



EXOACM Noise attenuation (EXO = exoskeletal)

1.0 In respect of targeting sound pressure level (SPL) insertion loss, the considerations are:

1. Transmission loss.
2. Absorption

And the balance thereof!

1.1 Transmission loss: All materials have a coefficient of transmission loss and generically, prior to application of science, the denser the material the greater the transmission loss. Sheet steel is ‘high density’ and has a high transmission loss, however 14ga galvanized (typical material) enclosures are assembled from ‘folded’ panels which: a) have panel joints i.e. noise escape paths and b) are inherently flexible (see stiffness tests at 1.3) allowing ‘drumming’ excited by low frequency sound pressure waves not attenuated by absorption efforts - See 1.2.

Steel panel enclosures without any absorption treatment can often increase internal, and external SPL at certain higher frequencies.

1.2 Absorption: Objective; Reduce SPL within the enclosure, particularly at higher frequency ranges and dissipate energy laterally within the insulation converting such energy to heat. *Point of note: The lower the SPL the less demands placed upon transmission loss.*

Thoughts:

- 1) *It is clear then that, ‘do a good job of absorption transmission loss is less significant’....yes but!.. We have to restrain the insulation material to allow absorption to be optimal.*
- 2) *Likewise if we eliminate drumming we incur greater performance.*
- 3) *Surely if we do a good job of both aspects (absorption and transmission loss) and have an optimal system (‘system’ defined as conjoining the two fundamentals), science will have prevailed and performance optimized.*

1.3 Material selection for Transmission loss

ACM is a laminate composite - in addition its mineral (or propylene) core has dampening properties. Conversely steel, as discussed above, in respect of noise can easily encounter ‘drumming’ if not carefully, strategically stiffened.

See following table - Steel versus ACM deflection.

The following tests were conducted using identically dimensioned test pieces (1) 14ga Steel, (1) 4mm ACM, each 3” x 31” supported at 24” centers (Image 1). Note: Steel self-weight deflected – flexible!

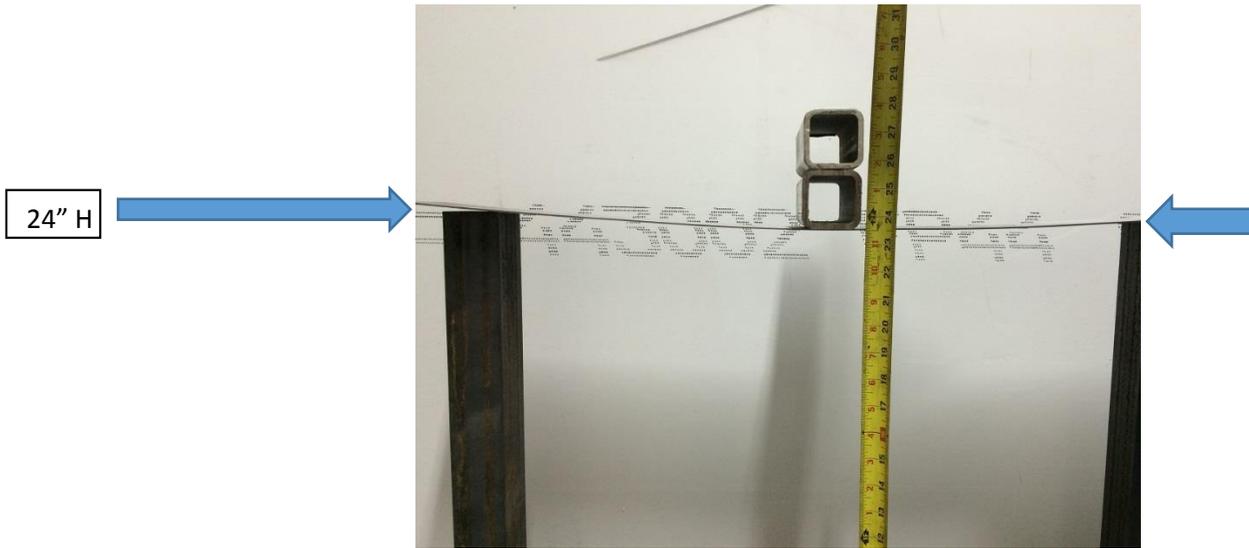
Test Results	Applied weight –lbs.	Steel - lbs	ACM - lbs
Test piece weight (31x3)		1.911408	0.7275255
Total Deflection (inches)	0	0.125	0
Total Deflection (inches)	1.95991	.250	.125
Total Deflection (inches)	3.919819	.500	.250
Total Deflection (inches)	6.347109	.750	.3125
Total Deflection (inches)	8.276153	1.000	.375
Deflection lb./inch	(8.276153/Deflection)	0.120	0.45

Result: ACM greater than twice as stiff.



EXOACM -4 mm Aluminum Composite material (ACM) Noise White paper / test results.

