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ACFoam® CrossVent® and ACFoam® Nail Base Insulation with Plywood Nailable Surface

ISSUED: 01/04/2011

***UPDATED:** 01/13/2025

PAGES: 01

*SUPERSEDES EXISTING DOCUMENTS

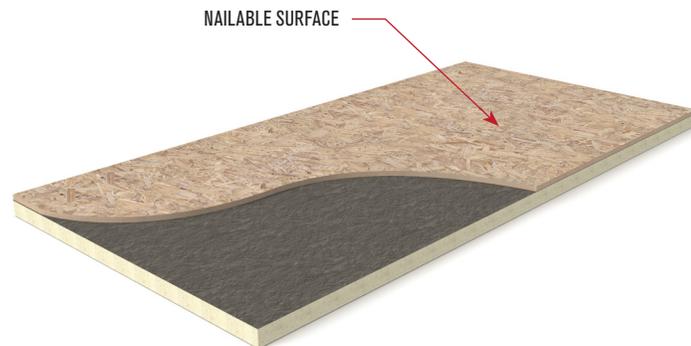
Building Codes are a set of regulations that govern and establish minimum requirements for building construction, including new construction and reroofing. The Building Code references ASCE 7 as the basis for determining wind uplift pressure resistance and other design loads for roof assemblies. Accordingly, Atlas Roofing Corporation ACFoam® Crossvent® and ACFoam® Nail Base published fastening recommendations are based on ASCE 7-10. Job-specific calculations/reports are based on either ASCE 7-10 or ASCE 7-16, as applicable.

However, based on field experience regarding dimensional stability of plywood, Atlas Roofing Corporation recommends that when plywood is used as a nailable surface of either the ACFoam® Crossvent® or ACFoam® Nail Base composite panels, the fastening requirements for each panel shall be increased to a minimum of 30 Atlas Nail Base fasteners per 4' x 8' board, or as outlined in Atlas Roofing Corporation's fastening requirements, depending on which requirements are more stringent. The more stringent requirements shall be used.

NAILABLE SURFACE OPTIONS			
NAILABLE SURFACE	AVAILABLE THICKNESSES		
OSB	7/16"	5/8"	3/4"
CDX	19/32"	5/8"	3/4"
FRT CDX (SPECIAL ORDER)	19/32"	5/8"	3/4"
FSC CERTIFIED OSB (SPECIAL ORDER)	7/16"	5/8"	3/4"
FSC CERTIFIED CDX (SPECIAL ORDER)	19/32"	5/8"	3/4"

Nailable Surface Plywood Notes:

- 15/32" (1/2") plywood is not approved.
- 5-Ply CDX Preferred. 4-Ply CDX approved.



Recycled Content of Atlas Polyisocyanurate

ISSUED:	10/13/2003
*UPDATED:	08/01/2024
PAGES:	01

³SUPERSEDES 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%

¹Post-Consumer and Pre-Consumer (Post-Industrial) recycled content.

²Pre-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.

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

NUMBER TB-3

FROM: Director Technical Services, Commercial Products Division

ISSUED 03.28.2003

***UPDATED** 12.01.2016

PAGES 01

SUBJECT: ACFoam[®] CrossVent[®] and other Ventilating Nail Base Insulation Products

*SUPERSEDES EXISTING DOCUMENTS

In December 2002, Atlas introduced ACFoam[®] CrossVent[®], ventilating nail base insulation product that does not require special detailing to allow air flow into hips and valleys. As a result of this change in design, the LTTR-values for the new product are slightly lower than those for Vented-R. Vented-R provided some thermal resistance in addition to the primary layer of ACFoam[®]-II because of the positive framing effect of the polyiso spacing strips. Additional thermal resistance for the air space or the OSB above the air space in Vented-R was not considered in determining the product LTTR-value, since outside air flowing through the product creates a thermal interruption and does not, therefore, provide any appreciable thermal resistance to the product. Further, the air flowing through a properly ventilated air space eliminates the small thermal resistance provided by the 7/16-inch OSB, as well as the roofing materials and outside air film above the air space, since ambient air is flowing above and below these components.

A review of available competitive product literature and websites indicates that unexplained thermal resistance values are being added to the LTTR-values of the polyiso foam portion of some ventilating nail base products. These values range from 0.6 to 2.3, and, when combined with the LTTR value of the polyiso foam layer, are called Total R-value, System R-value, or Product R-value. In one case, the LTTR-value for the foam was reportedly determined according to CAN/ULC-S770, but no test method was provided for the determination of the System R or Total R. In another case, the literature provided only a general reference to 6-month aging and to LTTR. Our review did not discover a single case that cited the test method used to determine the Total R, System R, or Product R.

Because air flows freely through the venting strips of ACFoam[®] CrossVent[®], the small thermal contribution of the spacing strips to the overall product thermal resistance is reduced. Although this value is not zero, Atlas has chosen not to report it, relying only on the third-party certified LTTR-values of the ACFoam[®] component. This decision was based on the recognized authority of the ASHRAE Fundamentals Handbook, Chapter 24, Table 3, note b; and Chapter 23, "Factors Affecting Heat Transfer Across Air Spaces." This chapter explains that the thermal resistance values claimed for air spaces are applicable only when the air spaces are sealed against air flow in or out of the space. It was also significantly based on the expert recommendations of the U. S. Department of Energy, Oak Ridge National Laboratory.

