7651
Form: 0.75 in. Plate
Specimen Type: CT
Orientation: L–T
Stress Ratio: 0.8

Yield Strength: 67.7 – 69.3 ksi
Ult. Strength:
Specimen Thk: 0.248 in.
Specimen Width: 2.003 in.
Ref: DA005




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.31 (min) | 0.0254 |
| 1.6 | 0.0449 |
| 2. | 0.0757 |
| 2.5 | 0.140 |
| 3. | 0.289 |
| 3.5 | 0.631 |
| 4. | 1.20 |
| 5. | 2.25 |
| 6. | 3.18 |
| 7. | 5.62 |
| 7.66 (max) | 6.84 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.88 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.98**

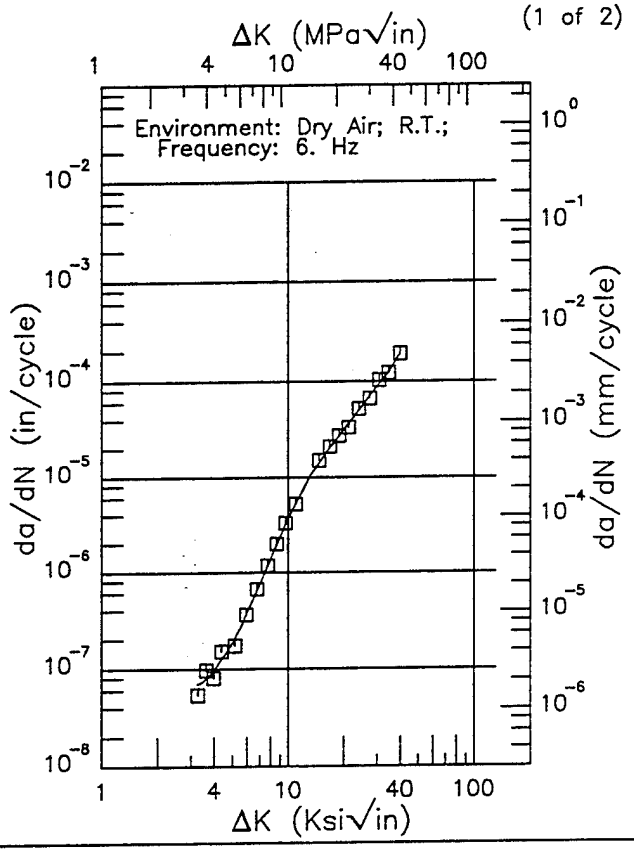
7475

EF

Condition/Ht: T7651
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: –0.2

Yield Strength: 70.6 ksi
Ult. Strength: 78.1 ksi
Specimen Thk: 0.2 – 0.202 in.
Specimen Width: 6.007 – 6.009 in.
Ref: GD006

(1 of 2)



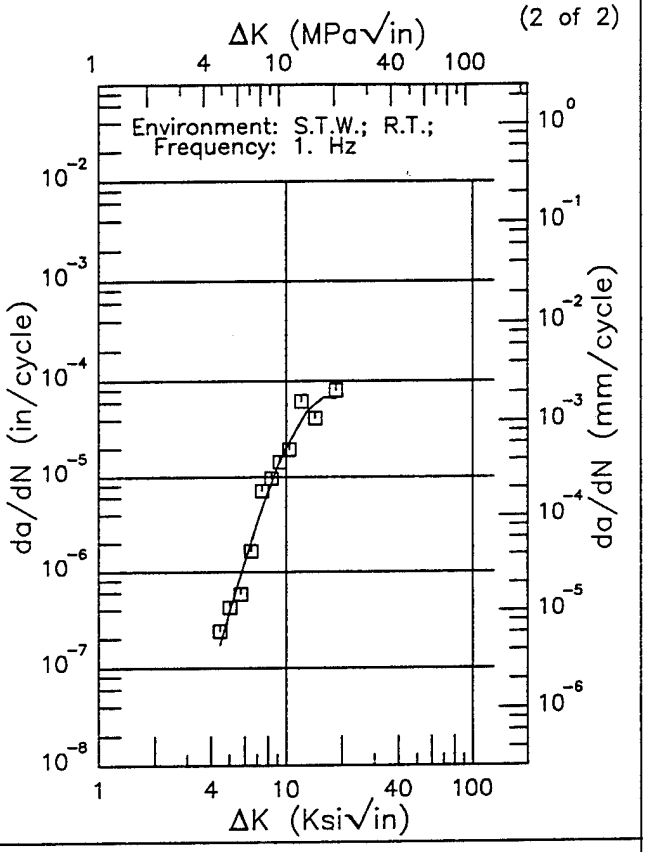

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.26 (min) | 0.0696 |
| 3.5 | 0.0746 |
| 4. | 0.0950 |
| 5. | 0.185 |
| 6. | 0.379 |
| 7. | 0.748 |
| 8. | 1.38 |
| 9. | 2.35 |
| 10. | 3.73 |
| 13. | 10.1 |
| 16. | 18.2 |
| 20. | 31.5 |
| 25. | 55.9 |
| 30. | 89.0 |
| 35. | 128. |
| 39.76 (max) | 187. |

RMS % Error
10.46

Life Prediction Ratio Summary

0. .5 .8 1.25 2.

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.45 (min) | 0.173 |
| 5. | 0.382 |
| 6. | 1.26 |
| 7. | 3.27 |
| 8. | 6.97 |
| 9. | 12.7 |
| 10. | 20.5 |
| 13. | 49.3 |
| 16. | 67.8 |
| 18.59 (max) | 66.7 |

RMS % Error
32.97

Life Prediction Ratio Summary

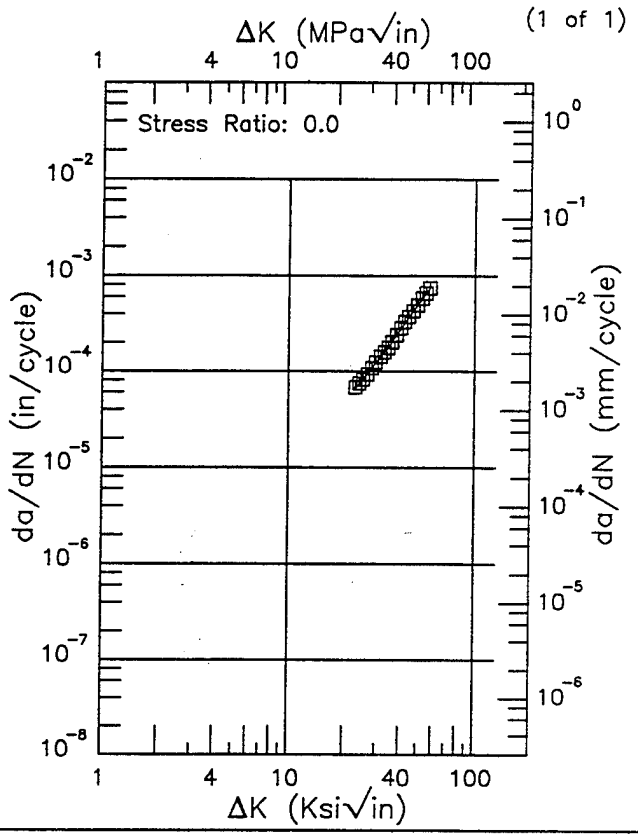
0. .5 .8 1.25 2.

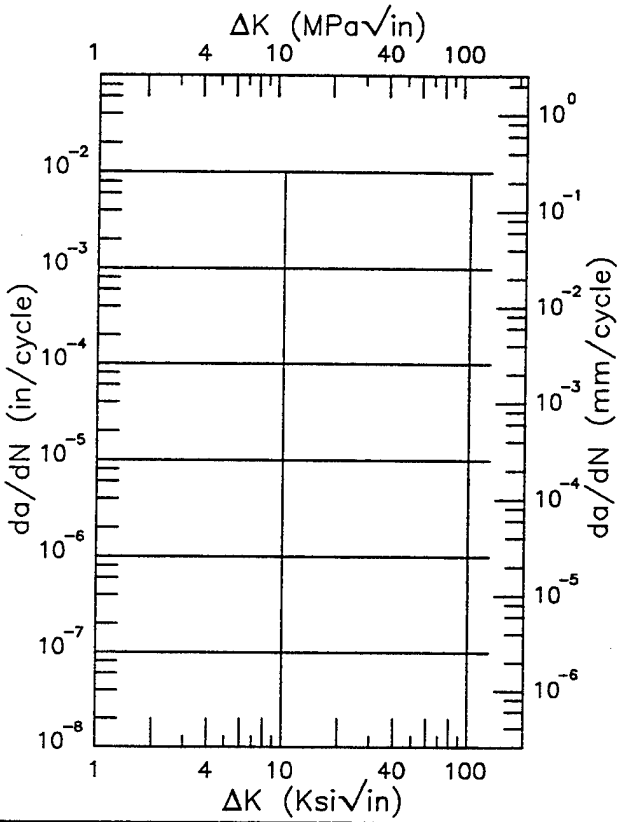
**Figure 8.19.3.1.99**

7475 R

Condition/Ht: T7651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 3 Hz
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.253 in.
Specimen Width: 12.011 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 22.80 (min) | 65.4 |
| 25. | 81.3 |
| 30. | 125. |
| 35. | 188. |
| 40. | 277. |
| 50. | 512. |
| 57.35 (max) | 745. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.49 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

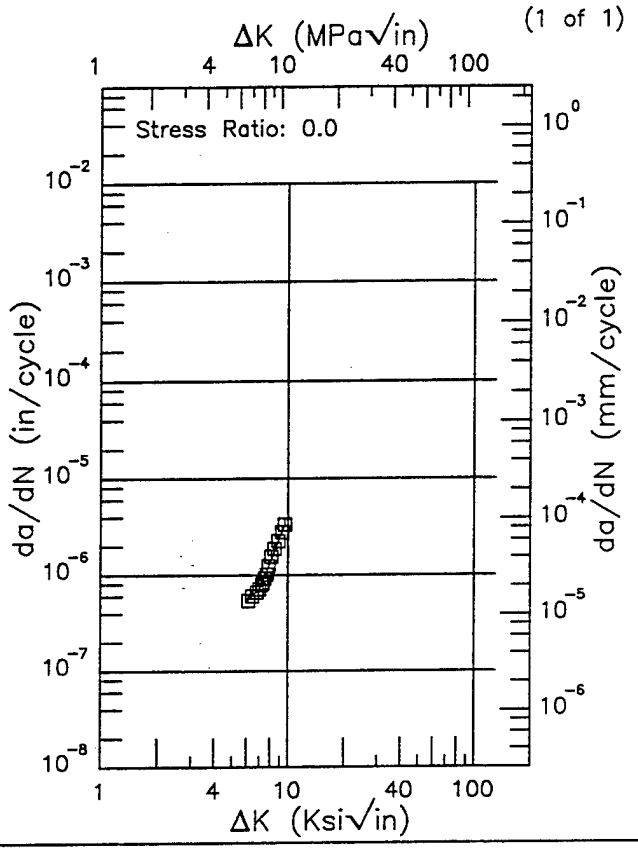
**Figure 8.19.3.1.100**

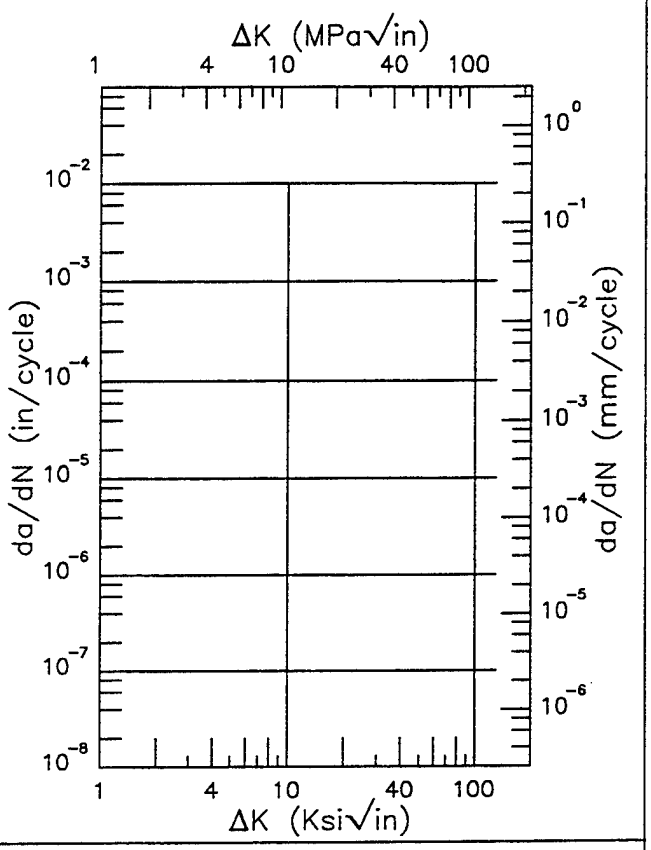
7475

R

Condition/Ht: T7651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 30 Hz
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.252 in.
Specimen Width: 3.998 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.12 (min) | 0.561 |
| 7. | 0.716 |
| 8. | 1.33 |
| 9. | 2.47 |
| 9.55 (max) | 3.22 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.52 | 0. .5 .8 1.25 2. |

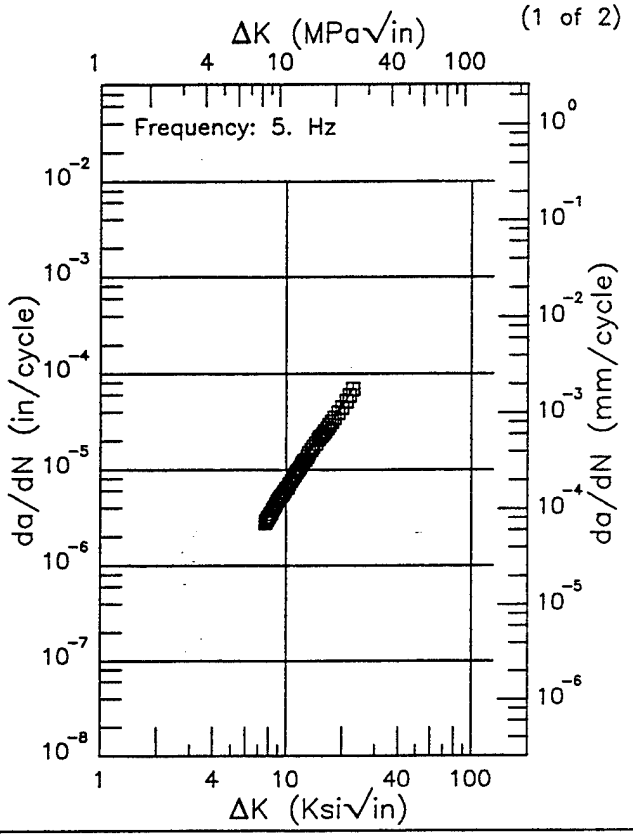
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.101**

Condition/Ht: T7651
Form: 0.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.05
Environment: LAB AIR; RT

Yield Strength: 69 ksi
Ult. Strength:
Specimen Thk: 0.207 in.
Specimen Width: 12.009 in.
Ref: DA005

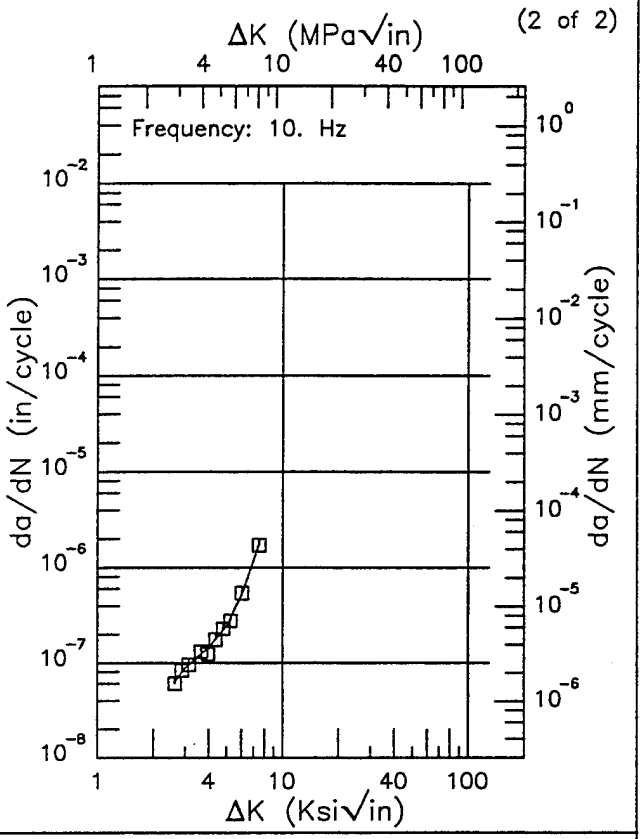
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.68 (min) | 2.80 |
| 8. | 3.21 |
| 9. | 4.70 |
| 10. | 6.47 |
| 13. | 14.0 |
| 16. | 24.9 |
| 20. | 44.8 |
| 22.59 (max) | 68.0 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.30 | 0. .5 .8 1.25 2. |

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| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.62 (min) | 0.0621 |
| 3. | 0.0883 |
| 3.5 | 0.117 |
| 4. | 0.145 |
| 5. | 0.244 |
| 6. | 0.517 |
| 7. | 1.19 |
| 7.43 (max) | 1.70 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.56 | 0. .5 .8 1.25 2. |

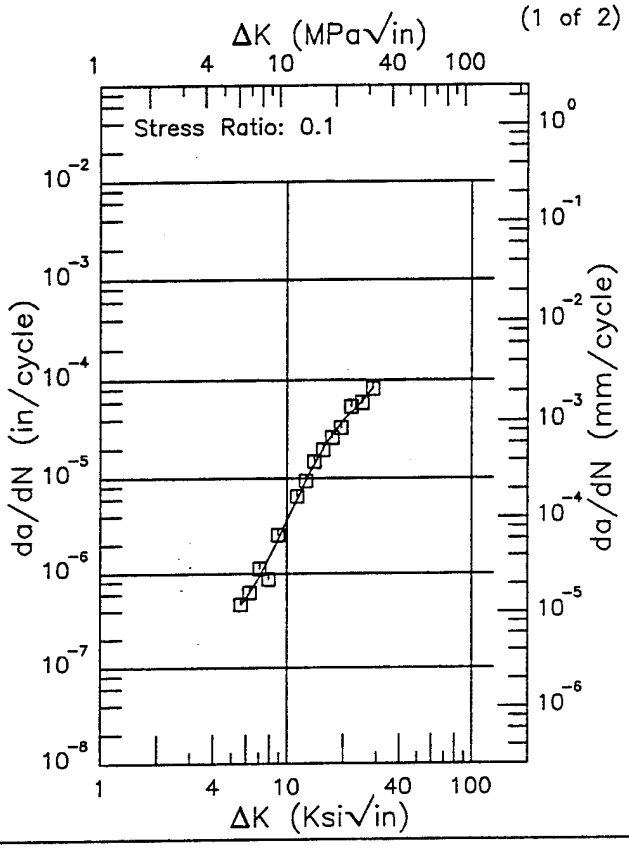
**Figure 8.19.3.1.102**

R 7475

Condition/Ht: T7651
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 6 Hz
Environment: DRY AIR; RT

Yield Strength: 70.6 ksi
Ult. Strength: 78.1 ksi
Specimen Thk: 0.2 – 0.201 in.
Specimen Width: 6.007 – 6.009 in.
Ref: GD006

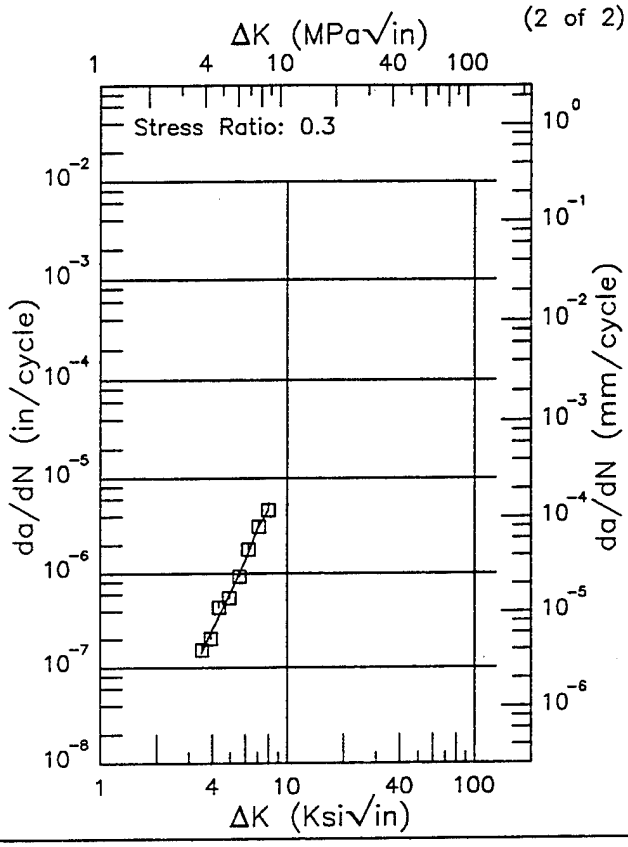
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.62 (min) | 0.470 |
| 6. | 0.552 |
| 7. | 0.889 |
| 8. | 1.46 |
| 9. | 2.34 |
| 10. | 3.64 |
| 13. | 10.7 |
| 16. | 22.2 |
| 20. | 39.0 |
| 25. | 60.3 |
| 28.70 (max) | 81.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.29 | 0. .5 .8 1.25 2. |

(2 of 2)



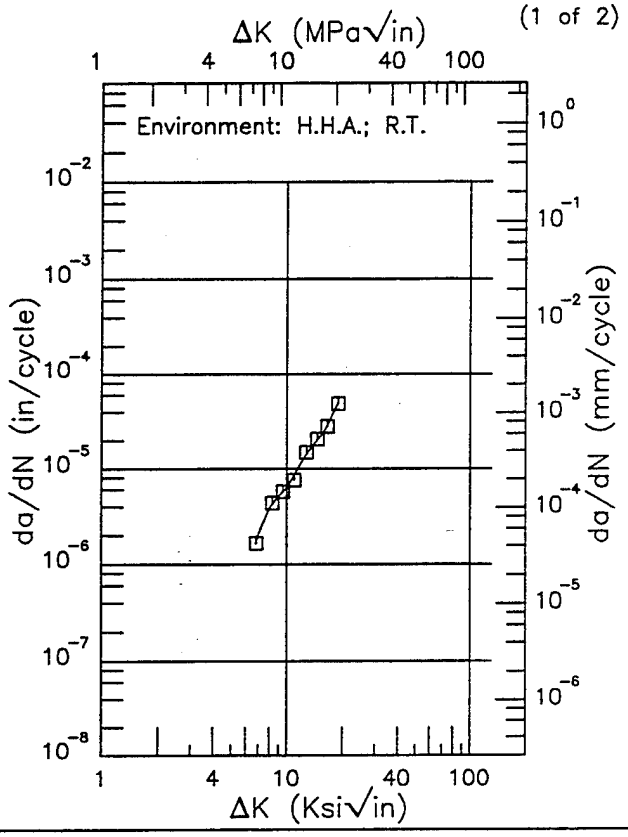

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.51 (min) | 0.141 |
| 4. | 0.253 |
| 5. | 0.612 |
| 6. | 1.37 |
| 7. | 2.97 |
| 7.94 (max) | 4.59 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.38 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.103**

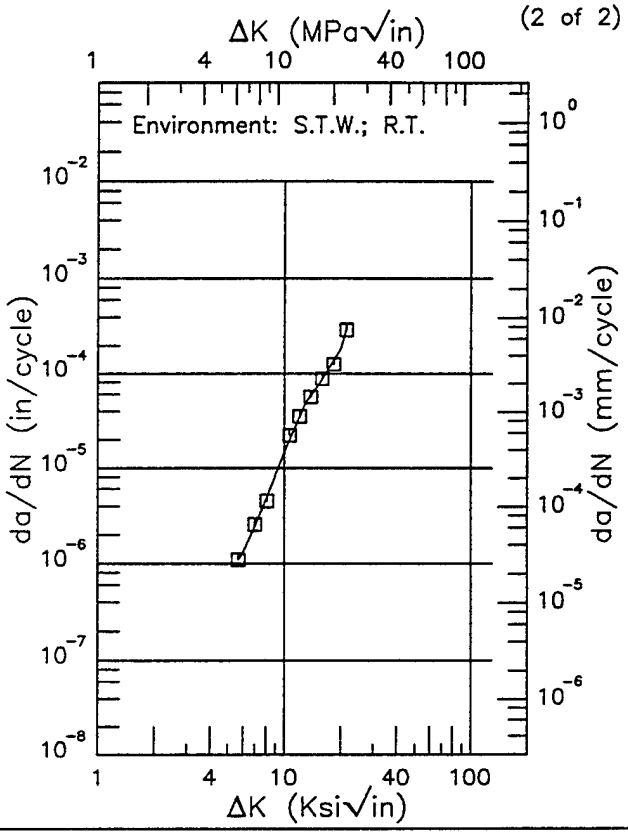
Condition/Ht: T7651
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.1
Frequency: 0.1 Hz

Yield Strength: 70.6 ksi
Ult. Strength: 78.1 ksi
Specimen Thk: 0.198 – 0.202 in.
Specimen Width: 6.006 – 6.007 in.
Ref: GD006




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 6.80 (min) | 1.65 |
| 7. | 2.04 |
| 8. | 3.88 |
| 9. | 5.16 |
| 10. | 6.27 |
| 13. | 15.2 |
| 16. | 25.7 |
| 18.72 (max) | 48.2 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.61 | 0. .5 .8 1.25 2. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.69 (min) | 1.11 |
| 6. | 1.30 |
| 7. | 2.42 |
| 8. | 4.64 |
| 9. | 8.60 |
| 10. | 14.9 |
| 13. | 48.7 |
| 16. | 86.7 |
| 20. | 186. |
| 21.30 (max) | 290. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.68 | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.104**

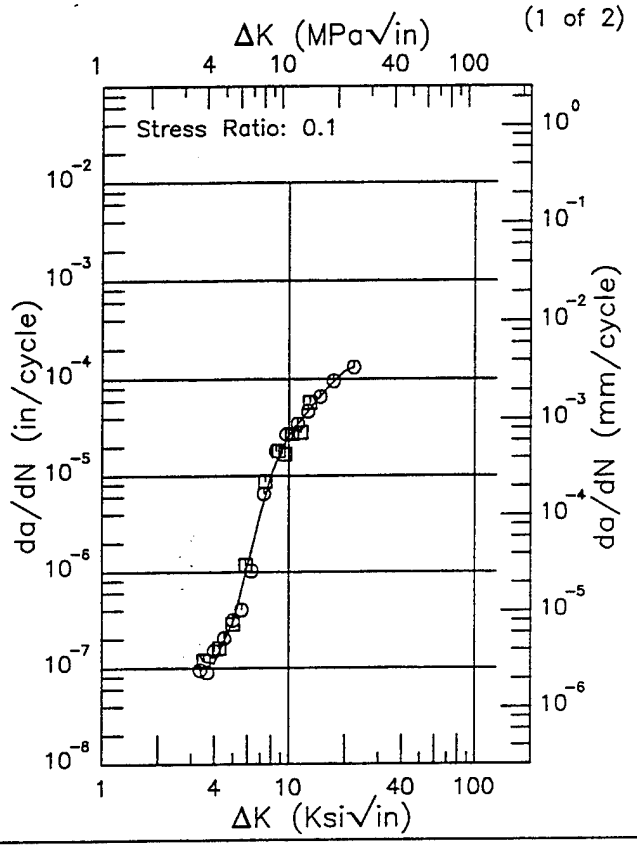
7475

R

Condition/Ht: T7651
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 1 Hz
Environment: S.T.W.; RT

Yield Strength: 70.6 ksi
Ult. Strength: 78.1 ksi
Specimen Thk: 0.202 – 0.206 in.
Specimen Width: 6.005 – 6.011 in.
Ref: GD006

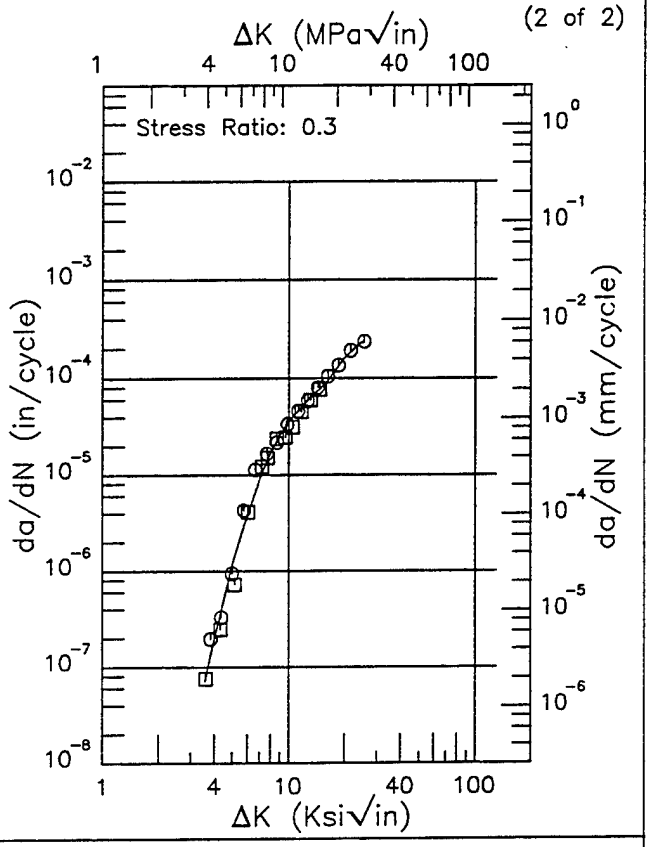
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.34 (min) | 0.141 |
| 3.5 | 0.119 |
| 4. | 0.113 |
| 5. | 0.301 |
| 6. | 1.18 |
| 7. | 4.01 |
| 8. | 10.0 |
| 9. | 18.1 |
| 10. | 26.4 |
| 13. | 50.2 |
| 16. | 80.5 |
| 20. | 122. |
| 22.11 (max) | 131. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 21.91 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.58 (min) | 0.0716 |
| 4. | 0.197 |
| 5. | 1.16 |
| 6. | 3.88 |
| 7. | 9.07 |
| 8. | 16.7 |
| 9. | 26.2 |
| 10. | 36.3 |
| 13. | 62.9 |
| 16. | 90.0 |
| 20. | 162. |
| 25. | 236. |
| 25.47 (max) | 232. |

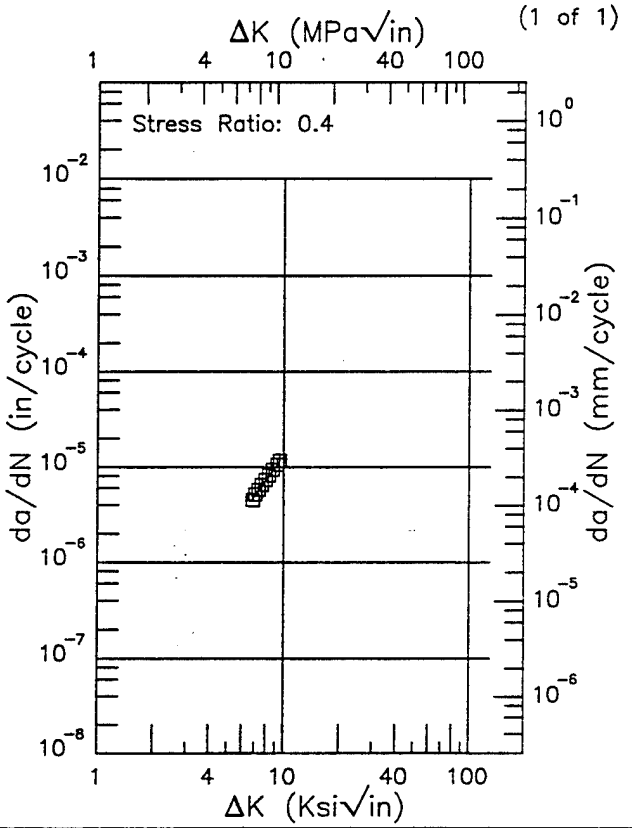
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 24.14 | 0. .5 .8 1.25 2. |

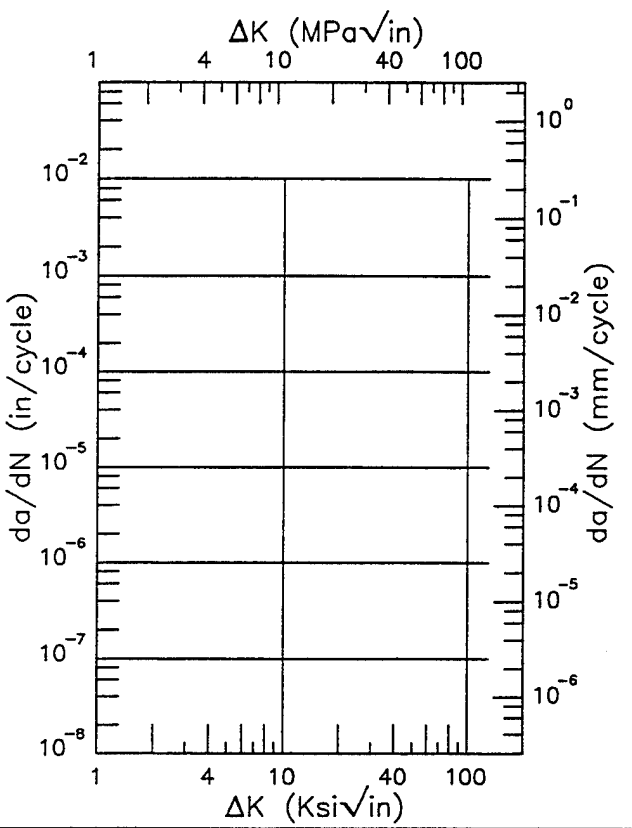
**Figure 8.19.3.1.105**

7475 R

Condition/Ht: T7651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 30 Hz
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.252 in.
Specimen Width: 3.998 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.82 (min) | 4.48 |
| 7. | 4.94 |
| 8. | 7.33 |
| 9. | 10.0 |
| 9.50 (max) | 11.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 0.71 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.19.3.1.106**

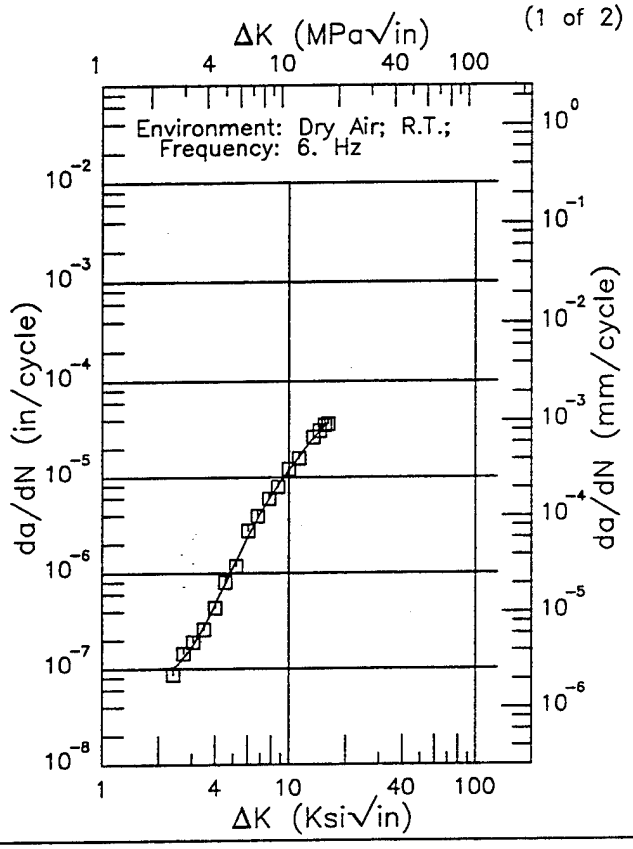
7475

EF

Condition/Ht: T7651
Form: 0.5 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.5

Yield Strength: 70.6 ksi
Ult. Strength: 78.1 ksi
Specimen Thk: 0.198 – 0.203 in.
Specimen Width: 6.005 – 6.009 in.
Ref: GD006

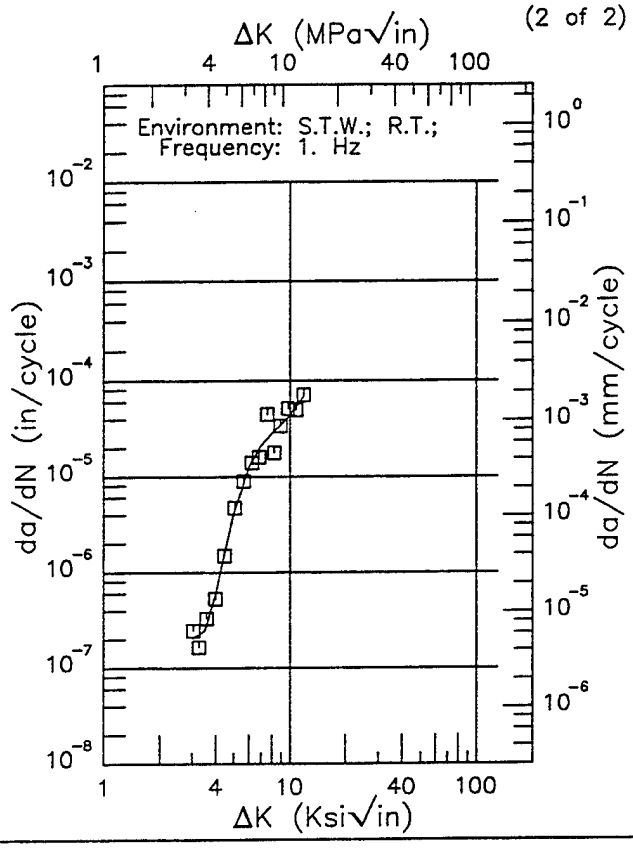
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.38 (min) | 0.101 |
| 2.5 | 0.110 |
| 3. | 0.169 |
| 3.5 | 0.279 |
| 4. | 0.461 |
| 5. | 1.14 |
| 6. | 2.38 |
| 7. | 4.17 |
| 8. | 6.37 |
| 9. | 8.92 |
| 10. | 11.8 |
| 13. | 23.6 |
| 15.98 (max) | 36.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.81 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.02 (min) | 0.205 |
| 3.5 | 0.249 |
| 4. | 0.592 |
| 5. | 4.07 |
| 6. | 12.6 |
| 7. | 21.4 |
| 8. | 28.4 |
| 9. | 35.1 |
| 10. | 44.8 |
| 11.88 (max) | 69.1 |