Image 1 Test method – Uprights 24" High and at 24" Ctrs. (14ga Steel depicted with 1.95lbs)



Steel 8.28lbs

ACM 8.28lbs





1.3.1 Application note: Above test results are using ‘un restrained’ test samples with zero tensile advantage. Since in EXOACM configuration ACM is subject to directly opposed restraint, resistance to applied perpendicular force will be greater than that of steel in bent panel form, which typically use half panel thickness bolt nodes with consequent leverage from the adjacent 90° fold acting upon the node. In this context this fold leverage reduces tensile resistance when perpendicular force is applied to center of the steel panel.

2.0 Of course steel is a proven material in this application. **dB(i)** have produced many such examples – “providing system key design objectives are understood and achieved” then.. No problem!

dB(i)'s motivation toward composites is multifaceted; each of equal significance listed in no specific order: 1) Reduce weight, 2) increase longevity by removal of the corrosion issues surrounding steel, 3) increase strength above the traditionally encountered 0.040", 0.080" & 0.100" aluminum enclosure derivatives, 4) increase panel stiffness, 5) improve aesthetics and 6) increase acoustic performance above traditional materials.

2.1 ACM Benefits v design objectives

1. Lighter v
2. Corrosion free v
3. Stronger than conventional aluminum derivatives v
4. Stiffer - twice that of steel, and XX times that of traditional 0.04 , 0.08 and 0.1 aluminum v
5. Cleaner lines - no concave or convex shaping between joints as unavoidable with steel panels or waving lines with lighter aluminum.v
6. Increased attenuation performance at lower frequencies than that of 14ga steel when insulated, and at all Hz ranges when uninsulated.v

In summary: EXOACM does not have noise path joints. Once assembled EXOACM is a continuously bonded high strength 100% single entity. Steel panels are reliant on bolting nodes and as touched upon in 1.3.1. EXOACM is better able to resist tensile forces from panel perpendicular loading. The structure as a whole has a more robust feel and look; per reality! ‘Strength’ needs defined of course and while no specific calculations have been performed to identify absolute strength variance between bent panel 14ga steel and EXOACM, wind rating is a good indicator of ‘strength’ in its generic definition. EXOACM >180mph capable - 184 mph being most common highest order of magnitude (ref Miami Dade). Resistance to top horizontally applied ‘racking’ force with EXOACM is greater than bent steel panel. EXOACM is a compilation of extruded I and C beams mechanically enhanced with bonded ACM panel infill.

2.2 System engineering: Insulation cover, i.e perforated sheet (perf) hole size and hole spacing (typ 1/8" on 3/16") is an important factor. Perf has transmission loss contribution in addition to controlling SPL derived velocity to insulation. Aluminium perf has less density / transmission loss than steel perf sheet - EXOACM has permitted the use of aluminum perf with zero net performance loss. Another step in the right direction in respect of corrosion and weight!

3.0 Material selection for absorption.

For circa 80-85 dB(A) @ 1 mtr applications; typically equating to 30dB(A) @ 1 mtr reduction, a combination of ACM and a 2" thick, 8lbft³ insulation provides for excellent results.

Image 2 below graphically summarizes overall average db(A) and 1/1 octave frequency spectrum performance, but in providing same please note that job site test conditions were non free field and ‘less than ideal’. dB(i) advise that an additional 5dB(A) of insertion loss above that depicted will be incurred with intake and discharge noise treatment designed for 80-85 dB(A).



As discussed the relationship between transmission loss and absorption is critical when striving for optimal.

3.1 dB(i) use a combination of insulation densities, preferring higher density for higher frequencies (higher boosted > 12 cyl engines) and lowering density accompanied by increased transmission loss using mass loaded vinyl; for the more difficult lower frequency naturally aspirated <6 cyl or less engines. The common denominator however is 8lb/ft³. This density provides a good balance between absorption and transmission loss. ACM has increased acoustic performance with its inherent stiffness and deadening properties. Where 100% absorption is required such as air splitters etc. 2lb/ft³ is preferred choice. Open cell material (fibrous insulation) densities less than 2lb/ft³ have insufficient transmission loss and energy dissipation laterally (for conversion to heat) within the material itself is not effective.

