# SECTION 220700 - plumbing INSULATION

## PART 1 - GENERAL

1.1 DESCRIPTION

A. The requirements of this section apply to the insulation of plumbing systems specified elsewhere in these specifications.

B. The requirements of Section 220500, Common Plumbing Materials and Methods, also apply to this section.

1.2 QUALITY ASSURANCE

A. Minimum Insulation Thickness and Thermal Performance: Comply with the State of Oregon Energy Efficiency Code except where more stringent requirements are specified herein.

B. Composite (Insulation, Jacket or Facing and Adhesives) Fire and Smoke Hazard Ratings: Not to exceed a flame spread of 25 or smoke development of 50 and containing less than 0.1% by weight deca-PDE fire retardant.

C. Component Ratings of Accessories (Adhesives, Mastics, Cements, Tapes, Finishing Cloth for Fittings): Same as "B" requirements above and permanently treated. No water soluble treatments.

1.3 SUBMITTALS

A. Submit catalog data and performance characteristics for each product specified.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. General: In addition to the requirements specified in Section 220500, the following apply:

1. Deliver insulation, coverings, cements, adhesives and coatings to the site in factory-fabricated containers with the manufacturer's stamp or label affixed showing fire hazard ratings of the products. Store insulation in original wrappings and protect from weather and construction traffic.

2. Protect insulation against dirt, water, chemical and mechanical damage. Do not install damaged insulation. Remove such insulation from project site.

## PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Insulation Manufacturers: Johns Manville, Owens-Corning, Knauf, Certain Teed, Armstrong, Pabco, Imcoa or Nomaco. Johns Manville products are listed unless indicated otherwise.

B. Adhesive Manufacturers: Foster, 3M, Insul-Coustic, Borden, Kingco or Armstrong.

2.2 PIPING INSULATION

A. Interior and Exterior Piping Systems 32 to 180 Deg. F: Glass fiber preformed pipe insulation with a minimum K-value of 0.23 at 75 deg. F, a minimum density of 3.5 pounds per cubic foot within all-service vapor barrier jacket, vinyl or pre-sized finish and pressure sensitive seal containing less than 0.1% by weight deca-PDE fire retardant.

B. Pipe Temperatures Minus 30 to 180 Deg. F: Flexible, preformed, pre-slit, self-sealing elastomeric pipe insulation up to 2-1/8" ID, thermal conductivity of 0.27 BTU/hr. sq. ft./in. at 75 deg. F and vapor transmission rating of 0.2 perms/inch. Armstrong "Armaflex 2000" or, in concealed locations, Imcoa or Nomaco also approved.

2.3 INSULATION ACCESSORIES

A. Insulation Compounds and Materials: Provide rivets, staples, bands, tapes, adhesives, cements, coatings, sealers, welded studs, etc., as recommended by the manufacturer for the insulation and conditions specified. No staples allowed on cold water piping systems.

B. PVC Protective Jacketing and Valve and Pipe Fitting Covers: Johns Manville Zeston 2000, Proto LoSmoke, or Ceel-Co Ceel-Tite 100 Series with precut fitting fiberglass insulation or approved.

C. Jacket Lap Sealing Adhesives: Foster Drion 85-75 contact cement or approved substitute.

D. Saddles and Shields: Install to prevent crushing of insulation at support points.

1. Protection Saddles: MSS Type 39.

2. Protection Shields: MSS Type 40.

3. Preinsulated Pipe Supports: Calcium silicate load bearing metal jacketed inserts. Pipe Shields Inc. or accepted substitute.

a. Pipe supported on rods - Models A1000, A2000, A3000, A4000.

b. Pipe supported on flat surfaces - Models A1000, A2000, A3000, A4000.

c. Pipe supported on pipe rolls - Models A3000, A4000, A5000,.

d. Vertical riser clamp – Models E1000, E1100, E1200.

## PART 3 - EXECUTION

3.1 PIPING INSULATION

A. General: Do not insulate underground piping.

B. At the contractor’s option and in accordance with Part 2 of this section, elastomeric insulation may be installed on domestic water piping in thicknesses providing overall thermal resistance equivalent to the glass fiber insulation. Increased thickness is typically required. Installation shall comply with the manufacturer’s recommendation with joints and seams completely sealed.

C. Domestic Water Piping:

1. Insulate with glass fiber pipe covering, 1/2” thick for 1” and larger cold water piping.

2. Insulate circulated hot water piping with 1” thickness for 1" and smaller hot water piping; 1-1/2" for 1-1/4" and larger hot water piping.

3. Insulate hot water return piping same as hot water piping.

D. Interior Rain Drains:

1. Concealed: Insulate with 1" thick one pound density glass fiber blanket and continuous vapor barrier jacket.

2. Exposed: Insulate with 3.5 pound density glass fiber insulation with continuous vapor barrier jacket.

E. Waste Lines: Insulate all pipe exposed to outside temperatures with 3/4" thick glass fiber pipe insulation with a vapor barrier jacket. Insulate over freeze protection heat trace where indicated.

F. Pipe Fittings: Insulate and finish all fittings including valve bodies, bonnets, unions, flanges and expansion joints with precut fiberglass insulation and preformed PVC covers sealed to adjacent insulation jacket for continuous vapor barrier covering over all fittings.

G. Piping Insulation Lap Seams and Butt Joints: Install insulation jacket in accordance with manufacturer's recommendation and without staples on cold water lines. Where jacket joint and lap seams have not adhered, remove affected section of insulation and reinstall or apply lap sealing adhesive in accordance with manufacturer's instructions.

END OF SECTION 220700