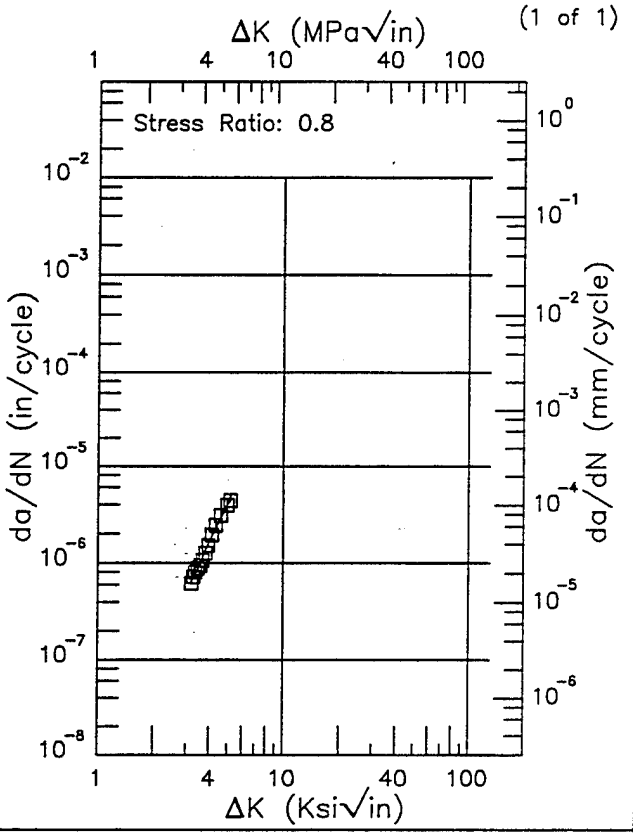
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 26.02 | 0. .5 .8 1.25 2. |

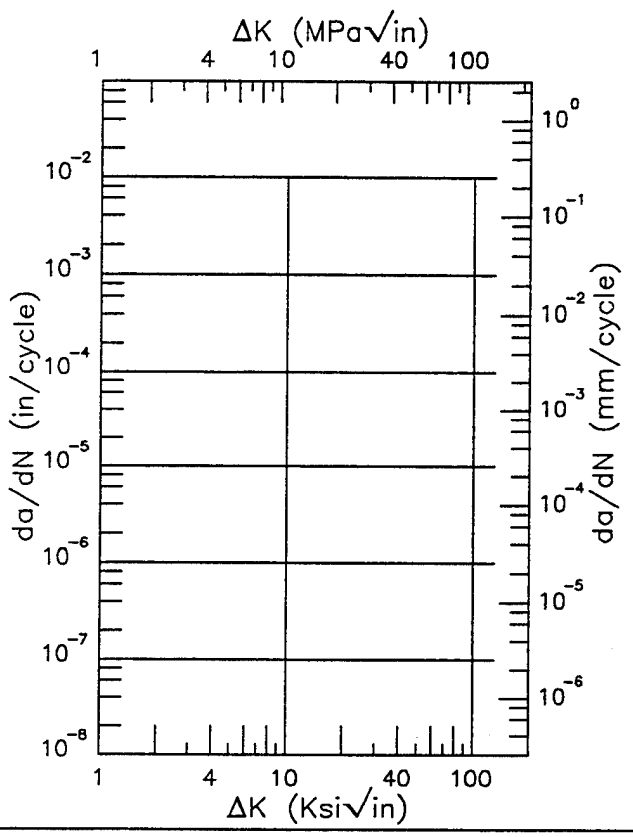
**Figure 8.19.3.1.107**

7475 R

Condition/Ht: T7651
Form: 0.25 in. Plate
Specimen Type: CCP (max stress specified)
Orientation: L–T
Frequency: 10 Hz
Environment: LAB AIR; RT

Yield Strength: 67.6 ksi
Ult. Strength:
Specimen Thk: 0.251 in.
Specimen Width: 4.002 in.
Ref: DA001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.18 (min) | 0.618 |
| 3.5 | 0.909 |
| 4. | 1.69 |
| 5. | 4.04 |
| 5.14 (max) | 4.31 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.16 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

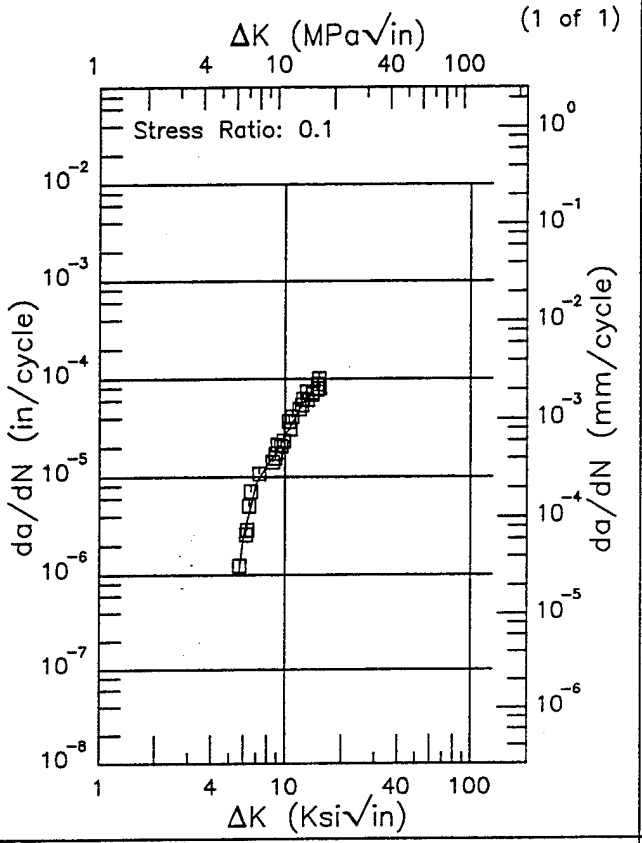
**Figure 8.19.3.1.108**

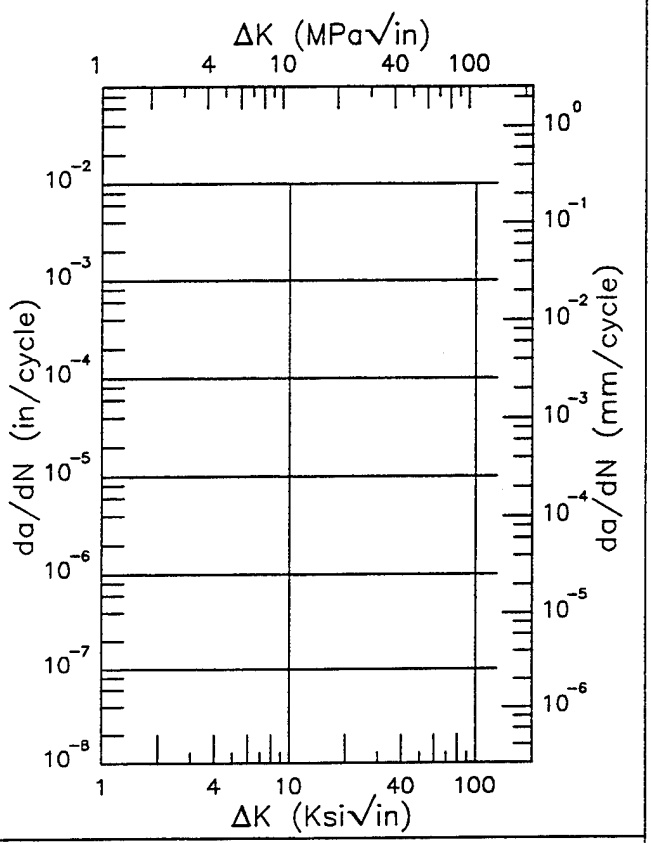
7475

R

Condition/Ht: T7651
Form: 1 in. Plate
Specimen Type:
Orientation:
Frequency: 1 Hz
Environment: 3.5% NACL; RT

Yield Strength:
Ult. Strength:
Specimen Thk:
Specimen Width:
Ref: 91332




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.68 (min) | 1.06 |
| 6. | 2.45 |
| 7. | 8.63 |
| 8. | 13.0 |
| 9. | 18.2 |
| 10. | 26.4 |
| 13. | 64.8 |
| 15.14 (max) | 93.7 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.76 | 0. .5 .8 1.25 2. |

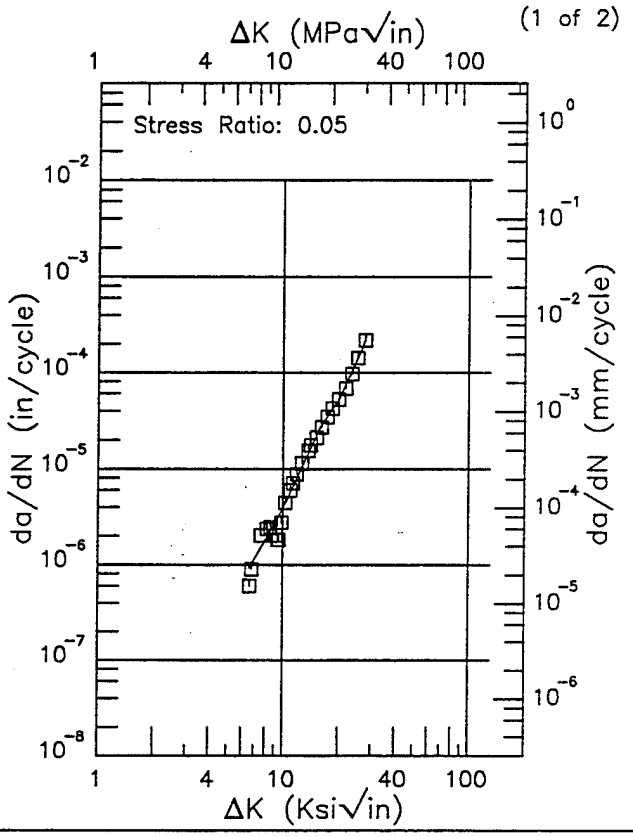
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

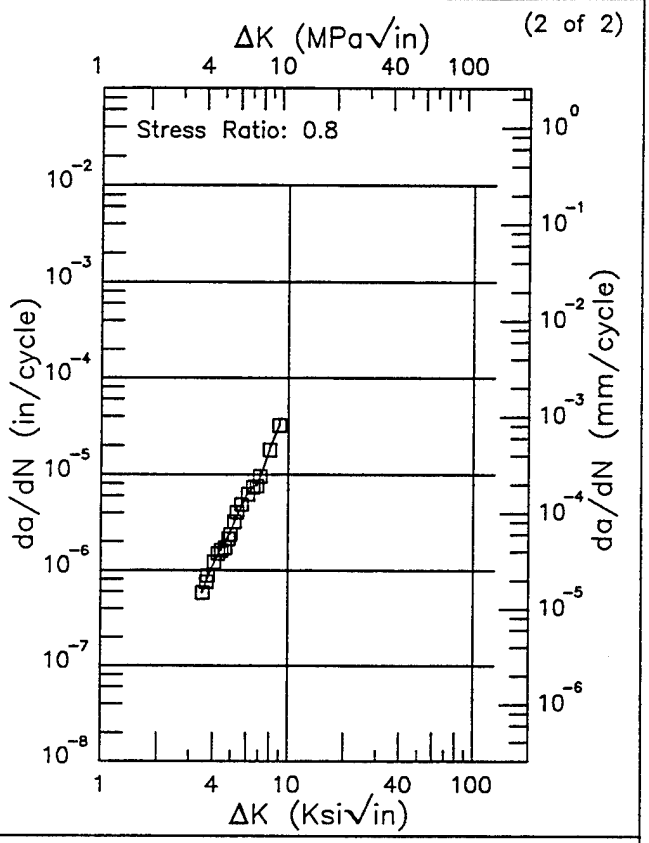
**Figure 8.19.3.1.109**

7475 R

Condition/Ht: T7651; 255F 4HR
Form: 1.75 in. Plate
Specimen Type: CT
Orientation: L–T
Frequency: 1 Hz
Environment: DIST WATER; RT

Yield Strength: 68.3 ksi
Ult. Strength: 77.6 ksi
Specimen Thk: 0.249 – 0.25 in.
Specimen Width: 2.002 – 2.003 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.61 (min) | 0.919 |
| 7. | 1.13 |
| 8. | 1.78 |
| 9. | 2.68 |
| 10. | 3.91 |
| 13. | 11.7 |
| 16. | 28.4 |
| 20. | 51.7 |
| 25. | 139. |
| 27.61 (max) | 217. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.51 (min) | 0.583 |
| 4. | 1.14 |
| 5. | 2.62 |
| 6. | 6.18 |
| 7. | 8.74 |
| 8. | 18.5 |
| 8.93 (max) | 31.8 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.81 | 0. .5 .8 1.25 2. |

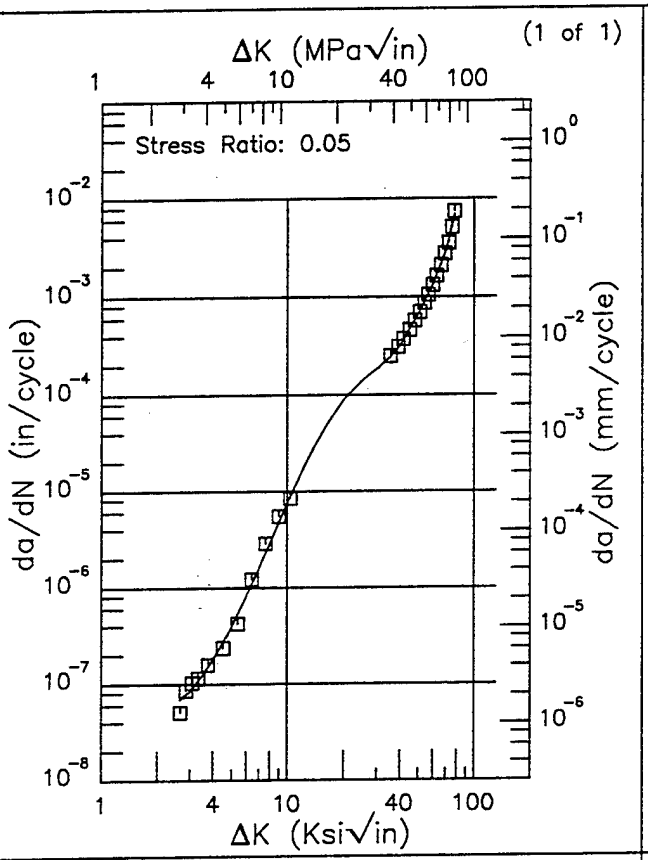
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.31 | 0. .5 .8 1.25 2. |

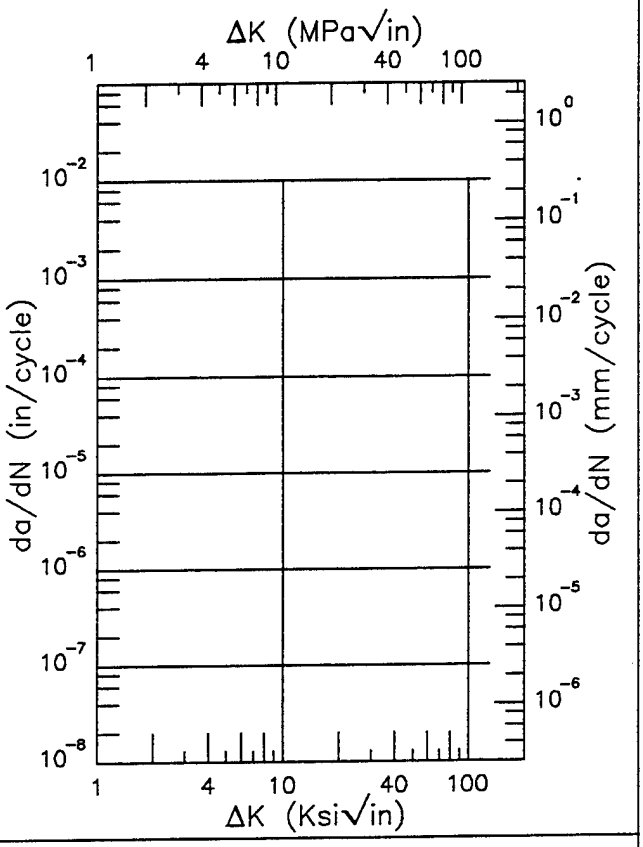
**Figure 8.19.3.1.110**

R 7475

Condition/Ht: T7651; 255F 4HR
Form: 1.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 8 Hz
Environment: LAB AIR; RT

Yield Strength: 68.3 ksi
Ult. Strength: 77.6 ksi
Specimen Thk: 0.199 in.
Specimen Width: 11.754 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.66 (min) | 0.0693 |
| 3. | 0.0847 |
| 4. | 0.179 |
| 5. | 0.394 |
| 6. | 0.820 |
| 7. | 1.59 |
| 8. | 2.85 |
| 9. | 4.79 |
| 10. | 7.59 |
| 16. | 47.4 |
| 20. | 90.4 |
| 30. | 185. |
| 40. | 323. |
| 60. | 1359. |
| 78.06 (max) | 6927. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.55 | 0. .5 .8 1.25 2. |

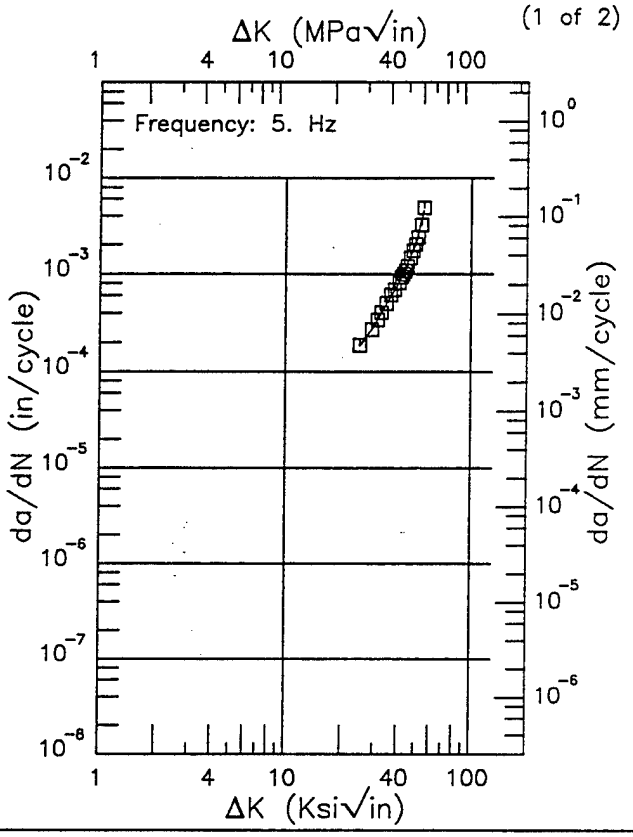
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

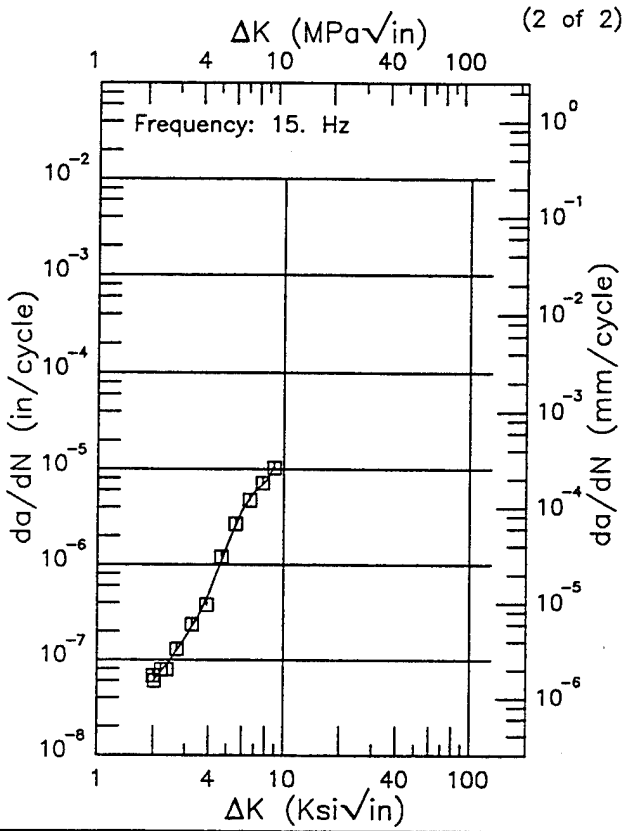
**Figure 8.19.3.1.111**

7475 F

Condition/Ht: T7651; 255F 4HR
Form: 1.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Stress Ratio: 0.4
Environment: LAB AIR; RT

Yield Strength: 68.3 ksi
Ult. Strength: 77.6 ksi
Specimen Thk: 0.201 in.
Specimen Width: 11.755 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 24.86 (min) | 185. |
| 25. | 186. |
| 30. | 304. |
| 35. | 505. |
| 40. | 785. |
| 50. | 2015. |
| 55.09 (max) | 4556. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.99 (min) | 0.0585 |
| 2. | 0.0591 |
| 2.5 | 0.102 |
| 3. | 0.170 |
| 3.5 | 0.285 |
| 4. | 0.492 |
| 5. | 1.53 |
| 6. | 3.69 |
| 7. | 5.76 |
| 8. | 7.36 |
| 8.86 (max) | 10.3 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.75 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.07 | 0. .5 .8 1.25 2. |

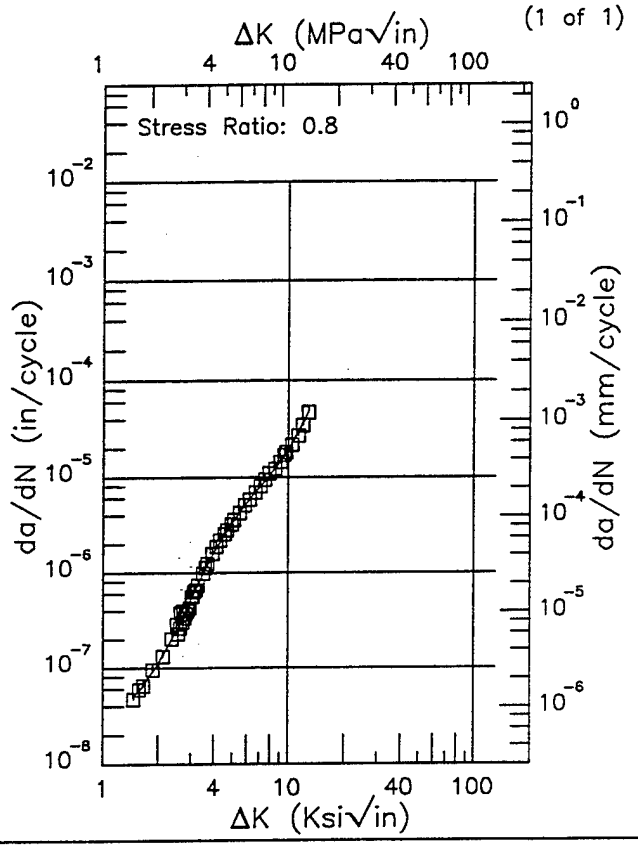
**Figure 8.19.3.1.112**

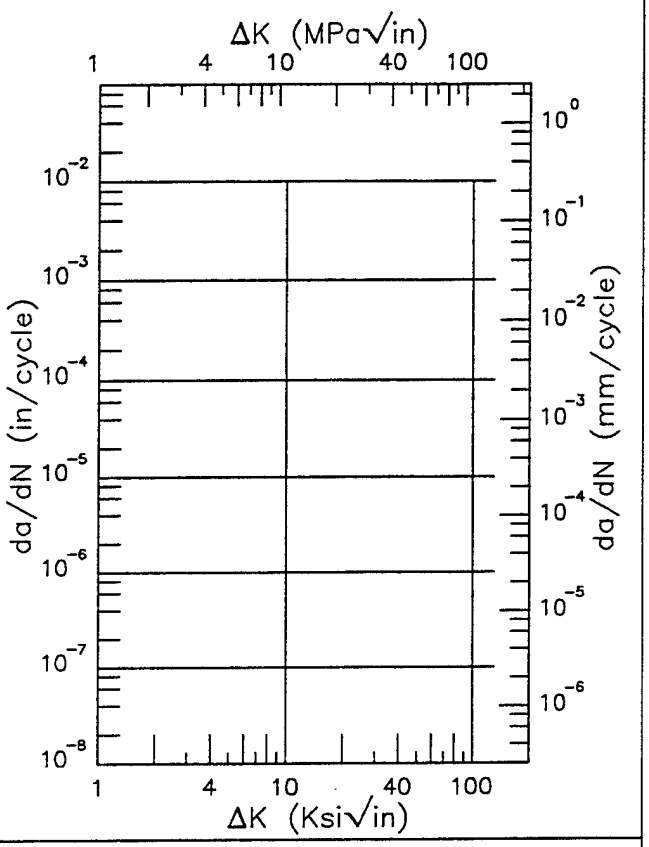
7475

R

Condition/Ht: T7651; 255F 4HR
Form: 1.75 in. Plate
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 10 – 15 Hz
Environment: LAB AIR; RT

Yield Strength: 68.3 ksi
Ult. Strength: 77.6 ksi
Specimen Thk: 0.2 in.
Specimen Width: 11.755 in.
Ref: DA004




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.46 (min) | 0.0508 |
| 1.6 | 0.0596 |
| 2. | 0.109 |
| 2.5 | 0.249 |
| 3. | 0.526 |
| 3.5 | 0.986 |
| 4. | 1.64 |
| 5. | 3.34 |
| 6. | 5.36 |
| 7. | 7.76 |
| 8. | 10.7 |
| 9. | 14.5 |
| 10. | 19.1 |
| 12.78 (max) | 46.6 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.83 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

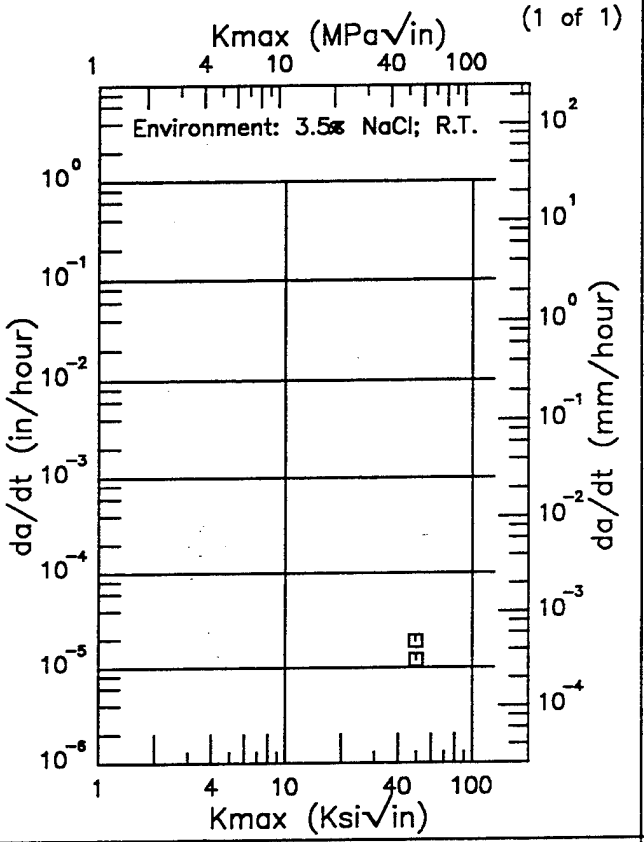
**Figure 8.19.3.1.113**

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7475

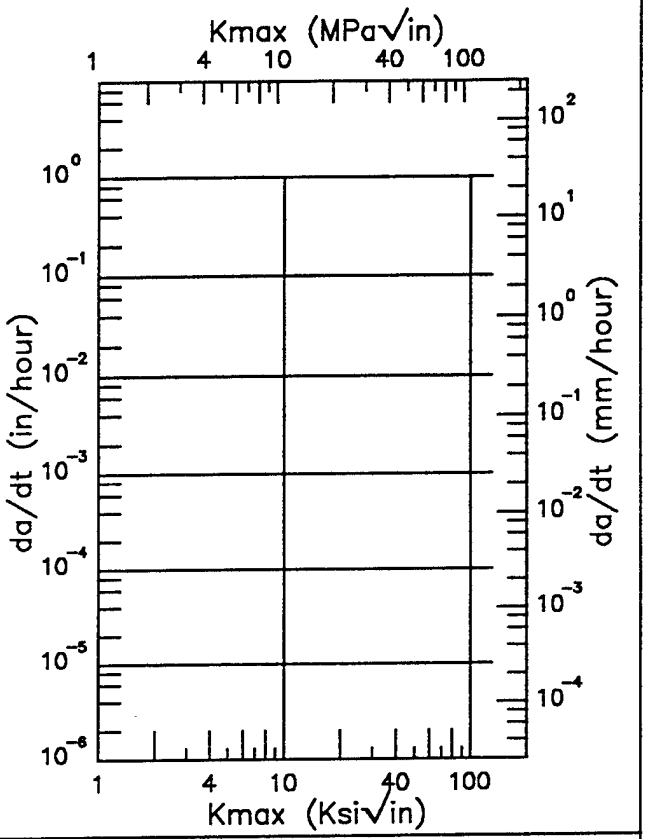
Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CNT
Orientation: L–T
Yield Strength: 59.8 ksi
Ult. Strength:

Specimen Thk: 0.04 in.
Specimen Width: 12 in.
$A_o$:
$K_{Iscc}$:
Ref: 86212




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

RMS % Error




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

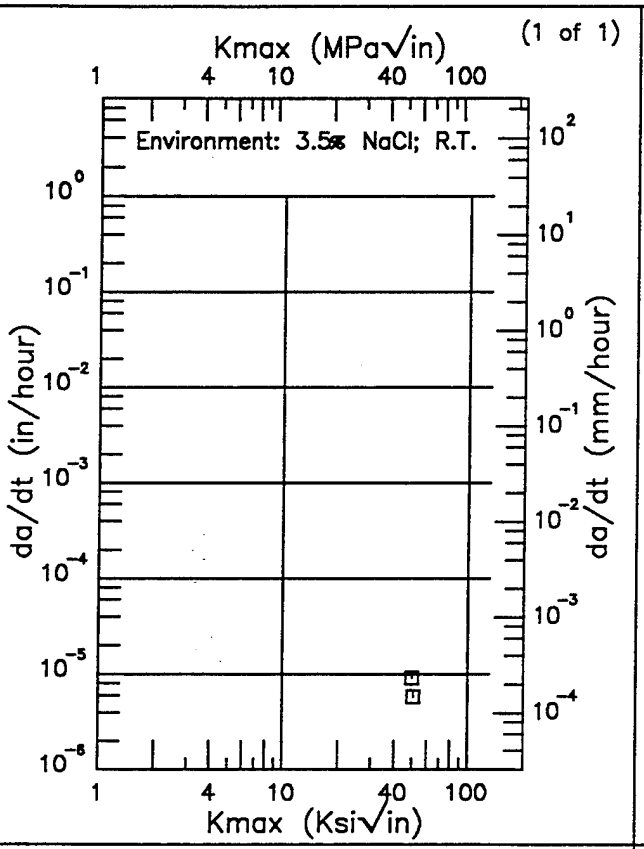
RMS % Error

**Figure 8.19.3.2.1**

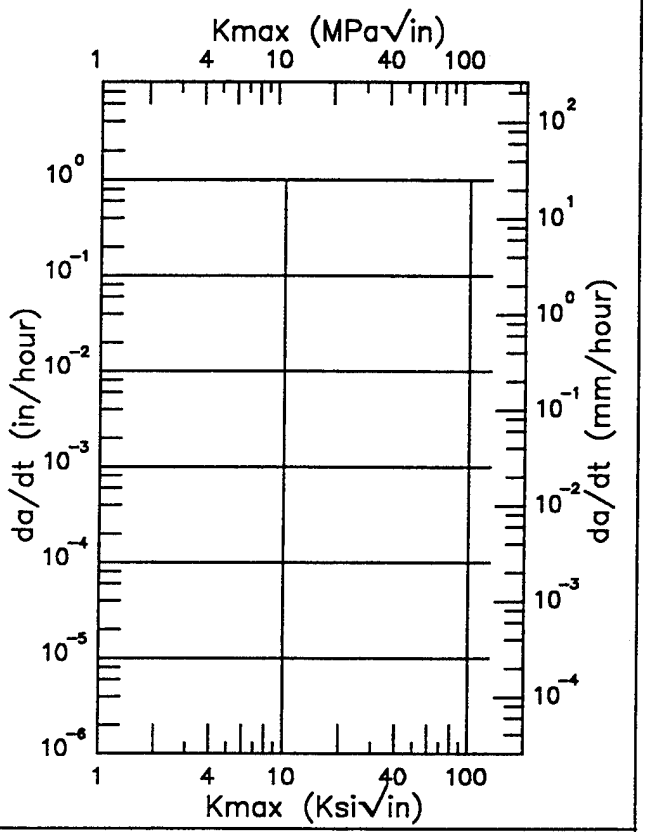
7475

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CNT
Orientation: T–L
Yield Strength: 59.9 ksi
Ult. Strength:

Specimen Thk: 0.04 in.
Specimen Width: 12 in.
$A_O$:
$K_{Iscc}$:
Ref: 86212




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)




Kmax (Ksi√in) da/dt ($10^{-3}$in/hour)

| RMS % Error | | RMS % Error | |
|---|---|---|---|

**Figure 8.19.3.2.2**

# TABLE 8.19.3.3



## $K_{Iscc}$ SUMMARY FOR ALUMINUM ALLOY 7475

| Condition/ Heat Treat | Prod Form | Test Temp (°F) | Spec Or. | Yield Str (Ksi) | Envir. | Specimen | | | Prod Thk (in) | Crack (in) | $K_Q$ (Ksi√in) | $K_{Iscc}$ (Ksi√in) | Test Time (min) | Test Date | Refer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Design | Width (in) | Thick (in) | | | | | | | |
| T7351 | P | R.T. | L-T | 59.5 | 3.5% NaCl | BWOL | 5.11 | 2.502 | 3 | 2.2 | --- | >37.5 | 112020 | 1978 | GD006 |
| | | | | | | BWOL | 5.097 | 2.503 | 3 | 2.18 | --- | >42.7 | 112020 | 1978 | GD006 |
| | | | | | S.T.W. | BWOL | 5.093 | 2.5 | 3 | 2.18 | --- | >38.6 | 112020 | 1978 | GD006 |
| | | | | | | BWOL | 5.093 | 2.503 | 3 | 2.23 | --- | >42.7 | 112020 | 1978 | GD006 |
| | | | | 62 | JP-4 Fuel | BWOL | 3.087 | 1.252 | 1.25 | 1.38 | --- | >35 | 195840 | 1977 | MA005 |
| | | | | | | BWOL | 3.093 | 1.255 | 1.25 | 1.38 | --- | >35.2 | 195840 | 1977 | MA005 |
| | | | | | Sim. Sea Water | BWOL | 3.085 | 1.25 | 1.25 | 1.37 | --- | >35 | 195840 | 1977 | MA005 |
| | | | | | | BWOL | 3.084 | 1.254 | 1.25 | 1.36 | --- | >35.1 | 195840 | 1977 | MA005 |
| | | | T-L | 61.3 | 3.5% NaCl | BWOL | 5.102 | 2.503 | 3 | 2.06 | --- | >31.5 | 112020 | 1978 | GD006 |
| | | | | | | BWOL | 5.107 | 2.505 | 3 | 2.2 | --- | >33.8 | 112020 | 1978 | GD006 |
| | | | | | S.T.W. | BWOL | 5.119 | 2.502 | 3 | 2.18 | --- | >31.5 | 112020 | 1978 | GD006 |
| | | | | | | BWOL | 5.106 | 2.503 | 3 | 2.2 | --- | >34.1 | 112020 | 1978 | GD006 |
| | | | | 61.8 | JP-4 Fuel | BWOL | 3.082 | 1.253 | 1.25 | 1.36 | --- | >30.3 | 195840 | 1977 | MA005 |
| | | | | | | BWOL | 3.087 | 1.254 | 1.25 | 1.38 | --- | >30.6 | 195840 | 1977 | MA005 |
| | | | | | Sim. Sea Water | BWOL | 3.087 | 1.25 | 1.25 | 1.35 | --- | >30.7 | 195840 | 1977 | MA005 |
| | | | | | | BWOL | 3.087 | 1.25 | 1.25 | 1.37 | --- | >30.5 | 195840 | 1977 | MA005 |

# TABLE 8.19.3.3 (CONCLUDED)

## $K_{Iscc}$ SUMMARY FOR ALUMINUM ALLOY 7475

| Condition/ Heat Treat | Prod Form | Test Temp (°F) | Spec Or. | Yield Str (Ksi) | Envir. | Specimen | | | Prod Thk (in) | Crack (in) | $K_Q$ (Ksi√in) | $K_{Iscc}$ (Ksi√in) | Test Time (min) | Test Date | Refer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Design | Width (in) | Thick (in) | | | | | | | |
| T7351 (cont'd) | P (cont'd) | R.T. (cont'd) | S-L | 57.4 | 3.5% NaCl | BWOL | 2.554 | 1.093 | 3 | 1.11 | --- | >20.4 | 74400 | 1978 | GD006 |
| | | | | | | BWOL | 2.552 | 1.004 | 3 | 1.12 | --- | >30.6 | 68700 | 1978 | GD006 |
| | | | | | S.T.W. | BWOL | 2.545 | 1.004 | 3 | 1.11 | --- | >30.9 | 74400 | 1978 | GD006 |
| | | | | | | BWOL | 2.554 | 1.006 | 3 | 1.09 | --- | 26.6 | 74400 | 1978 | GD006 |
| T7651 | P | R.T. | L-T | 70.6 | S.T.W. | BWOL | 2.555 | 0.509 | 0.5 | 1.07 | --- | 35.1+ | 104820 | 1978 | GD006 |
| | | | | | | BWOL | 2.555 | 0.509 | 0.5 | 1.08 | --- | 30.9 | 104820 | 1978 | GD006 |
| | | | T-L | 70.8 | 3.5% NaCl | BWOL | 2.558 | 0.509 | 0.5 | 1.1 | --- | 35.7+ | 104820 | 1978 | GD006 |
| | | | | | | BWOL | 2.557 | 0.509 | 0.5 | 1.12 | --- | 35.7+ | 104820 | 1978 | GD006 |
| | | | | | S.T.W. | BWOL | 2.557 | 0.509 | 0.5 | 1.09 | --- | 34.5+ | 104820 | 1978 | GD006 |
| | | | | | | BWOL | 2.556 | 0.509 | 0.5 | 1.13 | --- | 30.8 | 104820 | 1978 | GD006 |

