

1. PRODUCT NAME

Airboard® AERO A100 Breathable Insulation

2. MANUFACTURER

Airfoam Industries Ltd.
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3. PRODUCT DESCRIPTION

Airboard® AERO Breathable Insulation combines closed cell Graphite Expanded Polystyrene (GPS) rigid insulation with advanced polymeric facers for fast installation and excellent durability. GPS is an advanced combination of Graphite Nanoparticles and Expanded Polystyrene (EPS) creating closed cell foam insulation that uses air as main ingredient. The GPS insulation core is laminated on both sides with 1 mil [25.4µm] metallic reflective facers made of biaxially oriented polypropylene (BOPP) and other polymers. The reflective metallic facers are perforated for breathability* and can boost the effective insulation value when acting as radiant heat barrier against air spaces. Airboard® AERO can also serve as a water-resistive barrier** when the seams, penetrations and transitions are sealed & flashed.

Sizes: Airboard® AERO Insulation Boards are 4' x 8' [1.22m x 2.44m] with thicknesses from 5/8" to 6" [16-152mm] packed in bundles up to 12-½" high.

Applications: Breathable* continuous insulation, plus water-resistive barrier** when sealed, for new construction & retrofits of above-grade walls and more in low-rise buildings.

4. TECHNICAL DATA

Code Compliance

Refer to Airfoam's Code Compliance Research Report CRR-0379 at www.airfoam.com/Airfoam-Code-Report-CRR-0379.pdf

Airboard® AERO is third-party certified and complies with:

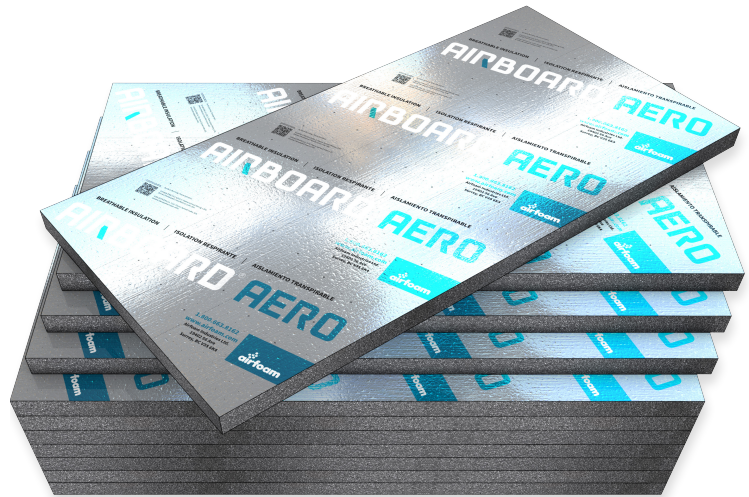
- **Thermal Insulation** Canada: CAN/ULC-S701.1 Type 1, US: ASTM C578 Type I, ICC-ES AC12
- **Surface Burning Characteristics:** CAN/ULC-S102.2, ASTM E84 (UL 723)

* Breathable Insulation Designs:

- **Canada:** Airboard® AERO at 2-½" [54mm] thick or less is relatively vapour-permeable with permeance of $\geq 60 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2$ (i.e. not a vapour barrier).
- **USA:** Airboard® AERO at 2-½" thick or less is a Semi-Permeable Vapor Retarder (1-10 perm Class III) and a Semi-Impermeable Vapor Retarder (0.1-1 perm Class II) for greater thicknesses. Note that Vapor Barriers are ≤ 0.1 perm (Class I) in the US.

** Water-Resistive Barrier (WRB) Designs:

- Board joints, penetrations and transitions must be adequately sealed and flashed.
- For Canadian Part 9 buildings, Airboard® AERO with joints sealed qualifies as Second Plane of Protection behind cladding per NBC 9.27.3.4. "Insulating Sheathing in lieu of Sheathing Membrane".
- Airboard® AERO resists bulk water penetration at levels exceeding CCMC 07102 (Section 6.4.5) and ASTM E2556 "Type I" WRB requirements.



Material Properties

Airboard® AERO A100 Breathable Insulation exhibits the typical physical properties indicated in Table 1 and below when tested as represented. Insulation values for given thicknesses are listed in Table 2.

