Cryogel® Z

aspen aerogels®

PRODUCT DATA SHEET

Flexible Aerogel Insulation for Sub-Ambient and Cryogenic Applications

Cryogel® Z flexible aerogel blanket insulation is engineered to deliver maximum thermal protection with minimal weight and thickness.

Cryogel Z is composed of a flexible aerogel blanket laminated to a vapor retarder. This powerful combination makes Cryogel Z unmatched in sub-ambient, cold cycling, and cryogenic applications.

Cryogel Z's extremely low thermal conductivity minimizes heat gain and liquid boil-off. Cryogel Z remains flexible, even at cryogenic temperatures, eliminating the need for complex and costly contraction joints, thereby resulting in simple and faster installation. It is designed for long term performance while also withstanding incidental mechanical abuse, leading to continued protection through the life of the asset. Cryogel Z is ideal for faster and safer installations for both maintenance work and new builds.

In addition to being the first choice in cold conservation, Cryogel Z based systems offer acoustic attenuation and protections against cryogenic spill, pool fire, and jet fire. The combination of these safeguards make Cryogel Z ideal for onshore, offshore and marine applications[1].

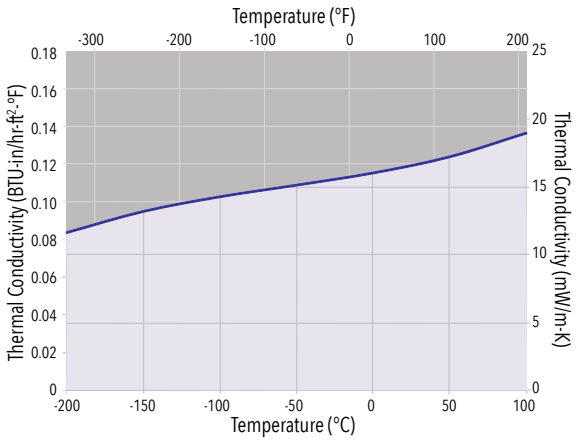
1 - IMO Compliant Grade is available

THERMAL CONDUCTIVITY †

Tested in accordance with ASTM C177

Mean Temp. °F / °C	*k* BTU-in/hr-ft²-°F / mW/m-K
-200 / -129	0.096 / 14
-100 / -73.3	0.10 / 15
0 / -17.8	0.11 / 16
75 / 23.9	0.12 / 17
100 / 37.8	0.12 / 17
200 / 93.3	0.13 / 19

†Thermal conductivity measured at a compressive load of 2 psi.



ADVANTAGES

- Extremely low thermal conductivity (k-value) enables thinner designs for improved space efficiency
- Integrated vapor retarder provides redundant protection in an easy-to-install package
- Eliminates the need for contraction joints reducing cost and complexity
- Durable and flexible even at cryogenic temperatures
- Robust performance during construction, transport and operations makes it suitable for pre-insulation and modular builds
- Increased labor productivity and faster installation rates
- Proven in global LNG liquefaction and regasification facilities
- Thermal, acoustic, jet-fire, pool fire, and cryogenic spill protection in a single system

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PHYSICAL PROPERTIES OF CRYOGEL® Z

THICKNESS*	0.2 in (5 mm)	0.4 in (10 mm)
MAX. USE TEMP.	257°F (125°C)	
COLOR	White	
DENSITY*	10 lb/ft³ (0.16 g/cc)	
HYDROPHOBIC	Yes	

*Nominal Values

PERFORMANCE OF FLEXIBLE AEROGEL BLANKET

Cryogel Z is produced from flexible aerogel blanket insulation that complies with ASTM C1728 Type I, Grade 1B and meets the following requirements

TEST PROCEDURE	PROPERTY	RESULTS
ASTM C165[1]	Compressive Resistance	≥ 5 psi (34.5 kPa) @ 10% deformation
ASTM C356	Linear Shrinkage Under Soaking Heat	< 2%
ASTM C795	Insulation for Use Over Austenitic Stainless Steel	Pass
ASTM C1101/1101M	Flexibility of Blanket Insulation	Flexible
ASTM C1104/1104M	Water Vapor Sorption	≤ 5% (by weight)
ASTM C1338	Fungal Resistance of Insulation Materials	No Growth
ASTM C1617	Corrosiveness to Steel	Pass
ASTM C1763	Water Absorption by Immersion	Pass
ASTM E84	Surface Burning Characteristics	Flame Spread Index ≤ 25 Smoke Developed Index ≤ 50

[1] Compression resistance measured using a preload of 2 psi.

PERFORMANCE OF VAPOR RETARDER

TEST PROCEDURE	PROPERTY	RESULTS
ASTM E96 - DRY CUP	Water Vapor Transmission	≤0.00 Perms

PERFORMANCE OF SYSTEMS INCORPORATING CRYOGEL® Z

The performance of Cryogel Z in cold acoustic service and passive fire protection systems has been evaluated according to the test methods described below. Performance levels achieved in these systems are configuration dependent. Contact Aspen Aerogels technical service for configuration and other details.

- UL 1709 Rapid Rise Fire Tests of Protection Materials for Structural Steel: Up to 120 min of protection.
- ISO 22899-1 Determination of the resistance to jet fires of passive fire protection materials: Up to 120 min of protection.
- ISO 20088-3 Determination of the resistance to cryogenic spillage of insulation materials, Part 3 Jet release: Up to 60 minutes of protection.
- Sequential Combination ISO 20088-3 & 22899-1 protection available.
- ISO 15665 – Acoustic Insulation for Pipes, Valves, and Flanges: Configurations meeting Class A2, B2, C2/3, and D2/3.
- IMO Part 2 and 5: Effective July 2019, use only Cryogel Z (IMO grade) for applications requiring compliance with IMO Part 2 and 5. Standard grade Cryogel Z is only appropriate for applications that do not require compliance with IMO Part 2 and 5. Contact Aspen technical service for additional information.

THE AEROGEL ADVANTAGE

Aerogel is a lightweight solid derived from gel in which the liquid component of the gel is replaced with air. The general process of creating aerogel results in a material with extremely low density and the lowest thermal conductivity of any solid. These remarkable properties make aerogel one of the world's most efficient insulating materials. Our patented process integrates this unique aerogel into a fiber-batting to create flexible, resilient, and durable aerogel blankets with superior insulating performance.

WORKING WITH CRYOGEL® Z

Clean, flush, and accurate cutting of Cryogel Z can be achieved using conventional cutting tools such as scissors, tin snips, razor knives, and hot knives. As with all technical insulation materials, appropriate personal protective equipment (PPE) should be worn when handling, cutting and installing Cryogel Z. See SDS/AIS for complete health and safety information. Cryogel Z is designed for use with a properly installed jacketing system. Refer to the Cryogel Z Installation Guide for details.

TECHNICAL SERVICES

Cryogel Z represents the state of the art in cold service asset and process protection, minimizing total installed costs while facilitating long-term operating cost savings. Our Technical Services team offers comprehensive assistance for your project, from initial design and specification, through training and site start up.

LEARN MORE

PRODUCT WEB PAGE

Scan with mobile device or go to aerogel.com/cryogel

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