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

NUMBER TB-4

FROM: Director Technical Services, Commercial Products Division

ISSUED 09.13.2004

***UPDATED** 12.01.2016

PAGES 01

SUBJECT: Adhering Atlas ACFoam[®] Products Using Hot Asphalt

*SUPERSEDES EXISTING DOCUMENTS

Hot asphalt is often used to adhere the above ACFoam[®] products to structural concrete decks. Additional layers of these products, as well as cover boards, such as perlite, high density wood fiberboard, and Dens-Deck[™], are also commonly adhered to each other with hot asphalt. Historically, Atlas's recommendation for this application has included three limitations: First, the size of the insulation board applied in hot asphalt shall not exceed 4' x 4'; Second, the asphalt temperature at point of contact with these ACFoam[®] products shall not exceed 450°F; Third, the asphalt shall be applied at the *EVT (equiviscous temperature).

This use of *EVT has a long history of success in the application of BUR ply felts. Certain contractor associations and BUR system manufacturers point out that the *EVT recommendation applies only to membrane construction and not to insulation attachment, because asphalt at its *EVT is too thin and flows too easily to fill irregular surfaces, such as found on a concrete deck. Asphalt at a lower temperature is more viscous, providing better adhesion and positive contact between the deck and the insulation surfaces and between layers of insulation.

Given the effect of temperature on asphalt viscosity, Atlas's recommendation for adhering these ACFoam[®] products with hot asphalt has changed in two important ways. First, the asphalt shall be applied at a temperature approximately 60° F (≈15°C) to 70°F (≈20°C) lower than the inter-ply hand mopping *EVT. Second, the temperature of the asphalt at point of contact with these ACFoam[®] products shall not be greater than 390° (≈200°C). The recommended maximum size of insulation boards applied in hot asphalt remains the same (4' x 4').

As a result of this bulletin, the applicator will probably need to adjust the temperature of the asphalt used for insulation attachment. Therefore, please be sure to communicate this information to your customers. Our literature and labels will reflect this change as soon as revisions can be made. In the meantime, this Technical Bulletin, which supersedes our previous recommendations on this subject, should be distributed as widely as possible.

*EVT is the temperature at which the viscosity of inter-ply hand mopping asphalt is 125 centipoise, a measure of viscosity that decreases (asphalt becomes thinner) as the temperature of the asphalt increases.

TO: Atlanta Sales, Commercial Field Sales, Regional Managers, Plant Managers and Account Executives**NUMBER** TB-5**FROM:** Director Technical Services, Commercial Products Division**ISSUED** 03.25.2009**UPDATED** 12.01.2016**SUBJECT:** Atlas ACFoam® Application Update**PAGES** 03

*SUPERSEDES EXISTING DOCUMENTS

The following bulletin reinforces and clarifies Atlas' existing position regarding the proper use of ACFoam® polyiso roof insulation. This Technical Bulletin is effective immediately. Projects bid prior to 1/03/00 will be considered on a project-by-project basis.

MULTI-LAYERING OF ROOF INSULATION

In 1994, Atlas issued Technical Bulletin 94-1009, which outlined our recommendation for multiple layers of ACFoam® installed with offset (staggered) joints. At that time, we cited the elimination of thermal bridging, prevention of thermal loss at insulation joints, reduction of moisture migration into the roof system, and reduction of membrane splitting as benefits provided by multiple layers of roof insulation. In other words, a single layer application can contribute to loss of design thermal value, moisture migration into the roof system, and ridging or splitting of the roof membrane. The benefits of multiple layers of rigid board insulation of all types have been well known for years. Industry authorities, including NRCA, ORNL and RIEI, have recognized these benefits; and many have followed our long-standing recommendation for the use of multiple insulation layers. Unfortunately, reports from the field indicate that single-layered applications are still commonplace. Therefore, the recommendations set forth in Technical Bulletin 94-1009 are repeated here with greater emphasis and in further detail.

SINGLE-PLY SYSTEMS

- Insulation Mechanically Fastened Through All Layers: When a coverboard is not used, Atlas strongly recommends the use of multiple layers when the total desired or specified R-value requires an insulation thickness greater than 2.7" thick.
- For a desired thickness greater than 2.7", the minimum thickness for the bottom layer is 1.3" and 1.5" for the top layer. These thicknesses maintain fire and wind ratings. When layers greater than 1.5" thick are needed in a multi-layered application, the thicker layer should be placed on the bottom, followed by a minimum 1.5" thick layer. Please refer to our published R-value/thickness chart to ensure that the desired or specified thermal value is provided. (This recommendation does not apply to Tapered ACFoam®).
- Atlas understands that designers and contractors may choose to specify or install ACFoam® in an application or in a thickness not recommended by Atlas. When non-recommended use of ACFoam® occurs, Atlas cannot assume or share in responsibility for roof system performance.
- The joints of each layer must be offset (staggered) to prevent continuous vertical joints through the full insulation thickness.

HOT-APPLIED BUR AND MODIFIED BITUMINOUS ROOF SYSTEMS

Although coverboards are generally required for hot-applied BUR and modified bituminous systems and do create a multi-layered insulation system, multiple layers of ACFoam® installed with staggered joints beneath the coverboard can further improve the thermal performance of the roof system.

- Bottom Layer Mechanically Fastened with Successive Layers Mopped: When a coverboard in an approved assembly is used, any thickness of ACFoam® equal to or greater than 1.5" is acceptable. However, thermal efficiency may be increased by the use of multiple layers of ACFoam®. When the total required polyiso insulation thickness is equal to or greater than 3.0" thickness, the minimum recommended thickness is 1.5" for both the bottom and top layer. Please refer to our published R-value/thickness chart to ensure that the required thermal value is provided.
- The joints of each layer must be offset (staggered) to prevent continuous vertical joints through the full insulation thickness.

