KNAUF PIPE INSULATION (1000°F, 537°C)

Form No. IC-DS-1N Effective: 12/1/97
Supersedes: IC-DS-1M, Dated: 9/1//97

APPLICATION & SPECIFICATION GUIDELINES

- *STORAGE.*

  Protect stored insulation from water damage or other abuse. Protect from welding sparks and open flame. Pipe Insulation cartons are not designed for outside storage.

- *PREPARATION.*

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

- *APPLICATION.*

  1. GENERAL:

  All sections should be firmly butted.

  Seal circumferential joint with a minimum of 3" (76 mm) wide butt strip. Jackets, coating and adhesives should have a comparable F.H.C. rating. Factory applied jacket can be painted with latex/water based paint; solvent based paints should not be used. Factory-applied jacketing should not be exposed to chemicals or liquid water. All piping should have continuous insulation.

  Position longitudinal lap downward to avoid dirt and moisture infiltration. Pipe Insulation should not be exposed to excessive vibration or physical abuse.

  2. SURFACE TEMPERATURE LIMITATION:

  Knauf faced Pipe Insulation should not have a surface temperature above 150°F (65°C).

  3. HOT PIPE:

  Knauf Pipe Insulation may be installed while the system is in operation, at all temperatures up to 1,000°F (537°)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 adhesive during installation of this product. A maximum of 6" (152 mm) wall thickness is recommended.

  Due to the fact that binders are organic in nature, an initial heat-up cycle for insulation with wall thickness of 4 ½" (114 mm) or more may be used, as listed below.*

  4. COLD PIPE:

  Piping below ambient temperatures must have a continuous vapor retarder. All joints, surfaces, seams and fittings must be sealed to prevent condensation. Exterior hanger supports are recommended.

  5. OUTSIDE APPLICATION:

  Pipe Insulation cannot be exposed to weather. It must be covered with appropriate jacketing, mastic or vapor retardant adhesive. All exposed surfaces must be protected. Proto Indoor/Outdoor PVC Jacketing is recommended for use over Knauf Pipe Insulation for outdoor applications. See Knauf Industrial/Commercial 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.

  6. ASJ-SSL:

  Adhesive and contact surfaces must be kept free from dirt and water and sealed immediately once the adhesive is exposed. Apply when ambient temperature and insulation temperature is between 0°F and 130°F (–18°C and 54°C). If stored below 0°F or above 130°F, insulation cartons should stand within the recommended temperature range for 24 hours prior to application. The product should never be stored below –20°F or above +150°F.

  When using Knauf's SSL closure system, the longitudinal and circumferential joints must be properly sealed by rubbing the closure firmly with a squeegee. Use of staples is not recommended with Knauf's SSL closure system.

  When using Knauf SSL Pipe Insulation, the surface temperature of the insulation should be between –20°F and +150°F during the life of the insulation.

  7. ASJ:

  Seal with vapor retardant adhesive. Close with outward clinch staples. Seal all staples where continuous vapor retarder is needed.

  8. 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 thickness as the adjoining insulation. Apply fittings per manufacturer's

*RECOMMENDED HEAT-UP CYCLE, IF DESIRED

Operating Temperature	Time	Total Time
500°F-600°F (260°C-315°C)	2 hrs at 500°F (260°C)	2 hrs
600°F-700°F (315°C-371°C)	2 hrs at 600°F (315°C)	4 hrs
700°F-800°F (371°C-427°C)	2 hrs at 700°F (371°C)	6 hrs
800°F-900°F (427°C-483°C)	2 hrs at 800°F (427°C)	8 hrs
900°F-1000°F (483°C-537°C)	2 hrs at 900°F (483°C)	10 hrs

