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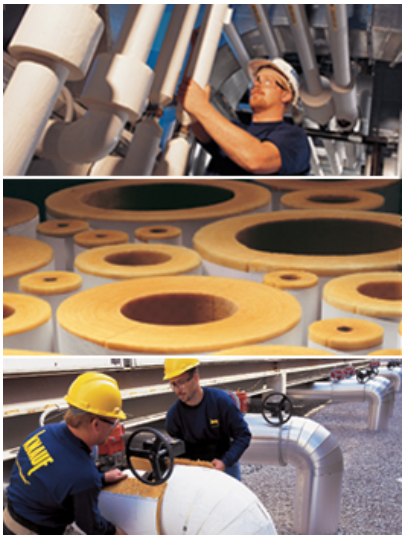
Knauf 1000° Pipe Insulation

Submittal MSDS Guide Specifications



Description

Knauf 1000° Pipe Insulation is a molded, heavy-density, one-piece insulation made from inorganic glass fibers bonded with a thermosetting resin. It is produced in 3' lengths with or without a factory-applied jacket. The jacket is a white kraft paper bonded to aluminum foil, and it is reinforced with a fiberglass scrim. The longitudinal lap of the jacket is available with or without a self-sealing adhesive, and a butt strip is furnished for each section.

Application

Knauf 1000° Pipe Insulation is used in power, process and industrial applications, and in commercial and institutional buildings where maximum fire safety, resistance to physical abuse, and a finished a appearance are desired. Additional weather protection is needed outdoors.

Features and Benefits

Energy Conservation

- Offers excellent resistance to heat loss or gain, which saves energy and lowers operating costs.
- A low thermal conductivity of .23 at 75°F (24°C).

Low-Cost Installation

- Available with self-sealing lap, which eliminates need for staples, and additional material and tools.
- Fast, easy installation reduces labor costs.

Condensation Control

- Installed properly, the foil vapor retarder and pressure-sensitive lap assure a positive vapor seal.

UL Classified

- All Knauf Pipe Insulation, plain or jacketed, meets the fire and smoke safety requirements of most federal, state, and local building codes.

Easy Size Identification

- Pipe size, wall thickness, and Proto 25/50-Rated PVC fitting cover size are printed in a repeat pattern along the longitudinal lap.
- Easy identification at job site.
- Simplifies restocking.
- After application, print is covered by the lap for a neat appearance.

Specification Compliance

In U.S.:

- ASTM C 547; Type I Grade A, Type IV Grade A
- ASTM C 585
- ASTM C 795
- ASTM C 1136 (jackets); Type I, II, III, IV
- HH-B-100B (jackets); Type I, II
- HH-I-558C; Form D, Type III, Class 12; Class 13 (to 1000°F, 538°C)
- MEA 325-83-M (City of New York Dept. of Buildings)

Website Options
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- MIL-I-22344D
- MIL-I-24244C (ships)
- NFPA 90A and 90B
- NRC Reg. Guide 1.36
- USCG 164.109/4/0 (plain, unjacketed only)

In Canada:

- CAN/ULC S102-M88
- T.C.270.F1.304 (plain only)
- CGSB 51-GP-9M
- CGSB 51-GP-52M (jacket)

Technical Data

Surface Burning Characteristics

- UL Classified.
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, CAN/ULC S102-M88, NFPA 255, and UL 723.

Temperature Range (ASTM C 411)

- Pipe operating temperatures from 0°F to 1000°F (-18°C to 538°C).

Water Vapor Permeance (ASTM E 96, Procedure A)

- Jacket has a water vapor permeance of .02 perms or less.

Corrosiveness (ASTM C 665)

- No greater than sterile cotton.

Stress Corrosion

- Complies with ASTM C 795, MIL-I-24244C, and NRC 1.36.

Puncture Resistance (TAPPI Test T803) (Beach Units)

- Jacket minimum rating of 50 units.

Alkalinity (ASTM C 871)

- Less than 0.6% as Na_2O.
- pH between 7.5 and 10.0.

Microbial Growth (ASTM C 1338)

- Does not promote microbial growth.

Water Vapor Sorption (ASTM C 1104)

- Less than 0.2% by volume.

Linear Shrinkage (ASTM C 356)

- Negligible.

Product Forms and Sizes

Produced in 3' (914 mm) sections:

- For iron pipe from $^1/_2$" to 24" nominal pipe size (13 mm to 610 mm).
- For copper tube from $^5/_8$" to $6^1/_8$" (16 mm to 156 mm).
- Wall thicknesses from $^1/_2$" to 6" (13 mm to 152 mm) in single layer (for most sizes).
- All insulation inner and outer diameters comply with ASTM C 585.

