

U-Vacua™ Vacuum Insulation Panels

Advanced Thermal Insulation for Buildings.

Vacuum Insulation Panels, or VIPs, are high R-Value, rigid non-structural thermal insulation panels. They provide high performance thermal insulation in a thin, light weight design. Great for areas with limited space that require high R-Value insulation or to meet energy standards without increasing wall, roof or floor thickness. Whether used stand alone or in combination with other materials, or as part of a composite panel, VIPs reliably deliver energy savings.

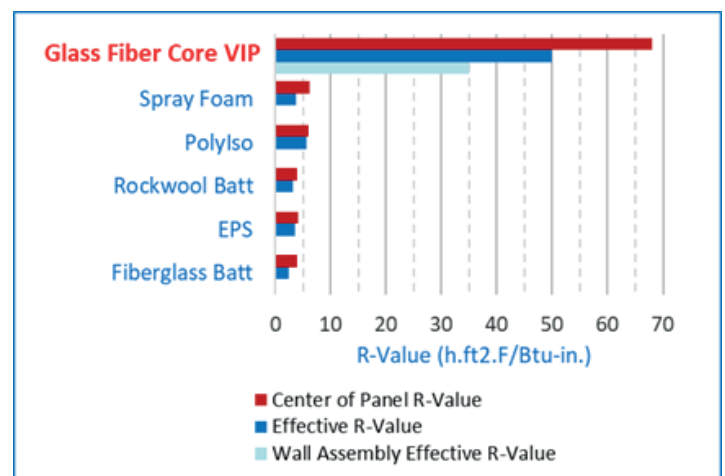
Features:

- Thermal conductivity of 0.002 W/mK, which equates to a Center-of-Panel R-Value of over R-60 per inch
- Class A Fire and Smoke rating for Building Products
- Made from non-toxic materials and over 70% recycled content
- Mold, fungi and rodent resistant
- Adhesive, Adhesive Tapes, Sprays common install methods

Materials of VIPs:

U-Vacua™ VIPs consist of a unique fiberglass core encased in a laminate film made up of several layers that includes nylon, aluminum, and a protective layer. An adsorbent is positioned between the fiber glass material and the exterior film to capture moisture molecules and any gases. Together, the adsorbent and outer film maintain the integrity of the vacuum over many years, ensuring a reliably long product life.

R-Value Comparison: Center of Panel and Effective R-Value by Insulation Type (per inch)



Center of panel R-Values determined using ASTM C1667. The Effective R-Value based on Panasonic calculations. Wall Assembly Effective R-Value determined by ASTM C 1363, which takes into account edge effects in a specific Wall Assembly.

BUILDING APPLICATIONS INCLUDE – Commercial + Residential Roofs, Embedded or Composite Panels (IMPs, SIPs, ...), Insulated Concrete, Walls (Interior + Exterior), Spandrel glass, Ceilings, Floors, Attics, Basement, Crawlspace, Rim joists.

SPECIFICATIONS

R-Value by Panel Thickness				
Panel Thickness				
inches	0.47	0.59	0.79	0.94
mm	12	15	20	24
R-Value (h.ft ² .F/Btu)				
Center of Panel ¹ R-Value	34	45	56	66
Effective ² R-Value	23	32	42	50
Effective R-Value in Wall Assembly ³	22	25	30	35

General Specifications	
Thermal Conductivity W/mK ASTM C1667	0.002
Flame Spread	10
Smoke Development ASTM E84	15
Compressive Resistance ASTM C165	14 psi @ 24 mm 10 psi @ 15 mm
Density	250 kg/m ³ +38kg/m ³ @ Core
Tensile Strength ASTM D882	0.85 kN @ 25x120x12mm (WxLxT)
Flexural Strength	1.2 Mpa @ 25x120x12 mm (WxLxT)
Recommended Use Temp. Range	-40°C to 60°C / -40°F to 140°F
Max. Use Temperature Range	-70°C to 100°C / -94°F to 212°F

Notes:

1. Center of Panel R-Value determined per ASTM C1667.
2. Effective R-Value determined from Panasonic calculations.
3. Effective R-Value for wall assembly per third party ASTM C1363 testing.
4. Panel dimensions, configuration, and environmental temperatures effect R-Value of a VIP panel.

Green Building: U-Vacua™ VIPs avoid toxic materials and are made from 70% or more recycled material. The glass fiber core material can also be recycled. For high efficiency buildings, VIPs provide superior thermal insulation in a thin panel, significantly reducing the energy use of a building or contained space.

Compliance and Standards: U-Vacua™ vacuum insulation panels have been third party tested by a certified lab to ASTM C1484, ASTM E84, ASTM C165, ASTM C1667, and ASTM C1363. U-Vacua™ VIPs are manufactured in facilities that have received and maintain these certifications: OHSAS 18001:2007 Occupational Health & Safety Management Systems; ISO 9001:2015 Quality Management Systems; ISO 14001:2015 Environmental Management Systems.

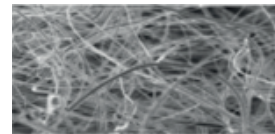
TECHNOLOGY



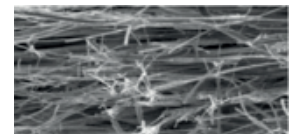
Vacuum insulation Panels do more with less. About 90% of a VIP's performance is a result of the inner vacuum. In a vacuum, heat can not travel through the air by conduction or convection. This limited ability for heat to travel in the vacuum is what gives vacuum insulation panels such a high thermal insulating performance and R-value.

Fiber Layer Arrangement Technology (FLAT) developed by Panasonic, minimizes the touch points of the core material's glass fibers to the panel sides, which reduces thermal conductivity along the fibers by as much as 60%.

Standard Orientation



Glass Fibers Aligned



Configurations and Service Life: U-Vacua™ vacuum insulation panels come in a variety of configurations specific to building design requirements, driven largely by desired thermal performance over a specified time period. Estimated useful life varies by Use temperatures, panel size and specific configuration. At 60 years, standard U-Vacua™ VIP panels are designed to have a Center of Panel R-Value of 12 or higher. Larger panel sizes typically have a longer Service Life than smaller panels of the same thickness. Superior grade U-Vacua™ VIPs can be configured to maintain R-Values significantly longer than the standard VIP panels.

Design Considerations: VIPs cannot be handled or installed in the same manner as traditional insulation. To avoid punctures when installing, adhesive tapes or sprays designed for building construction use are common ways to implement VIPs. Protecting the panels with additional insulation or other cover layers is another common approach with VIP panels. Without the vacuum, the thermal insulating performance or R-Value of a VIP is about R-5 per inch.



Certified to

ASTM C1484, ASTM C165, ASTM C1667,
ASTM C1363, ASTM E84

VACUUM INSULATION