CONSTRUCTION-GENERATED MOISTURE

Cold weather often dictates that the shell or building envelope be substantially closed before interior work can proceed. In other words, exterior walls and roofs are sometimes constructed before the concrete floor slab is placed or other moisture-producing activities begin. At this point, heaters, which also produce large quantities of moisture, are often employed to provide more comfortable working conditions and to assist in drying the construction. Since the building is basically closed, adequate ventilation is often unavailable to prevent these large quantities of moisture from entering the roof system. In addition, loose-laid or partially attached roof systems may promote air intrusion, drawing moisture-laden air up from the building interior into the roof system. These levels of moisture are well known and well documented. {See NRCA Roofing and Waterproofing Manual, The Manual of Low-Slope Roof Systems (Griffith and Fricklas), and Roofs (Baker)}.

- In the absence of adequate ventilation, a vapor/air retarder is recommended to limit the movement of moisture into the roof system. Therefore, Atlas cannot assume responsibility for the performance of ACFoam® roof insulation when installed under these high moisture conditions unless a properly installed, effective vapor/air retarder is present. Location of the vapor/air retarder within the roof system is the responsibility of the designer. The inclusion of a vapor/air retarder may affect insulation fastening requirements, wind uplift ratings, or other approvals.
- Consult the roof system manufacturer for fastening and approval requirements when insulation is placed over a vapor/air retarder.

COVERBOARDS

The use of coverboards (e.g. high-density wood fiber or perlite) over a base layer of insulation creates a multi-layered application and has long been standard practice in hot-applied BUR and modified bituminous systems. Some industry experts, contractor organizations, consultants, and specifiers also recommend the use of a coverboard over standard industry grade polyiso roof insulation in single-ply applications, especially in fully adhered systems, because it protects the foam/facer interface from traffic and certain adhesive solvents.

- **The roof system designer or the system manufacturer, who issues the roof warranty, should be consulted for coverboard requirements and approvals.**

- When construction traffic or material storage is expected on the finished roof, Atlas recommends the use of a coverboard or other adequate protection, such as plywood, placed over the finished roof. The placement of an adequate protective layer over the finished roof system should also protect the membrane from damage and is normally recommended by the roof system manufacturer. The coverboard should possess higher compression resistance than the base layer to help distribute loads caused by construction and frequent maintenance traffic.

In the absence of adequate protection, Atlas cannot assume responsibility for foam crushing, facer/foam separation, or other forms of damage.

COLD WEATHER APPLICATIONS

Millions of square feet of roofing have been successfully installed in cold weather, but it does present the contractor with difficult installation conditions that require special care and modified techniques to ensure a trouble-free installation. For example, cold weather may require shorter mop leads to avoid the rapid cooling of asphalt before insulation or membranes are placed. Sealants are also affected by cold weather and should be maintained above the manufacturer's recommended minimum application temperature.

Similarly, materials used in single-ply systems, especially adhesives used in fully adhered systems, are temperature sensitive, requiring careful attention during application. For example, adhesive drying time (open time) can be significantly increased in the presence of low temperatures and high humidity, conditions that are common during portions of the fall, winter, and spring in certain regions of North America. Membranes should also be allowed to relax before they are applied.

Improperly applied membrane or adhesive may affect membrane-to-insulation bond strength, as well as facer-to-foam bond strength or foam cohesive strength near the facer in polyiso roof insulation. As a polyiso roof insulation manufacturer and not a membrane system manufacturer, Atlas makes the following recommendations.

- The membrane system manufacturer's recommendations should be followed carefully, including adhesive application and membrane relaxation guidelines. Consultation with the membrane system manufacturer prior to installation, especially in cold weather, is recommended.
- Adhesives should be maintained at temperatures above the membrane manufacturer's recommended minimum temperature at the point of application. Heated on-site storage areas and roof top hot boxes may be necessary.
- Materials to receive adhesive application should also be maintained at temperatures warm enough to prevent rapid cooling of the adhesive as it is applied.
- Special care should be taken to allow solvents in adhesives to evaporate ("flash off") in accordance with the membrane manufacturer's recommendations. The difference in drying rates between shaded and sunlit areas should be considered. When the membrane is placed over insufficiently dried adhesive, the solvents may be trapped and forced downward into the insulation.



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

NUMBER TB-6

FROM: Director Technical Services, Commercial Products Division

ISSUED 06.01.2010

UPDATED 12.01.2016

SUBJECT: Radiant Barriers - Shingle Roof Assemblies

PAGES 01

*SUPERSEDES EXISTING DOCUMENTS

Radiant Barriers are defined as materials that have an emittance value of 0.05 or less, when tested per the ASTM C1371 or ASTM E408 testing standard.

ACCEPTABLE RADIANT BARRIER MATERIAL TYPES FOR USE WITH ATLAS ASPHALT SHINGLES ARE:

- Radiant Barrier sheet materials which are installed over the rafters or trusses and draped between to allow flow through ventilation from soffit to ridge within each cavity.
- Radiant Barrier sheet type materials may be attached to the bottom of the rafter or truss chords, leaving a path of ventilation from soffit to ridge within each cavity.
- OSB, or plywood, APA/TECO rated panels having a perforated radiant barrier material adhered to the bottom as installed and rated at 2 perms or greater vapor permeability.