+ specimen thickness does not meet minimum requirements of $2.5\left(\frac{K_{Iscc}}{\sigma_{ys}}\right)^2$

## TABLE 8.20.1.2.1



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: 3.5% NaCl**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 105.87 | | |
| | | 0.25 | 2 | | | | 116.93 | | |
| T761 | SHEET | 0.05 | 2 | | | | 86.75 | | |
| | | 0.25 | 2 | | | | 126.28 | | |

## TABLE 8.20.1.2.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) ΔK *Level* (*Ksi/in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 37.17 | | |
| | | 0.25 | 2 | | | 13.34 | 69.6 | | |
| T761 | SHEET | 0.05 | 2 | | | | 30.89 | | |
| | | 0.05 | 2 | | | | 25.11 | | |
| | | 0.25 | 2 | | | 9.02 | 49.07 | | |
| | | 0.25 | 2 | | | 11.95 | 44.61 | | |

## TABLE 8.20.1.2.3



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0. | 13.3 | | | 5.6 | 33.04 | | |
| | | 0. | 13.3 | | | 6.37 | 31.76 | | |
| | | 0.33 | 13.3 | | | 10.71 | 52.97 | | |
| | | 0.33 | 13.3 | | | 12.36 | 57.7 | | |

## TABLE 8.20.1.2.4

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: 3.5% NaCl**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 103.65 | | |
| T761 | SHEET | 0.05 | 2 | | | | 90.2 | | |

## TABLE 8.20.1.2.5



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0.05 | 2 | | | | 45.09 | | |
| | | 0.05 | 2 | | | | | | |
| | | 0.05 | 2 | | | | 40.49 | | |
| | | 0.25 | 2 | | | 9.09 | 62.92 | | |
| | | 0.25 | 2 | | | 10.82 | 56.45 | | |
| T761 | SHEET | 0.05 | 2 | | | | 34.21 | | |
| | | 0.05 | 2 | | | | | 602.53 | |
| | | 0.25 | 2 | | | 10.31 | 54.57 | | |

## TABLE 8.20.1.2.6

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 7475 (ALCLAD) AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi√in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T61 | SHEET | 0. | 13.3 | | | 8.56 | 22.04 | | |
| | | 0.33 | 13.3 | | | 10.48 | 33.83 | | |
| T761 | SHEET | 0. | 13.3 | | | 6.13 | 32.92 | | |
| | | 0.33 | 13.3 | | | 10.27 | 48.15 | | |

# TABLE 8.20.2.2



## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.13 | R.T. | L-T | 69.4 | 8.100 | 0.120 | 2.690 | 4.410 | --- | 37.70 | 83.00* | --- | --- | 122.70* | --- | --- | 1982 | LG002 |
| | | 0.13 | | | 69.4 | 8.100 | 0.120 | 2.700 | 3.780 | --- | 37.30 | 82.50* | | | 105.40* | | | 1982 | LG002 |
| | | 0.13 | | | 69.4 | 8.100 | 0.120 | 2.690 | 4.250 | --- | 36.70 | 80.70 | | | 115.20* | | | 1982 | LG002 |
| T61 | Sheet | 0.13 | R.T. | L-T | 69.4 | 12.130 | 0.120 | 3.990 | 5.940 | --- | 34.40 | 92.40 | 93.3 | 3.5 | 123.80* | --- | --- | 1982 | LG002 |
| | | 0.13 | | | 69.4 | 12.130 | 0.120 | 4.000 | 5.590 | --- | 36.10 | 97.10 | | | 123.70* | | | 1982 | LG002 |
| | | 0.13 | | | 69.4 | 12.130 | 0.120 | 4.010 | 5.930 | --- | 33.60 | 90.30 | | | 121.00* | | | 1982 | LG002 |
| T61 | Sheet | 0.13 | R.T. | L-T | 69.4 | 20.140 | 0.120 | 6.610 | 9.310 | --- | 29.80 | 102.90 | 103.1 | 0.3 | 131.90 | 129.8 | 3.0 | 1982 | LG002 |
| | | 0.13 | | | 69.4 | 20.180 | 0.120 | 6.580 | 8.880 | --- | 30.00 | 103.30 | | | 127.70 | | | 1982 | LG002 |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.04 | R.T. | L-T | 71.3 | 3.000 | 0.039 | 1.460 | 2.548 | --- | 30.60 | 54.55* | --- | --- | 126.43* | --- | --- | 1973 | 86213 |
| | | 0.04 | | | 71.3 | 3.000 | 0.039 | 1.380 | 2.573 | --- | 29.90 | 50.83 | | | 127.48* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | R.T. | L-T | 71.8 | 16.000 | 0.063 | 4.000 | 4.280 | --- | 26.90 | 70.15 | 76.5 | 6.8 | 73.00 | 84.3 | 12.0 | 1972 | 84368 |
| | | 0.06 | | | 71.8 | 16.000 | 0.063 | 5.970 | 6.250 | --- | 20.00 | 67.10 | | | 69.31 | | | 1972 | 84368 |
| | | 0.06 | | | 71.8 | 16.000 | 0.063 | 3.020 | 3.320 | --- | 31.20 | 69.49 | | | 73.20 | | | 1972 | 84368 |
| | | 0.06 | | | 71.8 | 16.000 | 0.063 | 3.980 | 4.550 | --- | 30.10 | 78.27 | | | 84.73 | | | 1972 | 84368 |
| | | 0.06 | | | 71.8 | 16.000 | 0.063 | 1.000 | 1.500 | --- | 56.70 | 71.23* | | | 87.51* | | | 1972 | 84368 |
| | | 0.06 | | | 69.3 | 16.000 | 0.064 | 3.980 | 5.300 | --- | 32.70 | 85.03 | | | 101.29 | | | 1972 | 84368 |
| | | 0.06 | | | 69.3 | 16.000 | 0.064 | 3.990 | 4.100 | --- | 31.50 | 82.03 | | | 83.34 | | | 1972 | 84368 |
| | | 0.06 | | | 69.3 | 16.000 | 0.064 | 3.000 | 4.070 | --- | 37.30 | 82.77 | | | 98.26 | | | 1972 | 84368 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONTINUED)



## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 Cont'd | Sheet Cont'd | 0.06 | R.T. Cont'd | L-T Cont'd | 69.3 | 16.000 | 0.064 | 1.000 | 1.930 | --- | 58.00 | 72.87* | Cont'd | Cont'd | 101.90* | Cont'd | Cont'd | 1972 | 84368 |
| | | 0.06 | | | 69.3 | 16.000 | 0.064 | 6.000 | 7.500 | --- | 22.80 | 76.76 | | | 90.91 | | | 1972 | 84368 |
| T61 | Sheet | 0.09 | R.T. | L-T | 73.9 | 15.880 | 0.089 | 3.990 | 4.720 | --- | 33.60 | 87.55 | 85.6 | 2.8 | 96.82 | 94.7 | 3.1 | 1973 | 86842 |
| | | 0.09 | | | 73.9 | 15.880 | 0.089 | 3.990 | 4.720 | --- | 32.10 | 83.64 | | | 92.49 | | | 1973 | 86842 |
| T61 | Sheet | 0.04 | 82 | L-T | 65.6 | 3.000 | 0.041 | 1.130 | 2.764 | --- | 28.80 | 42.12 | --- | --- | 170.92* | --- | --- | 1973 | 86213 |
| | | 0.04 | | | 65.6 | 3.000 | 0.041 | 1.350 | 2.307 | --- | 37.40 | 62.46* | | | 119.39* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 82 | L-T | 68.8 | 3.000 | 0.088 | 1.170 | 2.154 | --- | 40.20 | 60.25* | --- | --- | 112.95* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 68.8 | 3.000 | 0.089 | 1.150 | 2.340 | --- | 40.70 | 60.26* | | | 134.07* | | | 1973 | 86213 |
| T61 | Sheet | 0.18 | 82 | L-T | 73.8 | 3.000 | 0.192 | 1.080 | 2.166 | --- | 43.50 | 61.66* | --- | --- | 123.38* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 73.8 | 3.000 | 0.192 | 1.163 | 2.274 | --- | 40.10 | 59.81* | | | 124.42* | | | 1973 | 86213 |
| T61 | Plate | 0.25 | 82 | L-T | 69.6 | 3.000 | 0.243 | 1.133 | 2.311 | --- | 38.10 | 55.79* | --- | --- | 122.07* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 69.6 | 3.000 | 0.244 | 1.148 | 2.260 | --- | 38.50 | 56.93* | | | 118.01* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 84 | L-T | 73.6 | 3.000 | 0.089 | 1.060 | 2.071 | --- | 43.70 | 61.17* | --- | --- | 115.20* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 73.6 | 3.000 | 0.089 | 1.080 | 2.147 | --- | 43.50 | 61.66* | | | 121.46* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 84 | L-T | 71.0 | 3.000 | 0.098 | 1.090 | 2.196 | --- | 42.20 | 60.19* | --- | --- | 122.61* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 71.0 | 3.000 | 0.098 | 1.100 | 2.249 | --- | 42.80 | 61.43* | | | 129.85* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | 84 | L-T | 72.6 | 3.000 | 0.126 | 1.330 | 2.303 | --- | 37.50 | 61.88* | --- | --- | 119.28* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 72.6 | 3.000 | 0.126 | 1.150 | 2.193 | --- | 42.30 | 62.63* | | | 122.50* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONTINUED)



## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 Cont'd | Sheet Cont'd | 0.12 | 84 Cont'd | L-T Cont'd | 69.1 | 3.000 | 0.130 | 1.280 | 2.316 | --- | 37.40 | 59.91* | Cont'd | Cont'd | 120.48* | Cont'd | Cont'd | 1973 | 86213 |
| | | 0.12 | | | 69.1 | 3.000 | 0.130 | 1.180 | 2.228 | --- | 40.30 | 60.77* | | | 120.22* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 85 | L-T | 73.9 | 3.000 | 0.089 | 1.190 | 1.919 | --- | 40.30 | 61.14* | --- | --- | 95.48* | --- | --- | 1973 | 86842 |
| | | 0.09 | | | 73.9 | 3.000 | 0.089 | 1.200 | 1.997 | --- | 39.90 | 60.90* | | | 99.73* | | | 1973 | 86842 |
| T61 | Sheet | 0.06 | 86 | L-T | 69.9 | 3.000 | 0.063 | 1.180 | 2.062 | --- | 40.00 | 60.32* | --- | --- | 104.82* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 69.9 | 3.000 | 0.063 | 1.135 | 2.014 | --- | 40.00 | 58.64* | | | 101.26* | | | 1973 | 86213 |
| | | 0.06 | | | 71.8 | 3.000 | 0.063 | 1.150 | 1.893 | --- | 41.00 | 60.70* | | | 95.47* | | | 1973 | 86842 |
| | | 0.06 | | | 71.8 | 3.000 | 0.063 | 1.185 | 2.028 | --- | 39.40 | 59.56* | | | 100.74* | | | 1973 | 86842 |
| | | 0.06 | | | 73.0 | 3.000 | 0.063 | 1.115 | 1.872 | --- | 41.60 | 60.23* | | | 95.59* | | | 1973 | 86213 |
| | | 0.06 | | | 73.0 | 3.000 | 0.063 | 1.120 | 1.874 | --- | 41.50 | 60.31* | | | 95.49* | | | 1973 | 86213 |
| | | 0.06 | | | 69.3 | 3.000 | 0.064 | 1.135 | 1.976 | --- | 39.90 | 58.49* | | | 98.35* | | | 1973 | 86842 |
| | | 0.06 | | | 69.3 | 3.000 | 0.064 | 1.130 | 1.947 | --- | 40.70 | 59.52* | | | 98.28* | | | 1973 | 86842 |
| T61 | Sheet | 0.04 | R.T. | T-L | 64.8 | 3.000 | 0.041 | 1.210 | 2.404 | --- | 32.50 | 49.91* | --- | --- | 113.98* | --- | --- | 1973 | 86213 |
| | | 0.04 | | | 64.8 | 3.000 | 0.041 | 1.450 | 2.124 | --- | 38.80 | 68.75* | | | 106.51* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | R.T. | T-L | 68.4 | 16.000 | 0.063 | 3.990 | 4.380 | --- | 29.80 | 77.60 | 78.6 | 4.1 | 81.99 | 86.9 | 7.5 | 1972 | 84368 |
| | | 0.06 | | | 68.4 | 16.000 | 0.063 | 5.980 | 6.350 | --- | 21.50 | 72.22 | | | 75.36 | | | 1972 | 84368 |
| | | 0.06 | | | 68.4 | 16.000 | 0.063 | 4.000 | 4.500 | --- | 28.00 | 73.02 | | | 78.30 | | | 1972 | 84368 |
| | | 0.06 | | | 68.4 | 16.000 | 0.063 | 0.980 | 1.350 | --- | 55.80 | 69.39* | | | 81.62* | | | 1972 | 84368 |
| | | 0.06 | | | 68.4 | 16.000 | 0.063 | 3.000 | 3.520 | --- | 36.50 | 81.00 | | | 88.48 | | | 1972 | 84368 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONTINUED)



## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{si}\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_{si}\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 Cont'd | Sheet Cont'd | 0.06 | R.T. Cont'd | T-L Cont'd | 66.5 | 16.000 | 0.064 | 1.000 | 1.780 | --- | 57.30 | 71.99* | Cont'd | Cont'd | 96.55* | Cont'd | Cont'd | 1972 | 84368 |
| | | 0.06 | | | 66.5 | 16.000 | 0.064 | 6.000 | 7.150 | --- | 23.20 | 78.11 | | | 88.98 | | | 1972 | 84368 |
| | | 0.06 | | | 66.5 | 16.000 | 0.064 | 4.000 | 5.080 | --- | 31.20 | 81.36 | | | 94.05 | | | 1972 | 84368 |
| | | 0.06 | | | 66.5 | 16.000 | 0.064 | 3.000 | 3.680 | --- | 37.40 | 82.99 | | | 92.97 | | | 1972 | 84368 |
| | | 0.06 | | | 66.5 | 16.000 | 0.064 | 4.000 | 5.080 | --- | 31.50 | 82.15 | | | 94.95 | | | 1972 | 84368 |
| T61 | Sheet | 0.09 | R.T. | T-L | 71.5 | 15.880 | 0.089 | 3.980 | 4.520 | 12.40 | 29.70 | 77.27 | 74.8 | 3.5 | 83.34 | 79.5 | 5.4 | 1973 | 86842 |
| | | 0.09 | | | 71.5 | 15.880 | 0.089 | 3.960 | 4.270 | --- | 27.90 | 72.38 | | | 75.66 | | | 1973 | 86842 |
| T61 | Sheet | 0.04 | 82 | T-L | 66.0 | 3.000 | 0.038 | 1.400 | 2.407 | --- | 31.60 | 54.36* | --- | --- | 111.05* | --- | --- | 1973 | 86213 |
| | | 0.04 | | | 66.0 | 3.000 | 0.039 | 1.400 | 2.528 | --- | 28.70 | 49.37* | | | 115.63* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 82 | T-L | 66.4 | 3.000 | 0.088 | 1.130 | 2.320 | --- | 39.70 | 58.06* | --- | --- | 128.36* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 66.4 | 3.000 | 0.088 | 1.140 | 2.388 | --- | 39.70 | 58.42* | | | 137.00* | | | 1973 | 86213 |
| T61 | Sheet | 0.18 | 82 | T-L | 71.6 | 3.000 | 0.192 | 1.142 | 2.201 | --- | 39.30 | 57.90* | --- | --- | 114.55* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 71.6 | 3.000 | 0.193 | 1.160 | 2.256 | --- | 38.40 | 57.20* | | | 117.30* | | | 1973 | 86213 |
| T61 | Plate | 0.25 | 82 | T-L | 67.8 | 3.000 | 0.244 | 1.157 | 2.113 | --- | 36.10 | 53.64* | --- | --- | 98.19* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 67.8 | 3.000 | 0.244 | 1.170 | 1.954 | --- | 36.70 | 55.00* | | | 89.10* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | 83 | T-L | 66.9 | 3.000 | 0.130 | 1.280 | 2.381 | --- | 37.90 | 60.71* | --- | --- | 129.75* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 66.9 | 3.000 | 0.130 | 1.170 | 2.210 | --- | 39.40 | 59.05* | | | 115.79* | | | 1973 | 86213 |
| T61 | Sheet | 0.09 | 84 | T-L | 71.6 | 3.000 | 0.089 | 1.180 | 2.175 | --- | 40.30 | 60.77* | --- | --- | 115.03* | --- | --- | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONTINUED)



## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{Max}$ | $K_{app}$ ($Ksi\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($Ksi\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T61 | Sheet | 0.09 | 84 | T-L | 69.4 | 3.000 | 0.097 | 1.100 | 2.215 | --- | 41.70 | 59.85* | --- | --- | 122.95* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 69.4 | 3.000 | 0.098 | 1.150 | 2.241 | --- | 41.00 | 60.70* | | | 123.54* | | | 1973 | 86213 |
| T61 | Sheet | 0.12 | 84 | T-L | 68.6 | 3.000 | 0.126 | 1.220 | 2.213 | --- | 39.70 | 61.34* | --- | --- | 116.86* | --- | --- | 1973 | 86213 |
| | | 0.12 | | | 68.6 | 3.000 | 0.126 | 1.140 | 2.192 | --- | 41.70 | 61.36* | | | 120.76* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | 85 | T-L | 68.4 | 3.000 | 0.064 | 1.175 | 1.996 | --- | 38.30 | 57.54* | --- | --- | 95.73* | --- | --- | 1973 | 86842 |
| | | 0.06 | | | 68.4 | 3.000 | 0.064 | 1.160 | 1.973 | --- | 37.80 | 56.31* | | | 92.92* | | | 1973 | 86842 |
| T61 | Sheet | 0.09 | 85 | T-L | 71.5 | 3.000 | 0.089 | 1.190 | 1.925 | --- | 38.20 | 57.96* | --- | --- | 90.87* | --- | --- | 1973 | 86842 |
| | | 0.09 | | | 71.5 | 3.000 | 0.090 | 1.190 | 1.872 | --- | 39.40 | 59.78* | | | 90.54* | | | 1973 | 86842 |
| | | 0.09 | | | 71.6 | 3.000 | 0.090 | 1.185 | 2.029 | --- | 40.60 | 61.37* | | | 103.81* | | | 1973 | 86213 |
| T61 | Sheet | 0.06 | 86 | T-L | 67.2 | 3.000 | 0.062 | 1.225 | 2.044 | --- | 37.10 | 57.46* | --- | --- | 95.96* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 67.2 | 3.000 | 0.062 | 1.110 | 2.011 | --- | 39.00 | 56.33* | | | 98.45* | | | 1973 | 86213 |
| | | 0.06 | | | 70.2 | 3.000 | 0.063 | 1.150 | 1.874 | --- | 39.20 | 58.04* | | | 90.20* | | | 1973 | 86213 |
| | | 0.06 | | | 70.2 | 3.000 | 0.063 | 1.150 | 1.854 | --- | 39.70 | 58.78* | | | 90.16* | | | 1973 | 86213 |
| | | 0.06 | | | 66.5 | 3.000 | 0.064 | 1.185 | 2.039 | --- | 38.30 | 57.90* | | | 98.64* | | | 1973 | 86842 |
| | | 0.06 | | | 66.5 | 3.000 | 0.064 | 1.180 | 2.040 | --- | 38.20 | 57.60* | | | 98.52* | | | 1973 | 86842 |
| T73 | Sheet | 0.09 | 82 | L-T | 60.6 | 3.000 | 0.089 | 1.150 | 2.450 | --- | 37.20 | 55.07* | --- | --- | 136.93* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 60.6 | 3.000 | 0.089 | 1.145 | 2.410 | --- | 37.40 | 55.17* | | | 131.97* | | | 1973 | 86213 |
| T73 | Sheet | 0.09 | 82 | T-L | 58.5 | 3.000 | 0.088 | 1.105 | 2.428 | --- | 37.40 | 53.82* | --- | --- | 134.46* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 58.5 | 3.000 | 0.089 | 1.200 | 2.417 | --- | 35.60 | 54.34* | | | 126.40* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONTINUED)

## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ $K_{app}$ (Ksi$\sqrt{in}$) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ $K_C$ (Ksi$\sqrt{in}$) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T731 | Plate | 0.25 | 82 | L-T | 60.1 | 3.000 | 0.245 | 1.180 | 2.554 | --- | 37.80 | 57.00* | --- | --- | 157.39* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 60.1 | 3.000 | 0.245 | 1.185 | 2.558 | --- | 37.70 | 56.99* | | | 157.79* | | | 1973 | 86213 |
| T731 | Sheet | 0.25 | 82 | T-L | 58.8 | 3.000 | 0.245 | 1.233 | 2.580 | --- | 36.60 | 56.96* | --- | --- | 157.75* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 58.8 | 3.000 | 0.246 | 1.203 | 2.585 | --- | 37.10 | 56.70* | | | 160.78* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | R.T. | L-T | 62.0 | 15.880 | 0.062 | 2.980 | 3.920 | --- | 39.50 | 87.37 | 83.0 | 4.4 | 101.87* | 92.3 | 8.0 | 1973 | 86213 |
| | | 0.06 | | | 62.0 | 15.880 | 0.062 | 1.000 | 2.000 | --- | 57.40 | 72.12* | | | 102.75* | | | 1973 | 86213 |
| | | 0.06 | | | 66.9 | 15.880 | 0.062 | 2.980 | 3.500 | --- | 36.30 | 80.29 | | | 87.76 | | | 1973 | 86213 |
| | | 0.06 | | | 62.0 | 15.880 | 0.063 | 3.990 | 5.130 | --- | 33.20 | 86.51 | | | 100.81 | | | 1973 | 86213 |
| | | 0.06 | | | 62.0 | 15.880 | 0.063 | 6.000 | 7.500 | --- | 24.20 | 81.60 | | | 96.74 | | | 1973 | 86213 |
| | | 0.06 | | | 62.0 | 15.880 | 0.063 | 4.000 | 4.920 | --- | 33.90 | 88.46 | | | 100.24 | | | 1973 | 86213 |
| | | 0.06 | | | 66.9 | 15.880 | 0.063 | 4.000 | 4.580 | --- | 30.40 | 79.33 | | | 85.99 | | | 1973 | 86213 |
| | | 0.06 | | | 66.9 | 15.880 | 0.063 | 1.000 | 1.520 | 32.90 | 52.50 | 65.96* | | | 81.58* | | | 1973 | 86213 |
| | | 0.06 | | | 66.9 | 15.880 | 0.063 | 6.000 | 6.550 | --- | 22.90 | 77.21 | | | 82.26 | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | R.T. | L-T | 66.5 | 15.880 | 0.089 | 4.000 | 5.000 | 18.60 | 37.00 | 96.55 | 96.0 | 0.7 | 110.53* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 66.5 | 15.880 | 0.089 | 4.000 | 4.950 | 12.80 | 36.60 | 95.51 | | | 108.64 | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | 82 | L-T | 61.4 | 3.000 | 0.087 | 1.160 | 2.267 | --- | 37.40 | 55.71* | --- | --- | 115.24* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 61.4 | 3.000 | 0.088 | 1.190 | 2.406 | --- | 36.40 | 55.22* | | | 127.92* | | | 1973 | 86213 |
| T761 | Sheet | 0.18 | 82 | L-T | 64.1 | 3.000 | 0.193 | 1.107 | 2.480 | --- | 41.00 | 59.07* | --- | --- | 156.05* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 64.1 | 3.000 | 0.193 | 1.090 | 2.495 | --- | 40.80 | 58.20* | | | 157.81* | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONTINUED)



## ALUMINUM 7475 (ALCLAD) $K_C$

| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T761 | Plate | 0.25 | 82 | L-T | 60.9 | 3.000 | 0.246 | 1.145 | 2.610 | --- | 38.60 | 56.94* | --- | --- | 173.56* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 60.9 | 3.000 | 0.246 | 1.138 | 2.522 | --- | 39.00 | 57.31* | | | 155.97* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | 85 | L-T | 62.0 | 3.000 | 0.063 | 1.185 | 1.993 | --- | 38.40 | 58.05* | --- | --- | 95.71* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 62.0 | 3.000 | 0.063 | 1.140 | 1.965 | --- | 38.00 | 55.91* | | | 92.89* | | | 1973 | 86213 |
| | | 0.06 | | | 66.9 | 3.000 | 0.063 | 1.140 | 2.041 | --- | 38.80 | 57.09* | | | 100.07* | | | 1973 | 86213 |
| | | 0.06 | | | 66.9 | 3.000 | 0.063 | 1.170 | 2.040 | --- | 37.70 | 56.50* | | | 97.23* | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | 85 | L-T | 66.5 | 3.000 | 0.088 | 1.200 | 2.065 | --- | 38.20 | 58.31* | --- | --- | 100.25* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 66.5 | 3.000 | 0.088 | 1.150 | 2.057 | --- | 39.40 | 58.33* | | | 102.80* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | R.T. | T-L | 60.5 | 15.880 | 0.062 | 4.000 | 5.050 | --- | 33.90 | 88.46 | 82.6 | 4.8 | 101.91* | 90.1 | 6.9 | 1973 | 86213 |
| | | 0.06 | | | 60.5 | 15.880 | 0.062 | 4.000 | 5.000 | --- | 33.20 | 86.63 | | | 99.17 | | | 1973 | 86213 |
| | | 0.06 | | | 60.5 | 15.880 | 0.063 | 3.020 | 3.920 | --- | 39.30 | 87.56* | | | 101.36* | | | 1973 | 86213 |
| | | 0.06 | | | 60.5 | 15.880 | 0.063 | 6.010 | 7.240 | --- | 24.30 | 82.03 | | | 94.35 | | | 1973 | 86213 |
| | | 0.06 | | | 60.5 | 15.880 | 0.063 | 1.000 | 1.980 | --- | 55.10 | 69.23* | | | 98.11* | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 15.880 | 0.063 | 3.000 | 3.430 | --- | 35.50 | 78.80 | | | 84.86 | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 15.880 | 0.063 | 1.000 | 1.420 | --- | 58.00 | 72.87* | | | 87.05* | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 15.880 | 0.063 | 4.000 | 4.550 | --- | 30.60 | 79.85 | | | 86.21 | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 15.880 | 0.063 | 3.990 | 4.600 | --- | 33.30 | 86.77 | | | 94.45 | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 15.880 | 0.063 | 5.990 | 6.600 | --- | 22.50 | 75.78 | | | 81.28 | | | 1973 | 86213 |

* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

# TABLE 8.20.2.2 (CONCLUDED)



| ALUMINUM 7475 (ALCLAD) $K_C$ | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONDITION HEAT TREAT | PRODUCT FORM | PRODUCT THICK (in.) | TEST TEMP (°F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN WIDTH (in.) W | SPECIMEN THICK (in.) B | CRACK LENGTH INIT (in.) $2a_o$ | CRACK LENGTH FINAL (in.) $2a_f$ | GROSS STRESS ONSET (Ksi) $\sigma_o$ | GROSS STRESS MAX (Ksi) $\sigma_{max}$ | $K_{app}$ ($K_{app}$ (Ksi$\sqrt{in}$)) | $K_{app}$ MEAN | $K_{app}$ STAN DEV | $K_C$ ($K_C$ (Ksi$\sqrt{in}$)) | $K_C$ MEAN | $K_C$ STAN DEV | DATE | REFER |
| BUCKLING OF CRACK EDGES NOT RESTRAINED | | | | | | | | | | | | | | | | | | | |
| T761 | Sheet | 0.09 | R.T. | T-L | 65.6 | 15.880 | 0.089 | 3.970 | 4.600 | 14.90 | 31.70 | 82.36 | 82.9 | 0.8 | 89.91 | 91.7 | 2.5 | 1973 | 86213 |
| | | 0.09 | | | 65.6 | 15.880 | 0.089 | 3.980 | 4.800 | --- | 32.10 | 83.52 | | | 93.46 | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | 82 | T-L | 59.4 | 3.000 | 0.088 | 1.170 | 2.387 | --- | 36.30 | 54.41* | --- | --- | 125.02* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 59.4 | 3.000 | 0.088 | 1.155 | 2.397 | --- | 36.70 | 54.47* | | | 127.67* | | | 1973 | 86213 |
| T761 | Sheet | 0.18 | 82 | T-L | 62.9 | 3.000 | 0.193 | 1.188 | 2.413 | --- | 38.90 | 58.95* | --- | --- | 137.55* | --- | --- | 1973 | 86213 |
| | | 0.18 | | | 62.9 | 3.000 | 0.193 | 1.240 | 2.551 | --- | 37.50 | 58.64* | | | 155.33* | | | 1973 | 86213 |
| T761 | Plate | 0.25 | 82 | T-L | 61.9 | 3.000 | 0.245 | 1.180 | 2.723 | --- | 38.00 | 57.30* | --- | --- | 206.31* | --- | --- | 1973 | 86213 |
| | | 0.25 | | | 61.9 | 3.000 | 0.245 | 1.197 | 2.580 | --- | 37.70 | 57.41* | | | 162.49* | | | 1973 | 86213 |
| T761 | Sheet | 0.06 | 85 | T-L | 60.5 | 3.000 | 0.063 | 1.140 | 2.190 | --- | 37.40 | 55.03* | --- | --- | 108.13* | --- | --- | 1973 | 86213 |
| | | 0.06 | | | 60.5 | 3.000 | 0.063 | 1.085 | 2.085 | --- | 39.00 | 55.42* | | | 103.88* | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 3.000 | 0.063 | 1.165 | 2.046 | --- | 39.20 | 58.54* | | | 101.54* | | | 1973 | 86213 |
| | | 0.06 | | | 64.9 | 3.000 | 0.063 | 1.150 | 1.923 | --- | 39.90 | 59.07* | | | 94.79* | | | 1973 | 86213 |
| T761 | Sheet | 0.09 | 85 | T-L | 65.6 | 3.000 | 0.089 | 1.170 | 2.033 | --- | 39.00 | 58.45* | --- | --- | 100.01* | --- | --- | 1973 | 86213 |
| | | 0.09 | | | 65.6 | 3.000 | 0.089 | 1.150 | 2.066 | --- | 39.70 | 58.78* | | | 104.34* | | | 1973 | 86213 |

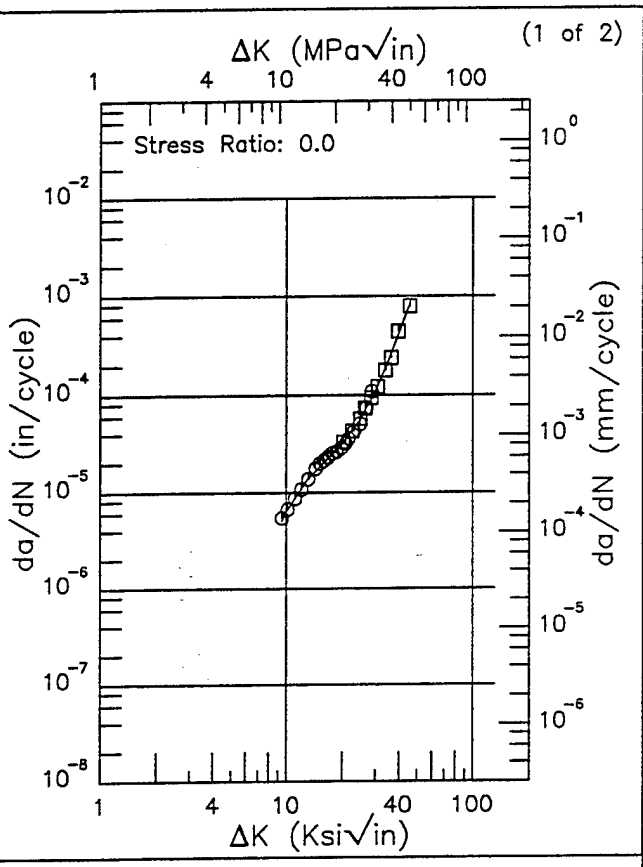
* NOTE: NET SECTION STRESS EXCEEDS 80% OF YIELD STRENGTH. VALUE NOT INCLUDED IN MEAN OR STANDARD DEVIATION.

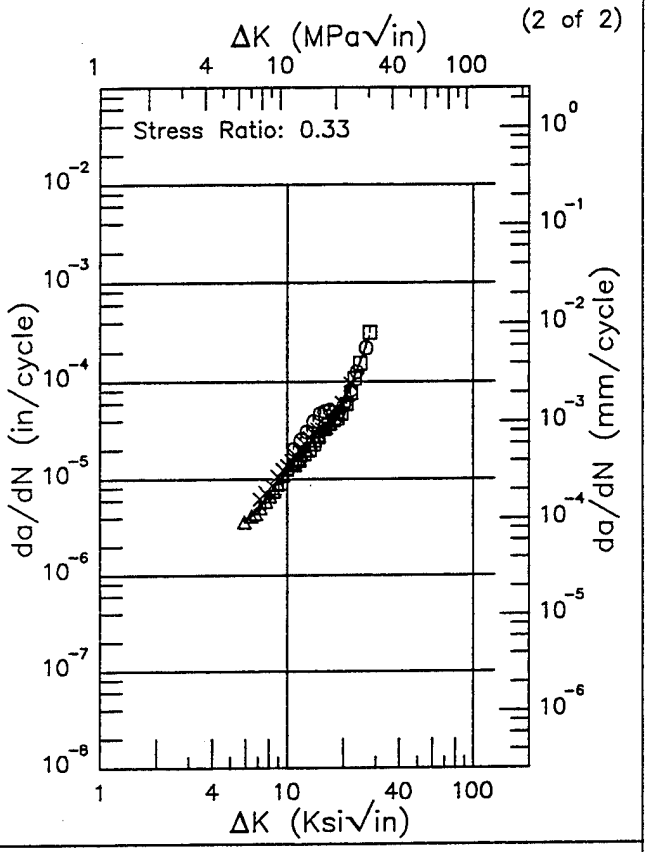
## 7475 (ALCLAD)

R

Condition/Ht: T61
Form: 0.09 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 73.6 ksi
Ult. Strength: 79.8 ksi
Specimen Thk: 0.087 – 0.088 in.
Specimen Width: 4 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.44 (min) | 5.07 |
| 10. | 6.37 |
| 13. | 13.6 |
| 16. | 20.6 |
| 20. | 31.8 |
| 25. | 56.8 |
| 30. | 109. |
| 35. | 219. |
| 40. | 433. |
| 45.47 (max) | 803. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.91 (min) | 3.60 |
| 6. | 3.68 |
| 7. | 4.92 |
| 8. | 6.80 |
| 9. | 9.31 |
| 10. | 12.4 |
| 13. | 23.2 |
| 16. | 35.0 |
| 20. | 57.7 |
| 25. | 169. |
| 27.65 (max) | 294. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.95 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.79 | 0. .5 .8 1.25 2. |

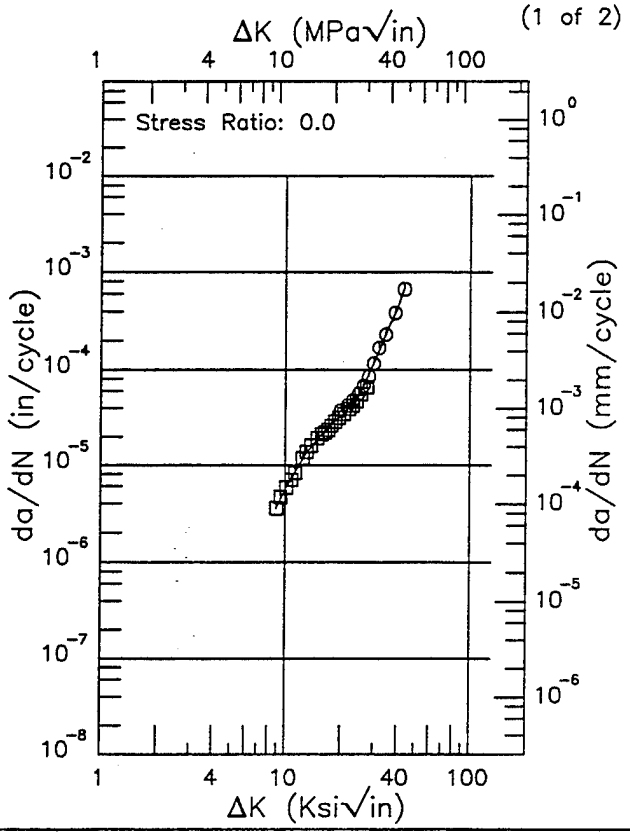
**Figure 8.20.3.1.1**

## 7475 (ALCLAD) R

Condition/Ht: T61
Form: 0.1 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 71 ksi
Ult. Strength: 76.8 ksi
Specimen Thk: 0.101 – 0.102 in.
Specimen Width: 4 in.
Ref: 86213

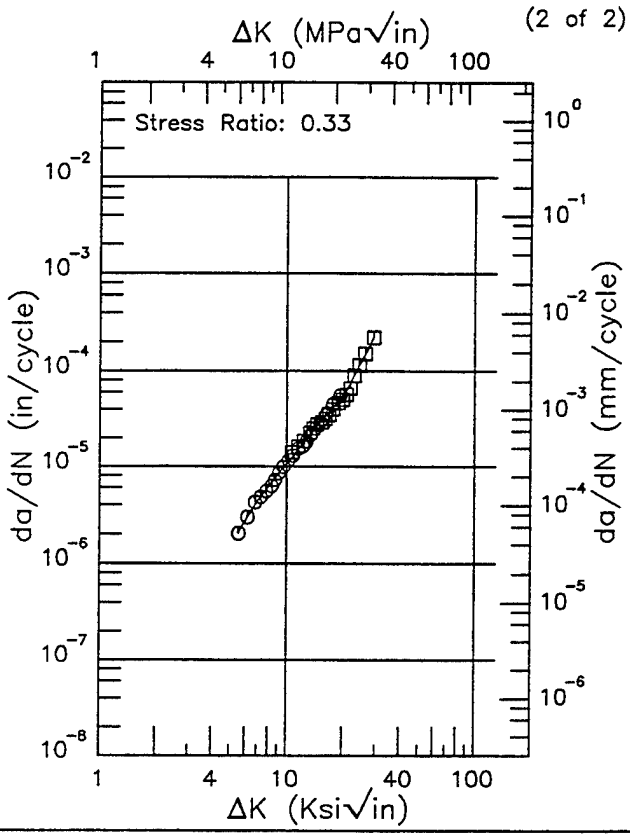
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.88 (min) | 3.54 |
| 9. | 3.73 |
| 10. | 5.60 |
| 13. | 13.3 |
| 16. | 22.3 |
| 20. | 33.0 |
| 25. | 54.4 |
| 30. | 118. |
| 35. | 248. |
| 40. | 431. |
| 43.48 (max) | 664. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.85 | 0. .5 .8 1.25 2. |

