

**Part 1 General****1.1 REFERENCES**

- .1 Definitions:
  - .1 For purposes of this section:
    - .1 "CONCEALED" - insulated mechanical services and equipment in suspended ceilings and non-accessible chases and furred-in spaces.
    - .2 "EXPOSED" - means "not concealed" as previously defined.
    - .3 Insulation systems - insulation material, fasteners, jackets, and other accessories.
  - .2 TIAC Codes:
    - .1 CRD: Code Round Ductwork,
    - .2 CRF: Code Rectangular Finish.
- .2 Reference Standards:
  - .1 ASTM International Inc.
    - .1 ASTM C335-05ae1, Standard Test Method for Steady State Heat Transfer Properties of Pipe Insulation.
    - .2 ASTM C449/C449M-00, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
    - .3 ASTM C553-02e1, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
  - .2 Canadian General Standards Board (CGSB)
    - .1 CGSB 51-GP-52Ma-89, Vapour Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
  - .3 Thermal Insulation Association of Canada (TIAC): National Insulation Standards (2005).
  - .4 Underwriters Laboratories of Canada (ULC)
    - .1 CAN/ULC-S102-03, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature and datasheets for duct insulation, and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Manufacturers' Instructions:
  - .1 Provide manufacture's written duct insulation jointing recommendations. and special handling criteria, installation sequence, cleaning procedures.

**1.3 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Installer: specialist in performing work of this section, and qualified to standards.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle in accordance with manufacturer's written instructions.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name.

**Part 2 Products****2.1 FIRE AND SMOKE RATING**

- .1 To CAN/ULC-S102:
  - .1 Maximum flame spread rating: 25.
  - .2 Maximum smoke developed rating: 50.

**2.2 INSULATION**

- .1 Thermal conductivity ("k" factor) not to exceed specified values at 24 degrees C mean temperature when tested in accordance with ASTM C335.
- .2 TIAC Code C-1: Rigid mineral fibre board to ASTM C612, with factory applied vapour retarder jacket to CGSB 51-GP-52Ma (as scheduled in PART 3 of this Section).
- .3 TIAC Code C-2: Mineral fibre blanket to ASTM C553 faced with factory applied vapour retarder jacket to CGSB 51-GP-52Ma (as scheduled in PART 3 of this section).
  - .1 Mineral fibre: to ASTM C553.
  - .2 Maximum "k" factor: to ASTM C553.

**2.3 ACCESSORIES**

- .1 Vapour retarder lap adhesive:
  - .1 Water based, fire retardant type, compatible with insulation.
- .2 Indoor Vapour Retarder Finish:
  - .1 Vinyl emulsion type acrylic, compatible with insulation.
- .3 Insulating Cement: hydraulic setting on mineral wool, to ASTM C449.
- .4 Tape: self-adhesive, aluminum, reinforced, 50 mm wide minimum.
- .5 Contact adhesive: quick-setting
- .6 Canvas adhesive: washable.
- .7 Tie wire: 1.5 mm stainless steel.
- .8 Banding: 12 mm wide, 0.5 mm thick stainless steel.
- .9 Facing: 25 mm galvanized steel hexagonal wire mesh stitched on both faces of insulation.

**Part 3 Execution****3.1 APPLICATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

**3.2 PRE-INSTALLATION REQUIREMENTS**

- .1 Ensure surfaces are clean, dry, free from foreign material.

**3.3 INSTALLATION**

- .1 Install in accordance with TIAC National Standards.
- .2 Apply materials in accordance with manufacturer's instructions and as indicated.
- .3 Install insulation on exhaust air ducts on a 3 meters distance from an exterior wall or roof.
- .4 Maintain uninterrupted continuity and integrity of vapour retarder jacket and finishes.
  - .1 Ensure hangers, and supports are outside vapour retarder jacket.
- .5 Fasteners: install at 300 mm on centre in horizontal and vertical directions, minimum 2 rows each side.

**3.4 DUCTWORK INSULATION SCHEDULE**

- .1 Insulation types and thicknesses: conform to following table:

	TIAC Code	Vapour Retarder	Thickness (mm)
Rectangular exhaust ducts	C-1	Yes	50
Round exhaust ducts	C-2	Yes	50

- .2 Insulation of ducts on a distance of 3 meters starting from roof.

**3.5 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**

