MANSON™ INSULATION

CONTRACTOR

JOB NAME

DATE

AKOUSTI-LINER™

Temperature Limit: 250° F (121° C)

DESCRIPTION

Akousti-Liner insulation is a flexible duct liner providing both thermal and acoustical insulation. It is manufactured from inorganic glass fibers bonded by a thermosetting binder. The airstream surface is faced with a black mat bonded to the fiberglass substrate. The encapsulant edge coating eliminates airstream flaring. The airstream surface mat facing is treated with an EPA-registered anti-microbial agent to aid in the prevention of fungal and bacterial growth.

SUSTAINABILITY

Manson Insulation products with ECOSE® Technology are made using our patented, bio-based binder - a smarter alternative to the phenol/formaldehyde (PF) binder traditionally used in fiberglass products. The bio-based binder holds our product together and gives the product its unique appearance.

Akousti-Liner is formaldehyde-free and made from sustainable resources, such as recycled glass and sand. And we're proud to be putting glass bottles back to work rather than into landfills. Our products are made with a minimum of 50% recycled glass—totaling an average of 26 million bottles each month.

APPLICATION

Manson Insulation Akousti-Liner insulation is a durable, flexible liner used extensively in flat and irregular shaped ductwork.

INSTALLATION

All duct liner shall be installed in accordance with the requirement of the NAIMA Fibrous Glass Duct Liner Standard or SMACNA HVAC Duct Construction Standard and the project specification. Liner shall be adhered with adhesive (complying with ASTM C916) and mechanical fasteners.

LIMITATION

Duct liner should be kept clean and dry during shipping, storage, installation and system operation. When condensation is permitted to occur between nested liner and galvanized steel panels, discoloration of the metal may occur.

INDOOR AIR QUALITY

- **asthma & allergy friendly®**
- Verified Healthier Air™
- UL Environment
  - 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
- EUCEB Certified

SPECIFICATION COMPLIANCE

- ASTM C1071; Type I
- NFPA 90A and NFPA 90B
- CAN/CGSB 51.11-92
- ASHRAE 62
- CAN/ULC S102
- ASTM G21 and G22

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FIBERGLASS AND MOLD

Fiberglass 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.

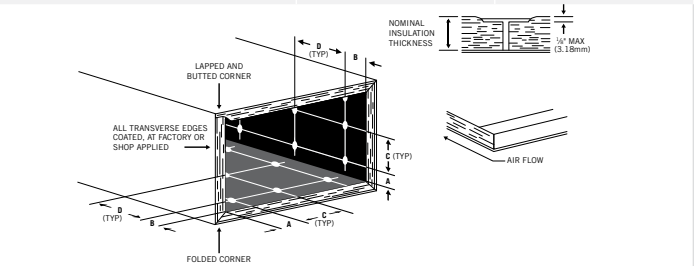
NOTES

The chemical and physical properties of this product represent average values determined in accordance with accepted test methods. The data is subject to normal manufacturing 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 Manson Insulation Area Manager to ensure information is current.

MECHANICAL FASTENER LOCATION

VELOCITY/FT./MIN. (M/SEC.)	0-255 (0-12.7)	2501-5000 (12.7-25.4)
A. From corners of duct	4" (102 mm)	4" (102 mm)
B. From transverse of duct	3" (76 mm)	3" (76 mm)
C. Across width of duct, on centers (min. 1/side)	12" (305 mm)	6" (152 mm)
D. Across length of duct, on centers (min. 1/side)	18" (457 mm)	16" (406 mm)



TECHNICAL DATA

PROPERTY (UNIT)	TEST	PERFORMANCE
Corrosiveness	ASTM C665	Does not accelerate corrosion of steel
Corrosion	ASMT C1617	Pass
Maximum Service Temperature	ASTM C411	250° F (121° C)
Maximum Air Velocity	ASTM C1071, UL 181 Erosion Test	Max. 6,000 ft./min. (30.5 m/sec.)
Water Vapor Sorption (by weight)	ASTM C1104	Less than 3%
Mold Growth	ASTM C1338, ASTM G21, ASTM G22	Pass
	UL 2824	Resistant to mold
Surface Burning Characteristics (flame spread/smoke developed)	ASTM E84, UL 723, CAN/ULC S102	UL/ULC Classified FHC 25/50

*Tested at 12,500 ft/ min per UL 181 - 2.5 times certified velocity rating

TECHNICAL DATA

DENSITY	THICKNESS	WIDTH	LENGTH
1.5 (PCF) (24 kg/m3)	1" (25 mm)	34" - 36"* (864 mm - 915 mm) 46" - 48" (1,168 mm - 1,219 mm) 56" - 72" (1,422 mm - 1,829 mm)	100' (30.48 m)
	1.5" (38 mm)		50' (15.24 m)
	2" (51 mm)		90' (27.43 m)
2.0 PCF (32 kg/m3)	0.5" (13 mm)		50' (15.24 m)
			100' (30.48 m)

