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Atlas Technical Bulletins

Recycled Content of Atlas Polyisocyanurate

ISSUED:	10/13/2003
***UPDATED:**	08/01/2024
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*SUPERSEDES EXISTING DOCUMENTS

PRODUCT	THICKNESS							
	0.5"	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
[1] *ACFoam®-II*	-	52.9%	44.6%	39.2%	35.5%	32.7%	30.6%	28.9%
[2] *ACFoam®-III*	-	6.2%	7.7%	8.7%	9.4%	10.0%	10.5%	10.9%
[2] *ACFoam®-HD CoverBoard*	7.4%	-	-	-	-	-	-	-
[2] *ACFoam®-Recover Board*	3.9%	6.2%	-	-	-	-	-	-
[2] *ACFoam® Supreme*	-	11.5%	12.3%	12.8%	13.1%	13.3%	13.5%	13.6%
[2] *EnergyShield®*	9.5%	11.5%	12.3%	12.8%	13.1%	13.3%	13.5%	13.6%
[2] *EnergyShield® CGF*	3.9%	6.2%	7.7%	8.7%	9.4%	10.0%	10.5%	10.9%
[2] *EnergyShield® CGF Pro*	4.6%	7.0%	8.4%	9.4%	10.1%	10.6%	11.1%	11.4%
[2] *EnergyShield® PanelCast*	3.9%	6.2%	7.7%	8.7%	9.4%	10.0%	10.5%	10.9%
[2] *EnergyShield® Pro*	9.2%	11.2%	12.1%	12.7%	13.0%	13.2%	13.4%	13.5%
[2] *EnergyShield® XR*	9.5%	11.5%	12.3%	12.8%	13.1%	13.3%	13.5%	13.6%

[1]Post-Consumer and Pre-Consumer (Post-Industrial) recycled content.
[2]Pre-Consumer (Post-Industrial) recycled content only.

Recycled content values have been established as a percentage of product weight. Download the applicable Package and Loading Guide at www.atlasrwi.com for an extended list of available ACFoam® and EnergyShield® product information.

ACFoam® Polyiso Roof Insulation
EnergyShield® Continuous Wall Insulation

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770-952-1442 • wall.atlasrwi.com

TO: Atlanta Sales, Commercial Field Sales, Regional Managers, Plant Managers and Account Executives

FROM: Director Technical Services Commercial Products Division

SUBJECT: Atlas Polyisocyanurate Insulation Classifications

NUMBER	TB-9
ISSUED	09.11.2013
*UPDATED	01.29.2021
PAGES	04

*SUPERSEDES EXISTING DOCUMENTS

There are two standards for polyisocyanurate thermal insulation, ASTM C1289 and CAN/ULC S704. This bulletin is intended to help clarify the differences between ASTM C1289 and CAN/ULC S704 as they relate to Atlas Polyisocyanurate Insulations.

ASTM C1289-17: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board (Most often referenced in the United States).

ASTM C1289 recognizes ***Type*** as a result of the facer, ***Class*** is based on physical properties and ***Grade*** is related to the compressive strength (see page 3).

Type I: (Faced with aluminum foil on both major surfaces of the core foam)

- **Class 1**: Non-reinforced core foam
- **Class 2**: Glass fiber reinforced or non-reinforced core foam
  - **Grade 1**: 16 psi (110 kPa) min. compressive strength

Type II:

- **Class 1**: Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of the core foam
  - **Grade 1**: 16 psi (110 kPa) min. compressive strength
  - **Grade 2**: 20 psi (138 kPa) min. compressive strength
  - **Grade 3**: 25 psi (140 kPa) min. compressive strength
- **Class 2**: Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of the core foam
  - **Grade 1**: 16 psi (110 kPa) min. compressive strength
  - **Grade 2**: 20 psi (138 kPa) min. compressive strength
  - **Grade 3**: 25 psi (140 kPa) min. compressive strength
- **Class 4**: Faced with coated or uncoated polymer bonded glass fiber mat facers on both major surfaces of the core foam. This product is used at a maximum thickness of ½" (12.7mm)
  - **Grade 1**: 80 psi (551 kPa) min. compressive strength
  - **Grade 2**: 110 psi (758 kPa) min. compressive strength
  - **Grade 3**: 140 psi (965 kPa) min. compressive strength

Type III: Faced with a perlite insulation board on one major surface of the core foam and a glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded glass fiber mat facer on the other major surface of the core foam.

Type IV: Faced with a cellulosic fiber insulating board on one major surface of the core foam and a glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded fiber mat facer on the other major surface of the core foam.

Type V: Faced with oriented strand board (OSB) or plywood on one major surface of the foam and a glass fiber reinforced cellulosic felt or uncoated or coated polymer bonded glass fiber mat facer on the other major surface of the core foam.

Type VII: Faced with glass mat faced gypsum board on one major surface and glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded glass fiber mat facer on the other major surface of the core foam.

CAN/ULC S704-11: Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced (Most often referenced in Canada)

CAN/ULC S704 recognizes ***Type*** as a result of physical properties, and the ***Class*** is based on water vapor permeance (see page 4).

