DUCT INSULATION – QUIETR® ROTARY DUCT LINER, DUCT LINER BOARD, & HD ROLL

General Specification Guide SECTION 23 07 13

GUIDE SPECIFICATIONS

PROJECT ENGINEER RESPONSIBILITY: This is a general specification guide, intended to be used by experienced construction professionals, in conjunction with good construction practice and professional judgment. This guide is to aid in the creation of a complete building specification that is to be fully reviewed and edited by the engineer. Sections of this guide should be included, edited, or omitted based on the requirements of a specific project. It is the responsibility of both the specifier and the purchaser to determine if a product or system is suitable for its intended use. Neither Owens Corning, nor any of its subsidiary or affiliated companies, assume any responsibility for the content of this specification guide relative to actual projects and specifically disclaim any and all liability for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or other construction related details, whether based upon the information provided by Owens Corning or otherwise.

SECTION 23 07 13
DUCT INSULATION
PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: Provide fibrous glass duct liner in sheet metal ducts for residential and commercial air duct systems.
Note to Specifier: The following temperature ranges are typical for these systems. However, if project requirements call for service temperatures outside the ranges listed, consult the manufacturer's published data to determine operating temperature limitations of the insulation product or products under consideration.
1. Air duct systems operating at internal air velocities not exceeding rated duct liner limitations as listed below, and internal air temperatures not exceeding 250°F (121°C).

1.2 REFERENCES

A. Materials shall meet the requirements of one or more of the following specifications as applicable to the specific product or end use:
1. American Society for Testing and Materials (ASTM):
   a. ASTM C1071, Standard Specification for Thermal and Acoustical Insulation (Glass Fiber, Duct Lining material).
   b. ASTM C916, Standard Specification for Adhesives for Duct Thermal Insulation.
   c. ASTM C1338, Test Method for Determining Fungi resistance of Insulation Materials and Facings
   d. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
2. Underwriters Laboratories (UL) and Canadian Underwriters Laboratories (ULC)
   a. UL 723, Test for Surface Burning Characteristics of Building Materials.
   b. CAN/ULC S102, Test for Surface Burning Characteristics of Building Materials.
3. National Fire Protection Association (NFPA):
   a. NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems.
   b. NFPA 90B, Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.

1.3 SUBMITTALS

A. Product Data: Submit product characteristics, performance criteria, and limitations, including installation instructions, for each type of product indicated.
1. For adhesives and sealants, submit documentation including printed statement of VOC content.

B. Sustainable Design Submittals: Submit manufacturer's sustainable design certifications as specified.

1.4 DELIVERY AND STORAGE OF MATERIALS

A. Delivery: Deliver materials in manufacturer's original packaging.

B. Storage: Store and protect products in accordance with manufacturer's instructions. Store in a dry indoors location. Protect insulation materials from moisture and soiling.

C. Do not install insulation that has been damaged or wet. Remove it from jobsite.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Owens Corning Insulating Systems, LLC, Toledo, OH 43659; www.owenscorning.com.

2.2 DUCT INSULATION

A. General:
   1. Duct Liners: Rigid, resin bonded fibrous glass blankets or board with a damage-resistant, flame retardant veil faced airstream surface.
   2. Owens Corning QuietR® Duct Liner insulation is not known to contain penta-, octa, or deca-brominated diphenyl flame retardant substances, such as deca-Bromine (deca-BDE).

B. Certifications:
   1. QuietR® Rotary Duct Liners are GREENGUARD Indoor Air Quality Certified®.
   2. QuietR® Rotary Duct Liners have achieved GREENGUARD Gold Certification for dimensions up to and including 1" thickness.
   3. QuietR® Rotary Liners are certified by SCS Global Services to contain a minimum of 53% recycled glass content, 31% pre-consumer and 22% post-consumer.
   4. All duct liner and duct liner board products are UL listed and labeled.

C. Duct Insulation, Rotary Type: For service at internal air velocities not to exceed 6,000 fpm (30.5 m/s), provide the following:
   1. Acceptable Product: Owens Corning® QuietR® Rotary Duct Liner.
      a. Type R-2.2: 1/2 in (13mm) thick.
      b. Type R-4.2: 1 in (25mm) thick.
      c. Type R-6.3: 1-1/2 in (38mm) thick.
      d. Type R-8: 2 in (51mm) thick.

D. Duct Liner Board: For service at internal air velocities not to exceed 6,000 fpm (30.5 m/s), provide the following:
   1. Acceptable Product: Owens Corning® QuietR® Duct Liner Board.
      a. 3.0 pcf (48 kg/m3) density: 1 in or 2 in (25 mm or 51mm) thick.

