

INSULATION BOARD

DESCRIPTION

Knauf Insulation 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, with a factory-applied FSK facing, or with a factory-applied all-service jacket (ASJ).

APPLICATION

Knauf Insulation 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.

FEATURES AND BENEFITS

Energy Conservation

- Excellent thermal efficiency results in lower operating costs.

Low-Cost Installation

- Lightweight, easy to handle and fabricate.
- Fast, easy installation lowers labor costs.

Noise Reduction

- Excellent acoustical properties effectively reduce noise.

Appearance

- Both FSK and ASJ vapor-retardant facings provide a pleasing appearance.

SPECIFICATION COMPLIANCE

In U.S.:

- ASTM C 612;
 - 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 C 795
- ASTM C 1136 (facings);
 - Type I, II, III, IV (ASJ)
 - Type II, IV (FSK)
- California Title 24
- HH-B-100B; Type I (ASJ facing), Type II (FSK facing)
- HH-I-558C;
 - Form A, Class 1 (1.6, 2.25, 3.0, 4.25, 6.0 pcf) (26, 36, 48, 68, 96 kg/m³)
 - Form A, Class 2 (3.0, 4.25, 6.0 pcf) (48, 68, 96 kg/m³)
- MIL-I-24244C
- NFPA 90A and 90B
- NRC Reg. Guide 1.36

In Canada:

- CAN 4-S102
- CGSB 51-GP-10M
- CGSB 51-GP-52M (facings)

TECHNICAL DATA

Surface Burning Characteristics (UL Classified)

- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, CAN 4-S102, NFPA 90A and 90B, NFPA 255 and UL 723.

Temperature Range (ASTM C 411)

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

Corrosiveness (ASTM C 665)

- Will not accelerate corrosion of aluminum, steel or copper.
- Meets the stress corrosion requirements of ASTM C 795, MIL-I-24244C and NRC 1.36.

Puncture Resistance (TAPPI Test T803) (Beach Units)

- FSK Facing: 25
- ASJ facing: 50

Water Vapor Transmission (ASTM E 96, Procedure A)

- Both FSK and ASJ vapor retarders have a maximum vapor transmission rate of .02 perms.

Water Vapor Sorption (ASTM C 1104)

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

Shrinkage (ASTM C 356)

- Less than 0.3% linear shrinkage.

APPLICATION AND 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. Metal ducts must be sealed before application. Prescore rigid insulation board where necessary to conform to curved surfaces.

Application

GENERAL:

- All insulation joints must be firmly butted. Insulation can be secured with adhesive, mechanical fasteners, or banded. Minimum compression is to be used to assure firm fit and still maintain thermal performance.
- Vapor retarders should overlap a minimum of 2" (51 mm) at all seams, and be sealed with appropriate pressure sensitive tape or mastic. When applying pressure sensitive tapes, the tape must be firmly rubbed with a proper sealing tool to make sure the closure is secure. Follow tape manufacturer's recommendations.
- Fasteners shall be located a maximum of 3" (76 mm) from each edge and spaced no greater than 12" (305 mm) on center.
- Where vapor retarder performance is necessary, all penetrations and facing damage shall be repaired with tapes or mastic with a minimum of 2" (51 mm) overlap. Tapes should be applied using a sealing tool and moving pressure. Use on ducts, plenums, vessels, tanks and equipment operating at temperatures of 450°F (232°C) or less.
- Tapes and mastics (dry) should have a UL 723 rating of 25 flame spread, 50 smoke developed.

DUCTS AND PLENUMS:

- Use 3.0 pcf (48 kg/m³) insulation board in concealed areas.
- Use 6.0 pcf (96 kg/m³) insulation board in exposed areas.
- Insulation Board is not designed to be exposed to the airstream.

VESSELS, TANKS AND EQUIPMENT:

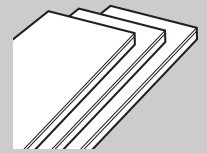
- For irregular surfaces, use 1.6 pcf (26 kg/m³) insulation board and band with minimum compression.
- For outdoor application, Knauf Insulation Board must be covered with appropriate jacketing, mastic or other vapor retarder. All exposed surfaces must be protected.
- Apply jacketing, mastics and other vapor retarders in accordance with manufacturer's instructions.

Caution

Fiber glass 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.

NOTES

The chemical and physical properties of Knauf Insulation Board represent typical 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 Knauf regional office to assure information is current.



Submittal Sheet

Form No. IC-SS-2

Effective: 10/01

Supersedes, IC-SS-2

Dated 11/00

Submittal Date:

KNAUF

"This is my insulation."®

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Knauf has regional offices throughout the U.S. and Canada. For the number of the nearest office, call (800) 825-4434.

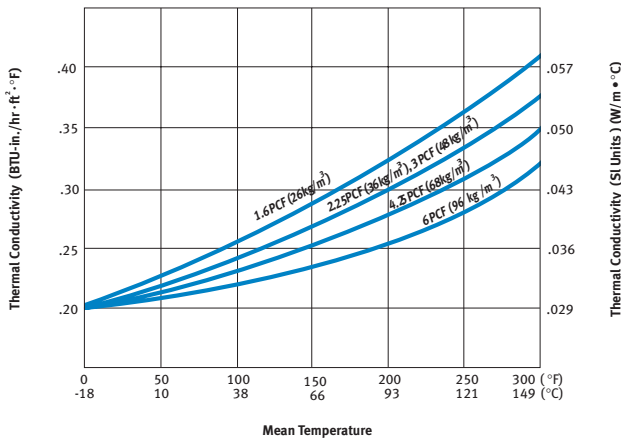
INSULATION BOARD

SOUND ABSORPTION COEFFICIENTS (ASTM C 423, TYPE A MOUNTING)

$\frac{1}{3}$ Octave Band Center Frequency (cycles/sec.)