UN-ACCEPTABLE "RADIANT BARRIER" TYPES WHICH WOULD VOID THE ATLAS LIMITED SHINGLE WARRANTY:

- Liquid applied, radiant Barriers installed to the bottom of the decking material, unless proven to be highly vapor permeable (>2 perms test results). If these liquid applied materials are not highly vapor permeable, they have potential to contribute to moisture retention in the decking and framing members. Only water based, highly vapor permeable coating applications will be recognized, as solvent based liquids have potential for VOC's to harm the asphalt roofing products on top of the deck.
- Any Radiant Barrier installed onto the top surface of the decking and serving as an underlayment to the shingles. A true Radiant Barrier material must have an open air space adjacent to the reflective surface to perform as a radiant barrier.
- Non-Perforated, Radiant Barrier deck panels are not approved.

WARRANTY PROVISION COMPLIANCES:

- In order for the Atlas Shingle Limited Warranty to remain in effect, full compliance to the minimum stated ventilation requirements as well as the entire installation requirements as stated on the product packaging, must be provided. Unrestricted, flow-through ventilation from soffit area to the ridge area must be incorporated into the roof assembly to maintain the warranty provisions. This flow-through ventilation must occur directly below the decking and must be able to support the minimum roof ventilation, per local code requirements, or, the standard Atlas ventilation requirements as printed on the product packaging, whichever is greater.
- Atlas Roofing Corporation shall not have liability for:
 1. Damage to Atlas shingles caused by movement, distortion, settlement, deterioration, cracking or failure of the roof deck or framing members of the roof assembly.
 2. Failure of, damage to or defects attributable to radiant barrier type materials used in the deck assembly, such as excessive blistering, cracking and/or excessive granule loss.
 3. Premature failure of, or damage to, Atlas asphalt shingles not applied in strict compliance with the installation instructions stated on the packaging or as dictated by local building codes.

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

NUMBER TB-7

FROM: Director Technical Services, Commercial Products Division

ISSUED 06.01.2010

***UPDATED** 12.01.2016

SUBJECT: ACFoam® Product Weights (lb/sf)

PAGES 01

*SUPERSEDES EXISTING DOCUMENTS

One of the important features of ACFoam® is that the product has exceptional strength, yet is very lightweight. Additionally, because of superior fire test performance characteristics, ACFoam® products can be installed directly over a metal deck without the need for a heavy and costly gypsum underlayment. Lastly, the thermal efficiency of ACFoam® (ability to obtain a high LTTR-Value in a thin profile) means that specified LTTR-value can be obtained using thinner boards, thereby limiting the weight added to the structure. See chart below.

THICKNESS	ACFoam®-II	ACFoam®-III	ACFoam® Supreme	ACFoam® -HD CoverBoard	¹ACFoam® CrossVent® Air Space Dimension			¹ACFoam® Nail Base
					1.0"	1.5"	2.0"	
0.5"	–	–	–	0.500	–	–	–	–
1.0"	0.245	0.315	0.170	–	–	–	–	–
1.5"	0.313	0.383	0.238	–	–	–	–	1.697
2.0"	0.380	0.450	0.305	–	–	–	–	1.768
2.5"	0.448	0.518	0.373	–	1.731	–	–	1.832
3.0"	0.515	0.585	0.440	–	1.799	1.748	–	1.900
3.5"	0.583	0.653	0.508	–	1.866	1.816	1.764	1.967
4.0"	0.650	0.720	0.575	–	1.934	1.883	1.832	2.035
4.5"	–	–	–	–	2.001	1.951	1.899	2.102
5.0"	–	–	–	–	2.069	2.018	1.967	–
5.5"	–	–	–	–	2.136	2.086	2.034	–
6.0"	–	–	–	–	–	2.153	2.102	–
6.5"	–	–	–	–	–	–	2.169	–

¹ACFoam® CrossVent® & ¹ACFoam® Nail Base calculated using 7/16 in. OSB and GRF (Glass fiber reinforced cellulosic felt) faced polyisocyanurate.

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

NUMBER TB-8

ISSUED 05.13.2003

***UPDATED** 12.01.2016

PAGES 05

FROM: Director Technical Services, Commercial Products Division

SUBJECT: Atlas ACFoam® Third Party LTTR and Quality Control

*SUPERSEDES EXISTING DOCUMENTS

Atlas Roofing Corporation first published Long-Term Thermal Resistance (LTTR) values for ACFoam®-II and ACFoam®-III in the spring of 2002, prior to the conversion in Canada from 6-month conditioned R-values to LTTR-values. These values range from 6.0 to 25.0, depending on product thickness, and are determined in accordance with CAN/ULC-770, now included in ASTM C 1289-02, Annex A1. Test samples are third-party selected at the plants by an accredited testing laboratory or by Underwriters Laboratories. ACFoam®-II and ACFoam®-III are also manufactured according to the requirements established by our FM Approvals and UL Classifications.

Since the Atlas plants are listed in Canada by the Canadian Construction Materials Centre (CCMC), third party testing was already required of product from each listed plant in order to maintain these listings, which, practically speaking, are necessary for widespread acceptance in the Canadian marketplace. CCMC is part of a federal governmental agency, and its testing protocol stipulates annual certification by the manufacturer and full product testing performed by an approved testing laboratory every third year. CCMC's program is well respected and supported by the construction industry throughout Canada, including the contractor community.

As a result of this experience with CCMC's protocol, Atlas decided last year to expand LTTR testing to include our remaining two polyiso plants, making a total of seven. Our LTTR verification schedule requires full LTTR testing annually in addition to daily QC checks, such as density and initial k-value (thermal conductivity) testing. Atlas believes that this comprehensive approach better ensures the thermal performance expected by building owners, architects, consultants, contractors, specification writers and installers of our roof insulation.