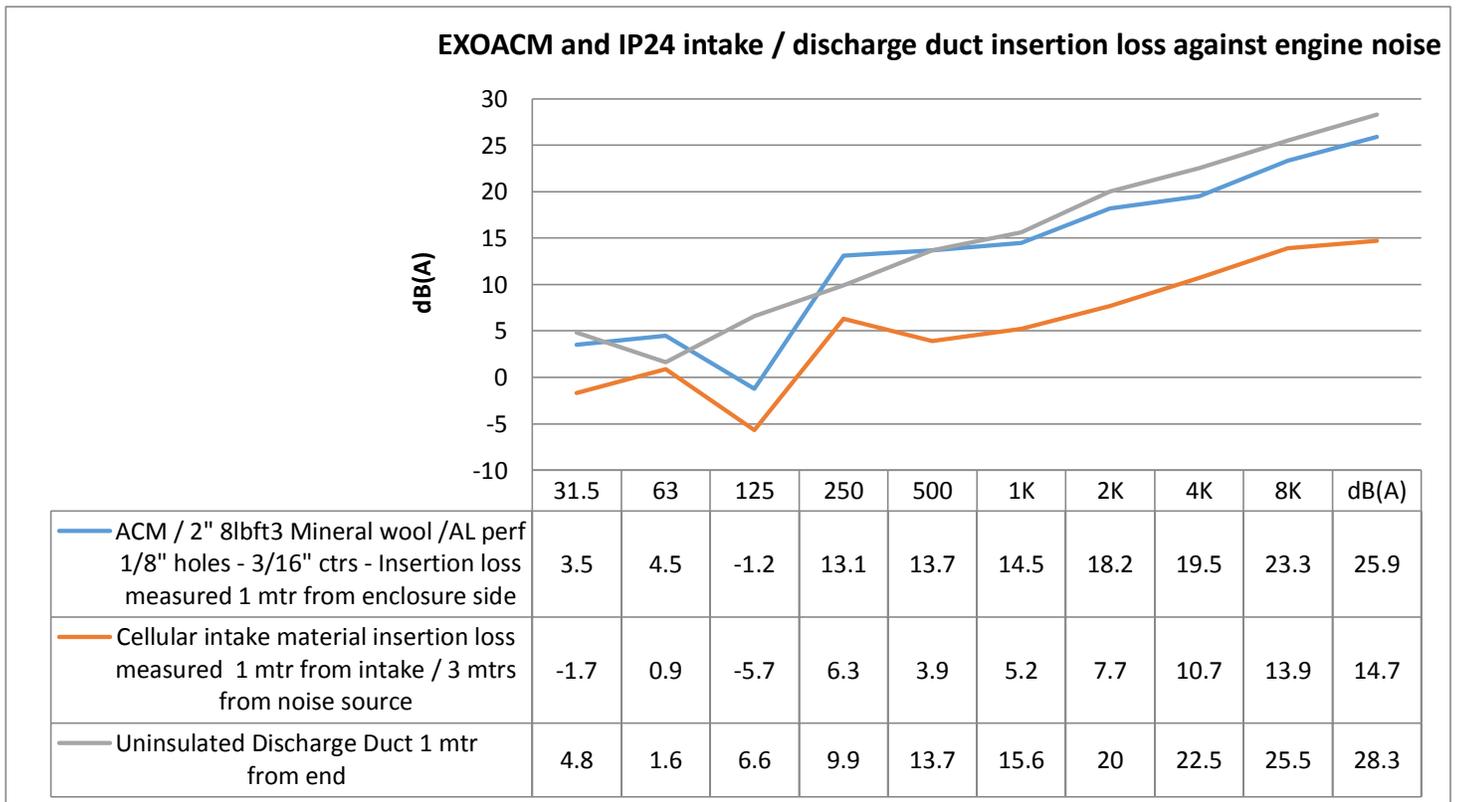
At 2" wall thickness **dB(i)** when using **dB(i)** construction are comfortable down to 30-35 overall dB(A) reduction whereas at 4" thick we achieve reduction of > 44dB(A).

3.2 dB(i) have experimented with household grade R19 'pink' insulation but learned that wall thickness needs to be 4" to attain less than comparable performance than that achieved with 2" of **dB(i)** preferred construction. Density using R19 when compressed from 6.5" thick to 4" = 0.798lb/ft³.

3.3. Doesn't seem like much however 2" internal space loss per side with 4" thick walls with larger engines is often all that is needed bearing in mind further reduction due to conduit runs, electrical boxes and the like and the need to maintain 24" walkway for NEC code etc. The desire for 2" walls is high in a lot of cases.

We attached data sheets for Mineral wool and R 19 insulation for reference.

Image 2 (Ref 3.0) 2" 8lb/ft³/ACM





ACM Manufacturer Test Data

Standard (std) Apolic (Polypropylene core)

<u>Impact resistance by Dupont method</u>		ALPOLIC®		
Steel Ball	Height	Dent depth (x10 ⁻² in)		
		3mm .118"	4mm .157"	6mm .236"
1.10 lb	20 in	6.30	5.51	3.15
2.20 lb	12 in	7.87	6.69	3.93
2.20 lb	20 in	10.23	9.05	5.90

Fire resistant (fr) Apolic, mineral filled core

<u>Impact resistance by Dupont method</u>		ALPOLIC®/fr	
Steel Ball	Height	Dent depth (x10 ⁻² in)	
		4mm .157"	6mm .236"
1.10 lb	20 in	5.07	3.93
2.20 lb	12 in	5.47	4.72
2.20 lb	20 in	7.40	6.30

dB(i) tests. Images below are of (2) ACM test pieces. (Left) with a polypropylene core plus (Right) with a Mineral core.

Tests conducted are various heights of 3', 4' and 5' using a 1lb bolt dropped head down from fingers holding the threaded end. Sharp edge contact.

Velocity (5') at impact 17.9 feet per second (12 .2 mph). **Free fall energy at:** 5ftlb / 160.87 ft-pdl / 59.99 pound force – inch.