ASTM C1289 STANDARD CLASSIFICATION
ATLAS POLYISO ROOF AND WALL INSULATION

PHYSICAL PROPERTIES			ATLAS PRODUCTS
TYPE I Faced with aluminum foil on both major surfaces of the core foam	**CLASS 1** (Non-reinforced core foam)	(16 psi min. compressive strength)	ACFoam® Supreme, EnergyShield® & EnergyShield® Pro
	CLASS 2 (Reinforced or non-reinforced core foam)	(16 psi min. compressive strength)	EnergyShield® Pro
TYPE II Faced with a non-asphaltic, glass fiber reinforced cellulosic organic felt or inorganic uncoated or coated polymer-bonded glass fiber mat facer on both major surfaces of the core foam	**CLASS 1** Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of the core foam	**GRADE 1** (16 psi min. compressive strength)	N/A
		GRADE 2 (20 psi min. compressive strength)	ACFoam®-II
		GRADE 3 (25 psi min. compressive strength)	ACFoam®-II
	CLASS 2 Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of the core foam	**GRADE 1** (16 psi min. compressive strength)	N/A
		GRADE 2 (20 psi min. compressive strength)	ACFoam® Recover Board, ACFoam®-III, EnergyShield® CGF, & Stucco-Shield®
		GRADE 3 (25 psi min. compressive strength)	ACFoam®-III, ACFoam® Recover Board, EnergyShield® CGF Pro, & EnergyShield® PanelCast®
	CLASS 3 Faced with uncoated polymer-bonded glass fiber mat facers on both major surfaces of the core foam (AGF)	**GRADE 1** (16 psi min. compressive strength)	N/A
		GRADE 2 (20 psi min. compressive strength)	N/A
		GRADE 3 (25 psi min. compressive strength)	N/A
	CLASS 4 Faced with coated or uncoated polymer-bonded glass fiber mat facers on both major surfaces of the core foam. This product is used at a maximum thickness of 1/2″ (12.7mm)	**GRADE 1** (80 psi min. compressive strength)	ACFoam®-HD CoverBoard
		GRADE 2 (110 psi min. compressive strength)	N/A
		GRADE 3 (140 psi min. compressive strength)	N/A
TYPE III	Faced with a perlite insulation board on one major surface of the core foam and a glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded glass fiber mat facer on the other major surface of the core foam		N/A
TYPE IV	Faced with a cellulosic fiber insulating board on one major surface of the core foam and a glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded glass fiber mat facer on the other major surface of the core foam		N/A
TYPE V	Faced with oriented strand board (OSB) or plywood on one major surface of the foam and a glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded glass fiber mat facer on the other major surface of the core foam		ACFoam® Nail Base & ACFoam® CrossVent®
TYPE VII	Faced with glass mat faced gypsum board on one major surface and glass fiber reinforced cellulosic felt or uncoated or coated polymer-bonded glass fiber mat facer on the other major surface of the core foam		ACFoam® Composite/GB

CAN/ULC S704 STANDARD CLASSIFICATION
ATLAS POLYISO ROOF AND WALL INSULATION

PHYSICAL PROPERTIES		ATLAS PRODUCTS
TYPE 1 Compressive strength: min, kPa=110 Flexural Strength: min., kPa=170 Tensile Strength: min., kPa=24	**CLASS 1** Water Vapour Permeance ≤15 ng/(Pa·s·m²), for 25.4 mm product	EnergyShield®
	CLASS 2 Water Vapour Permeance ≥15≤60 ng/(Pa·s·m²), for 25.4 mm product	N/A
	CLASS 3 Water Vapour Permeance >60 ng/(Pa·s·m²), for 25.4 mm product	EnergyShield® CGF
TYPE 2 Compressive strength: min, kPa=140 Flexural Strength: min., kPa=275 Tensile Strength: min., kPa=35	**CLASS 1** Water Vapour Permeance ≤15 ng/(Pa·s·m²), for 25.4 mm product	ACFoam® Supreme & EnergyShield®
	CLASS 2 Water Vapour Permeance ≥15≤60 ng/(Pa·s·m²), for 25.4 mm product	N/A
	CLASS 3 Water Vapour Permeance >60 ng/(Pa·s·m²), for 25.4 mm product	ACFoam®-II, ACFoam®-III, ACFoam® Recover Board, EnergyShield® CGF & Stucco-Shield®
TYPE 3 Compressive strength: min, kPa=170 Flexural Strength: min., kPa=275 Tensile Strength: min., kPa=35	**CLASS 1** Water Vapour Permeance ≤ 15 ng/(Pa·s·m²), for 25.4 mm product	ACFoam® Supreme
	CLASS 2 Water Vapour Permeance ≥15≤60 ng/(Pa·s·m²), for 25.4 mm product	N/A
	CLASS 3 Water Vapour Permeance >60 ng/(Pa·s·m²), for 25.4 mm product	ACFoam®-II & ACFoam®-III

TO: Atlanta Sales, Commercial Field Sales, Regional Managers, Plant Managers and Account Executives

FROM: Director, Technical Services, Roof and Wall Insulation Division

NUMBER	TB-13
ISSUED	03.05.18
PAGES	02

SUBJECT: R-Value Testing

During the fall and winter months, discussions increase regarding thermal performance of various types of insulations.

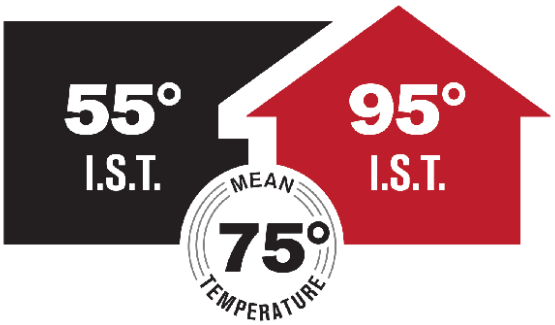
This technical bulletin will provide you with some important insight to assist you in understanding some basic information regarding R-value testing when you are involved in one of those discussions.

First, it's important to have a basic understanding of what R-value means and how products are tested to determine their R-values.

Thermal resistance (R-value) is the temperature difference, at steady state, between two defined surfaces of a material that induces a unit heat flow rate through a unit area, **K · m² / W**. Or, it is known as a rating used to measure a materials ability to resist heat flow. The higher the R-value, the greater the insulation properties and the slower heat passes through it.

R-value testing for common insulations is conducted in accordance with the applicable product standard. The R-value of Polyiso, EPS, XPS, and Mineral Fiber is tested using ASTM C518. The appropriate product standard outlines the procedures used for product sampling and conditioning.

The product standards for many of the construction insulations require R-value testing at a 75°F mean reference testing temperature with a 40°F temperature differential. The mean reference testing temperature is the mean (average) of the cold side insulation surface temperature (IST) and the hot side insulation surface temperature (IST).

