



## AK BLANKET™

Temperature Limit: 650°F (343°C)

### DESCRIPTION

AK Blanket is an amber blanket of glass fibers bonded with a thermosetting resin.

### APPLICATION

AK Blanket products are used as thermal and/or acoustical insulation in the appliance, equipment, industrial, commercial and marine markets.

### PACKAGING

AK Blanket products are rolled using a tight wound single compression method and wrapped in poly sheets and unitized in bundles of 4 rolls.

### 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.

### SPECIFICATION COMPLIANCE

#### ASTM C553

- Standard specification for mineral fiber board insulation
- Type I
- Type II

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Water Vapor Sorption (ASTM C1104)

- Less than 3% by weight when exposed to air at 120°F (49°C) and 95% humidity for 96 hours

#### Microbial Growth (ASTM C1338)

- Does not promote or support the growth of fungi or bacteria

#### Surface Burning Characteristics

- UL/ULC Classified
- Does not exceed 25 Flame Spread, 50 smoke
- Developed when tested in accordance with UL 723, ASTM E84

#### Odor (ASTM C1304)

- Not objectionable

#### Maximum Service Temperature (ASTM C411)

- Unfaced, up to 350°F (177°C)

**NOTES**

The chemical and physical properties of AK Blanket represent average values determined in accordance with accepted test methods. The data is subject to normal 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 material under actual fire conditions.

Check with your Manson Insulation Area Manager to assure information is current.

**SOUND ABSORPTION COEFFICIENTS**  
ASTM C423, TYPE A MOUNTING

		½ OCTAVE BAND CENTER FREQUENCY (CYCLES/SEC.)						
TYPE	THICKNESS	125	250	500	1000	2000	4000	NRC
1.5 PCF (24 kg/m³)	1" (25 mm)	0.03	0.28	0.56	0.82	0.90	0.94	0.65
	2" (51 mm)	0.38	0.89	1.08	1.14	1.11	1.08	1.05

**THERMAL CONDUCTIVITY**  
ASTM C518 @ 75°F MEAN TEMPERATURE

DENSITY	THERMAL CONDUCTIVITY	
	BTU-IN. FT³°F	M². °C/W
1.5 PCF (24 kg/m³)	0.24	0.035





## AK BOARD™

Temperature Limit: 450°F (232°C)

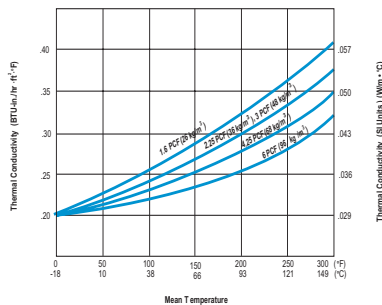
### DESCRIPTION

AK Board is a thermal and acoustical insulation product made from inorganic glass fibers preformed into boards bonded by a thermosetting resin. It is available plain or with factory applied FSK or All Service Jacket (ASJ) facings.

### APPLICATION

Manson Insulation AK Board is a versatile product for thermal and acoustical applications such as heating and air conditioning ducts, power and process equipment, boiler and stack installations, metal and masonry walls, wall and roof panel systems, curtain wall assemblies and cavity walls.

### THERMAL EFFICIENCY (ASTM C177)



### MEAN TEMPERATURE

	1.6 PCF		3.0 PCF		6.0 PCF	
	K	K (SI)	K	K (SI)	K	K (SI)
75°F (24°C)	0.24	0.035	0.23	0.033	0.22	0.032
100°F (38°C)	0.25	0.036	0.24	0.035	0.23	0.033
200°F (93°C)	0.33	0.048	0.29	0.042	0.27	0.039
300°F (149°C)	0.42	0.061	0.37	0.053	0.34	0.049

### SPECIFICATION COMPLIANCE

#### ASTM C612

- Standard specification for mineral fiber board insulation
- Type IA (1.6, 2.25, 3.0, 4.25, 6.0 PCF) (26, 36, 48, 68, 96 kg/m³)
- Type IB (3.0, 4.25, 6.0 PCF) (48, 68, 96 kg/m³)

#### ASTM C1136 (facings)

- FSK: Type II
- ASJ: Type I, II

#### California Title 24

#### City of New York

- MEA 324-83-M

#### Puncture Resistance (TAPPI Test T803) (Beach Units)

- FSK facings: 25
- ASJ facings: 50

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Temperature Range (ASTM C411)

- Operating temperatures from 0°F to 450°F (-18°C to 232°C)

#### Water Vapor Transmission (ASTM E96, Procedure A)

- FSK & ASJ vapor retarders have maximum vapor transmission rate of 0.02 perms

#### Water Vapor Sorption (ASTM C1104)

- Less than 5% by weight when exposed to air at 120°F (49°C) and 95% humidity for 96 hours

#### Shrinkage (ASTM C356)

- Less than 0.3% linear shrinkage

#### Microbial Growth (ASTM C1338, G21, G22)

- Does not promote or support the growth of fungi or bacteria

#### CGSM 51-GP-10M

- Canadian specification for mineral fiber board insulation

#### Fire Hazard Classification

- UL 723, CAN/ULC-S102-M-88, ASTM E84, NFP 90A and 90B
- Flame Spread Index not exceeding 25 and Smoke Developed Index not exceeding 50

#### Corrosiveness (ASTM C665)

- Will not accelerate corrosion of aluminum, steel or copper

**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.

**NOTES**

The chemical and physical properties of Manson Insulation AK Board insulation 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 Manson Insulation Area Manager to assure information is current.

FORMS AVAILABLE*			
DENSITY	THICKNESS	R-VALUE	(R-SI)
1.6 PCF (26 kg/m³)	1½" (38 mm)	R-6.3	(1.1)
	2" (51 mm)	R-8.3	(1.5)
	3" (76 mm)	R-12.5	(2.2)
2.25 PCF (36 kg/m³)	1" (25 mm)	R-4.3	(0.8)
	1½" (38 mm)	R-6.5	(1.1)
	2" (51 mm)	R-8.7	(1.5)
	3" (76 mm)	R-13	(2.3)
3.0 PCF (48 kg/m³)	4" (102 mm)	R-17.4	(3.1)
	1" (25 mm)	R-4.3	(0.8)
	1½" (38 mm)	R-6.5	(1.1)
	2" (51 mm)	R-8.7	(1.5)
	2½" (64 mm)	R-10.9	(1.9)
4.25 PCF † (68 kg/m³)	3" (76 mm)	R-13	(2.3)
	4" (102 mm)	R-17.4	(3.1)
	1" (25 mm)	R-4.3	(0.8)
	1½" (38 mm)	R-6.5	(1.1)
6.0 PCF † (96 kg/m³)	2" (51 mm)	R-8.7	(1.5)
	2½" (64 mm)	R-10.9	(1.9)
	2" (102 mm)	R-9.1	(1.6)

\* Available in widths of 24" (610 mm) and 48" (1219 mm) and lengths from 36" to 120" (915 mm-3048 mm). † Cartons only.

SOUND ABSORPTION COEFFICIENTS ASTM C423, TYPE A MOUNTING										
			½ OCTAVE BAND CENTER FREQUENCY (CYCLES/SEC.)							
DENSITY	FACING	THICKNESS	125	250	500	1000	2000	4000	NRC	
1.6 PCF (26 kg/m³)	Plain	1½" (38 mm)	0.19	0.44	0.86	0.98	1.00	1.02	0.80	
		2" (51 mm)	0.31	0.57	0.96	1.04	1.03	1.03	0.90	
		2½" (64 mm)	0.43	0.82	1.12	1.07	1.04	1.03	1.00	
		3" (76 mm)	0.47	0.92	1.17	1.06	1.06	1.04	1.05	
2.25 PCF (36 kg/m³)	Plain	1" (25 mm)	0.05	0.24	0.59	0.86	0.97	1.00	0.65	
		1½" (38 mm)	0.17	0.49	0.93	1.03	1.03	0.99	0.85	
		2" (51 mm)	0.26	0.62	1.05	1.07	1.04	1.05	0.95	
	FSK	1" (25 mm)	0.14	0.69	0.81	0.99	0.55	0.27	0.75	
		2" (51 mm)	0.63	0.76	1.11	0.75	0.42	0.22	0.75	
3.0 PCF (48 kg/m³)	Plain	1" (25 mm)	0.08	0.23	0.62	0.88	0.96	0.99	0.65	
		1½" (38 mm)	0.09	0.39	0.89	1.03	1.06	1.01	0.85	
		2" (51 mm)	0.29	0.65	1.11	1.13	1.06	1.03	1.00	
		3" (76 mm)	0.54	1.01	1.18	1.07	1.07	1.04	1.10	
	FSK	4" (102 mm)	0.95	1.11	1.17	1.07	1.07	1.06	1.10	
		1" (25 mm)	0.21	0.63	0.84	0.93	0.51	0.22	0.75	
		1½" (38 mm)	0.45	0.60	0.99	0.73	0.53	0.27	0.70	
		2" (51 mm)	0.67	0.77	0.93	0.74	0.47	0.28	0.75	
		ASJ	1" (25 mm)	0.15	0.71	0.65	0.82	0.41	0.16	0.65
			1½" (38 mm)	0.42	0.55	0.91	0.69	0.40	0.23	0.65
ASJ	2" (51 mm)	0.75	0.71	0.80	0.66	0.41	0.24	0.65		
4.25 PCF (68 kg/m³)	Plain	1" (25 mm)	0.06	0.24	0.69	0.99	1.05	1.02	0.75	
	ASJ	2½" (64 mm)	0.75	0.63	0.63	0.62	0.41	0.25	0.55	
6.0 PCF (96 kg/m³)	Plain	1" (25 mm)	0.05	0.26	0.77	1.04	1.04	1.03	0.80	
		1½" (38 mm)	0.61	0.47	0.78	0.61	0.51	0.35	0.60	
		2" (51 mm)	0.13	0.58	1.01	1.05	1.00	1.01	0.90	
	FSK	1" (25 mm)	0.23	0.65	0.39	0.48	0.47	0.32	0.50	
		1½" (38 mm)	0.61	0.47	0.78	0.61	0.51	0.35	0.60	
		2" (51 mm)	0.77	0.50	0.72	0.58	0.53	0.41	0.60	
ASJ	1½" (38 mm)	0.60	0.46	0.62	0.48	0.47	0.31	0.50		
	2" (51 mm)	0.77	0.44	0.60	0.50	0.41	0.30	0.50		





## AK-CLAD™

Temperature Limit: 0°F to 850°F (-18°C to 454°C)

### DESCRIPTION

AK-Clad pipe insulation is a preformed insulation product composed of high quality glass fibers, bonded together with a thermosetting resin. AK-Clad pipe insulation comes with factory applied 5-ply weather and abuse resistant jacketing with self-sealing lap. Butt strips are also supplied.

### APPLICATION

Manson Insulation AK-Clad pipe insulation is intended for indoor and outdoor installation on industrial and commercial mechanical system piping. Typical applications include, but are not limited to, steam, condensate, process, chilled, and domestic water piping for new or retro-fit power generation, petro-chemical, pulp and paper, institutional, and educational construction projects.

