



INNOVATIONS FOR LIVING®

# QuietR® Rotary Duct Liner

## Product Data Sheet



### Availability and Thermal Performance

QuietR® Rotary Duct Liner is available in the following combinations of thicknesses and types.

Thickness		R-Value		Roll Length	
in	mm	(hr•ft²•°F)/Btu	(m²•°C)/W	ft	m
½	13	2.2	0.38	100	31
1	25	4.2	0.74	100	31
1½	38	6.3	1.11	50	15
2	51	8.0	1.41	50	15

### Uses

QuietR® Rotary Duct Liner enhances indoor environmental quality by absorbing noise within sheet metal ducts, and contributes to indoor comfort by lowering heat loss or gain through duct walls.

### Application Recommendations

All portions of duct designated to receive QuietR® Rotary Duct Liner shall be completely covered with duct liner, adhered to the sheet metal with 90% coverage of adhesive complying with ASTM C 916. Transverse joints shall be neatly butted and there shall be no interruptions or gaps. All transverse joints shall be edge-coated. Metal nosing on leading edges must be used where duct liner is preceded by unlined metal, and on all upstream edges when velocity exceeds 6,000 fpm (20.3 m/s). The black mat faced surface of the duct liner shall face the airstream.

QuietR® Rotary Duct Liner shall also be secured with mechanical fasteners, either impact-driven or weld-secured, which shall compress the duct liner sufficiently to hold it firmly in place. For fastener spacing, see Figure 1.

### Typical Physical Properties

Property	Test Method	Value	
Operating Temperature	ASTM C 411	250°F (121°C)	
Maximum Air Velocity	UL 181 Erosion Test ASTM C 1071	6,000 fpm (30.5 m/sec)	
Water Vapor Sorption (by weight)	ASTM C 1104	<3% at 120°F (49°C), 95% R.H.	
Fungi Resistance	ASTM C 1338	Meets requirements	
Fungi Resistance	ASTM G 21	Meets requirements	
Bacteria Resistance	ASTM G 22	Meets requirements	
Corrosiveness	ASTM C 665 (Corrosiveness Test)	Will not cause corrosion greater than caused by sterile cotton on aluminum or steel*	
Thermal Conductivity k at 75°F (λ at 24°C mean)	ASTM C 518	Btu•in/hr•ft²•°F	W/m•°C
Type 200		0.23	0.034
R-4.2		0.24	0.035
R-6.3		0.24	0.035
R-8		0.24	0.035
Surface Burning Characteristics	ASTM E 84, UL 723, CAN/ULC S102	Flame Spread	25
		Smoke Developed	50

Duct Liner shall be cut to assure overlapped and compressed longitudinal corner joints. For details, refer to NAIMA Publication AH124, Fibrous Glass Duct Liner Standard.

Minor damage and small tears may be repaired by coating with adhesive.

After installation, and prior to occupancy, blow out duct system to remove any cutting scraps or foreign material remaining in the duct.

Installing two layers of material to meet a specific liner thickness is not recommended. If the specification forces the use of multiple layers, the following steps must be taken:

1. Adhere bottom layer of duct liner to duct in normal manner.
2. Adhere top layer to bottom layer of liner using a minimum of 90% adhesive coverage.
3. Treat all leading edges with metal nosings to prevent separation of the two layers.
4. Use mechanical fasteners of the proper length for double layer.

### Specification Compliance

- ASTM C 1071, Type I, Flexible (replaces obsolete Federal Specification HH-I-545B.)
- NFPA 90A/90B
- ICC Compliant
- California Title 24



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## Product Data Sheet

- SMACNA Application Standard for Duct Liners
- NAIMA Fibrous Glass Duct Liner Installation Standard
- Conforms to ASHRAE 62-2001

### Application Limitations

Use of QuietR® Rotary Duct Liner is not recommended for the following applications:

- With wood or coal fired equipment, or equipment of any type which does not include automatic maximum temperature controls and where operating temperatures of 250°F (121°C) may be exceeded.
- In kitchen or fume exhaust ducts, or ducts conveying solids or corrosive gases
- In any application where the duct liner may come in direct contact with liquid water (such as cooling coils, humidifiers, and evaporative coolers) unless protected from the water source.
- Inside fire damper sleeves.
- Immediately adjacent to high temperature heating coils without radiation protection.