Type	Facing	Thickness	125	250	500	1000	2000	4000	NRC
1.6 PCF (26 kg/m ³)	Plain	1½" (38 mm)	.19	.44	.86	.98	1.00	1.02	.80
		2" (51 mm)	.31	.57	.96	1.04	1.03	1.03	.90
		2½" (64 mm)	.43	.82	1.12	1.07	1.04	1.03	1.00
		3" (76 mm)	.47	.92	1.17	1.06	1.06	1.04	1.05
2.25 PCF (36 kg/m ³)	Plain	1" (25 mm)	.05	.24	.59	.86	.97	1.00	.65
		1½" (38 mm)	.17	.49	.93	1.03	1.03	.99	.85
		2" (51 mm)	.26	.62	1.05	1.07	1.04	1.05	.95
	FSK	1" (25 mm)	.14	.69	.81	.99	.55	.27	.75
2" (51 mm)		.63	.76	1.11	.75	.42	.22	.75	
3.0 PCF (48 kg/m ³)	Plain	1" (25 mm)	.08	.23	.62	.88	.96	.99	.65
		1½" (38 mm)	.09	.39	.89	1.03	1.06	1.01	.85
		2" (51 mm)	.29	.65	1.11	1.13	1.06	1.03	1.00
		3" (76 mm)	.54	1.01	1.18	1.07	1.07	1.04	1.10
	FSK	1" (25 mm)	.21	.63	.84	.93	.51	.22	.75
		1½" (38 mm)	.45	.60	.99	.73	.53	.27	.70
		2" (51 mm)	.67	.77	.93	.74	.47	.28	.75
	ASJ	1" (25 mm)	.15	.71	.65	.82	.41	.16	.65
1½" (38 mm)		.42	.55	.91	.69	.40	.23	.65	
2" (51 mm)	.75	.71	.80	.66	.41	.24	.65		
	4.25 PCF (68 kg/m ³)	Plain	1" (25 mm)	.06	.24	.69	.99	1.05	1.02
ASJ	2½" (64 mm)	.75	.63	.63	.62	.41	.25	.55	
6.0 PCF (96 kg/m ³)	Plain	1" (25 mm)	.05	.26	.77	1.04	1.04	1.03	.80
		1½" (38 mm)	.13	.58	1.01	1.05	1.00	1.01	.90
		2" (51 mm)	.32	.81	1.08	1.06	1.03	1.04	1.00
	FSK	1" (25 mm)	.23	.65	.39	.48	.47	.32	.50
		1½" (38 mm)	.61	.47	.78	.61	.51	.35	.60
		2" (51 mm)	.77	.50	.72	.58	.53	.41	.60
	ASJ	1½" (38 mm)	.60	.46	.62	.48	.47	.31	.50
		2" (51 mm)	.77	.44	.60	.50	.41	.30	.50

Thermal Efficiency (ASTM C 177)



Mean Temperature	1.6 PCF		3.0 PCF		6.0 PCF	
	k	k (SI)	k	k (SI)	k	k (SI)
75°F (24°C)	.24	.035	.23	.033	.22	.032
100°F (38°C)	.25	.036	.24	.035	.23	.033
200°F (93°C)	.33	.048	.29	.042	.27	.039
300°F (149°C)	.42	.061	.37	.053	.34	.049

INSULATION BOARD FORMS AVAILABLE *

Density (PCF)	Thickness	R-Value	(R-SI)
1.6 (26 kg/m ³)	1½" (38 mm)	6.3	(1.1)
	2" (51 mm)	8.3	(1.5)
	2½" (64 mm)	10.4	(1.8)
	3" (76 mm)	12.5	(2.2)
	3½" (89 mm)	14.6	(2.6)
2.25 (36 kg/m ³)	4" (102 mm)	16.7	(2.9)
	1" (25 mm)	4.3	(0.8)
	1½" (38 mm)	6.5	(1.1)
	2" (51 mm)	8.7	(1.5)
	2½" (64 mm)	10.9	(1.9)
3.0 (48 kg/m ³)	3" (76 mm)	13.0	(2.3)
	3½" (89 mm)	15.2	(2.7)
	4" (102 mm)	17.4	(3.1)
	1" (25 mm)	4.3	(0.8)
	1½" (38 mm)	6.5	(1.1)
4.25 (68 kg/m ³)	2" (51 mm)	8.7	(1.5)
	2½" (64 mm)	10.9	(1.9)
	3" (76 mm)	13.0	(2.3)
	1" (25 mm)	4.3	(0.8)
	1½" (38 mm)	6.5	(1.1)
6.0 (96 kg/m ³)	2" (51 mm)	8.7	(1.5)
	2½" (64 mm)	10.9	(1.9)
	1" (76 mm)	4.4	(0.8)
6.0 (96 kg/m ³)	1½" (89 mm)	6.7	(1.2)
	2" (102 mm)	8.9	(1.6)

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