### INSTALLATION

Manson Insulation AK-Clad insulation is usually installed in accordance with the procedure in the publication "Commercial & Industrial Standards" by the National Insulation Association (NIA).

### NOTES

The chemical and physical properties of Manson Insulation AK-Clad insulation 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.

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### SPECIFICATION COMPLIANCE

**ASTM C547** Type I

**ASTM C795**

**MIL-I-24244C**

**City of New York MEA 325-83-M**

**NRC Reg Guide 1.36**

**ASTM C1338**

#### Jacketing

- UL 723/ASTM E84
- CGSB 51-GP-52M
- ASTM C1136 (Type I, II)
- Water Vapor Permeance (ASTM E96): 0 perms MAX
- TAPPI T803 (Beach Units) Jacket minimum rating of 50 units

### TECHNICAL DATA

#### Venture Clad Jacket and Tape Surface Burning Characteristics

- UL/ULC Listed
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with UL 723

#### Surface Temperature Range

- Maximum temperature continuous use 300°F (149°C)
- Application temperature -10°F to 300°F (-23°C to 149°C)

#### Water Vapor Permeability (ASTM E96-05)

- Zero-perm

#### Puncture Resistance (ASTM D1000)

- 35.4 kg, 189.3 N.

#### Tear Strength (ASTM D624)

- 4.3 lb., 19.4 N.

#### Thickness

- 14.5 mils (0.0145")

#### Tensile (PSTC-31)

- 68 lb./inch width, 306 N (31 kg)/25 mm

### PRODUCT FEATURES

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Temperature Limitation (ASTM C411)

- Up to 850°F (454°C)

#### Alkalinity (ASTM C871)

- Less than 0.6% as Na<sub>2</sub>O
- pH between 7.5 and 12.0

#### Corrosiveness (ASTM C665)

- No greater than sterile cotton

#### Zero Permeability

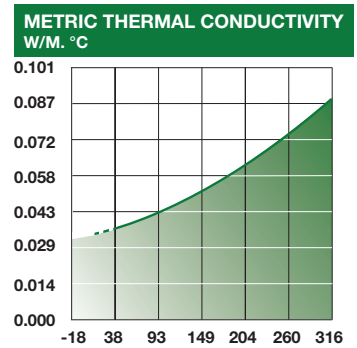
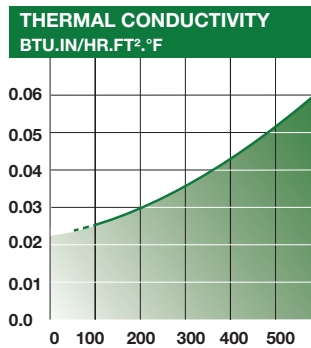
- Properly installed, AK-Clad jacket provides a zero perm vapor barrier.

**USAGE QUALIFICATIONS**

- Hot surface performance: tested to 850°F (454°C) according to ASTM C411.
- A sufficient thickness of insulation must be used to keep maximum surface temperature of AK-Clad pipe insulation with ASJ jacket below 140°F (60°C).
- Apply when ambient and insulation temperatures are between 20°F and 130°F (-6.7°C and 54°C)
- When pressure sensitive self-sealing tape and butt strips are used, the material must be stored in a clean, dry environment.
- Keep adhesive and contact surfaces free from dirt and water, seal immediately once adhesive is exposed. Do not store product below -20°F (-29°F) or above 150°F (66°C). If stored below 20°F or above 130°F, allow insulation cartons to stand within recommended temperature range for 24 hours prior to application. When adhering SSL tape and butt strip, rub firmly with a hard object such as a plastic squeegee or back of a knife to assure good vapor seal.
- At operating temperatures above 500°F (260°C), AK-Clad pipe insulation must be applied in a thickness ranging from 2" (51 mm) min to 6" (152 mm) max.
- Due to the fact that binder is organic in nature, we recommend the following heat up schedule for operating temperatures from 500°F (260°C) to 850°F (454°C). (see table)
- Fibrous insulation can emit an acrid odour during the initial heat-up when applied to hot surfaces above 392°F (200°C). It is recommended that adequate ventilation be provided and /or workers be supplied with approved full face respirators.

HEAT UP SCHEDULE		
TIME	TEMPERATURE	TOTAL TIME
3.5 hrs	550°F (288°C)	3.5 hrs
2.5 hrs	650°F (343°C)	6 hrs
2 hrs	750°F (399°C)	8 hrs

THERMAL CONDUCTIVITY ASTM C335			
MEAN TEMPERATURE		THERMAL CONDUCTIVITY	
°F	°C	BTU.IN/HR.FT².°F	W/M.°C
75	24	0.23	0.033
100	38	0.24	0.035
200	93	0.28	0.040
300	149	0.34	0.049
400	204	0.42	0.061
500	260	0.51	0.074



**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.





## AK FLEX™

Temperature Limit: 850°F (454°C)

### DESCRIPTION

AK Flex pipe and tank insulation is a 48" wide semi-rigid glass mineral wool blanket, 2.5 PCF density, in roll form. It is available faced with a factory-applied ASJ or FSK vapor retarder jacket. The fiber orientation provides excellent compressive strength while maintaining flexibility for ease of installation.

### APPLICATION

Manson Insulation AK Flex pipe and tank insulation is typically used on tanks, vessels and large-diameter (greater than 10") pipes. It can be used for any curved or irregular surfaces that require finished characteristics of rigid glass mineral wool insulation.

### FEATURES AND BENEFITS

#### Excellent Thermal Properties

- Low thermal conductivity ratings to 850°F (454°C)

#### Low-Cost Installation

- Flexible
- Easy to handle and Fabricate

#### Inventory Savings

- No need to stock multiple sizes
- Various thickness available to meet all your pipe and tank insulation needs.

#### Resists Damage

- Tough and durable
- Resists damage in shipment as well as during and after installation

### SPECIFICATION COMPLIANCE

#### ASTM C612

- Standard specification for mineral fiber board insulation,
- Type IA (1.6, 2.25, 3.0, 6.0 PCF) (26, 36, 48, 96 kg/m<sup>3</sup>)
- Type IB (3.0, 6.0 PCF) (48, 96 kg/m<sup>3</sup>)

#### ASTM C1136 (facings):

- FSK: Type II
- ASJ: Type I, II

#### California Title 24

#### City of New York MEA 363-83-M

#### Puncture Resistance (TAPPI Test T803) (Beach Units)

- FSK facings: 25
- ASJ facings: 50

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Water Vapor Transmission (ASTM E96, Procedure A)

- FSK & ASJ vapor retarders have maximum vapor transmission rate of 0.02 perms

#### Water Vapor Sorption (ASTM C 104)

- Less than 5% by weight when exposed to air at 120°F (49°C) and 95% humidity for 96 hours

#### Shrinkage (ASTM C356)

- Less than 0.3% linear shrinkage

#### Microbial Growth (ASTM C1338, G21, G22)

- Does not promote or support the growth of fungi or bacteria

#### CGSM 51-GP-10M

- Canadian specification for mineral fiber board insulation

#### Fire Hazard Classification

- UL 723, CAN/ULC-S102-M-88, ASTM E84, NFP90A & 90B
- Flame spread index not exceeding 25 and smoke developed index not exceeding 50

#### Corrosiveness (ASTM C665)

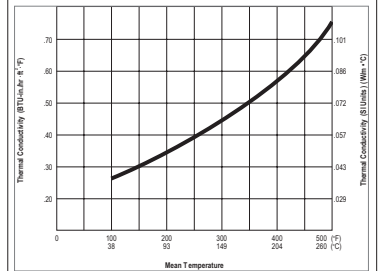
- Will not accelerate corrosion of aluminum, steel or copper

**STRETCH-OUTS**

ADDITIONAL 2" (51 mm) TO 4" (102 mm) SHOULD BE ADDED FOR LAP

NOMINAL IRON PIPE SIZE	IRON PIPE OUTSIDE DIAMETER	THICKNESS			
		1" (25 mm)	1½" (38 mm)	2" (51 mm)	3" (76 mm)
10" (254 mm)	10¾" (273 mm)	40⅞" (1019 mm)	43¼" (1099 mm)	46⅜" (1178 mm)	52⅝" (1337 mm)
12" (305 mm)	12¾" (324 mm)	46⅞" (1178 mm)	49½" (1257 mm)	52¾" (1340 mm)	59" (1499 mm)
14" (356 mm)	14" (356 mm)	50⅞" (1280 mm)	53½" (1359 mm)	56⅞" (1438 mm)	62⅞" (1597 mm)
16" (406 mm)	16" (406 mm)	56⅞" (1438 mm)	59¾" (1518 mm)	62⅞" (1597 mm)	69⅞" (1756 mm)
18" (457 mm)	18" (457 mm)	62⅞" (1597 mm)	66" (1676 mm)	69¼" (1756 mm)	75½" (1918 mm)
20" (508 mm)	20" (508 mm)	69⅞" (1756 mm)	72⅞" (1838 mm)	75½" (1918 mm)	81¾" (2076 mm)
22" (559 mm)	22" (559 mm)	75½" (1918 mm)	78⅞" (1997 mm)	81¾" (2076 mm)	88" (2235 mm)
24" (610 mm)	24" (610 mm)	81¾" (2076 mm)	84⅞" (2156 mm)	88" (2235 mm)	94⅞" (2397 mm)
26" (660 mm)	26" (660 mm)	88" (2235 mm)	91⅞" (2315 mm)	94⅞" (2397 mm)	100⅞" (2556 mm)
28" (711 mm)	28" (711 mm)	94⅞" (2397 mm)	97½" (2477 mm)	100⅞" (2556 mm)	106⅞" (2715 mm)
30" (762 mm)	30" (762 mm)	100⅞" (2556 mm)	103¾" (2635 mm)	106⅞" (2715 mm)	113⅞" (2873 mm)
32" (813 mm)	32" (813 mm)	106⅞" (2715 mm)	110" (2794 mm)	113⅞" (2873 mm)	119½" (3035 mm)
34" (864 mm)	34" (864 mm)	113⅞" (2873 mm)	116¼" (2953 mm)	119½" (3035 mm)	125¾" (3194 mm)
36" (914 mm)	36" (914 mm)	119½" (3035 mm)	122⅞" (3115 mm)	125¾" (3194 mm)	132" (3353 mm)
38" (965 mm)	38" (965 mm)	125¾" (3194 mm)	128⅞" (3273 mm)	132" (3353 mm)	138¼" (3512 mm)
40" (1016 mm)	40" (1016 mm)	132" (3353 mm)	135⅞" (3432 mm)	138¼" (3512 mm)	144⅞" (3673 mm)
42" (1067 mm)	42" (1067 mm)	138¼" (3512 mm)	141½" (3594 mm)	144⅞" (3673 mm)	150⅞" (3832 mm)

**THERMAL EFFICIENCY**  
ASTM C177



MEAN TEMPERATURE	K	K (SI)
75°F (24°C)	0.24	0.035
100°F (38°C)	0.25	0.036
200°F (93°C)	0.32	0.046
300°F (149°C)	0.39	0.056
400°F (204°C)	0.49	0.070
500°F (260°C)	0.61	0.088

**INSTALLATION**

For proper application of Manson Insulation AK Flex pipe and tank insulation simply follow these guidelines:

- Refer to the Stretch-out Chart to find the appropriate length to cut for the specific pipe size. Be sure to add an additional 2" (51 mm) to 4" (102 mm) for your staple flap.
- Cut your stretch-out length and wrap the material around the iron pipe to ensure the proper fit.