Results consistent with manufacture's data above - No practicable variance between std and fr cores. Majority of deformation absorbed at surface. Marginal circular expansion / push through to rear of material noted. Most energy dissipated laterally within the core.





MinWool-1200® Industrial Board HIGH TEMPERATURE INSULATION

DESCRIPTION

IIG MinWool-1200 Industrial Board Insulation is made of inorganic fibers derived from basalt, a volcanic rock, with a thermosetting resin binder. Advanced manufacturing technology ensures consistent product quality, with high fiber density and low shot content, for excellent performance in high temperature thermal control and fire resistance applications.

ADVANTAGES

Thermal Performance. Good thermal conductivity values help maximize control of heat loss, contributing to reduced operating costs and greater energy savings.

Lightweight, Low Dust. Easy to handle and fabricate, these boards are easy to cut with a knife. Clean handling properties help reduce irritation and minimize job clean-up time and expense.

Low Smoke & Flame Spread. When tested in accordance with ASTM E84, UL 723, CAN/ULC-S102-M, these unfaced insulation boards have a flame spread rating of 5 and a smoke developed rating of 0. The faced insulation has a flame spread rating of 25 and a smoke developed rating of 5.

Noncombustible. MinWool-1200 Industrial Board is rated as noncombustible in accordance with ASTM E136 and CAN4-S114-M.

Mold Resistant. IIG MinWool-1200 does not support growth of fungi.

APPLICATIONS

MinWool-1200 Industrial Board Insulation provides excellent thermal insulation performance for mechanical, power and process systems operating from sub-ambient to 1200°F(650°C). These industrial board insulations are easily fabricated, cutting cleanly and easily with a knife. Very low in-service shrinkage helps prevent gaps from forming at joints, preventing costly thermal leaks. The insulation is designed to be field-jacketed. It may be installed directly on hot surfaces; system shut-down and staged heat-up are not required.

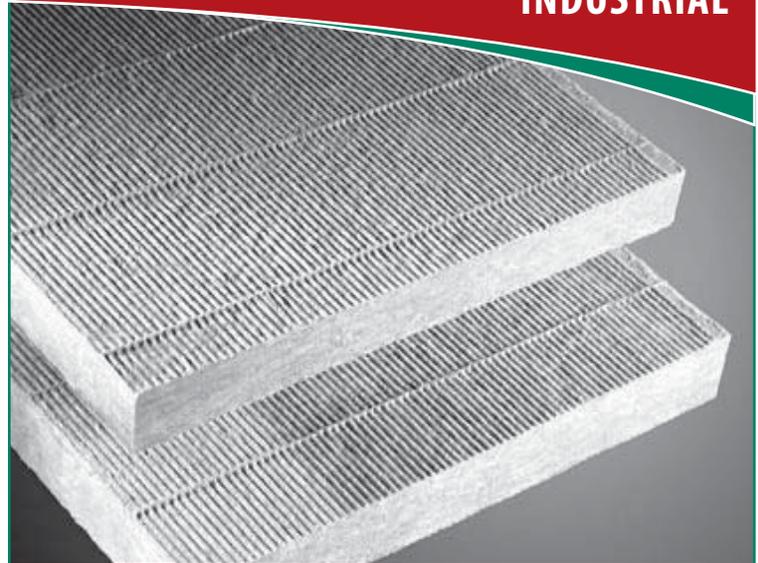
AVAILABLE TYPES

IIG MinWool-1200 Industrial Boards are available in six nominal densities in accordance with ASTM C612 and in a range of standard thicknesses, as follows:

	Type					
Nominal Density	1230	1240	1260	1280	1210	1212
lb/ft³	3	4	6	8	10	12
kg/m³	48	64	96	128	160	192

Standard Sizes: 24" x 48" (610mm x 1219mm)
36" x 48" (914mm x 1219mm)

Standard Thicknesses: 1" to 4" (25 mm to 102 mm).
1½" to 4" (38 mm to 102 mm) industrial boards are available with FSP (Foil Scrim Polyethylene) facings on a made-to-order basis. Minimum order quantities will apply. Other thicknesses may be available upon request.



MinWool-1200® Industrial Board
Operating Temperature Limit: 1200°F (650°C)

SPECIFICATION COMPLIANCE

ASTM C612 Material Specification	Complies
ASTM C356 In-Service Shrinkage	0% at 1050°F (566°C); <2% at 1200°F (650°C)
ASTM C447 Maximum Service Temperature	1200°F(650°C)
ASTM C665 Corrosivity to Steel	Passes
ASTM C795/C871/C692 Stainless Steel	Passes
ASTM C1104 Water Vapor Sorption	<1% by Weight, <.02% by Volume @ 120°F(50°C), 95% RH
ASTM C1335 Shot Content	<25%
ASTM C1338 Fungi Resistant	Passes
ASTM E84 Flame Spread/Smoke Developed	Unfaced 5/0 or less Faced 25/5 or less
ASTM E136 Noncombustible	Passes
UL 723, CAN/ULC-S102-M	Unfaced 5/0 or less Faced 25/5 or less

ASTM C612 TYPES

1A-4A	All Boards
4B	1280, 1210, 1212

R-Value @ 75°F

IB 1230	4.0 per inch of thickness
IB 1240	4.2 per inch of thickness
IB 1260-IB 1212	4.3 per inch of thickness

ADDITIONAL INFORMATION AND MSDS

Please visit our website at www.iig-llc.com.