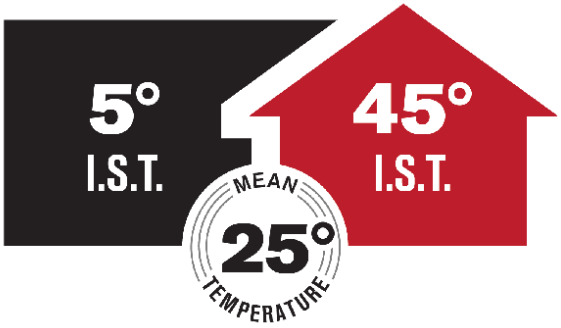


75°F mean reference testing temperature with a 40°F differential

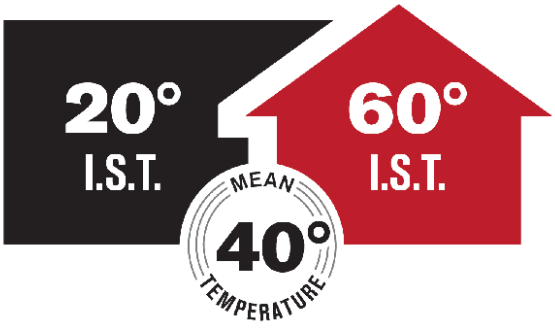
I.S.T. represents the temperature of the two defined outer most insulation surfaces

The R-value testing required by a materials product standard is representative of testing conducted at a specific and controlled "moment in time". This "moment in time" is intended to provide a baseline for consistent and fair product analysis and comparison. Please do not confuse this testing environment with reality.

Some product standards discuss alternate, non-mandatory, mean reference testing temperatures. An example of some of those alternate mean reference testing temperatures are:



25°F mean reference testing temperature with a 40°F differential



40°F mean reference testing temperature with a 40°F differential

It's important to remember when it comes to R-value testing, the mean reference testing temperature is not the outside air temperature. Additionally, the IST's representative on either side of the mean likely does not represent outside or inside ambient temperatures either. Unless otherwise indicated, the applicable product standard requires the thermal resistance value of the material be tested and published with a mean reference testing temperature of 75° F with a cold side I.S.T. of 55° F, and a hot side I.S.T. of 95°F.

TO: Atlanta Sales, Commercial Field Sales, Regional Managers, Plant Managers and Account Executives

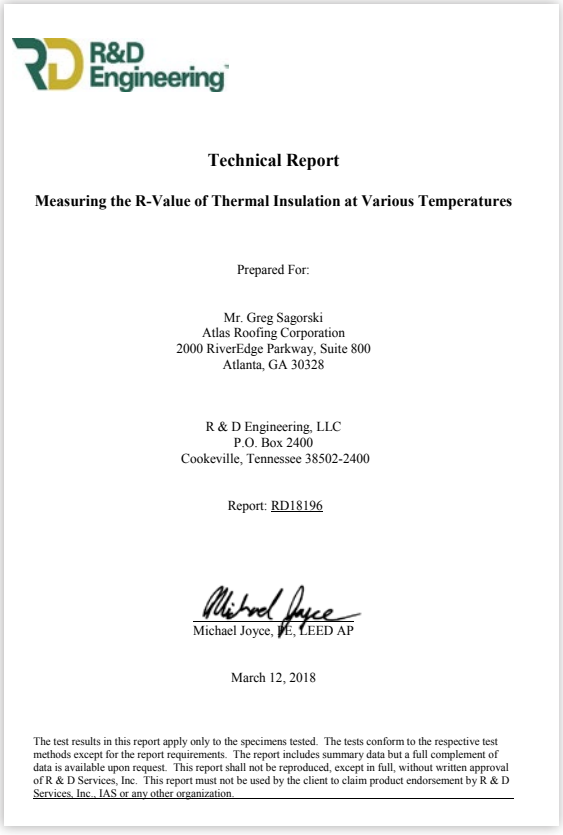
FROM: Director, Technical Services, Roof and Wall Insulation Division

NUMBER	TB-14
ISSUED	03.12.18
PAGES	01

SUBJECT: Measuring the R-value of Thermal Insulation at Various Temperatures

R-Value is often the topic of conversation when it comes to building material insulations. In our discussions with industry professionals, we have noticed the knowledge level of R-Values and R-Value Testing can vary significantly. Below are two links to Technical Reports developed by R&D Engineering that were designed to provide some insight on R-values, R-value measurements and the calculation of R-values.

For a simplified overview, view R&D Engineering Technical Report RD18196 - Technical Bulletin 2017-1.



R&D Engineering

Technical Report

Measuring the R-Value of Thermal Insulation at Various Temperatures

Prepared For:

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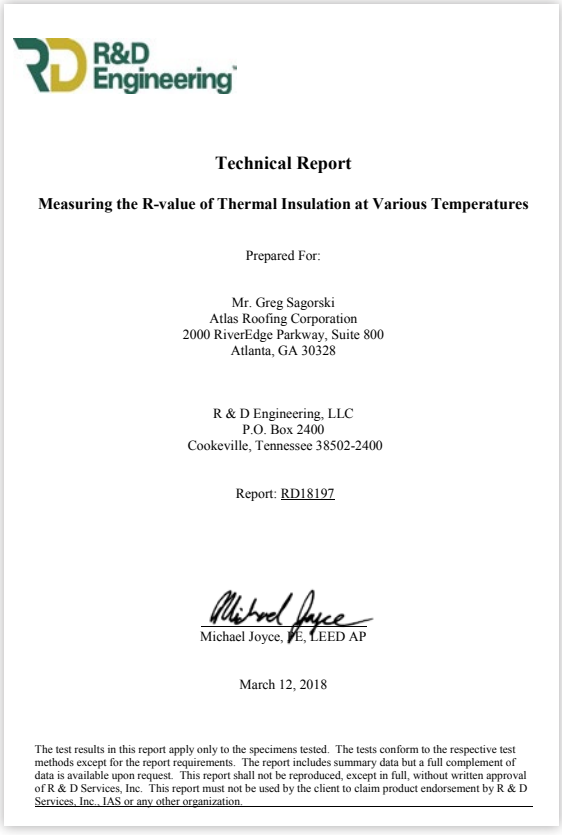
Report: RD18196

Michael Joyce, PE, LEED AP

March 12, 2018

The test results in this report apply only to the specimens tested. The tests conform to the respective test methods except for the report requirements. The report includes summary data but a full complement of data is available upon request. This report shall not be reproduced, except in full, without written approval of R & D Services, Inc. This report must not be used by the client to claim product endorsement by R & D Services, Inc., IAS or any other organization.