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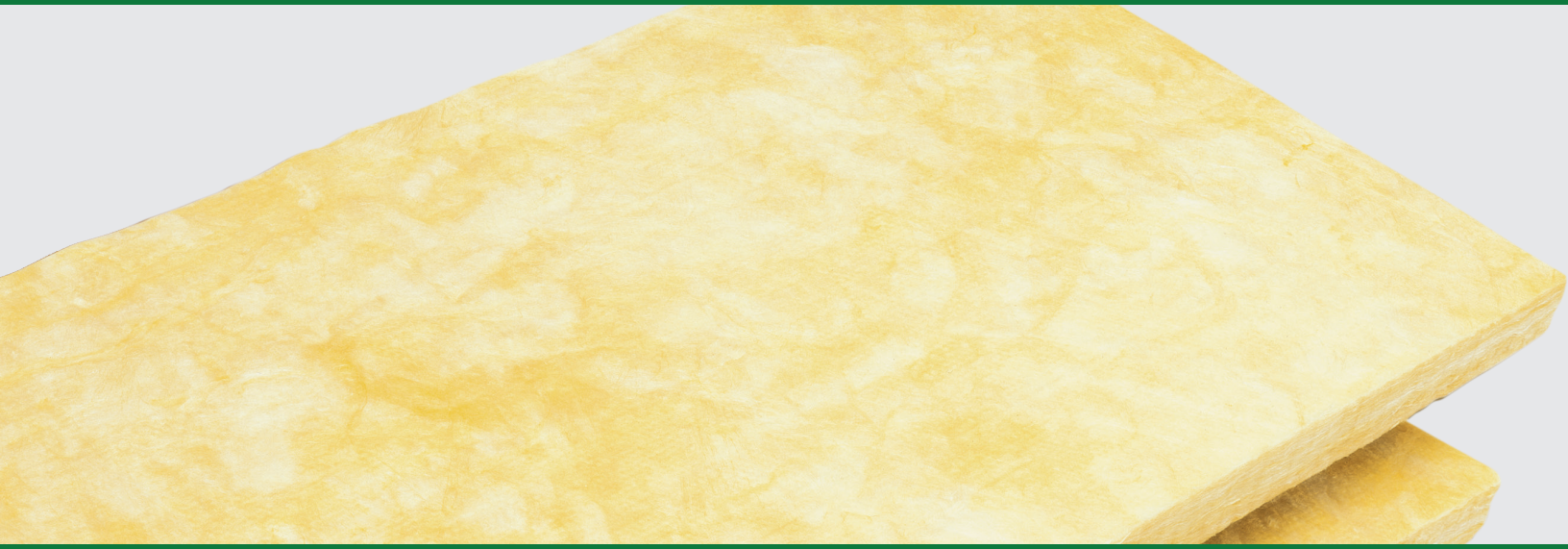
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Check with your Manson Insulation Area Manager to assure information is current.







## AK SMOOTH BOARD™

Temperature Limit: 450°F (232°C)

### DESCRIPTION

AK Smooth Board is a thermal and acoustical insulation product made from inorganic glass fibers performed into boards bonded by a thermosetting resin.

### APPLICATION

Manson Insulation AK Smooth Board is a versatile product for thermal and acoustical applications such as office partitions, interior panels and sound baffles.

### INSTALLATION

Manson Insulation AK Smooth Board insulation is usually installed in accordance with the procedure in the publication "Commercial & Industrial Standards" by the National Insulation Association (NIA).

### 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.

### SPECIFICATION COMPLIANCE

#### ASTM C612

- Standard specification for mineral fiber board insulation
- Type IA
- Type IB

#### ASTM C795

#### California Title 24

#### HH-1-558C

- Form A, Class 1 and Class 2

#### Temperature Range (ASTM C411)

- Operating temperatures from 0°F to 450°F (-18°C to 232°C)

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Water Vapor Sorption (ASTM C1104)

- Less than 5% by weight

#### Shrinkage (ASTM C356)

- Less than 0.3% linear shrinkage

#### Microbial Growth (ASTM C1338)

- Does not promote or support the growth of fungi or bacteria

#### CGSB 51-GP-10M, CAN/ULC S102-M-88

- Canadian Specification for mineral fiber board insulation

#### Fire Hazard Classification

- UL 723, CAN/ULC-S102-M-88, ASTM E84, NFPA 90A and 90B, NFPA 255
- Flame Spread Index not exceeding 25 and Smoke Developed
- Index not exceeding 50

#### Odor (ASTM C1304)

- Not objectionable

#### Corrosiveness (ASTM C665)

- Will not accelerate corrosion of aluminum, steel or copper

**SOUND ABSORPTION COEFFICIENTS**  
ASTM C423, TYPE A MOUNTING

DENSITY	THICKNESS	OCTAVE BAND CENTER FREQUENCY (CYCLES/SEC.)						NRC
		125	250	500	1000	2000	4000	
6.0 PCF (96 kg/m³)	1" (25 mm)	0.05	0.26	0.77	1.04	1.04	1.03	0.80
	1½" (38 mm)	0.13	0.58	1.01	1.05	1.00	1.01	0.90
	2" (51 mm)	0.32	0.81	1.08	1.06	1.03	1.04	1.00

**FORMS AVAILABLE AND MINIMUM RELEASE — 6.0 PCF (96 kg/m³)**

THICKNESS	WIDTH RANGE †	LENGTH RANGE	MINIMUM RELEASE
¾" (19 mm)	24"-61" (610 mm to 1549 mm)	48"-121" (1219 mm to 3073 mm)	18 MSF
1" (25 mm)			12 MSF
1½" (38 mm)			9 MSF
2" (51 mm)			6 MSF

†Tolerances: Thickness: ± 1/16" (1.59 mm); Width: ± 1/8" (3.2 mm); Length: ± 1/4" (6.4 mm). For requirements not listed, contact your Manson Insulation Area Manager.

**PACKAGING AVAILABLE**

PRODUCT DIMENSIONS	PACKAGE
24" x 48"	Carton
48" x 96"	Pallet
48" x 120"	Pallet
49" x 97"	Pallet
49" x 121"	Pallet

**THERMAL CONDUCTIVITY**  
ASTM C177 @ 75°F MEAN TEMPERATURE

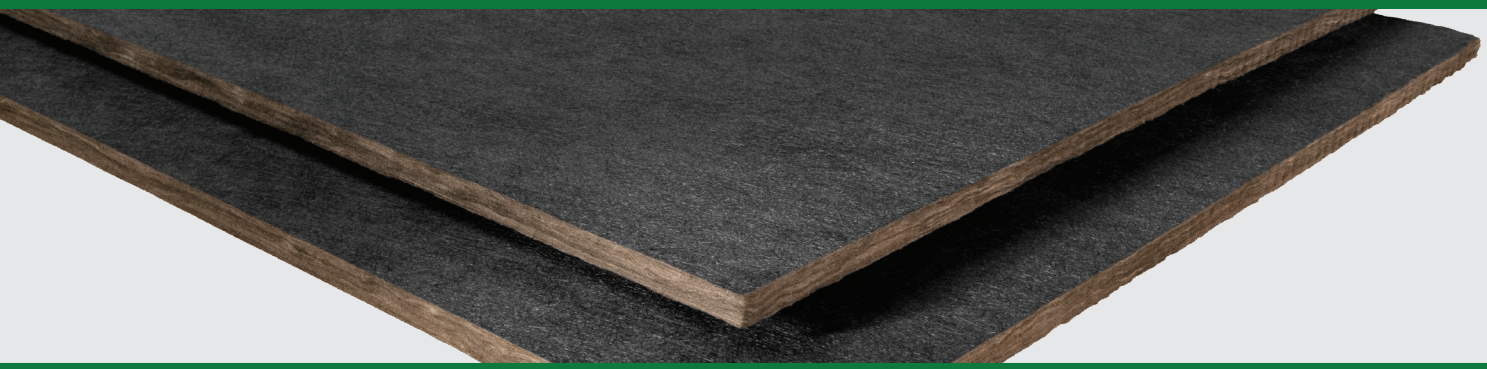
DENSITY	THERMAL CONDUCTIVITY BTU-IN. FT²°F
6.0 PCF (96 kg/m³)	0.22

**NOTES**

The chemical and physical properties of Manson Insulation AK Smooth Board insulation 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 Manson Insulation Area Manager to assure information is current.





## AKOUSTI-BOARD BLACK™

### DESCRIPTION

Akousti-Board Black is a heavy density glass mineral wool insulation. The base board has a black mat applied to provide a smooth, tough finish.

### APPLICATION

Manson Insulation Akousti-Board Black is designed for use as acoustical insulation and/or visual barrier on walls and ceilings where system design requires a rigid product and where additional strength and abuse resistance are required. The black surface provides a visual barrier with an aesthetically pleasing appearance, in both wall and ceiling applications. This product is typically used where framing members are not present.

### 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.

### NOTES

The chemical and physical properties of Manson Insulation Akousti-Board Black insulation 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 Manson Insulation Area Manager to assure information is current.

### SPECIFICATION COMPLIANCE

#### NFPA 255

### PRODUCT FEATURES

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- UL/ULC Classified FCH 25/50
- Flame Spread 25 and Smoke Developed 50 when tested in accordance with ASTM E84, UL 723

#### Corrosiveness (ASTM C665)

- Will not accelerate corrosion of a steel panel compared to sterile cotton

#### Corrosion (ASTM C1617)

- The corrosion rate in mils/yr will not exceed that of the 1ppm chloride solution

### SOUND ABSORPTION COEFFICIENTS

ASTM C423, TYPE A MOUNTING, OCTAVE BAND CENTER FREQUENCY (CYCLES/SEC.)

DENSITY	THICKNESS	125	250	500	1000	2000	4000	NRC
3.0 PCF (48 kg/m <sup>3</sup> )	1" (25 mm)	0.13	0.24	0.56	0.83	0.92	0.98	0.65
	2" (51 mm)	0.33	0.67	1.07	1.07	1.03	1.06	0.95

Available 24" (610 mm) wide x 48" (1219 mm) long.



## 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 black glass mineral wool substrate. Akousti-Liner insulation is offered with or without edge coating to seal fibers.