The following bullet points highlight our QC and LTTR-value verification practice:

- Production from each plant is tested annually, based on the date of the first LTTR test for a given plant.
- The accredited testing laboratory, Bodycote Materials Testing Canada Inc., has the most experience, perhaps in the world, in performing this relatively new LTTR test protocol, having provided repeated LTTR testing services for manufacturers since at least the close of 2000. Bodycote has performed LTTR testing for other PIMA members, as well.

- Test samples are randomly selected by the accredited testing laboratory or, in the U.S., by Underwriters Laboratories. UL selects product for testing, signs each board selected, and issues a letter to Atlas and the testing laboratory to confirm the selection, including such information as site location, dates, location of the UL inspection center, and so on (see attached copy). The signed boards are then shipped to the testing laboratory.
- The laboratory performs the LTTR testing and issues a signed report to Atlas (and to CCMC when required). The report (see attached copy) includes a description of the procedure, the five-year aged thermal resistivity for 4", 3", 2" and 1" products, and aged thermal resistivity for 10 years, 15 years and 20 years at a given thickness (this additional data is requested by Atlas but not required by the LTTR test method). Resistivity values are then converted to LTTR-values for each thickness.
 - As stated in CAN/ULC-S770, a five-year aged value is equal to a 15-year time weighted average, which is intended for use as the design value.
 - Third-party test results consistently support Atlas's published LTTR-values.
- QC checks for density, compressive strength, initial k-value, and dimensional stability are performed every day on each product manufactured that day.
- FM Approvals and Underwriters Laboratories audit each of our plants every quarter to ensure that the products are consistently manufactured within the parameters of the FM Approved and UL Classified formulations.

This level of attention to consistent quality is important to help distinguish Atlas Roofing Corporation from the competition. As a result, our customers can be further assured that the thermal and mechanical properties of our polyiso roofing products meet or exceed our published values.



1.0 INTRODUCTION

At the request of Atlas Roofing Corporation Bodycote materials Testing Canada Inc. was retained to evaluate Atlas' 2 inch ACFoam II in accordance with ASTN C1298-02 "Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulate".

Underwriters laboratories Inc. conducted sample selection on December 10, 2002 from Atlas' CampHill, PA plant. The sample selection letter dated January 23, 2003 is presented in Figure 7

Upon receipt, the sample was given the following Bodycote Sample no.:

<u>Client Sample Description</u>	<u>Bodycote Sample No.</u>
Atlas ACFoam II CampHill (Black facers)	02-06-M0259

2.0 PROCEDURE

The sample was evaluated in accordance with ASTM C1289-02 "Standard Specification for Faced Rigid Cellular polyisocyanurate thermal insulation" for:

Long Term thermal Resistance	Annex A1
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In addition, at the request of Atlas roofing Corporation, Bodycote materials Testing Canada inc. was requested to determine the LTTR of the 2 in. product at 10, 15, and 20 years.

The sample was analyzed using the following test equipment:

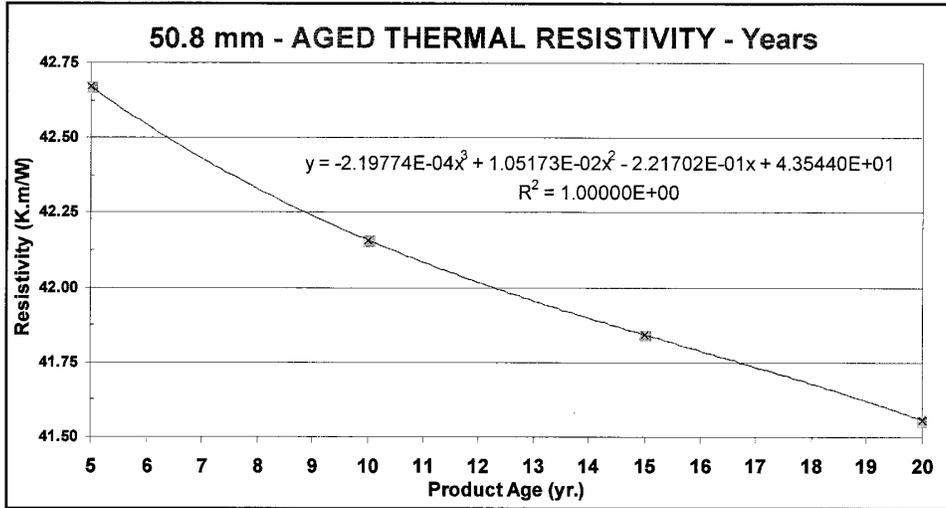
Conditioning room # 3028, asset #A11354,
Mitutoyo 8 in. Digimatic Caliper, asset # B01458,
LaserComp, Model Fox 600, asset # A13785,
Holometrix Model Rapid-K, asset # A04850

3.0 RESULTS

The test results for the ACFoam II, CampHill, PA sample, are summarized in the following Tables and Figures;

Table 1	Thermal Resistance of the Original Product
Table 2	Surface Thickness Measurements
Table 3	Core Thickness Measurements
Table 4	Test Point Days for Thin Surface and Core Layers for Various thicknesses
Table 5	Test Point Days for Thin Surface and Core Layers for Various Years
Table 6	Thermal Resistance of thin slices
Table 7	Thin Slice Aging Factors at Various thicknesses,
Table 8	Thin Slice Aging Factors at Various Years.

Figure 6



4. CONCLUSION

The 5 year aged long-term thermal resistivity values for the Atlas ACFoam II, CampHill, PA, are presented in Table 9.