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ACOUSTICAL PERFORMANCE | ASTM C423, TYPE A MOUNTING

DENSITY	THICKNESS	FREQUENCY						
		125	250	500	1000	2000	4000	NRC
1.5 PCF (24 kg/m³)	1" (25 mm)	0.18	0.28	0.73	0.85	0.91	0.90	0.70
	1½" (38 mm)	0.23	0.50	0.87	0.92	0.93	0.93	0.80
	2" (51 mm)	0.37	0.76	1.02	1.00	0.98	0.92	0.95
2.0 PCF (32 kg/m³)	½" (13 mm)	0.10	0.17	0.43	0.59	0.73	0.75	0.50
	1" (25 mm)	0.25	0.35	0.69	0.89	0.96	1.01	0.70

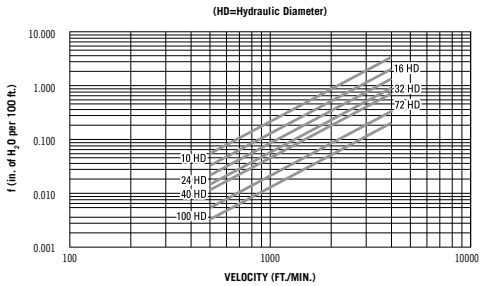
NOTE: ASHRAE Handbook for HVAC Applications – Sound and Vibration Control contains insertion loss values for lined sheet metal ducts.

THERMAL PERFORMANCE | ASTM C177
MEAN TEMPERATURE 75° F (24° C)

DENSITY	THICKNESS	C-VALUE[1]		R-VALUE[2]	
		BTU/ FT² · HR · °F	W/ M² · °C	FT² · HR · °F/ BTU	M² · °C/ W
1.5 PCF (24 kg/m³)	1" (25 mm)	0.24	1.42	4.2	0.74
	1½" (38 mm)	0.17	0.97	6.0	1.06
	2" (51 mm)	0.13	0.74	8.0	1.41
2.0 PCF (32 kg/m³)	½" (13 mm)	0.48	2.73	2.1	0.37
	1" (25 mm)	0.24	1.36	4.2	0.74

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

FRICTION LOSS (INCHES OF WATER PER 100')



FT./MIN.	HYDRAULIC DIAMETER						
VELOCITY	10"	16"	24"	32"	40"	72"	100"
500	0.054	0.030	0.018	0.012	0.009	0.005	0.003
600	0.077	0.042	0.025	0.018	0.013	0.007	0.004
700	0.104	0.057	0.034	0.024	0.018	0.009	0.006
800	0.134	0.074	0.044	0.031	0.023	0.011	0.008
900	0.169	0.093	0.056	0.039	0.029	0.014	0.010
1000	0.207	0.114	0.068	0.048	0.036	0.018	0.012
2000	0.806	0.443	0.266	0.186	0.141	0.069	0.046
3000	1.797	0.988	0.594	0.415	0.315	0.153	0.103
4000	3.179	1.748	1.050	0.734	0.557	0.271	0.181
5000	4.952	2.724	1.636	1.143	0.867	0.422	0.283

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APPLICATION & SPECIFICATION GUIDELINES

Storage

- Inside storage is recommended.

Fabrication and Application

- Fabricate in compliance with the latest edition of "NAIMA's Fibrous Glass Duct Liner Standard."
- Liner shall be folded and compressed in the corners of rectangular duct sections or shall be cut and fit to assure lapped, compressed joints. Longitudinal joints in duct liner should occur at the corners of ducts. However, duct size and standard duct liner product dimensions may make exposed longitudinal joints necessary. In such cases, the exposed joints shall be coated with adhesive and additionally secured with mechanical fasteners in accordance with NAIMA Fibrous Glass Duct Liner Standard. All damaged areas of the air stream surface shall be repaired with an adhesive which conforms to ASTM C916.
- Liner should be adhered to the duct with 90% minimum area coverage of an adhesive which conforms to ASTM C916.
- Mechanical fasteners should not compress the insulation more than ⅛" (3 mm), and shall be installed perpendicular to the duct surface. All fasteners should comply with the guidelines of NAIMA's "Fibrous Glass Duct Liner Standard and the Mechanical Fastener's Standard MF-1-1975."
- Metal nosings shall be securely installed over transversely oriented liner edges facing the airstream at fan discharge, at access doors and at any interval of lined duct preceded by unlined duct. In addition, where velocities exceed 4,000 ft./min. (20.3 m/sec.), metal nosing shall be used on upstream edges of liner at every transverse joint (See illustration)

Limitations

- Should not be used in systems operating at velocities exceeding 6,000 ft./min. (30.5 m/sec.) or at temperatures above 250° F (121° C).

MAINTAINED DUCT SYSTEMS ARE KEY

The best way to ensure that an HVAC system, whether bare metal or internally insulated, will continue to provide efficient, quiet air delivery, occupant comfort, and cost-effectiveness is by following a regular system operation and maintenance schedule. This, along with a high-efficiency filtration system, assures protection of both HVAC system components and building occupants. Maintenance procedures include inspection, detection, and remediation of proable sources of airborne contaminants and moisture.

One Knauf Drive, Shelbyville, IN 46176
Manufactured by Knauf Insulation