### 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.

### SPECIFICATION COMPLIANCE

#### ASTM C1071 Type I

- Standard specification for Thermal and Acoustical Insulation (Glass, Fiber, Duct Lining Material)

#### NFPA 90A

- Standard for the Installation of Air-Conditioning and Ventilating Systems

#### NFPA 90B

- Standard for the Installation of Warm Air Heating and Air-Conditioning Systems

#### City of New York MEA 323-83-M

#### California Title 24

#### CAN/CGSB 51.11-92

### PRODUCT FEATURES

#### Sustainability

- Over 50% post-consumer recycled glass
- Greenguard GOLD certified for superior indoor air quality performance
- EUCEB
- No added formaldehyde

#### 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

#### Air Flow Characteristics (ASTM C1071)

- Air velocity rating 6,000 ft/min (30.5 m/s)

#### Water Vapor Sorption (ASTM C1104)

- Less than 3% by weight

#### Corrosiveness (ASTM C665)

- Will not accelerate corrosion

#### Bacteria Resistance (ASTM G22)

- Does not breed or promote growth

#### Fungi Resistance (ASTM C1338, ASTM G21)

- Airstream surface is coated with an EPA-registered anti-microbial agent; does not breed or promote growth

#### Hot Surface Performance (ASTM C411)

- Operating temperature limit: Max. 250°F (120°C)

#### DecaBDE Free

- Does not contain polybrominated diphenyl ethers (PBDE) such as: Penta – BDE, Octa – BDE or Deca – BDE

**ACOUSTICAL PERFORMANCE**  
ASTM C423, TYPE A MOUNTING

DENSITY	THICKNESS	FREQUENCY						
		125	250	500	1000	2000	4000	NRC
2.0 PCF (32 kg/m <sup>3</sup> )	½" (13 mm)	0.09	0.14	0.40	0.60	0.73	0.82	0.45
	1" (25 mm)	0.25	0.35	0.69	0.89	0.96	1.01	0.70
1.5 PCF (24 kg/m <sup>3</sup> )	1" (25 mm)	0.18	0.36	0.59	0.86	0.95	0.90	0.70
	1½" (38 mm)	0.35	0.51	0.83	0.93	0.97	0.96	0.80
	2" (51 mm)	0.34	0.64	0.96	1.03	1.00	1.03	0.90

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

DENSITY	THICKNESS	C-VALUE		R-VALUE	
		BTU/ FT <sup>2</sup> .HR.°F	W/M <sup>2</sup> .°C	FT <sup>2</sup> .HR.°F/ BTU	M <sup>2</sup> .°C/W
2.0 PCF (32 kg/m <sup>3</sup> )	½" (13 mm)	0.48	2.73	2.1	0.37
	1" (25 mm)	0.24	1.36	4.2	0.74
1.5 PCF (24 kg/m <sup>3</sup> )	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

**GLASS MINERAL WOOL AND MOLD**

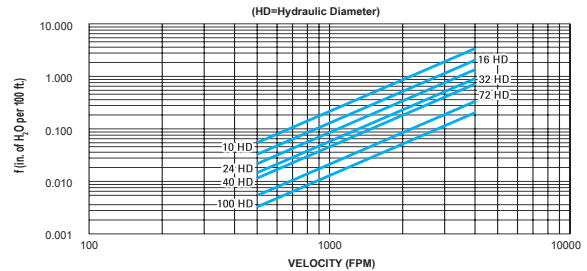
Glass mineral wool insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold, it must be discarded. If the material is wet but shows no evidence 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 Manson Insulation Akousti-Liner insulation 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 Manson Insulation Area Manager to assure information is current.

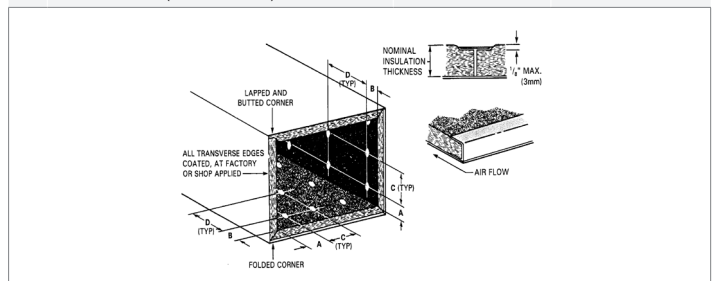
**FRICTION LOSS (INCHES OF WATER PER 100')**



FPM	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

**MECHANICAL FASTENER LOCATION**

	VELOCITY/FPM (METERS/SECOND)	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)



CONTRACTOR \_\_\_\_\_

JOB NAME \_\_\_\_\_

DATE \_\_\_\_\_



## AKOUSTI-LINER R™

Temperature Limit: 250°F (121°C)

### DESCRIPTION

Akousti-Liner R insulation is a heavy density glass mineral wool board insulation product made from inorganic glass fibers bonded by a thermosetting binder. Its base board is brown with a black mat facing on the airstream surface.

### APPLICATION

Manson Insulation Akousti-Liner R insulation is a premium, extra durable rigid liner for use on flat duct surfaces. Some typical applications include fan plenums and air distribution ducting on industrial and commercial heating, ventilating and air-conditioning systems.

### 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.

### SPECIFICATION COMPLIANCE

#### ASTM C1071 Type II

- Standard specification for Thermal and Acoustical Insulation (Glass, Fiber, Duct Lining Material)

#### NFPA 90A

- Standard for the Installation of Air-Conditioning and Ventilating Systems

#### NFPA 90B

- Standard for the Installation of Warm Air Heating and Air-Conditioning Systems

#### CGSB 51.11-92

- Canadian specification for mineral fiber board insulation

### PRODUCT FEATURES

#### Greenguard Certification

- Greenguard GOLD certified for superior indoor air quality performance
- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Air Flow Characteristics (ASTM C1071)

- Air velocity rating 5,000 ft/min (25.4 m/s)  
Tested 12,500 ft/min (63.5 m/s)

#### Water Vapor Sorption (ASTM C1104)

- Less than 3% by weight

#### Microbial Growth (ASTM C1338, ASTM G22, ASTM G21)

- Does not breed or promote growth

#### Fire Hazard Classification

##### (ASTM E84, NFPA 55, CAN/ULC S102-88M, UL723)

- UL/ULC Listed
- Flame Spread Index not exceeding 25, Smoke Developed Index not exceeding 50

#### DecaBDE Free

- Does not contain polybrominated diphenyl ethers (PBDE) such as Penta – BDE, Octa – BDE or Deca – BDE

**ACOUSTICAL PERFORMANCE**  
ASTM C423, TYPE A MOUNTING

DENSITY	THICKNESS	FREQUENCY (Hz)						
		125	250	500	1000	2000	4000	NRC
3.0 PCF (48 kg/m <sup>3</sup> )	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

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

DENSITY	THICKNESS	C-VALUE		R-VALUE	
		BTU/ FT <sup>2</sup> .HR.°F	W/M <sup>2</sup> .°C	FT <sup>2</sup> .HR.°F/ BTU	M <sup>2</sup> .°C/W
3.0 PCF (48 kg/m <sup>3</sup> )	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

**GLASS MINERAL WOOL AND MOLD**

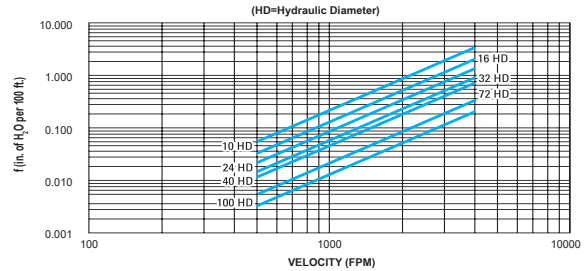
Glass mineral wool insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold, it must be discarded. If the material is wet but shows no evidence 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 Manson Insulation Akousti-Liner R insulation 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 Manson Insulation Area Manager to assure information is current.

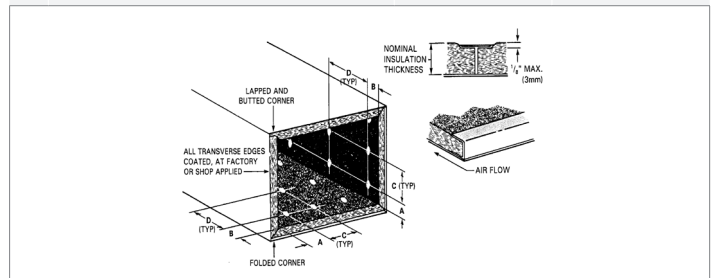
**FRICITION LOSS (INCHES OF WATER PER 100')**



FPM	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

**MECHANICAL FASTENER LOCATION**

	VELOCITY/FPM (METERS/SECOND)	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)



CONTRACTOR \_\_\_\_\_  
JOB NAME \_\_\_\_\_  
DATE \_\_\_\_\_



## AKOUSTI-SHIELD™

### DESCRIPTION

Akousti-Shield insulation is a flexible glass mineral wool blanket with a black mat facing adhered to one surface. It provides thermal and acoustical insulation while a smooth, tough surface resists damage during installation.

### APPLICATION

Manson Insulation Akousti-Shield is designed for use as an acoustical and visual barrier for walls and ceilings where a black surface is required. It is primarily used in theaters, sound studios, public concourses and other areas where acoustical treatment is needed. It is intended to be mechanically fastened to walls and can be covered with fabric or draping, or suspended above linear metal and metal pan ceiling systems to serve as both a visual and acoustical treatment.

### 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.

### NOISE REDUCTION COEFFICIENTS ASTM C423, TYPE A MOUNTING

DENSITY	THICKNESS	NRC
1.5 PCF (24 kg/m <sup>3</sup> )	1" (25 mm)	0.70
	2" (51 mm)	0.90

Available in 48" (1219 mm) wide rolls in lengths of 100' or 50' (30.48 or 15.24 m).

### PRODUCT FEATURES

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- UL/ULC Classified FCH 25/50
- Flame Spread 25 and Smoke Developed 50 when tested in accordance with ASTM E84, UL 723

#### Corrosiveness (ASTM C665)

- Will not accelerate corrosion of a steel panel compared to sterile cotton

#### Corrosion (ASTM C1617)

- The corrosion rate in mils/yr will not exceed that of the 1ppm chloride solution

### NOTES

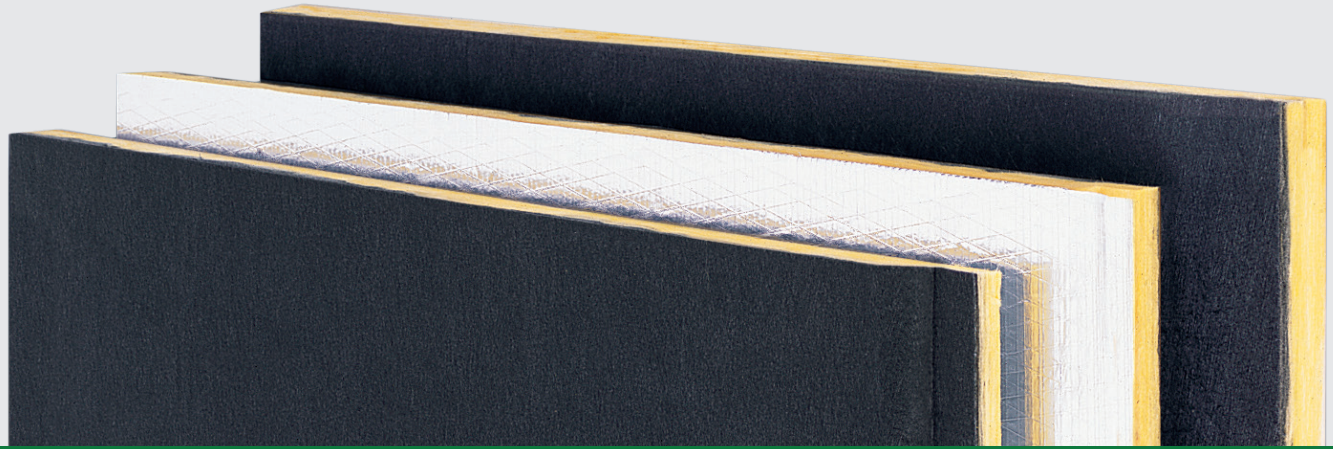
The chemical and physical properties of Manson Insulation Akousti-Shield insulation represent average values determined in accordance with accepted test methods. The data is subject to normal manufacturing and testing variations. The data is supplied as a technical service and is subject to change without 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 Manson Insulation Area Manager to assure information is current.



