



FOAMGLAS®

Pittsburgh Corning

Protecting Companies and Their People Worldwide

INDUSTRIAL PIPING, DUCTS AND EQUIPMENT

FOAMGLAS® insulation is a lightweight, rigid material composed of millions of completely sealed glass cells. Each cell is an insulating entity. FOAMGLAS® insulation's all-glass, closed-cell structure provides the following benefits:

- Constant Insulating Efficiency
- Zero Water Vapor Permeability
- Moisture Resistance
- Fire Protection
- Corrosion Resistance
- Long-Term Dimensional Stability
- Vermin Resistance
- CFC and HCFC Free

These benefits result in FOAMGLAS® Insulation Systems that are long-lasting, require little maintenance and are ideal for:

- Low temperature pipe, equipment, tanks and vessels
- Medium and high temperature pipes and equipment
- Hot oil and hot asphalt storage tanks
- Heat transfer fluid systems
- Hydrocarbon processing systems
- Chemical processing systems
- Above ground and underground steam and chilled water piping
- Commercial piping and ductwork

FOAMGLAS® insulation is manufactured by Pittsburgh Corning in a basic block form. Blocks are fabricated into a wide range of shapes, thicknesses and sizes to satisfy industrial insulation requirements.

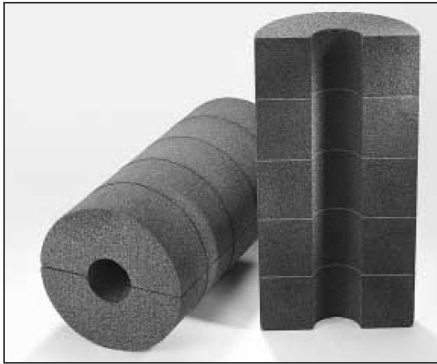
PHYSICAL AND THERMAL PROPERTIES OF FOAMGLAS® ONE™ INSULATION

| PHYSICAL PROPERTIES | ASTM | | | EN ISO |
|--|--|---|-------------------------------|---|
| | SI | ENGLISH | Method | Method |
| Absorption of Moisture (Water % by Volume) | 0.2% | 0.2% | C 240 | EN 1609 EN 12087 |
| | Only moisture retained is that adhering to surface cells after immersion | | | |
| Water-Vapor Permeability | 0.00 perm-cm | 0.00 perm-in | E96 Wet Cup Procedure B | EN 12086 EN ISO 10456 |
| Acid Resistance | Impervious to common acids and their fumes except hydrofluoric acid | | | |
| Capillarity | None | | | |
| Combustibility & Reaction to Fire | Noncombustible - will not burn Flame Spread 0 Smoke Development 0 | | E 136 E84 | EN ISO 1182 (Class A1) |
| Composition | Soda-lime silicate glass – inorganic with no fibers or binders | | | |
| Compressive Strength, Block | 620 kPa Strength for flat surfaces capped with hot asphalt. | 90 psi | C 165 C 240 C 552 | EN 826 Method A |
| Density | 120 kg/m ³ | 7.5 lb/ft ³ | C 303 | EN 1602 |
| Dimensional Stability | Excellent—does not shrink, swell or warp | | | EN 1604 (DS 70/90) |
| Flexural Strength, Block | 480 kPa | 70 psi | C 203 C 240 | EN 12089 (BS450) |
| Hygroscopicity | No increase in weight at 90% relative humidity | | | |
| Linear Coefficient of Thermal Expansion | 9.0 x 10 ⁻⁶ /K 25°C to 300°C | 5.0 x 10 ⁻⁶ /°F 75°F to 575°F | E 228 | EN 13471 |
| Maximum Service Temperature | 482° C | 900° F | | |
| Modulus of Elasticity, Approx. | 900 MPa | 1.3 x 10 ⁵ psi | C 623 | EN 826 Method A1 |
| Thermal Conductivity | W/mK 0.040 @ 10°C 0.042 @ 24°C | Btu-in/hr.ft ² .°F 0.28 @ 50°F 0.29 @ 75°F | C 177 C 518 | EN 12667 EN 12939 (λ ₀ (90/90) ≤ 0.041 W/mK @ 10° C) |
| Specific Heat | 0.84 kJ/kg.K | 0.18 Btu/lb.°F | | |
| Thermal Diffusivity | 4.2 x 10 ⁻⁷ m ² /sec | 0.016 ft ² /hr | | |

Note: FOAMGLAS® ONE™ is manufactured to meet or exceed the minimum requirements of ASTM C552-07 Standard Specification for Cellular Glass Insulation (or most recent revision). Unless otherwise specified, measurements were collected using ASTM guidelines at 24°C (75°F) and are average or typical values recommended for design purposes and not intended as specification or limit values. Values under EN ISO are declared as limit values under the specific set of standard test conditions. Properties may vary with temperature. Where testing method or reporting values differ between ASTM and EN ISO methodologies, values are denoted within parentheses in the EN ISO column.