For a simplified overview, view R&D Engineering Technical Report RD18197 - Technical Bulletin 2017-1.



R&D Engineering

Technical Report

Measuring the R-value of Thermal Insulation at Various Temperatures

Prepared For:

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Report: RD18197

Michael Joyce, PE, LEED AP

March 12, 2018

The test results in this report apply only to the specimens tested. The tests conform to the respective test methods except for the report requirements. The report includes summary data but a full complement of data is available upon request. This report shall not be reproduced, except in full, without written approval of R & D Services, Inc. This report must not be used by the client to claim product endorsement by R & D Services, Inc., IAS or any other organization.

EnergyShield® Products Compliance as a Water-Resistive Barrier

ISSUED:	09/15/2023
***UPDATED:**	N/A
PAGES:	02

*SUPERSEDES EXISTING DOCUMENTS

Atlas EnergyShield® Continuous Wall Insulation Products are polyisocyanurate foam plastic insulation sheathing with hydrophobic closed-cell structure and durable facers. When installed with approved joint sealing components, they offer added protection as a code compliant water-resistive barrier (WRB) system in an exterior wall assembly.

The International Building Code (IBC) and International Residential Code (IRC) identify provisions for use of foam plastic insulation as a WRB in the following sections[1]:

- IBC Section 1402.2 Water-resistance.
- IBC Section 1403.2 Water-resistive barriers.
- IBC Section 104.11 Alternative materials, design and methods of construction and equipment.
- IRC Section R703.2 Water-resistive barrier.
- IRC Section R703.1.1 Water-resistance.
- IRC Section R104.11 Alternative materials, design and methods of construction and equipment.

ICC Evaluation Service (ICC-ES) has established requirements outlined in Acceptance Criteria (AC) 71, "Foam Plastic Sheathing Panels Used as Water-Resistive Barriers," that recognizes foam plastic insulation and associated joint-sealing treatments and methods for compliance as an approved alternative material to a traditional sheet- or fluid-applied WRB.

The following Atlas EnergyShield Products installed with a joint-sealing treatment have been successfully evaluated in accordance with AC71 by an accredited third party testing facility as referenced in DrJ TER 2202-01 and meet the requirements prescribed in the current IBC and IRC. The water-resistive barrier system is defined by combining an EnergyShield product listed in Table 1 with an approved joint sealing product listed in Table 2, and must be installed in accordance with written instructions per product manufacturer(s) and DrJ TER 2202-01.

TABLE 1. Atlas Foam Plastic Insulation Polyiso Products

EnergyShield®	EnergyShield® CGF	EnergyShield® Pro	EnergyShield® CGF Pro

TABLE 2. Approved Joint Sealing Products[2]

Manufacturer	Brand Name
3M	All Weather Flashing Tape 8067
	Venture Tape™ Duct Tape 1599B
	Venture Tape™ Aluminum Foil Tape 1519CW
	Venture Tape™ Aluminum Foil Tape 1520CW
	Venture Tape™ Aluminum Foil Tape 1521CW
Carlisle	Barribond HP Liquid Flashing
DuPont	Weathermate™ Construction Tape
GCP Applied Technologies	Perm-A-Barrier® Aluminum Flashing
	Perm-A-Barrier® Detail Membrane
	Perm-A-Barrier® Liquid Flashing
	Perm-A-Barrier® Wall Flashing
Henry	Blueskin® Butyl Flash
	Blueskin® SA
Huber Engineered Woods	ZIP System™ Flashing Tape
	ZIP System™ Stretch Tape
	ZIP System™ Liquid Flash
IPG	UL723 Cold Weather Aluminum Foil Tape
Protecto Wrap®	Super Stick Building Tape®
	Protecto Seal 45 Butyl
	BT20XL Butyl Window & Door Sealing Tape
	BT25XL Window & Door Sealing Tape
Siga	Wigluv®
	Wigluv® Black
Siplast	WALLcontrol™ STPE Liquid Flashing
Sto	RapidGuard™ Liquid
Tremco	Dymonic® 100
Universal Tape	UT-40 Seam Sealing Tape

[1] Referenced sections are from the 2021 version of the codes and standards. This material and system of construction complies with prior versions of the referenced codes and standards as referenced therein.
[2] The materials noted are approved for sealing joints to create a code compliant WRB system when installed accordingly with EnergyShield Products. Other compatible joint sealing materials, and materials used to flash through wall penetrations and fenestration, may be used at the designer's sole discretion and installed in accordance with all recommendations and requirements of respective manufacturers. This information is subject to revision without notice. It is the user's responsibility to confirm product(s) are still applicable and stated within TB-15 and TER 2202-01 at the time of installation.

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EnergyShield® Continuous Wall Insulation

Storage Recommendations for EnergyShield® Polyiso Wall Insulation

ISSUED:	02/21/2023
***UPDATED:**	N/A
PAGES:	01

*SUPERSEDES EXISTING DOCUMENTS

EnergyShield Polyiso Wall Insulation products are manufactured with enhanced moisture resistance that allows them to be exposed to environmental factors like water with no long-term detrimental impact on their performance. In fact, EnergyShield can be installed to function as a Water-Resistive Barrier providing an effective drainage plane within the wall assembly. Consideration of the following guidelines for storage and handling of material are intended to properly protect product from damage prior to installation.

The information in this bulletin expressly excludes ACFoam Polyiso Roof Insulation products.

Additional storage and handling information for ACFoam can be found in Technical Bulletin #12.

GENERAL STORAGE RECOMMENDATIONS:

EnergyShield products are supplied in 4-foot shrouded bundles that may be safely stacked up to four high for 16 foot high stacks. Because of the low friction facers on the product, individual sheets must be stacked no more than 10 feet high for worker safety.

Shrouded bundles can accommodate outdoor storage, but care must be taken to protect the material from wind due to the light weight of the panels. In high wind areas, outdoor storage is not recommended without proper tie-down or other secured systems. Bundles must not be stored where standing water could float the material or cause bundles to tip over.

As a combustible foam plastic, certain jurisdictions in high population centers may restrict storage height or mandate special high volume flow fire suppression systems for indoor storage above 10 feet for EnergyShield products. Consult local fire marshal or other public safety officials for applicable restrictions.

