

## **Rigid Plenum Liner**

# Rigid Plenum Liner

## Description

Knauf Rigid Plenum Liner is a heavy-density fiber glass board insulation made from inorganic glass fibers bonded by a thermosetting resin. Its base board is amber with a black top layer of fiber glass. A black polymer overspray is applied to the airstream side for a smooth, tough finish.

## Application

Knauf Rigid Plenum Liner is specifically designed as an interior insulation material for heating, ventilating and air conditioning plenums and sheet metal ducts. It offers an optimum combination of efficient sound absorption, low thermal conductivity and minimal air surface friction.

## Features

- Low thermal conductivity.
- Fire-resistant, non-corrosive.
- Tough and resilient.

## Benefits

- Energy conservation.
- Better temperature control.
- Lower operating costs.
- Greatly reduces noise from fans and mechanical equipment as well as cross-talk and air movement.
- Withstands damage from normal handling and shop abuse.
- If necessary, can be cleaned in accordance with NAIMA's "Cleaning Fibrous Glass Insulated Air Duct Systems Recommended Practices."

## Specification Compliance

### In U.S.:

- ASTM C 1071; Type II
- ASTM D 5116
- ASTM G 21, G 22
- GREENGUARD Environmental Institute™
- California Title 24
- NFPA 90A and 90B
- State of Alaska IAQ Specifications
- State of Washington IAQ Specifications

### In Canada:

- CAN/ULC S102-M88
- CAN/CGSB 51.11-92

## Technical Data

### Surface Burning Characteristics

- UL/ULC listed.
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, CAN/ULC S102-M88, NFPA 255 and UL 723.

### Temperature Range (ASTM C 411)

- Up to 250°F (121°C).

### Air Velocity (ASTM C 1071)

- Maximum 5000 fpm (1524 mpm).
- Tested to 12,500 fpm (3810 mpm).

### Water Vapor Sorption (ASTM C 1104)

- Less than 3% by weight.

### Microbial Growth (ASTM C 1338, G 21, G 22)

- Does not promote or support the growth of mold, fungi or bacteria.

## Application and Specification

### Guidelines

#### Storage

Inside storage is recommended. Protect stored Rigid Plenum Liner from water damage or abuse. If stored outside, stack cartons on pallets and cover adequately to prevent moisture infiltration.

#### Fabrication and Application

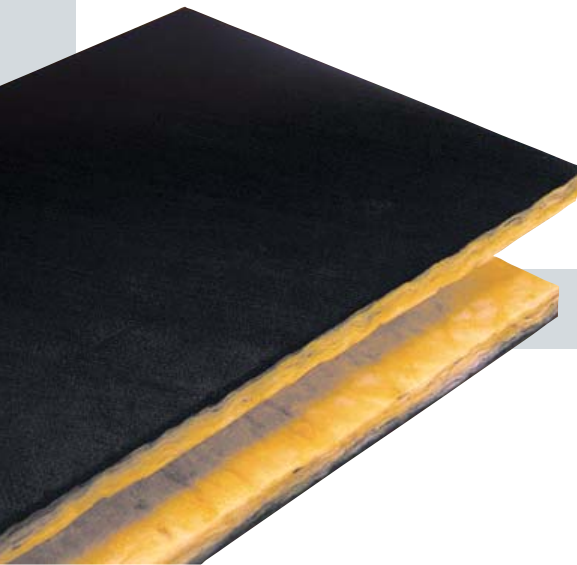
- Install Knauf Rigid Plenum Liner in metal duct and plenums operating at 250°F (121°C) service

temperature or less and velocities of 5000 fpm (1524 mpm) or less.

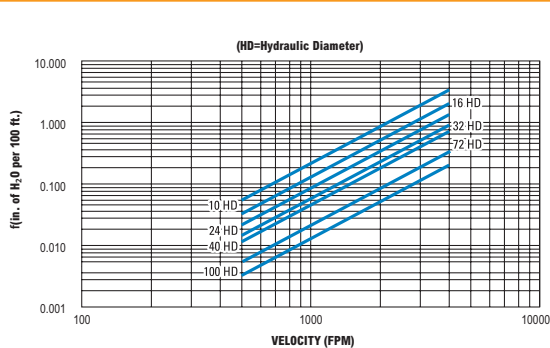
- Liner shall be applied with the treated surface facing toward the air stream.
- Mechanical fasteners shall not compress the liner more than 1/8" (3.2 mm) and shall be installed perpendicular to the airstream surface. All fasteners must meet "Standard for Mechanical Fasteners-MF-1-1975."
- Adhesives which conform to ASTM C 916 shall be applied to the sheet metal with at least 90% coverage.
- All internal duct areas designated to be lined shall be completely covered with liner. Transverse joints shall be firmly butted together with no gaps, and coated with adhesive. All exposed leading edges shall be coated with adhesive.
- Mechanical fasteners shall be used to secure the rigid plenum liner and spaced in accordance with the chart and diagram to the right.
- Corner joints shall be overlapped so no gaps are present. Top pieces shall be supported by side pieces.
- All longitudinal joints shall be coated with adhesive conforming to ASTM C 916 at velocities over 2500 fpm (762 mpm).
- All damaged areas to the airstream surface shall be repaired with an adhesive that conforms to ASTM C 916.