### Acoustic Performance

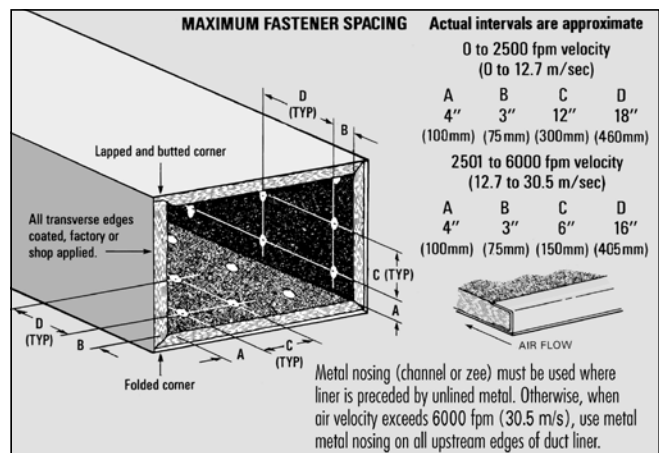
Tested Values - QuietR® Duct Liner							
Sound absorption coefficients at octave band center frequencies (Hz)							
Thickness in (mm)	125	250	500	1000	2000	4000	NRC
½ (13)	0.04	0.12	0.39	0.64	0.78	0.74	0.50
1 (25)	0.05	0.30	0.60	0.87	0.98	1.05	0.70
1½ (38)	0.05	0.47	0.85	1.01	1.01	1.01	0.85
2 (51)	0.12	0.66	1.04	1.08	1.04	1.07	0.95

These data were collected using a limited sample size and are not absolute values. Reasonable tolerances must therefore be applied. All tests were conducted in accordance with ASTM C 423, Mounting A (material placed against a solid backing such as a block wall). For more information, call your Owens Corning Representative.

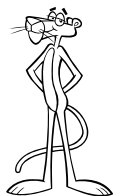
Insertion Loss, dB per ft of Lined Duct													
P/A, ft/ft <sup>2</sup>	1" Liner						2" Liner						
	Octave band center frequencies, Hz						Octave band center frequencies, Hz						
	125	250	500	1000	2000	4000	125	250	500	1000	2000	4000	
8	0.6	1.5	2.7	5.8	7.4	4.3	0.8	2.9	4.9	7.2	7.4	4.3	
6	0.5	1.2	2.3	5.0	5.8	3.6	0.6	2.3	4.2	6.2	5.8	3.6	
4	0.4	0.8	1.9	4.0	4.1	2.8	0.5	1.6	3.5	5.0	4.1	2.8	
2	0.2	0.5	1.4	2.8	2.2	1.8	0.3	0.8	2.3	3.3	2.0	1.7	
1	0.1	0.1	1.0	2.0	1.2	1.2	0.2	0.5	1.8	2.3	1.1	1.1	

Duct Liner Insertion Loss – Data extracted from ASHRAE Handbook, HVAC Applications, Chapter 43, 1999  
P/A = duct perimeter, ft/duct cross sectional area (ft<sup>2</sup>). Example: 12" x 12", P/A = 4 (1/ft). For more information, call your Owens Corning Representative.

Figure 1



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## **SECTION 15082**

### **Sheet Metal Ducts – Acoustical Lining Insulation Commercial/Residential Duct Systems**

#### **PART 1.00 - GENERAL**

##### **1.01 Scope**

A. The work covered by this specification consists of furnishing all labor, equipment, materials and accessories, and performing all operations required, for correct fabrication and installation of fibrous glass duct liner in sheet metal ducts for commercial or residential air duct systems in accordance with applicable project drawings and specifications, subject to terms and conditions of the contract:

1. All 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).

B. The finished duct system shall meet the requirements of NFPA 90A and 90B.

C. Dimensions shown on the plans are finished inside dimensions.

D. Fabrication and installation shall conform to manufacturer's recommendations and to the requirements of the latest edition of North American Insulation Manufacturers Association (NAIMA) Fibrous Glass Duct Liner Standards, hereinafter referred to as NAIMA FGDLs, and/or Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Standard, HVAC Duct Construction Standards – Metal and Flexible, hereinafter referred to as SMACNA HVAC DCS.

##### **1.02 References**

A. Duct liner insulation materials shall meet the requirements of the following:

1. American Society for Testing and Materials specifications:

a. ASTM C 1071, Standard Specification for Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material).

b. ASTM G 21, Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi (fungi resistance section only).

c. ASTM G 22, Practice for Determining Resistance of Plastics to Bacteria (bacteria resistance section only).

##### **1.03 Delivery and Storage of Materials**

A. Deliver all materials and/or fabricated, insulated duct sections and fittings to the job site and store in a safe, dry place.