Applicable Standards

- ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
- ASTM C203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions
- ASTM C303 - Standard Test Method for Dimensions and Density of Preformed Block and Board—Type Thermal Insulation
- ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
- ASTM C1512 - Standard Test Method for Characterizing the Effect of Exposure to Environmental Cycling on Thermal Performance of Insulation Products
- ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics
- ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
- ASTM D2863 - Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
- ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics
- ASTM E2178 - Standard Test Method for Air Permeance of Building Materials
- ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
- ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Material
- CAN/ULC-S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials
- CAN/ULC-S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
- CAN/ULC-S701.1 - Standard for Thermal Insulation, Polystyrene, Boards & Pipe Covering
- ICC-ES AC12 - Foam Plastic Insulation
- NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components

TABLE 1. Airboard® AERO A100 Breathable Insulation

Property ¹	Units, Applicability	Type A100	Test Standard
Third-Party Certified Type	Canada	1	CAN/ULC-S701.1
	USA	I	ASTM C578, ICC-ES AC12
Thermal Resistance ^{2,3,7} typical at mean temperatures of:	R-Value / nominal inch	ft ² ·hr·°F / (BTU·1.0625in)	40°F 5.2
			75°F 5.0
	R _{s1} / 25mm	m ² ·°C / (W·25mm)	4°C 0.85
			24°C 0.815
			1" thick 2.2
Water Vapor Permeance ⁴	perm	2½" thick 1.2	
		25.4mm thick 126	
		54mm thick 68	
Water-Resistance ⁴ of boards & joint-sealing	5/8" thick @ 300 Pa	> 24 hours	Modified AATCC 127 Water Column
	1" thick @ 747 Pa	> 24 hours	
Water Absorption ^{4,5} when submerged	% by volume	USA 0.91	ASTM C272, 1day
		Canada 0.27	ASTM D2842, 4 days
Compressive Resistance ⁶ minimum @ 10% Deformation	psi	10	ASTM D1621 Proc.A
	kPa	70	
Flexural Strength of GPS-cores, minimum without facers	psi	25	ASTM C203 Proc.B
	kPa	172	
Density ^{7,8}	Nominal ⁷	lbs/ft ³ 1	ASTM D1622
	Minimum ⁸	kg/m ³ 14.4	

¹ The test methods used to determine the material properties provide a means of comparing different cellular plastic thermal insulations. They are intended for use in specifications, product evaluations and quality control but they are not intended to predict end-use product performance.

² Values are for 1-1/16 inch or 25mm thick samples as indicated. Better values will result for thicker materials.

³ R means resistance to heat flow. The higher the R-value, the greater the insulating power.

⁴ Values are per testing with laminated facers intact & joints sealed, and for thicknesses as noted.

⁵ The lab-test methods for water absorption use complete submersion under a head of water for 24 or 96 hours, so the values are applicable to specific design requirements only when the end-use conditions are similar to test method requirements. Unlaminated edges were sealed to reflect installation with sealed joints, penetrations & transitions.

⁶ The elastic limit is between 1% and 2% strain. Compressive resistances at 10% strain are provided for applications where the intended end-use can tolerate plastic (permanent) deformation under load.

⁷ Not part of all the industry consensus standards (ASTM C578, CAN/ULC-S701.1) and provided AS-IS solely for informational purposes.

⁸ Minimum Density only applicable to USA-bound products per ASTM C578 (not Canada-bound products per CAN/ULC-S701.1).

Environment Data

Graphite-enhanced expanded polystyrene (GPS) has no nutritional value for organisms and **resists mold & fungi growth** per ASTM C1338. To protect against animals place adequate physical barriers such as bug-screens or membranes around GPS.

UV-Light Degradation: Airboard® AERO can be exposed to direct sunlight for a few weeks. Prolonged exposure to ultraviolet light can degrade the facers and GPS. Fading of the print on the facers does not affect performance.

Deformation due to Thermal Radiation: unlaminated, gray GPS at edges will deform when exposed to direct or reflected sunlight or other radiant heat sources. Store AERO in the UV-protected bags and cover boards with opaque tarp for prolonged exposure.

Max. Service Temperature: Long-Term Exposure 74°C [165°F], Intermittent Exposure 79°C [175°F]

Thermal Expansion Coefficient: 5-7·10⁻⁵/°K per ASTM D696

Capillarity: None.

Fire Characteristics

• Limiting Oxygen Index: min. 24% per ASTM D2863. Airfoam's GPS for construction applications contains a polymeric (non-HBCD) flame-retardant modifier.

Surface Burning Characteristics

- **Canada:** CAN/ULC-S102.2: Flame-Spread Rating ≤295, Smoke Developed Classification over 500.
- **USA:** Class A (NFPA101), ASTM E84 (UL 723)*: Flame Spread Index ≤25, Smoke-Developed Index ≤450 up to 6" thick.

* Ceiling measurement only, conducted through determination of flame spread index and smoke-developed index with the removal of any contribution of molten materials ignited on the floor of the Steiner tunnel.