MinWool-1200® Industrial Board

HIGH TEMPERATURE INSULATION

THERMAL PERFORMANCE (IP UNITS) *

Apparent Thermal Conductivity						
Mean Temp. (°F)	Btu · in/(hr · ft² · °F)					
	1230	1240	1260	1280	1210	1212
25	0.21	0.21	0.22	0.22	0.22	0.22
75	0.25	0.24	0.23	0.23	0.23	0.23
100	0.27	0.26	0.25	0.25	0.25	0.25
200	0.34	0.32	0.30	0.30	0.30	0.30
300	0.43	0.40	0.36	0.36	0.35	0.35
400	0.55	0.49	0.42	0.42	0.41	0.40
500	0.70	0.62	0.53	0.49	0.47	0.46
600	0.87	0.75	0.63	0.56	0.54	0.52
700	1.06	0.90	0.75	0.64	0.62	0.59

THERMAL PERFORMANCE (SI UNITS) *

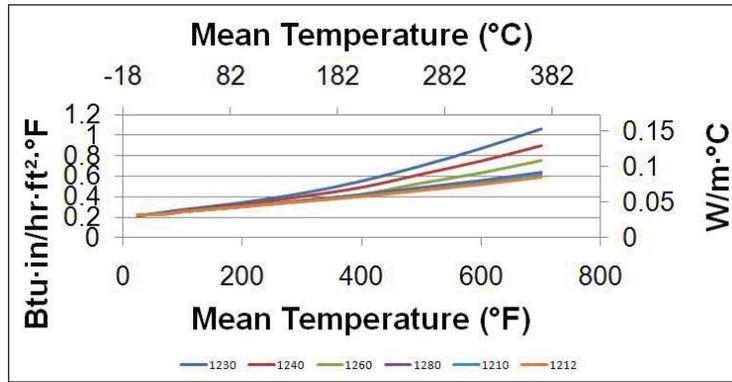
Apparent Thermal Conductivity						
Mean Temp. (°C)	W/m · °C					
	1230	1240	1260	1280	1210	1212
-4	0.030	0.030	0.032	0.032	0.032	0.032
24	0.036	0.035	0.033	0.033	0.033	0.033
38	0.039	0.037	0.036	0.036	0.036	0.036
93	0.049	0.046	0.043	0.043	0.043	0.043
149	0.062	0.058	0.052	0.052	0.050	0.050
204	0.079	0.071	0.061	0.061	0.059	0.058
260	0.101	0.089	0.076	0.071	0.068	0.066
316	0.125	0.108	0.091	0.081	0.078	0.075
371	0.153	0.130	0.108	0.092	0.089	0.085

ACOUSTICAL PERFORMANCE

Sound Absorption Coefficients									
Type	Thickness		1/3 Octave Band Center Frequencies, Hz						
	(in)	(mm)	125	250	500	1000	2000	4000	NRC
1240	1½	40	0.13	0.48	1.02	1.08	1.02	1.01	0.90
	2	50	0.20	0.61	1.07	1.06	1.04	1.07	0.95
	4	100	0.88	1.14	1.17	1.08	1.06	1.10	1.10
1260	6	150	1.32	1.14	1.11	1.09	1.06	1.07	1.10
	1½	40	0.18	0.62	1.08	1.08	1.03	1.07	0.95
	2	50	0.25	0.85	1.15	1.10	1.04	1.06	1.05
	3	75	0.80	1.07	1.11	0.99	0.98	0.96	1.05
1280	4	100	0.99	1.01	1.10	1.03	1.03	1.05	1.05
	1½	40	0.18	0.64	1.08	1.04	1.04	1.07	0.95
	2	50	0.32	0.90	1.11	1.01	1.01	1.05	1.00
4	100	1.11	0.91	1.03	1.06	1.06	1.07	1.00	

* MinWool Industrial Board Insulation as tested in accordance with ASTM C177 and ASTM C518.

THERMAL CONDUCTIVITY



PRODUCT CERTIFICATION

When ordering material to comply with any government specification or any other listed specification, a statement of that fact must appear on the purchase order. Government regulations and other listed specifications require specific lot testing, and prohibit the certification of compliance after shipment has been made. There may be additional charges associated with specification compliance testing. Please refer to IIG-CSP-3 for Certification Procedures and Charges. Call customer service for more information.

QUALITY STATEMENT

IIG Products are designed, manufactured and tested to strict quality standards in our own facilities. This along with third party auditing is your assurance that this product delivers consistent high quality.