FOAMGLAS® ONE™ INSULATION SYSTEMS FOR INDUSTRIAL APPLICATIONS

Pittsburgh Corning has developed insulation systems for a wide range of piping and equipment applications—above ground or underground, indoors or outdoors—at operating temperatures from -450°F to +900°F (-268°C to +482°C).



With the patented StrataFab® System, blocks of FOAMGLAS® insulation are laminated into billets using a special high temperature adhesive. These billets are fabricated into the desired shapes and sizes for pipe, tank, vessels, flanges and valves—practically any industrial insulation application.

Totally Impermeable

Long Term Performance

Because it consists of closed glass cells, FOAMGLAS® insulation resists moisture in both liquid and vapor forms. When tested in accordance with ASTM E96, it has a permeability rating of 0.00 perm-in.

Noncombustible

FOAMGLAS® insulation is 100% glass and contains no binders or fillers—it cannot burn. FOAMGLAS® insulation will not absorb flammable liquids or vapors. If a fire does occur, FOAMGLAS® insulation can help to contain or suppress it.

Corrosion-Resistant

All-glass FOAMGLAS® insulation is unaffected by common chemicals and by most corrosive plant atmospheres. It does not promote metal corrosion and its moisture resistance will help keep water from reaching equipment and piping.

Dimensionally Stable

FOAMGLAS® insulation is unaffected by temperature differentials and humidity. It will not swell, warp, shrink or otherwise distort. The insulation system's integrity remains intact.

High Compressive Strength

FOAMGLAS® insulation can withstand loads which crush most other insulating materials. In a properly designed piping system, FOAMGLAS® insulation eliminates the need for special treatment at pipe cradles. It also provides a firm base for roof membranes, jacketing or vapor retarders, prolonging their life.

Technical Service

Pittsburgh Corning's Technical Service Staff provides product, application and materials testing—standardized and customized specifications—on-site customer assistance and installation guidance.

For complete data on FOAMGLAS® Insulation Systems, please visit our Web site at www.foamglas.com, or contact Pittsburgh Corning at any of the following locations:

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BCCA ISO 9001:2008

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STANDARDS, CERTIFICATIONS* AND APPROVALS

FOAMGLAS® insulation can be certified to conform to the requirements of:

- ASTM C 552 "Specification for Cellular Glass Thermal Insulation"
- ASTM C 1639 "Standard Specification for Fabrication of Cellular Glass Piping and Tubing Insulation"
- Military Specification MIL-I-24244C, "Insulation Materials, Thermal, with Special Corrosion and Chloride Requirement"
- Nuclear Regulatory Guide 1.36, ASTM C 795, C 692, C 871
- Flame Spread 5, Smoke Developed 0 (UL 723, ASTM E 84), UL R2844; also classified by UL of Canada
- ISO 9001:2008
- UL 1709
- For a listing of UL Through Penetration Fire Stop Approved Systems please search the UL Database at <http://www.ul.com/> Once on this page click on CERTIFICATIONS on the left hand side. Under General Search click on UL FILE NUMBER and type in R15207 and then SEARCH
- Board of Steamship Inspection (Canada) Certificate of Approval No. 100/F1-98
- General Services Administration, PBS (PCD): 15250, Public Building Service Guide Specification, "Thermal Insulation (Mechanical)"
- New York City Dept. of Bldgs., MEA #138-81-M FOAMGLAS® insulation for piping, equipment, walls and ceilings
- New York State Uniform Fire Prevention and Building Code Dept. of State (DOS) 07200-890201-2013
- City of Los Angeles General Approval RR22534

FOAMGLAS® insulation is identified by Federal Supply Code for Manufacturers (FSCM 08869)

***Written request for certificate of compliance must accompany order.**



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