

MICROLITE® FSK, MICROLITE® WHITE PSK & BLACK PSK
FORMALDEHYDE-FREE™ FIBERGLASS DUCT WRAP
MASTER SPECIFICATION FOR DUCT WRAP

SECTION 230713 - HVAC DUCT 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 commercial flexible blanket duct wrap insulation, in accordance with applicable project drawings and specifications, subject to the terms and conditions of the contract.
- B. Related Sections: Section 15880 – Air Distribution
- C. Measurement Procedures: Dimensions shown on the plans are inside dimensions.

1.02 REFERENCES

- A. ASHRAE 90.1- 2013 - Energy Efficient Design of New Buildings
- B. ASHRAE 62 – 2013 – Ventilation for Acceptable Indoor Air Quality
- C. ASTM C 411 – Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
- D. ASTM C 518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- E. ASTM C 553 - Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
- F. ASTM C 665 – Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- G. ASTM C 1104 – Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation
- H. ASTM C 1136 - Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
- I. ASTM C 1338 – Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
- J. ASTM C 1290 - Specification for Flexible Fibrous Glass Blanket Insulation used to Externally Insulate HVAC Ducts
- K. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials
- L. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials
- M. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems
- N. NFPA 90B - Standards for the Installation of Warm Air Heating and Air Conditioning Systems
- O. NFPA 255 - Method of Test of Surface Burning Characteristics of Building Materials

- P. UL 723 - Test for Surface Burning Characteristics of Building Materials
- Q. Canada: CGSB 51-GP-11M – Thermal Insulation, Mineral Fibre Blanket for Piping, Ducting, Machinery and Boilers
- R. MEA 40-75-M – Materials and Equipment Acceptance (New York City)
- S. Scientific Certification Systems – California Specification 01350 (Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chamber)
- T. GREENGUARD – UL 2818 “GREENGUARD Certification Program For Chemical Emissions for Building Materials, Finishes and Furnishings”

1.03 SUBMITTALS

- A. Product Data: Provide product description, list of materials and thickness and manufacturer’s installation instructions for each duct or equipment to be insulated.
- B. Shop Drawings: Submit list of insulation to be used, and include installation details for all ducts or equipment to be insulated.
- C. Samples: Submit samples of each insulation to be used.

1.04 QUALITY ASSURANCE

- A. All work shall conform to accepted industry and trade standards for commercial and industrial insulations, and shall conform to manufacturer’s recommendations.
- B. Installation shall be by licensed applicators.
- C. Insulation materials that have become wet or contaminated shall not be installed.
- D. Verify that insulation of the proper thickness and R-value, meeting ASHRAE 90.1 and/or local requirements is to be installed.

1.05 DELIVERY, STORAGE, AND HANDLING A.

- 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

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insulation, adhesives, tapes, and coatings.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A Duct Wrap: Johns Manville or approved equivalent

2.02 MATERIALS

- A. Microlite® duct wrap insulation [Type 75 / Type 100 / Type 150] with FSK/PSK facing meeting ASTM C 1290 [Type III-FSK/PSK] and meeting the following requirements:

1. Maximum k-value (thermal conductivity) at 75°F (24°C) and nominal thickness measured per ASTM C 518 in BTU•in./hr. •ft.²•°F (ksi W/m•°C)

| | |
|----------------------------|--------------|
| Microlite FSK/PSK Type 75 | 0.29 (0.042) |
| Microlite FSK/PSK Type 100 | 0.27 (0.039) |
| Microlite FSK/PSK Type 150 | 0.24 (0.036) |

2. Maximum k value (thermal conductivity) at 75°F (24°C) and compressed 25% from nominal thickness measured per ASTM C 518 in BTU•in /hr. •ft.²•°F (ksi W/m•°C)

| | |
|----------------------------|--------------|
| Microlite FSK/PSK Type 75 | 0.27 (0.039) |
| Microlite FSK/PSK Type 100 | 0.25 (0.036) |
| Microlite Type FSK/PSK 150 | 0.24 (0.035) |

