Product Information Sheet

ALKEGEN

AlkeGel Ember™

Aerogel Technology BY ALKEGEN

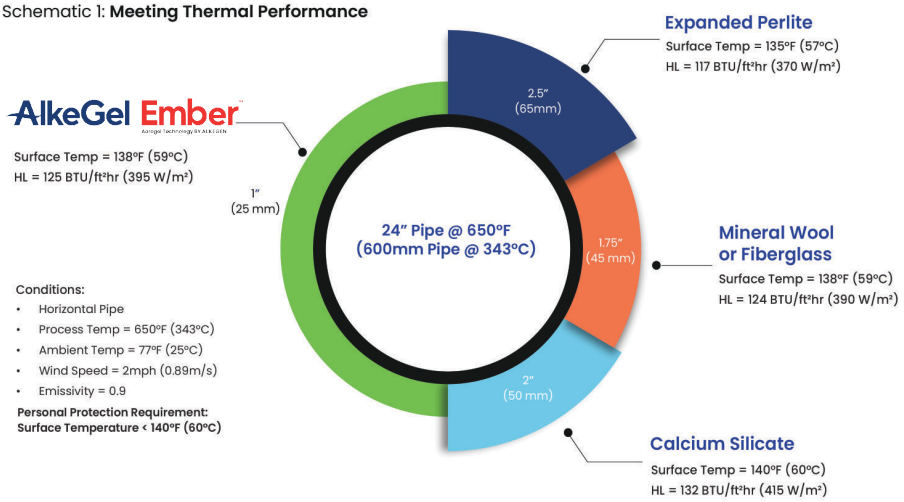
INTRODUCTION

AlkeGel Ember™ is part of a new portfolio of ultra-lightweight aerogel insulating materials specifically designed for moderate-high temperature applications. These fiber-enhanced aerogels offer advantages in their improved product handleability, flexibility and acoustical performance. AlkeGel Ember is engineered for high temperature service and to minimize the impact of Corrosion Under Insulation (CUI) on piping and large process vessels, reducing maintenance budgets and the risk of catastrophic failure.

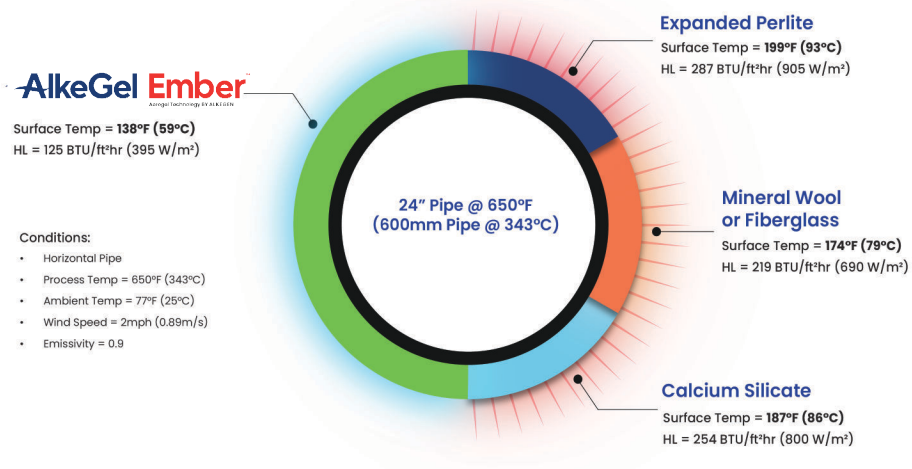
KEY CHARACTERISTICS

- ASTM C1728 Compliant, Type V, Grade 1A
- 80% less dusty than traditional aerogel blankets
- Hydrophobic
- Made In The USA
- Available in 5 & 10mm thicknesses

Schematic 1: **Meeting Thermal Performance**



Schematic 2: **Surface Temperature at Equal Thickness**



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TYPICAL PRODUCT PARAMETERS

AlkeGel Ember	
Physical Properties	
Color	Grey
Material	Flexible Aerogel Blanket Insulation
Classification (ASTM C1728)	Type V, Grade 1A
Maximum Use Temperature, (ASTM C411 & C447), °F (°C)	1200 (650)
Density, lb/ft³ (kg/m³)	10 (160)
Hydrophobic	Yes

Permanent Linear Shrinkage (ASTM C356)	
After 24 Hour Soak @ 1200°F (650°C)	< 2.0%

Thermal Conductivity (ASTM C177)	
Mean Temperature, °F (°C)	Thermal Conductivity, Btu in/hr ft² °F (W/m-K)
75 (24)	0.185 (0.026)
100 (38)	0.185 (0.026)
200 (93)	0.193 (0.027)
300 (149)	0.212 (0.030)
400 (204)	0.242 (0.035)
500 (260)	0.284 (0.041)
600 (316)	0.335 (0.048)
700 (371)	0.398 (0.057)

Fire Protection	
Hot Surface Performance & Maximum Exothermic Temperature Rise (ASTM C411)	Pass
Surface Burning Characteristics (ASTM E84, EN13501, CAN/ULC-S102, Mounting E2231)	Flame Spread Index = 0 Smoke Developed Index = 10

Corrosion & Chemical Properties	
Insulation Influence on Stress Corrosion Cracking of Austenitic Stainless Steel (ASTM C795, C692)	Pass
Corrosiveness to Steel (ASTM C1617)	Pass
Water Vapor Sorption (ASTM C1104, 1104M)	<1%
Water Absorption by Immersion (ASTM C1763)	Pass
Fungal Resistance (ASTM C1338)	No growth

