

Commercial Building Insulation with *ECOSE[®]* Technology

Submittal Date _____



Submitted To

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EcoBatt® Insulation with ECOSE® Technology			
Product Description	R-Value (RSI)	Thickness	Location
Unfaced Thermal and Acoustical			
<p>Glass mineral wool insulation designed to be friction fit between metal framing members. Specifier permitted choice of warm side vapor retarders, including foil backed gypsum board or polyethylene film. Unfaced glass mineral wool insulation is also an excellent sound control insulation, designed for installation in partition walls and as a lay-in over acoustical ceiling panels. When tested in accordance with ASTM E84, material has Fire Hazard Classification of 25/50 or less.</p> <p>Specification Compliance</p> <ul style="list-style-type: none"> • ASTM C665; Type I, Class A • HH-I-521F; Type I, Class A • ASTM E136 	R-8 (1.4)	2½" (64 mm)	
	R-11 (1.9)	3½" (89 mm)	
	R-13 (2.3)	3½" (89 mm)	
	R-15 (2.6)	3½" (89 mm)	
	R-19 (3.3)	6¼" (159 mm)	
	R-20 (3.5)	5½" (140 mm)	
	R-21 (3.7)	5½" (140 mm)	
	R-25 (4.4)	8" (203 mm)	
	R-30 (5.3)	10" (254 mm)	
	R-30 HD (5.3)	8¼" (210 mm)	
	R-38 (6.7)	12" (311 mm)	
	R-38 HD (6.7)	10¼" (260 mm)	
R-49 (8.6)	13¾" (349 mm)		
Kraft Faced Thermal and Acoustical			
<p>Glass mineral wool insulation with kraft paper with flanges. Kraft vapor retarder has vapor transmission (permeance) rating of 1.0 or less. Kraft faced glass mineral wool insulation is also an excellent sound control insulation, designed for installation in partition walls and as a lay-in over acoustical ceiling panels. Kraft facing will burn and should not be left exposed. Install kraft facing in contact with approved finish material.</p> <p>Specification Compliance</p> <ul style="list-style-type: none"> • ASTM C665; Type II, Class C • HH-I-521F; Type II, Class C 	R-11 (1.9)	3½" (89 mm)	
	R-13 (2.3)	3½" (89 mm)	
	R-15 (2.6)	3½" (89 mm)	
	R-19 (3.3)	6¼" (159 mm)	
	R-20 (3.5)	5½" (140 mm)	
	R-21 (3.7)	5½" (140 mm)	
	R-25 (4.4)	8" (203 mm)	
	R-26 (4.6)	9" (229 mm)	
	R-30 (5.3)	10" (254 mm)	
	R-30 HD (5.3)	8¼" (210 mm)	
	R-38 (6.7)	12" (311 mm)	
	R-38 HD (6.7)	10¼" (260 mm)	
R-49 (8.6)	13¾" (349 mm)		
FSK-25 Foil Faced			
<p>Glass mineral wool insulation with a flanged reinforced foil/scrim/kraft facing with an average vapor transmission (permeance) rating of 0.04. When tested in accordance with ASTM E84, material has Fire Hazard Classification of 25/50 or less.</p> <p>Specification Compliance</p> <ul style="list-style-type: none"> • ASTM C665; Type III, Class A • HH-I-521F; Type III, Class A 	R-11 (1.9)	3½" (89 mm)	
	R-13 (2.3)	3½" (89 mm)	
	R-19 (3.3)	6¼" (159 mm)	
	R-21 (3.7)	5½" (140 mm)	
	R-30 (5.3)	10" (254 mm)	
	R-38 (6.7)	12" (311 mm)	
Foil Faced			
<p>Glass mineral wool foil insulation with asphalt-coated kraft/foil facing with flanges. Foil vapor retarder has vapor transmission (permeance) rating of 0.05 or less. Insulation should not be left exposed. Install foil facing in contact with approved finish material.</p> <p>Specification Compliance</p> <ul style="list-style-type: none"> • ASTM C665; Type III, Class B • HH-I-521F; Type III, Class B 	R-11 (1.9)	3½" (89 mm)	
	R-13 (2.3)	3½" (89 mm)	
	R-19 (3.3)	6¼" (159 mm)	
	R-21 (3.7)	5½" (140 mm)	
	R-30 (5.3)	10" (254 mm)	
	R-38 (6.7)	12" (311 mm)	

Theater Insulation

Product Description	Density	Thickness	Location
Wall and Ceiling Liner M with ECOSE® Technology			
Brown 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. It 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. When tested in accordance with ASTM E84 and UL 723, material has Fire Hazard Classification of 25/50 or less.	1.0 PCF (16 kg/m³)	1" (25 mm)	
		1½" (38 mm)	
		2" (51 mm)	
	1.5 PCF (24 kg/m³)	½" (13 mm)	
		1" (25 mm)	
		1½" (38 mm)	
		2" (51 mm)	
	2.0 PCF (32 kg/m³)	½" (13 mm)	
		1" (25 mm)	
Black Acoustical Board with ECOSE® Technology			
Heavy density glass mineral wool board insulation; the base board is brown with a black mat applied to provide a smooth tough finish. When tested in accordance with ASTM E84, UL 723 and NFPA 255, material has Fire Hazard Classification of 25/50 or less.	2.25 PCF (36 kg/m³)	2" (51 mm)	
	3.0 PCF (48 kg/m³)	1½" (38 mm)	
		2" (51 mm)	