Table # 9 – 5 YEAR LTRR VALUES FOR ACFOAM II, CAMPHILL, PA				
Product Thickness (mm. / in.)	Thermal Resistivity (K.m/W)	Thermal Resistance (m².°K/W)	Thermal Resistivity (°F.ft².h/Btu.in)	Thermal Resistance (°F.ft².h. / Btu)
101.6 / 4.0	43.819	4.452	6.320	25.280
76.2 / 3.0	43.358	3.304	6.254	18.762
50.8 / 2.0	42.671	2.168	6.155	12.310
25.4 / 1.0	41.559	1.056	5.994	5.994

The thermal resistivity of the product, for any thickness between the values listed in the above Table 9, can be calculated using the following equations:



Northbrook Division
333 Pfingsten Road
Northbrook, IL 60062-2096
www.ul.com

January 23, 2003

Atlas Roofing Corp.
Mr. Richard Roe
Suite 160
1775 The Exchange
Atlanta, GA 30339

Our Reference: R13089/02NK45887

Dear Mr. Roe:

This is in reference to your email requesting that Underwriters Laboratories Inc. (UL) conduct visits you your plants in Diboll, TX and Camp Hill, PA for the purpose of selecting and marking samples for testing at Bodycote Materials Testing, in Mississauga, ON, CANADA.

On December 3, 2002, a representative of UL from our Southern Delta Inspection Center visited your Diboll, TX facility and selected and marked three 2 in. by 4 ft. by 8 ft. pieces of ACFoam II.

On December 10, 2002, a representative of UL from our Pennsylvania Area inspection Center visited you Camp Hill, PA facility and selected and marked three 2 in. by 4 ft. by 8 ft. pieces of ACFoam II.

We have opened a work completed Project 02NK45887, File R13089 with a cost limit of \$600.00 to cover the charges associated with this work. Our Accounting Department has been advised that the work as been completed and to send the appropriate invoices.

If you need any additional information, do not hesitate to contact us.

Sincerely,

Reviewed by:

JUDITH G. MARZULLO
Lead Engineering Associate
Fire Protection Division

DOUGLAS C. MILLER
Engineering Group Leader
Fire Protection Division



TO: Atlanta Sales, Commercial Field Sales, Regional Managers, Plant Managers and Account Executives**NUMBER** TB-9**FROM:** Director Technical Services Commercial Products Division**ISSUED** 09.11.2013***UPDATED** 01.29.2021**SUBJECT:** Atlas Polyisocyanurate Insulation Classifications**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 $\leq 15 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	EnergyShield®
	CLASS 2 Water Vapour Permeance $\geq 15 \leq 60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	N/A
	CLASS 3 Water Vapour Permeance $> 60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, 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 $\leq 15 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	ACFoam® Supreme & EnergyShield®
	CLASS 2 Water Vapour Permeance $\geq 15 \leq 60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	N/A
	CLASS 3 Water Vapour Permeance $> 60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, 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 $\leq 15 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	ACFoam® Supreme
	CLASS 2 Water Vapour Permeance $\geq 15 \leq 60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	N/A
	CLASS 3 Water Vapour Permeance $> 60 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$, for 25.4 mm product	ACFoam®-II & ACFoam®-III



TO: Atlanta Sales, Commercial Field Sales, Regional Managers, Plant Managers and Account Executives	NUMBER	TB-10
FROM: Director Technical Services, Commercial Products Division	ISSUED	12.12.2014
SUBJECT: GREENGUARD Certification Program Method for Measuring Microbial Resistance	*UPDATED	12.01.2016
	PAGES	01

*SUPERSEDES EXISTING DOCUMENTS

Atlas Products Referenced in this Document: ACFoam®-III, ACFoam® -Recover Board, EnergyShield® CGF and Stucco-Shield®

Atlas Roofing Corporation continues to demonstrate commitment to healthy indoor environments by testing the referenced Atlas products to be microbial resistance in accordance to UL 2824. This method also meets the requirements of **ASTM D6329**.

UL 2824: GREENGUARD Certification Program Method for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers.

The referenced Atlas products have been 3rd party tested by UL Environment and achieve a measurement of: **Highly Resistant to Mold Growth**.

PRODUCT RATING	ACFoam®-III, ACFoam® -Recover Board, EnergyShield® CGF and Stucco-Shield®	
	PRODUCT MEASUREMENT	DEFINITION
1		Growth comparable to highly susceptible materials. Log (CFU) >7.5 at 3 weeks.
2		Growth comparable to susceptible materials. Log (CFU) ≤7.5 and >5.5 at 3 weeks.
3		Growth comparable to resistant materials. Log (CFU) ≤5.5 and >2.5 at 3 weeks.
4		Growth comparable to highly resistant materials. Log (CFU) ≤2.5 at 3 weeks, or Log (CFU) <5.5 with a decrease of at least 0.5 Log (CFU) after 3 weeks.

