

# Thin Is In

**HIGH-PERFORMANCE AEROGEL INSULATION  
FOR APPLIANCES AND REFRIGERATED EQUIPMENT**

## Ultra-Slim Insulation Expands Usable Space With Same Footprint

Aspen Aerogels and Pacor provide thermal insulation solutions for a variety of appliance and refrigerated applications. Aspen's ultra-thin, ready-to-use aerogel blanket insulation, fabricated by Pacor, delivers extremely low conductivity, enabling appliance and refrigerated products designers to insulate in tighter, smaller profiles such as doors and walls.

Benefits of aerogel insulation include:

- Two to eight times the insulation value for the same thickness compared to traditional materials.
- Extremely thin profile, which increases internal volume within tight spaces.
- Consistent, high insulating effectiveness for the life of the unit.
- Easy fabrication, such as die-cutting, laminating, composite layering and other options.
- Environmental friendliness: Aerogels pose no chemical threat to the environment. They are silica based, which is essentially sand. Since the installed volume is considerably less than competing materials, there is less going to landfills.
- Excellent resistance to flame spread and smoke emission.
- Lighter weight than other insulation materials on an installed basis.
- Hydrophobicity: Aerogels have outstanding resistance to moisture.





# Aerogel Insulation: Ultimate Thermal Protection



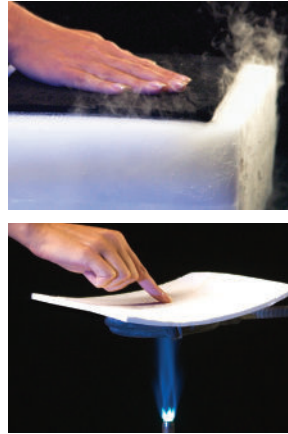
**aspen** aerogels™  
NANOTECHNOLOGY AT WORK™

Aspen Aerogels' revolutionary insulation materials are made from nanoporous aerogel – the world's best thermal insulator. They are available in an advantageous flexible form for service temperatures from -460°F (-273°C) to 1200°F (649°C). This wide range enables the insulation to perform in low, high, and dual temperature applications.

Aerogels have been in existence for more than 70 years. They consist of lightweight silica solids derived from a gel in which the liquid component has been replaced with gas. The silica solids, which are poor conductors, consist of very small, three-dimensional, intertwined clusters that comprise only 3% of the solids. Volume conduction through the solid is therefore very low. The remaining 97% of the volume is composed of air in extremely small nanopores. The air has little room to move, inhibiting both convection and gas phase conduction.

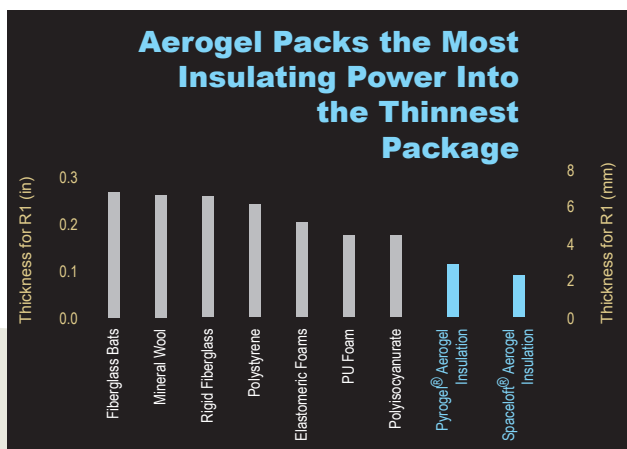
These characteristics make aerogel the world's lowest density solid and most effective thermal insulator. The outstanding thermal properties of aerogels have been studied for decades, but Aspen Aerogels has developed a technically and economically viable form of aerogel for appliance insulation uses. Our unique process integrates aerogel into a carrier to create flexible, resilient, durable aerogel blankets with superior insulating properties.

In addition to these benefits, Aspen Aerogels' products support the green building movement (information available).



Pacor is equipped to fabricate any of the Aspen Aerogels insulation products with state-of-the-art equipment, including:

- Precision Die Cutting
- Computer Numerical Control (CNC) Cutting Systems
- Adhesive and Film Laminating
- Close Tolerance Slitting-Sheeting
- Encapsulating
- Application of Pressure Sensitive Adhesives (PSA)



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