SECTION 22 07 19

PLUMBING PIPING INSULATION

**PART 1 GENERAL**

1. **SECTION INCLUDES**
2. Piping insulation.
3. Jackets and accessories.
4. **RELATED REQUIREMENTS**
5. Section 07 8400 – Fire stopping from csi.
6. Section 09 9113 - Exterior Painting: Painting insulation jacket from csi.
7. Section 09 9123 - Interior Painting: Painting insulation jacket from csi.
8. Section 22 1005 - Plumbing Piping and Valves.
9. **REFERENCE STANDARDS**
10. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
11. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
12. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.
13. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2013).
14. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2013).
15. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.
16. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation; 2013.
17. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2014.
18. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2015.
19. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2015.
20. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2014.
21. ASTM C585 - Standard Practice for Inner and Outer Diameters of Thermal Insulation for

Nominal Sizes of Pipe and Tubing; 2010.

1. ASTM C591 - Standard Specification for Un faced Preformed Rigid Cellular Poly Isocyanurate Thermal Insulation; 2015.
2. ASTM C610 - Standard Specification for Molded Expanded Perlite Block and Pipe Thermal Insulation; 2011.
3. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2013).
4. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2014.
5. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012.
6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
7. ASTM E90 Standard Testing for Sound Transmission; 2009.
8. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
9. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
10. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.
11. **SUBMITTALS**
12. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
13. Samples: Submit one samples of any representative size illustrating each insulation type.
14. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.
15. **QUALITY ASSURANCE**
16. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than ten years of documented experience.
17. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum Ten years of experience.
18. **DELIVERY, STORAGE, AND HANDLING**

A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1. **FIELD CONDITIONS**
2. Maintain ambient conditions required by manufacturers of each product.
3. Maintain temperature before, during, and after installation for minimum of 24 hours.

**PART 2 PRODUCTS**

1. **REGULATORY REQUIREMENTS**
2. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.
3. **APPLICATION**
4. Insulate all cold-water pipes and any drainage pipe carrying waste with a temperature lower than 20 degrees C.
5. Insulate all hot water pipes
6. Insulate all domestic hot water valves with 50mm diameter and larger
7. **FLEXIBLE ELASTOMERIC CELLULAR INSULATION (FOR DOMESTIC COLD AND HOT WATER** **NETWORKS)**
8. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 3, type 1; use molded tubular material wherever possible.
9. 'Ksi' ('K') Value: 0.036 at 24 degrees C (0.25 at 75 degrees F), when tested in accordance with ASTM C177 or ASTM C518.
10. Minimum Service Temperature: Minus 40 degrees C (Minus 40 degrees F).
11. Maximum Service Temperature: 104 degrees C (220 degrees F).
12. Connection: Waterproof vapor barrier adhesive.
13. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.
14. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with aluminum single piece construction with self-adhesive closure. Thickness to match pipe insulation.
15. **JACKETS**
16. Aluminum Jacket: ASTM B209 (ASTM B209M) formed aluminum sheet.
17. Thickness: 0.64 mm (0.025 inch) sheet.
18. Finish: Smooth.
19. Joining: Longitudinal slip joints and 50 mm (2 inch) laps.
20. Fittings: 0.4 mm (0.016 inch) thick die shaped fitting covers with factory attached protective liner.

**PART 3 EXECUTION**

1. **EXAMINATION**
2. Verify that piping has been tested before applying insulation materials.
3. Verify that surfaces are clean and dry, with foreign material removed.
4. **INSTALLATION**
5. Install in accordance with manufacturer's instructions.
6. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
7. Exposed Piping: Locate insulation and cover seams in least visible locations.
8. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
9. For hot piping conveying fluids 60 degrees C (140 degrees F) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
10. For hot piping conveying fluids over 60 degrees C (140 degrees F), insulate flanges and unions at equipment.
11. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 8400.
12. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 3 meters (10 feet) above finished floor): Finish with canvas jacket sized for finish painting.
13. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
14. **SCHEDULES**
15. Plumbing Systems:

1. Domestic Hot Water Supply: for conductivity 0.0317 - 0.0418 W/m.K Wall thickness of pipe insulation shall be equal to nominal pipe diameter up to 50mm diameter pipe, all pipes larger than 50mm diameter shall have insulation with a thickness of 50mm.

**END OF SECTION**