## Fiber Glass and Mold

Fiber glass insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated with organic materials. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold it must be discarded. If the material is wet but shows no evidence of mold, it should be dried rapidly and thoroughly. If it shows signs of facing degradation from wetting, it should be replaced. Air handling insulation used in the air stream must be discarded if exposed to water.



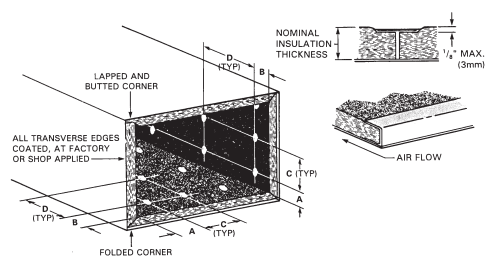
### Friction Loss (Inches of water per 100')



FPM	Hydraulic Diameter						
Velocity	10"	16"	24"	32"	40"	72"	100"
500	.047	.026	.016	.011	.008	.004	.003
600	.066	.037	.022	.016	.012	.006	.004
700	.088	.049	.030	.021	.016	.008	.005
800	.113	.063	.038	.027	.020	.010	.007
900	.142	.079	.048	.034	.026	.013	.008
1000	.173	.096	.059	.041	.031	.015	.010
2000	.657	.366	.222	.157	.119	.059	.040
3000	1.449	.808	.491	.345	.263	.130	.087
4000	2.548	1.421	.863	.607	.463	.228	.154
5000	3.954	2.206	1.339	.943	.719	.354	.239

### Mechanical Fastener Location

Velocity/fpm (meters/second)	0-2500 (0-12.7)	2501-5000 (12.7-25.4)
A From corners of duct	4" (102 mm)	4" (102 mm)
B From transverse end of duct liner	3" (76 mm)	3" (76 mm)
C Across width of duct, on centers (min. 1/side)	12" (305 mm)	12" (305 mm)
D Across length of duct, on centers (min. 1/side)	18" (457 mm)	18" (457 mm)



### Sound Absorption Coefficients (ASTM C 423, Type A Mounting)

Product	<sup>1</sup> /43 Octave Band Center Frequency (cycles/sec.)						
	125	250	500	1000	2000	4000	NRC
3.0 PCF 1" (48 kg/m <sup>3</sup> 25 mm)	.13	.24	.56	.83	.92	.98	.65
3.0 PCF 1.5" (48 kg/m <sup>3</sup> 38 mm)	.19	.41	.89	1.02	1.03	1.04	.85
3.0 PCF 2" (48 kg/m <sup>3</sup> 51 mm)	.33	.67	1.07	1.07	1.03	1.06	.95

### Thermal Conductance "C"<sup>1</sup> and Resistance "R"<sup>2</sup> (ASTM C 177)

Product	Mean Temperature 75°F (24°C)	
	Conductance "C"	Resistance "R"
3.0 PCF 1" (48 kg/m <sup>3</sup> 25 mm)	.23 (1.31)	4.3 (.76)
3.0 PCF 1.5" (48 kg/m <sup>3</sup> 38 mm)	.15 (.85)	6.5 (1.15)
3.0 PCF 2" (48 kg/m <sup>3</sup> 51 mm)	.11 (.62)	8.7 (1.53)

"C" Units:  $\frac{\text{BTU}}{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}} \left( \frac{\text{W}}{\text{m}^2 \cdot ^\circ\text{C}} \right)$       "R" Units:  $\frac{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}}{\text{BTU}} \left( \frac{\text{m}^2 \cdot ^\circ\text{C}}{\text{W}} \right)$

<sup>1</sup>The lower the value, the better the performance. <sup>2</sup>The higher the value, the better the performance.

For more information call (800) 825-4434, ext. 8283

or visit us online at [www.KnaufInsulation.com](http://www.KnaufInsulation.com)

# KNAUF INSULATION



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## Forms Available

Product		Width	Length
<b>Standard Sizes</b>			
3.0 PCF	1" (48 kg/m <sup>3</sup> 25 mm)	24" (610 mm)	48" (1219 mm)
3.0 PCF	1½" (48 kg/m <sup>3</sup> 38 mm)		
3.0 PCF	2" (48 kg/m <sup>3</sup> 51 mm)		
<b>Made-to-Order Sizes*</b>			
3.0 PCF	1" (48 kg/m <sup>3</sup> 25 mm)*	24" (610 mm)	36" (914 mm)
3.0 PCF	1½" (48 kg/m <sup>3</sup> 38 mm)*		72" (1829 mm)
3.0 PCF	2" (48 kg/m <sup>3</sup> 51 mm)*	48" (1219 mm)	96" (2438 mm)
			120" (3048 mm)

\*Consult price sheet for minimum order quantities. Pallets available on made-to-order basis.

## Notes

The chemical and physical properties of Knauf Rigid Plenum Liner represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing and testing variations. The data is supplied as a technical service and is subject to change without notice. References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

Check with your Knauf sales representative to assure information is current.



Knauf Rigid Plenum Liner products are certified for indoor air quality by The GREENGUARD Environmental Institute™, a global, non-profit organization, providing the world's leading guide to certified low emitting interior products and building materials through independent, indoor air quality laboratory testing. [www.greenguard.org](http://www.greenguard.org)



## LEED Eligible Product

Use of this product may help building projects meet green building standards as set by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. Credit 4.1 - 4.2 Recycled Content  
Credit 5.1 - 5.2 Regional Materials