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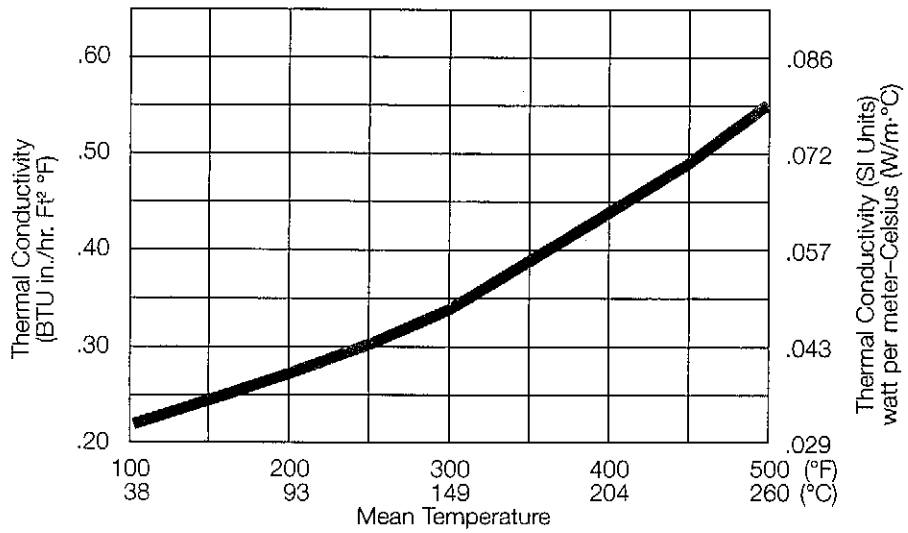
TECHNICAL DATA

- *THERMAL EFFICIENCY. (ASTM C 335)*



- *SURFACE BURNING CHARACTERISTICS. (UL Classified.)*
  When tested in accordance with ASTM E 84, NFPA 255 and UL 723 and CAN 4-S102, as plain insulation or on a composite basis (insulation, jacket and adhesive), Knauf Pipe Insulation does not exceed:
  25 Flame spread
  50 Smoke developed
- *TEMPERATURE RANGE.*
  This product is recommended for piping which operates from -20°F to +1,000°F (-29°C to +537°C).
- *WATER VAPOR TRANSMISSION RATES. (ASTM E 96, Procedure A)*
  The jacket has a water vapor permeance of 0.02 perms (maximum).
- *BEACH PUNCTURE RESISTANCE. (ASTM D 781)*
  The jacket has a minimum rating of 50 units.
- *WATER VAPOR SORPTION. (ASTM C 1104)*
  Less than 0.2% by volume.
- *ALKALINITY. (ASTM C 871)*
  Less than 0.6% as Na_2O; pH between 7.5 and 10.0
- *STRESS CORROSION.*
  Complies to requirements of MIL-I-24244C (ships), NRC 1.36, ASTM C 795.
- *LINEAR SHRINKAGE. (ASTM C 356)*
  Negligible.
- *CORROSIVENESS. (ASTM C 665)*
  Exhibits no greater corrosion than sterile cotton.
- *RESISTANCE TO FUNGI AND BACTERIA. (ASTM C 665)*
  Does not promote growth of fungi or bacteria.

COMPLIANCE

- *SPECIFICATION COMPLIANCE:*
  Knauf Pipe Insulation, either plain or jacketed, complies to the property requirements of the following specifications:
  MIL-I-22344D
  USCG 164.009/255/0 (Applies to plain, unjacketed insulation only.)
  HH-I-558B Form D, Type III Class12, Class 13 (to +1,000°F) (+537°C)
  MIL-I-24244C (Ships)
  HH-B-100B (Jackets) Type I and II
  NRC Reg. Guide 1.36
  NFPA 90A and *90B*
  ASTM C 547 Type I, Type II, (to +1,000°F) (+537°C)
  ASTM C 795
  ASTM C 1136 (Jackets) Type I, II, III, IV
  ASTM C 585
  IN CANADA:
  CGSB 51-GP-9M
  CGSB 51-GP-52M (Jacket)
  CCG 100/F1-108 (plain only)
  CAN 4-S102

  City of New York, N.Y. Department of Buildings M.E.A. 325-83-M