

October 1970

Brief 70-10413

NASA TECH BRIEF



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Improved Linings for Integrating Spheres

Integrating spheres, for measurement of the thermo-optical properties of materials, can be lined by a novel and improved method that is quick (in about 20% of the time taken for MgO coatings) and easy. The polished metallic surface is covered with a tailored layer of 4484-beta fabric which is a plain weave of glass fibers coated with polytetrafluoroethylene. The fabric is then coated with MgO deposited from vapor generated by burning of magnesium. A second layer of the same processed material may be applied to the sphere if required to increase the total thickness to 2.5 mm.

The resultant lining is suitable for measurement of radiation in the ultraviolet, visible, and near-infrared ranges of wavelength and is not damage-prone. Snapping of the fabric does not easily remove the MgO from its interstices, nor is the MgO rubbed from the layer next to the basic material. The fabric scatters irradiant light and, when coated with MgO, ideally presents the desired detection properties.

When cleaning the sphere for a fresh preparation of MgO, distilled water or Freon can be used without damaging the fabric or releasing the bond between the fabric and the sphere.

Notes:

1. Tech Brief 68-10126 describes alternative linings.
2. No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
Manned Spacecraft Center, Code BM7
Houston, Texas 77058
Reference: B70-10413

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C., 20546.

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Category 03