(2 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.54 (min) | 2.08 |
| 6. | 2.69 |
| 7. | 4.26 |
| 8. | 6.12 |
| 9. | 8.27 |
| 10. | 10.7 |
| 13. | 20.2 |
| 16. | 32.7 |
| 20. | 53.0 |
| 25. | 123. |
| 29.02 (max) | 219. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.39 | 0. .5 .8 1.25 2. |

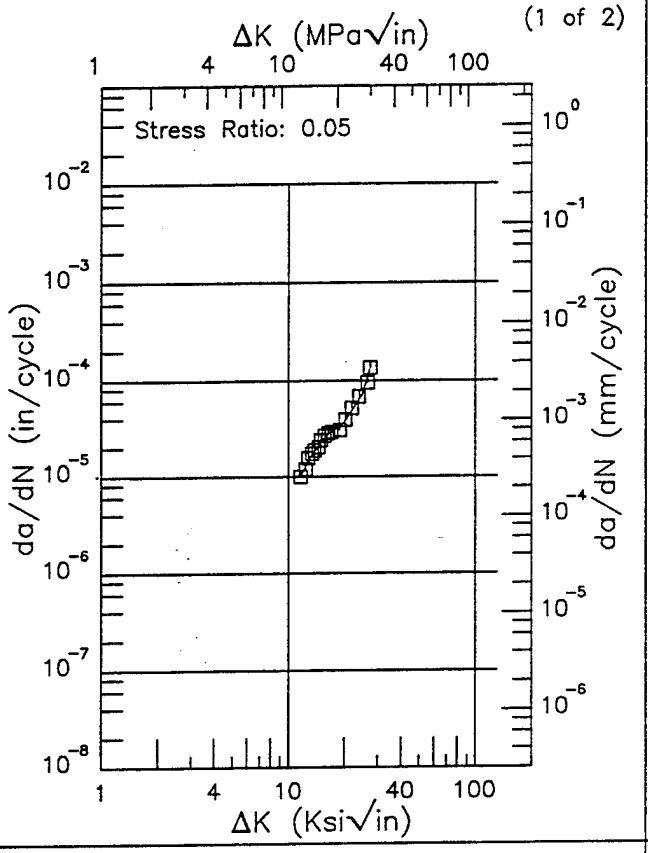
**Figure 8.20.3.1.2**

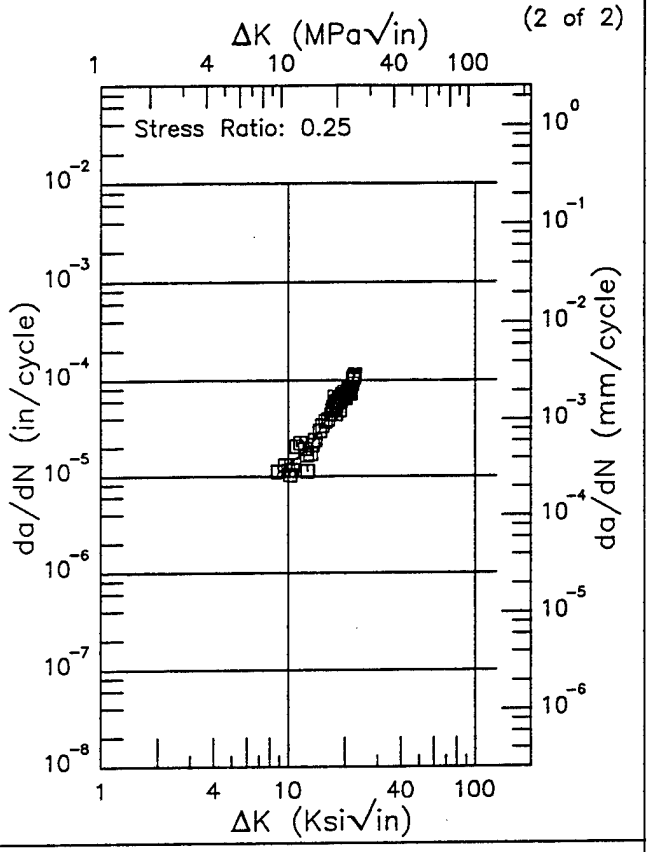
## 7475 (ALCLAD)

R

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 65.7 ksi
Ult. Strength: 73.6 ksi
Specimen Thk: 0.04 in.
Specimen Width: 23.97 – 24.01 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.50 (min) | 9.88 |
| 13. | 15.7 |
| 16. | 27.0 |
| 20. | 37.2 |
| 25. | 72.5 |
| 27.35 (max) | 130. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.78 (min) | 10.5 |
| 9. | 11.1 |
| 10. | 13.3 |
| 13. | 19.7 |
| 16. | 39.1 |
| 20. | 69.6 |
| 22.61 (max) | 109. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.09 | 0. .5 .8 1.25 2. |

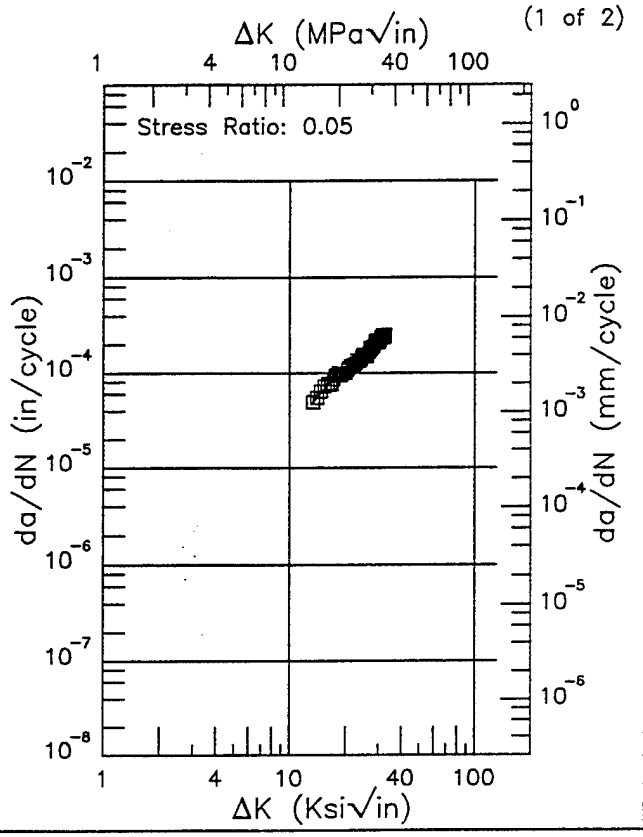
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.39 | 0. .5 .8 1.25 2. |

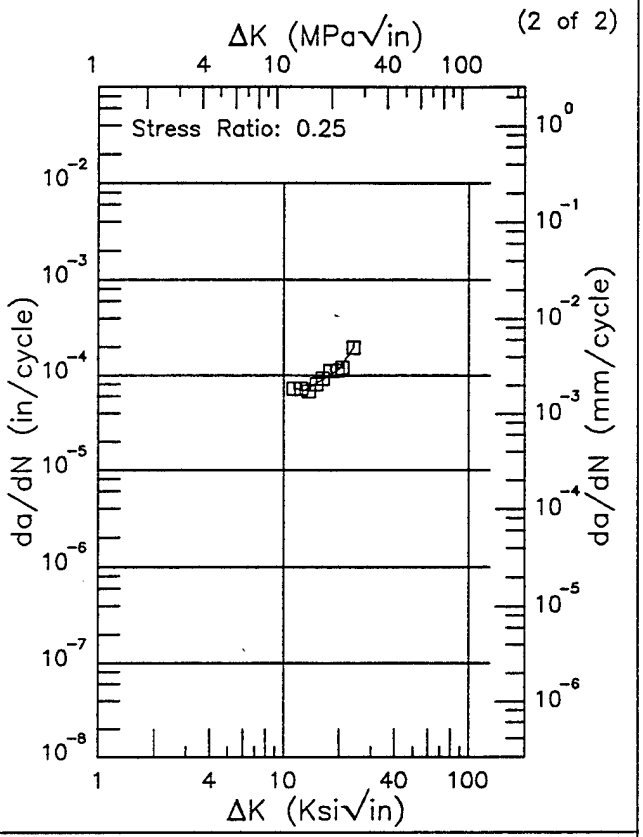
**Figure 8.20.3.1.3**

## 7475 (ALCLAD) R

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 68.6 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.04 in.
Specimen Width: 36.03 – 36.04 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 13.24 (min) | 47.7 |
| 16. | 76.1 |
| 20. | 106. |
| 25. | 151. |
| 30. | 217. |
| 32.52 (max) | 252. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.34 (min) | 73.7 |
| 13. | 69.4 |
| 16. | 88.6 |
| 20. | 117. |
| 23.86 (max) | 194. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.81 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.03 | 0. .5 .8 1.25 2. |

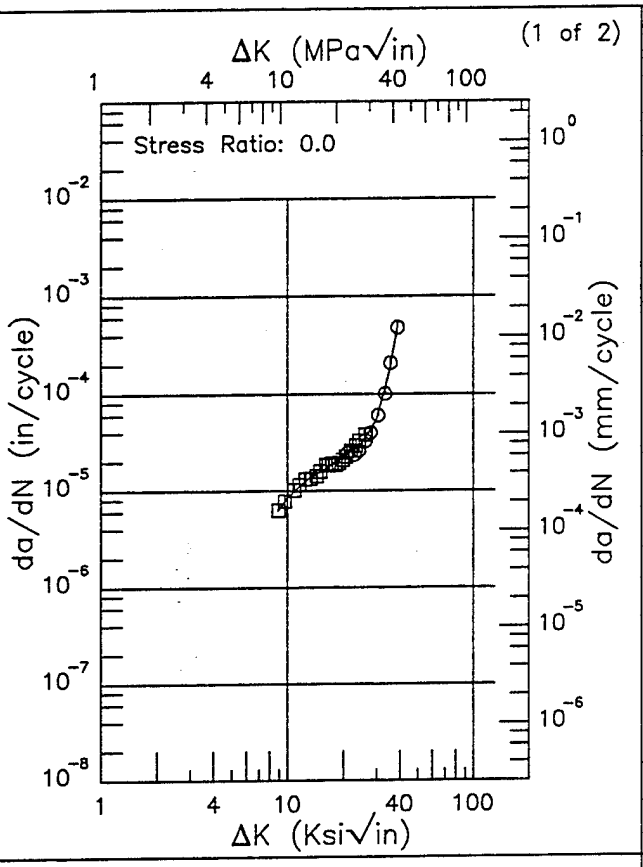
**Figure 8.20.3.1.4**

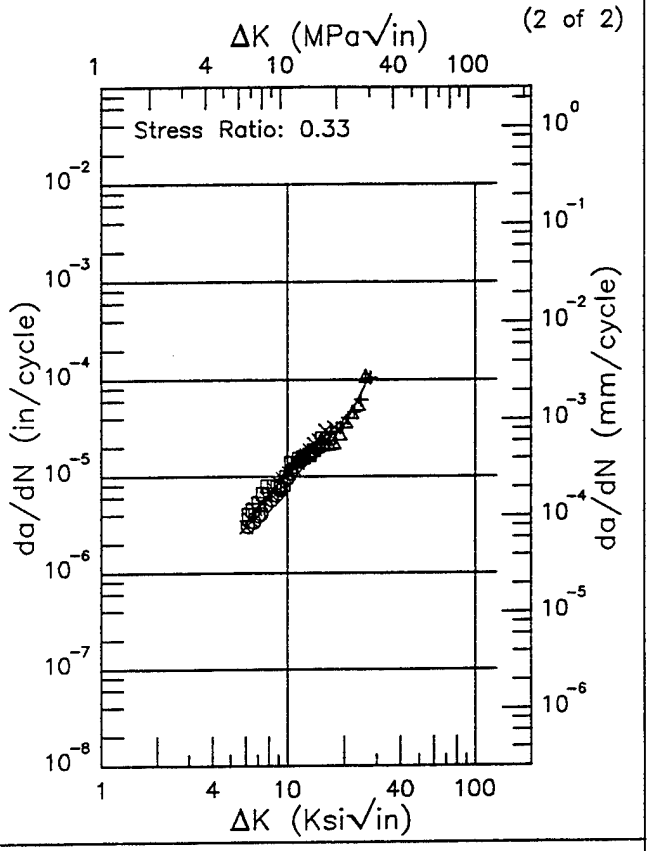
## 7475 (ALCLAD)

R

Condition/Ht: T61
Form: 0.09 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 68.2 ksi
Ult. Strength: 78.6 ksi
Specimen Thk: 0.089 – 0.09 in.
Specimen Width: 4 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.89 (min) | 6.21 |
| 9. | 6.45 |
| 10. | 8.56 |
| 13. | 13.3 |
| 16. | 16.7 |
| 20. | 22.0 |
| 25. | 31.0 |
| 30. | 54.6 |
| 35. | 170. |
| 38.72 (max) | 487. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.05 (min) | 3.40 |
| 7. | 4.66 |
| 8. | 6.32 |
| 9. | 8.28 |
| 10. | 10.5 |
| 13. | 17.5 |
| 16. | 24.1 |
| 20. | 33.8 |
| 25. | 75.1 |
| 27.65 (max) | 116. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.50 | 0. .5 .8 1.25 2. |

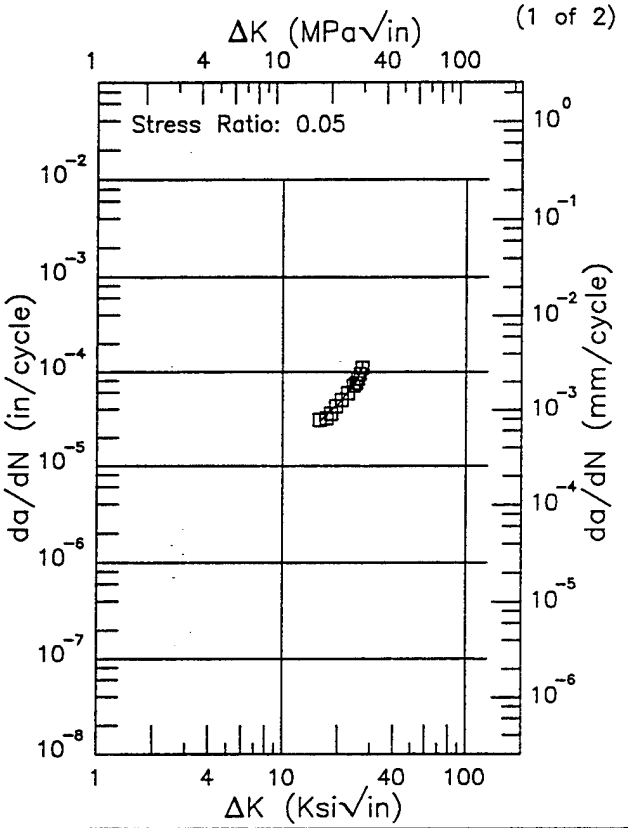
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.06 | 0. .5 .8 1.25 2. |

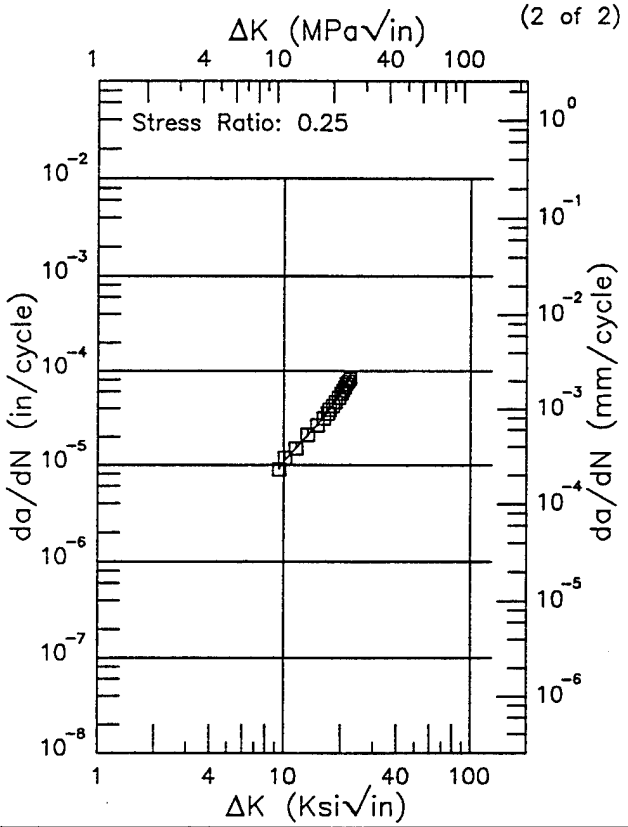
**Figure 8.20.3.1.5**

## 7475 (ALCLAD) R

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 68.6 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.04 in.
Specimen Width: 23.92 – 24.01 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 15.82 (min) | 30.5 |
| 16. | 30.3 |
| 20. | 45.1 |
| 25. | 77.8 |
| 27.02 (max) | 111. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.46 (min) | 9.31 |
| 10. | 10.8 |
| 13. | 19.3 |
| 16. | 30.2 |
| 20. | 56.4 |
| 22.36 (max) | 82.6 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.29 | 0. .5 .8 1.25 2. |

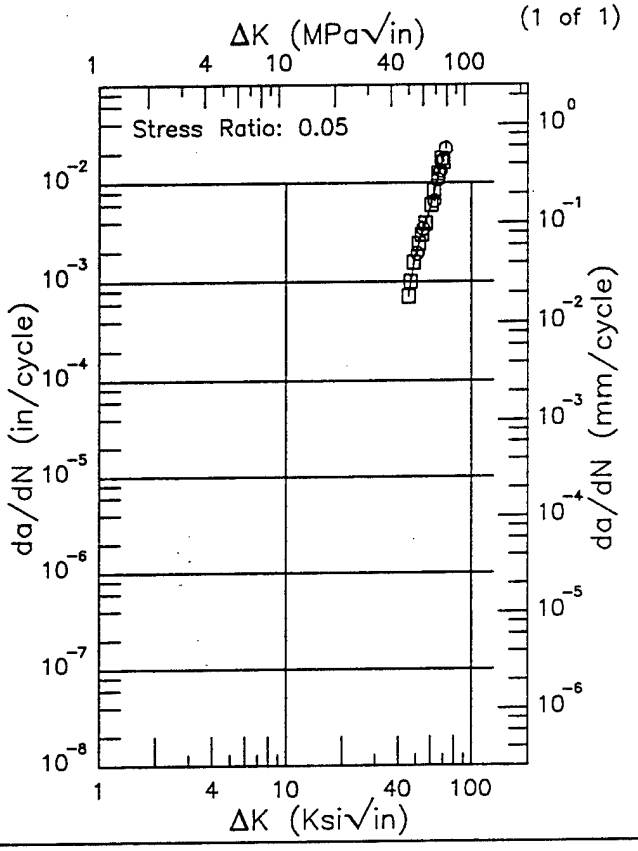
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.99 | 0. .5 .8 1.25 2. |

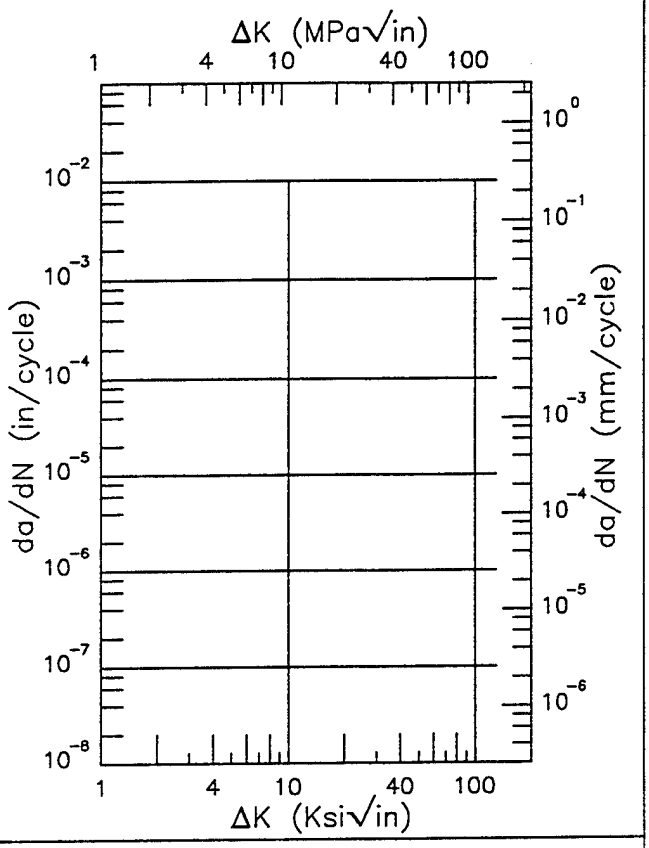
**Figure 8.20.3.1.6**

## R 7475 (ALCLAD)

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 65.7 – 68.6 ksi
Ult. Strength: 73.6 – 74.5 ksi
Specimen Thk: 0.04 in.
Specimen Width: 12 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 45.66 (min) | 746. |
| 50. | 1877. |
| 60. | 5635. |
| 70. | 17603. |
| 72.32 (max) | 20509. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.68 | 0. .5 .8 1.25 2. |

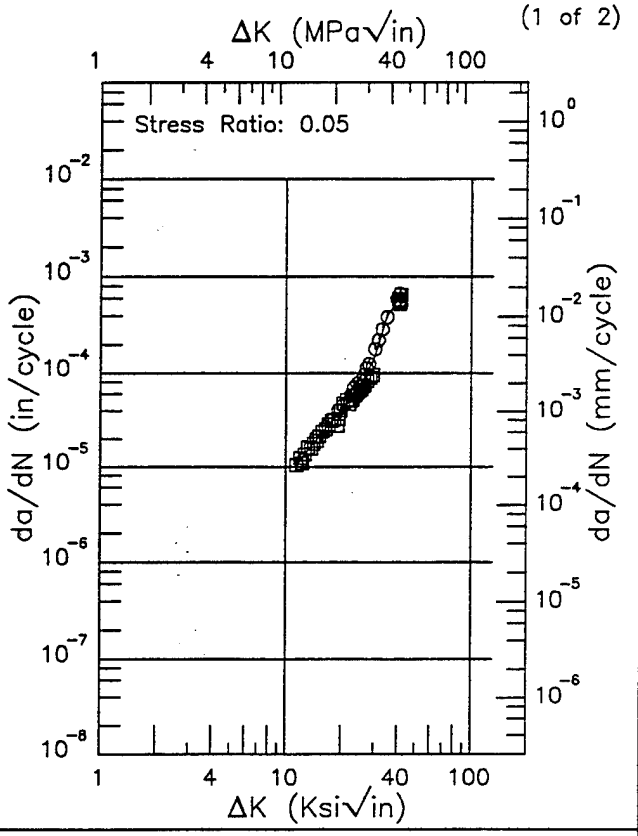
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

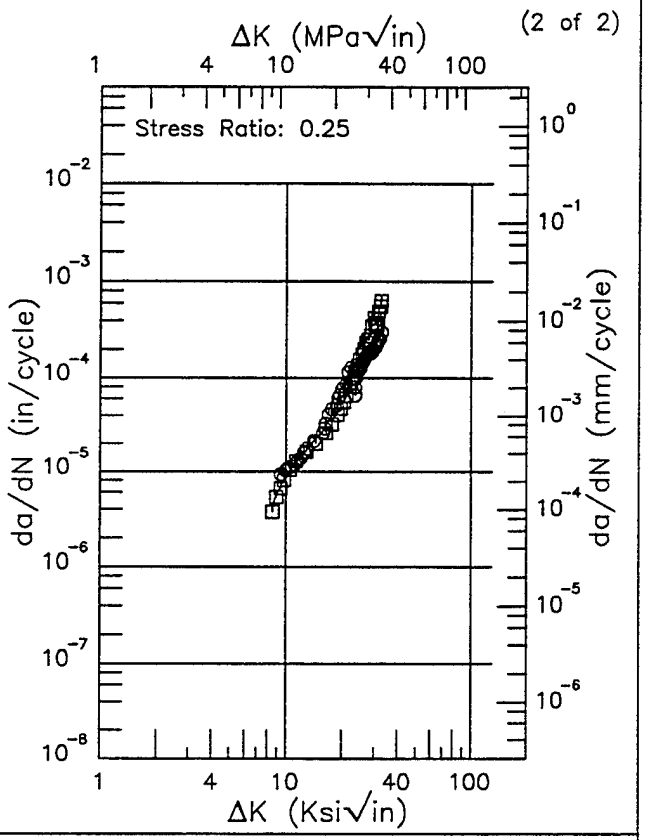
**Figure 8.20.3.1.7**

## 7475 (ALCLAD) R

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 65.7 – 68.6 ksi
Ult. Strength: 73.6 – 74.5 ksi
Specimen Thk: 0.04 in.
Specimen Width: 35.98 – 36.02 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.39 (min) | 10.3 |
| 13. | 14.6 |
| 16. | 24.2 |
| 20. | 40.5 |
| 25. | 69.6 |
| 30. | 146. |
| 35. | 398. |
| 40. | 591. |
| 41.52 (max) | 519. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.44 (min) | 4.19 |
| 9. | 5.90 |
| 10. | 9.09 |
| 13. | 17.5 |
| 16. | 28.0 |
| 20. | 62.9 |
| 25. | 144. |
| 30. | 279. |
| 32.55 (max) | 481. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.47 | 0. .5 .8 1.25 2. |

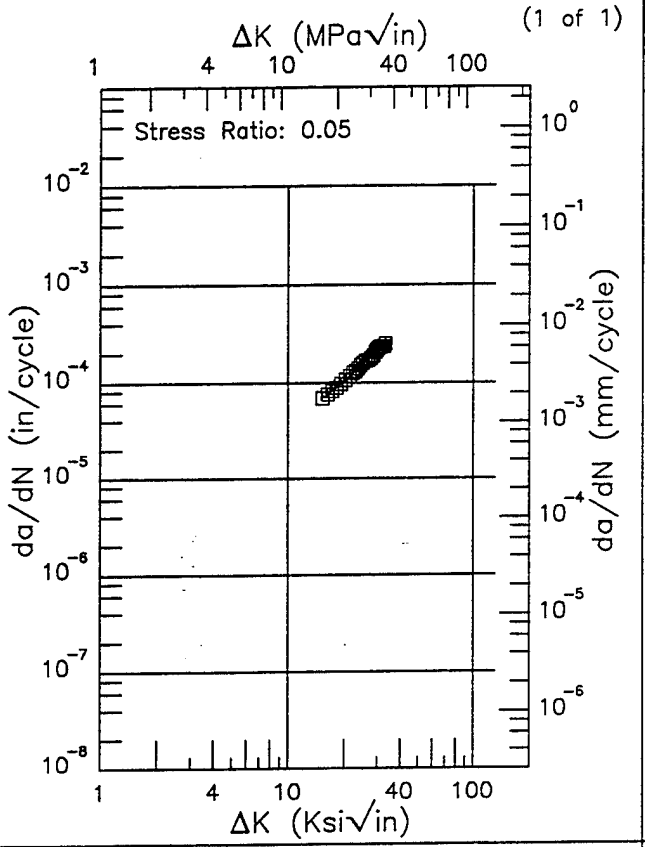
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 20.63 | 0. .5 .8 1.25 2. |

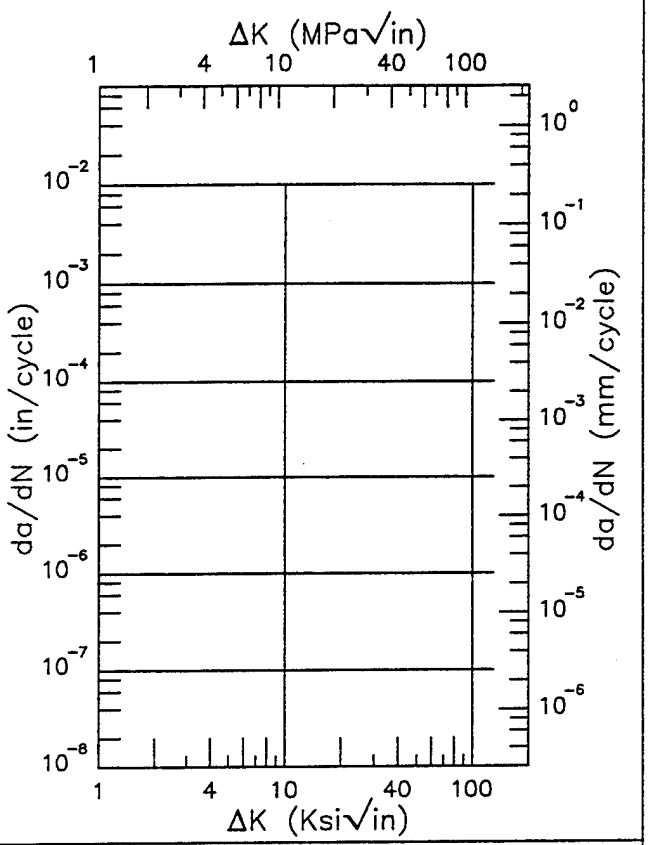
**Figure 8.20.3.1.8**

## R 7475 (ALCLAD)

Condition/Ht: T61
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T-L
Frequency: 2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 65.7 ksi
Ult. Strength: 73.6 ksi
Specimen Thk: 0.04 in.
Specimen Width: 35.8 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 15.18 (min) | 69.1 |
| 16. | 73.7 |
| 20. | 104. |
| 25. | 154. |
| 30. | 212. |
| 33.11 (max) | 248. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 2.07 | 0. .5 .8 1.25 2. |

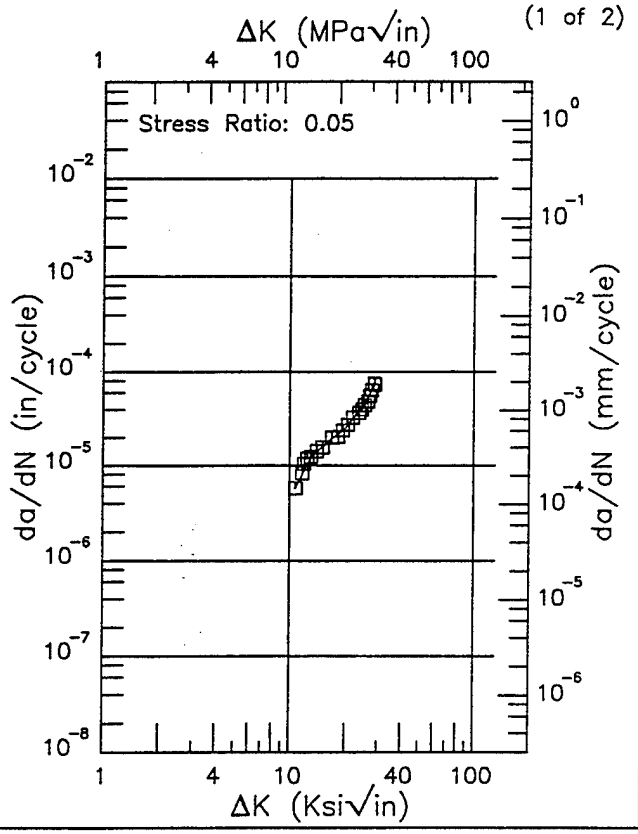
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

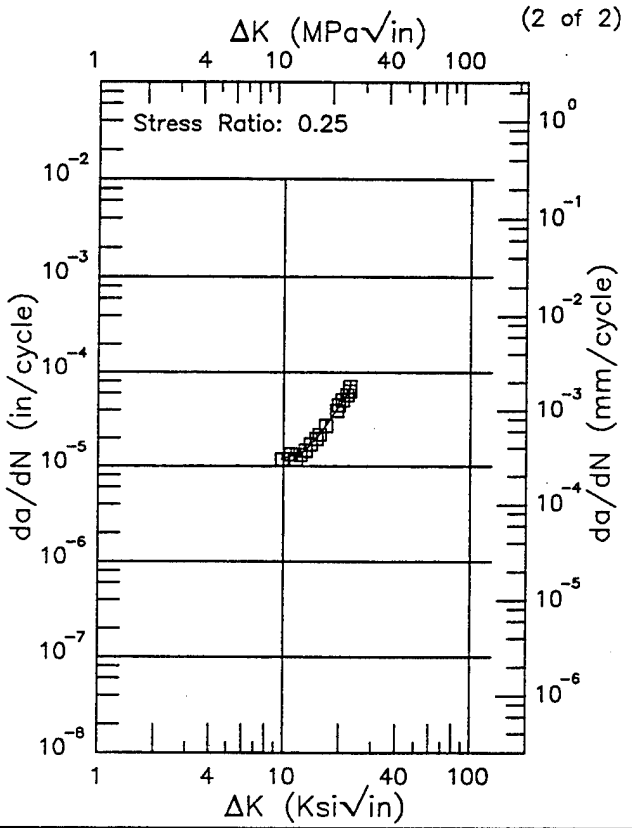
**Figure 8.20.3.1.9**

## 7475 (ALCLAD) R

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 59.8 ksi
Ult. Strength: 68.7 ksi
Specimen Thk: 0.04 in.
Specimen Width: 23.98 – 23.99 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 10.65 (min) | 5.71 |
| 13. | 12.2 |
| 16. | 18.0 |
| 20. | 25.1 |
| 25. | 44.0 |
| 28.69 (max) | 71.9 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.82 (min) | 11.9 |
| 10. | 12.0 |
| 13. | 14.4 |
| 16. | 23.0 |
| 20. | 44.6 |
| 22.74 (max) | 64.8 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.32 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.39 | 0. .5 .8 1.25 2. |

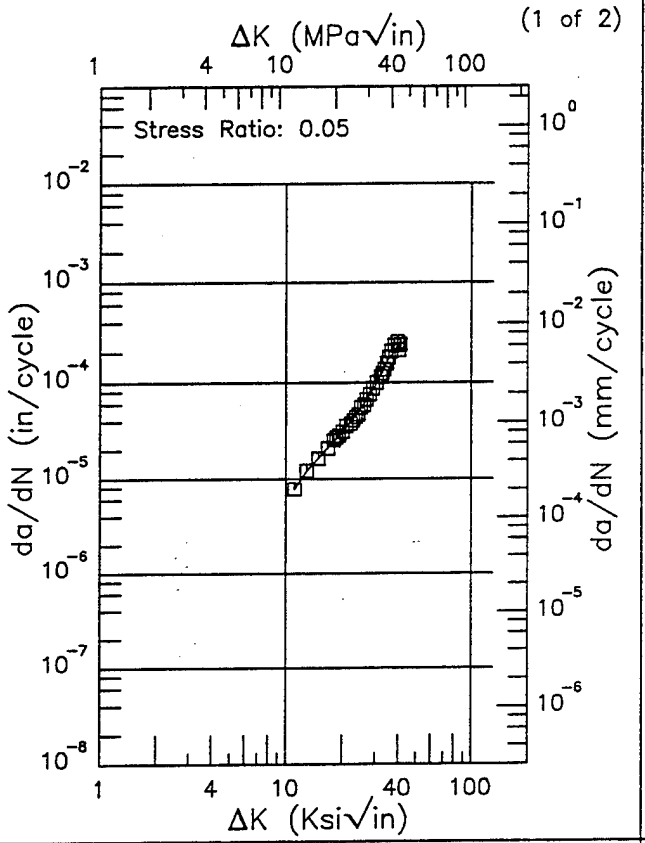
**Figure 8.20.3.1.10**

## 7475 (ALCLAD)

R

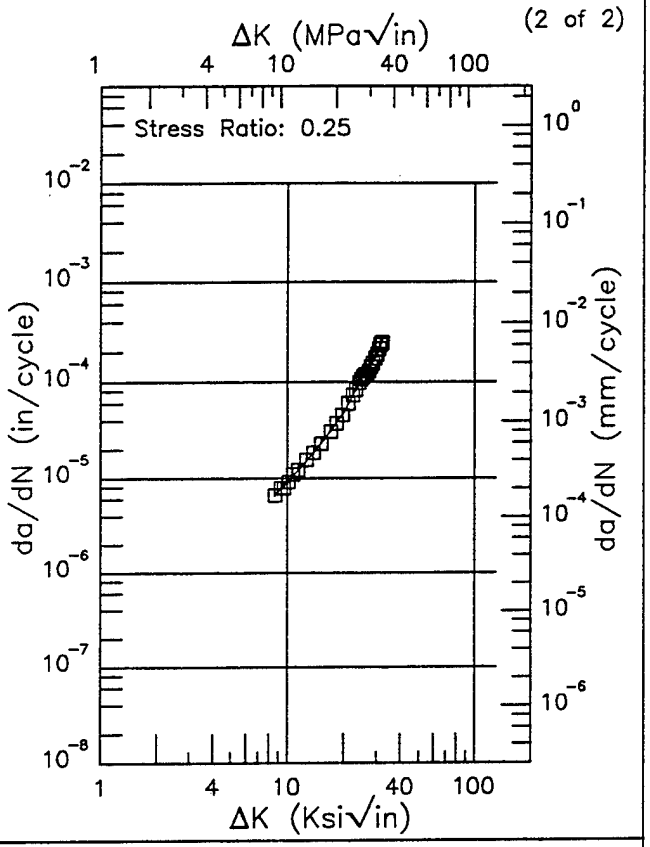
Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 59.8 ksi
Ult. Strength: 68.7 ksi
Specimen Thk: 0.04 in.
Specimen Width: 36 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.08 (min) | 7.82 |
| 13. | 12.2 |
| 16. | 19.3 |
| 20. | 30.9 |
| 25. | 53.3 |
| 30. | 91.1 |
| 35. | 169. |
| 40. | 239. |
| 40.71 (max) | 235. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.61 | 0. .5 .8 1.25 2. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 8.57 (min) | 6.51 |
| 9. | 7.21 |
| 10. | 9.02 |
| 13. | 16.2 |
| 16. | 26.2 |
| 20. | 49.1 |
| 25. | 108. |
| 30. | 186. |
| 31.95 (max) | 270. |

