

NASA TECH BRIEF

Lyndon B. Johnson Space Center



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Plastic Covering on Airfoil Structure Provides Smooth Uninterrupted Surface

When an aircraft is manufactured, its airfoil sections are riveted together. This riveting causes depressions that make the airfoil surface somewhat irregular. The surface must be smoothed out; otherwise air turbulences are created in flight, causing undesirable aerodynamic performance. Rivet depressions are usually filled with malleable materials which are sanded down by hand into a smooth surface. In a new simpler method, the airfoils are covered with plastic sheets, which provide a smooth low-friction surface.

Before the plastic sheets are applied, the surface to be smoothed is cleaned and prepared by either chemical etching or mechanical abrasion (glass bead). A suitable primer is applied to the surface and is allowed to cure. The primer must be compatible with the surface and the adhesive that will be used. Next, the primed surface is covered with an adhesive. A sheet of plastic film is stretched over the adhesive, and a mechanical holder is used to apply tension to the ends of the sheet to make it conform to the surface of the airfoil. The plastic is smoothed over the surface with any suitable smooth tool to force air bubbles out. After the adhesive cures, which may take anywhere from 1 to 3 days depending on the adhesive, the plastic can be trimmed with a sharp cutting tool.

Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
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Reference: B74-10270

Patent status:

This invention is owned by NASA, and a patent action has been filed. Inquiries concerning non-exclusive or exclusive license for its commercial development should be addressed to:

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