Product Description	Density	Thickness	R-Value (RSI)	Location
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Earthwool® Insulation Board with ECOSE® Technology				
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. It is bonded with ECOSE Technology and is available plain or with a factory-applied foil-scrim-kraft (FSK) facing or all-service jacket (ASJ+). When tested in accordance with ASTM E84, material has Fire Hazard Classification of 25/50 or less.	1.6 PCF (26 kg/m³)	1½" (38 mm)	R-6.3 (1.1)	
		2" (51 mm)	R-8.3 (1.5)	
		2½" (64 mm)	R-10.4 (1.8)	
		3" (76 mm)	R-12.5 (2.2)	
		3½" (89 mm)	R-14.6 (2.6)	
		4" (102 mm)	R-16.7 (2.9)	
	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)	
		2½" (64 mm)	R-10.9 (1.9)	
		3" (76 mm)	R-13.0 (2.3)	
		3½" (89 mm)	R-15.2 (2.7)	
		4" (102 mm)	R-17.4 (3.1)	
		1" (25 mm)	R-4.3 (0.8)	
	3.0 PCF (48 kg/m³)	1½" (38 mm)	R-6.5 (1.1)	
		2" (51 mm)	R-8.7 (1.5)	
		2½" (64 mm)	R-10.9 (1.9)	
		3" (76 mm)	R-13.0 (2.3)	
		3½" (89 mm)	R-15.2 (2.7)	
		4" (102 mm)	R-17.4 (3.1)	
	4.25 PCF (68 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)	
		2½" (64 mm)	R-10.9 (1.9)	
6.0 PCF (96 kg/m³)	1" (25 mm)	R-4.4 (0.8)		
	1½" (38 mm)	R-6.7 (1.2)		
	2" (51 mm)	R-8.9 (1.6)		

- Specification Compliance**
- UL/ULC Classified (FSK, ASJ+)
 - ASTM C612
 - 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)
 - MIL-I-24244C
 - NRC Reg. Guide 1.36 (Certification needs to be specified at time of order)
 - ASTM C1136
 - Type I, II, III, IV, VIII (ASJ+)
 - Type II, IV (FSK)
 - California Title 24
 - HH-B-100B
 - Type I (ASJ+)
 - Type II (FSK)
 - HH-I-558B
 - 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)
 - NFPA 90A and 90B

ECOSE® TECHNOLOGY

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

ACOUSTICAL PERFORMANCE

Knauf Insulation EcoBatt® Insulation with ECOSE® Technology provides excellent acoustical properties and will reduce sound transmission when properly installed in partition walls and acoustical ceiling and floor systems. Knauf Insulation EcoBatt Acoustical/Thermal Insulation can improve STC ratings in wood stud construction by 3 to 5 points and metal stud construction by 8 to 10 points depending upon the complexity of the wall configurations, R-values and layers of insulation.

The below table illustrates the improved STC Ratings using Knauf Insulation EcoBatt acoustical/thermal insulation compared to no insulation.

THERMAL RESISTANCE

Thermal resistance (R-value) of the blanket insulation only is certified to be as represented above when measured at a mean temperature of 75° F (24° C) and subject to manufacturing and testing tolerances.

SURFACE BURNING CHARACTERISTICS

Knauf Insulation Unfaced Batts and Blankets, FSK-25 Batts, Insulation Board, Wall and Ceiling Liner M and Black Acoustical Board do not exceed 25 Flame Spread and 50 Smoke Developed when tested in accordance with ASTM E84.

FIRE SAFETY

Knauf Insulation Unfaced Batts are considered noncombustible according to ASTM E136. Facings and coated products do affect fire safety and burning characteristics. Please consult your Knauf Insulation sales representative or technical support for additional information and appropriate applications.

CERTIFICATIONS

- UL Environment
 - GREENGUARD
 - GREENGUARD Gold
 - Formaldehyde free
- USGBC LEED
- EUCEB

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

Knauf Insulation is registered to ISO 9001:2000 in the prevention, detection and correction of problems in production and service areas. The chemical and physical properties of Knauf Insulation products with ECOSE Technology—Unfaced Batts and Blankets, FSK-25 Batts, Insulation Board, Wall and Ceiling Liner M and Black Acoustical 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 Insulation Territory Manager to ensure information is current.

STC Ratings*				
	With insulation	No insulation	With insulation	No insulation
Wood Frame, 2x4 (3½"-4" Batt)	(with ½" gypsum wallboard both sides)		(with ⅝" gypsum wallboard both sides)	
Single studs/Single layer gypsum	38	35	38	34
Single studs/Resilient channel	47	39	52	40
Staggered studs/Single layer gypsum	49	39	51**	43
Double stud walls/Single layer gypsum	57	46	56	45
Steel Frame (2½" Studs) (2½"-2⅝" Batt)	(with ½" gypsum wallboard both sides)		(with ⅝" gypsum wallboard both sides)	
Single layer gypsum	45	36	47	39
Double layer gypsum one side/Single layer gypsum other side	50	39	52	44
Double layer both sides	54	45	57	48
Steel Frame (3⅝" Studs) (3½"-4" Batt)	(with ½" gypsum wallboard both sides)		(with ⅝" gypsum wallboard both sides)	
Single layer gypsum	47	39	50	39
Double layer gypsum one side/Single layer gypsum other side	52	42	55	47
Double layer both sides	56	50	58	52

*See NAIMA publication BI405 for additional information. **Uses 2"-2½" Batts
 These products are covered by one or more U.S. and/or other patents. See patent www.knaufinsulation.us/patents.