

SECTION 22 07 19)
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.1 REFERENCES

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
- C. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation
- D. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
- E. ASTM C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials

1.2 SUBMITTALS

- A. Submit under provisions of Section 01 33 00
- B. Product Data: For each product used in this project, provide catalog data for insulation, jackets and accessories, and installation instructions.
- C. Samples: Not required

1.3 QUALITY ASSURANCE

- A. Materials shall meet a flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84.
- B. Applicator shall be a company specializing in performing the work of this section with minimum 3-years of experience.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Store insulation in original wrapping, and protect from weather and construction traffic.
- C. Protect insulation against dirt, water, chemical and mechanical damage.

PART 2 PRODUCTS

2.1 RIGID FIBER GLASS INSULATION

- A. Provide molded, heavy density, noncombustible; one-piece pipe insulation made from inorganic glass fibers bonded with a thermosetting resin K-value shall be a minimum of 0.25 at 75°F per ASTM C547.
- B. Provide factory installed all service jacket of white kraft paper bonded to aluminum foil and reinforced with glass fibers and self-sealing lap for longitudinal seam and butt strips for circumferential joints per ASTM C921.
- C. Provide 18-ga, Type 304 stainless steel tie wire with twisted ends on 24" centers but not less than two-tie wires per insulation section.
- D. For fittings and valves, provide one-piece, molded, 20-mil thick, PVC covers with fiberglass inserts.
 - 1. Use pressure sensitive, color matching vinyl tape to seal PVC fitting covers to jacket of insulation per ASTM C921

2.2 FLEXIBLE FIBER GLASS INSULATION

- A. Provide flexible, noncombustible, blanket insulation made from highly resilient, inorganic glass fibers bonded by a thermosetting resin.

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1. Density shall be 1.0 lb/cu ft. K-value shall be a minimum of 0.25 at 75°F per ASTM C553
 - B. Provide factory applied, foil-scrim-kraft vapor barrier with 2" wide stapling flange.
 1. Secure seams with outward clinching staples on 6" centers.
 2. Seal seams with two coats of vapor barrier mastic reinforced with 4" wide, open weave glass fabric per ASTM C921.
- 2.3 CELLULAR FOAM INSULATION
- A. Provide flexible, closed-cell, slit tubing form, elastomeric pipe insulation.
 1. For large diameter pipe, provide sheet form.
 2. K-value shall be a minimum of 0.27 at 75°F.
 3. Use contact adhesive to seal longitudinal seams and circumferential joints per ASTM C534/C534M.
 - B. For fittings and valves, fabricate insulation from mitered-cut tubular form using contact adhesive to seal joints.
 - C. If necessary, provide two layers of insulation to obtain specified thickness, staggering the longitudinal and circumferential joints.
- 2.4 ALUMINUM JACKET
- A. For pipes, provide 16-mil thick, stucco embossed pattern finish, Type-1100 aluminum jacket, ASTM B209 and for horizontal pipe, locate longitudinal lap on bottom.
 - B. For fittings, provide 24-mil thick, die shaped, smooth finish, Type-1100 aluminum jacket, ASTM B209.
 - C. Provide 0.5" wide, 20-mil thick, Type-3003 aluminum bands on maximum 24" centers but not less than two bands per jacket section.
- 2.5 SHIELDS AND INSERTS
- A. At all pipe hangers or pipe supports, provide 12" long, 180°-arc, galvanized sheet metal shields matching the insulation outside dimension.
 - B. For pipes larger than 2" diameter, provide 12" long, 180°-arc, cellular glass insulation inserts.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Before applying insulation, verify the following:
 1. The inspection, testing, and approval of piping are complete.
 2. The surfaces are clean (all foreign material removed) and dry.

3.2 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. On exposed insulation provide jacket or finish, and locate longitudinal seams in least visible locations.
 1. Where insulated piping extends to weather exposed areas, provide specified aluminum sheet metal jacket.
- C. Piping insulation or covering shall not penetrate fire-rated assembly unless the specific material has been tested and approved as part of the fire-rated assembly.
- D. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe.
- E. For above grade applications, maintain 0.5" air space on all sides of the insulation.
- F. Finish insulation at supports, protrusions, and interruptions.
- G. Storm Water Pipe (Interior and Above Grade Applications)
 1. For roof drain bodies, provide 2" thick, flexible fiberglass insulation.
 2. For horizontal drains, provide 1" thick, rigid fiberglass insulation.

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3. For vertical leaders, insulation is not required.
 4. Seal all seams with vapor barrier mastic.
 5. Insulate all fittings per Article 2.1.D.
- H. Domestic Hot Water Pipe (Interior and Above Grade Applications): For hot water supply and return pipes, provide 1" thick, rigid fiberglass insulation.
- I. Domestic Cold Water Pipe: Insulation is not required.
- J. Condensate Pipe (Interior and Above Grade Applications): Provide $\frac{3}{4}$ " thick, cellular foam insulation.

END OF SECTION