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Mechanical Properties	
Compression Strength @ 10% Deformation (ASTM C165), psi (kPa)	> 3 (21)
Flexibility Classification (ASTM C1101, C1101M)	Flexible

AVAILABILITY

Thickness, in (mm)	Width, in (mm)	Standard Roll Length, ft (m)	Jumbo Roll Length, ft (m)	Pony Roll Length, ft (m)
0.20 (5)	60 (1524)	300 (91.4)	600 (183)	50 (15.4)
0.40 (10)	60 (1524)	150 (46)	300 (91.4)	25 (7.6)

AlkeGel Blankets are produced and distributed worldwide; however, packaging, density, and thickness may differ based on regional needs. To obtain information on specific packaging options please reach out to your nearest Alkegen representative.

GENERAL BENEFITS OF AEROGEL INSULATION

- Superior thermal insulators (extremely low thermal conductivity)
- Environmentally friendly
- Defend & protect against corrosion under insulation (CUI)
- Light weight
- Flexible & resilient
- Thermal shock resistance
- Hydrophobic

ADVANTAGES OF ALKEGEL EMBER over traditional Aerogel:

- 80% less dusty than traditional aerogels
- Extremely easy to cut and handle
- Superior material uniformity
- Superior heat flow uniformity
- Fiber-enhanced aerogel containing high temperature insulating wool

TYPICAL INDUSTRIES & APPLICATIONS

Petrochemical & Refining

- Heat Trace / Steam Trace
- Delayed Coking
- Cracking
- Reforming

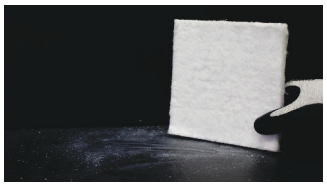
Liquified Natural Gas (LNG)

- Piping
- Terminal Storage
- Trailers, Cars, Ships

Power Generation

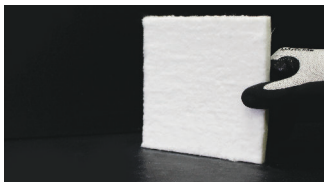
- Piping

Competitive Aerogel

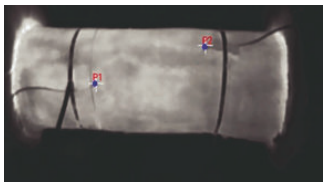


Excessive dust

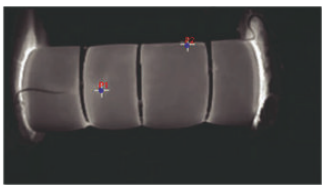
AlkeGel Ember™



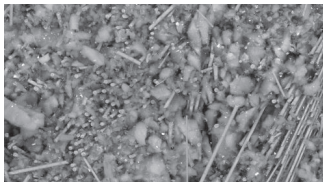
Minimal dust



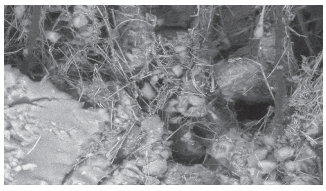
"Hot spots" due to non-uniform aerogel distribution



Thermal images demonstrate uniform heat flow through AlkeGel



Microscopic SEM image of traditional aerogel



Microscopic SEM image of AlkeGel blanket showing superior interlocking qualities of aerogel particles and fiber matrix

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INSTALLATION OVERVIEW

Precise cutting of AlkeGel is achieved using common tools. We recommend the following tools at the installation site:

- Scissors
- Utility Knife
- Electric Shears
- Slitters
- Measurement Tools
  (Tape measure, straight edge, set square)
- Markers/Pens
- Pliers

AlkeGel is suitable for application on:

1. Single Wrap Pipe
2. Multi-Layer Pipe
3. Pipe Elbow & Bends
4. Flanges, Valves, & Fittings
5. Small-bore Pipe

NOTE: Please contact Alkegen Application Engineering office to discuss key application details including project specific procedures and required cutting.

SAFETY & STORAGE

Installer safety and cleanliness is what sets AlkeGel ahead of existing aerogel blankets. Handling AlkeGel will produce considerably less dust and irritation in the workplace. As a general guideline, we recommend the following PPE when working with AlkeGel:

1. Safety Eyewear
2. Work gloves

Please refer to the material safety data sheet (SDS) for more detailed work practices and other EH&S information.

HEALTH AND SAFETY INFORMATION

SDS is available on our website
Safety Data Sheets - CLICK HERE

AlkeGel rolls should always be stored on their side. Avoid orienting rolls in an "upright" position for storage, as this can affect the edges of the rolls. Ensure material is stored in a dry, clean environment.

Information on other applications is available upon request. Any new and/or special use of these products, whether in an application listed in our literature, is advised to be submitted to our Alkegen Application Engineering department for review and guidance on material selection.

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The test data shown are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes. Product Information Sheets are periodically updated by Alkegen. Before relying on any data or other information in this Product Information Sheet, you should confirm that it is still current and has not been superseded. A Product Information Sheet that has been superseded may contain incorrect, obsolete and/or irrelevant data and other information.

Alkegen
Headquarters
5215 N. O'Connor Blvd, Suite 2300
Irving, TX 75039
Telephone: 716-768-6500
Website: www.alkegen.com
Email: info@alkegen.com

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