CONDITIONS TO AVOID:

EnergyShield products contain flame-retardants designed to extinguish flames in the event of ignition, but they are combustible materials. Care must be taken to avoid exposure to open flames, welding, sparks, or other sources of ignition.

The polyiso core of EnergyShield products may be discolored by ultraviolet (UV) light exposure over long periods of time. This is generally limited to darkening of the exposed edges and is not a cause for defect or material rejection. The facers of EnergyShield products may degrade by fading if stored in UV exposed conditions for longer than 3 months, so it is recommended the material be protected with an opaque cover.

EnergyShield products are generally tolerant to solvents and fumes, such as gasoline, fuel oil, acetone, solvent-based mastics, and will not degrade or melt from exposure, nor will they melt if exposed to sunlight or high heat.

While EnergyShield is water-resistant, standing water in a stored stack of horizontal boards can freeze making sheets hard to separate and marring the branded surfaces. Any accumulated water will drain from boards when tilted vertical for installation. To assist installation, handling, and sealing, when required, keeping the product dry is required.

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EnergyShield® Continuous Wall Insulation

Component Compatibility
Applicable to EnergyShield® Polyiso Wall Insulation Products

ISSUED:	09/25/2023
***UPDATED:**	N/A
PAGES:	01

*SUPERSEDES EXISTING DOCUMENTS

EnergyShield Polyiso Wall Insulation products can often come in contact with other materials, such as adhesives and sealants. Polyisocyanurate foam insulation is highly compatible with a number of common construction-grade component products available in the market.

The following is a partial list of component products that are compatible with EnergyShield Products. It is recommended to confirm compatibility and installation instructions with the individual manufacturer. For a list of approved products when installing EnergyShield as a code compliant water resistive barrier, reference Atlas Technical Bulletin #15.

General Use Tapes:

Manufacturer	Brand Name
3M	All Weather Flashing Tape 8067
Huber Engineered Woods	ZIP System™ Flashing Tape
DuPont	Weathermate™ Construction Tape
GCP Applied Technologies	Perm-A-Barrier® Detail Membrane
Henry	Blueskin® Butyl Flash
IPG	UL723 Cold Weather Aluminum Foil Tape
Protecto Wrap®	Super Stick Building Tape®
Siga	Wigluv®

General Use Liquid-Applied Products:

Manufacturer	Brand Name
Carlisle	Barribond HP Liquid Flashing
DuPont	LiquidArmour
GCP Applied Technologies	Perm-A-Barrier® Liquid Flashing
Henry	Air-Bloc® LF Liquid-Applied Flashing
Huber Engineered Woods	ZIP System™ Liquid Flash
Sto	RapidGuard™ Liquid

General Use Adhesives and Sealants:

Manufacturer	Brand Name
3M	90 Spray Adhesive
Bostik	Heavy Duty Construction Adhesive
Henry	925 BES Sealant
Dow	795 Sealant
DuPont	Great Stuff™ Pro
Henkel	Loctite PL Premium
Henkel	OSI QB300 Multi-Purpose Construction Adhesive

This is not a complete list of general use products. Other products may be deemed compatible as acceptable alternatives by contacting Atlas Technical Services. These lists are provided as a courtesy to EnergyShield users and no warranty on performance is made.

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EnergyShield® Continuous Wall Insulation

Utilizing NFPA 285 Engineering Extensions

ISSUED:	05/13/2024
*UPDATED:	N/A
PAGES:	03

*SUPERSEDES EXISTING DOCUMENTS

Specifiers have a responsibility to verify that assemblies with foam plastic comply with NFPA 285 when used in Types I-IV construction. Manufacturers of foam plastic have an obligation to clearly communicate to users those assemblies which comply with NFPA 285. The combinations of base walls, sheathing choices, insulation thicknesses, weather resistant barriers, air spaces, and cladding are seemingly limitless, therefore compliance of assemblies cannot be attained through testing of exactly every assembly. Since all foam plastics must assess NFPA 285 assemblies for use in Types I-IV buildings, foam plastic manufacturers have the most complete assembly listings of all the combustible exterior wall components.

The current industry standard for addressing this challenge is:

- Full scale NFPA 285 testing of worse case wall assemblies to establish passing of NFPA 285 with various combustible components in addition to the foam plastic insulation.
- Small scale testing of the foam plastic and other combustible components to define fuel load, flame spread index, and heat release characteristics.
- Examination of small and large scale testing by fire science professionals to compare other available products for substitution in the assembly (Engineering Extensions).
- Independent review of the test reports and the extension by a third party approval agency for creation of approved assembly tables and any limits that must be clearly communicated.
- Publication and distribution of the third party accredited approval report for use by specifiers to avoid non-compliant assemblies.

As part of due diligence, some specifiers request the actual test reports. However, this is not helpful, as the tested assemblies are almost always unrealistically a worse case build that would not be used in the real world. Also, some components are specifically chosen due to being more combustible than counterparts in the market. Revealing these brands could unfairly lead specifiers to avoid the products, despite their successful incorporation in compliant assemblies.

What is meant by a worse case assembly? The following are explanations of each layer of a wall, and how fire science professionals assess the tested assembly versus other commonly available options in the market. NFPA 285-2023 includes Annex B, the consensus “Guide for Extensions of Results from Assemblies that Meet NFPA285 Test Requirements.”

- Base wall – Interior: The worse case interior sheathing for a stud base wall is 1/2" gypsum, but most commonly 5/8" Type X gypsum is tested considering hourly assembly needs. If 5/8” Type X gypsum is tested, then 5/8" Type C gypsum is also allowed, as well as gypsum thicker than 5/8". Also, concrete base walls are less combustible, so testing of a stud wall with interior gypsum allows all concrete and CMU base walls to be approved as well.
- Base wall – Steel Studs: Most testing is constructed with worse case 24" o.c. steel stud spacing with 20 or 25 gauge 3-5/8" deep studs. This produces a worse case for steel thickness and warping of the wall during testing. The fire engineer can then approve thicker gauge studs, narrower stud spacing, or deeper studs based on the tested assembly being weaker. IMPORTANT: IF THE WALL IS TESTED WITH LATERAL BRACING, THEN LATERAL BRACING MUST BE USED IN THE ACTUAL BUILDING ASSEMBLY.