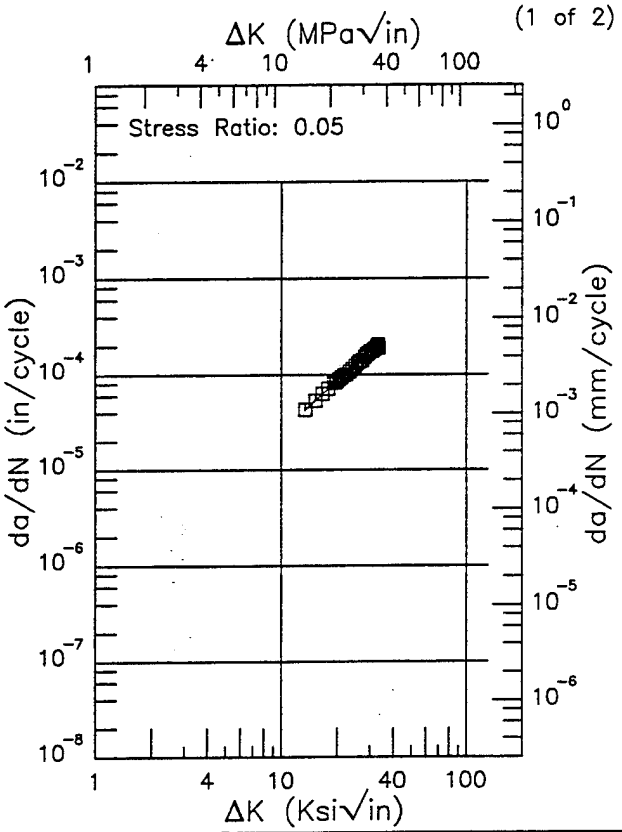
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.30 | 0. .5 .8 1.25 2. |

**Figure 8.20.3.1.11**

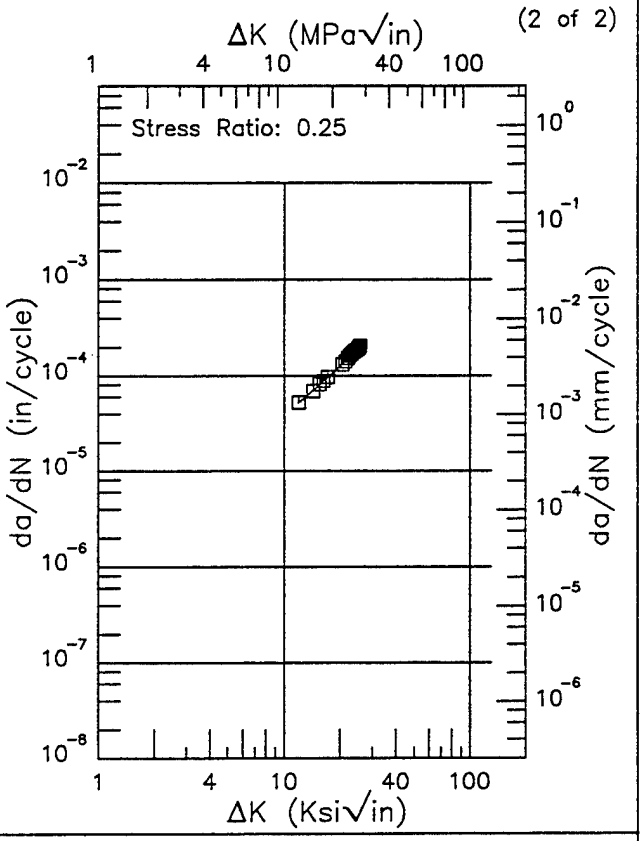
## 7475 (ALCLAD) R

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: L–T
Frequency: 2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 59.8 ksi
Ult. Strength: 68.7 ksi
Specimen Thk: 0.04 in.
Specimen Width: 35.96 – 36 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 13.39 (min) | 42.7 |
| 16. | 58.8 |
| 20. | 86.7 |
| 25. | 123. |
| 30. | 173. |
| 33.27 (max) | 198. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.95 (min) | 51.8 |
| 13. | 59.4 |
| 16. | 84.5 |
| 20. | 126. |
| 25. | 194. |
| 25.66 (max) | 204. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.58 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.18 | 0. .5 .8 1.25 2. |

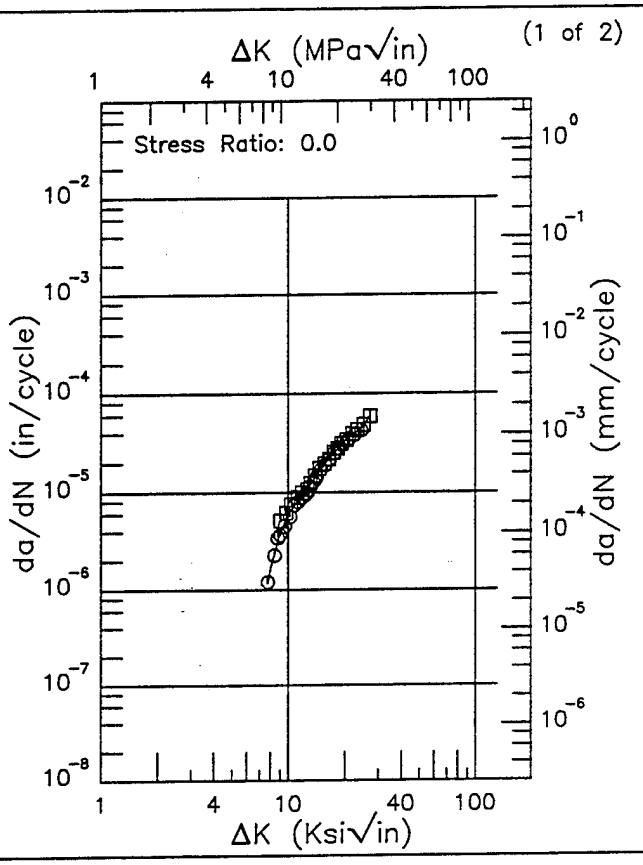
**Figure 8.20.3.1.12**

## 7475 (ALCLAD)

R

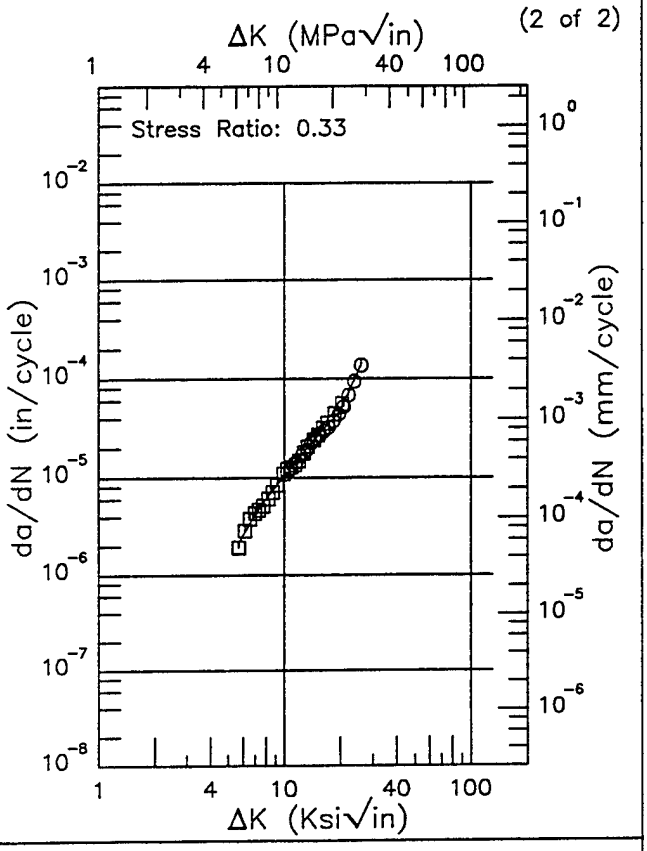
Condition/Ht: T761
Form: 0.09 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 13.3 Hz
Environment: LAB AIR; RT

Yield Strength: 66 ksi
Ult. Strength: 74.5 ksi
Specimen Thk: 0.09 in.
Specimen Width: 4 in.
Ref: 86213




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.75 (min) | 1.17 |
| 8. | 1.60 |
| 9. | 3.84 |
| 10. | 6.13 |
| 13. | 11.6 |
| 16. | 20.6 |
| 20. | 32.9 |
| 25. | 47.0 |
| 27.14 (max) | 58.5 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 7.29 | 0. .5 .8 1.25 2. |




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.67 (min) | 2.11 |
| 6. | 2.60 |
| 7. | 4.25 |
| 8. | 6.07 |
| 9. | 8.06 |
| 10. | 10.3 |
| 13. | 19.0 |
| 16. | 29.7 |
| 20. | 48.2 |
| 25. | 118. |
| 25.76 (max) | 136. |

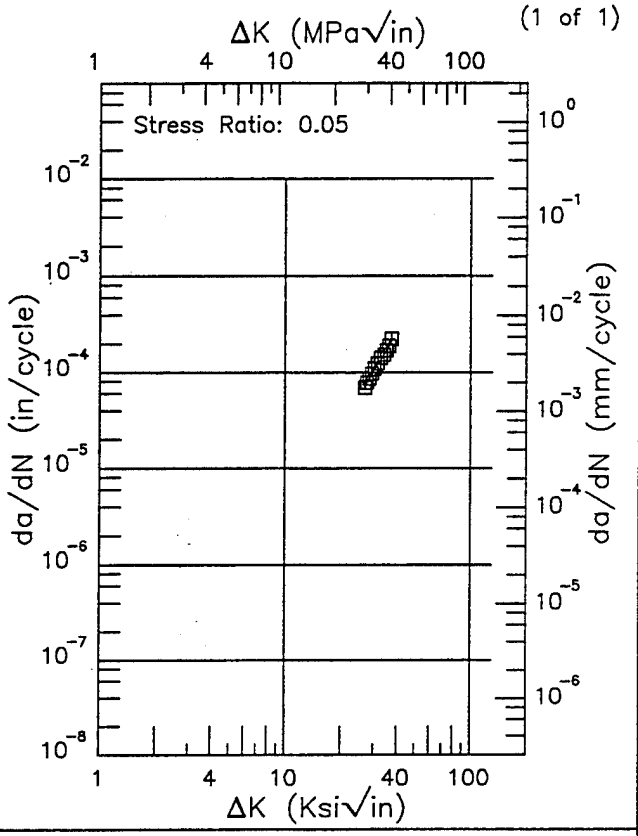
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 4.88 | 0. .5 .8 1.25 2. |

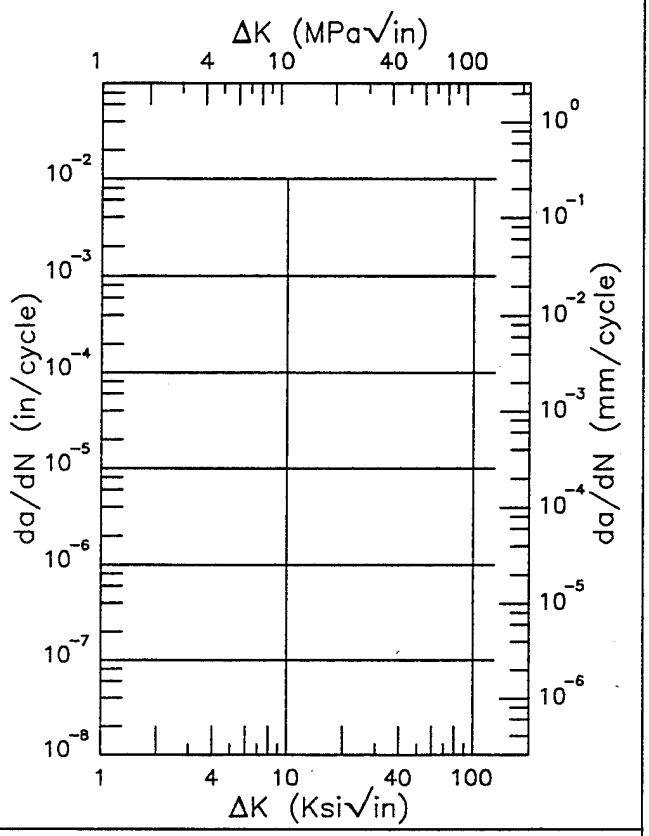
**Figure 8.20.3.1.13**

## 7475 (ALCLAD) R

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 59.9 ksi
Ult. Strength: 67.3 ksi
Specimen Thk: 0.04 in.
Specimen Width: 23.94 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 26.64 (min) | 69.3 |
| 30. | 106. |
| 35. | 169. |
| 37.33 (max) | 224. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.46 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

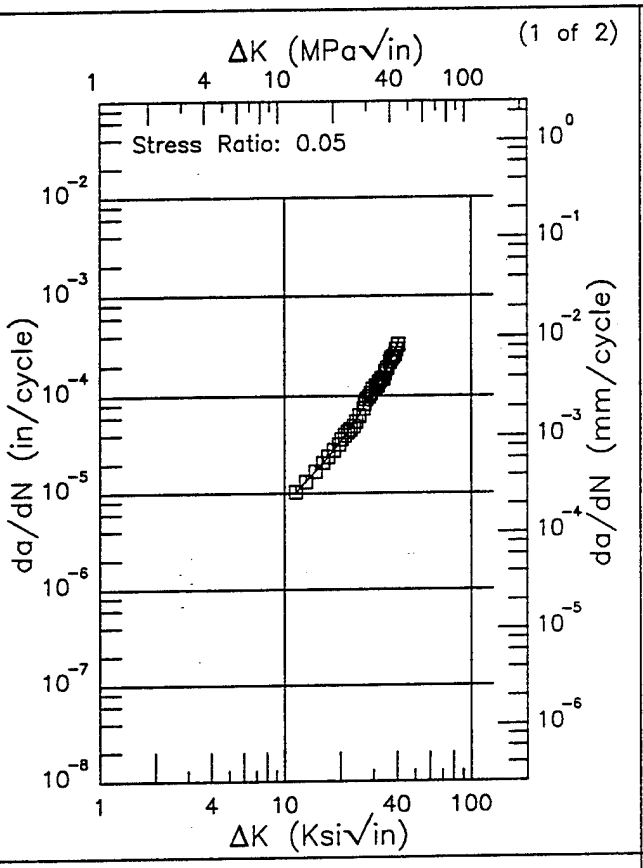
**Figure 8.20.3.1.14**

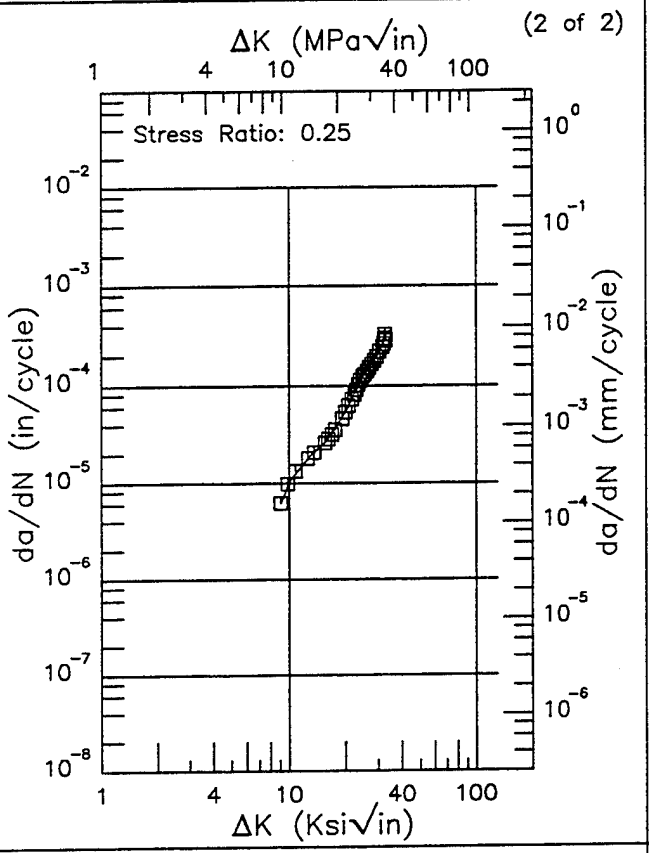
## 7475 (ALCLAD)

R

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 59.9 ksi
Ult. Strength: 67.3 ksi
Specimen Thk: 0.041 in.
Specimen Width: 36 – 36.02 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 11.47 (min) | 10.2 |
| 13. | 13.1 |
| 16. | 20.4 |
| 20. | 34.2 |
| 25. | 62.8 |
| 30. | 114. |
| 35. | 181. |
| 40. | 309. |
| 40.45 (max) | 331. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 9.01 (min) | 6.17 |
| 10. | 10.3 |
| 13. | 19.2 |
| 16. | 27.9 |
| 20. | 54.6 |
| 25. | 127. |
| 30. | 208. |
| 32.68 (max) | 313. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.48 | 0. .5 .8 1.25 2. |

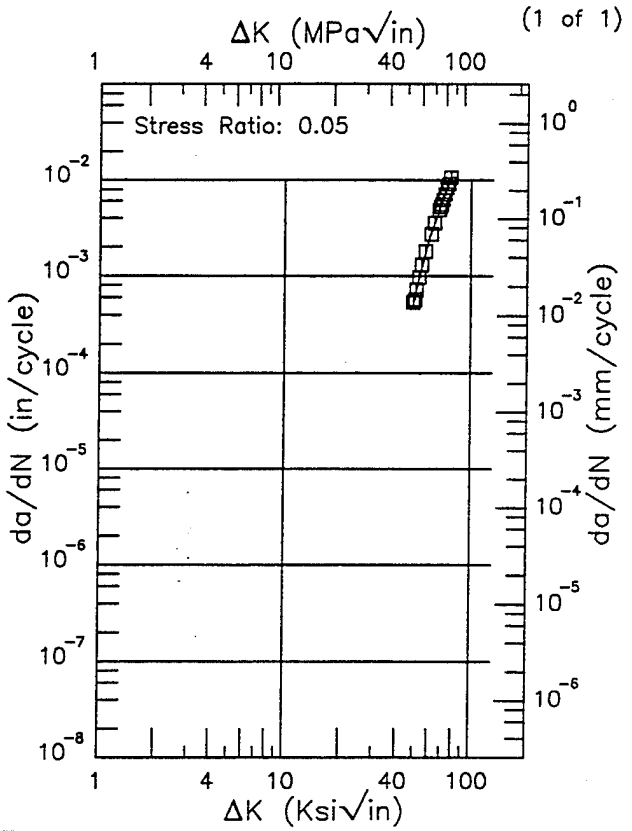
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.29 | 0. .5 .8 1.25 2. |

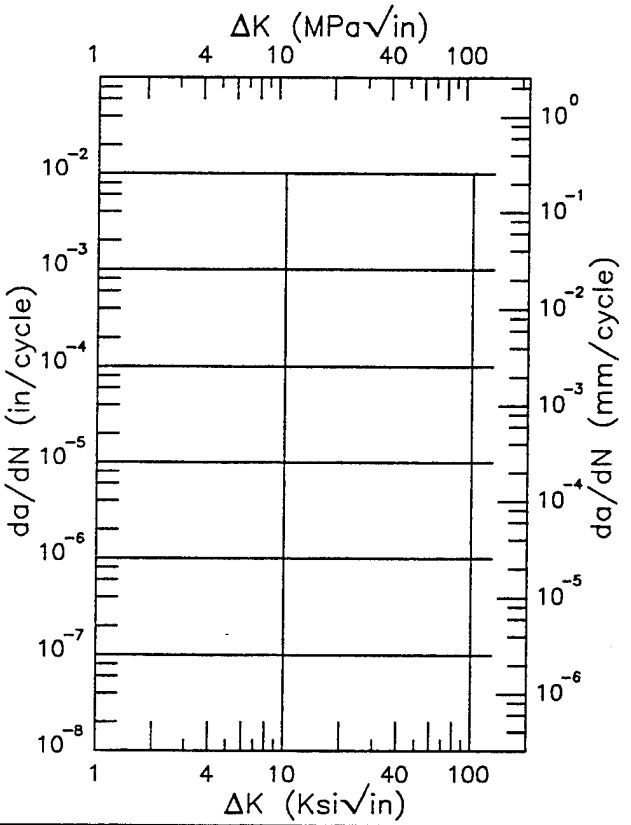
**Figure 8.20.3.1.15**

## 7475 (ALCLAD) R

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: H.H.A.; RT

Yield Strength: 59.9 ksi
Ult. Strength: 67.3 ksi
Specimen Thk: 0.04 in.
Specimen Width: 12 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 49.02 (min) | 493. |
| 50. | 603. |
| 60. | 2504. |
| 70. | 6068. |
| 77.48 (max) | 10397. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.07 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

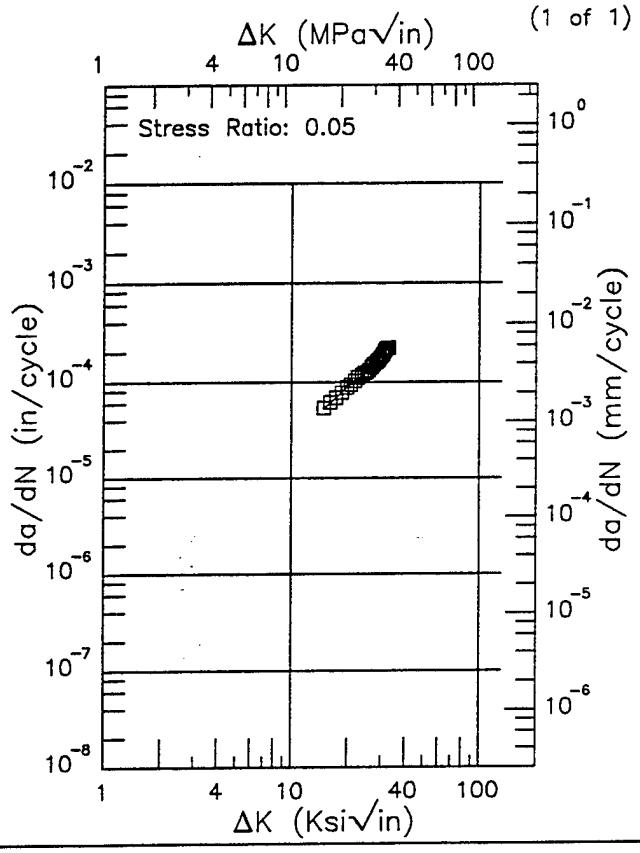
**Figure 8.20.3.1.16**

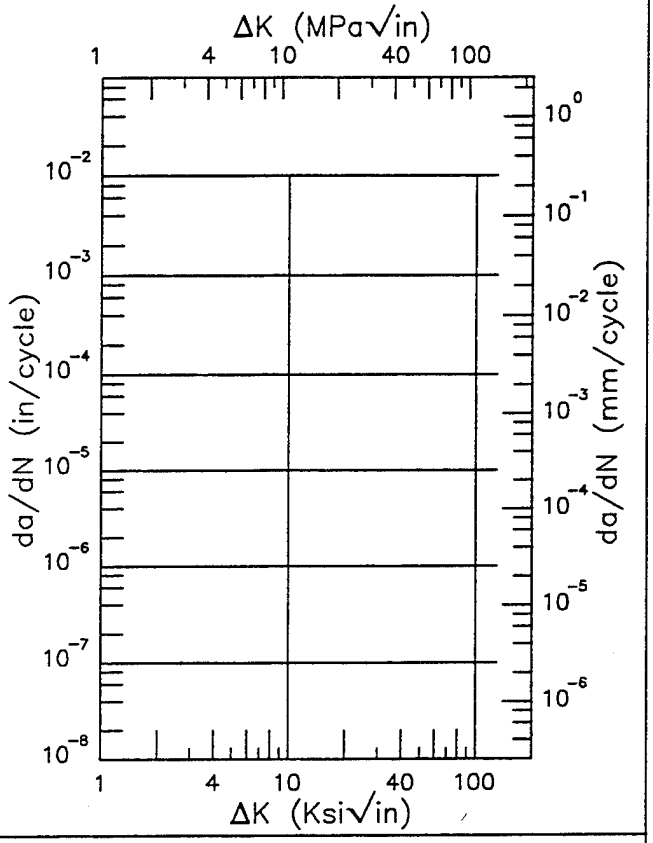
## 7475 (ALCLAD)

R

Condition/Ht: T761
Form: 0.04 in. Sheet
Specimen Type: CCP (max load specified)
Orientation: T–L
Frequency: 2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 59.9 ksi
Ult. Strength: 67.3 ksi
Specimen Thk: 0.04 in.
Specimen Width: 35.99 in.
Ref: 86212




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 14.79 (min) | 53.7 |
| 16. | 60.5 |
| 20. | 90.2 |
| 25. | 127. |
| 30. | 184. |
| 32.79 (max) | 229. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 1.62 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.20.3.1.17**

## TABLE 8.21.1.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK
## 8009 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| UNSPECIFIED | SHEET | 0.1 | 5 | 0.29 | 1.05 | 4.43 | | | |
| | | 0.5 | 5 | 0.32 | 1.25 | 6.05 | | | |

8-1323

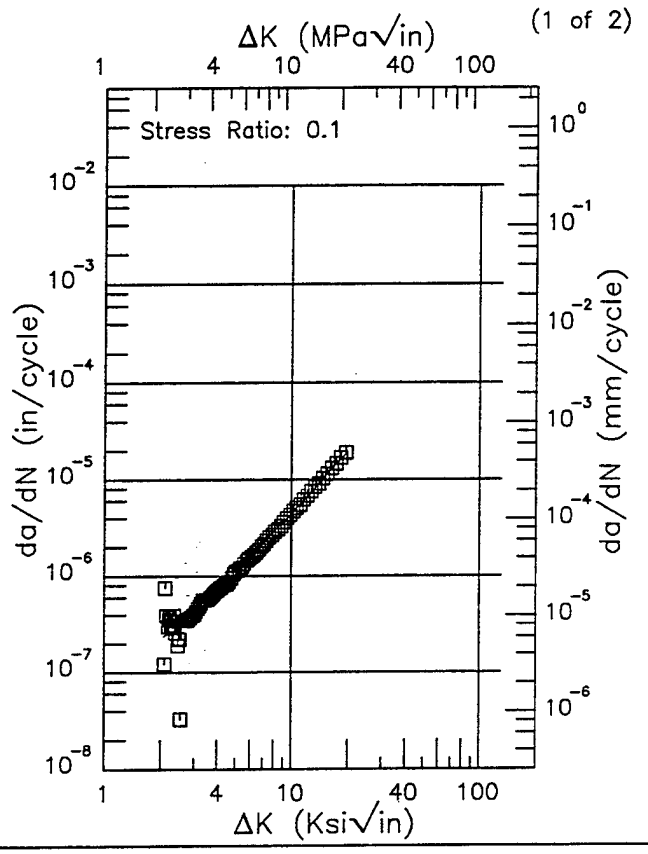
8009

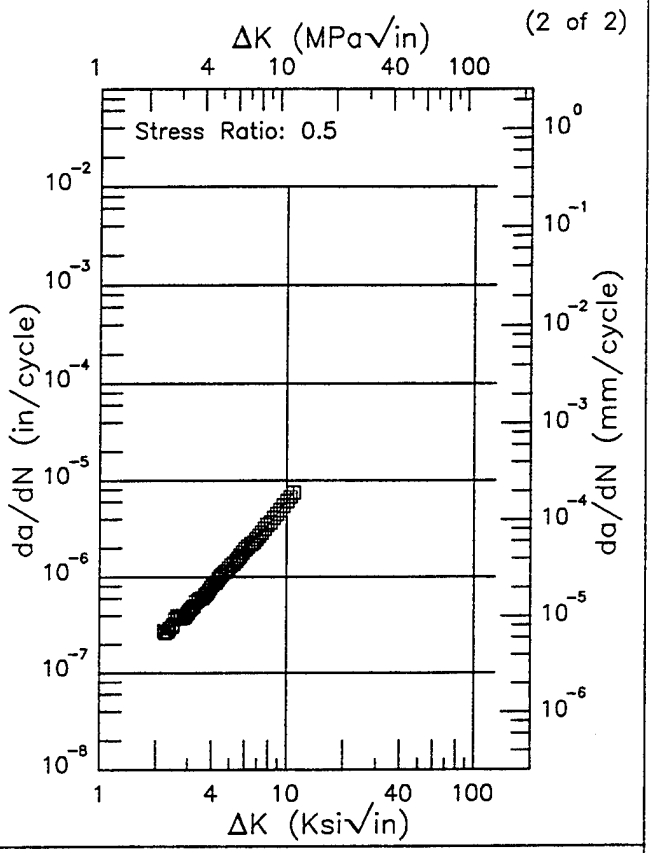
8009

R

Condition/Ht: UNSPECIFIED
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR; RT

Yield Strength: 60 ksi
Ult. Strength: 62 ksi
Specimen Thk: 0.089 in.
Specimen Width: 1.5 in.
Ref: UD011




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.08 (min) | 0.241 |
| 2.5 | 0.289 |
| 3. | 0.376 |
| 3.5 | 0.495 |
| 4. | 0.647 |
| 5. | 1.05 |
| 6. | 1.57 |
| 7. | 2.20 |
| 8. | 2.89 |
| 9. | 3.63 |
| 10. | 4.43 |
| 13. | 7.59 |
| 16. | 12.6 |
| 19.44 (max) | 18.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.20 (min) | 0.261 |
| 2.5 | 0.321 |
| 3. | 0.445 |
| 3.5 | 0.600 |
| 4. | 0.786 |
| 5. | 1.25 |
| 6. | 1.85 |
| 7. | 2.58 |
| 8. | 3.47 |
| 9. | 4.62 |
| 10. | 6.05 |
| 10.90 (max) | 7.44 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 29.83 | 0. .5 .8 1.25 2. |

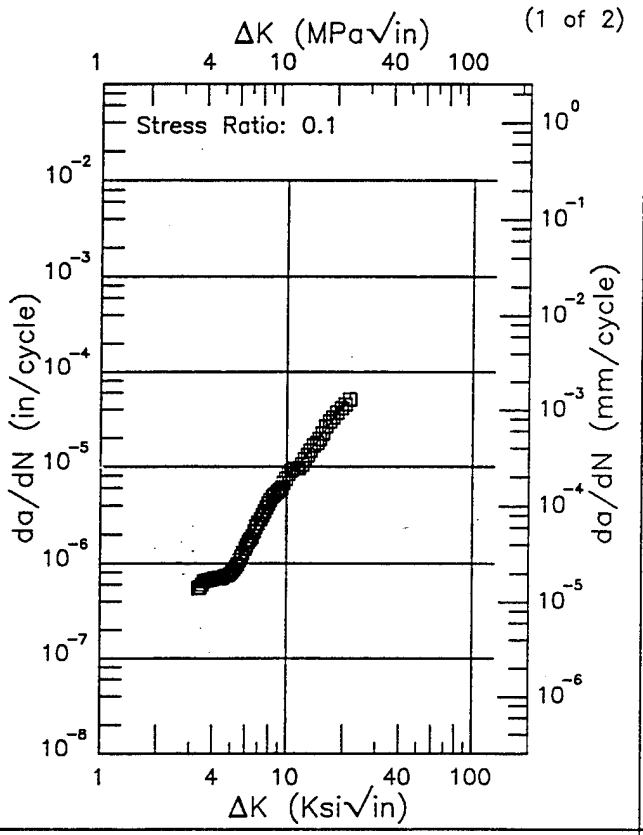
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.50 | 0. .5 .8 1.25 2. |

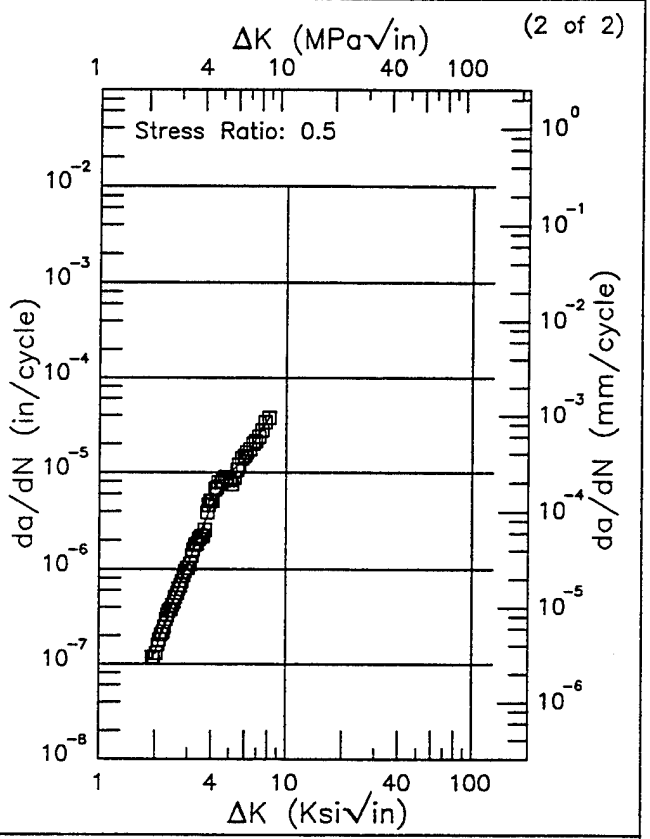
**Figure 8.21.3.1.1**

8009 R

Condition/Ht: UNSPECIFIED
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR;400°F

Yield Strength: 39 ksi
Ult. Strength: 42 ksi
Specimen Thk: 0.089 in.
Specimen Width: 1.5 – 1.502 in.
Ref: UD011




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.32 (min) | 0.676 |
| 3.5 | 0.628 |
| 4. | 0.612 |
| 5. | 0.870 |
| 6. | 1.48 |
| 7. | 2.51 |
| 8. | 3.97 |
| 9. | 5.76 |
| 10. | 7.62 |
| 13. | 13.6 |
| 16. | 24.1 |
| 20. | 44.9 |
| 21.42 (max) | 47.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.93 (min) | 0.111 |
| 2. | 0.132 |
| 2.5 | 0.431 |
| 3. | 1.11 |
| 3.5 | 2.41 |
| 4. | 4.52 |
| 5. | 9.83 |
| 6. | 13.8 |
| 7. | 23.0 |
| 8. | 35.7 |
| 8.06 (max) | 36.1 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 6.46 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 10.86 | 0. .5 .8 1.25 2. |

**Figure 8.21.3.1.2**

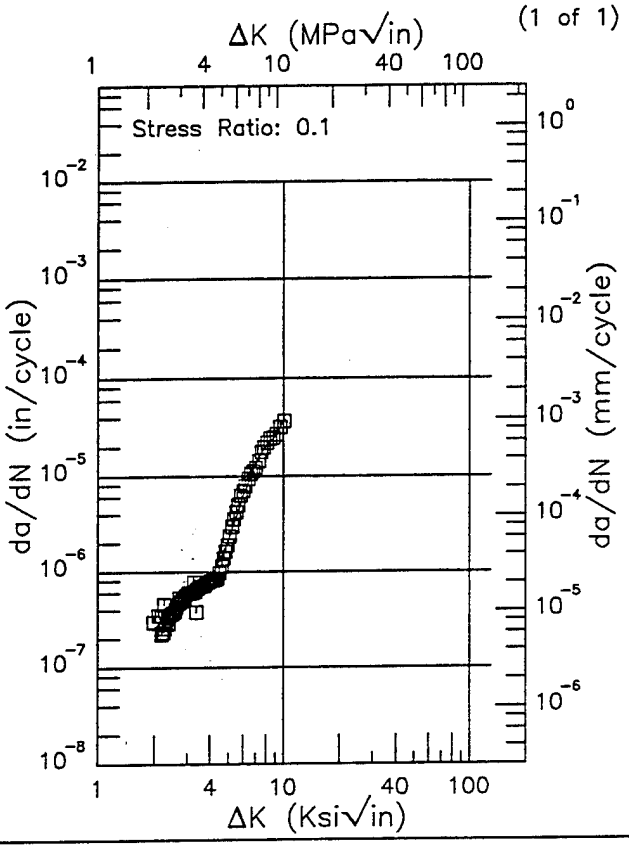
8009

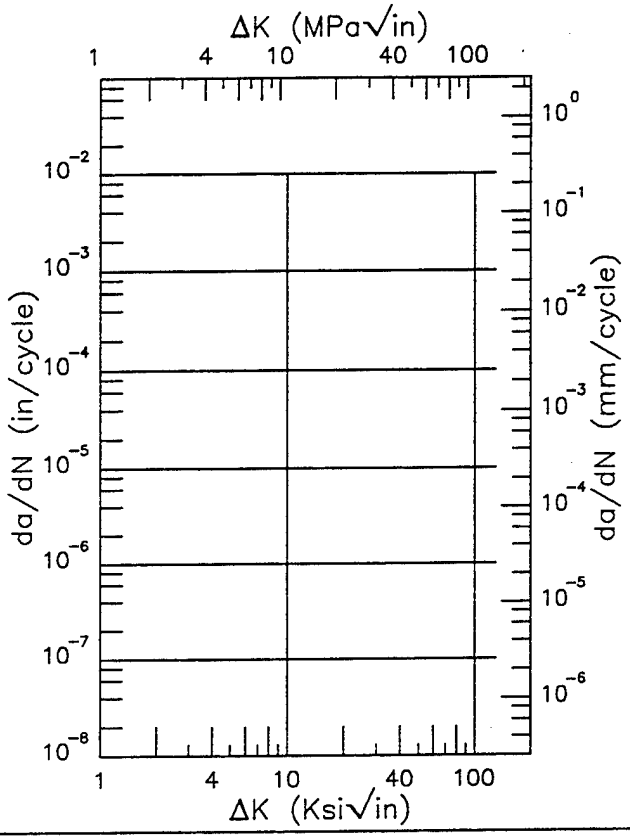
R

Condition/Ht: UNSPECIFIED
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR;600°F

Yield Strength: 31 ksi
Ult. Strength: 42 ksi
Specimen Thk: 0.088 in.
Specimen Width: 1.498 in.
Ref: UD011

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.97 (min) | 0.246 |
| 2. | 0.260 |
| 2.5 | 0.410 |
| 3. | 0.502 |
| 3.5 | 0.614 |
| 4. | 0.823 |
| 5. | 2.09 |
| 6. | 6.23 |
| 7. | 13.9 |
| 8. | 20.6 |
| 9. | 26.1 |
| 10. | 37.6 |
| 10.01 (max) | 37.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.84 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