2-16 | M-CI-ACS-DS





## ALLEY KAT AIR DUCT BOARD™

Temperature Limit: 250°F (121°C)

### DESCRIPTION

Alley Kat Air Duct Board is a rigid glass mineral wool board faced on one side with a foil-scrim-kraft (FSK) vapor retarder and with a lightweight black fiber glass mat on the airstream surface. It is used to fabricate rectangular or Max10 air duct systems. The product is offered in 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 Manson Insulation Alley Kat Air Duct Board is treated with an EPA registered, anti-microbial agent that prevents growth of mold, fungus or bacteria in accordance with ASTM C1071, G21.

### APPLICATION

Manson Insulation Alley Kat 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.

### 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"
- Manson Insulation Alley Kat 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

### SPECIFICATION COMPLIANCE

- **ASTM C1136** Type II (FSK facing)
- **ASTM D5116**
- **ASTM G21**
- **California Title 24**
- **Corps of Engineers Guide Specifications**
- **International Building Code**
- **International Mechanical Code**
- **NFPA 90A and 90B**
- **UL 181 Class 1**
- **City of New York MEA 497-90-M**
- **In Canada:**
  - CAN/CGSB 51-GP-52M (facing)
  - CAN/CGSB 51.10-92

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- UL listed
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E84, CAN/ULC S102-M88, NFPA 255 and UL 723

#### Flexural Rigidity

- Available in two 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) as determined in accordance with NAIMA AHS-100-96

#### Service Temperature (ASTM C411)

- Up to 250°F (121°C)

#### Air Velocity (UL 181)

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

#### Internal Static Pressure (UL 181)

- Maximum ±2" water (498 pascals [Pa])

#### Water Vapor Transmission Rate (ASTM E96)

- Less than 0.02 perms

#### Water Vapor Sorption (ASTM C1104)

- Less than 5% by weight

#### Microbial Growth (ASTM G21, UL 181)

- Does not promote or support the growth of fungi or bacteria

**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 Manson Insulation Alley Kat Air Duct Board insulation 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 Manson Insulation Area Manager to assure information is current.

THERMAL CONDUCTIVITY K (ASTM C177) MEAN TEMPERATURE 75°F (24°C)	
	K-VALUE
Manson Insulation Air Duct Type EI-475 and EI-800	0.23 (0.033)
"k" Units: $\frac{\text{BTU} \cdot \text{in}}{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}}$ $\left(\frac{\text{W}}{\text{m} \cdot ^\circ\text{C}}\right)$	

THERMAL RESISTANCE R (ASTM C518) MEAN TEMPERATURE 75°F (24°C)	
THICKNESS	R-VALUE (R.S.I.)
1" (25 mm)	R-4.3 (0.76)
1½" (38 mm)	R-6.5 (1.14)
2" (51 mm)	R-8.7 (1.53)
"R" Units: $\frac{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}}{\text{BTU}}$ $\left(\frac{\text{m}^2 \cdot ^\circ\text{C}}{\text{W}}\right)$	

SOUND ABSORPTION COEFFICIENTS ASTM 423, TYPE A MOUNTING, ½ OCTAVE BAND CENTER FREQUENCY (CYCLES/SEC.)								
	TYPE	125	250	500	1000	2000	4000	NRC
EI-475	1" (25 mm)	0.03	0.25	0.62	0.92	1.03	0.97	0.70
EI-800	1½" (38 mm)	0.02	0.44	0.96	1.17	1.16	1.12	0.95
EI-800	2" (51 mm)	0.19	0.64	1.08	1.13	1.06	1.06	1.00

**RECOMMENDED MAXIMUM DUCT DIMENSIONS WITHOUT REINFORCEMENT\***

INTERNAL PRESSURE INCHES OF WATER	EI-475-1"		
	0.5 (125)†	1.0 (249)†	2.0 (498)†
Positive	36" (914 mm)	24" (610 mm)	15" (381 mm)
Negative	30" (762 mm)	24" (610 mm)	15" (381 mm)
	EI-800-1"		
	0.5 (125)†	1.0 (249)†	2.0 (498)†
Positive	36" (914 mm)	24" (610 mm)	18" (457 mm)
Negative	30" (762 mm)	24" (610 mm)	18" (457 mm)

\* The above table summarizes span/pressure limitations for unreinforced duct. For larger ducts, refer to NAIMA's "Fibrous Glass Duct Construction Standard."  
†(Pressure—Pascals [Pa])

**FORMS AVAILABLE**

THICKNESS	SIZE*	EDGE	PIECES/ CARTON**
1" (25 mm)	48" x 96" (1219 mm x 2438 mm)	BE, SL	8
1" (25 mm)	48" x 120" (1219 mm x 3048 mm)	BE, SL	6
1½"*** (38 mm)	48" x 120" (1219 mm x 3048 mm)	BE, SL	4
2"*** (51 mm)	48" x 120" (1219 mm x 3048 mm)	BE	3

\*Other lengths available on custom order. \*\* Palletized packaging available on request. \*\*\* EI-800 only. BE - Butt, SL - Shiplap

**FRICITION LOSS (INCHES OF WATER PER 100')**

FPM	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





## ALLEY WRAP B™

Temperature Limit: Unfaced 350°F (177°C) | Faced 250°F (121°C)

### DESCRIPTION

Alley Wrap B glass mineral wool blanket insulation is a thermal and acoustical insulation product made from highly resilient, inorganic glass fibers bonded by a thermosetting resin. It is available unfaced or with a multi-purpose foil-scrim kraft (FSK) jacket and with a white metalized polypropylene scrim-kraft (PSK) jacket. Vapor retarders have a 2" (51 mm) stapling flange on one edge, and the factory-applied facing assures uniform quality.

### APPLICATION

Manson Insulation Alley Wrap B is used as an external insulation on commercial or residential heating or air conditioning ducts. It is suitable for the exterior of rectangular or round sheet metal ducts and spaces, or surfaces where temperature and condensation must be controlled.

#### SPECIFICATION COMPLIANCE

**ASTM C1139** Unfaced, Type I, Type II

- Grade 1 - 0.75 lb/ft<sup>3</sup>
- Grade 2 - 1.0 lb/ft<sup>3</sup>
- Grade 3 - 1.5 lb/ft<sup>3</sup>

**ASTM C553**

- Type I, II, III

**ASTM C1136**

- Type II

**ASTM C1290**

**California Title 24** (installed at 25% compression)

**HH-I-558C**

- Form B, Type I, Class 7

**NFPA 90A and 90B**

**In Canada**

- CAN/CGSB 51.11-92

#### PRODUCT FEATURES

##### Greenguard Certification

- Greenguard GOLD certified for superior indoor air quality performance
- Over 50% post-consumer recycled glass
- No added formaldehyde

##### Surface Burning Characteristics

- UL/ULC Classified FCH 25/50 (FSK, unfaced)
- Unfaced and FSK wrap have a Flame Spread 25 and Smoke Developed 50 when tested in accordance with ASTM E84, CAN/ULC S102-M88, NFPA 55 and UL 723 PSK wrap has a Flame Spread 25 and Smoke Developed 50 when tested in accordance with ASTM E84

##### Temperature Range (ASTM C411)

- Faced, can be used on ducts operating up to 250°F (121°C)
- Unfaced, up to 350°F (177°C)

##### Water Vapor Permeance (ASTM E96, Procedure A)

- FSK and white PSK facings have maximum water vapor permeance of 0.02 perms

##### Water Vapor Sorption (ASTM C1104)

- Less than 5% by weight when tested for 96 hours at 120°F (49°C) and 95% relative humidity

##### Corrosiveness (ASTM C665)

- Will not accelerate corrosion of a steel panel compared to sterile cotton

##### Corrosion (ASTM C1617)

- The corrosion rate in mils/yr will not exceed that of the 1 ppm chloride solution

##### Microbial Growth (ASTM C1338)

- No growth

##### Puncture Resistance (TAPPI Test T803) (Beach Units)

- FSK and PSK: 25

**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 Manson Insulation Alley Wrap B blanket insulation 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 Manson Insulation Area Manager to assure information is current.

ACOUSTICAL PERFORMANCE											
DUCT DIMENSIONS		SHEET METAL	DUCT WRAP		INSERTION LOSS						
			NOMINAL THICKNESS	NOMINAL DENSITY	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
12" x 12"	(305 mm x 305 mm)	24 GA	1½" (38 mm)	0.75 PCF (12 kg/m³)	0.6	0.6	0.6	0.7	7.4	14.2	20.9
24" x 12"	(610 mm x 305 mm)	24 GA			0.6	0.6	0.6	0.7	7.4	14.2	20.9
48" x 12"	(1219 mm x 305mm)	22 GA			0.6	0.5	0.5	0.6	7.4	14.1	20.9
24" x 24"	(610 mm x 610 mm)	22 GA			0.6	0.5	0.5	0.6	7.4	14.1	20.9
24" x 12"	(610 mm x 305 mm)	26 GA			0.8	0.8	0.8	0.8	7.5	14.2	21.0
24" x 8"	(610 mm x 203 mm)	26 GA	2" (51 mm)		1.0	1.0	1.0	3.6	10.4	17.1	23.9

Insertion Loss: (Reduction of Sound Transmitted Through Duct Wrap) (Sound and Vibration Design and Analysis, National Environmental Balancing Bureau, 1944)

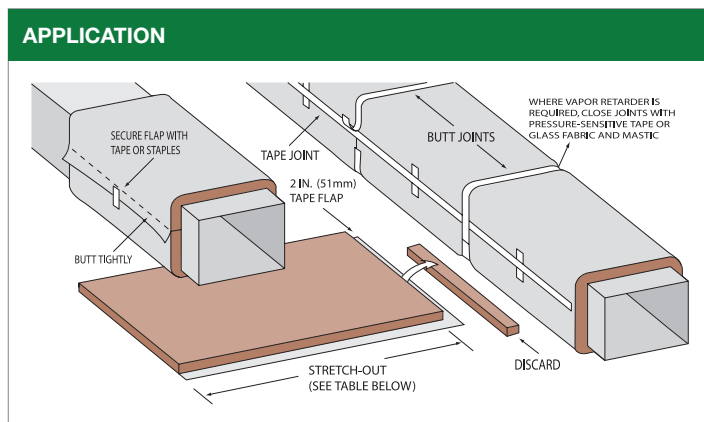
THERMAL EFFICIENCY (ASTM C177)						
MEAN TEMPERATURE	0.75 PCF (12 kg/m³)		1.0 PCF (16 kg/m³)		1.5 PCF (24 kg/m³)	
	K	K (SI)	K	K (SI)	K	K (SI)
50°F (10°C)	0.28	0.040	0.26	0.037	0.23	0.033
75°F (24°C)	0.29	0.042	0.27	0.039	0.24	0.035
100°F (38°C)	0.31	0.045	0.29	0.042	0.26	0.037
125°F (52°C)	0.33	0.048	0.31	0.045	0.28	0.040
150°F (66°C)	0.36	0.052	0.34	0.049	0.31	0.045
175°F (80°C)	0.39	0.056	0.37	0.053	0.33	0.048
200°F (93°C)	0.43	0.063	0.40	0.058	0.36	0.052