- Base wall – Fibrous Cavity Insulation: When the tested assembly is worse case with no cavity insulation, then approved assemblies include fiberglass, mineral wool – or empty – in addition to 6-mil poly vapor retarder allowed on either side of the studs. Cellulose insulation requires the same material and method (wet applied, dry applied, etc.) to be tested, and may not be extended by testing an empty cavity.
- Base wall – SPF Insulation: Using calorimetry data, the worse case spray foam within a manufacturer's product line may be tested and then extended to less combustible products within that brand. When a base wall containing SPF is tested via NFPA 285 and no flaming on the exterior of the wall is observed, the SPF base wall may be substituted for a base wall that includes other combustible components such as WRB, foam plastics, and cladding that has passed NFPA 285 criteria. Testing full cavity thickness of SPF allows approval of less than full cavity SPF in the approved assembly, but less than full cavity thickness testing of closed cell SPF limits approved assemblies to the same air cavity depth as that tested.
- Floor line fire stops: Most NFPA 285 compliant assemblies require floor line fire stops within the stud cavity, typically 4" high mineral wool the full depth of the stud. When FRT wood studs are used, the floor line fire stop may be FRT blocking. When certain exterior gypsum or concrete sheathings are used, the floor line fire stopping may be waived. When intumescent fire stopping materials are used, the same must be installed as it was tested.
- Exterior Sheathing: The worse case testing is no exterior gypsum with foam insulation thus installed for the test direct to the studs. Such a tested assembly allows approval of assemblies with any gypsum or no gypsum. If regular, Type X, or glass faced gypsum is tested, the tested thickness and any greater thickness of any of these gypsum products are approved for the assembly.
- WRB over Exterior Sheathing: Fire engineers assess multiple mechanical and liquid applied weather resistant barriers and maintain a confidential database of calorimetry and fuel characteristics of each. In this manner, a more combustible WRB is selected to be burned in the NFPA 285 test assembly, allowing less combustible products to be allowed in the approved assembly as well. This is crucial, given the large number of mechanically attached and liquid applied WRB options in the market, and the desire to not restrict the designer to only those WRB tested in the actual NFPA 285 assembly.
- Exterior Foam Plastic Insulation: The maximum thickness of foam plastic insulation tested in the assembly allows thinner product of the same brand and composition to be used in the approved assembly.
- WRB over Exterior Foam Plastic Insulation: A WRB with less combustible characteristics than that which was tested over the foam plastic may be allowed in the approved assembly as well.
- Air Cavity under Cladding: The air cavity from the interior face of the cladding or masonry veneer to the underlying surface of the WRB or foam plastic insulation is tested greater than might be typically used in actual construction, which allows approval of thinner air cavities in the approved assembly.
- Drainage Mats: Non-combustible drainage mats may be used in approved assembles despite not being tested in the NFPA 285 assembly, provided the depth does not exceed the allowed air cavity for the particular cladding. Combustible drainage mats must be tested between the same cladding and underlying layer for which approval is sought.
- Fire Stops in the Cladding Air Cavity: When fire stops are tested under the cladding, the approved assembly must be limited to placement of the firestop in the same configuration as was tested. When no firestops are used under the cladding, as is typical, firestops may NOT be incorporated under the cladding in the approved assembly.
- Cladding: Testing of a brick façade allows approval of similar bulk cementitious claddings such as terra cotta, natural stone, etc. Testing of worse case open joint MCM cladding with joints directly over the window opening of the test assembly provides approval of other light-weight non-combustible claddings such as metal panel, fiber cement, thin brick, etc. Testing of an aluminum faced MCM typically allows approval of higher melting point skins such as titanium, copper, or stainless steel.
- Combustible Claddings: Most other combustible claddings, such as High Pressure Laminates (HPL), Exterior Insulation Finishing Systems, Composite Panels, FRP, or Insulated Metal Panels, require that the assembly be tested with that specific cladding. Typically, thinner versions of the same cladding are approved based on testing a thicker version with more combustion fuel. However, both the thickest and the thinnest HPL claddings must be tested to meet code.

- Composite Cladding Attachment Systems: Some cladding attachments utilize composites, including fiberglass, to limit thermal bridging. These attachment systems must be tested on a base wall to assess initial combustibility in the system.
- Window Perimeter: The tested window rough opening header, jambs, and sill for polyiso foam insulation is typically the C-channel steel studs used in the rest of the wall assembly, normally 20 or 25 gauge. If mineral wool is used to separate the cavity insulation from the window perimeter, or a special header is used, this must be disclosed as a requirement in the approved assemblies. Such additional requirements are more common for XPS and EPS than polyiso, spray foam, or mineral wool exterior insulation.
- Window Perimeter Treatment: Metal flashing is commonly used to bridge the rough window opening framing gap to the exterior cladding, back to the interior drywall. Testing with 0.040" aluminum allows other flashings to be used. Other rules apply for tests with flashings other than aluminum. Generic installation is restricted to horizontal extension to the surface of the cladding, and vertical extension on the interior drywall no more than 2-inches. When aluminum is used, all other metals are approved, as this aluminum perimeter melts off during the test. In some cases, the window perimeter is constructed and tested with specific materials such as stainless steel, gypsum, FRT, or mineral wool in air cavities. The report outlining approved assemblies will specify which systems require specific window perimeter detailing, often this is the case for ACM claddings combined with no exterior gypsum sheathing (polyiso installed direct to steel stud).
- Window Flashing: Combustible tapes and flashings at window openings are not a cause for test failure. For this reason, any flashing material may be used without limit, provided it extends no more than 18-inches out from the window opening. Flashing greater than this would be considered a WRB, and must be listed in the approved WRB list in the approval report.

As outlined above, every layer within a wall assembly is taken into consideration when constructing the NFPA 285 test assembly. Materials, fabrication, and testing of a single assembly ranges from $25,000 to $40,000 and require months to complete. Failures are treated as learning experience and changes incorporated into future testing, balanced against worse case conditions and more conservative commonly employed building practices. The end results are well vetted assembly test reports that are used by fire engineering professionals as the basis for limiting what assembly alternatives are approved and which must be avoided.

