

NASA TECH BRIEF



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Thermoplastic Rubberlike Material Produced at Low Cost

The problem:

To formulate a thermoplastic rubberlike material that can be produced from commercially available ingredients at low cost.

The solution:

A material prepared by blending a copolymer of ethylene and vinyl acetate with asphalt and a petroleum distillate.

How it's done:

The copolymer, containing 23.8 percent by weight of vinyl acetate, is blended with steam-refined asphalt (ductility above 150 cm at 77°F) and unrefined petroleum distillate (0.95 specific gravity) or kerosene (0.79 specific gravity) at 350°F. A typical composition is produced by blending 2.7 pounds of the copolymer, with 0.9 pound of asphalt, and 1.5 pounds of the unrefined petroleum distillate. The cooled blend is a thermoplastic material having good tensile strength and resilience in the temperature range of -50° to +150°F. At temperatures below -50°F, the material becomes very hard but not brittle.

The material has a glass-transition temperature of less than -60°F, and a softening point above 150°F.

None of the blended ingredients are exuded at any temperature within the useful temperature range of the material.

Notes:

1. The new material can be easily molded or extruded and is compatible with a variety of fillers.
2. This low cost material would be useful for lining concrete water tanks and swimming pools, and as a crack sealant in asphalt and concrete roads, especially where low temperature is a problem.
3. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B66-10453

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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(JPL-793)

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