PSK, FSK AND UNFACED					
DENSITY	THICKNESS	WIDTH	LENGTH	R-VALUE	R-VALUE (INSTALLED)
0.75 PCF (12 kg/m³)	1½"	48"	100'	R-5.1	R-4.2
	2"	48"	75'	R-6.8	R-5.6
	2¾"	48"	75'	R-7.4	R-6.0
	2½"	48"	75'	R-8.5	R-7.0
	3"	48"	50'	R-10.2	R-8.4
1.0 PCF (16 kg/m³)	1½"	48"	100'	R-5.6	R-4.5
	2"	48"	75'	R-7.4	R-6.0
1.5 PCF (24 kg/m³)	1½"	48"	75'	R-6.1	R-4.8
	2"	48"	50'	R-8.2	R-6.4

**APPLICATION**

- Install Manson Insulation Alley Wrap B with facing to the outside to obtain specified R-value using a maximum of 25% compression.
- Butt all insulation joints firmly together. Longitudinal seam of the vapor retarder must be overlapped a minimum of 2" (51 mm). A 2" (51 mm) tab is provided for the circumferential seam and must be overlapped.
- Where vapor retarder performance is necessary, all penetrations, joints, seams and damage to the facing should be sealed with an FSK, PSK or foil tape or glass fabric and mastic prior to system startup.
- Pressure sensitive tapes should be a minimum 3" (76 mm) wide and be applied with moving pressure using an appropriate sealing tool. Staples should be outward clinch and placed approximately 6" (152 mm) on centre.

- Closure systems should have a 25/50 F.H.C. per UL 723.
- For rectangular ducts over 24" (610 mm) wide, secure the insulation to the bottom side of the duct with mechanical fasteners spaced on 18" (457 mm) centers to reduce sag. Care should be taken to avoid over compressing the insulation with the retaining washer.
- It is neither necessary nor desirable to adhere Alley Wrap B to duct surfaces with adhesive.
- Unfaced Alley Wrap B should be overlapped with a minimum of 2" (51 mm) and fastened with 4" (102 mm) to 6" (152 mm) nails or skewers placed 4" (102 mm) apart, or secured with a wire or banding system. Care must be taken to avoid damaging the Alley Wrap B. Refer to diagram for staple stitching and butt-joint method.



**APPLICATION & SPECIFICATION GUIDELINES**

**Storage**

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

**Preparation**

- Install Manson Insulation Alley Wrap B over clean, dry sheet metal ducts.
- All sheet metal joints and seams must be sealed to prevent air leakage from the duct.

**INSTALLATION PROCEDURES**

Use this table to determine stretch-outs required for the nominal thickness of insulation to limit average compression of the insulation to 25% or less.

STRETCH-OUTS				
LABELED THICKNESS	INSTALLED COMPRESSED THICKNESS	ROUND	SQUARE	RECTANGULAR
		P* +	P* +	P* +
1½" (38 mm)	1⅛" (29 mm)	9½" (241 mm)	8" (203 mm)	7" (178 mm)
2" (51 mm)	1½" (38 mm)	12" (305mm)	10" (254 mm)	8" (203 mm)
2⅜" (56 mm)	1⅝" (42 mm)	13" (330 mm)	11" (279 mm)	8½" (216 mm)
2½" (64 mm)	1⅞" (48 mm)	14½" (368 mm)	12½" (318 mm)	9½" (241 mm)
3" (76 mm)	2¼" (57 mm)	17" (432 mm)	14½" (368 mm)	11½" (292 mm)

\*P = Perimeter of duct to be installed.





## ALLEY-K®

Temperature Limit: 850°F (454°C)

### DESCRIPTION

Alley-K pipe insulation is a preformed insulation product composed of high quality glass fibers bonded together with a thermosetting resin. The 36" pipe sections are available with or without the all service jacket (ASJ). Our all service vapor retarder jakcet (ASJ) reinforced with glass fibers comes with a factory-applied, pressure-sensitive self-sealing lap closure system (SSL). Butt strips are also supplied.

### APPLICATION

Manson Insulation pipe insulation is intended as a thermal insulation product for hot and cold service piping. Typical uses include domestic hot and cold water, hot water heating, high temperature, dual temperature, steam, condensate and refrigerated lines. As a component of a suitable insulation system, plain pipe insulation may be used for light industrial applications, while pipe insulation with ASJ jacket may be used for commercial and institutional usage.

### INSTALLATION

Manson Insulation pipe insulation is usually installed in accordance with the procedure in the publication "Commercial & Industrial Standards" by the National Insulation Association (NIA).

### SPECIFICATION COMPLIANCE

**ASTM C547** Type I

**ASTM C795**

**ASTM C585**

**MIL-I-24244C**

**City of New York MEA 325-83-M**

**NRC Reg Guide 1.36**

**ASTM C1338**

**ASTM C356**

#### Jacketing

- UL 723/ASTM E84
- CGSB 51-GP-52M
- ASTM C1136 (Type I, II)
- Water Vapor Permeance (ASTM E-96): 0.02 perms MAX
- TAPPI T803 (Beach Units) Jacket minimum rating of 50 units

#### Surface Burning Characteristics

- UL/ULC Classified
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with CAN/ULC S102-M88 and NFPA 255

#### NFPA 90A and 90B

### PRODUCT FEATURES

#### Greenguard Certification

- Greenguard GOLD certified for indoor air quality performance.

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Temperature Limitation (ASTM C411)

- Up to 850°F (454°C)

#### Alkalinity (ASTM C871)

- Less than 0.6% as Na<sub>2</sub>O
- pH between 7.5 and 12.0

#### Corrosiveness (ASTM C665)

- No greater than sterile cotton

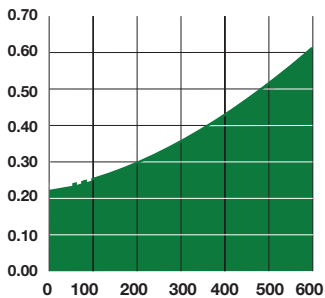
#### Water Vapor Sorption (ASTM C1104)

- 0.2% or less by volume

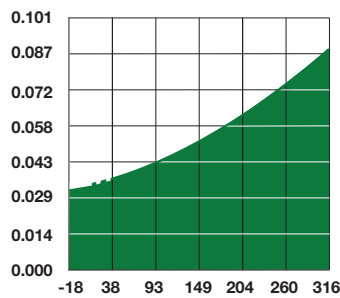
### THERMAL CONDUCTIVITY ASTM C335

°F	°C	BTU.IN/HR.FT <sup>2</sup> . °F	W/M. °C
75	24	0.23	0.033
100	38	0.24	0.035
200	93	0.28	0.040
300	149	0.34	0.049
400	204	0.42	0.061
500	260	0.51	0.074
600	316	0.62	0.089

### THERMAL CONDUCTIVITY BTU.IN/HR.FT<sup>2</sup>.°F



### METRIC THERMAL CONDUCTIVITY W/M. °C



### FIRE HAZARD CLASSIFICATION

	FLAME SPREAD	SMOKE DEVELOPED
Plain	25	50
ASJ	25	50

### HEAT UP SCHEDULE

TIME (HRS)	TEMPERATURE	TOTAL TIME (HRS)
3.5	550 F (288 C)	3.5
2.5	650 F (343 C)	6
2	750 F (399 C)	8

### NOTES

The chemical and physical properties of Manson Insulation Alley-K insulation 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 Manson Insulation Area Manager to assure information is current.

### USAGE QUALIFICATIONS

- Hot surface performance: tested to 850°F (454°C) according to ASTM C411.
- A sufficient thickness of insulation must be used to keep maximum surface temperature of Manson Insulation pipe insulation with ASJ jacket below 140°F (60°C).
- Apply when ambient and insulation temperatures are between 20°F and 130°F (-6.7°C and 54°C)
- When pressure sensitive self-sealing tape and butt strips are used, the material must be stored in a clean, dry environment.
- Keep adhesive and contact surfaces free from dirt and water, seal immediately once adhesive is exposed. Do not store product below -20°F (-29°F) or above 150°F (66°C). If stored below 20°F or above 130°F, allow insulation cartons to stand within recommended temperature range for 24 hours prior to application. When adhering SSL tape and butt strip, rub firmly with a hard object such as a plastic squeegee or back of a knife to assure good vapor seal.
- At operating temperatures above 500°F (260°C), Manson Insulation pipe insulation must be applied in a thickness ranging from 2" (51 mm) min to 6" (152 mm) max.
- Due to the fact that binder is organic in nature, we recommend the following heat up schedule for operating temperatures from 500°F (260°C) to 850°F (454°C). (see table)
- Fibrous insulation can emit an acrid odour during the initial heat-up when applied to hot surfaces above 392°F (200°C). It is recommended that adequate ventilation be provided and /or workers be supplied with approved full face respirators!

### 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.



## HIGH TEMPERATURE BATT & HD BLANKET

Temperature Limit: 1000°F (538°C)

### DESCRIPTION

High Temperature Batt & HD Blanket are semi-rigid thermal insulation products (1.6 PCF, 25.6 kg/m<sup>3</sup>), made from highly resilient, inorganic glass fibers, bonded by high-temperature thermosetting resin.

### APPLICATION

Manson Insulation High Temperature Batt & HD Blanket are used in high-temperature marine applications, industrial furnaces, boilers, vessels, and industrial ovens where light-weight insulation is needed or flexible and/or semi-rigid high-temperature insulation products are needed for irregular surfaces.

