



Graphite Polystyrene (GPS) Rigid Foam Insulation

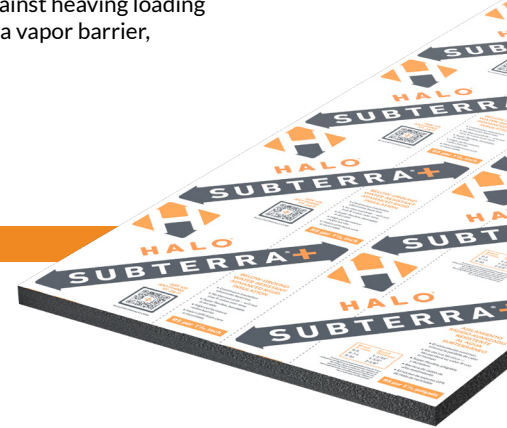
Halo® Subterra® Plus is made with denser graphite infused expanded polystyrene insulation (GPS) to provide a minimum compressive strength of 16, 20, 25, 30 and 40 psi (110, 140, 172, 210, 276 kPa) (Subterra® Plus 16, Subterra Plus 20, Subterra® Plus 25, Subterra® Plus 30 and Subterra® Plus 40, respectively). Subterra® Plus is coated with a polypropylene woven fabric on one, or both sides.

The denser GPS insulation and tough woven fabric laminate makes Subterra® Plus strong and durable against heaving loading and wet environments, such as backfill and construction traffic. In addition, Halo® Subterra® Plus acts as a vapor barrier, while providing continuous insulation.

Subterra® Protection Board provides more than 7 times higher radon resistance than 6 mil. polyethylene membranes.

BASIC USE

- Below-grade exterior walls
- Under-slab
- Perimeter Insulation



Product Features

Stable long term thermal resistance (R4.7 per inch (25.4mm))	Environmentally responsible	Flexible	Durable	Vapor retarder/ Soil gas retarder

Environmental & Sustainability

- Produced without the use of chlorofluorocarbon (CFCs), hydrochlorofluorocarbon (HCFCs) or formaldehyde. As a result, Halo® