

1. PRODUCT NAME

Airboard® GPS VBG 160 Insulation + Vapor Barrier

2. MANUFACTURER

Airfoam Industries Ltd.
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800.663.8162 or 604.534.8626 | www.airfoam.com

3. PRODUCT DESCRIPTION

Airboard® 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 can boost the effective insulation value, if installed like a radiant heat barrier against dead air space. Airboards are vapor barriers and serve as an air barrier when the seams, penetrations and transitions are properly sealed.

Basic Use: Continuous Rigid Insulation + Vapor Barrier for new construction & retrofits of foundation walls, concrete slabs, interior of above-grade walls (in heating climates), floors, frost walls, crawl-spaces, cathedral ceilings, attics, radiant floor heating systems, snow melt and de-icing systems and more in residential, commercial, and industrial buildings.

Sizes: Airboards are 4' x 8' [1.22m x 2.44m] with thicknesses from 1" to 6" [25-152mm] packed in bundles up to 12-½" high.

4. TECHNICAL DATA

Code Compliance

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

Airboard® is third-party certified and complies with:

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

Material Properties

Airboard® products exhibit 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® VBG 160 Insulation + Vapor Barrier

Property	Units	Type 160	Test Std.	
Third-Party Certified GPS Type	Canada USA	2 II	CAN/ULC-S701 ASTM C578	
Compressive Resistance ^{1,4} @ 10% Deformation, minimum	psi kPa	16 110	ASTM D1621 Proc.A	
Thermal Resistance ^{1,2,3} Minimum at mean temperatures of:				
R-Value per inch thickness	ft ² •hr•°F/ (BTU•in)	75°F 4.7 40°F 4.9	ASTM C518	
RSI per 25mm thickness	m ² •°C/ (W•25mm)	24°C 0.815 4°C 0.850		
Water Vapor Permeance ^{1,2} tested at 1 inch thickness	perms ng/(Pa•s•m ²)	0.13 7.4	ASTM E96 Proc.A desiccant	
Air Permeance ^{2,a} tested at 1 inch thickness	CFM/ft ² at 1.57 psf l/(s•m ²) at 75 Pa	0.0002 0.001	ASTM E2178	
GPS Flexural Strength ¹ minimum	psi kPa	35 240	ASTM C203 Proc.B	
GPS Water Absorption ^{1,5} maximum without facers	% by volume	USA 3 Canada 4	ASTM C272, 1day ASTM D2842, 4 days	
Dimensional Stability ¹	% linear change max.	1.5	ASTM D2126, 7 Days @ 70±2°C	

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 inch or 25mm thick samples with laminated skins intact and seams, fasteners & penetrations properly sealed. 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 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.

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.

^a not part of the industry consensus standards (ASTM C578, CAN/ULC-S701) and provided AS-IS solely for informational purposes.

Environment Data

GPS has much lower environmental impacts than most other foamed plastic insulation materials. The **Environmental Product Declaration (EPD)** has been certified by UL Environment and is available on www.airfoam.com.

Airboard® GPS may contain up to 30% pre-consumer recycled content. Airboard® GPS **resists mold & fungi** growth per ASTM C1338 and has no nutritional value for insects. To protect against termites place adequate physical barriers such as membranes around below-grade GPS.

Max. service temperature: Long-Term Exposure 75°C [167°F]; Intermittent Exposure 80°C [176°F].

Thermal expansion coefficient: $5-7 \cdot 10^{-5}/^{\circ}\text{K}$

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:** ASTM E84 (UL 723)^a: FSI ≤ 25 , SDI ≤ 450 up to 6" thick.

^a 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: This product is combustible. Keep away from high heat and ignition sources. A protective barrier or a thermal barrier is required as specified in the appropriate building code.

$\frac{3}{4}$ Hour Fire Rating for a Composite Wall Assembly with GPS 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

Follow the Airboard® Installation Guide available at www.airboard.ca.

Install Airboard® insulation in compliance with all applicable building codes. Airboard® insulation is easy to handle and install and can be cut with a utility knife or any sharp blade. Butt edges and ends tightly to adjacent Airboards. Ensure compatibility of any other product (such as adhesives, tapes, coatings or finishes) with Expanded Polystyrene and Airboard® facers. Airboard® Insulation is a non-structural material. Airboard® 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.pdf or request a printed copy.

GHS Classification: Non-Hazardous

UV-Light Degradation: Airboard® Insulation can be exposed to direct sunlight for a few days. Prolonged exposure to ultraviolet light can degrade the facers and GPS.

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

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TABLE 2. Airboard® VBG 160 Thermal Resistance Properties by Thickness

Material Thickness		R-Value ¹ ft ² ·hr·°F/BTU	Rsi ¹ (m ² ·°C)/W
1"	25.4mm	4.70	0.815
1.5"	38.1mm	7.05	1.223
2"	50.8mm	9.40	1.630
2.5"	63.5mm	11.75	2.038
3"	76.2mm	14.10	2.445
4"	101.6mm	18.80	3.260
5"	127mm	23.50	4.075
6"	152.4mm	28.20	4.890

¹ Taken at 75°F [24°C] mean temperature.

6. AVAILABILITY

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



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