

SECTION 15083 - PIPE INSULATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes preformed, flexible pipe insulation.

1.03 SUBMITTALS

- A. Product Data: Identify thermal conductivity and thickness.
- B. Samples: For each type of insulation and jacket. Identify each Sample, describing product and intended use. Submit Samples in the following sizes:
 - 1. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
- C. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, and attachments with requirements indicated. Include dates of tests.
- D. Installer Certificates: Signed by the Contractor certifying that installers comply with requirements.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the U.S. Department of Labor, Bureau of Apprenticeship and Training.
- B. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this Section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer material containers with appropriate markings of applicable testing and inspecting agency.
 - 1. Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Ship insulation materials in containers marked by manufacturer with appropriate ASTM specification designation, type and grade, and maximum use temperature.

1.06 COORDINATION

- A. Coordinate size and location of supports and hangers specified in Division 15 Section "Hangers and Supports."
- B. Coordinate clearance requirements with piping Installer for insulation application.

1.07 SCHEDULING

- A. Schedule insulation application after testing piping systems.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the

following:

1. Flexible Elastomeric Thermal Insulation:
 - a. Armstrong World Industries, Inc..
 - b. Rubatex.

2.02 INSULATION MATERIALS

- A. Flexible Elastomeric Thermal Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C534, Type I for tubular materials. Provide adhesive as recommended by the manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Preparation: Clean and dry pipe and fitting surfaces. Remove materials that will adversely affect insulation application.

3.03 GENERAL APPLICATION REQUIREMENTS

- A. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.
- B. Refer to schedules at the end of this Section for thicknesses required for each piping system.
- C. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation in either wet or dry state.
- D. Apply insulation with longitudinal seams at top of horizontal pipe runs.
- E. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- F. Keep insulation materials dry during application and finishing.
- G. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.
- H. Apply insulation with the least number of joints practical.
- I. Apply insulation over fittings, valves, and specialties, with continuous thermal integrity. Refer to special instructions for applying insulation over fittings, valves, and specialties.
- J. Apply adhesives at the manufacturer's recommended coverage rate.
- K. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and floors.
- L. Fire-Rated Wall and Partition Penetrations: Apply insulation continuously through penetrations of fire-rated walls and partitions.

1. Firestopping and fire-resistive joint sealers are specified in Division 7 Section "Firestopping."
2. FLEXIBLE ELASTOMERIC THERMAL INSULATION APPLICATION
3. Apply insulation to straight pipes and tubes as follows:
 - a. Follow manufacturer's written instructions for applying insulation.
 - b. Seal longitudinal seams and end joints with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.
4. Apply insulation to fittings and elbows as follows:
 - a. Apply mitered sections of pipe insulation.
 - b. Secure insulation materials and seal seams with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.
5. Apply insulation to valves and specialties as follows:
 - a. Apply preformed valve covers manufactured of the same material as pipe insulation and attached according to the manufacturer's written instructions.
 - b. Apply cut segments of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, fabricate removable sections of insulation arranged to allow access to stainer basket.
 - c. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive. Cement to avoid openings in insulation that will allow passage of air to the pipe surface.

3.04 PIPING SYSTEM APPLICATIONS

- A. Insulation thicknesses are specified in schedules at the end of this Section.
- B. Items Not Insulated: Unless otherwise indicated, do not apply insulation to the following systems, materials, and equipment:
 1. Flexible connectors.
 2. Drainage piping located in crawl spaces, unless otherwise indicated.
 3. Below-grade piping, unless otherwise indicated.
 4. Chrome-plated pipes and fittings, unless potential for personnel injury.

3.05 FIELD QUALITY CONTROL

- A. Inspection: Perform the following field quality-control inspections, after installing insulation materials, jackets, and finishes, to determine compliance with requirements:
 1. Inspect fittings and valves randomly selected by Engineer
 2. Remove fitting covers from 20 elbows or 1 percent of elbows, whichever is less, for various pipe sizes.
 3. Remove fitting covers from 20 valves or 1 percent of valves, whichever is less, for various pipe sizes.
- B. Insulation applications will be considered defective if sample inspection reveals noncompliance with requirements. Remove defective Work and replace with new materials according to these Specifications.
- C. Reinstall insulation and covers on fittings and valves uncovered for inspection according to these Specifications.

3.06 INSULATION APPLICATION SCHEDULE, GENERAL

- A. Application schedules identify piping system and indicate pipe size ranges and thickness requirements.

3.07 INTERIOR INSULATION APPLICATION SCHEDULE

- A. Service: Domestic cold water.
 - 1. Operating Temperature: 50 to 80 deg F.
 - 2. Insulation Thickness: 1/2 inch.
- B. Service: Condensate drain piping.
 - 1. Operating Temperature: 35 to 75 deg F.
 - 2. Insulation Thickness: 1/2 inch.
- C. Service: Hot-water piping.
 - 1. Operating Temperature: 100 to 200 deg F.
 - 2. Insulation Thickness: 1/2 inch.

3.08 EXTERIOR INSULATION APPLICATION SCHEDULE

- A. Service: Refrigerant suction.
 - 1. Operating Temperature: 35 to 50 deg F.
 - 2. Insulation Thickness: 1/2 inch.
- B. Service: Hot-water piping.
 - 1. Operating Temperature: 100 to 220 deg F.
 - 2. Insulation Thickness: 1 inch.
 - 3. Service: Domestic Cold Water
 - a. Operating Temperature: 50 to 80 deg F.
 - b. Insulation Thickness: 3/4 inch.

END OF SECTION 15083