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The stress corrosion cracking of AerMet 100 and 300M steels was investigated in aqueous NaCl solutions of different concentrations (0.035-3.5%) but an identical electrical conductivity, employing rising step load test method. The threshold stress intensity ofr stress corrosion cracking, K_{ISCC}, increases from 15.4 MPa$\sqrt{m}$ to 26.4 v with applied cathodic potential for AerMet 100 steel. On the other hand, K_{ISCC} is relatively constant, 15.4-16.5 MPa$\sqrt{m}$, for all potentials employed, ranging from -1.2 V_{SCE} to -0.7V_{SCE}. The open circuit potentials and the K_{ISCC} values at those potentials are greater for AerMet 100 steel than for 300M steel. These results indicate the AerMet 100 steel is nobler and more resistant to stress corrosion cracking than 300M steel. The SEM fractographs of both steels show mixed intergranular and cleavage cracking across all potential employed.

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STRESS CORROSION CRACKING OF HIGH STRENGTH STEELS

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The stress corrosion cracking of AerMet 100 and 300M steels was investigated in aqueous NaCl solutions of different concentrations (0.035-3.5%) but an identical electrical conductivity, employing rising step load test method. The threshold stress intensity for stress corrosion cracking, K_{ISCC}, increases from 15.4 MPa$\sqrt{m}$ to 26.4 MPa$\sqrt{m}$ with applied cathodic potential for AerMet 100 steel. On the other hand, K_{ISCC} is relatively constant, 15.4-16.5 MPa$\sqrt{m}$, for all potentials employed, ranging from –1.2 V_{SCE} to –0.7 V_{SCE}. The open circuit potentials and the K_{ISCC} values at those potentials are greater for AerMet 100 steel than for 300M steel. These results indicate that AerMet 100 steel is nobler and more resistant to stress corrosion cracking than 300M steel. The SEM fractographs of both steels show mixed intergranular and cleavage cracking across all potentials employed.

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