

230713 - HVAC DUCT INSULATION

PART 1 – GENERAL

1.01 SUMMARY

- A. The work covered by this specification consists of furnishing all labor, equipment, materials and accessories, and performing all operations required for the correct fabrication and installation of commercial air distribution ductwork of rectangular sheet metal lined with fibrous glass duct liner in accordance with applicable project drawings and specifications, subject to the terms and conditions of the contract.
- B. Dimensions shown on the plans are inside dimensions.
- C. Related Sections, 15880 Air Distribution.

1.02 REFERENCES

- A. ASTM C 411 – Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
- B. ASTM C 423 - Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- C. ASTM C 916 – Specification for Adhesives for Duct Insulation
- D. ASTM C 1071 – Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material)
- E. ASTM C 1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
- F. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials
- G. ASTM G 21 - Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- H. ASTM G 22 - Practice for Determining Resistance of Plastics to Bacteria
- I. NFPA 90A - Standard for the Installation of Air Conditioning and Ventilating Systems
- J. NFPA 90B - Standards for the Insulation of Warm Air Heating and Air Conditioning Systems
- K. SMACNA HVAC Duct Construction Standards Metal and Flexible
- L. NAIMA Fibrous Glass Duct Liner Standard
- M. ASHRAE 62-2013 - Energy Efficient Design of New Buildings
- N. ASHRAE 90.1 – 2013 - Energy Efficient Design of New Buildings
- O. INDA IST 80.6 - The Standard Test Method For Alcohol Repellency Of Nonwoven Fabrics
- P. UL 723 - Test for Surface Burning Characteristics of Building Materials
- Q. Canada: Can/ULC S102-M88 – Test for Surface Burning Characteristics of Building Materials
- R. Canada: CGSB 51-GP-11M – Thermal Insulation, Mineral Fibre Blanket for Piping, Ducting, Machinery and Boilers

- S. GREENGUARD – UL 2818 “GREENGUARD Certification Program For Chemical Emissions for Building Materials, Finishes and Furnishings”
- T. California Title 24 – California Building Standards Code

1.03 QUALITY ASSURANCE

- A. Insulation materials will be manufactured at facilities certified and registered with an approved registrar to conform to the ISO 9000 Quality Standard.
- B. Insulation materials that have become wet or soiled shall not be installed unless restored to original condition.
- C. Installed duct will have openings capped to prevent entry of dirt or water.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials and/or fabricated, insulated duct and fittings to the job site and store in a clean dry place.
- B. Protect materials from dust, dirt, moisture, and physical damage, before and during installation.

1.05 PROJECT/SITE CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of insulations, adhesives, and mastics.

PART 2 – PRODUCTS

2.01.MANUFACTURERS

- A. Johns Manville or approved equivalent

2.02.MATERIALS

- A. Permacote Linacoustic RC-HP meeting ASTM C1071 and meeting the following requirements:
 1. "K" ('ksi') value per ASTM C518, 0.23 at 75°F (0.036 at 24°C) based on 1" material thickness.
 2. Noise reduction coefficient of 0.75 minimum when tested in accordance with ASTM C423 when using a type "A" mounting at 1" thickness.
 3. Maximum rated velocity of 6000 FPM (30.5 Meters/ Second).
 4. The air stream surface shall have a 100% coverage coating of acrylic polymer formulated with an immobilized EPA registered anti-microbial agent proven resistant to microbial growth as determined by ASTM G21 and G22.
 5. Minimum water repellency of 7 on air stream side coating per INDA IST 80.6
 6. Duct liner shall have a FHC of 25/50 and be classified as meeting the requirements of limited combustibility.
 7. Material shall be certified by per GREENGUARD.
 8. Shall not contain asbestos, lead, mercury, or mercury compounds.



InsulSpec™ – CSI 3-Part Specification

Permacote® Linacoustic® RC-HP Fibrous Glass Duct Liner

Specification for Rectangular Metal Duct

B. Accessories

1. SuperSeal® and SuperSeal® HV for coating exposed edges, connections or minor surface damage not requiring replacement insulation.
2. Duct liner adhesive, meeting the requirements of ASTM C916.
3. Weld pins of sufficient finished length to provide proper compression of insulation.
4. Metal Channel or "Z" profile for upstream edges of liner.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that the Permacote Linacoustic RC-HP Duct Liner installed in accordance with project drawings, specifications, and SMACNA/NAIMA standards.

3.02 INSTALLATION

- A. All portions of duct designated to receive liner shall be completely covered with 1"(or other specified thickness) of Permacote Linacoustic RC-HP. All sections shall be tightly butted together so that there are no interruptions or gaps.
- B. Adhere liner to metal with a full coverage of adhesive meeting ASTM C916.
- C. Secure duct liner with mechanical fasteners in accordance with SMACNA and NAIMA Standards.
- D. Install metal nosing on all leading edges of liner when velocity exceeds 4000 FPM.
- E. SuperSeal will be used to coat all circumferential joints, exposed edges, and minor surface damage after the liner is in place.

- F. SuperSeal HV will be used to fill minor gaps and indentations.

3.03 FIELD QUALITY CONTROL

- A. Upon completion of installation of duct liner and before HVAC system start-up, visually inspect the ductwork and verify that the duct liner has been correctly installed.
- B. Confirm that any damage to the airstream surface has been properly repaired and that the duct is free from obstructions or debris.
- C. After the system is completely installed and ready for service, conduct an inspection of the entire system. This inspection should include, as a minimum, the following steps:
 1. Check all registers, grilles, and diffusers to ensure they are clean and free from construction debris.
 2. Check all filters in accordance with manufacturer's instructions. Use specified grade of filters at all times system is operating.
 3. Cover supply openings with filter media prior to system start-up to catch any loose material that may remain inside the ductwork.
 4. Turn on the HVAC system and allow it to run until steady state operation is reached.
 5. Remove the temporary filter media from supply openings and along with it any loose material trapped by the media.
 6. Check to ensure that air delivery performance meets all requirements.

3.04 CLEANING

- A. Cleaning of lined duct, if required, shall be done in accordance with NAIMA recommended practice contained in publication "Cleaning Fibrous Glass Insulated Air Duct Systems."

END OF SECTION

North American Sales Offices, Insulation Systems

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The physical and chemical properties of Permacote Linacoustic RC-HP Fibrous Glass Duct Liner 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. Numerical flame spread and 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 to ensure current information. **All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions including Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions, Limited Warranty and Limitation of Remedy, and information on other Johns Manville thermal insulations and systems, call (800) 654-3103.**