

FOAMGLAS® INSULATION SPECIFICATION

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SPECIFICATION FOR THE APPLICATION OF FOAMGLAS® INSULATION TO ABOVE GROUND STEAM PIPING

1. SCOPE

- 1.1 This specification provides guidelines for the use of FOAMGLAS® insulation, and accessory materials on above ground steam piping operating in the range of 181°F (83°C) to 400°F (204°C).
- 1.2 The product data sheets referenced in the text are listed at the end of the specification. Product data sheets for Pittsburgh Corning Corporation products may be accessed on line at: <http://www.foamglasinsulation.com/datasheets.asp>.

2. GENERAL

- 2.1 This specification is subject to revision without notice; Contact Pittsburgh Corning Corporation for current revision date before using. This specification is offered as a guide for the purpose described herein and should be employed at the discretion of the user. No warranty of procedures, either expressed or implied, is intended.
- 2.2 All piping and equipment to be insulated shall be cleaned of oil, grease, rust and foreign matter, and shall be dry and free of frost, prior to and during insulation application.
- 2.3 All insulation and accessory materials shall be stored in a dry area protected from the weather before and during application.
- 2.4 All testing of the system, such as hydrostatic, x-ray or other such testing shall be accomplished prior to application of insulation.
- 2.5 Inspection of the application of insulation is the responsibility of the owner or his designated representative. Pittsburgh Corning Corporation accepts no responsibility for workmanship.

3. MATERIALS

- 3.1 Insulation - shall be FOAMGLAS® cellular glass insulation manufactured in accordance with ASTM C 552, "Standard Specification for Cellular Glass Thermal Insulation," by Pittsburgh Corning Corporation, whose quality system for manufacturing, inspecting, and testing of FOAMGLAS® insulation is certified to meet the requirements of ISO 9001:2000.

The FOAMGLAS® insulation may be fabricated in half, curved sidewall, segmented, Advantage® System or StrataFab® System, depending on the operating conditions. For systems operating above 401°F (205°C), StrataFab® System, or segmented insulation is preferred.

- 3.2 Bore Coating - shall be Hydrocal B-11 gypsum cement, manufactured by U.S. Gypsum Corporation.
- 3.3 Metal Jacket - options are:
- 3.3.1 0.016" smooth aluminum jacket for insulation O.D.'s of 24" or less. For larger O.D.'s, use 0.020" embossed aluminum jacket, or:
- 3.3.2 0.016" smooth stainless steel jacket for caustic service or where the FOAMGLAS® insulation is being used for fire protection applications. Depending on conditions, galvanized steel jacketing may be an acceptable alternative. Contact jacketing manufacturer for recommendations.
- 3.4 Metal Bands - options are:
- 3.4.1 0.5" x 0.020" aluminum bands with matching seals for piping, vessels, or equipment with O.D.'s of 48" or less. For larger O.D.'s, use 0.75" x 0.020" aluminum bands, or:
- 3.4.2 0.5" x 0.015" stainless steel bands with matching seals for caustic service or where the FOAMGLAS® insulation is being used for fire protection applications.
- 3.5 Tape - shall be 1" wide, high tensile strength, fiber reinforced, strapping tape. Scotch Brand Filament Tape or approved equal. Tape is appropriate for providing temporary insulation securement for piping with insulation O.D.'s 18" or smaller as long as it is covered with metal jacket afterwards. Tape is not acceptable as primary means of securement if the insulation system is being designed to provide fire protection.
- 3.6 Jacketing for indoor applications may be one of any non-cellulose multi-ply laminated fiberglass-reinforced polypropylene, PVC, or vinyl faced/metalized film backed jacket. Jacket must not contain known mold or mildew nutrients, and exhibit no mold growth when tested according to ASTM C 1338 "Determining Fungi Resistance of Insulation Materials and Facings".

4. INSULATION THICKNESS

The insulation thickness shall be computed from design criteria for the system being insulated. Such computations can be performed by Pittsburgh Corning Corporation at the owner's or designer's request. Consideration should be given to process control, energy conservation, personnel and fire protection, and other criteria as required.

5. APPLICATION PROCEDURE

5.1 In the temperature range of 181°F (83°C) to 400°F (204°C), the insulation may be applied in a single layer. Insulation should be fabricated in half sections or curved sidewall segments where possible. In the temperature range of 401°F (205°C) to 900°F (482°C), the primary recommendation is the StrataFab® System. As an alternative to the StrataFab® System, FOAMGLAS® insulation may be used in this temperature range in the following configurations:

- 5.1.1 Applied in a double-layer application. The first layer may be either taped or banded according to the recommendations above. The second layer should be banded in place.
- 5.1.2 Applied in a single layer with an external reinforcement of gypsum cement as found in Section 3.8.1 and a 10 x 10 fiberglass scrim reinforcing fabric. This external reinforcement system is applied in the fabrication shop, not in the field.
- 5.1.3 Applied in the Advantage® System. Contact Pittsburgh Corning Corporation for details.
- 5.1.4 Applied in a composite system using either a high density fibrous glass blanket or a mineral wool inner layer and FOAMGLAS® insulation outer layer. Not for use on systems containing combustible fluids.

Note: Pittsburgh Corning Corporation recommends that composite systems only be used on lines operating at 450°F (232°C) or higher. In addition, the system should be designed so that the FOAMGLAS® insulation/inner layer material interface is a minimum temperature of 250°F (121°C). Contact Pittsburgh Corning Corporation for further details.

- 5.2 The insulation shall be applied to piping with all joints dry and tightly fitted to eliminate voids. All ill-fitting or broken insulation shall be refitted or replaced.
- 5.3 Insulation may be taped or banded in place. Banding or tape shall be installed on equal spacing such that there are two bands or round of tape per section of insulation. Securement shall be a minimum of four inches (4") from the end of any insulation section. Care shall be taken not to damage the insulation during banding. All damaged insulation shall be replaced before jacketing. Tape securement shall be applied to overlap a minimum of 50%.

- 5.4 Fittings shall be insulated in a manner similar to piping. Where the outer diameter of fitting insulation is larger than that of adjacent piping, a beveled or tapered transition section shall be provided.
- 5.5 Jacketing Application
- 5.5.1 Metal jacketing shall be fitted with tight, smooth joints and all laps positioned to shed water. Securement of the jacketing shall be with matching bands at a minimum of two bands per jacket section. Spacing of jacket banding shall be not greater than 18" on centers.
- 5.5.2 Apply laminated jacket in accordance with manufacturer's recommendations.

6. INSPECTION

Inspect all insulation and accessory materials to be certain they are applied in conformance with the specification recommendations. Joints should be tight, sealing and flashing should be thorough and watertight, and finished should be uniform and free of defects.

7. QUALITY ASSURANCE

The insulation manufacturer's quality system, including its implementation, shall meet the requirements of ISO 9001:2000.

8. CERTIFICATES

The manufacturer will furnish evidence of compliance with the quality system requirements of ISO 9001:2000.

Product Data Sheets

1. Hydrocal® B-11 Powder: FI-169

This specification has been prepared by Pittsburgh Corning Corporation using generally accepted and appropriate technical information, but it is not intended to be solely relied upon for specific design or technical applications. Having no control over the elements of design, installation, workmanship or site conditions, Pittsburgh Corning assumes that persons trained and qualified in the appropriate disciplines will make the actual design choices and installation. Therefore, Pittsburgh Corning disclaims all liability potentially arising from the use or misuse of this specification.