3. Thickness of [specify] to provide an installed "R" of [specify].
4. Material faced with FSK/PSK shall have a permeance of 0.02 perms (1.1 x 10⁻⁹ g/Pa-s-m²) or less measured per ASTM E 96.
5. Material must conform to ASHRAE 90.1.
6. Material shall have a flame spread no greater than 25 and a smoke developed no greater than 50 when tested as a composite in accordance with ASTM E 84, UL 723 or NFPA 255.
7. Material shall be certified as GREENGUARD Gold or Scientific Certification Systems as formaldehyde free for formaldehyde.
8. Shall not contain asbestos, lead, mercury, or mercury compounds.
9. Microlite White PSK or Black PSK will be provided free of print on the facing due to the aesthetic nature of the product application. The authority having jurisdiction (AHJ) should be made aware of this prior to installation of the product. Painting any facing will void the 25/50 manufacturer's rating and void the UL warranty.

B. ACCESSORIES

1. Pressure sensitive tape meeting perm rating less than 1 per ASTM E 96 and a fire hazard classification of 25/50 or less per ASTM E 84/UL 723.

2. Weld pins of sufficient finished length to provide proper compression of insulation.
3. Speed clips.
4. UL listed vapor retarder mastic designed for use with duct wrap insulation.
5. Open weave glass fabric, 4 in. (102 mm) wide.
6. Adhesives designed for use with fiberglass insulation.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that the duct has been installed, sealed and tested in accordance with project drawings and specifications, and is ready for installation of insulation.
- B. Verify that all surfaces are clean, dry, and free from foreign materials.
- C. Verify that it is physically possible to install duct wrap in accordance with project drawings, operation performance parameters and manufacturer's recommendations.

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 portions of duct designated to receive wrap shall be completely covered with the specified thickness. All sections shall be tightly butted together so that there are no interruptions or gaps.
- C. Install duct wrap in accordance with the manufacturer's instructions and recommendations.
- D. Cut insulation to length according to manufacturer's stretch-out schedule to avoid excessive compression at comers. Prepare the end overlap by removing insulation from two inches of facer at the end of the cut section. Wrap insulation around the duct with the facing to the outside so that the prepared 2" (51 mm) flap completely overlaps the facing and insulation of the opposite end of the section to create the longitudinal seams.
- E. Snugly butt adjacent sections of duct wrap with the circumferential 2" (51 mm) flap (factory supplied) completely overlapping the facing and insulation of the adjacent duct wrap section to create the circumferential seams.
- F. Secure circumferential and longitudinal seams with outward clinching staples on 6" (152 mm) centers.
- G. Seal circumferential and longitudinal seams with pressure sensitive tape, or with two coats of mastic reinforced with one layer of open weave glass fabric.
- H. Continue insulation and vapor barrier through penetrations except where not allowed by fire stopping or code requirements.
- I. At facer terminations and at all penetrations to the facing for hangers, supports, anchors or projections the facer shall be

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sealed to the adjacent surface with two coats of UL listed vapor retarder mastic reinforced with one layer of 4" (102 mm) wide, open weave glass fabric

- J. The insulation on the underside of ducts 24" (610 mm) or more wide shall be secured with mechanical fasteners or speed clips spaced approximately 18" (460 mm) on center. Protruding ends of fasteners shall be cut off flush after speed clips are installed and sealed with pressure sensitive tape designed for use with duct insulation, or with two coats of vapor retarder mastic reinforced with one layer of 4" (102 mm) wide, open weave glass fabric.
- K. Insulated duct exposed to mechanical abuse in equipment rooms or other high abuse areas will be covered with Zeston 2000 PVC jacket or (0.016 in. (0.41 mm) aluminum jacket). Insulated duct installed outdoors will have weather protective jacketing installed.

- L. Repair tears in vapor retarder facer using UL181A-P compliant tape.
- M. For Microlite White PSK and Microlite Black PSK, the use of Johns Manville PSK seaming tapes at 96 mm width is recommended for best results and aesthetic appearance of the installation.

3.03 FIELD QUALITY CONTROL

- A. Upon completion of installation of the duct wrap and before HVAC system start-up, visually inspect the duct work and verify that the duct wrap has been correctly installed.
- B. Confirm that any damage to the vapor barrier has been properly repaired.

END OF SECTION



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Technical specifications as shown in this literature are intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product. The physical and chemical properties of the products listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Any references to numerical flame spread or smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Regional Sales Office nearest you for current information.

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