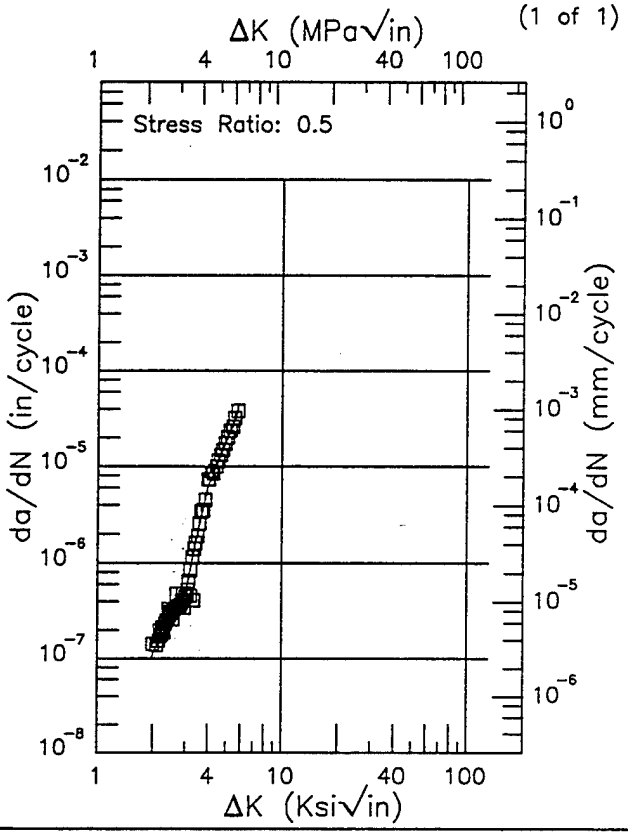
**Figure 8.21.3.1.3**

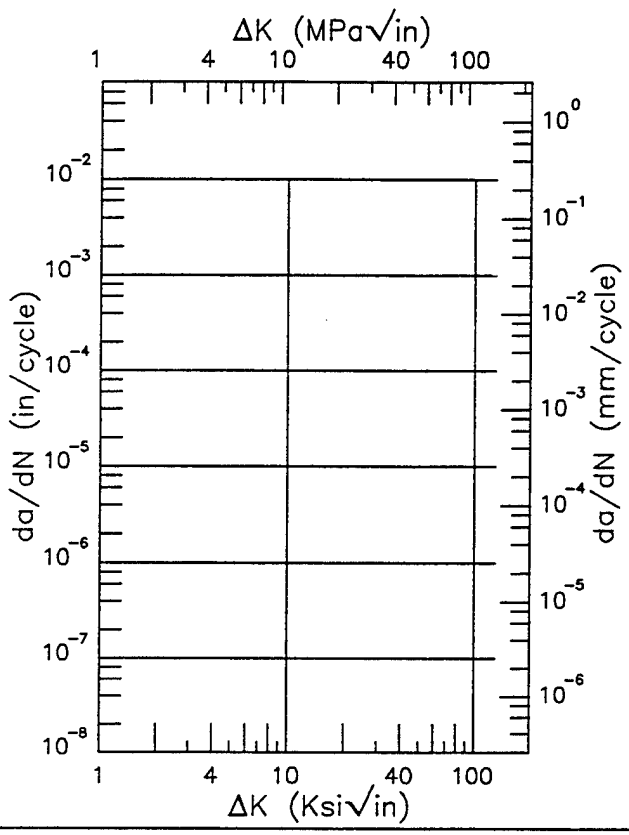
8009 R

Condition/Ht: UNSPECIFIED
Form: 0.09 in. Sheet
Specimen Type: CT
Orientation: L–T
Frequency: 5 Hz
Environment: LAB AIR;600°F

Yield Strength: 31 ksi
Ult. Strength: 42 ksi
Specimen Thk: 0.089 in.
Specimen Width: 2.002 in.
Ref: UD011

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 1.99 (min) | 0.105 |
| 2. | 0.112 |
| 2.5 | 0.269 |
| 3. | 0.493 |
| 3.5 | 2.01 |
| 4. | 6.40 |
| 5. | 18.7 |
| 5.75 (max) | 38.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 17.06 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.21.3.1.4**

# TABLE 8.22.1.1



## MEAN PLANE STRAIN FRACTURE TOUGHNESS FOR ALUMINUM 7000/8000 SERIES ALLOY 8090 AT ROOM TEMPERATURE

| Product Form | Condition/Heat Treatment | $K_{Ic}$ ($ksi\sqrt{in}$) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Specimen Orientation | | | | | | | | |
| | | L-T | | | T-L | | | S-L | | |
| | | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n | Mean $K_{Ic}$ | Std Dev | n |
| Extrusion | T651 | 20.4 | 5.9 | 5 | --- | --- | --- | --- | --- | --- |

## TABLE 8.22.1.2.1

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 8090 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | FCGR ($10^{-6}$ in/cycle) ΔK Level (Ksi/in) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | EXTRUSION | 0.1 | 10 | | | 1.8 | 19.32 | | |
| | | 0.1 | 25 | | | 5.24 | 24.63 | | |
| T8; 338F 24HRS | EXTRUSION | 0. | 8 | | | 2.85 | 9.35 | | |
| | | 0.5 | 10 | | | 4.58 | 23.55 | | |

## TABLE 8.22.1.2.2



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 8090 AT ROOM TEMPERATURE

**ORIENTATION: L-T** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | EXTRUSION | 0.1 | 25 | | | 0.85 | 17.86 | | |
| | | 0.33 | 25 | | 0.27 | 1.86 | 34.84 | | |

## TABLE 8.22.1.2.3

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 8090 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: H.H.A.**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | EXTRUSION | 0.1 | 10 | | 0.55 | 6.9 | | | |
| | | 0.1 | 25 | | 0.37 | 8.06 | | | |
| T8; 338F 24HRS | EXTRUSION | 0. | 8 | | | 6.43 | | | |
| | | 0.5 | 10 | | 1.31 | | | | |

8-1331

## TABLE 8.22.1.2.4



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK 8090 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Lab Air**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi/in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T651 | EXTRUSION | 0.1 | 25 | | 0.25 | 0.34 | | | |
| | | 0.33 | 25 | | 0.49 | 5.12 | | | |

# TABLE 8.22.2.1



## ALUMINUM 8090 $K_{Ic}$

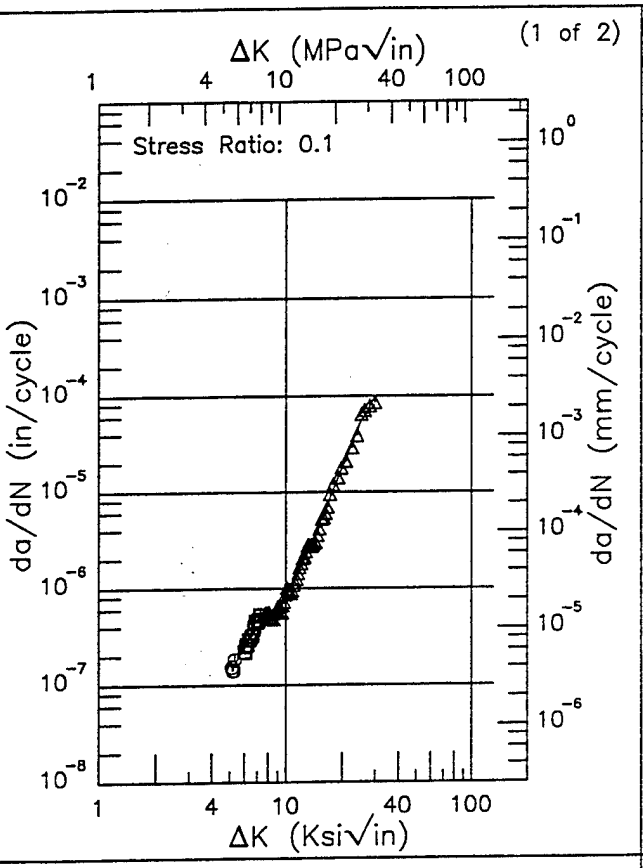
| CONDITION | PRODUCT | | TEST TEMP (F) | SPEC OR | YIELD STR (Ksi) | SPECIMEN | | | CRACK LENGTH (in.) A | 2.5 * ($K_{Ic}$/TYS)$^2$ (in.) | $K_{Ic}$ | | | DATE | REFER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FORM | THICK (in.) | | | | WIDTH (in.) W | THICK (in.) B | DESIGN | | | $K_{Ic}$ (Ksi * √in.) | $K_{Ic}$ MEAN | STAN DEV | | |
| T651 | Extrusion | 1.00 | R.T. | L-T | 58.0 | 3.004 | 0.251 | CT | --- | 0.57 | 27.70 | 20.4 | 5.9 | 1990 | WL003 |
| | | 1.00 | | | 59.6 | 1.991 | 0.291 | CT | --- | 0.47 | 25.80 | | | 1990 | WL003 |
| | | 1.00 | | | 64.1 | 1.992 | 0.291 | CT | --- | 0.16 | 16.30 | | | 1990 | WL003 |
| | | 1.00 | | | 64.1 | 1.992 | 0.292 | CT | --- | 0.15 | 15.90 | | | 1990 | WL003 |
| | | 1.00 | | | 64.1 | 1.992 | 0.291 | CT | --- | 0.16 | 16.10 | | | 1990 | WL003 |
| T651 | Extrusion | 1.00 | R.T. | T-L | 68.7 | 3.006 | 0.254 | CT | --- | 0.12 | 15.10 | --- | --- | 1990 | WL003 |
| T8; 338F 24HRS | Extrusion | 1.00 | R.T. | T-L | 68.7 | 2.507 | 0.255 | CT | --- | 0.11 | 14.60 | --- | --- | 1990 | WL003 |

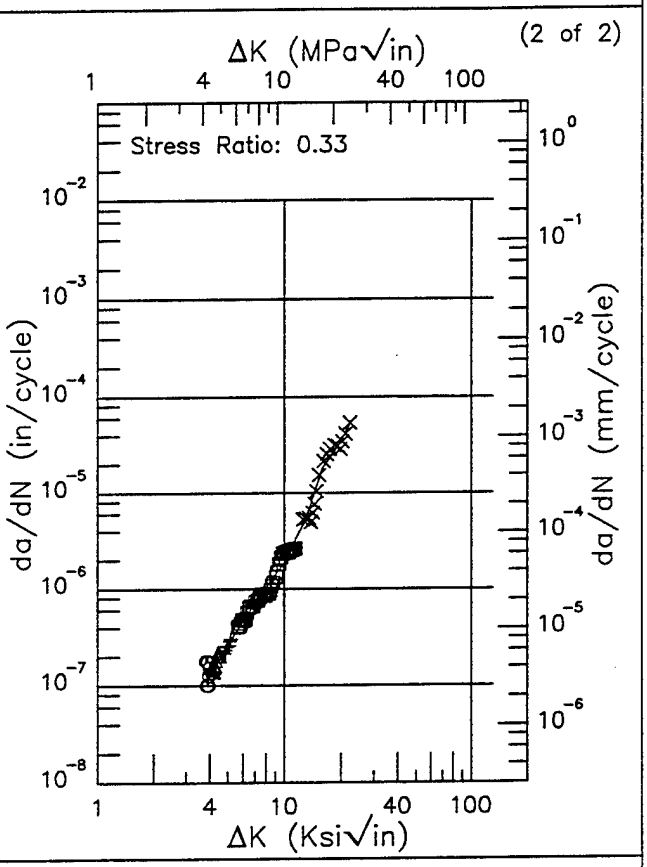
8090

R

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 25 Hz
Environment: LAB AIR; RT

Yield Strength: 54.6 ksi
Ult. Strength: 68.4 ksi
Specimen Thk: 0.291 in.
Specimen Width: 1.991 – 1.995 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.11 (min) | 0.139 |
| 6. | 0.260 |
| 7. | 0.392 |
| 8. | 0.518 |
| 9. | 0.661 |
| 10. | 0.853 |
| 13. | 2.27 |
| 16. | 6.34 |
| 20. | 17.9 |
| 25. | 53.9 |
| 29.80 (max) | 81.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.81 (min) | 0.124 |
| 4. | 0.142 |
| 5. | 0.268 |
| 6. | 0.458 |
| 7. | 0.715 |
| 8. | 1.03 |
| 9. | 1.40 |
| 10. | 1.86 |
| 13. | 5.29 |
| 16. | 18.2 |
| 20. | 34.8 |
| 22.15 (max) | 52.5 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.80 | 0. .5 .8 1.25 2. |

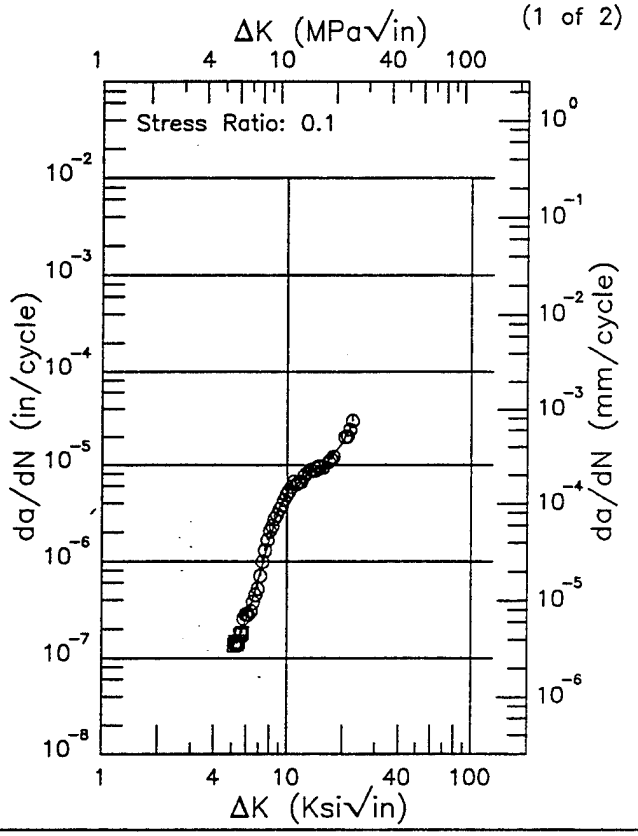
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.84 | 0. .5 .8 1.25 2. |

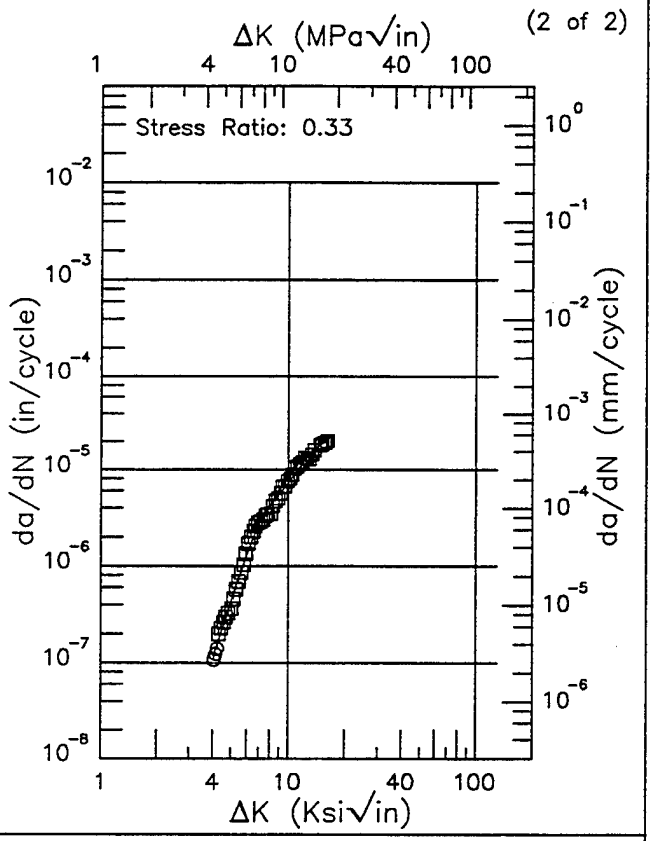
**Figure 8.22.3.1.1**

8090 R

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency:
Environment: H.H.A.;83°F –85°F

Yield Strength: 57.9 ksi
Ult. Strength: 70.5 ksi
Specimen Thk: 0.233 – 0.235 in.
Specimen Width: 2 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 5.12 (min) | 0.132 |
| 6. | 0.251 |
| 7. | 0.672 |
| 8. | 1.68 |
| 9. | 3.39 |
| 10. | 5.24 |
| 13. | 7.99 |
| 16. | 10.1 |
| 20. | 17.5 |
| 22.42 (max) | 28.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.03 (min) | 0.117 |
| 5. | 0.436 |
| 6. | 1.29 |
| 7. | 2.69 |
| 8. | 4.15 |
| 9. | 5.56 |
| 10. | 7.27 |
| 13. | 14.9 |
| 16. | 20.5 |
| 16.11 (max) | 21.0 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 8.86 | ⊙ 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 9.41 | ⊡ 0. .5 .8 1.25 2. |

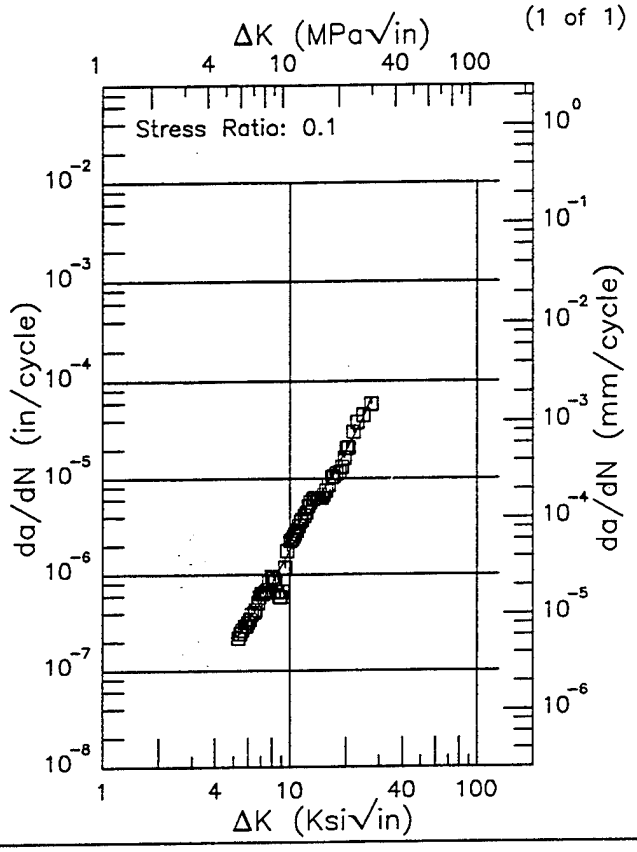
**Figure 8.22.3.1.2**

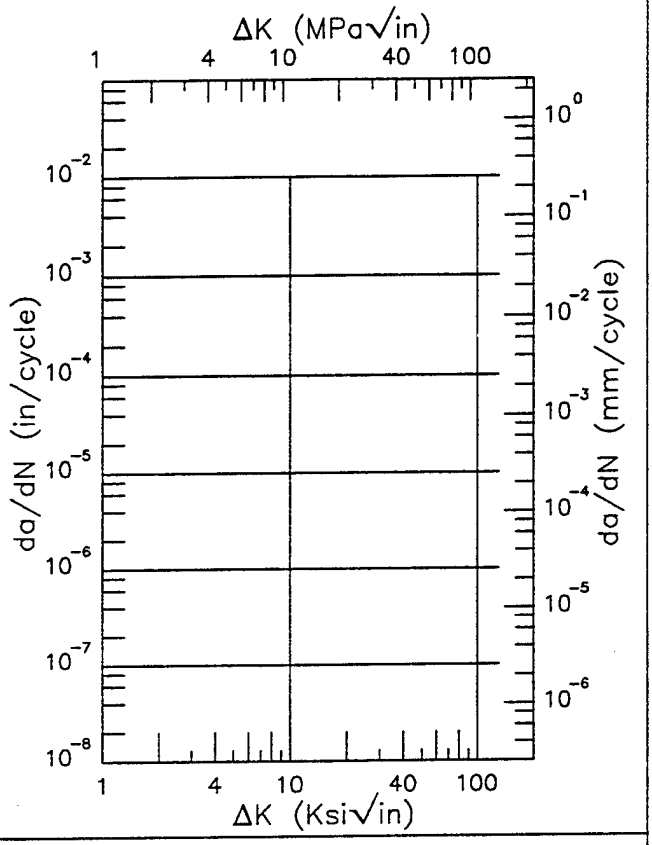
8090

R

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 10 Hz
Environment: H.H.A.; RT

Yield Strength: 58 ksi
Ult. Strength: 68.2 ksi
Specimen Thk: 0.251 in.
Specimen Width: 3.004 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.31 (min) | 0.231 |
| 6. | 0.320 |
| 7. | 0.512 |
| 8. | 0.803 |
| 9. | 1.22 |
| 10. | 1.80 |
| 13. | 4.69 |
| 16. | 9.54 |
| 20. | 19.3 |
| 25. | 45.3 |
| 27.08 (max) | 67.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

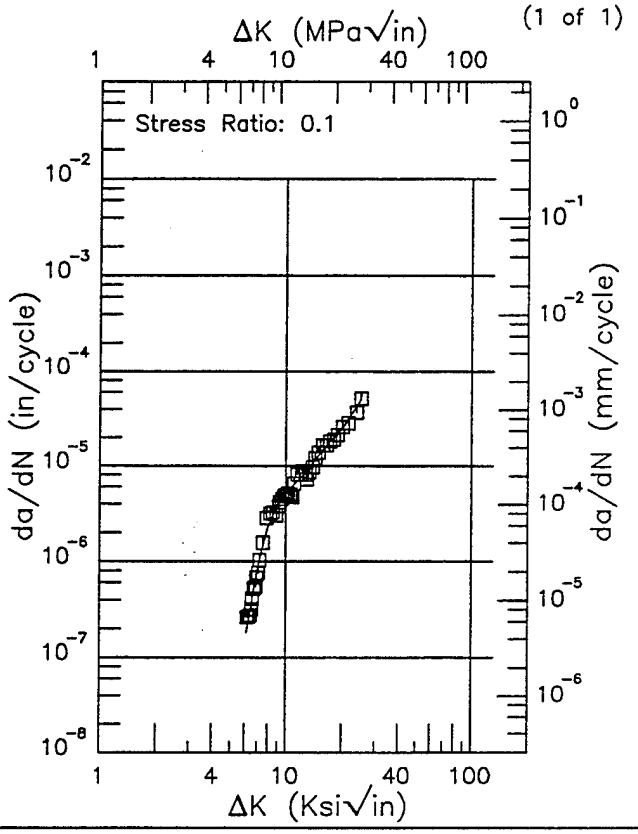
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 18.43 | 0. .5 .8 1.25 2. |

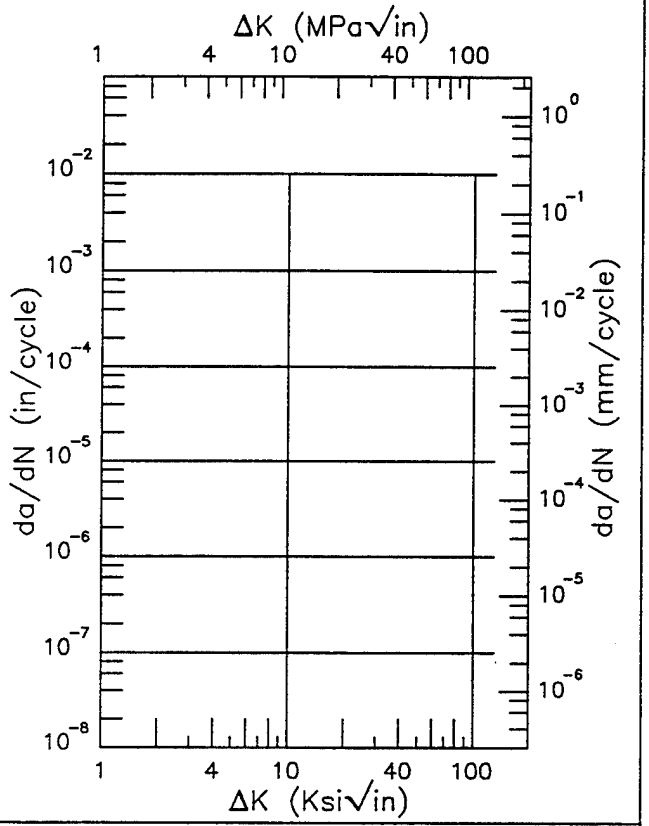
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.22.3.1.3**

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 25 Hz
Environment: H.H.A.; RT

Yield Strength: 54.6 ksi
Ult. Strength: 68.4 ksi
Specimen Thk: 0.291 in.
Specimen Width: 1.995 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.16 (min) | 0.181 |
| 7. | 0.836 |
| 8. | 2.30 |
| 9. | 3.92 |
| 10. | 5.24 |
| 13. | 8.78 |
| 16. | 15.5 |
| 20. | 24.6 |
| 25. | 49.3 |
| 25.06 (max) | 50.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 14.36 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

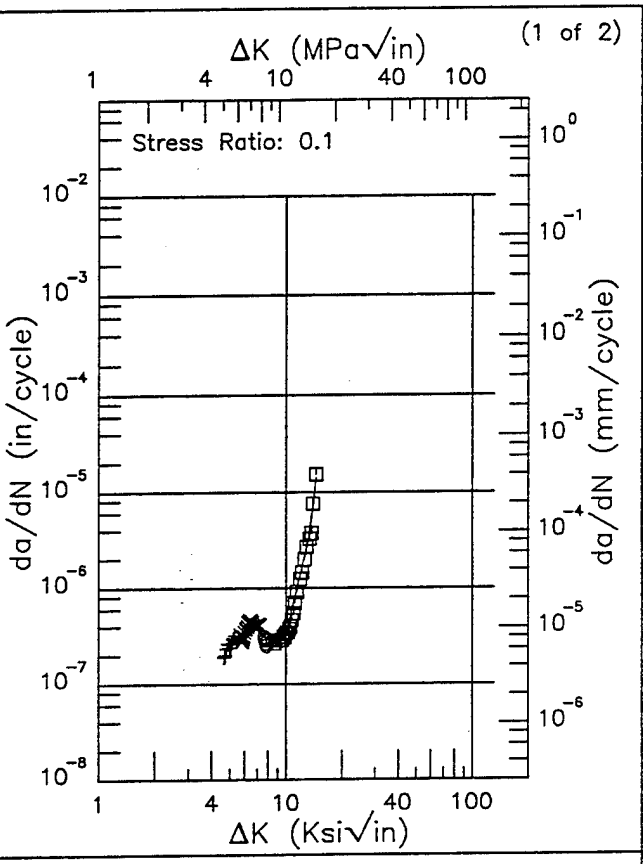
**Figure 8.22.3.1.4**

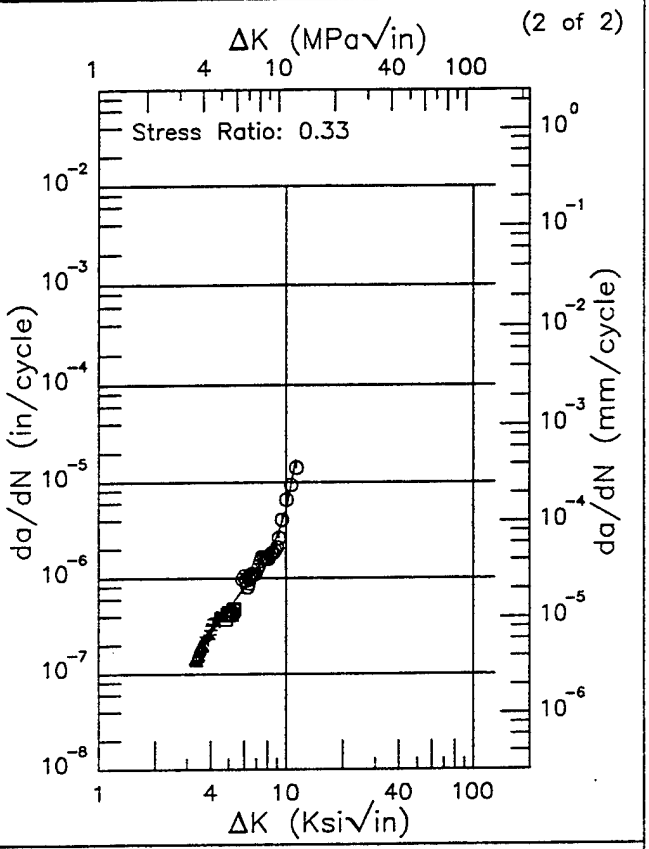
8090

R

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: T–L
Frequency: 25 Hz
Environment: LAB AIR; RT

Yield Strength: 64.1 ksi
Ult. Strength: 75.6 ksi
Specimen Thk: 0.291 – 0.292 in.
Specimen Width: 1.992 – 1.995 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.65 (min) | 0.211 |
| 5. | 0.250 |
| 6. | 0.369 |
| 7. | 0.389 |
| 8. | 0.297 |
| 9. | 0.257 |
| 10. | 0.342 |
| 13. | 2.77 |
| 14.40 (max) | 14.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.32 (min) | 0.163 |
| 3.5 | 0.187 |
| 4. | 0.266 |
| 5. | 0.486 |
| 6. | 0.796 |
| 7. | 1.20 |
| 8. | 1.72 |
| 9. | 2.69 |
| 10. | 5.12 |
| 11.30 (max) | 17.0 |

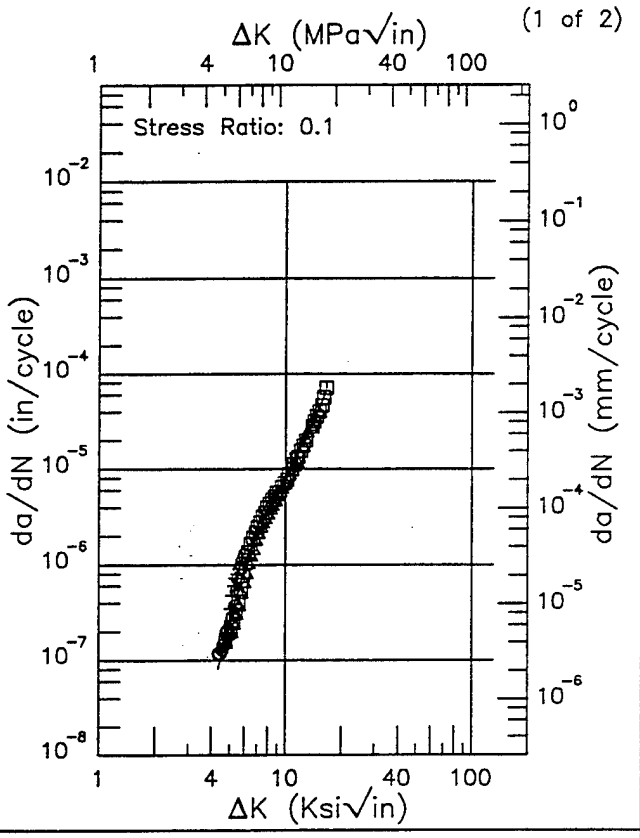
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.65 | MAX 0. .5 .8 1.25 2. |

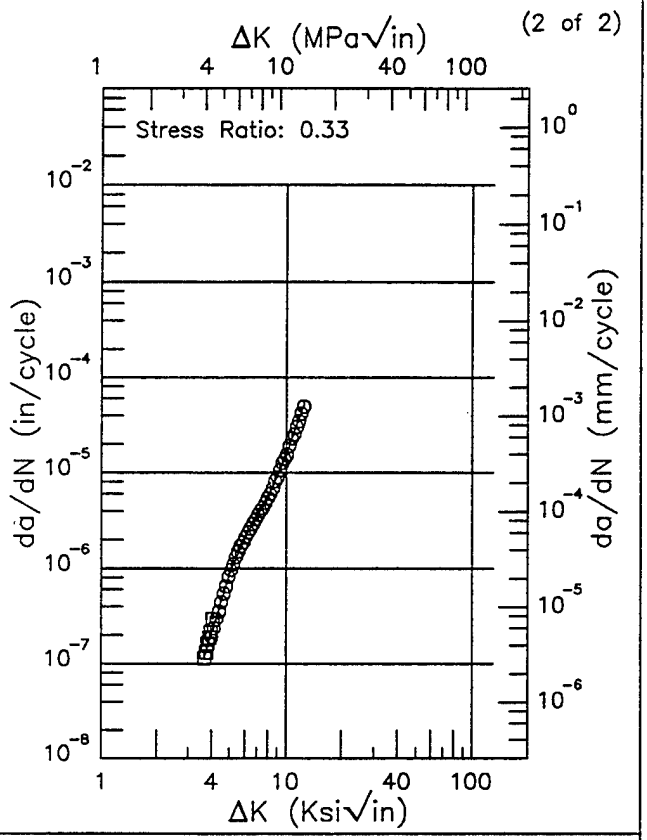
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 12.79 | Δ 0. .5 .8 1.25 2. |

**Figure 8.22.3.1.5**

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: T-L
Frequency:
Environment: H.H.A.;82°F -85°F

Yield Strength: 67.5 ksi
Ult. Strength: 76.6 ksi
Specimen Thk: 0.237 - 0.238 in.
Specimen Width: 2 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 4.35 (min) | 0.0824 |
| 5. | 0.274 |
| 6. | 0.924 |
| 7. | 2.03 |
| 8. | 3.56 |
| 9. | 5.52 |
| 10. | 8.02 |
| 13. | 21.8 |
| 16. | 58.8 |
| 16.41 (max) | 67.8 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.66 (min) | 0.119 |
| 4. | 0.212 |
| 5. | 0.857 |
| 6. | 2.08 |
| 7. | 3.48 |
| 8. | 5.48 |
| 9. | 9.29 |
| 10. | 15.7 |
| 12.41 (max) | 49.9 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 20.72 | △ □ 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.43 | ○ 0. .5 .8 1.25 2. |

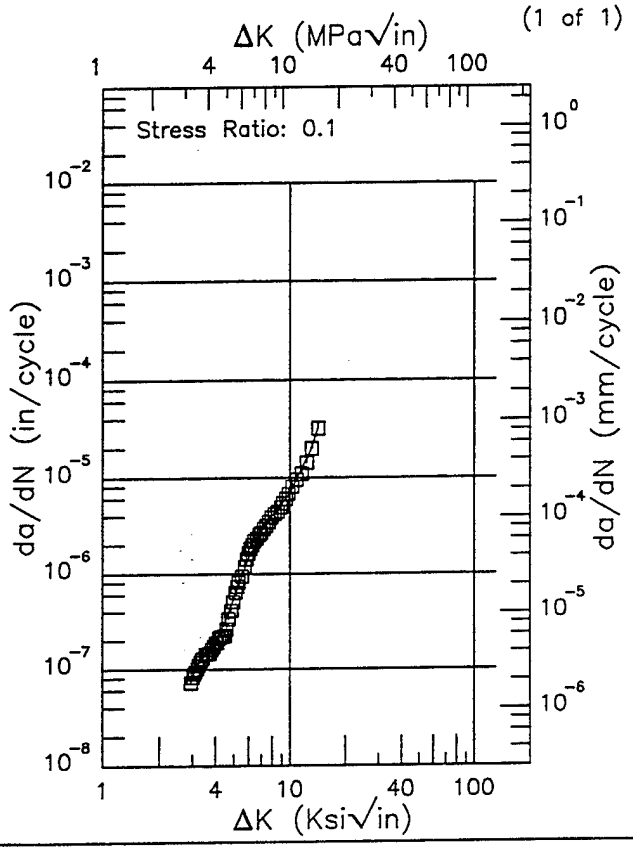
**Figure 8.22.3.1.6**

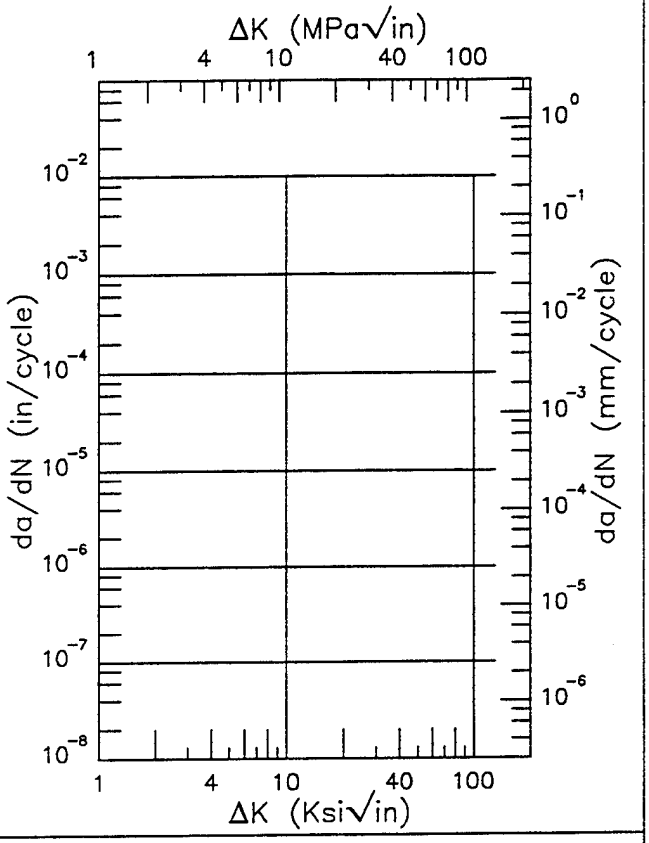
R 8090

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: T–L
Frequency: 10 Hz
Environment: H.H.A.; RT

Yield Strength: 68.7 ksi
Ult. Strength: 75.6 ksi
Specimen Thk: 0.254 in.
Specimen Width: 3.006 in.
Ref: WL003

(1 of 1)




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 2.94 (min) | 0.100 |
| 3. | 0.0988 |
| 3.5 | 0.115 |
| 4. | 0.180 |
| 5. | 0.549 |
| 6. | 1.44 |
| 7. | 2.74 |
| 8. | 4.01 |
| 9. | 5.29 |
| 10. | 6.90 |
| 13. | 19.2 |
| 14.14 (max) | 31.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.75 | 0. .5 .8 1.25 2. |