Packaging

- Four convenient carton sizes for easy ordering, inventory tracking, and storage.
- Reinforced carton handles for strength and easy lifting.
- Bar-coded cartons for accurate shipments and tracking.
- Full product range stocked at distributors for fast availability.

Precautions

Hot Pipe

- May be installed while the system is in operation, at all temperatures up to 1000°F (538°C).
- Knauf recommends, for insulation thicknesses greater than 6" (152 mm), the temperature must be increased from 500°F (260°C) to maximum temperature at a rate not exceeding 100°F (56° C) per hour.
- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.
- Care must also be taken when using sealants, solvents, or flammable adhesives during installation.

Cold Pipe

- Use a continuous vapor retarder on piping operating below ambient temperatures.
- Seal all joints, surfaces, seams, and fittings to prevent condensation.
- On below freezing applications and, in high abuse areas, the ASJ jacket shall be protected with a PVC vapor retarding outer jacket. In addition, exposed ends of insulation shall be sealed with vapor barrier mastic installed per the mastic manufacturer's instructions. Vapor seals at butt joints shall be applied at every fourth pipe section joint and at each fitting to isolate any water incursion.
- On chilled water systems operating in high humidity conditions, it is recommended that the same guidelines be followed as listed above for below freezing applications.
- Exterior hanger supports are recommended.

Outside Application

- Do not expose pipe insulation to weather. It must be covered with appropriate jacketing, mastic, or vapor retardant adhesives.
- All exposed surfaces must be protected. Proto® Indoor/Outdoor PVC Jacketing is recommended. See Knauf Guide Specifications for recommended PVC jacketing application guidelines.
- Apply jacketing, mastics or vapor retardant adhesives per manufacturer's instructions. For metallic jackets, factory-applied and condensate retarders are recommended.

ASJ-SSL

- Keep adhesive and contact surfaces free from dirt and water, and immediately seal once adhesive is exposed.
- Apply when ambient and insulation outer-surface temperatures are between 0°F and 130°F (-18°C and 54°C).
- If stored below 0°F or above 130°F, allow insulation cartons to stand within recommended temperature range for 24 hours prior to application.
- Do not store product below -20°F (-29°C) or above 150°F (66°C).
- When using Knauf's SSL closure system, make sure the longitudinal and circumferential joints are properly sealed by rubbing the closure firmly with a squeegee. Use of staples is not recommended.
- When using Knauf SSL Pipe Insulation, the outer-surface temperature of the insulation should be between -20°F and 150°F (-29°C and 66°C) during the life of the insulation.

Fittings and Hangers

- Use Proto 25/50-Rated (ASTM E 84) PVC Fitting Covers, applying PVC fittings per Proto's Data Sheet.
- Fittings should be insulated to same thicknesss and R-value as the adjoining insulation.
- Apply fittings per manufacturer's instructions.
- When required by specification, a hard insert of sufficient length should be used to avoid insulation compression.

Additional Precautions

- Fiber glass may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves, and eye protection when handling and applying material.
- Wash with soap and warm water after handling.
- Wash work clothes separately and rinse washer.
- Use a disposable mask/respirator designed for nuisance-type dusts where sensitivity to dust and airborne particles may cause irritation to the nose or throat.

Application Guidelines

Storage

- Protect insulation from water damage or other abuse, welding sparks and open flame.
- Cartons are not designed for outside storage.

Preparation

- Apply only on clean, dry surfaces.
- Pipe or vessel should be tested and released before insulation is applied.

General Guidelines

- All sections should be firmly butted.
- Seal circumferential joint with a minimum 3" (76 mm) wide butt-strip.
- Jackets, coatings, and adhesives should have a comparable F.H.C. rating.
- Factory-applied jacket can be painted with latex or water-based paint. Solvent based paints should not be used.
- Do not expose factory-applied jacket to chemicals or liquid water.
- All piping should have continuous insulation.
- Position longitudinal lap downward to avoid dirt and moisture infiltration.
- Do not expose pipe insulation to excessive physical abuse.
- Faced insulation should not have a facing temperature above 150°F (66°C).

THERMAL EFFICIENCY (ASTM C 335)

Mean Temperature	Mean Temperature (SI)	k	k (SI)
75°F	24°C	0.23	0.033
100°F	38°C	0.24	0.035
200°F	93°C	0.28	0.040
300°F	149°C	0.34	0.049
400°F	204°C	0.42	0.061
500°F	260°C	0.51	0.074
600°F	316°C	0.62	0.089