B. Use all means necessary at the job site to protect materials from dust, dirt, moisture and physical abuse before and during installation.

#### **PART 2.00 - PRODUCTS**

##### **2.01 Insulated Duct System**

A. All supply ducts, return ducts and related fittings shall be insulated with one of the following as designated on project plans and specifications:

1. Owens Corning QuietR<sup>®</sup> Textile Duct Liner, for service at internal air velocities not to exceed 6,000 fpm (30.5 m/s):

a. Type 150, 1", 1-1/2" or 2" (25mm, 38mm or 51mm) thick.

b. Type 200, 1/2", 1", 1-1/2" or 2" (13mm, 25mm, 38mm or 51mm) thick.

c. Type 300, 1/2" or 1" (13mm or 25mm) thick.

The duct liner shall have a black pigmented coating on the airstream side to resist damage during installation and in service. Edges shall be factory coated with the same black pigmented coating to comply with SMACNA HVAC DCS.

2. Owens Corning QuietR<sup>®</sup> Rotary Duct Liner, for service at internal air velocities not to exceed 6,000 fpm (30.5 m/s):

a. Type 200, 1/2" (13mm) thick.

b. Type R-4.2, 1" (25mm) thick.

c. Type R-6, 1-1/2" (38mm) thick.

d. Type R-8, 2" (51mm) thick.

The duct liner shall have a black pigmented coating on the airstream side to resist damage during installation and in service. Edges shall be factory coated with the same black pigmented coating to comply with SMACNA HVAC DCS.

3. Owens Corning Quiet® Duct Liner Board, for service at internal air velocities not to exceed 6,000 fpm (30.5 m/s):

a. 3.0 pcf (48 kg/m<sup>3</sup>) density, 1-1/2" or 2" (38mm or 51mm) thick.

The duct liner shall have a black pigmented mat on the airstream side to resist damage during installation and in service. Edges shall be factory coated with black pigmented coating to comply with SMACNA HVAC DCS requirements.

### **PART 3.00 - EXECUTION**

#### **3.01 Inspection**

A. Verify that the duct liner product may be installed in accordance with project drawings, operating performance parameters and limitations, and NAIMA FGDLs or SMACNA HVAC DCS.

#### **3.02 Insulation of Straight Duct and Fittings**

A. All portions of duct designated to receive duct liner shall be completely covered with duct liner. Transverse joints shall be neatly butted and there shall be no interruptions or gaps. The black pigmented or mat faced surface of the duct liner shall face the airstream.

B. Duct liner shall be adhered to the sheet metal with 90% coverage of adhesive complying with requirements of ASTM C 916. All exposed leading edges and transverse joints shall be factory coated or coated with adhesive during fabrication.

C. Duct liner shall be additionally secured with mechanical fasteners, either weld-secured or impact-driven, which shall compress the duct liner sufficiently to hold it firmly in place. Adhesive bonded pins are not permitted due to long-term adhesive aging characteristics.

Spacing of mechanical fasteners with respect to duct liner interior width shall be in accordance with SMACNA HVAC DCS. Maximum spacing for mechanical fasteners shall be as follows:

Velocity = 0 to 2,500 feet per minute (0 to 12.8 m/s):

From transverse end of liner        3" (75mm)

Across width of duct        12" (300mm) O.C.

From corners of duct        4" (100mm)

Along length of duct        18" (450mm) O.C.

Velocity = 2,501 to 5,000 feet per minute

(12.8 to 25.4 m/s):

From transverse end of liner        3" (75mm)

Across width of duct        6" (150mm) O.C.

From corners of duct        4" (100mm)

Along length of duct        16" (400mm) O.C.

D. When air velocities exceed 4,000 fpm (20.3 m/s), galvanized sheet metal nosing shall be applied to all leading edges of duct liner.

E. QuietR® Duct Liner products shall be cut to assure overlapped and compressed longitudinal corner joints.

F. Quiet R® Duct Liner board shall be cut to assure tight, over-lapped corner joints. The top pieces of liner board shall be supported at the edges by the side pieces.

G. 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.

#### **3.03 Inspection**

A. Upon completion of installation of duct liner and before operation is to commence, visually inspect the system and verify that the duct liner insulation 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.

### **3.04 Safety Precautions**

A. Contractor's employees shall be properly protected during installation of all 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.

B. The contractor shall conduct all job site operations in compliance with applicable provisions of the Occupational Safety and Health Act, as well as with all state and/or local safety and health codes and regulations that may apply to the work.