

Eclipse® Air Duct Board

Submittal Date _____

KNAUF INSULATION

DESCRIPTION

Knauf Insulation Eclipse Air Duct Board is a rigid, fiberglass board faced on one side with a foil-scrim-kraft (FSK) vapor retarder and with a lightweight black glass mat on the airstream surface. It is used to fabricate rectangular or Max¹⁰ air duct systems. It comes with two stiffness ratings: EI-475 and EI-800. Both types are available with butt edge or factory molded male-female shiplap edges. The airstream surface of Knauf Insulation Eclipse Air Duct Board is treated with an EPA registered, anti-microbial agent that prevents growth of mold, fungus or bacteria in accordance with UL 181, G21 and G22.

APPLICATION

Knauf Insulation Eclipse Air Duct Board is designed for commercial and residential air handling installations for cooling, heating or dual-temperature service where good temperature control and noise absorption are required.

PRODUCT FEATURES

- Low thermal conductivity of 0.23 at 75° F (24° C) mean temperature
- Low installed cost insulated duct system
- Excellent acoustical characteristics
- Non-woven all-glass mat facing on airstream surface
- Assured insulation thickness, shiplap joints and FSK vapor retarder
- If necessary, can be cleaned in accordance with NAIMA's "Cleaning Fibrous Glass Insulated Air Duct Systems Recommended Practices."
- Knauf Insulation Eclipse Air Duct Board systems meet the fire and smoke safety regulations of most federal, state and local building codes.
- Fabrication in shop or on jobsite
- Dark black glass mat airstream surface
- One craft required to fabricate and install system
- Minimum capital investment for fabrication equipment
- Black mat facing ensures a smoother airstream surface for a cleaner cut and added durability
- Quiet, efficient air delivery
- Reduces noise generated by air turbulence and mechanical equipment
- Eliminates "booming" and "cracking" sounds caused by sheet metal duct contraction and expansion

SPECIFICATION COMPLIANCE

In U.S.

- ASTM C1136; Type II (FSK facing)
- ASTM G21, G22
- California Title 24
- Corps of Engineers Guide Specifications
- International Mechanical Code
- NFPA 90A and 90B
- UL 181; Class 1

In Canada

- CAN/ULC S102
- CAN/CGSB 51-GP-52M (facing)
- CAN/CGSB 51.10-92
- ULC Issue 869C; Class 1

APPLICATION AND SPECIFICATION GUIDELINES

Storage

- Protect stored duct board from water damage, construction damage and other abuse.
- If stored outside, proper protection from weather conditions should be provided.

Application

- Duct shall be fabricated and installed in strict accordance with NAIMA's "Fibrous Glass Duct Construction Standard," "Residential Standard," or "2" Fabrication Manual" in accordance with the conditions of UL 181 listing. Duct systems shall have all transverse joints, longitudinal seams and duct wall penetrations sealed using 3" (76 mm) wide glass fabric and mastic, 2" (51 mm) minimum width heat sealable tape or 2" (51 mm) minimum width pressure sensitive tape with acrylic adhesive. Rubber-based adhesives are not approved.
- Only UL 181-A listed and labeled products shall be used for closure systems. A listing of specific approved closure products is available from your local Knauf Insulation Territory Manager.
 - **Pressure Sensitive Tapes**
Only those tapes listed under and imprinted with designation UL 181-A-P and registered with UL.
 - **Heat Sealable Tapes**
Only those tapes listed under and imprinted with the designation UL 181 A-H and registered with UL.
 - **Mastics**
Mastic systems listed and registered with UL and carrying the designation UL 181 A-M used in conjunction with a 3" (76 mm) wide glass fabric.

PROCEDURES

Pressure Sensitive Tape

- All longitudinal and circumferential joints must be stapled with outward flaring, 1/2" (13 mm) minimum length staples 2" (51 mm) on centers.
- If necessary, follow the recommendations of the tape manufacturer for cleaning the surface to be taped.
- Center tape over staple flap and rub tape firmly in place immediately after application, using a plastic "squeegee" or similar tool, until the scrim reinforcement of the duct board facing can be clearly seen through the tape.
- A heat-sealing iron must be used to assure a good bond when installed below 50° F (10° C).

- Tape should not be applied to surface of duct board when temperature is below 32° F (0° C) due to the possibility of entrapping ice crystals which, upon melting, will cause tape to loosen. Heat duct board facing surface first to drive off moisture.

