

Atmosphere™ Rigid Plenum Liner with ECOSE® Technology

Submittal Date _____

KNAUF INSULATION

DESCRIPTION

Knauf Insulation Atmosphere™ Rigid Plenum Liner with ECOSE Technology is a heavy-density mat-faced glass mineral wool board insulation bonded with ECOSE Technology. Its base board is brown with a black mat facing to give the airstream a smooth, tough surface, that resists damage during installation and operation.

ECOSE® TECHNOLOGY

ECOSE Technology is a revolutionary binder chemistry that enhances the sustainability of our products. The “binder” is the bond that holds our glass mineral wool product together and gives the product its shape and brown color. ECOSE Technology is a plant-based, sustainable chemistry that replaces the phenol/formaldehyde (PF) binder traditionally used in glass mineral wool products. Products using ECOSE Technology are formaldehyde-free and have reduced global warming potential when compared to our products of the past.

APPLICATION

Knauf Insulation Atmosphere Rigid Plenum Liner with ECOSE Technology 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.

PRODUCT FEATURES

- Low thermal conductivity
- Fire-resistant, non-corrosive
- Tough and resilient
- Airstream surface mat facing is treated with an EPA-registered anti-microbial agent to aid in the prevention of fungal and bacterial growth.

SUSTAINABILITY

Knauf Insulation’s products used for thermal insulating purposes recover the energy that it took to make them in just hours or days, depending on the application. Once installed, the product continues to save energy and reduce carbon generation as long as it is in place.

Glass mineral wool insulation with ECOSE Technology contains three key ingredients:

- Recycled glass content, verified every 6 months by UL Environment
- Sand, one of the world’s most abundant resources
- Our green chemistry initiative ECOSE Technology, which is validated to be formaldehyde-free

SPECIFICATION COMPLIANCE

In U.S.

- ASTM C1071; Type II
- ASTM G21
- California Title 24
- NFPA 90A and 90B

In Canada

- CAN/ULC S102

INDOOR AIR QUALITY

- UL Environment
 - UL/ULC Classified
 - GREENGUARD Certified
 - GREENGUARD Gold certified
 - Validated to be formaldehyde free
- Does not contain polybrominated diphenyl ethers (PBDE) such as Penta-BDE, Octa-BDE, or Deca-BDE
- Tested and certified to meet all requirements of EUCEB

APPLICATION AND SPECIFICATION GUIDELINES

Storage

- Inside storage is recommended. Protect stored Atmosphere 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 Insulation Atmosphere Rigid Plenum Liner in metal duct and plenums operating at 250° F (121° C) service temperature or less and velocities of 5,000 ft./min. (25.4 m/sec.) 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 C916 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 on the next page.

- 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 C916 at velocities over 2,500 ft./min. (12.7 m/sec.).
- All damaged areas to the airstream surface shall be repaired with an adhesive that conforms to ASTM C916.

CERTIFICATIONS

- UL Environment
 - UL/ULC Classified
 - GREENGUARD
 - GREENGUARD Gold
 - Validated to be formaldehyde free
- EUCEB
- USGBC LEED

GLASS MINERAL WOOL AND MOLD

Glass mineral wool insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated. 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.

NOTES

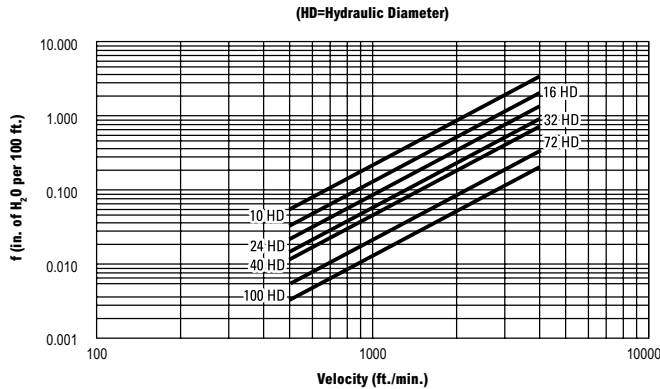
The chemical and physical properties of Knauf Insulation Atmosphere Rigid Plenum Liner with ECOSE Technology represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing and testing variations. The data is supplied as a technical service 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.

When condensation is permitted to occur between nested Rigid Plenum Liner and galvanized steel panels, discoloration of the metal may occur.

