800 SERIES SPIN-GLAS®

FIBERGLASS DUCT & EQUIPMENT RIGID BOARD INSULATION

3-PART SPECIFICATION FOR RECTANGULAR DUCTS

220716 - PLUMBING EQUIPMENT INSULATION
230716 - HVAC EQUIPMENT INSULATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: The work covered by this specification consists of furnishing all labor, equipment, materials and accessories, and performing all operations required, for the correct installation of insulation on all tanks, equipment and ductwork with operating temperatures below 450°F.

1.02 REFERENCES

A. ASTM C 553 Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
B. ASTM C 612 Specification for Mineral Fiber Block and Board Thermal Insulation
C. ASTM C 795 Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
D. ASTM C 1136 Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
E. ASTM E 84 Test Method for Surface Burning Characteristics of Building Materials
F. MIL-I-24244 Military Specification Insulation Material, With Special Corrosion, Chloride and Fluoride Requirements
G. NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems
H. NFPA 90B Standard for the Installation of Warm Air Heating and Air Conditioning Systems
I. NFPA 255 Method of Test of Surface Burning Characteristics of Building Materials
J. NRC 1.36 Nonmetallic Thermal Insulation for Austenitic Stainless Steel
K. UL 723 Test for Surface Burning Characteristics of Building Materials
L. Canada: ULC S102-M88 Test for Surface Burning Characteristics of Building Materials
M. Canada: CGSB 51-GA-11M Thermal Insulation, Mineral Fibre Blanket for Piping, Ducting, Machinery and Boilers

1.03 SUBMITTALS

A. Product Data: Provide product description, list of materials and thickness for each service or equipment scheduled, locations, and manufacturer's installation instructions.
B. Shop Drawings: Submit list of insulation to be used for each service.
C. Samples: Submit samples of each insulation to be used.

1.04 QUALITY ASSURANCE

A. Insulation materials shall be manufactured at facilities certified and registered with an approved registrar to conform to the ISO 9002 Quality Standard.
B. All work shall conform to accepted industry and trade standards for commercial and industrial insulations, and shall conform to manufacturer's recommendations.
C. Installation shall be by licensed applicators.
D. Insulation materials that have become wet or contaminated shall not be installed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver all materials (insulation, coverings, cements, adhesives, coatings, etc.) to the job site in factory containers with manufacturer's label showing manufacturer, product name and product fire hazard information.
B. Protect the insulation from dirt, water, chemical attack and mechanical damage before, during and after installation.
C. Installed insulation which has not been weatherproofed and which is not protected by roof and walls shall be protected from precipitation by waterproof sheeting installed by the contractor. Wet or damaged insulation shall be removed and replaced by the contractor at no additional cost.

1.06 PROJECT/SITE CONDITIONS

A. Maintain job site temperature and conditions, before, during and after installation, as required by the manufacturers of insulation, adhesives and coatings.

PART 2 – PRODUCTS

2.01. MANUFACTURERS

A. Rigid fiber glass board insulation: Johns Manville or approved alternate
B. PVC insulation jacketing: Johns Manville or approved equivalent.

2.02. MATERIALS

A. [813 / 814 / 815 / 817] Series Spin-Glas rigid fiber glass board insulation, complying with ASTM C 612, Type II, rigid board, noncombustible, and meeting the following requirements:
   1. Asbestos free

2. Furnished in standard lengths and widths with ends cut square, conforming with the dimensional requirements of ASTM C 612, Types IA and IB.
3. Nominal density

813	2.25 pfc (36 kg/m^3)
814	3.0 pcf (48 kg/m^3)
815	4.25 pcf (68 kg/m^3)
817	6.0 pcf (96 kg/m^3)

4. Maximum thermal conductivity, k (ksi), at 75° F (24° C) in BTU-in /hr. -ft.2-°F (0.033 W/m-°C) per ASTM C 518

813	0.23	(0.033)
814	0.23	(0.033)
815	0.22	(0.032)
817	0.22	(0.032)

5. Rated maximum service temperature: not less than 450°F (232°C).
6. Material shall have a flame spread no greater than 25 and a smoke developed no greater than 50 when tested as in accordance with ASTM E 84, UL 723, or NFPA 255.
7. When being used over stainless steel, product must comply with the requirements of ASTM C 795, MIL-I-24244, or NRC 1.36.
8. Vapor Retarder Jacketing: AP, a bleached kraft paper reinforced with a glass fiber yarn and bonded to an aluminum foil complying with ASTM C 1136 Type I, or FSK, Aluminum foil reinforced with a glass fiber yard and laminated to fire-resistant kraft complying with ASTM C 1136 Type II.
9. UL listed, with UL compliance label on the carton.
10. Shall not contain asbestos, lead, mercury, or mercury compounds.