Industrial Insulation Group, LLC is a Johns Manville company. IIG manufactures MinWool-1200® mineral fiber pipe, block and a variety of other insulations; Thermo-12® Gold Calcium Silicate pipe and block insulation; Super Firetemp® fireproofing board; SprouleWR-1200® Perlite pipe and block insulation; high temperature adhesives, and insulating finishing cement.

The physical and chemical properties presented herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Numerical flame spread and smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Customer Service Office to assure current information. All Industrial Insulation Group products are sold subject to the IIG Limited Warranty and Limitation of Remedy. For a copy of the IIG Limited Warranty and Limitation of Remedy, email - info@iig-llc.com.



Industrial Insulation Group, LLC
A Johns Manville Company

2100 LINE STREET • BRUNSWICK, GA 31520

**CUSTOMER SERVICE,
TECHNICAL & GENERAL INFORMATION**

(800) 866-3234

www.iig-llc.com



Density: 0.798 ft3
when compressed
from 6.25 to 4"
thick.

EcoTouch® PINK® FIBERGLAS™ Insulation with PureFiber® Technology

Product Data Sheet



PROPINK® EcoTouch® Insulation Product Data

	Width		Length		Thickness	R-Value ¹	
Metal Frame Construction	16" (406mm)	24" (609mm)	48" (1,219mm)	96" (2,438mm)	3½" (89mm)	11	
	16" (406mm)	24" (609mm)	48" (1,219mm)	96" (2,438mm)	3½" (89mm)	13	
	16" (406mm)	24" (609mm)	48" (1,219mm)	96" (2,438mm)	3½" (89mm)	15	
Wood Frame Construction Walls	16" (406mm)	24" (609mm)	48" (1,219mm)	96" (2,438mm)	5½" (139mm)	21	
	15" (381mm)	23" (584mm)	48" (1,219mm)	93" (2,362mm)	3½" (89mm)	11	
	15" (381mm)	23" (584mm)	48" (1,219mm)	93" (2,362mm)	3½" (89mm)	13	
Wood Frame Construction Walls	15" (381mm)	23" (584mm)	48" (1,219mm)	93" (2,362mm)	3½" (89mm)	15	
	15" (381mm)	19¼" (491mm)	23" (584mm)	48" (1,219mm)	93" (2,362mm)	6¼" (159mm)	19
	15" (381mm)	23" (584mm)	23" (584mm)	93" (2,362mm)	5½" (139mm)	20	
	15" (381mm)	23" (584mm)	23" (584mm)	93" (2,362mm)	5½" (139mm)	21	
	15" (381mm)	23" (584mm)	105" (2,667mm)	5½" (139mm)	21		
	23" (381mm)	23" (584mm)	93" (2,362mm)	5½" (139mm)	21		
	23" (381mm)	23" (584mm)	93" (2,362mm)	5½" (139mm)	21		
Floor/Ceiling	15" (381mm)	19¼" (491mm)	23" (584mm)	48" (1,219mm)	93" (2,362mm)	6¼" (159mm)	19
	15" (381mm)	23" (584mm)	48" (1,219mm)	48" (1,219mm)	6¼" (171mm)	22	
	15" (381mm)	23" (584mm)	48" (1,219mm)	8" (203mm)	25		
	15½" (394mm)	23¾" (603mm)	48" (1,219mm)	8" (209mm)	30		
	16" (406mm)	19¼" (491mm)	24" (609mm)	48" (1,219mm)	9½" (241mm)	30	
	15½" (394mm)	23¾" (603mm)	48" (1,219mm)	10¼" (260mm)	38		
	16" (406mm)	24" (609mm)	48" (1,219mm)	12" (305mm)	38		
	16" (406mm)	24" (609mm)	48" (1,219mm)	14" (356mm)	49		



Description

Owens Corning™ EcoTouch® Insulation with PureFiber® Technology is flexible insulation made in R-values from 11 to 49. EcoTouch® Insulation is available plain, or faced with either a kraft or foil vapor retarder. The product is manufactured in thicknesses from 3½" to 14".

Uses

EcoTouch® Insulation can be used in a wide range of exterior wall and roof/ceiling applications. The product can be installed in wood or metal framing cavities, or can be installed between furring strips.

Features and Benefits

Excellent Thermal Control

With the range of R-values and thicknesses available, EcoTouch® Insulation can meet most thermal

specifications with ease. The R30C and R38C provide excellent thermal performance in the limited space of cathedral ceilings.

Effective Acoustical Control

EcoTouch® Insulation enhances interior noise control by improving the Sound Transmission Class (STC) of walls and floor/ceiling assemblies.

Long Term Performance

EcoTouch® Insulation is dimensionally stable and will not slump within the wall cavity. Due to its inorganic fibers, EcoTouch® Insulation will not rot or mildew¹ and is noncorrosive to steel, copper, and aluminum.

Easy Installation

EcoTouch® Insulation is easy to handle and install. Sized for installation in either wood or metal stud construction, EcoTouch® Insulation can either be friction-fit or stapled into place. Trimming and fabrication can be done with an ordinary utility knife and is easily installed into odd-shaped cavities and small spaces.

