

# NASA TECH BRIEF

## *Marshall Space Flight Center*



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### Inorganic Glass Ceramic Slip Rings

#### **The problem:**

There is a need for slip-ring capsule assemblies made of materials which will not be adversely affected by high temperatures.

#### **The solution:**

Prototypes of slip rings have been fabricated from ceramic glass, a material which is highly resistant to deterioration due to high temperature. The slip-ring assemblies were not structurally damaged by mechanical tests (acceleration, vibration, and shock) and performed satisfactorily for 200 hours.

#### **How it's done:**

Convertible glass-ceramic wafers were stacked and fired to form both slip-ring rotors and brush assemblies. The glass phase converted to a ceramic, as the stacked wafers were fused to each other. Contacts were made of gold-plated copper surfaced with electrodeposited gold-niobium diselenide composite. Bearings were successfully lubricated with sodium silicated bonded molybdenum disulfide and graphite. Graphite seals were used to close the capsule housings.

The rings may be used approximately 200 hours if

noise levels in the range of 20 to 60 milliohms can be tolerated. After 500 hours and at 5 to 6 Hz, noise levels were high and wear severe.

#### **Note:**

Requests for further information may be directed to:  
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Reference: TSP72-10313

#### **Patent status:**

Title of this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457(f)], to the Litton Precision Products, Inc., Blackburg, Virginia

Source: E. W. Glossbrenner and  
S. R. Cole of  
Litton Precision Products, Inc.  
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