Check with your Knauf Insulation Territory Manager to ensure information is current.

with **ECOSE**[®]
TECHNOLOGY

Friction Loss | Inches of water per 100'



ft./min.	Hydraulic Diameter						
Velocity	10"	16"	24"	32"	40"	72"	100"
500	0.056	0.031	0.018	0.013	0.010	0.005	0.003
600	0.080	0.044	0.026	0.018	0.014	0.007	0.004
700	0.108	0.059	0.035	0.025	0.019	0.009	0.006
800	0.140	0.077	0.046	0.032	0.024	0.012	0.008
900	0.176	0.096	0.058	0.040	0.031	0.015	0.010
1000	0.216	0.118	0.071	0.050	0.038	0.018	0.012
2000	0.845	0.463	0.278	0.194	0.147	0.071	0.048
3000	1.887	1.034	0.620	0.432	0.328	0.159	0.106
4000	3.340	1.831	1.097	0.765	0.580	0.281	0.188
5000	5.206	2.854	1.710	1.193	0.904	0.438	0.293

Sound Absorption Coefficients | ASTM C423, Type A Mounting

		Octave Band Center Frequency (cycles/sec.)						
Product		125	250	500	1000	2000	4000	NRC
3.0 PCF (48 kg/m ³)	1" (25 mm)	0.13	0.24	0.56	0.83	0.92	0.98	0.65
	1½" (38 mm)	0.19	0.41	0.89	1.02	1.03	1.04	0.85
	2" (51 mm)	0.33	0.67	1.07	1.07	1.03	1.06	0.95
4.25 PCF (68 kg/m ³)	1" (25 mm)	0.06	0.24	0.69	0.99	1.05	1.02	0.75

Technical Data

Property (Unit)	Test	Performance
Corrosiveness	ASTM C665	Does not accelerate corrosion of steel
Corrosion	ASTM C1617	Pass
Air Velocity	ASTM C1071	Max. 5,000 ft./min. (25.4 m/sec.) Tested to 12,500 ft./min. (63.5 m/sec.)
Maximum Service Temperature	ASTM C411	250° F (121° C) Max. thickness 3"
Mold Growth	ASTM C1338, ASTM G21	Pass
Water Vapor Sorption (by weight)	ASTM C1104	5% or less
Surface Burning Characteristics (flame spread/smoke developed)	ASTM E84, NFPA 255, CAN/ULC S102, UL 723	25/50

Thermal Conductivity "C" and Resistance "R" | ASTM C177

		Mean Temperature 75° F (24° C)	
Product		Conductance "C"	Resistance "R"
3.0 PCF (48 kg/m ³)	1" (25 mm)	0.23 (1.31)	4.3 (0.76)
	1½" (38 mm)	0.15 (0.85)	6.5 (1.15)
	2" (51 mm)	0.11 (0.62)	8.7 (1.53)
4.25 PCF (68 kg/m ³)	1" (25 mm)	0.225 (1.56)	4.4 (0.78)
	1½" (38 mm)	0.15 (0.85)	6.6 (1.16)
	2" (51 mm)	0.11 (0.62)	8.9 (1.56)

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

¹The lower the value, the better the performance. ²The higher the value, the better the performance.

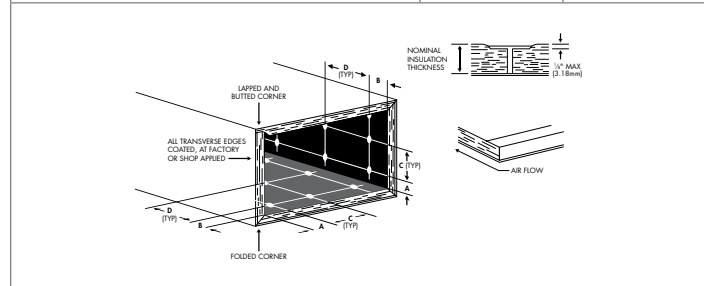
Forms Available*

Thickness	Density	Width	Length
1"	3.0 PCF (48 kg/m ³)	24" (610 mm), 48" (1219 mm)	48" (1219 mm)
1½"			96" (2438 mm)
2"			36" (914 mm)
			72" (1829 mm)
			96" (2438 mm)

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

Mechanical Fastener Location

Velocity per ft./min. (m/sec.)	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)



This product is covered by one or more U.S. and/or other patents. See patent www.knaufinsulation.us/patents.