### FEATURES AND BENEFITS

#### Excellent Thermal Properties

- Low thermal conductivity
- Increase system efficiency and decrease fuel use

#### Resilient Glass Mineral Wool

- Maintains integrity at elevated temperatures

#### Low Installed Cost

- Lightweight and easy to handle and fabricate
- Flexibility makes them ideal for flat or irregular surfaces

#### Packaging - Cartons & Sleeves

- More resistant to abuse than standard HT blankets
- Tough and resilient
- Resist damage in shipment, during and after installation

### 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.

### SPECIFICATION COMPLIANCE

#### ASTM C795

#### ASTM C1139 replaces MIL-I-22023D

- Type I, Class 4 to Type I, Grade 5
- Type II, Class 4 to Type II, Grade 5

#### MIL-I-24244C

#### HH-1-558C

- Form B, Type I, Class 7,8
- NRC Reg Guide 1.36

#### In Canada

- CAN/ULC S102-M88

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E84, CAN/ULC S102-M88, UL 723

#### Temperature Limitation (ASTM C411)

- Up to 1000 °F (538 °C)

#### Microbial Growth (ASTM C1338)

- Does not promote or support the growth of mold
- Will not rot
- Will not support vermin

#### Alkalinity (ASTM C871)

- Less than 0.6% as Na<sub>2</sub>O
- pH between 7.5 and 12.0

#### Non-Corrosive (ASTM C665)

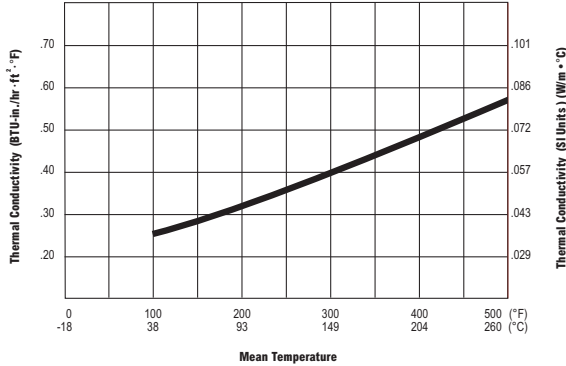
- Will not accelerate corrosion of steel
- Complies to stress corrosion requirements of MIL-I-24244C

#### Water Vapor Sorption (ASTM C1104)

- 0.1% or less by volume



**THERMAL EFFICIENCY (ASTM C177)**



MEAN TEMPERATURE	K	K(SI)
100°F (38°C)	0.24	0.035
200°F (93°C)	0.33	0.048
300°F (149°C)	0.44	0.063

**HT BATT FORMS AVAILABLE**

THICKNESS	WIDTH	LENGTH
1½" (38 mm)	24" (610 mm)	48" (1219 mm)
2" (51 mm)		
2½" (64 mm)		
3" (76 mm)		
3½" (89 mm)		
4" (102 mm)		

**HD BLANKET FORMS AVAILABLE**

THICKNESS	WIDTH	LENGTH
1½" (38 mm)	48" (1219 mm)	120 (36.6 m)
2" (51 mm)		80 (24.4 m)
2½" (64 mm)		70 (21.3 m)
3" (76 mm)		60 (18.3 m)
3½" (89 mm)		50 (15.2 m)
4" (102 mm)		40 (12.2 m)

**NOTES**

The chemical and physical properties of Manson Insulation High Temperature Batt & HD Blanket 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 assure information is current.

**APPLICATION & SPECIFICATION GUIDELINES**

**Precaution**

- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.

**Storage**

- Protect material from water damage or other abuse. Protect from welding sparks and open flame. The material may be stored outside if the packaging is not damaged.

**Preparation**

- Apply the product on clean, dry surfaces.

**Application**

- There is no heat-up cycle requires for Manson Insulation High Temperature Batt & HD Blanket.
- The product should be secured with welded pins or studs and covered with sheet metal. An alternate method entails covering the insulation with a metal mesh and insulating cement, canvassing and painting.
- Care should be taken to avoid over compressing the insulation with the retaining washer.
- Pins and studs shall be located a maximum of 4" (102 mm) from each edge and spaced no greater than 16" (406 mm) on centre.
- For application of Manson Insulation High Temperature Batt & HD Blanket over 500°F (260°C), double layer application is recommended with staggered joints.
- When using the products at 1000°F (538°C), it is recommended that no more than 6" (152 mm) thickness should be used. For thicknesses in excess of 6", contact your Manson Insulation Area Manager.

**CAUTION**

Glass mineral wool may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material. Wash with soap and warm water after handling. Wash work clothes separately and rinse washer. A disposable mask designed for nuisance type dusts should be used where sensitivity to dust and airborne particles may cause irritation to the nose or throat.





## HIGH TEMPERATURE BLANKET

Temperature Limit: 1000°F (538°C)

### DESCRIPTION

High Temperature Board is a lightweight insulation blanket (1.1 PCF, 17.6 kg/m<sup>3</sup>) made from highly resilient, inorganic glass fibers bonded with a high-temperature thermosetting resin.

### APPLICATION

Manson Insulation High Temperature Blanket is used for industrial heating equipment up to 1000°F (538°C), such as industrial furnaces, panel systems, marine applications and irregular surfaces.

### FEATURES AND BENEFITS

#### Excellent Thermal Properties

- Low thermal conductivity ratings to 1000°F (538°C)

#### Low Installed Cost

- Lightweight and easy to handle and fabricate
- Flexibility make them ideal for flat or irregular surfaces

#### Packaging- Cartons & Sleeves

- Tough and resilient
- Resists damage in shipment, during and after installation

FORMS AVAILABLE		
THICKNESS	WIDTH	LENGTH
1" (25 mm)	48" (1219 mm)	75' (22.9 m)
1½" (38 mm)		50' (15.2 m)
2" (51 mm)		75' (22.9 m)
2½" (64 mm)		60' (18.3 m)
3" (76 mm)		50' (15.2 m)
3½" (89 mm)		45' (13.7 m)
4" (102 mm)		40' (12.2 m)

### SPECIFICATION COMPLIANCE

#### ASTM C795

ASTM C1139 replaces MIL-I-22023D

#### MIL-I-24244C

#### HH-1-558C

- Form B, Class 7,8
- NRC Reg Guide 1.36

#### City of New York MEA 364-83-M

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E84, CAN/ULC S102-M88, and UL 723

#### Temperature Limitation (ASTM C411)

- Up to 1000°F (538°C)

#### Microbial Growth (ASTM C1338)

- Does not promote or support the growth of mold
- Will not rot
- Will not support vermin

#### Alkalinity (ASTM C871)

- Less than 0.6% as Na<sub>2</sub>O
- pH between 7.5 and 12.0

#### Non-Corrosive (ASTM C665)

- Will not accelerate corrosion of steel
- Complies to stress corrosion requirements of MIL-I-24244C

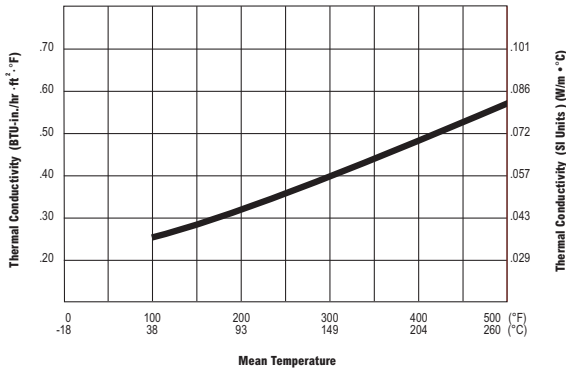
#### Water Vapor Sorption (ASTM C1104)

- 0.1% or less by volume

# HIGH TEMPERATURE BLANKET

Temperature Limit: 1000°F (538°C)

## THERMAL EFFICIENCY (ASTM C177)



MEAN TEMPERATURE	K	K(SI)
100°F (38°C)	0.28	0.040
200°F (93°C)	0.38	0.055
300°F (149°C)	0.52	0.075
400°F (204°C)	0.70	0.101
500°F (260°C)	0.90	0.130

## 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.

## NOTES

The chemical and physical properties of Manson Insulation High Temperature Blanket 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 assure information is current.

## APPLICATION & SPECIFICATION GUIDELINES

### Precaution

- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.

### Storage

- Protect material from water damage or other abuse. Protect from welding sparks and open flame. The material may be stored outside if the packaging is not damaged.

### Preparation

- Apply the product on clean, dry surfaces.

### Application

- There is no heat-up cycle requires for Manson Insulation High Temperature Blanket.
- The product should be secured with welded pins or studs and covered with sheet metal. An alternate method entails covering the insulation with a metal mesh and insulating cement, canvassing and painting.
- Care should be taken to avoid over compressing the insulation with the retaining washer.
- Pins and studs shall be located a maximum of 4" (102 mm) from each edge and spaced no greater than 16" (406 mm) on centre.
- For application of Manson High Temperature Blanket over 500°F (260°C), double layer application is recommended with staggered joints.

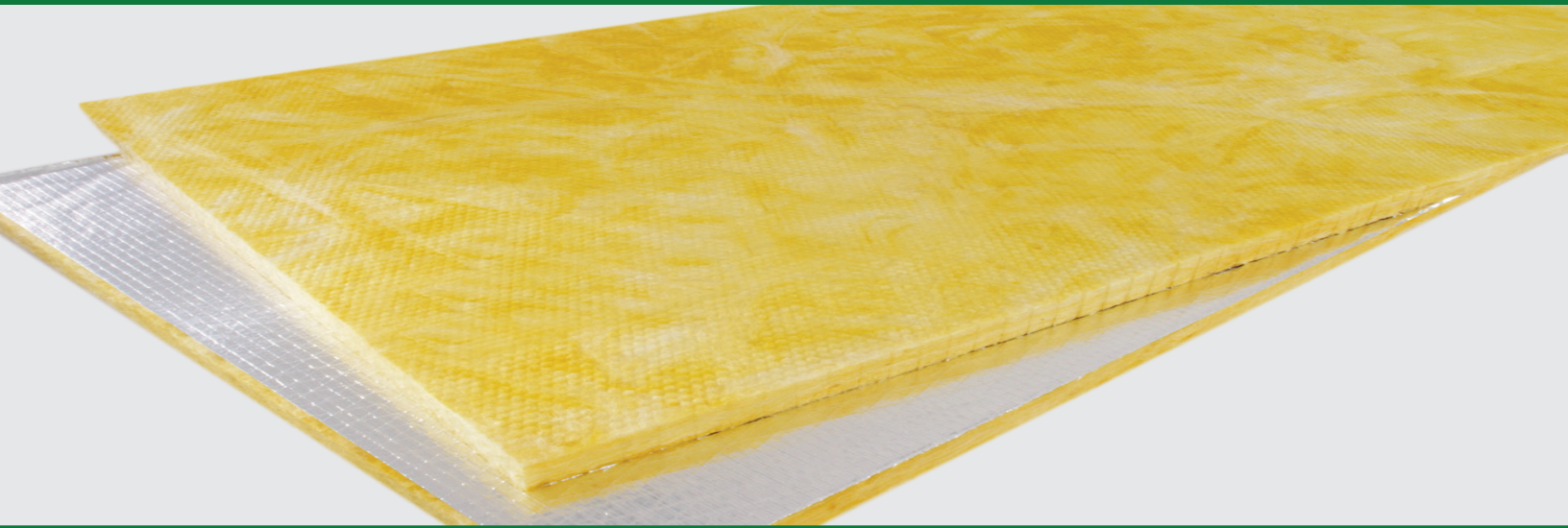
### CAUTION

Glass mineral wool may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material. Wash with soap and warm water after handling. Wash work clothes separately and rinse washer. A disposable mask designed for nuisance type dusts should be used where sensitivity to dust and airborne particles may cause irritation to the nose or throat.



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## HIGH TEMPERATURE BOARD

Temperature Limit: 850°F (454°C)

### DESCRIPTION

High Temperature Board is a lightweight insulation (2.8 PCF, 44.9 kg/m<sup>3</sup>) product made from inorganic glass fibers bonded with a high-temperature thermosetting resin.

### APPLICATION

Manson Insulation High Temperature Board is used for boiler walls, hot precipitators, hot ductwork, cylindrical tanks, towers, stacks, and industrial ovens.