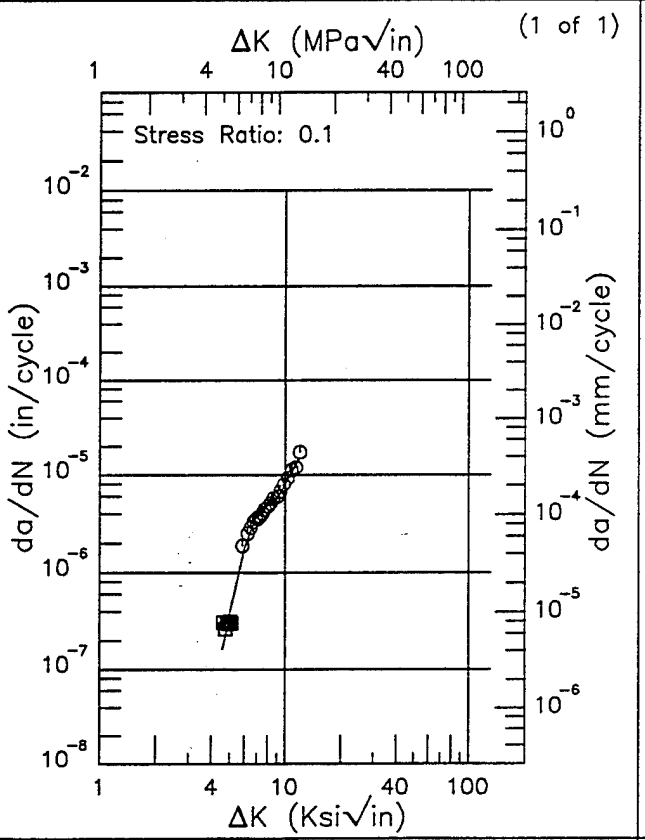
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

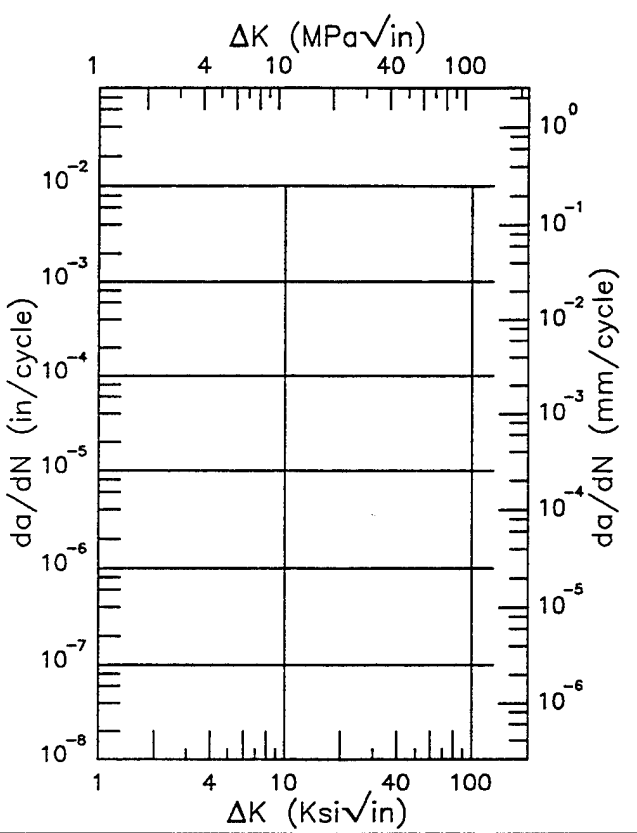
**Figure 8.22.3.1.7**

8090 R

Condition/Ht: T651
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: T–L
Frequency: 25 Hz
Environment: H.H.A.; RT

Yield Strength: 64.1 ksi
Ult. Strength: 75.6 ksi
Specimen Thk: 0.292 in.
Specimen Width: 1.992 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 4.59 (min) | 0.163 |
| 5. | 0.372 |
| 6. | 1.76 |
| 7. | 3.98 |
| 8. | 5.03 |
| 9. | 5.75 |
| 10. | 8.06 |
| 11.91 (max) | 15.0 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 21.84 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.22.3.1.8**

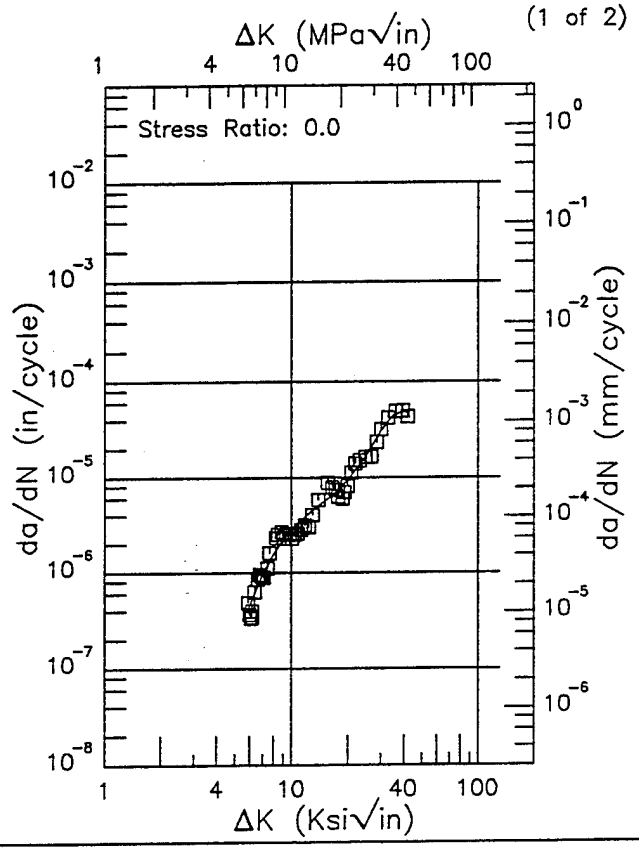
## 8090

R

Condition/Ht: T8; 338F 24HRS
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: L–T
Frequency: 8 – 10 Hz
Environment: H.H.A.; RT

Yield Strength: 62.8 ksi
Ult. Strength: 71.1 ksi
Specimen Thk: 0.254 – 0.256 in.
Specimen Width: 2.495 – 2.503 in.
Ref: WL003

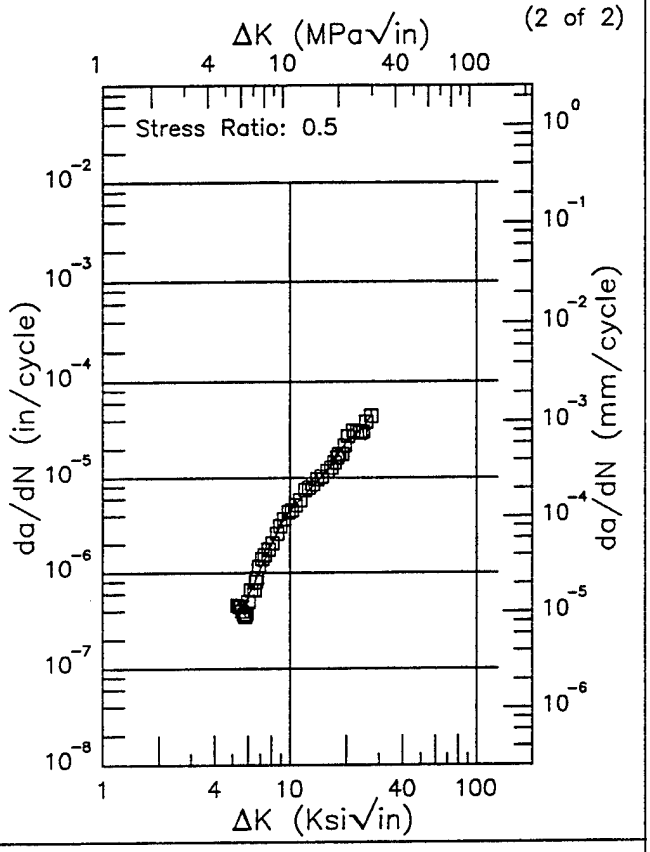
(1 of 2)




| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.86 (min) | 0.391 |
| 6. | 0.449 |
| 7. | 0.952 |
| 8. | 1.57 |
| 9. | 2.22 |
| 10. | 2.85 |
| 13. | 4.55 |
| 16. | 6.22 |
| 20. | 9.35 |
| 25. | 17.0 |
| 30. | 30.9 |
| 35. | 45.1 |
| 40. | 49.3 |
| 41.66 (max) | 47.5 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 19.25 | 0. .5 .8 1.25 2. |

(2 of 2)



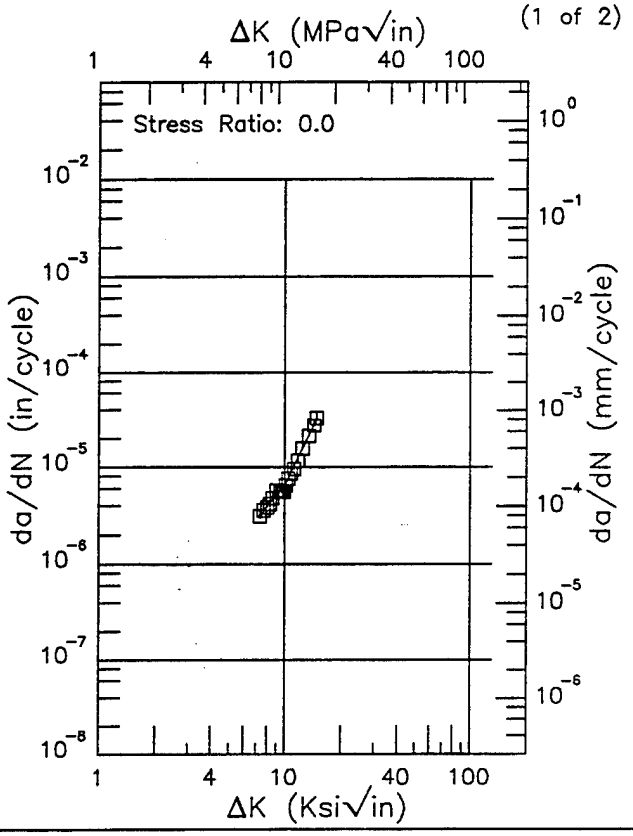

| ΔK (Ksi√in) | da/dN ($10^{-6}$ in/cycle) |
|---|---|
| 5.26 (min) | 0.326 |
| 6. | 0.554 |
| 7. | 1.10 |
| 8. | 1.98 |
| 9. | 3.19 |
| 10. | 4.58 |
| 13. | 7.97 |
| 16. | 11.9 |
| 20. | 23.6 |
| 25. | 34.7 |
| 26.95 (max) | 44.4 |

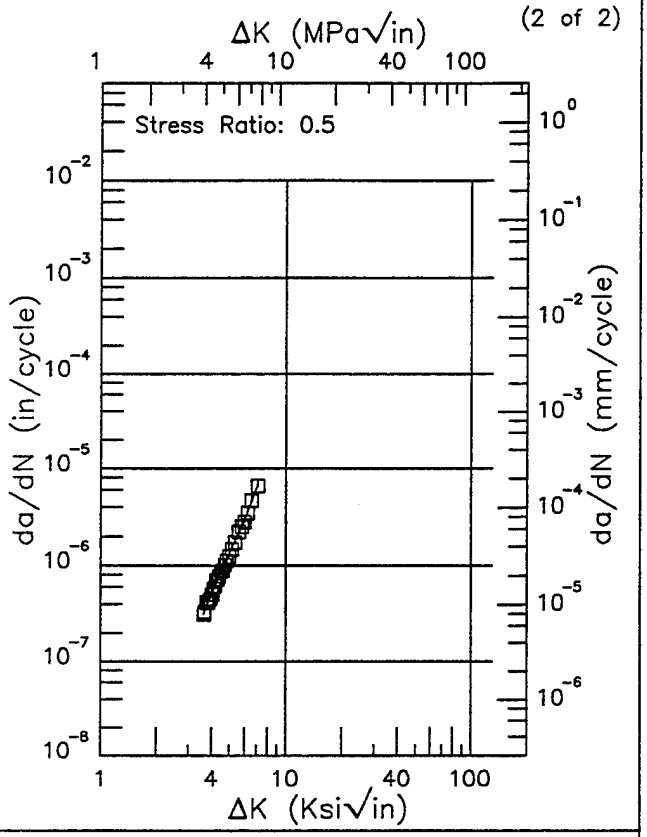
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.88 | 0. .5 .8 1.25 2. |

**Figure 8.22.3.1.9**

Condition/Ht: T8; 338F 24HRS
Form: 1 in. Extrusion
Specimen Type: CT
Orientation: T–L
Frequency: 8 – 10 Hz
Environment: H.H.A.; RT

Yield Strength: 77.4 ksi
Ult. Strength: 80.6 ksi
Specimen Thk: 0.255 in.
Specimen Width: 2.507 – 2.511 in.
Ref: WL003




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 7.34 (min) | 2.99 |
| 8. | 4.00 |
| 9. | 5.06 |
| 10. | 6.43 |
| 13. | 18.4 |
| 14.76 (max) | 31.5 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.61 (min) | 0.319 |
| 4. | 0.510 |
| 5. | 1.31 |
| 6. | 2.91 |
| 7. | 6.30 |
| 7.07 (max) | 6.58 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.32 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.83 | 0. .5 .8 1.25 2. |

**Figure 8.22.3.1.10**

## TABLE 8.23.1.2.1



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK X7090 AT ROOM TEMPERATURE

**ORIENTATION: S-T** **ENVIRONMENT: 3.5% NaCl**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) ΔK *Level* (*Ksi√in*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7E69 | PLATE | 0.5 | 0.13 | | 11.57 | | | | |
| | | 0.5 | 0.2 | | 14.63 | | | | |

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK X7090 AT ROOM TEMPERATURE

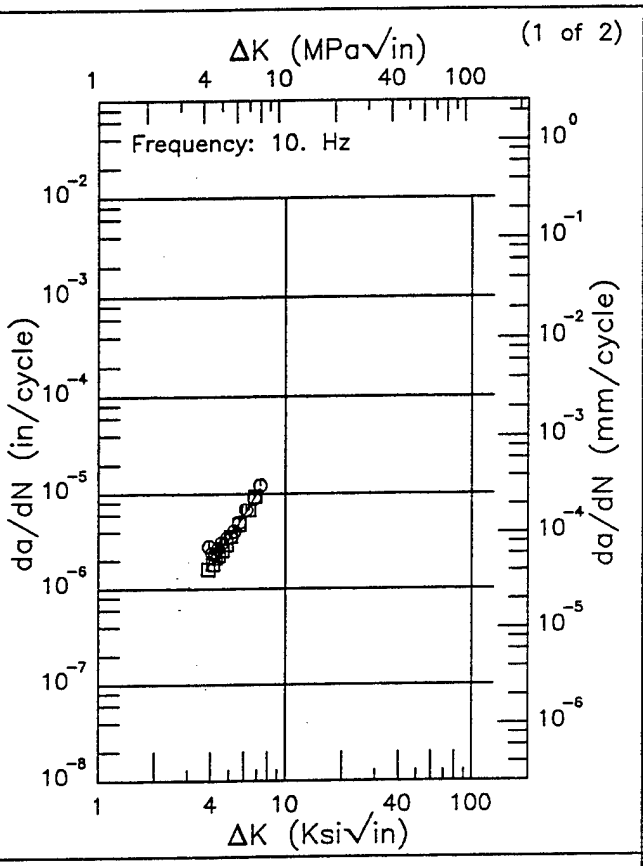
**ORIENTATION: S-T** **ENVIRONMENT: Nitrogen Gas**

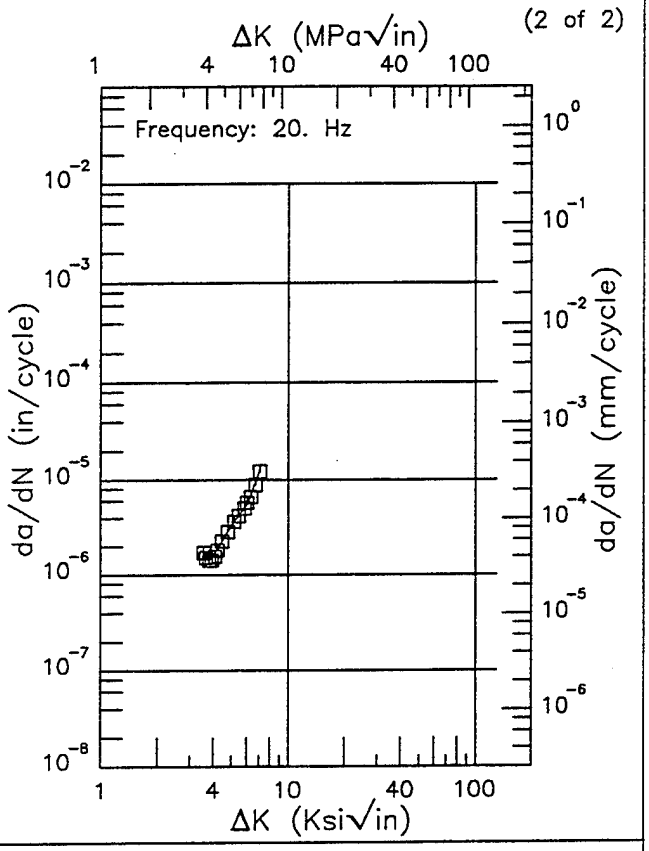
| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level (Ksi√in)* | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7E69 | PLATE | 0.5 | 10 | | 3.31 | | | | |
| | | 0.5 | 20 | | 3.3 | | | | |

F X7090

Condition/Ht: T7E69
Form: 1 in. Plate
Specimen Type: CT
Orientation: S-T
Stress Ratio: 0.5
Environment: NITROGEN GAS; RT

Yield Strength: 60 - 70 ksi
Ult. Strength:
Specimen Thk: 0.508 - 0.509 in.
Specimen Width: 1.028 - 1.03 in.
Ref: MR001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.86 (min) | 2.20 |
| 4. | 2.22 |
| 5. | 3.31 |
| 6. | 5.94 |
| 7. | 10.0 |
| 7.30 (max) | 11.4 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.53 (min) | 1.57 |
| 4. | 1.55 |
| 5. | 3.30 |
| 6. | 5.40 |
| 7. | 11.8 |
| 7.04 (max) | 12.4 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 11.42 | 0. .5 .8 1.25 2. |

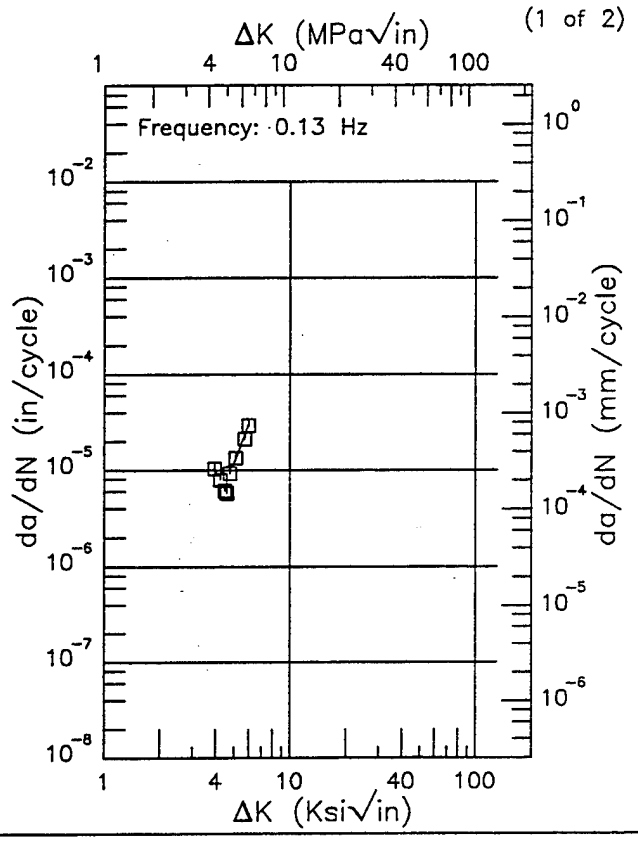
| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 5.38 | 0. .5 .8 1.25 2. |

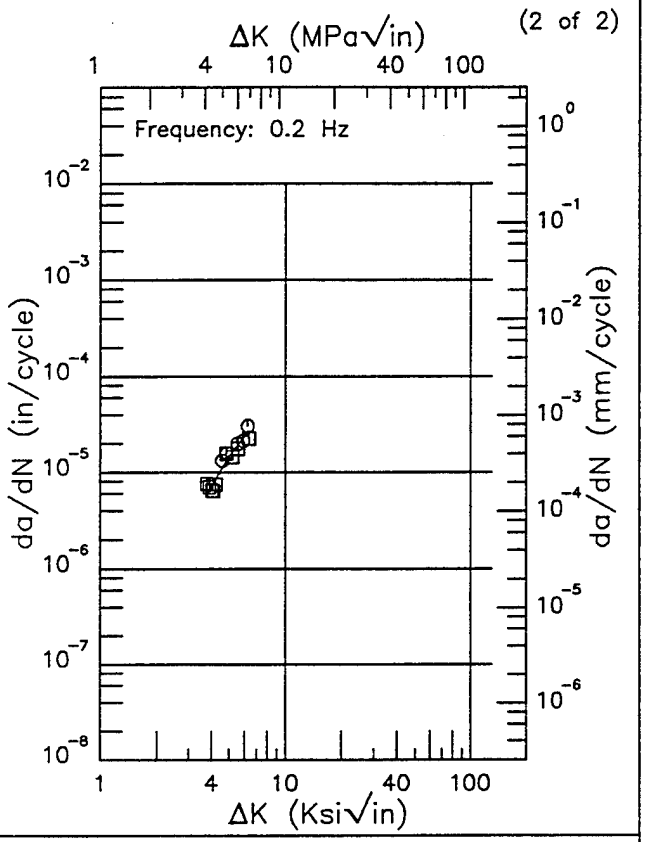
**Figure 8.23.3.1.1**

X7090 F

Condition/Ht: T7E69
Form: 1 in. Plate
Specimen Type: CT
Orientation: S-T
Stress Ratio: 0.5
Environment: 3.5% NACL; RT

Yield Strength: 65 ksi
Ult. Strength:
Specimen Thk: 0.509 - 0.51 in.
Specimen Width: 1.029 in.
Ref: MR001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.94 (min) | 10.3 |
| 4. | 9.63 |
| 5. | 11.6 |
| 5.94 (max) | 29.3 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.77 (min) | 5.62 |
| 4. | 7.18 |
| 5. | 14.6 |
| 6. | 23.6 |
| 6.31 (max) | 27.0 |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 24.78 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 16.66 | 0. .5 .8 1.25 2. |

**Figure 8.23.3.1.2**

## TABLE 8.24.1.2.1



## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK X7091 AT ROOM TEMPERATURE

**ORIENTATION: T-L** **ENVIRONMENT: Nitrogen Gas**

| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Δ*K Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7E70 | PLATE | 0.5 | 20 | | 2.74 | 21.35 | | | |

## TABLE 8.24.1.2.2

## FATIGUE CRACK GROWTH RATE AT DEFINED LEVELS OF STRESS INTENSITY FACTOR ΔK X7091 AT ROOM TEMPERATURE

**ORIENTATION: S-T** **ENVIRONMENT: Nitrogen Gas**

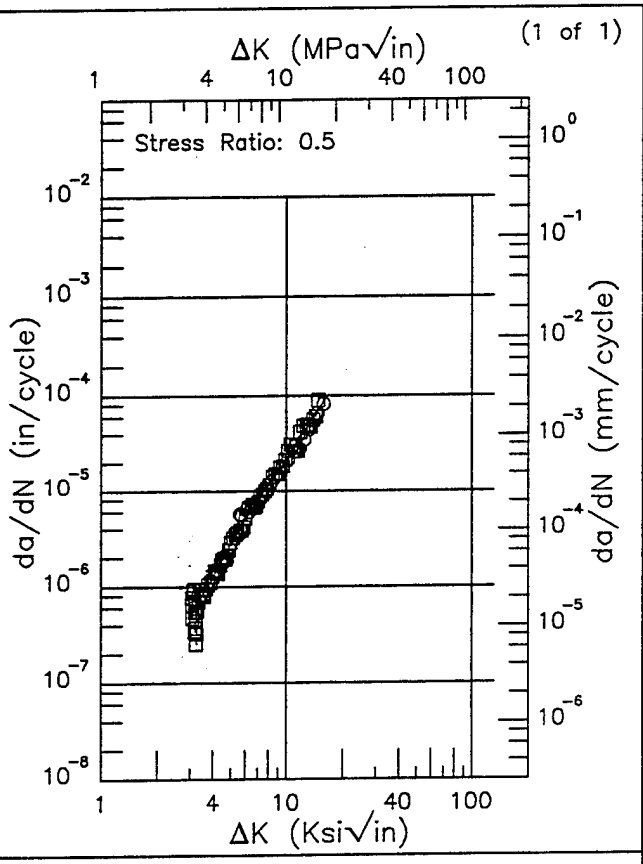
| CONDITION/ HEAT TREATMENT | PRODUCT FORM | R | FREQ (Hz) | *FCGR* ($10^{-6}$ *in/cycle*) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | *ΔK Level* (*Ksi√in*) | | | | | |
| | | | | 2.5 | 5.0 | 10.0 | 20.0 | 50.0 | 100.0 |
| T7E70 | PLATE | 0.1 | 20 | | | 12.92 | 109 | | |
| | | 0.5 | 20 | | 3.02 | 19.93 | | | |

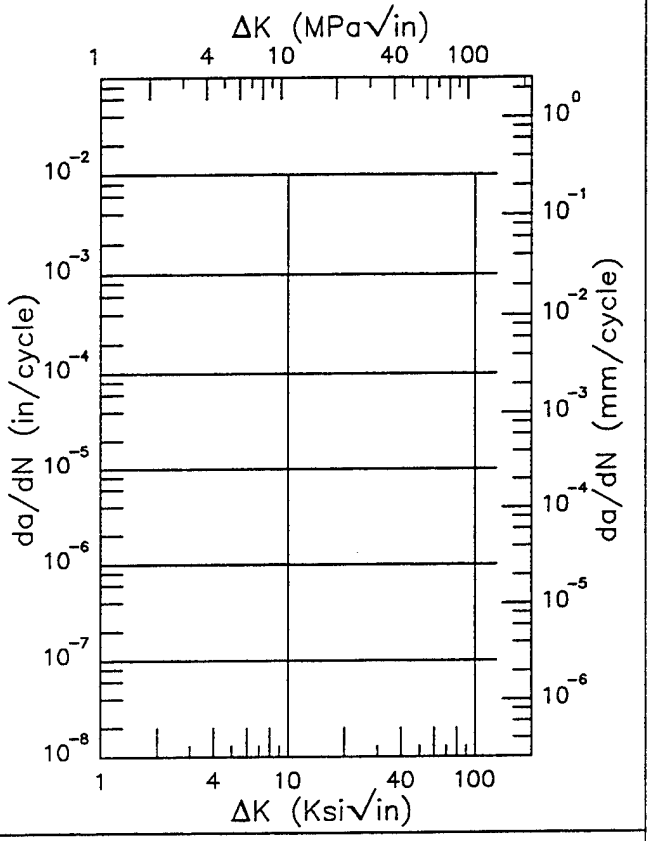
X7091

R

Condition/Ht: T7E70
Form: 1 in. Plate
Specimen Type: CT
Orientation: T–L
Frequency: 20 Hz
Environment: NITROGEN GAS; RT

Yield Strength: 60 ksi
Ult. Strength: 73.2 ksi
Specimen Thk: 0.51 – 0.513 in.
Specimen Width: 1.032 – 1.033 in.
Ref: MR001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.06 (min) | 0.539 |
| 3.5 | 0.790 |
| 4. | 1.23 |
| 5. | 2.74 |
| 6. | 5.12 |
| 7. | 8.07 |
| 8. | 11.5 |
| 9. | 15.8 |
| 10. | 21.3 |
| 13. | 48.9 |
| 15.71 (max) | 87.2 |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

RMS % Error
18.36

Life Prediction Ratio Summary
0. .5 .8 1.25 2.

RMS % Error

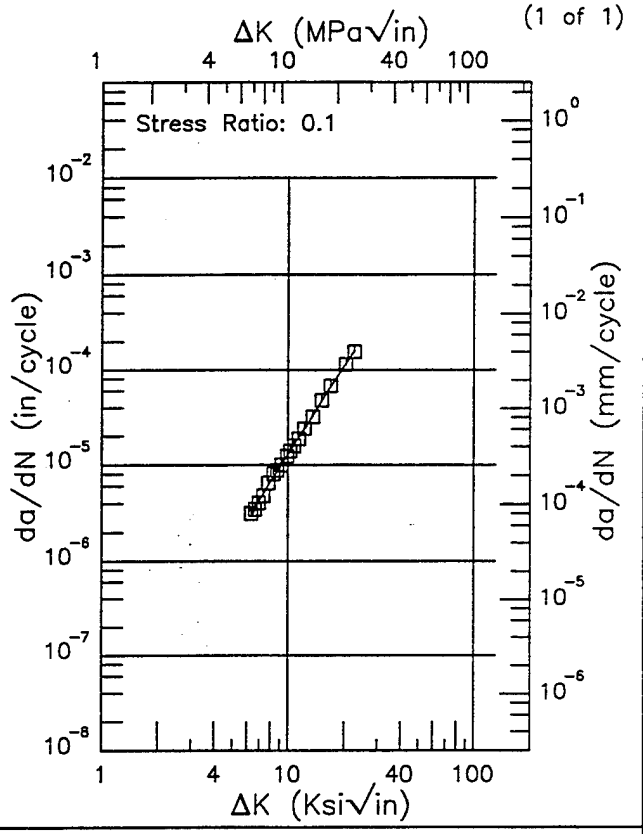
Life Prediction Ratio Summary
0. .5 .8 1.25 2.

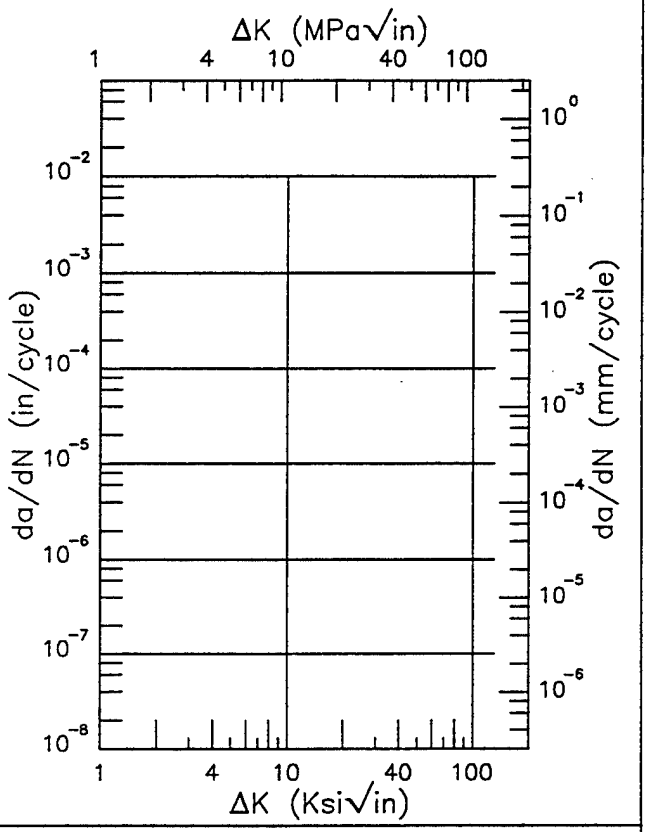
**Figure 8.24.3.1.1**

X7091 R

Condition/Ht: T7E70
Form: 1 in. Plate
Specimen Type: CT
Orientation: S-T
Frequency: 20 Hz
Environment: NITROGEN GAS; RT

Yield Strength: 70 ksi
Ult. Strength:
Specimen Thk: 0.483 in.
Specimen Width: 1.021 in.
Ref: MR001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 6.32 (min) | 2.92 |
| 7. | 4.31 |
| 8. | 6.71 |
| 9. | 9.54 |
| 10. | 12.9 |
| 13. | 28.5 |
| 16. | 57.0 |
| 20. | 109. |
| 22.48 (max) | 156. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 3.11 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

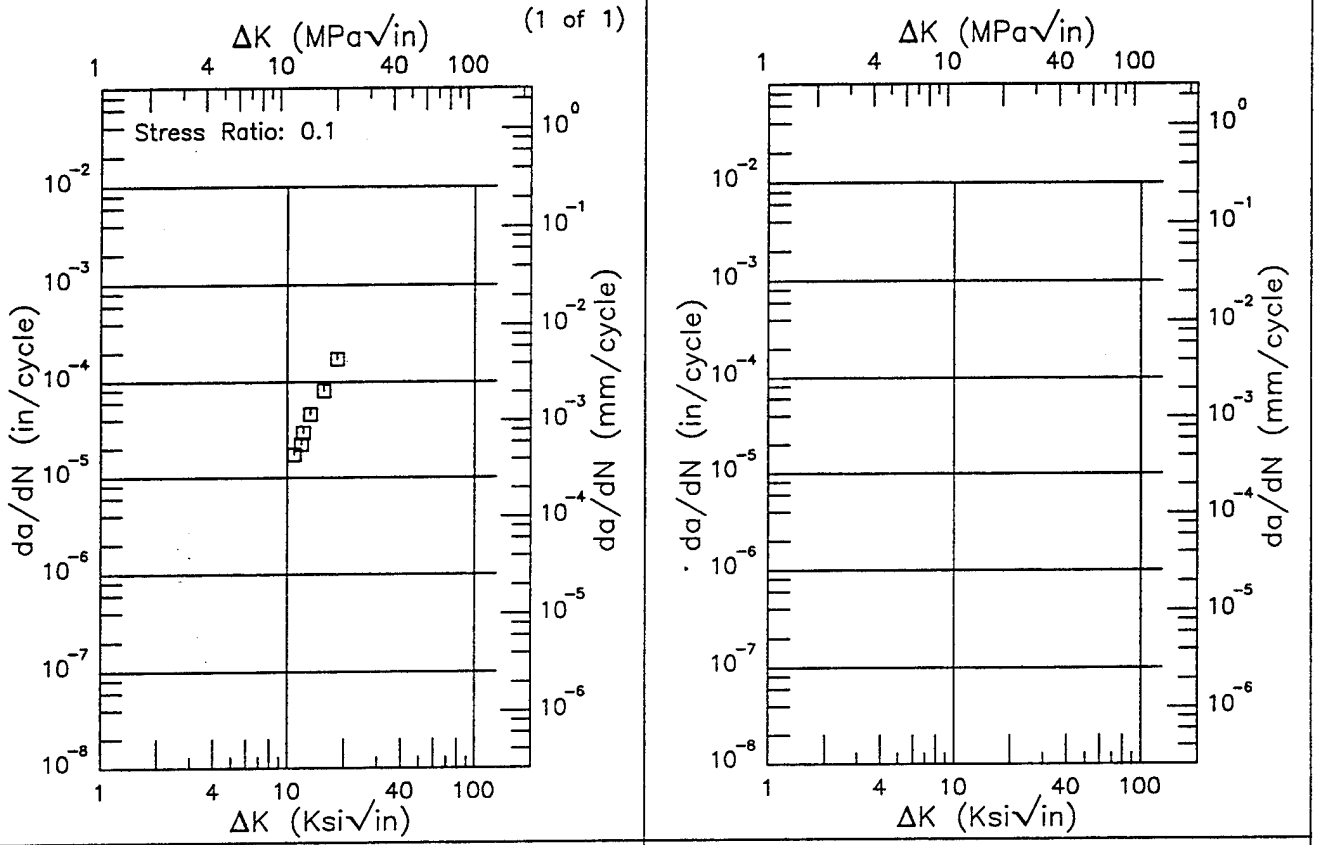
**Figure 8.24.3.1.2**

X7091

R

Condition/Ht: T7E70
Form: 1 in. Plate
Specimen Type: CT
Orientation: S-T
Frequency: 0.2 Hz
Environment: 3.5% NACL; RT

Yield Strength: 70 ksi
Ult. Strength:
Specimen Thk: 0.485 in.
Specimen Width: 1.04 in.
Ref: MR001




ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

ΔK (Ksi√in) da/dN ($10^{-6}$in/cycle)

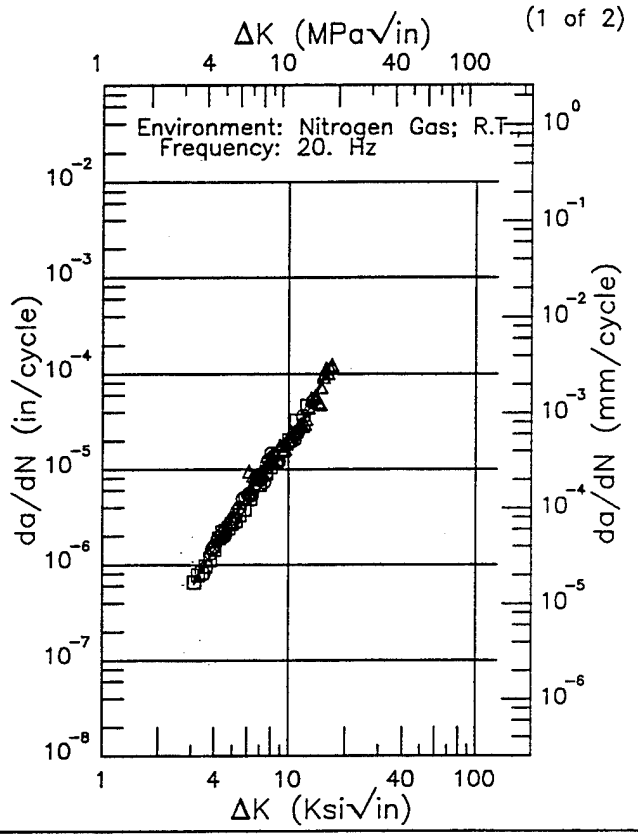
| RMS % Error | Life Prediction Ratio Summary | RMS % Error | Life Prediction Ratio Summary |
|---|---|---|---|
| | 0. .5 .8 1.25 2. | | 0. .5 .8 1.25 2. |

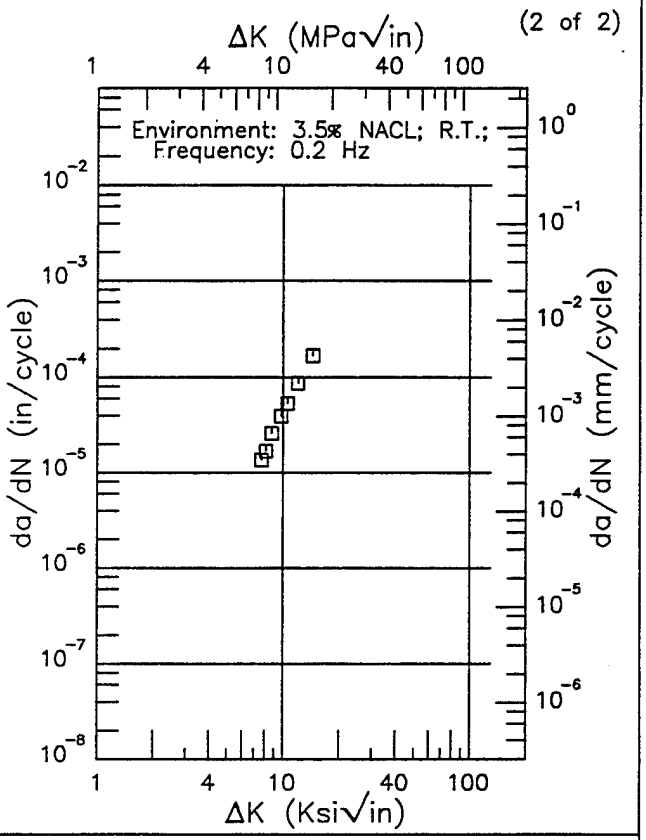
**Figure 8.24.3.1.3**

X7091 EF

Condition/Ht: T7E70
Form: 1 in. Plate
Specimen Type: CT
Orientation: S-T
Stress Ratio: 0.5

Yield Strength: 60 - 70 ksi
Ult. Strength:
Specimen Thk: 0.511 - 0.515 in.
Specimen Width: 1.032 - 1.034 in.
Ref: MR001




| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|
| 3.10 (min) | 0.626 |
| 3.5 | 0.926 |
| 4. | 1.44 |
| 5. | 3.02 |
| 6. | 5.31 |
| 7. | 8.12 |
| 8. | 11.3 |
| 9. | 15.1 |
| 10. | 19.9 |
| 13. | 45.0 |
| 16. | 104. |
| 16.82 (max) | 133. |

| ΔK (Ksi√in) | da/dN ($10^{-6}$in/cycle) |
|---|---|

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| 13.55 | 0. .5 .8 1.25 2. |

| RMS % Error | Life Prediction Ratio Summary |
|---|---|
| | 0. .5 .8 1.25 2. |

**Figure 8.24.3.1.4**

## TABLE 8.25

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

57210 7075 $K_c$

Unknown.

