

December 1970

Brief 70-10706

NASA TECH BRIEF



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Improved Protection for Silicon Solar Cells

Fluorinated ethylene propylene (FEP) film has proved to be an effective substitute for the epoxy cement used to bond glass covers to silicon solar cells. Silicon solar cells used in space require glass covers for protection from electron and proton radiation. But the epoxy cement previously used to bond the covers to the cells was degraded by ultraviolet light, and required filters for protection. The filters, in turn, reduced the blue light impinging on the cell surface, lessening cell output power.

The cement bond can be replaced by a sheet of treated FEP, from 0.001 to 0.002 in. thick, placed between each cell and cover. The FEP can also be bonded to either the cell or the cover, before the two are joined. The assembly is then subjected to 288°C at 25 psi for 5 minutes, cooled, and trimmed of excess FEP.

Because FEP is relatively insensitive to ultraviolet radiation, it needs no filtering and does not impair cell performance. The filter is eliminated, cell cost is reduced, and cover mounting is simplified. The new technique could be extended to other glass-cementing operations, in the laboratory and elsewhere, where

specific chemical or radiation resistance of the bond is required.

Note:

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

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Reference: B70-10706

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to:

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(LEW-11065)

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