

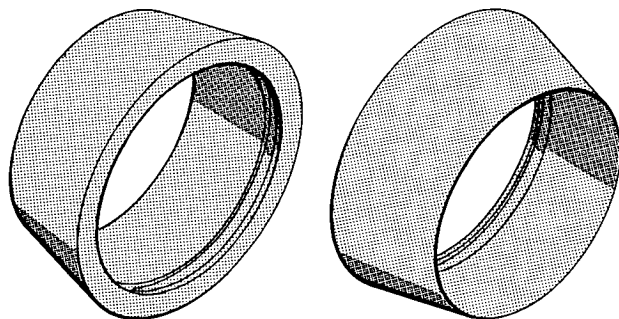
NASA TECH BRIEF



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Open-Cellled Polyurethane Foam

An open-celled polyurethane foam has been developed with an 8.3 lb/ft³ density, and a compressive strength of 295 to 325 psi. The manufacturing of a foam with both a high degree of open cells and strength to withstand over 300 psi compressive load



Foam Insulating Block

is considered a major improvement in foam development. Possessing these advantages over other known open-celled polyurethane foams, the new foam may be useful as a porous spacer in layered insulation and as an insulation material in vacuum tight systems. It is expected that wherever rigid polyurethane foam is used in a vacuum tight system as an insulation member, the open-cell foam can be evacuated, with resultant lower thermal conductivity than obtainable with a closed-cell foam of the same density. Adjustment of the quantity of activator mixed with other substances to produce the foam can yield materials of variable compressive strength and density. The foam may also have possible application as a filter element in various industries.

The general purpose of the rigid, open-cell polyurethane foam is its use as an insulation block. The open-cell characteristic of the material allows cryopumping of gas from within the cell structure to a cold surface or sorbent material. This property permits elimination of gas conduction and convection that normally occur within the closed-cell foam.

As shown in the figure, the completed foam sections were machined on a lathe and cut with a band saw as required. Both cutting methods produced excellent results. The evaluation of test development samples was accomplished using a vacuum pump, bell jar and Hg manometer. The open cell foam that resulted from this development program was very successful.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Kennedy Space Center
Kennedy Space Center, Florida 32899
Reference: B70-10349

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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