E. Duct Liner HD-Roll: For service at internal air velocities not to exceed 6,000 fpm (30.5 m/s), provide the following:
   1. Acceptable Product: Owens Corning® QuietR® Duct Liner Board.
      a. 3.0 pcf (48 kg/m3) density: 1 in (25 mm) thick

2.3 ACCESSORY MATERIALS

A. Accessories: Provide accessories per duct insulation system manufacturer's recommendations, including the following:
   1. Adhesives for Indoor Applications: VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
   2. Fasteners.

2.4 FABRICATION

A. Fabricate duct insulation and liner board products with a black pigmented coating on the airstream side, to resist damage during installation and in service. Factory coat edges with the same coating, to comply with SMACNA HVAC DCS.

Part 3 - EXECUTION

3.1 EXAMINATION

A. Verify that materials and accessories can be installed in accordance with Contract Documents and material manufacturers' recommendations.

B. Verify, by inspecting product labeling, submittal data, and/or certifications which may accompany the shipments, that materials and accessories to be installed on the project comply with applicable specifications and standards and meet specified thermal and physical properties.

C. Before starting work under this section, carefully inspect the site and installed work of other trades and verify that such work is complete to the point where installation of materials and accessories under this section can begin.

3.2 Safety Precautions

A. Insulation contractor's employees shall be properly protected during installation of insulation. Protection shall include proper attire when handling and applying insulation materials, and shall include, but not be limited to, disposable dust respirators, gloves, hard hats, and eye protection.

3.3 INSTALLATION

A. Completely cover duct designated to receive duct liner. Neatly butt transverse joints. Install the black mat faced surface of the duct liner so it is exposed to the airstream.
B. Complying with requirements of ASTM C916, adhere duct liner to the sheet metal with 90% coverage of adhesive.
C. In addition to the adhesive, secure duct liner with mechanical fasteners, either weld-secured or impact-driven, which shall be the correct length for the specified duct liner thickness and not compress the duct liner insulation more than 1/8" (3mm). Adhesive bonded pins are not permitted due to long-term adhesive aging characteristics.
D. Space mechanical fasteners in accordance with SMACNA HVAC DCS. Maximum spacing for mechanical fasteners shall be as follows:
    1. Velocity = 0 to 2,500 feet per minute (0 to 12.8 m/s):
        a. From transverse end of liner: 3 in (75mm)
        b. Across width of duct: 12 in (300mm) O.C.
        c. From corners of duct: 4 in (100mm)
        d. Along length of duct: 18 in (450mm) O.C.
    2. Velocity = 2,501 to 5,000 feet per minute (12.8 to 25.4 m/s):
        a. From transverse end of liner: 3 in (75mm)
        b. Across width of duct: 6 in (150mm) O.C.
        c. From corners of duct: 4 in (100mm)
        d. Along length of duct: 16 in (400mm) O.C.
E. When air velocities exceed 4,000 fpm (20.3 m/s), apply galvanized sheet metal nosing to leading edges of duct liner.
F. Duct Liner: Cut duct liner to ensure overlapped and compressed longitudinal corner joints.
G. Duct Liner Board: Cut duct liner board to ensure tight and overlapped corner joints. Support the top pieces of liner board at the edges by the side pieces.
H. Installation of two layers of duct liner to meet a specified liner thickness is not recommended. If the specification forces use of multiple layers, the following additional steps shall be taken:
    1. Adhere bottom layer of duct liner in normal manner.
    2. Adhere top layer of duct liner to bottom layer using a minimum of 90% adhesive coverage.
    3. Treat the leading edges of the duct liner with metal nosings to prevent separation of the two layers.
    4. Use mechanical fasteners of the proper length for the double layer.

3.4 FIELD QUALITY ASSURANCE

A. Upon completion of insulation work and before operation is to commence, visually inspect the work and verify that it has been correctly installed.
B. Open all system dampers and turn on fans to blow all scraps and other loose pieces of material out of the duct system. Allow for a means of removal of such material.
C. Check the duct system to ensure that there are no air leaks through joints.

3.5 PROTECTION

A. Replace damaged insulation, which cannot be satisfactorily repaired, including insulation with duct liner damage and moisture-saturated insulation.
B. The insulation contractor shall advise the general and/or the mechanical contractor as to requirements for protection of the insulation work during the remainder of the construction period, to avoid damage and deterioration of the finished insulation work.