62306 7075 $K_c$

Eichenberger, T. W., "Fracture Resistance Data Summary," Report DA-20947, The Boeing Company (June 1962).

62309 7075 $K_c$

Batch, E. J., and Edwards, W. T., "Evaluation of Tear Resistance of 7079 Aluminum Alloys (Sheet Extrusions and Forgings)," Report SMN 86, Lockheed Aircraft Corporation, Marietta, Ga., (April 13, 1962).

62310 7075 $K_c$

Anon., "Fracture Toughness Data Summary of 2000 and 7000 Series Aluminum Alloys," The Boeing Company, received from J. P. Butler (April 1965).

62311 7075 (ALCLAD) $K_c$

Gurin, P. J., "Crack Propagation Tests for Some Aluminum Alloy Materials," LR 10498, Lockheed Aircraft Corporation (February 1955).

65697 7075 (ALCLAD) $K_c$

Broek, D., "The Residual Strength of Aluminum Alloy Sheet Specimens Containing Fatigue Cracks of Saw Cuts," NLR-TR M.2143, National Aerospace Laboratory, Amsterdam (March 1966).

70485 7075 (ALCLAD) $K_c$

Broek, D., "The Effect of Finite Specimen Width on the Residual Strength of Light Alloy Sheet," TR M.2152, National Aero- and Astronautical Research Institute, Amsterdam (September 1965).

75599 7075 $K_c$

Hudson, C. M., "Effect of Stress Ratios on Fatigue-Crack Growth in 7075-T6 and 2024-T3 Aluminum-Alloy Specimens," NASA TN D-5390, Langley Research Center (August 1969).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 75787 | 7075 | $K_{Iscc}$ |

Procter, R. P. M., and Paxton, H. W., "Stress Corrosion of Aluminum Alloy 7075-T651 in Organic Liquids," Journal of Materials, 4 (3) 729-760 (September 1969).

| | | |
|---|---|---|
| 76411 | 7079 | $K_{Ic}$ |

Wessel, E. T., et al., "Engineering Methods for the Design and Selection of Materials Against Fracture," Final Technical Report, Westinghouse Research Laboratories, Pittsburgh, PA, Contract DA-30-069-AMC-602 (T) (June 24, 1966).

| | | |
|---|---|---|
| 76442 | 7079 | da/dt |

Beck, T. R., Blackburn, M. J., and Spiedel, M. O., "Stress Corrosion Cracking of Titanium Alloys",Boeing Scientific Research Laboratories, Contract NAS 7-489, Seattle, Washington, 98124, March 1969.

| | | |
|---|---|---|
| 77140 | 7075 | $K_{Ic}$ |
| | 7178 | $K_{Ic}$ |

Kaufman, J. G., Schilling, P. E., and Nordmark, G. E., "Fracture Toughness, Fatigue and Corrosion Characteristics of X7080-T7E41 and 7178-T651 Plate and 7075-T6510, 7075-T73510, X7080-T7E42, and 7178-T6510 Extruded Shapes," Report AFML-TR-67-C-1521 (November 1969).

| | | |
|---|---|---|
| 77720 | 7075 | $K_{Ic}$; a-vs-N; da/dN |
| | 7079 | $K_{Ic}$; a-vs-N; da/dN |

Brownhill, D. J., et al., "Mechanical Properties, Including Fracture Toughness and Fatigue, Corrosion Characteristics and Fatigue-Crack Propagation Rates of Stress-Relieved Aluminum Alloy Hand Forgings," Report AFML-TR-70-10, Aluminum Company of America, Alcoa Research Laboratory, New Kensington, PA, Contract F33615-68-C-1385 (February 1970).

| | | |
|---|---|---|
| 78313 | 7075 | da/dt |
| | 7079 | da/dt; $K_{Iscc}$ |
| | 7175 | da/dt; $K_{Iscc}$ |

Hyatt, M. V., "Use of Precracked Specimens in Stress-Corrosion Testing of High-Strength Aluminum Alloys," Summary Report D6-24466, The Boeing Company, Renton, Wash., ARPA Contract N00014-66-C-0365 (November 1969).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

79089 7075 $K_c$

Fedderson, C. E., and Hyler, W. S., "Fracture-Crack Propagation Characteristics of 7075-T7351 Aluminum Alloy Sheet and Plate Report No. G-8902, Battelle Memorial Institute, Columbus Laboratories (March 1970).

80073 7007 $K_{Iscc}$

Schwartzberg, F. R., et al., "Cryogenic Alloy Screening," Report NASA CR-72733, Martin Marietta Corporation, Denver, CO, Contract NAS 3-11203 (November 1970).

82675 7075 $K_{Ic}$; $K_{Iscc}$

Chu, H. P., and Wacker, G. A., "Fracture Toughness and Stress Corrosion Properties of Aluminum Alloy Hand Forgings," Journal of Materials, 7 (1) 95-99 (March 1972).

82879 7075 $K_{Ic}$
7079 $K_{Ic}$
7080 $K_{Ic}$

Moore, R. L., et al., "Fatigue and Fracture Characteristics of Aluminum Alloy Cylinders Under Internal Pressure," Engineering Fracture Mechanics, 4 (1) 51-63 (March 1972).

82880 7075 $K_{Ic}$
7079 $K_{Ic}$

Nelson, F. G., et al., "The Effect of Specimen Size on the Results of Plane-Strain Fracture-Toughness Tests," Engineering Fracture Mechanics, 4 (1) 33-50 (March 1972).

83058 7175 $K_{Ic}$

Jones, R. E., "Fracture Toughness and Fatigue Crack Growth Properties of 7175-T736 Aluminum Alloy Forgings at Several Temperatures," Report AFML-TR-72-1, University of Dayton Research Institute, Dayton, OH, Contract F33615-71-C-1054 (February 1972).

83061 7049 $K_{Ic}$; $K_{Iscc}$

Jones, R. E., "Mechanical Properties of 7049-T73 and 7049-T76 Aluminum Alloy Extrusions at Several Temperatures," Report AFML-TR-72-2, University of Dayton Research Institute, Dayton, OH, Contract F33615-71-C-1054 (February 1972).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 83242 | 7049 | $K_{Ic}$; $K_{Iscc}$ |
| | 7175 | $K_{Ic}$; $K_{Iscc}$ |

Harmsworth, C. L., "Evaluation of Landing Gears Fabricated from 7175-T736 Aluminum Alloys" Report No. LA 72-22, Air Force Materials Laboratory, Wright-Patterson AFB, OH, (May 25, 1972).

| | | |
|---|---|---|
| 84284 | 7039 | da/dt |
| | 7049 | da/dt |
| | 7075 | da/dt |
| | 7079 | da/dt |
| | 7175 | da/dt |

Hyatt, M. V., "Use of Precracked Specimens in Stress Corrosion Testing of High Strength Aluminum Alloys," Corrosion, 26 (11), 487-503 (November 1970).

| | | |
|---|---|---|
| 84286 | 7075 | da/dt |

Hyatt, M. V., "Use of Precracked Specimens in Selecting Heat Treatments for Stress-Corrosion Resistance in High Strength Aluminum Alloys," Corrosion, 27 (1), 49-53 (January 1971).

| | | |
|---|---|---|
| 84288 | 7075 | $K_{Ic}$ |
| | 7079 | $K_{Ic}$ |

Nelson, F. G., and Kaufman, J. G., "Plane Strain Fracture Toughness of Aluminum Alloys at Room and Subzero Temperatures". ASTM STP 496, American Society for Testing and Materials, Philadelphia, PA, (1971).

| | | |
|---|---|---|
| 84306 | 7049 | $K_{Ic}$ |
| | 7075 | $K_{Ic}$ |

Harrigan, M. J., "B-1 Fracture Mechanics Data for Air Force Handbook Usage," Report TFD-72-501, North American Rockwell, Los Angeles Division, Los Angeles, CA, (April 21, 1972).

| | | |
|---|---|---|
| 84329 | 7079 | $K_{Iscc}$ |

Report of NRL Progress, Naval Research Laboratory, Washington, D. C., (October 1967).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 84330 | 7079 | da/dt; $K_{Iscc}$ |

Report of NRL Progress, Naval Research Laboratory, Washington, D. C., (April 1968).

| | | |
|---|---|---|
| 84331 | 7005 | $K_{Iscc}$ |
| | 7075 | $K_{Iscc}$ |
| | 7079 | $K_{Iscc}$ |

Report of NRL Progress, Naval Research Laboratory, Washington, D. C., (January 1968).

| | | |
|---|---|---|
| 84340 | 7075 | $K_c$ |

Allen, F. C., "Effect of Thickness on the Fracture Toughness of 7075 Aluminum in the T6 and T73 Conditions," ASTM STP 486, "Damage Tolerance in Aircraft Structures," p 16-38 (1971).

| | | |
|---|---|---|
| 84360 | 7075 | $K_{Ic}$; da/dN; $K_{Iscc}$ |
| | 7175 | da/dN; $K_{Iscc}$ |

McDonnell Aircraft Company, McDonnell Corp., St. Louis, Mo., Phase B Test Program, Report MDC A0913 (May 18, 1971).

| | | |
|---|---|---|
| 84362 | 7050 | $K_{Iscc}$ |
| | 7075 | $K_{Iscc}$ |

Dill, H. D., and Rich, D. L., "Evaluation of Aluminum Plate Alloys 7075-T7351, X7050-T73651 and 2021-T81," Report No. MDC Al755, McDonnell Aircraft Company, McDonnell Corporation, St. Louis, MO, (May 30, 1972).

| | | |
|---|---|---|
| 84363 | 7050 | $K_{Ic}$ |
| | 7075 | $K_{Ic}$; a-vs-N; da/dN |

Rich, D. L., "MCAIR IRAD Data for Fracture Mechanics Engineering and Design Data Handbook," with enclosures (1) Materials Definition, (2) Mechanical Properties Test Data, (3) Plane Strain Fracture Toughness Test Data, and (4) Plane Strain Constant Amplitude Crack Growth Test Data, McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO (June 1972).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 84367 | 7075 | $K_c$ |

McEvily, A. J., Illg, W., and Hardrath, H. F., "Static Strength of Aluminum-Alloy Specimens Containing Fatigue Cracks," NACA TN 3816, Langley Aeronautical Laboratories (October 1956).

| | | |
|---|---|---|
| 84368 | 7049 | $K_{Ic}$ |
| | 7175 | $K_{Ic}$ |
| | 7475 | $K_c$ |
| | 7475 (ALCLAD) | $K_c$ |

Babilon, C. F., et al., "Mechanical Properties, Fracture Toughness, Fatigue, Environmental Fatigue Crack Growth Rates, and Corrosion Characteristics of High-Toughness Aluminum Alloy Forgings, Sheet and Plate," Fifth Technical Management Report, Aluminum Company of America, Alcoa Research Laboratories, New Kensington, PA, Contract F33615-71-C-1571 (August 1972).

| | | |
|---|---|---|
| 85291 | 7050 | $K_{Ic}$ |

Deel, O. L., and Mindlin, H., "Engineering Data on New Aerospace Structural Materials," Report AFML-TR-72-196, Volume 1, Battelle, Columbus Laboratories, Columbus, OH, Contract F33615-71-C-1262 (September 1972).

| | | |
|---|---|---|
| 85363 | 7475 | a-vs-N; da/dN |

Cervay, R. R., "Engineering Design Data for Aluminum Alloy 7475 in the T761 and T61 Condition," Report AFML-TR-72-173, University of Dayton Research Institute, Dayton, OH, Contract F33615-71-C-1054, (September 1972).

| | | |
|---|---|---|
| 85543 | 7075 | da/dt |
| | 7079 | da/dt |
| | 7178 | da/dt |

Speidel, M. O., "Current Understanding of Stress Corrosion Crack Growth in Aluminum Alloys," from the Theory of Stress Corrosion Cracking in Aluminum Alloys, the Proceedings of a Research Evaluation Conference, J. C. Scully (Editor), Published by NATO Scientific Affairs Division, Brussels, Belgium (1971).

| | | |
|---|---|---|
| 85836 | 7049 | $K_{Ic}$ |
| | 7050 | $K_{Ic}$ |
| | 7075 | $K_{Ic}$ |

"B-1 Fracture Toughness Data ($K_{Ic}$) - Rockwell International," Rockwell International Corporation, Los Angeles, CA, (April 24, 1973).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 85837 | 7049 | a-vs-N; da/dN |
| | 7050 | a-vs-N; da/dN |
| | 7075 | a-vs-N; da/dN |
| | 7175 | a-vs-N; da/dN |

"Fracture Toughness Data Collection, Rockwell International Corporation, from B-1 Program," Rockwell International Corporation, Los Angeles, CA., April 1973.

| | | |
|---|---|---|
| 85880 | 7050 | $K_{Ic}$ |
| | 7175 | $K_{Ic}$; a-vs-N; da/dN |

Garland, K., "Evaluation of X7050-T736 Die Forgings," Report 514-131.10, McDonnell Aircraft Company, McDonnell Douglas Corporation, St. Louis, MO, (February 20, 1973).

| | | |
|---|---|---|
| 86088 | 7075 | a-vs-N; da/dN |
| | 7178 | a-vs-N; da/dN |

Hudson, C. M., and Newman, J. C., Jr., "Effect of Specimen Thickness on Fatigue-Crack-Growth-Behavior and Fracture Toughness of 7075-T6, and 7178-T6 Aluminum Alloys," Report NASA TN D-7173, Langley Research Center, Hampton, VA (April 1973).

| | | |
|---|---|---|
| 86210 | 7075 | $K_{Ic}$ |

"Rockwell International, B-1 Fracture Toughness Data on Titanium and Aluminum Alloys of June 4, 1973," Rockwell International, Los Angeles, CA, (June 4, 1973).

| | | |
|---|---|---|
| 86212 | 7050 | $K_{Ic}$; $K_{Iscc}$ |
| | 7075 | $K_{Ic}$; $K_{Iscc}$ |
| | 7475 | a-vs-N; da/dN; da/dt |
| | 7475 (ALCLAD) | a-vs-N; da/dN |

McCarty, J. E., et al., "Materials Fracture Data From the Advanced Metallic Structures: Cargo Fuselage Design for Improved Cost, Weight and Integrity," The Boeing Company, Seattle, Washington, Contract F33615-72-C-1893 (June 15, 1973).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 86213 | 7001 | $K_{Ic}$; $K_c$ |
| | 7005 | $K_{Ic}$; $K_c$ |
| | 7049 | $K_{Ic}$ |
| | 7050 | $K_{Ic}$; a-vs-N; da/dN |
| | 7075 | $K_{Ic}$; Kc; a-vs-N; da/dN |
| | 7075 (ALCLAD) | $K_{Ic}$; Kc; a-vs-N; da/dN |
| | 7079 | $K_{Ic}$; $K_c$ |
| | 7079 (ALCLAD) | $K_c$ |
| | 7080 | $K_{Ic}$ |
| | 7175 | $K_{Ic}$ |
| | 7178 | $K_{Ic}$; $K_c$; a-vs-N; da/dN |
| | 7178 (ALCLAD) | $K_c$ |
| | 7475 | $K_{Ic}$; $K_c$; a-vs-N; da/dN |
| | 7475 (ALCLAD) | $K_c$; a-vs-N; da/dN |

Wygonik, R. H., "Compilation of Fracture Mechanics Data," Aluminum Company of America, Alcoa Research Laboratories, New Kensington, PA, Subcontract on F33615-73-C-5051 (June 12, 1973).

86429 7050 $K_{Ic}$

"Fracture Toughness Data," Progress Report on Materials Test Program, General Dynamics Corporation, Fort Worth Division, Fort Worth, Texas, Contract F33615-72-C-2149 (Received July 6, 1973).

86493 7050 $K_{Ic}$

Deel, O. L., Ruff, P. E., and Mindlin, H., "Engineering Data on New Aerospace Structural Materials," Report AFML-TR-73-114, Battelle-Columbus Laboratories, Columbus, OH, Contract F33615-72-C-1280 (June 1973).

| | | |
|---|---|---|
| 86574 | 7050 | $K_{Ic}$ |
| | 7475 | $K_{Ic}$ |

Figge, F. A., and Wells. R. R., "Advanced Metallic Structure: Air Superiority Fighter-Wing Design for Improved Cost, Weight and Integrity," Report No. AFFDL-TR-73-52, Volume III, Northrop Corporation, Aircraft Division, Hawthorne, CA, Contract F33615-72-C-1891 (June 1973), with no original data for da/dN tests.

86575 7075 a-vs-N; da/dN

"Rockwell International, B-1 Program, da/dN Data, Center-Cracked Tension Specimens," Lockheed California Company, Burbank, CA, Report LR25152, (Received July 1973) (Memo from Ed Cawthorne dated July 10, 1973).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| 86688 | 7075 | $K_{Iscc}$ |
| | 7079 | $K_{Iscc}$ |

Sprowls, D. O., et al., "Evaluation of Stress Corrosion Cracking Susceptibility Using Fracture Mechanics Techniques," Final Report Part I, Aluminum Co., of America, Alcoa Technical Center, Alcoa, Pa., Contract NAS8-21487, May 31, 1973.

| | | |
|---|---|---|
| 86734 | 7001 | a-vs-N; da/dN |
| | 7005 | a-vs-N; da/dN |
| | 7075 | $K_c$ |
| | 7075 (ALCLAD) | $K_c$ |
| | 7079 | a-vs-N; da/dN |

Smith, S. H., "Fracture Mechanics Application to Materials Evaluation and Selection for Aircraft Structure and Fracture Analysis," Report No. D6-17756, The Boeing Company, Commercial Airplane Division, Renton, Washington (July 19, 1966).

| | | |
|---|---|---|
| 86842 | 7049 | a-vs-N; da/dN |
| | 7175 | a-vs-N; da/dN |
| | 7475 | $K_c$; a-vs-N; da/dN |
| | 7475 (ALCLAD) | $K_c$ |

Babilon, C. E., et al., "Mechanical Properties, Fracture Toughness, Fatigue, Environment Fatigue Crack Growth Rates and Corrosion Characteristics of High-Toughness Aluminum Alloy Forgings, Sheet and Plate," Report AFML-TR-73-83, Alcoa Research Laboratories, New Kensington, PA, Contract 71-C-15-71.

| | | |
|---|---|---|
| 86844 | 7050 | a-vs-N; da/dN |

"Crack Growth Rate Data Generated Under Contract F33615-72-C-2165," Lockheed Aircraft Corporation, Lockheed-Georgia Company, Marietta, GA, Contract F33615-72-C-2165, Data Sheets received from AFFDL August 13, 1973.

| | | |
|---|---|---|
| 88140 | 7075 | $K_{Ic}$; da/dN |
| | 7475 | da/dN |

Hall, L. R., Finger, R. W., and Spurr, W. F., "Corrosion Fatigue Crack Growth in Aircraft Structural Materials," Report AFML-TR-73-204, Boeing Aerospace Company, Seattle, WA. Contract AF33615-71-C-1687 (September 1973).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

88174 7050 $K_{Ic}$; a-vs-N; da/dN

Jones, R. E., and Fudge, K. A., "Engineering Design Data for Aluminum Alloy 7050-T73651 Plate," Report AFML-TR-73-269, University of Dayton Research Institute, Dayton, OH, Contract F33615-72-C-1282 (November 1973)., with supplementary data supplied by Russell R. Cervay on March 20, 1974.

88186 7050 $K_{Ic}$

"Selected Pages from Materials Section of Final Report on Cargo/Tanker Phase IA (AFFDL-TR-73-51) Lockheed Report SMN 378," Summary Report, Lockheed-Georgia Company, Marietta, GA, Contract F33615-72-C-2165 (February 8, 1974).

88579
7049 a-vs-N; da/dN
7050 a-vs-N; da/dN
7075 a-vs-N; da/dN
7175 a-vs-N; da/dN

"B-1 Program da/dN Data for Aluminum Alloys," Rockwell International Corporation, memorandum to H. D. Moran from E. W. Cawthorne, Battelle's Columbus Laboratories (April 3, 1974).

90011 7075 $K_{Ic}$

"Rockwell International, B-1 Program Fracture Toughness Data of August 5, 1974," with memorandum from E. W. Cawthorne to H. D. Moran of Battelle's Columbus Laboratories (August 5, 1974).

91123
7050 $K_{Ic}$
7075 $K_{Ic}$

McCarty, J. E., et al., "Advanced Metallic Structure: Cargo Fuselage Design for Improved Cost, Weight, and Integrity," Report AFFDL-TR-73-53, Boeing Commercial Airplane Company, Seattle, WA, Contract F33615-72-C-1893 (June 1973).

91332
7050 da/dN
7475 da/dN

Wells, R. R., "New Alloys for Advanced Metallic Fighter-Wing Structures," Northrop Corporation, Aircraft Division, Hawthorne, CA, AIAA/ASME/SAE 15th Structures, Structural Dynamics and Materials Conference, Las Vegas, NV (April 17-19, 1974).

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| AL001 | 7050 | $K_{Ic}$; da/dN |
| | 7475 | da/dN |

Brownhill, D. G., et al., "Exploratory Development for Design Data on Structural Aluminum Alloys in Representative Environments," Alcoa Laboratories, Alcoa Center, PA, Contract No. F33615-74-C-5089, Report No. AFML-TR-77-102, July 1977.

| | | |
|---|---|---|
| AL002 | 7075 | a-vs-N; da/dN |
| | 7475 | a-vs-N; da/dN |

Data Sheets Containing Fatigue-Crack Growth Rate Data Near the Threshold on Aluminum Alloys 2020, 2024, and 7475, sent from R. J. Bucci, Aluminum Company of America, ATC, February 1982.

| | | |
|---|---|---|
| AL003 | 7475 | a-vs-N; da/dN |

FCGR Data Sheets for Aluminum 7475-T651 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

| | | |
|---|---|---|
| AL004 | 7050 | a-vs-N; da/dN |

FCGR Data Sheets on Aluminum Alloy 7050-T6511 and T73511, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

| | | |
|---|---|---|
| AL005 | 7075 | a-vs-N; da/dN |

FCGR Data Sheets on Aluminum Alloy 7075- Conditions T651, T6510, T7351, T73510, Plates, Bars, and Extrusions; Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

| | | |
|---|---|---|
| AL006 | 7050 | a-vs-N; da/dN |

FCGR Data Sheets on Aluminum Alloy 7050-T73511 Extrusions, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

| | | |
|---|---|---|
| AL007 | 7050 | a-vs-N; da/dN |

FCGR Data Sheets on Aluminum Alloy 7050-T7351X Extrusions, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

AL008 7050 a-vs-N; da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T7651X Extrusions, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL009 7475 a-vs-N; da/dN

FCGR Data Sheets on Aluminum Alloy 7475-T7351 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL012 7050 (ALCLAD) a-vs-N; da/dN

FCGR Data Sheets on Aluminum 7050-T76 (ALCLAD), Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL013 7050 a-vs-N; da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T73651 Plate, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

AL014 7150 a-vs-N; da/dN

FCGR Data Sheets on Aluminum Alloy 7150-T651 Plate, Received from R. J. Bucci, Company of America, Alcoa Laboratories, August 1982.

AL015 7050 $K_{Ic}$; da/dN

FCGR Data Sheets on Aluminum Alloy 7050-T73651 Plate and 7050-T73652 Forging, Received from R. J. Bucci, Aluminum Company of America, Alcoa Laboratories, August 1982.

BL001 7010 $K_{Ic}$; $K_{Iscc}$

Deel, O., "Engineering Data for New Aerospace Materials," Battelle's Columbus Laboratories, Columbus, OH, Contract No. F33615-78-C-5040, Report No. AFWAL-TR-80-4103, July 1980.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| BL002 | 7075 | a-vs-N; da/dN |
| | 7475 | a-vs-N; da/dN |

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| | | |
|---|---|---|
| BW001 | 7075 | da/dN |
| | 7079 | da/dN |
| | 7178 | da/dN |

Horsley, J. J., and Harris, C. E., "Durability and Damage Tolerance Assessment (DADTA) of B-52 G/H Structure, Task II, Damage Tolerance Assessment Final Report," Boeing Company, Wichita, KS, Contract No. F34601-79-C-1515, Document No. D3-11560-3, June 1980.

| | | |
|---|---|---|
| BW002 | 7075 | da/dN |
| | 7178 | da/dN |

Lambert, G., Mecham, P., and Mah, T., "Durability and Damage Tolerance Assessment (DADTA) of B-52 G/H Structure, Task III, Individual Airplane Crack Growth Tracking Program," Boeing Company, Wichita, KS, Contract No. F34601-79-C-2258, Document No. D3-11560-6, November 1981.

| | | |
|---|---|---|
| DA001 | 7075 | a-vs-N; da/dN |
| | 7475 | a-vs-N; da/dN |

Fatigue Crack Growth Rate Data Sheets on Aluminum Alloys 2024, 7010, 7050, 7075 and 7475, Stainless Steel Alloys 17-4PH and 17-7PH, and Alloy Steels 4340, A286, H-11, HY-180 and 12-9-2, Sent from Mr. Paul Abelkis, Douglas Aircraft Company, McDonnell Douglas Corporation, Long Beach, CA, March 1982.

| | | |
|---|---|---|
| DA004 | 7050 | $K_{Ic}$; a-vs-N; da/dN |
| | 7475 | $K_{Ic}$; a-vs-N; da/dN |

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## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

DA005 — 7050 — $K_{Ic}$; a-vs-N; da/dN
7475 — $K_{Ic}$; a-vs-N; da/dN

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DA008 — 7150 — a-vs-N; da/dN

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EFM01 — 7075 (ALCLAD) — a-vs-N; da/dN

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GD001 — 7175 — a-vs-N; da/dN

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GD002 — 7175 — a-vs-N; da/dN

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GD005 — 7475 — $K_c$

Margolis, W. S., and Nordquist, F. C., "Plane Stress Fracture Toughness ($K_c$) of Aluminum Alloy 7475- One Half Inch Plate Tempers -T7651 and -T7351 and of Aluminum 2024 - One Eighth Inch Sheet -T81 and T62 Temper," General Dynamics, Fort Worth Division, TX, Report No. 16 PR889, February 1978.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

GD006 7475 $K_{Ic}$; a-vs-N; da/dN; $K_{Iscc}$

Margolis, W. S., "F-16 Material Test Allowables for Aluminum Alloy 7475, 3.0" Plate - T7351 Temper and 0.5" Plate (92" Width) - T7651 Temper and - T7351 Temper," General Dynamics, Fort Worth Division, Report No. 16PR926, April 1978.

GD008 7075 a-vs-N; da/dN

Margolis, W. S., "F-16 Material Test Allowables of Aluminum Alloy Forgings 7075-T73 and 7049-T73," General Dynamics, Fort Worth Division, Report No. 16 PR956, July 1978.

GD011 7475 $K_c$

Margolis, W. S., "Plane Stress ($K_c$) Fracture Toughness of Thin Elements from Thick Plate of 2124-T851 and 7475-T7351 Aluminum Alloys," General Dynamics, Fort Worth Division, Report No. 16 PR1287, October 1979.

LG001 7175 $K_{Ic}$; $K_c$; $K_{Iscc}$

Carter, F. J., et al., "C-5A Wing Modification Program - Material Characteristics Program - 7175-T73511 Extrusions Final Report," Lockheed-Georgia Company, Marietta, GA, Contract No. F33657-75-C-0178, Report No. LG75ER 0186-2, September 1977.

LG002 7050 (ALCLAD) $K_c$
7475 (ALCLAD) $K_c$

Fuselage Materials Tests - Kc Data on Aluminum 7050-T76 and 7475-T61 Materials - sent from E. J. Batch, Lockheed Georgia Company, Marietta, GA, October 1982.

LG003 7175 $K_{Ic}$

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## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

MA002 7175 $K_{Ic}$; a-vs-N; da/dN

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MA005
7050 da/dN; $K_{Iscc}$
7075 $K_{Ic}$; da/dN; $K_{Iscc}$
7175 $K_{Ic}$; da/dN; $K_{Iscc}$
7475 $K_{Ic}$; da/dN; $K_{Iscc}$

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MA006 7075 da/dN

Garland, K., and Krieg, J. F., "Evaluation of the Effect of Material Cyclic Softening and Hardening on Crack Initiation Life and Crack Growth, with and without Overloads as a Function of Stress Ratio," McDonnell Aircraft Company, St. Louis, MO, April 1978.

MA007
7049 da/dN
7075 da/dN

Garland, K., and Krieg, J. F., "Environment-Load Interaction Effects on Crack Growth," McDonnell Aircraft Company, St. Louis, MO, Report No. 703-116, June 1978.

MA008 7075 da/dN

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MA009 7075 da/dN

Garland, K., and Krieg, J. F., "Evaluation of Crack Growth Gages for Service Life Tracking Program," McDonnell Aircraft Company, St. Louis, MO, Report No. TR 703-325, TM 256-5298, December 1978.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| MA011 | 7075 | $K_{Ic}$; da/dN |
| | 7079 | da/dN |
| | 7178 | da/dN |

"Final Report, F/RF-4C/D Damage Tolerance and Life Assessment Study - Vol. II," McDonnell Aircraft Company, St. Louis, MO, Contract No. AFSC F33657-73-A-0062, Report No. MDC A2883, February 1975.

| | | |
|---|---|---|
| MA012 | 7075 | $K_{Ic}$; da/dN |
| | 7178 | da/dN |

Model F-4E Slatted Airplane Fatigue and Damage Tolerance Assessment, Vol. II," McDonnell Aircraft Company, St. Louis, MO, Contract No. F33657-73-A-0004-0015, Report No. MDC A3390, July 1975.

| | | |
|---|---|---|
| MPC01 | 7075 | $K_{Ic}$ |
| | 7075 (ALCLAD) | $K_{Ic}$ |
| | 7079 | $K_{Ic}$ |
| | 7175 | $K_{Ic}$ |
| | 7178 | $K_{Ic}$ |
| | 7475 | $K_{Ic}$ |

Collis, S. F., et al., "Fracture Toughness Data Bank for Aluminum Alloy Mill Products," Aluminum Company of America, Alcoa Laboratories, Alcoa Center, PA, Data Submitted by Alcoa, Reynolds Metals, Kaiser Aluminum , and Martin Marietta Aluminum and Prepared for Metal Properties council, Inc., August 1979.

| | | |
|---|---|---|
| MR001 | 7075 | $K_{Ic}$; a-vs-N; da/dN |
| | X7090 | a-vs-N; da/dN |
| | X7091 | a-vs-N; da/dN |

"Damage Tolerant Test Data on X7090, X7091, and 7075 Aluminum ," Materials Research Laboratory, Ins, Glenwood, IL, Under Contract to ARRADCOM, (DAAK10-79-C-0278), Received June 1982.

| | | |
|---|---|---|
| NC001 | 7050 | $K_{Ic}$ |
| | 7149 | $K_{Ic}$ |

Plane Strain Fracture Toughness Data Sets on Aluminum, Steel, and Titanium Alloys, Data sent from P. G. Porter of Northrop Corp., Hawthorne, CA, March 1, 1982.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| NC002 | 7050 | a-vs-N; da/dN |
| | 7075 | da/dN |
| | 7149 | a-vs-N; da/dN |

Fatigue Crack Growth Rate Data on Aluminum, Steel, and Titanium Alloy, Data sent from P. G. Porter of Northrop Corp., Hawthorne, CA, March 1, 1982.

| | | |
|---|---|---|
| NC003 | 7050 | $K_{Ic}$ |
| | 7075 | $K_{Ic}$; da/dN |

Chanini, G. R., et al., "Methodology for Evaluation of Fatigue Crack-Growth Resistance of Aluminum Alloys Under Spectrum Loading," Northrop Corporation, Aircraft Division, Hawthorne, CA, Contract No. N00019-80-C-0427, April 1982.

| | | |
|---|---|---|
| RA001 | 7475 | $K_{Ic}$ |

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 36-KFP-3M04, September 1978 - June 1980.

| | | |
|---|---|---|
| RA003 | 7475 | $K_{Ic}$ |

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38KFN-7475 Alloy, March 1978 - November 1978.

| | | |
|---|---|---|
| RA004 | 7475 | $K_{Ic}$ |

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFN-7475 Alloy, August 1977 - December 1977.

| | | |
|---|---|---|
| RA005 | 7475 | $K_{Ic}$ |

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFN-3M04-7475 Alloy, May 1980.

| | | |
|---|---|---|
| RA006 | 7475 | $K_{Ic}$ |

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFP-7475 Alloy, September 1977 - November 1977.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

RA007 7475 $K_{Ic}$

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFP-7475 Alloy, 1977.

RA008 7050 $K_{Ic}$

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFP-7050 Alloy-T73651, January 1978.

RA009 7050 $K_{Ic}$

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 37-KFN-7050 Alloy-T73651, 1977.

RA010 7050 $K_{Ic}$

Summary of Plane-Strain Fracture Toughness and Notch-Tensile Tests-Reynolds Metals Company, Metallurgical Research Division, Richmond, VA, Project 38-KFP-7050 Alloy-T73651, 1977.

RI002 7178 a-vs-N; da/dN

Data Sheets Containing Fatigue Crack Growth Rate Data on 7178-T651 Aluminum Plate Supplied by J. Stolpestad, Rockwell International, North American Aircraft Division, March 1982.

RI006 7049 $K_{Iscc}$
7050 $K_{Iscc}$
7075 $K_{Iscc}$
7175 $K_{Iscc}$

Ferguson, R. R., and Berryman, R. C., "Fracture Mechanics Evaluation of B-1 Materials," Rockwell International, B-1 Division, Los Angeles, CA, Contract No. F33657-70-C-0800, Report No. AFML-TR-76-137, October 1976.

## TABLE 8.25 (CONTINUED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA

| | | |
|---|---|---|
| RI008 | 7175 | a-vs-N; da/dN |
| | 7475 | a-vs-N; da/dN |

"Crack Growth Test of 7175-T76511 Al Extr," Rockwell International, B-1 Program, Los Angeles, CA, 90009.

| | | |
|---|---|---|
| SA001 | 7075 | a-vs-N; da/dN |

Rungta, R., Deel, O., and Frey, N., "Fatigue-Crack-Propagation Behavior of Materials of Several H-53 Helicopter Materials," Sikorsky Aircraft Company, Stratford, CT, Data Submitted by Battelle, Columbus, OH, 43201, Received October 20, 1992.

| | | |
|---|---|---|
| SW001 | 7050 | $K_{Ic}$; a-vs-N; da/dN |
| | 7075 | $K_{Ic}$; a-vs-N; da/dN |
| | 7175 | a-vs-N; da/dN |

Data submitted by Mr. Jack Fitzgerald, Southwest Research Institute, San Antonio, TX.

| | | |
|---|---|---|
| UD002 | 7010 | da/dN |

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| | | |
|---|---|---|
| UD003 | 7010 | $K_{Ic}$; da/dN; $K_{Iscc}$ |

Cervay, R. R., "Mechanical Property Evaluation on Aluminum Alloy 7010-T73651," University of Dayton Research Institute, Dayton, OH, Contract No. F33615-78-C-5002, Report No. AFWAL-TR-80-4094, July 1980.

| | | |
|---|---|---|
| UD006 | 7075 | da/dN |

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## TABLE 8.25 (CONCLUDED)

## REFERENCES FOR THE 7000 SERIES ALUMINUM ALLOY DATA


WA001 7049 $K_{Ic}$; da/dN
7050 $K_{Ic}$; da/dN
7075 $K_{Ic}$; da/dN

Petrak, G. J., "Effect of Purity Level on the Mechanical Properties of 7000-Series Aluminum," Air Force Wright Aeronautical Laboratories (AFWAL/MSLA). Air Force Systems Command, WPAFB, OH, Project No. 2418, April 1980.

WL003 8090 $K_{Ic}$; a-vs-N; da/dN

Phillips, M. A., and Thompson, S. R., "The Mechanical Property Data Base From an Air Force/Industry Cooperative Test Program on Advanced Aluminum Alloys (8090 Extrusion)," Wright Patterson Materials Laboratory, WPAFB, Dayton, OH, 45433-6533, Report WRDC-TR-90-4113, November 1990.

WL005 7075 a-vs-N; da/dN

Data submitted by Mr. Jim Harter from ASTM round robin, Wright Patterson Materials Labs, April 1992.