

SECTION 23 07 00 – HVAC INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Insulation for HVAC equipment.
 - 2. Insulation for HVAC duct systems.

1.2 SUBMITTALS

- A. Product Data
- B. Manufacturer's Installation Instructions: Required.

1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.
- B. Product must comply with ASHRAE 189.1-2009 Green Building Standards.

PART 2 - PRODUCTS

2.1 EQUIPMENT INSULATION Note: k factor = BTU-in/Hr*sq.ft.*Deg.F

- A. Flexible Mineral Fiber Blanket: ASTM C553; flexible, noncombustible, externally wrapped only. Not allowed for chilled or cold water piping.
 - 1. k factor: 0.25 at 75 degrees F. Thickness = 1.5".
 - 2. Maximum service temperature: 250 degrees F.
 - 3. Density: 2.0 lb/cu ft density.
 - 4. Vapor Retarder Jacket: Kraft paper with glass fiber yarn and bonded to aluminized film, secured with self-sealing longitudinal laps and butt strips or with outward clinch expanding staples and vapor retarder mastic.
- B. Flexible Elastomeric Rubber: ASTM C534; Grade 1; flexible, externally wrapped only..
 - 1. k factor: 0.25 at 75 degrees F. Thickness = 1.5".
 - 2. Maximum service temperature: 220 degrees F.
 - 3. Density: 3.0 lb/cu ft density.
 - 4. Jacketing: Closed cell elastomeric insulation adhered to a plastic (PVC) sheet laminated to aluminum foil or closed cell elastomeric insulation adhered to a white PVC film.

- C. Rigid Mineral Fiberboard: ASTM C612; rigid, noncombustible, externally wrapped only..
 - 1. k factor: 0.24 at 75 degrees F. Thickness = 1.5".
 - 2. Maximum service temperature: 850 degrees F.
 - 3. Density: 3.0 lb/cu ft.
 - 4. Vapor Retarder Jacket: Kraft paper with glass fiber yarn and bonded to aluminized film, secured with self-sealing longitudinal laps and butt strips or with outward clinch expanding staples and vapor retarder mastic.
 - 5. Facing: One inch galvanized steel hexagonal wire mesh stitched on one face of insulation.

2.2 DUCTWORK INSULATION

- A. Flexible Glass Fiber: ASTM C553; flexible, noncombustible blanket.
 - 1. k factor: 0.29 at 75 degrees F. Thickness = 1.5".
 - 2. Vapor Retarder Jacket: Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, secured with pressure sensitive tape.
- B. Flexible Elastomeric Rubber: ASTM C1534; flexible.
 - 1. k factor: 0.25 at 75 degrees F. Thickness = 1.5".
 - 2. Vapor Retarder Jacket: Composite product comprised of closed cell elastomeric insulation adhered to a plastic (PVC) sheet laminated to aluminum foil secured with pressure sensitive tape.
- C. Canvas Jacket: UL listed fabric, 6 oz/sq yd, plain weave cotton treated with dilute fire retardant lagging adhesive.
- D. Mineral Fiber (Outdoor) Jacket: Asphalt impregnated and coated sheet, 36 lb/square.
- E. Aluminum Jacket: 0.025 inch thick sheet, smooth finish, with longitudinal slip joints and 2 inch laps.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide minimum 2" thick plenum, liner board on interior walls and ceiling of mechanical rooms. E.g., Linacoustic R-300 from John Manville.
- B. Continue insulation and vapor barrier through penetrations.
- C. Equipment Insulation:
 - 1. Apply insulation to equipment by grooving, scoring, and beveling insulation. Secure insulation to equipment with studs, pins, clips, adhesive, wires, or bands, or adhesive – either solvent-based contact or PSA (factory-applied pressure sensitive adhesive).

2. Fill joints, cracks, seams, and depressions with bedding compound to form uniform surface. On cold equipment, use vapor barrier cement.
3. Install fiber glass insulated equipment containing fluids below ambient temperature with vapor barrier jackets.
4. For fiber glass insulated equipment containing fluids above ambient temperature, install standard jackets, with or without vapor barrier.
5. For equipment in mechanical equipment rooms or in finished spaces, finish with PVC or composite jacket and fitting covers.
6. Do not insulate over nameplate or ASME stamps. Bevel and seal insulation around nameplates or stamps.
7. When equipment with insulation requires periodic opening for maintenance, repair, or cleaning, install insulation in to allow removal and replacement without damage.

D. External Ductwork Insulation:

1. For insulated ductwork conveying air below ambient temperature install vapor barrier jacket. Finish with tape. Seal vapor barrier penetrations with vapor barrier adhesive.
2. For insulated ductwork conveying air above ambient temperature install with or without standard vapor barrier jacket. Where service access is required, bevel and seal ends of insulation.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Install without sag on underside of ductwork. Use solvent-based contact adhesive or equal, or mechanical fasteners where necessary to prevent sagging.
5. For ductwork exposed in mechanical equipment rooms or in finished spaces, finish with composite jacket or aluminum jacket.
6. For exterior applications, install insulation with vapor barrier jacket. Cover with composite jacket or equal.

END OF SECTION