The following link will direct you to the UL Environment Site where the mentioned ACFoam® products microbial resistance claims are validated.
<http://productguide.ulenvironment.com/SearchResults.aspx?BrandID=1766>

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

NUMBER TB-11

FROM: Director Technical Services, Commercial Products Division

ISSUED 10.01.2013

***UPDATED** 12.01.2016

SUBJECT: 2014 ACFoam® Revised LTTR Values

PAGES 01

*SUPERSEDES EXISTING DOCUMENTS

On May 16, 2014 the LTTR values for polyiso roofing products will be revised in accordance with the updated ASTM C1289 Standard. The 2014 revised LTTR values will affect the following ACFoam® products: ACFoam®-II, ACFoam®-III, ACFoam® Supreme, ACFoam® Nail Base and ACFoam® CrossVent®

THICKNESS	ACFoam®-II, ACFoam®-III & ACFoam® Supreme	
	ASTM C1289-11	
1.0"	5.7	
1.1"	6.3	
1.2"	6.8	
1.3"	7.4	
1.4"	8.0	
1.5"	8.6	
1.6"	9.1	
1.7"	9.7	
1.8"	10.3	
1.9"	10.8	
2.0"	11.4	
2.1"	12.0	
2.2"	12.6	
2.3"	13.2	
2.4"	13.8	
2.5"	14.4	
2.6"	15.0	
2.7"	15.6	
2.8"	16.2	
2.9"	16.8	
3.0"	17.4	
3.1"	18.0	
3.2"	18.6	
3.3"	19.2	
3.4"	19.9	
3.5"	20.5	
3.6"	21.1	
3.7"	21.7	
3.8"	22.3	
3.9"	23.0	
4.0"	23.6	
4.1"	24.2	
4.2"	24.9	
4.3"	25.5	
4.4"	26.1	
4.5"	26.8	

NOT INTENDED FOR USE IN SINGLE LAYER APPLICATIONS

THICKNESS	ACFoam® CrossVent® Air Space Dimension			ACFoam® Nail Base
	1.0"	1.5"	2.0"	
	ASTM C1289-11			
1.0"	—	—	—	—
1.5"	—	—	—	6.3
2.0"	—	—	—	9.2
2.5"	5.7	—	—	12.0
3.0"	8.6	5.7	—	15.0
3.5"	11.4	8.6	5.7	*18.0
4.0"	14.4	11.4	8.6	*21.1
4.5"	*17.4	14.4	11.4	*24.2
5.0"	*20.5	*17.4	14.4	—
5.5"	*23.6	*20.5	*17.4	—
6.0"	—	*23.6	*20.5	—
6.5"	—	—	*23.6	—

*To minimize the effects of thermal bridging, Atlas Roofing Corporation strongly recommends the use of multiple layers when the total desired or specified R-value requires an insulation thickness greater than 2.7" thick.

LTTR VALUE	ASTM C1289-11 ACFoam®-II, ACFoam®-III, ACFoam®-IV & ACFoam® Supreme	
	20	1 LAYER OF 1.5" ACFoam® + 1 LAYER OF 2.0" ACFoam®
25	2 LAYERS OF 2.2" ACFoam® (ACTUAL LTTR VALUE = 25.2)	
30	2 LAYERS OF 2.6" ACFoam® (ACTUAL LTTR VALUE = 30.0)	
35	2 LAYERS OF 3.1" ACFoam® (ACTUAL LTTR VALUE = 36.0)	
40	2 LAYERS OF 3.5" ACFoam® (ACTUAL LTTR VALUE = 41.0)	





Storage Recommendations for Atlas ACFoam® Products

ISSUED:	10/26/2017
*UPDATED:	08/19/2024
PAGES:	01

*SUPERSEDES EXISTING DOCUMENTS

Factory applied packaging is intended only for protection during transit. When stored outdoors or on the job site, the insulation should be stacked on pallets at least three inches above ground level and completely covered with a weatherproof covering such as a tarpaulin. The temporary factory-applied packaging should be slit or removed to prevent accumulation of condensation. Roof insulation which has become wet or damaged should be removed and replaced with solid, dry insulation, of the same type.

For additional storage and handling recommendations, see [PIMA Technical Bulletin #109](#).



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

NUMBER TB-13

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

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.

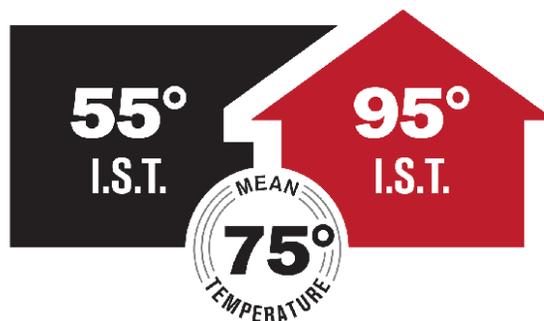
This technical bulletin will provide you with some important insight to assist you in understanding some basic information regarding R-value testing when you are involved in one of those discussions.

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 (I.S.T.) and the hot side insulation surface temperature (I.S.T.).

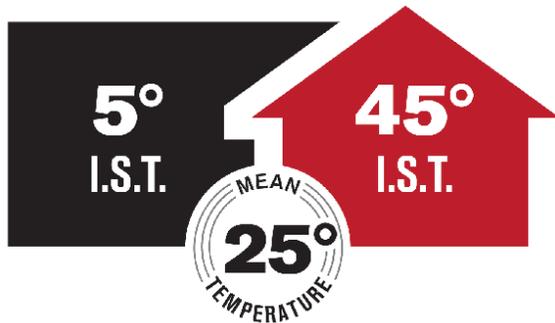


75°F mean reference testing temperature with a 40°F differential

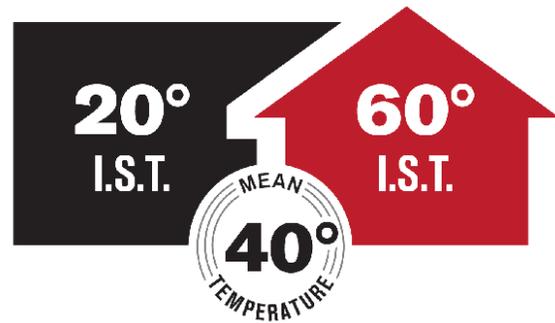
I.S.T. represents the temperature of the two defined outer most insulation surfaces

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

NUMBER TB-14

ISSUED 03.12.18

PAGES 01

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

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.