Heat Sealable Tape

- All longitudinal and circumferential joints must be stapled with outward flaring, 1/2" (13 mm) minimum length staples 2" (51 mm) on centers.
- If necessary, follow the recommendations of the tape manufacturer for cleaning the surface to be taped.
- Center tape over staple flap and seal down tape end with 500° F (260° C) iron. Do not use heat gun; both heat and pressure are required to effect a seal.
- Press down entire length of tape with iron using a smearing action to get a good bond. Be sure edges are sealed.
- Staples may be omitted when an automatic closure machine such as the Glassmaster Close-master is used. In this case, iron temperature must be set at 650° F (343° C) minimum. Continuous production may require periodic pauses to allow sealing iron temperature to recover to the 650° F (343° C) minimum.
- Allow joint to cool before stressing

Mastic and Glass Fabric

- All longitudinal and circumferential joints must be stapled with outward flaring, 1/2" (13 mm) minimum length staples 2" (51 mm) on centers.
- Brush approved mastic onto joint and embed 3" (76 mm) wide glass fabric in mastic.
- Brush second coat of mastic over glass fabric until mesh is completely filled.
- Follow mastic manufacturer's instructions on curing the mastic prior to subjecting the joint to stress.

Closure

If the closure system used is not one of the approved systems described above and if application is not in accordance with stated procedures, Knauf Insulation assumes no liability for duct system performance. Use of a non-UL registered and listed closure voids the UL 181 Class 1 rating as well as Knauf Insulation's product performance warranties.

Reinforcements

Duct sections shall be additionally reinforced where necessary, according to Knauf Insulation and NAIMA standards. Ductwork shall be supported as required on straight runs, at all turns and at transitions to maintain proper alignment. Hangers and supports shall be in strict accordance with Knauf Insulation and NAIMA standards.

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Submittal Sheet



FIBERGLASS AND MOLD

Fiberglass 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.

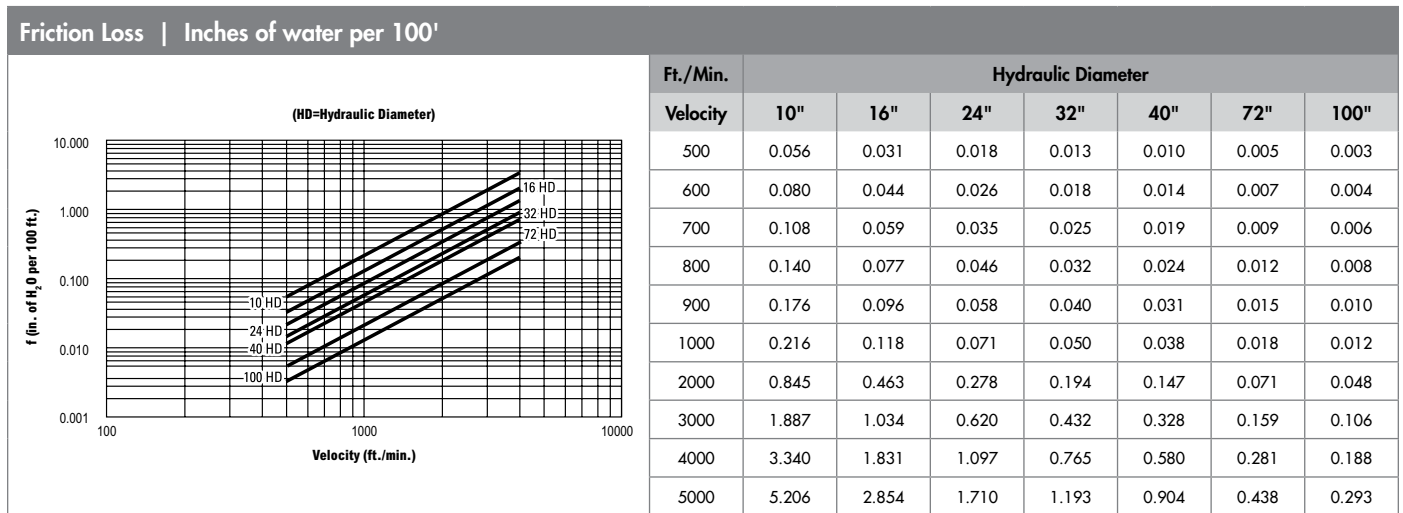
NOTES

When used in accordance with NAIMA's and Knauf Insulation's application instructions, the closure systems described herein meet UL 181 requirements, and the resulting system carries a Class 1 Air Duct rating. This submittal sheet is not intended to be a design or fabrication manual. For specific details and recommendations on fabrication, reinforcement, hanging and other details, refer to the latest edition of the NAIMA "Fibrous Glass Duct Construction Standard," "Residential Standard," or "2" Fabrication Manual." Application and installation procedure is at the discretion of and is the responsibility of the Design Engineer to meet specific job requirements.