B. Zeston 2000 or Zeston 300 PVC Field Applied Jackets
   1. [20 mil (0.51 mm) / 30 mil (0.76 mm) / 40 mil (1.02 mm)] stock thickness
   2. UV resistant
   3. Joints secured and sealed with Perma-Weld Adhesive.

C. Aluminum Field Applied Jackets
   1. 0.016 inch (0.045 mm) thick sheet
   2. [Smooth / Embossed} finish
   3. Longitudinal slip joints and 2 inch (50mm) laps
   4. Factory applied protective liner

D. Stainless Steel field Applied Jackets
   1. Type 304 Stainless Steel
   2. 0.10 inch (0.25mm)
   3. [Smooth / Corrugated] finish.

E. Insulkote ET, non water vapor retarder, weatherproof coating for use over insulation where breathing is required.

F. Accessories
   1. Tape complying with UL 181A-P (pressure sensitive), -H (heat activated) or -M (glass cloth and mastic)
   2. Studs, pins, clips, adhesives, wires, bands

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that all surfaces are clean, dry, and free from dirt, scale, moisture, oil and grease.

B. Verify that it is physically possible to install the fiber glass board insulation in accordance with project drawings, operation performance parameters and limitations of this specification.

3.02 INSTALLATION

A. All work activities shall be conducted in accordance with all applicable federal, state and local codes and laws. This shall include, but not be limited to, the Occupational Safety and Health Act.

B. All works shall conform with accepted industry and trade standards for commercial and industrial standards.

C. Insulation of Equipment:
   1. Apply insulation as close as possible to equipment by grooving, scoring, and beveling insulation, if necessary.
   2. As required, secure insulation to equipment with studs, pins, clips, adhesive, wires or bands.
   3. If a multiple layer configuration of insulation is required, make sure that all joints between layers are staggered.
   4. Fill joints, cracks, seams, and depressions with bedding compound to form a smooth surface.
   5. Provide insulation for dual temperature equipment or cold equipment containing fluids below ambient temperature with a vapor retarder jacket.
   6. For insulated equipment containing fluids above ambient temperature, a vapor retarder jacket is not required.
   7. Cover insulation with aluminum jacket, or with metal mesh and finish with heavy coat of insulating cement or mastic, as indicated in the drawings

8. For equipment in mechanical equipment rooms or in finished spaces, finish with Zeston 2000 or Zeston 300 PVC, or aluminum jacketing. When using PVC jacketing adequate thickness of insulation must be applied to maintain a surface temperature no greater than 140 °F (66 °C).
9. Do not insulate over nameplate or ASME stamps. Bevel and seal insulation around such.
10. When equipment with insulation requires periodic opening for maintenance, repair or cleaning, install insulation in such a manner that it can be easily removed and replaced without damage.

D. External Insulation of Ductwork:

1. Provide insulated ductwork conveying air at below ambient temperature with vapor retardant jacket. Seal all vapor retardant jacket seams and penetrations with UL181A compliant tapes or vapor retardant adhesive.
2. Provide insulated ductwork conveying air above ambient temperature with or without vapor retardant jacket.
3. Where service access is required, bevel and seal ends of insulation.
4. Continue insulation through walls, sleeves, hangers and other duct penetrations except where prohibited by code.
5. The underside of duct work 24" (610 mm) or more wide shall be secured with mechanical fasteners spaced approximately 18" (460 mm) on center. The protruding ends of studs or pins should be cut off flush after the speed clips are installed.
6. For ductwork exposed to physical abuse in mechanical equipment rooms or in finished spaces, finish with Zeston 2000 or Zeston 300 PVC jacket or aluminum jacket. When using PVC jacket, adequate insulation thickness is required to maintain surface temperature of no greater than 140 °F.
7. For exterior applications, a 3, 4.25 or 6 pcf (48, 68, or 96 kg/m3) density board should be used. Provide the insulation with a weather protective jacket.

3.03 FIELD QUALITY CONTROL

A. Upon completion of installation of the insulation and before system start-up, visually inspect and verify that the insulation has been correctly installed.

B. Confirm that any damage to the vapor retarder jacket has been properly repaired.

END OF SECTION

Johns Manville

717 17th St.
Denver, CO 80202
(800) 866-3234
JM.com