Specifiers understand exterior wall assemblies are complex. To date, the most efficient way to address NFPA 285 approved assemblies is for fire engineering professionals to create tables with sections specific to approved options in each layer, and footnotes that denote important restrictions. As an example, a cladding may be approved, but a footnote may clarify that exterior gypsum sheathing must be used in conjunction with the cladding. Or, a cladding may be approved, but is restricted to a maximum air gap underneath. For this reason, it is important to not only check published tables for approved components, but to note any caveats that must be observed when designing the actual building.

Finally, specifiers should exercise caution when confronted with products simply proclaiming "NFPA 285 approved." Compliance is only attained as part of a wall system, and every layer of that wall system must be shown to understand which combinations are compliant with the product. Where a manufacturer has contracted with a third party approval agency to vet and publish the approved wall assemblies, specifiers should feel confident that the information in the table is accurate and much more complete than if they were simply handed a test report. Every year, more cladding, WRB, composite attachment systems, and other wall options are brought to market. NFPA 285 approval reports from foam plastic manufacturers are updated often to keep pace, so always access the most recent third party report for accurate details. See DRJ TER 1306-03 for Atlas approvals.

Blowing Agent Gases and Global Warming Potential in Rigid Foams

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*SUPERSEDES EXISTING DOCUMENTS

Atlas Roofing Corporation is committed to ensuring we are using blowing agents with the lowest Global Warming Potential (GWP) available for each of our product technologies.

Blowing agents are gases used to create tiny cells in the manufacture of foam products. The gas can stay in the cell over long periods of time or can dissipate quickly. In general, the blowing agent gases are retained in polyisocyanurate, extruded polystyrene (XPS) and closed cell spray foams. The gases dissipate during or shortly after the manufacturing process for open cell spray foam and closed cell Expanded Polystyrene (EPS).

With the renewed focus on chemicals that contribute to global warming, some rigid foams are under increased regulation to reduce the GWP for their blowing agent gases. In particular, XPS faces regulation to reduce the GWP of their blowing agent gases by 2025.[1]

Regardless of being a retained blowing agent or a dissipated blowing agent, it is assumed the blowing agent eventually makes its way into the environment. The GWP of blowing agent gases is important as the higher the GWP, the more they contribute to climate change.

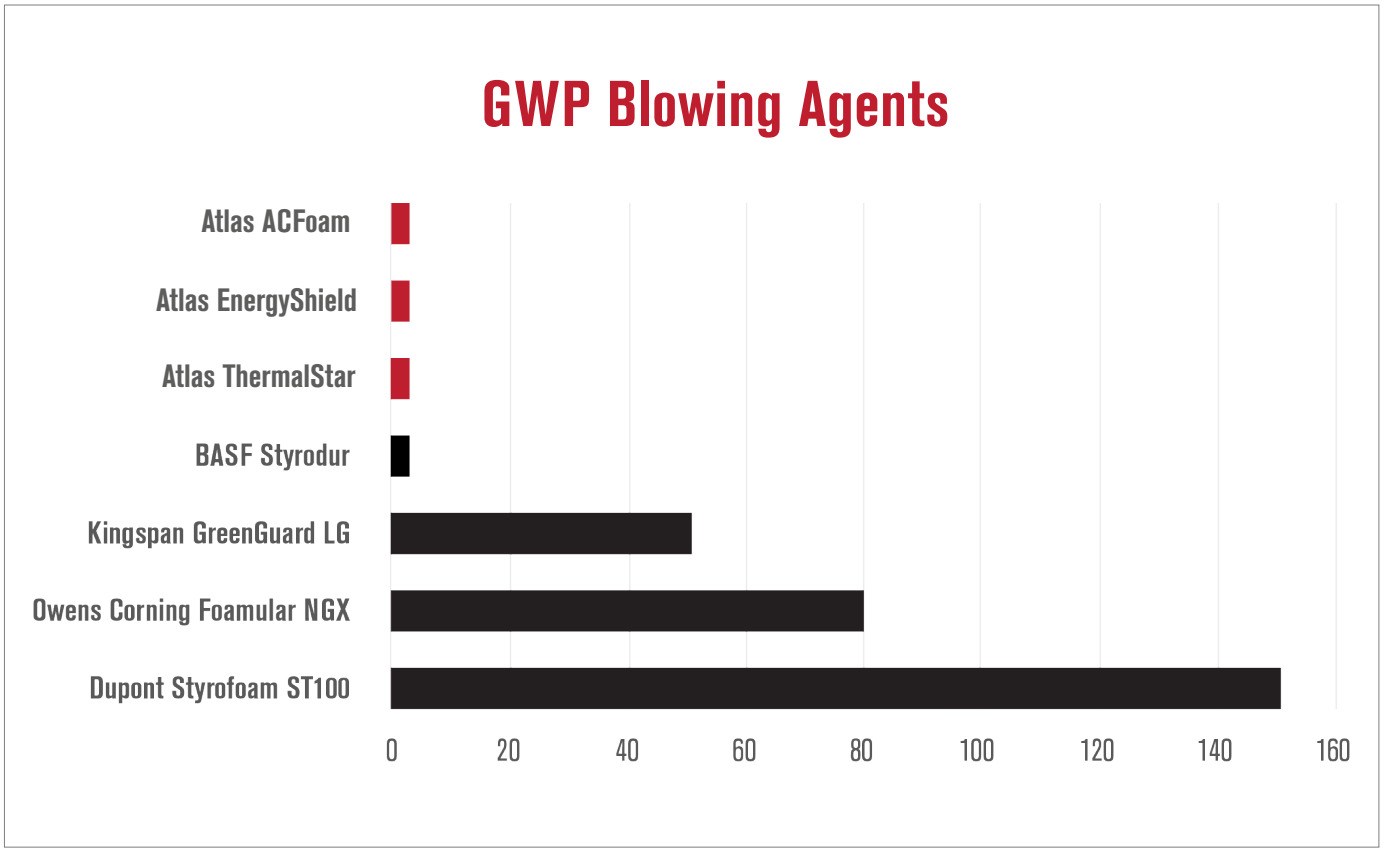
Summary of rigid foam products and their blowing agent GWP