With less dust than other fiberglass insulation products, EcoTouch® Insulation has excellent stiffness and recovery characteristics.²

Designed with the Environment in Mind

EcoTouch® Insulation includes a minimum of 50% total recycled content—the highest certified recycled content available in the fiberglass industry.³ EcoTouch® Insulation is GREENGUARD Gold Certified and is verified to be formaldehyde free.⁴

SpaceSaver Packaging

EcoTouch® Insulation is compression packaged in exclusive SpaceSaver packaging from Owens Corning Insulating Systems. SpaceSaver packaging reduces freight and speeds job site handling/installation.

Design Considerations

Kraft and standard foil facings on this insulation will burn and must not be left exposed. Install facings in substantial contact with the finish material. Protect from open flame or other heat source.



EcoTouch® PINK® FIBERGLAS™ Insulation with PureFiber® Technology

Product Data Sheet

Buildings utilizing curtainwall construction may be required to be equipped with a sprinkler system to provide adequate fire protection. Check local building codes for specific requirements.

Commercial roof/ceiling thermal applications require that the building envelope block the movement of air from the outdoor environment to the conditioned space. Neither the insulation nor its facing should be relied upon to provide an air barrier. Failure to provide an adequate air barrier could lead to loss of thermal control, discomfort of the building occupants and frozen pipes.

When insulation is added to the inside perimeter of a structure, the area outside the insulation becomes exposed to greater temperature extremes. Check for piping which should be protected against freezing.

The need for and placement of a vapor retarder in commercial construction depends on many factors. The architect or specifier should evaluate the requirements of each project. If a vapor retarder is specified, maintaining the facing integrity may be important for effective moisture/humidity control. Repair any punctures or tears in the facing by taping. Follow the tape manufacturer's application recommendations.

Insulation installed too close to light fixtures may affect the luminaire's performance. Do not install insulation on top of or within 3" of recessed light fixtures unless the fixtures are approved

Technical Data

Property (Unit)	Value	Test
Dimensional Stability (shrinkage)	<0.1%	ASTM C167
Surface Burning Characteristics (flame spread / smoke developed)		ASTM E84
Unfaced	25 / 50	
Kraft faced	NR / NR	
Foil faced	75 / 150	
Poly / FSK / PSK faced"	25 / 50	
Critical Radiant Flux (W/cm ²) all facings	>0.12	ASTM E970
Water Vapor Permeance (perms)		ASTM E96
Kraft faced	1.0	
Foil faced	0.5	
Poly faced	0.7	
FSK & PSK faced	0.02	
Water Vapor Sorption (by weight)	<5%	ASTM C1104
Odor Emission	Pass	ASTM C1304
Corrosion Resistance	Pass	ASTM C665, part 13.8
Fungi resistance	Pass	ASTM C1338

Classifications

EcoTouch® Product	ICC Building Construction	ASTM C665
Unfaced	all types	Type I
Kraft faced	Type III, IV, V	Type II, Class C, Cat. I
Foil faced	Type III, IV, V	Type III, Class C, Cat. I

for such use. This is a requirement of the National Electrical Code.

Due to the potential for skin irritation, EcoTouch® Unfaced Insulation should not be used for exposed applications where it will be subject to human contact.

Applicable Standards

EcoTouch® Unfaced Insulation is manufactured in compliance with ASTM Standard Specification C665 and is classified noncombustible per ASTM E136. EcoTouch® Kraft-faced Insulation is manufactured in compliance with ASTM C665, Type II, Class C. EcoTouch® Foil-faced Insulation is manufactured in compliance with ASTM C665, Type III, Class B and C. Federal Specification HH-I-521F has been canceled and is replaced by ASTM C665.

The thermal resistance values for EcoTouch® Insulation were tested in accordance with ASTM C518; R-value for insulation only.

The surface burning characteristics of EcoTouch® Insulation were derived from products tested in accordance with ASTM E84. This standard is used solely to measure and describe properties of products in response to heat and flame under controlled laboratory conditions, and should not be used to describe or approve the fire hazard of materials under actual fire conditions. However, the results of these tests may be used as elements of a fire risk assessment that takes into account all of the factors pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest five rating.