The chemical and physical properties of Knauf Insulation Eclipse Air Duct Board represent 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 Insulation Territory Manager to ensure information is current.

Technical Data		
Property (Unit)	Test	Performance
Maximum Service Temperature	ASTM C411	250° F (121° C)
Water Vapor Permeance	ASTM E96	0.02 perms or less
Water Vapor Sorption (by weight)	ASTM C1104	Less than 5%
Flexural Rigidity	NAIMA AHS-100-74	Available in 2 stiffness values: EI-475 and EI-800; Flexural rigidity (EI) is the product of Young's modulus of elasticity (E) and moment of inertia (I)
Air Velocity	UL 181	Maximum 5,000 ft./min. (1,524 m/min.) Tested to 12,500 ft./min. (3,810 m/min.)
Internal Static Pressure	UL 181	Maximum ±2" water (498 pascals [Pa])
Microbial Growth	ASTM G21, UL 181	Pass, does not support the growth of fungi or bacteria
Surface Burning Characteristics (flame spread/smoke developed)	ASTM E84, NFPA 255, UL 723, CAN/ULC S102	25/50, UL/ULC listed



Recommended Maximum Duct Dimensions Without Reinforcement*						
Internal Pressure inches of water	EI-475-1"			EI-800-1"		
	0.5 (125)†	1.0 (249)†	2.0 (498)†	0.5 (125)†	1.0 (249)†	2.0 (498)†
Positive	36" (914 mm)	24" (610 mm)	15" (381 mm)	36" (914 mm)	24" (610 mm)	18" (457 mm)
Negative	30" (762 mm)	24" (610 mm)	15" (381 mm)	30" (762 mm)	24" (610 mm)	18" (457 mm)

*This table summarizes span/pressure limitations for unreinforced duct. For larger ducts, refer to NAIMA's "Fibrous Glass Duct Construction Standard," or Knauf Insulation's Air Duct Fabrication Manual. †(Pressure—Pascals [Pa])

Sound Absorption Coefficients ASTM C423, Type A Mounting							
Octave Band Center Frequency (Cycles/Sec.)							
Thickness	125	250	500	1000	2000	4000	NRC
1" (25 mm)	0.03	0.25	0.62	0.92	1.03	0.97	0.70
1.5" (38 mm)	0.02	0.44	0.96	1.17	1.16	1.12	0.95
2" (51 mm)	0.19	0.64	1.08	1.13	1.06	1.06	1.00

Forms Available				
Type	Size*	Edge	Pieces/Carton**	
EI-475	1" (25 mm)	48" x 96" (1219 mm x 2438 mm)	8	
EI-800		48" x 120" (1219 mm x 3048 mm)	6	
EI-800	1.5" (38 mm)	48" x 120" (1219 mm x 3048 mm)	4	
	2" (51 mm)	48" x 120" (1219 mm x 3048 mm)	3	

*Other lengths available on custom order basis. **Palletized packaging available on request.

Thermal Resistance R ASTM C518	
Mean Temperature 75° F (24° C)	
Thickness	R-Value (R.S.I.)
1" (25 mm)	4.3 (0.76)
1.5" (38 mm)	6.5 (1.14)
2" (51 mm)	8.7 (1.53)
"R" Units $\frac{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}}{\text{BTU}}$ $\left(\frac{\text{m}^2 \cdot ^\circ\text{C}}{\text{W}} \right)$	

Thermal Conductivity k ASTM C177	
Mean Temperature 75° F (24° C)	
k-Value	
EI-475 and EI-800	0.23 (.033)
"k" Units $\frac{\text{BTU} \cdot \text{in}}{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}}$ $\left(\frac{\text{W}}{\text{m}^2 \cdot ^\circ\text{C}} \right)$	