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B.F. Goodrich

AVIATION PRODUCTS

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DEVELOPMENT, SELECTION, TESTING OF
BASIC MATERIALS AND FABRICATION
OF THERMAL RADIATION PROTECTIVE ASSEMBLIES
Prepared Under Navy, Bureau of Weapons
Contract NOas 60-6095-c
Seventh Bi-Monthly Engineering Report
Covering Period 9 June 1961 through 8 August 1961

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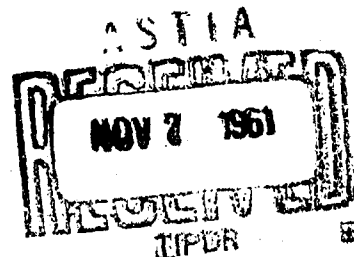
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**This Report Applies to Work
on Contract NOas 60-6095-c.**

Prepared By:

W. J. Berus
W. J. Berus, Product Engineer

**B.F.GOODRICH AEROSPACE & DEFENSE PRODUCTS
A DIVISION OF THE B.F.GOODRICH COMPANY
AKRON, OHIO**



ABSTRACT

Several woven panels of candidate thermal protective fabrics have been submitted to the Air Crew Equipment Laboratory for testing.

Considerable experience has been gained, during our investigation program, dealing with glass cloth fabricating methods. Specialized techniques and procedures necessary for handling and fabricating glass fabrics have been devised and will be utilized later, if necessary.

As of August 4, 1961 further work under this contract has been suspended due to lack of funds.

I. Engineering Progress and Problems Encountered

Four sample fabrics have been submitted to ACEL for thermal testing. Additional work connected with this materials investigation program is delayed pending receipt of these results.

Additional samples of woven glass fabrics were examined with respect to sewing characteristics, seam strength, drape characteristics and general handling characteristics. During these investigations valuable experience has been gained concerning fabrication techniques and procedures of glass fabric. It has been found the tendency to fray is eliminated by the application of a cement to the appropriate area before actually cutting the material. Also it has been noted an increase in seam strength is obtained by using a special high speed needle and a low number of stitches per inch. Investigation of glass fabric seam strengths has uncovered several stitching patterns that improve seam strengths. These patterns tend to spread the load over a greater number of yarns. Stitches such as the zig-zag with varied dimensions and the double zig-zag have proven somewhat successful during this program. Various seams such as the fold-over and french seam have also exhibited good strength characteristics. A sample of a plain woven 3.2 oz/yd² glass cloth, 4.0 mils thick, with a zig-zag stitch and fold-over seam, was tested in a bag 30 inches long and 12 inches in diameter. The bag was pressurized to 4.8 psig before failure of the seams. A glass-nylon combination cloth was tested in the same bag with a plain seam and a zig-zag stitch. The seam withstood 10 psig for 20 minutes without deleterious effects.

Additional contact was made with a supplier of teflon-coated glass fabrics who in turn manufactures conveyor belts from these materials. They have available several standard weaves of glass cloth, i.e., plain, twill and satin, plus many other exotic weaves currently produced on an experimental basis. Several promising materials were returned to B.F. Goodrich for testing and evaluation.

Work has been continuing at our weave job shop on the problems associated with obtaining a glass fabric that has a tight weave, that is durable and that yields a highly mobile garment.

II. Planned Work for Succeeding Period

Due to a lack of funds work under this project has been suspended.