SECTION 232600 - PIPING INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Piping insulation

B. Jackets and accessories

1.2 SUBMITTALS

A. Product Data: Provide product description, list of materials and thickness for each service, and locations.

B. Manufacturer's Installation Instructions: Indicate procedures which ensure acceptable workmanship and installation standards will be achieved.

1.3 QUALITY ASSURANCE

A. Materials: Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84, NFPA 255, and UL 723.

1.4 QUALIFICATIONS

A. Applicator: Company specializing in performing the work of this section with minimum three years experience.

1.5 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.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

PART 2 - PRODUCT DATA

2.1 CELLULAR FOAM

A. Insulation: ASTM C534; flexible, cellular elastomeric, molded or sheet.

1. 'K' Value: ASTM C177 or C518; 0.27 at 75 deg F
2. Minimum Service Temperature: -40 deg F
3. Maximum Service Temperature: 220 deg F
4. Maximum Moisture Absorption: ASTM D1056; 1.0 percent (pipe) by volume, 1.0 percent (sheet) by volume
5. Moisture Vapor Transmission: ASTM E96; 0.20 perm inches
6. Maximum Flame Spread: ASTM E84; 25
7. Maximum Smoke Developed: ASTM E84; 50
8. Connection: Waterproof vapor barrier adhesive.

B. Elastomeric Foam Adhesive

1. Comply with MIL-A-24179A, Type II, Class I.
2. Air dried, contact adhesive, compatible with insulation.

2.2 JACKETS

A. Aluminum Jacket: ASTM B209.

1. Thickness: 0.016 inch sheet
2. Finish: Smooth.
3. Joining: Longitudinal slip joints and 2 inch (50 mm) laps.
4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that piping has been tested before applying insulation materials. Insulation materials shall only be applied to dry surfaces.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.2 INSTALLATION

A. Install materials in accordance with the Manufacturer's instructions.

B. On exposed piping, locate insulation and cover seams in least visible locations.

C. Insulated cold pipes conveying fluids below ambient temperature:

1. Provide vapor barrier jackets, factory applied or field applied.
2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe.
3. Finish with a vapor barrier adhesive.
4. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations.
5. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.

D. Inserts and Shields:

1. Application: Piping 1-1/2 inches diameter or larger.
2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
3. Insert Location: Between support shield and piping and under the finish jacket.
4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
5. Insert Material: ASTM C640 cork or other heavy density insulating material suitable for the planned temperature range.

E. Finish insulation at supports, protrusions, and interruptions.

F. For 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.

G. For buried piping, provide factory fabricated assembly with inner all-purpose service jacket with self sealing lap, and asphalt impregnated open mesh glass fabric, with one mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with a polyester film.

3.3 TOLERANCE

A. Substituted insulation materials shall provide thermal resistance within 10 percent at normal conditions, as materials indicated.

3.4 CELLULAR FOAM INSULATION SCHEDULE

PIPING SYSTEMS		PIPE SIZE (Inches)	THICKNESS (Inches)
A.	Cooling Systems		
1.	Refrigerant Suction Line (CU's and HP's)	All	1"
2.	Refrigerant Liquid Line (HP's)	All	1"

END OF SECTION 232600