EcoTouch® PINK® FIBERGLAS™ Insulation with PureFiber® Technology

Product Data Sheet

Figure 1

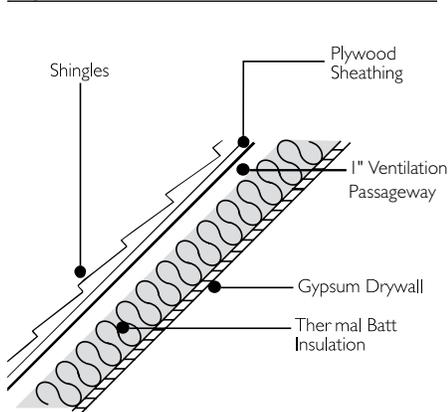
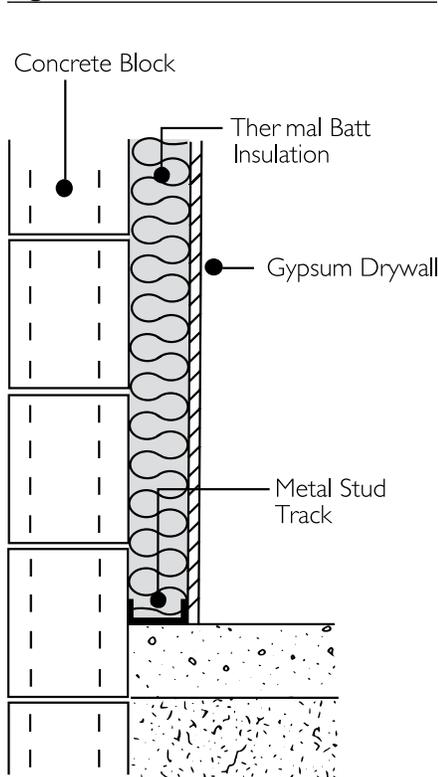


Figure 2



The vapor retarder permeance of the kraft and foil facings on EcoTouch® Insulation were developed from tests conducted in accordance with ASTM E96, desiccant method.

Installation

Between Wood Studs/Rafters

EcoTouch® Insulation fits between studs. If required, the flanges can be stapled to either the face or the side of the stud every 8–12" to prevent gapping or "fishmouthing" of the vapor retarder.

EcoTouch® Unfaced insulation can be friction-fit between studs after the cover material has been installed on one side of the cavity. Use wire or metal straps to hold insulation in place in applications without a cover material, or where the insulation does not fill the depth of the cavity.

Cathedral ceiling products (R30C and R38C) are intended to be friction-fit between rafters. Cathedral ceiling insulation should be installed to provide a minimum 1" ventilation passageway between the roof deck and insulation. (See Figure 1) It is recommended to use a vent baffle to assure proper clearance.

Between Metal Studs

EcoTouch® Insulation can be friction-fit in place until the interior finish is applied. Insulation should fill the cavity and the wall should eventually be closed on both sides. (See Figure 2)

In areas where it will be applied in heights over 8', use wire or metal straps to hold the product in place until the interior finish is applied. When faced insulation is

used, the attachment flanges may be taped to the face of the metal stud prior to applying the interior finish. Wire or metal straps should also be used to hold the product in place in applications without a cover material or where the stud depth is larger than the insulation thickness.

Furring Strips

EcoTouch® Insulation can be applied between furring strips, hat channels, or Z-shaped furring in areas where a finish surface will be installed. Contact the furring strip manufacturer for appropriate fastening system.

Caution: FIBERGLAS™ insulation may cause temporary irritation to the skin, eyes and respiratory tract. Avoid contact with eyes and skin, wear loose-fitting, long-sleeved clothing, gloves and eye protection when handling and applying the material. Wash with soap and cold water after handling. Wash work clothes separately and wipe out washer.



EcoTouch® PINK® FIBERGLAS™ Insulation with PureFiber® Technology

Product Data Sheet

Notes

1. As manufactured, FIBERGLAS™ insulation is resistant to mold growth. However, mold growth can occur on building materials, including insulation, when it becomes contaminated with organic material and when water is present. To avoid mold growth on FIBERGLAS™ insulation, remove any water that has accumulated and correct or repair the source of the water as soon as possible. Insulation that has become wet should be inspected for evidence of residual moisture and contamination, and any insulation that is contaminated should be promptly removed and replaced.
2. According to 2010 clinical trial conducted in Toronto, Canada by Ducker Worldwide on behalf of Owens Corning Insulation Systems, LLC.
3. Certified by Scientific Certifications Systems to have a minimum of 50% recycled glass content, with at least 30% post-consumer recycled and the balance of pre-consumer recycled glass content.
4. Owens Corning™ EcoTouch® Unfaced FIBERGLAS™ insulation is verified to be formaldehyde free by the GREENGUARD Environmental Institute.



GREENGUARD Indoor Air Quality and GREENGUARD Gold Certified Products applies to EcoTouch® Unfaced Batts, EcoTouch® Faced Batts and Unbonded Loosefill Insulation. GREENGUARD Formaldehyde Free applies to EcoTouch® Unfaced Batts and Unbonded Loosefill Insulation.

GREENGUARD Gold Certified Products applies to Flame Spread 25 FSK Faced; Flame Spread 25 Extended Flanges PSK Faced; Sound Attenuation Batt Insulation; Sonobatts® Insulation Unfaced; Sonobatts® Insulation Kraft-Faced and Metal Building Insulation.



**MINIMUM 50% RECYCLED CONTENT
30% POST-CONSUMER
20% PRE-CONSUMER**

SCS 50% recycled content applies to EcoTouch® Unfaced Batts and Rolls, EcoTouch® Faced Batts and Rolls, Loosefill Insulation, Metal Building Insulation products and Flexible Air Handling products.



Applies to EcoTouch® Unfaced Insulation

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GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.



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