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



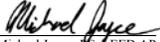
Technical Report
Measuring the R-Value of Thermal Insulation at Various Temperatures

Prepared For:

Mr. Greg Sagorski
Atlas Roofing Corporation
2000 RiverEdge Parkway, Suite 800
Atlanta, GA 30328

R & D Engineering, LLC
P.O. Box 2400
Cookeville, Tennessee 38502-2400

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.



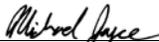
Technical Report
Measuring the R-value of Thermal Insulation at Various Temperatures

Prepared For:

Mr. Greg Sagorski
Atlas Roofing Corporation
2000 RiverEdge Parkway, Suite 800
Atlanta, GA 30328

R & D Engineering, LLC
P.O. Box 2400
Cookeville, Tennessee 38502-2400

Report: [RD18197](#)



Michael Joyce, PE, LEED AP

March 12, 2018

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Blowing Agent Gases and Global Warming Potential in Rigid Foams

ISSUED:	07/31/2024
*UPDATED:	N/A
PAGES:	02

*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 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
GWP²	<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

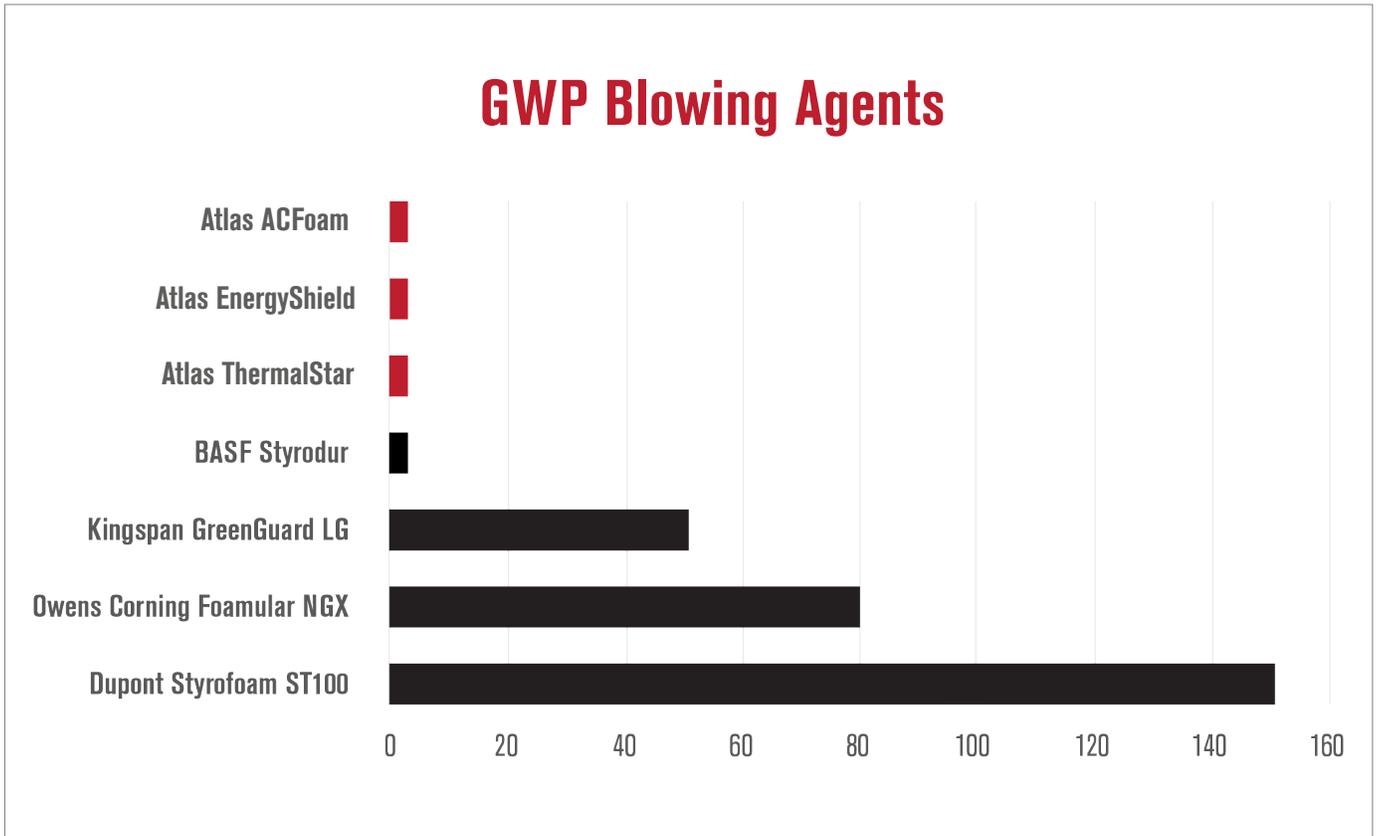
[‡] Kingspan-green-guard-xps-lg-brochure-sell-sheet-siding-applications-en-us-ca-v1, 02/2024

[§] 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.



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)

ISSUED: 09/09/2024

*UPDATED: N/A

PAGES: 01

*SUPERSEDES EXISTING DOCUMENTS

Atlas Roofing Corporation is committed to ensuring products meet the requirements of our customers. Regarding 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. 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.