Fire Protection

CAUTION: GPS products are combustible and must not be exposed to excessive heat, sparks, open flames, or any other sources of ignition. A protective barrier or thermal barrier is required as specified in the appropriate building code. If stored/used in closed containers, confined, or low-lying areas, **ensure adequate ventilation** to prevent accumulation of flammable pentane vapours.

Prevent inhalation of smoke, fumes or dust from burning or fabrication activities.

¾ Hour Fire Rating for a Composite Wall Assembly with EPS c.i. (Continuous Insulation) per **CAN/ULC-S101, ASTM E119, see Design No. CPIA/CWP 45-01.**

Meets **NFPA 285** with specific limitations for an exterior wall assembly.

For more information consult Airfoam's CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf, your engineer, local building department or call Airfoam at 800.663.8162.

Solubility & Incompatibility

Insoluble in water and in general chemically inert. GPS dissolves in hydrocarbons (e.g. fuels, oils, tar), organic solvents (e.g. acetone/ketones, benzene, paint thinner), ethers, esters, aldehydes and amines. The facers made of biaxially oriented polypropylene (BOPP) and polyethylene are incompatible with strong oxidizing agents, many hydrocarbons and aromatics.

5. INSTALLATION

Install Airboard® AERO Insulation in compliance with all applicable building codes. Airboard® AERO Insulation is easy to handle and install and can be cut with a utility knife or any sharp blade. Airboard® AERO is a non-structural material so framed walls must be sheathed or braced per applicable building codes.

Remove any obstacles from the wall that may interfere with the installation.

Starting from bottoms of walls at corners (or near them to center board joints on studs where required), temporarily tack the boards to the wall with an adequate number of sufficiently corrosion-resistant cap fasteners to resist temporary loads such as wind.

Butt edges and ends tightly to adjacent boards and components.

If furring/strapping will not be used over Airboard®, mechanically fasten the boards to the wall at spacing & penetration required by the applicable building codes or at max. 16" [406mm] apart around the edges of the boards and 24" [610mm] at the center.

Seal gaps between boards and/or adjacent components with PU spray foam or caulking. Seal board joints, corners, penetrations, and transitions using approved sheathing tape/membrane of min. 2-3/8" [60mm] width per the manufacturer's instructions. Install flashings around openings and penetrations in compliance with the applicable building code. Install furring and weather resistive exterior cladding materials according to manufacturer's installation instructions and building codes.

TABLE 2. Airboard® AERO A100 Thermal Resistance Properties by Thickness

Material Thickness	R-Value (ft ² ·hr·°F/BTU)		Rsi ((m ² ·°C)/W)	
	40°F	75°F	4°C	24°C
5/8" 15.9mm	3.1	2.94	0.539	0.517
1" 25.4mm	4.9	4.7	0.863	0.83
1-1/16" 27.0mm	5.2	5	0.92	0.88
1-1/2" 38.1mm	7.4	7.1	1.294	1.242
2" 50.8mm	9.8	9.4	1.73	1.66
2-1/8" 54.0mm	10.4	10	1.834	1.76

Ensure compatibility of any other product (such as adhesives, tapes, coatings and finishes) with Expanded Polystyrene and polypropylene / polyethylene facers. Airboard® AERO Insulation shall only be placed into an assembly where the moisture transport mechanisms are well understood and determined to be acceptable in accordance with accepted engineering practice (e.g. current ASHRAE Handbook of Fundamentals).

For safe handling and storage information refer to the Safety Data Sheet (SDS) at www.airfoam.com/SDS/ or request a printed copy.

GHS Classification: Non-Hazardous

6. AVAILABILITY

Airboard® AERO is supplied from Surrey BC through our extensive distribution network. For product availability or to get in touch with your local distributor, call Airfoam at 800.663.8162 or +1.604.534.8626.

7. WARRANTY

Airfoam offers a limited product warranty for defective products. Please visit www.airfoam.com/terms for Terms and Conditions of Sale.

8. MAINTENANCE

No maintenance is required in normal use.

9. TECHNICAL SERVICES

Airfoam can provide technical information and support to help address questions when using Airboard® AERO Insulation. Technical personnel are available to assist with any insulation project. For technical assistance, contact Airfoam at:

Online: www.airfoam.com/EPS-Insulation-Support.php

Phone: 800.663.8162 or +1.604.534.8626

Fax: +1.604.534.1212

10. FILING SYSTEM

Airboard® AERO Technical Specifications filed at: www.airfoam.com



Please contact us for a free estimate or additional information: www.airfoam.com

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