### FEATURES AND BENEFITS

#### Excellent Thermal Properties

- Reduces operating cost

#### Resilient Fiber Glass

- Maintains integrity at elevated temperatures

#### Low Installed Cost

- Lightweight
- Easy to Fabricate

#### Packaging - Cartons & Sleeves

- Damage resistant
- Reduces storage space

FORMS AVAILABLE		
THICKNESS	WIDTH	LENGTH
1" (25 mm)		
1½" (38 mm)		
2" (51 mm)	24" (610 mm)	48" (1219 mm)
2½" (64 mm)	and	and
3" (76 mm)	48" (1219 mm)	96" (2438 mm)
3½" (89 mm)		
4" (102 mm)		

### SPECIFICATION COMPLIANCE

#### ASTM C612

- Type IA
- Type IB
- Type II - Category 1

#### ASTM C795

#### ASTM C1139 replaces MIL-I-22023D

- Type III

#### MIL-I-24244C

#### HH-1-558C (Amend 3)

- Form A, Class 1, 2, 3

#### NRC Reg Guide 1.36

#### City of New York MEA 326-83-M

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E84, CAN/ULC S102-M88 and UL 723

#### Temperature Limitation (ASTM C411)

- Up to 850°F (454°C)

#### Microbial Growth (ASTM C1338)

- Does not promote or support the growth of mold

#### Alkalinity (ASTM C871)

- Less than 0.6% as Na<sub>2</sub>O
- pH between 7.5 and 12.0

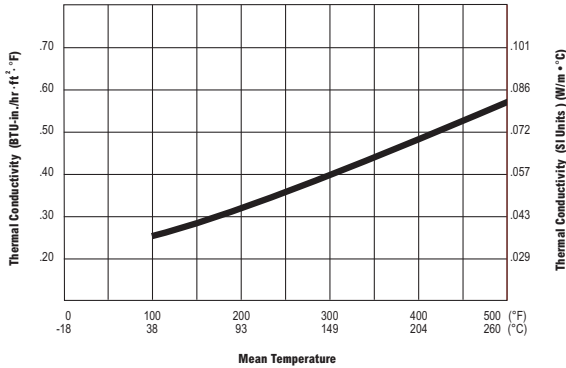
#### Corrosiveness (ASTM C 665)

- Will not accelerate corrosion of steel

# HIGH TEMPERATURE BOARD

Temperature Limit: 850°F (454°C)

## THERMAL EFFICIENCY (ASTM C177)



MEAN TEMPERATURE	K	K(SI)
100°F (38°C)	0.25	0.036
200°F (93°C)	0.33	0.048
300°F (149°C)	0.40	0.058
400°F (204°C)	0.49	0.071
500°F (260°C)	0.57	0.082

## 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.

## NOTES

The chemical and physical properties of Manson Insulation High Temperature Board 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 assure information is current.

## APPLICATION & SPECIFICATION GUIDELINES

### Precaution

- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.

### Storage

- Protect material from water damage or other abuse. Cartons are not designed for outside storage. Vacuum packaged material can be stored outside if care is taken not to puncture the polybag.

### Preparation

- Apply the product on clean, dry surfaces.

### Application

- All insulation joints must be firmly butted. Mount flush against surfaces up to 850°F (454°C) or use in panels mounted away from operating surface.
- Manson Insulation High Temperature Board is designed to be applied over welded pins and/or studs up to 1/2" (13 mm) in diameter. The board is to be held in place by speed washers, tension clips or metal mesh reinforcement.
- Installation method should not compress material beyond maximum of 5% at any point.
- Pins and studs shall be located a maximum of 4" (102 mm) from each edge and spaced no greater than 16" (406 mm) on center.
- In temperatures over 550°F (288°C) and designed thickness over 3" (76 mm) dual layer application with staggered joints is recommended. Install thickness recommended by Manson Insulation or NAIMA 3E Plus program.
- Finish surface with metal cover, or with insulating cement and canvas.

### CAUTION

Glass mineral wool may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material. Wash with soap and warm water after handling. Wash work clothes separately and rinse washer. A disposable mask designed for nuisance type dusts should be used where sensitivity to dust and airborne particles may cause irritation to the nose or throat.

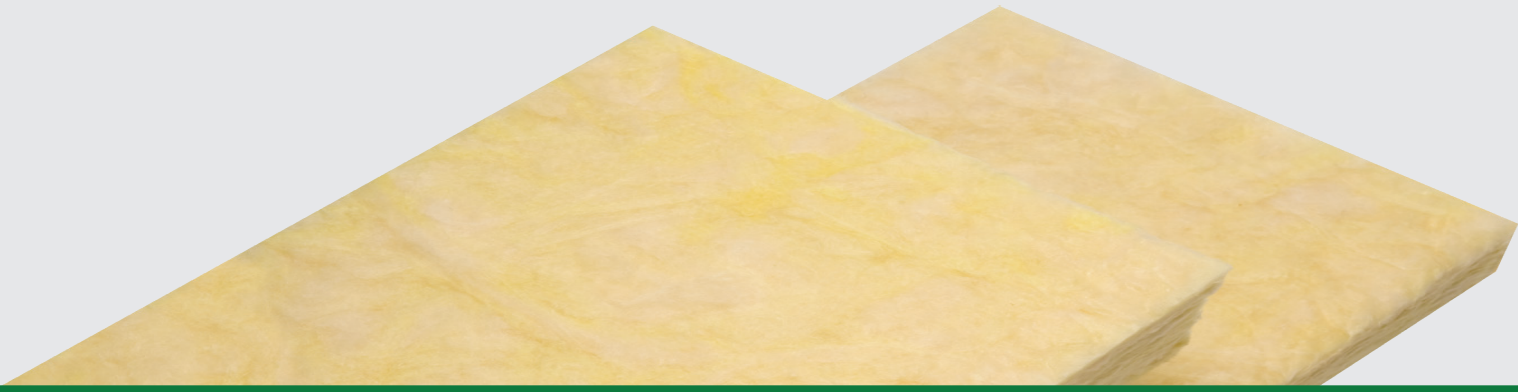


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## HIGH TEMPERATURE PANEL

Temperature Limit: 1000°F (538°C)

### DESCRIPTION

High Temperature Panel is a semi-rigid, thermal insulation board (2.4 PCF, 38.4 kg/m<sup>3</sup>) made from highly resilient, inorganic glass fibers, bonded by high-temperature, thermosetting resin.

### APPLICATION

Manson Insulation High Temperature Panel is suitable for use in industrial heating applications up to 1000°F (538°C), such as high-temperature panel systems for ducts and precipitators, boilers, vessels, and industrial ovens. It is ideal for use in metal mesh blankets.

### FEATURES AND BENEFITS

#### Excellent Thermal Properties

- Reduces operating costs

#### Resilient Glass Mineral Wool

- Maintains integrity at elevated temperatures

#### Low Installed Cost

- Lightweight
- Easy to fabricate

#### Packaging - Cartons & Sleeves

- Damage resistant
- Reduces storage space

### 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.

### SPECIFICATION COMPLIANCE

#### ASTM C612

- Type IA
- Type IB
- Type II- category 1
- Type III

#### ASTM C795

#### MIL-I-24244C

#### HH-1-558C

- Form A, Class 1, 3
- NRC Reg Guide 1.36

#### ASTM C1139

- Type I, Grade 5
- Type II, Grade 5

#### City of New York MEA 362-83-M

### PRODUCT FEATURES

#### Greenguard Certification

- Over 50% post-consumer recycled glass

#### EUCEB

- This product is tested and certified to meet EUCEB requirements.

#### Surface Burning Characteristics

- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E84, CAN/ULC S102-M88 and UL 723

#### Temperature Limitation (ASTM C411)

- Up to 1000°F (538°C)

#### Microbial Growth (ASTM C1338)

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

#### Alkalinity (ASTM C871)

- Less than 0.6% as Na<sub>2</sub>O
- pH between 7.5 and 12.0

#### Corrosiveness (ASTM C665)

- Will not accelerate corrosion of steel
- Complies to stress corrosion requirements of ASTM C795, MIL-I-24244C and NRC Reg. Guide 1.36

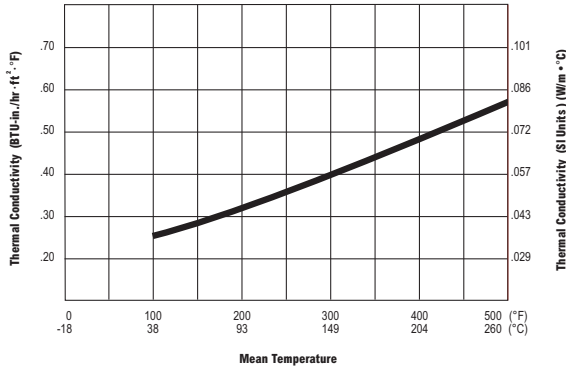
#### Water Vapor Sorption (ASTM C1104)

- 0.1% or less by volume

# HIGH TEMPERATURE PANEL

Temperature Limit: 1000°F (538°C)

## THERMAL EFFICIENCY (ASTM C177)



MEAN TEMPERATURE	K	K(SI)
100°F (38°C)	0.25	0.036
200°F (93°C)	0.32	0.046
300°F (149°C)	0.40	0.063
400°F (204°C)	0.52	0.075
500°F (260°C)	0.68	0.098

## FORMS AVAILABLE

THICKNESS	WIDTH	LENGTH
1" (25 mm)	24" (610 mm) and 48" (1219 mm)	24" (610 mm) to 120" (3048 mm)
1½" (38 mm)		
2" (51 mm)		
2½" (64 mm)		
3" (76 mm)		
3½" (89 mm)		
4" (102 mm)		

## NOTES

The chemical and physical properties of Manson Insulation High Temperature Panel 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 assure information is current.

## APPLICATION & SPECIFICATION GUIDELINES

### Precaution

- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.

### Storage

- Protect material from water damage or other abuse. Cartons are not designed for outside storage. Vacuum packaged material can be stored outside if care is taken not to puncture the polybag.

### Preparation

- Apply the product on clean, dry surfaces.

### Application

- All insulation joints must be firmly butted. Mount flush against surfaces to 1000°F (538°C) or use in panels mounted away from operating surface.
- Manson Insulation High Temperature Panel is designed to be applied over welded pins and/or studs up to ½" (13 mm) in diameter. The board is to be held in place by speed washers, tension clips or metal mesh reinforcement.
- Installation method should not compress material beyond maximum of 5% at any point.
- Pins and studs shall be located a maximum of 4" (102 mm) from each edge and spaced no greater than 16" (406 mm) on center.
- In temperatures over 550°F (288°C) and designed thickness over 3" (76 mm) dual layer application with staggered joints is recommended. Install thickness recommended by Manson Insulation or NAIMA 3E Plus program.
- Finish surface with metal cover, or with insulating cement and canvas.

### CAUTION

Glass mineral wool may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material. Wash with soap and warm water after handling. Wash work clothes separately and rinse washer. A disposable mask designed for nuisance type dusts should be used where sensitivity to dust and airborne particles may cause irritation to the nose or throat.



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