

NASA TECH BRIEF

Manned Spacecraft Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

Nonflammable Potting, Encapsulating and/or Conformal Coating Compound

A polymer material formed from dimethylpolysiloxane, ammonium phosphate, and ground glass, provides a nonflammable potting, encapsulating, or conformal coating compound. It is nonflammable in an air environment and self-extinguishing in an atmosphere of 60 percent oxygen and 40 percent nitrogen. The table gives the formulation of the material.

<u>Ingredient</u>	<u>Percentage by Weight</u>
Dimethylpolysiloxane Resin	42.56%
Ammonium Phosphate, Monobasic	31.91%
Glass, 325 Mesh	21.28%
Dimethylpolysiloxane Curing Agent	4.25%

The ammonium phosphate appears to inhibit or retard combustion by interfering with the free radical chain reactions. In addition, gas emitted by the hot ammonium phosphate causes intumescence of the dimethylpolysiloxane and creates an insulating gaseous layer. The glass, which melts at low temperatures, reduces the rate of heat transfer within the material.

This material may have applications for reducing industrial fire hazards. Also, results of preliminary dielectric property measurements indicate a potential use in electrical component encapsulation.

This material should interest the aircraft industry, machinery manufacturers, the automotive industry, and manufacturers of encapsulating, potting, and conformal coating polymers.

Note:

Requests for further information may be directed to:
 Technology Utilization Officer
 Manned Spacecraft Center
 Code JM7
 Houston, Texas 77058
 Reference: TSP72-10337

Patent status:

No patent action is contemplated by NASA.

Source: H. F. Kline and Fredrick Dawn
 Manned Spacecraft Center
 (MSC-13499)