

1 General

1.1 RELATED SECTIONS

- .1 Section 21 05 01 – Common Work Results – Mechanical.
- .2 Section 23 05 05 – Installation of Pipework.

1.2 REFERENCES

- .1 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):
 - .1 ASHRAE Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings (IESNA co-sponsored; ANSI approved; Continuous Maintenance Standard).
- .2 American Society for Testing and Materials International (ASTM):
 - .1 ASTM B209M, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
 - .2 ASTM C335, Standard Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
 - .3 ASTM C411, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
 - .4 ASTM C449/C449M, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
 - .5 ASTM C533, Calcium Silicate Block and Pipe Thermal Insulation.
 - .6 ASTM C547, Mineral Fiber Pipe Insulation.
 - .7 ASTM C795, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
 - .8 ASTM C921, Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
- .3 Canadian General Standards Board (CGSB):
 - .1 CGSB 51-GP-52Ma, Vapor Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
 - .2 CAN/CGSB-51.53, Poly (Vinyl Chloride) Jacketing Sheet, for Insulated Pipes, Vessels and Round Ducts
- .4 Thermal Insulation Association of Canada (TIAC) National Insulation Standards.
- .5 Underwriters' Laboratories of Canada (ULC):
 - .1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .3 CAN/ULC-S702, Thermal Insulation, Mineral Fiber, for Buildings
 - .4 CAN/ULC-S702.2, Thermal Insulation, Mineral Fiber, for Buildings, Part 2: Application Guidelines.

1.3 SUBMITTALS

- .1 Provide Shop Drawing and Maintenance Manual submittals in accordance with Section 01 33 00 - Submittal Procedures and Section 21 05 01 – Common Work Results – Mechanical.

1.4 DEFINITIONS

- .1 For purposes of this section:
 - .1 CONCEALED - insulated mechanical services in suspended ceilings and non-accessible chases and furred-in spaces.
 - .2 EXPOSED - will mean "not concealed" as specified.
 - .3 RUN-OUT(s) – piping, not exceeding 4000 mm long, to individual equipment
- .2 TIAC codes:
 - .1 CRF: Code Rectangular Finish.
 - .2 CPF: Code Piping Finish.

1.5 ACCEPTABLE PIPE INSULATION CONTRACTORS

- .1 Guilfords, PCI Contracting Canada, Twin City Insulation Contractors Ltd., Zinck's Mechanical Insulation Limited, Pro-Insul Ltd.

2 Products

2.1 FIRE AND SMOKE RATING

- .1 Maximum flame spread rating: 25.
- .2 Maximum smoke developed rating: 50.

2.2 INSULATION

- .1 Flexible, closed-cell, light weight elastomeric material designed for insulating water piping c/w integral vapor retarder.
- .2 Performance criteria:
 - .1 Thermal Conductivity @ 24 deg.C mean temperature: 0.04 W/mK.
 - .2 Water Vapor Transmission/Permeability: 1.16×10^{-13} Kg/(s-m-Pa).
 - .3 Fire Rating: Will not contribute significantly to fire (simulated end-use testing).
 - .4 Thickness: 50 mm.
 - .5 Flame spread rating of 25 or less.
 - .6 Smoke developed rating of 50 or less, as tested by ASTM E-84 "Surface Burning Characteristics of Building Materials".
 - .7 Ultraviolet (UV) and Ozone resistant.
 - .8 Moisture resistant.
 - .9 Recommended operating temperature range: -183 to +105 deg.C.
 - .10 Water absorption: 0.2% by weight.

.11 Antimicrobial protection.

.3 Acceptable Materials: Armacell AP Armaflex; Pittsburgh Corning Foamglas.

2.3 INSULATION SECUREMENT

.1 Contact adhesive: quick setting, as recommended by the manufacturer.

2.4 OUTER COVERING/JACKET FOR PIPING, VALVES, FITTINGS AND FLANGES

- .1 PVC:
 - .1 White in color, pre-formed PVC jacketing c/w covers for all insulated piping, valves and fittings.
 - .2 30 mil (0.8 mm) thick.
 - .3 Joints: Perma-Weld solvent welding adhesive.
 - .4 Provide hi-lo temperature inserts, if deemed necessary by the manufacturer.
 - .5 Use a vapor retarder mastic in accordance with the manufacturer's recommendations.
 - .6 Provide PVC cover and/or tape overlap as recommended by the manufacturer.
 - .7 Acceptable Materials: Johns Manville Zeston 2000/300.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.
- .2 Install in accordance with TIAC National Standards.

3.2 PRE-INSTALLATION REQUIREMENT

- .1 Pressure testing of piping systems and adjacent equipment to be complete, witnessed and certified.
- .2 Surfaces clean, dry, free from foreign material.

3.3 CLEANING

- .1 Insulation Sub-Contractor to remove all garbage relating to the installation of their product from site including, but not limited to insulation scraps, tape backing, scraps of jackets, material containers, etc.

END OF SECTION