

1. GENERAL

1.1 Scope

- .1 Duct thermal insulation.
- .2 Duct acoustic insulation.
- .3 Adhesives, tie wires, tapes.
- .4 Recovery.
- .5 All outdoor mounted ductwork.

1.2 Quality Assurance

- .1 Insulation shall be installed by skilled workmen regularly engaged in this type of work.
- .2 Materials shall meet fire and smoke hazard ratings as stated in this section and defined in applicable current building codes.

1.3 Submittals

- .1 Submit shop drawings which indicate complete material data, "K" value temperature rating, density, finish, recovery jacket of materials proposed for this project and indicate thickness of material for individual services.
- .2 Submit samples of proposed insulating materials and recovering.

1.4 Job Conditions

- .1 Deliver material to job site in original non-broken factory packaging, labelled with manufacturer's density and thickness.
- .2 Perform work at ambient and equipment temperatures as recommended by the adhesive manufacturer. Make good separation of joints or cracking of insulation due to thermal movement, poor workmanship or material defects.

1.5 Alternatives

- .1 Alternative insulations are subject to review. Alternatives shall provide the same or better thermal resistance at normal conditions as material specified.

2. PRODUCTS

2.1 General

- .1 Insulation Material, Vapour Barrier Facings, Tapes and Adhesives: Composite fire and smoke hazard ratings shall not exceed 25 from flame spread and 50 for smoke developed.
- .2 Insulating materials and accessories shall withstand service temperatures without smouldering, glowing, smoking or flaming.
- .3 All insulation materials shall meet current Building Code Standards, and packages or containers of such materials shall be appropriately labelled.

2.2 Materials

- .1 Acoustic Lining: Fibrous glass or mineral fibreboard insulation with "K" value maximum 0.035 W/m.²°C (0.25 Btu-in/(hr ft²°F)) at 24°C(75°F). Absolute roughness of exposed surface not to exceed 0.58 mm (0.02 in), coated to prevent fibre erosion at air velocities up to 25.4 m/s (5,000 fpm), 24 kg/m³ (1.5 lb/ft³) minimum density for ductwork and 75 kg/m³ (4.7 lb/ft³) for plenums. Substrate must not be dark in colour. Service temperature -40°C (-40°F) to 65°C (150°F).

3. EXECUTION

3.1 Preparation

- .1 Do not install covering before ductwork and equipment has been tested and approved.
- .2 Ensure surface is clean and dry prior to installation. Ensure insulation is dry before and during application. Finish with systems at operating conditions where possible.

3.2 Installation

- .1 Ensure insulation is continuous through inside walls. Pack around ducts with fireproof self-supporting insulation materials, properly sealed.
- .2 Finish insulation neatly at hangers, supports and other protrusions.
- .3 Do not insulate ductwork with external thermal insulation where acoustic duct insulation is specified.
- .4 Locate insulation or cover seams in least visible locations. Locate seams on ductwork in ceiling spaces on the underside of the duct.
- .5 Acoustic Lining: Apply to interior of ducts where shown. Secure to ductwork with adhesive using 50% coverage and anchors or weld pins on 400 mm (16 in) centres. Secure in place with retaining clips. Cut off excess fastener length and cover with brush coat of mastic over protrusions and all raw edges. Use 25 mm (1 in) thick insulation unless otherwise noted for

ductwork and 50 mm (2 in) thick insulation for fabricated outdoor plenums. Provide vapour barrier located on the warm side for outside air intakes. Bevel corners at joints and butt together. Install acoustic gauze over all cut corners and joints and brush coat with lap seal adhesive.

- .6 Where duct velocities exceed 15 m/s (3,000 fpm), cover internal duct insulation with 0.8 mm (22 ga) perforated galvanised steel with 24% free area.

3.3 Insulation Installation Thickness Schedule

Ducts and Equipment	Insulation Thickness mm (in)	Recovery Jacket
.1 Acoustic Lining in Plenums (Systems with Cooling Coils)	50 (2)	--
.2 Acoustic Lining (where indicated)	25 (1)	--

END OF SECTION