Manufacturer	Atlas	Atlas	Atlas	BASF	Kingspan	Owens Corning	Dupont
Insulation Brand	ACFoam	EnergyShield	ThermalStar	Styrodur	GreenGuard GG25-LG	Foamular NGX	Styrofoam (ST100)
Materials	Polyiso	Polyiso	White EPS	Green XPS	Green XPS	Pink XPS	Gray XPS
Location	North America	North America	North America	Europe	North America	North America	North America
Blowing Agent Gas	Pentane	Pentane	Pentane	CO_2 (Since 1998)	Blend	Blend / R152a	Unknown
GWP[2]	<3*	<3*	<3*	1†	<50‡	<80§	<150+

1 "EPA HFC Final Rule Fact Sheet 2023", Office of Air and Radiation, October 2023
2 The unit for GWP is "kg CO2 equivalent" for 100 years, with CO2 having a GWP of 1
* World Meteorological Organization, "Scientific Assessment of Ozone depletion 2018", Annex A, Summary of Abundances, Lifetimes, ODPs, Res, GWPs, and GTPs
† E-CPB/FM 2205 BE Styrodur Sustainability Brochure
‡ Kingspan-greenguard-xps-lg-brochure-sell-sheet-siding-applications-en-us-ca-v1, 02/2024
§ Foamular NGX Extruded Polystyrene Insulation Health Product Declaration V2.3 2023-11-10
\+ https://www.beyondblue.dupont.com/compliance.html

EPS, Polyiso, and XPS can all be sourced with a low GWP (less than 10) blowing agents around the world. Unfortunately, a low GWP XPS product is not available in North America.

In North America, the use of Atlas rigid foam products provides a significant environmental benefit over XPS where higher GWP blowing agents are used.



ACFoam® Polyiso Roof Insulation

EnergyShield® Continuous Wall Insulation

Atlas Roofing Corporation
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Conformance with the Buy America, Build America Act

Title IX of the Infrastructure Investment and Jobs Act of 2021 (Pub.L. 117-58, §§ 70901-70953)

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*SUPERSEDES EXISTING DOCUMENTS

Atlas Roofing Corporation is committed to ensuring products meet the requirements of our customers. Regarding the Buy America Act and its more specific extension the Build America, Buy America Act, the regulation does not require that a building product manufacturer certify compliance for their products. It does require:

"All construction materials used in projects must be manufactured in the United States. This means all manufacturing processes for the construction material occurred in the United States. As an additional step to ensure compliance when purchasing products for the project, FEMA award recipients or sub-recipients may request a certification letter from the product manufacturer to demonstrate compliance with BABAA requirements. **Although requesting manufacturer certifications is not required**, FEMA recommends this step as a best practice for documenting compliance with BABAA.[1]"

Atlas Roofing Corporation manufactures rigid polyisocyanurate foam insulation boards at six United States facilities. All Atlas product brands manufactured at these six facilities comply with the BABAA requirements. Atlas products manufactured in the United States also satisfy the minimum domestic component cost limits established in the Buy American Act[2]. Specifiers may include Atlas polyisocyanurate foam board products into their projects and be assured of compliance with the regulation.

In the event that a project requires certification to prove compliance, the following information must be provided to Atlas in order to generate a signed, project specific certificate.

- The project name and address, including the city and state
- The Atlas product(s) used on the project
- The location of the Atlas facility supplying the project
- The date that the project began using the Atlas products, for verification

Because specifiers must vet available materials well in advance of their projects coming to fruition, this technical bulletin serves to assure the products will meet the requirements when actual products are installed.

Note that Atlas Roofing Corporation also manufactures polyisocyanurate foam board products in two Canadian facilities, and those products would not meet the BABAA requirements. Potentially some US projects may be sourced from one of these Canadian facilities. It is the responsibility of the material distributor to ensure Atlas is aware of BABAA projects so that compliant products are provided when needed.

[1] BABAA Best Practices, Documenting Compliance with Build America, Buy America Act (BABAA) Requirements, Procurement Disaster Assistance Team (PDAT) 2023, FEMA.

[2] 48 CFR Part 25, Subpart 25.2 - Buy American - Construction Material.

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FTC Fact Sheet
EnergyShield® Polyisocyanurate Insulation

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This fact sheet contains important information about EnergyShield polyisocyanurate insulation manufactured by Atlas Roofing Corporation. The standard size for insulation board is a 4'x8' sheet with total coverage of 32 square feet.

INSULATION BOARD R-VALUES

FOIL FACED POLYISO THERMAL DATA

NOMINAL BOARD THICKNESS[3]	0.5"	0.75"	1.0"	1.5"	1.6"	2.0"	2.5"	3.0"	3.5"	4.0"
R-VALUE[1, 2]	3.3	5.0	6.5	9.8	10.5	13.1	16.0	19.7	22.2	26.0

COATED GLASS FACED POLYISO THERMAL DATA

NOMINAL BOARD THICKNESS[3]	0.5"	0.75"	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"
R-VALUE[1, 2]	3.0	4.5	6.0	9.0	12.1	15.3	18.5	21.7	25.0

[1] Thermal values were determined by ASTM C518 Test Method C 518 at 75°F mean temperature using materials conditioned in accordance with ASTM C1289.
[2] "R" means resistance to heat flow. The highter the R-value, the greater the insulation power.
[3] Other sizes available upon request. Contact your local Atlas sales office.

READ THIS BEFORE YOU BUY

What You Should Know About R-values

The chart shows the R-values of this insulation. R means resistance to heat flow. The higher the R-value, the greater the insulation power. Compare insulation R-values before you buy.

There are other factors to consider. The amount of insulation you need depends mainly on the climate you live in. Also, your fuel savings from insulation will depend upon the climate, the type and size of your house, the amount of insulation already in your house, your fuel use patterns and family size, proper installation of your insulation, and how tightly your house is sealed against air leaks. If you buy too much insulation, it will cost you more than what you'll save on fuel.

To get the marked R-value, it is essential that this insulation be installed properly.

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EnergyShield® Continuous Wall Insulation