

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
 - .1 ASHRAE Standard 90.1-01, 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 B 209M-04, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate Metric.
 - .2 ASTM C 335-04, Standard Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
 - .3 ASTM C 449/C 449M-00, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
 - .4 ASTM C 547-2003, Mineral Fiber Pipe Insulation.
 - .5 ASTM C 795-03, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
 - .6 ASTM C 921-03a, Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
 - .3 Canadian General Standards Board (CGSB)
 - .1 CGSB 51-GP-52Ma-89, Vapour Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
 - .2 CAN/CGSB-51.53-95, Poly (Vinyl Chloride) Jacketing Sheet, for Insulated Pipes, Vessels and Round Ducts
 - .4 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
 - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
 - .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .6 Manufacturer's Trade Associations
 - .1 Thermal Insulation Association of Canada (TIAC): National Insulation Standards (Revised 2004).

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- 1.1 REFERENCES (Cont'd)
- .7 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC-S102-03, Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S701-01, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .3 CAN/ULC-S702-1997, Thermal Insulation, Mineral Fibre, for Buildings
 - .4 CAN/ULC-S702.2-03, Thermal Insulation, Mineral Fibre, for Buildings, Part 2: Application Guidelines.
- 1.2 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.
- .2 TIAC ss:
- .1 CRF: Code Rectangular Finish.
 - .2 CPF: Code Piping Finish.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
 - .1 Submit one copy of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Shop Drawings:
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
- .1 Instructions: submit manufacturer's installation instructions.
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1.4 QUALITY
ASSURANCE

- .1 Qualifications:
- .2 Installer: specialist in performing work of this Section, and have at least 3 years successful experience in this size and type of project, qualified to standards of TIAC.
- .3 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Requirements.

1.5 DELIVERY,
STORAGE AND
HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle in accordance with manufacturer's written instructions and Section 01 10 10 - General Instructions.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - .3 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .2 Storage and Protection:
 - .1 Protect from weather, construction traffic.
 - .2 Protect against damage.
 - .3 Store at temperatures and conditions required by manufacturer.
- .3 Waste Management and Disposal:
 - .1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 01 10 10 - General Instructions.
 - .2 Place excess or unused insulation and insulation accessory materials in designated containers.
 - .3 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
 - .4 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative.

PART 2 - PRODUCTS

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| <u>2.1 FIRE AND SMOKE
RATING</u> | .1 | In accordance with CAN/ULC-S102.

.1 Maximum flame spread rating: 25.
.2 Maximum smoke developed rating: 50. |
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| <u>2.2 INSULATION</u> | .1 | Mineral fibre specified includes glass fibre, rock wool, slag wool. |
| | .2 | Thermal conductivity ("k" factor) not to exceed specified values at 24 degrees C mean temperature when tested in accordance with ASTM C 335. |
| | .3 | TIAC Code A-3: rigid moulded mineral fibre with factory applied vapour retarder jacket.
.1 Mineral fibre: to CAN/ULC-S702 ASTM C 547.
.2 Jacket: to CGSB 51-GP-52Ma.
.3 Maximum "k" factor: to CAN/ULC-S702 ASTM C 547. |
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| <u>2.3 INSULATION
SECUREMENT</u> | .1 | Tape: self-adhesive, aluminum, plain, 50 mm wide minimum. |
| | .2 | Contact adhesive: quick setting. |
| | .3 | Canvas adhesive: washable. |
| | .4 | Tie wire: 1.5 mm diameter stainless steel. |
| | .5 | Bands: stainless steel, 19mm wide, 0.5 mm thick. |
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| <u>2.4 CEMENT</u> | .1 | Thermal insulating and finishing cement:
.1 Hydraulic setting or Air drying on mineral wool, to ASTM C 449/C 449M. |
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| <u>2.5 VAPOUR RETARDER
LAP ADHESIVE</u> | .1 | Water based, fire retardant type, compatible with insulation. |

- 2.6 INDOOR VAPOUR RETARDER FINISH .1 Vinyl emulsion type acrylic, compatible with insulation.
- 2.7 JACKETS .1 Polyvinyl Chloride (PVC):
.1 One-piece moulded type and sheet to CAN/CGSB-51.53 with pre-formed shapes as required.
.2 Colours: White.
.3 Minimum service temperatures: -20 degrees C.
.4 Maximum service temperature: 65 degrees C.
.5 Moisture vapour transmission: 0.02 perm.
.6 Thickness: 0.55 mm.
.7 Fastenings:
.1 Use solvent weld adhesive compatible with insulation to seal laps and joints.
.2 Tacks.
.3 Pressure sensitive vinyl tape of matching colour.

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.
- 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 INSTALLATION .1 Install in accordance with TIAC National Standards.
.2 Apply materials in accordance with manufacturers instructions and this specification.
.3 Use two layers with staggered joints when required nominal wall thickness exceeds 75 mm.
.4 Maintain uninterrupted continuity and integrity of vapour retarder jacket and finishes.
.1 Install hangers, supports outside vapour retarder jacket.

3.3 INSTALLATION (Cont'd) .5 Supports, Hangers:
.1 Apply high compressive strength insulation, suitable for service, at oversized saddles and shoes where insulation saddles have not been provided.

3.4 PIPING INSULATION SCHEDULES .1 Includes valves, valve bonnets, strainers, flanges and fittings unless otherwise specified.
.2 TIAC Code: A-3.
.1 Securements: Tape at 300 mm on centre.
.2 Seals: VR lap seal adhesive, VR lagging adhesive.
.3 Installation: TIAC Code: 1501-C.
.3 Thickness of insulation as listed in following table.
.1 Run-outs to individual units and equipment not exceeding 4000 mm long.
.2 Do not insulate exposed runouts to plumbing fixtures, chrome plated piping, valves, fittings.

Applic a-tion	Temp degrees	TIAC code	Pipe sizes (NPS) and insulation thickness (mm)					
	Run out	to 1 A- 3	1 1/4 to 2 25	2 1/2 to 4 25	5 to 6 25	8 & over 38	38	38
Domest ic HWS Water		A- 3	25	25	25	25	25	25
Domest ic CWS								

.4 Finishes:
.1 Exposed indoors: PVC jacket.
.2 Exposed in mechanical rooms: PVC jacket.
.3 Concealed, indoors: canvas on valves, fittings. No further finish.
.4 Use vapour retarder jacket on TIAC code A-3 insulation compatible with insulation.
.5 Finish attachments: SS screws bands, at 150 mm on centre. Seals: wing closed.
.6 Installation: to appropriate TIAC code CRF/1 through CPF/5.

3.5 CLEANING .1 Proceed in accordance with Section 01 10 10 - General Instructions.

PWGSC
Atlantic Region
Renovations to AAFC Lab
Bldg 25, SJRDC, St. John's, NL
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3.5 CLEANING
(Cont'd)

- .2 Upon completion and verification of performance of
installation, remove surplus materials, excess
materials, rubbish, tools and equipment.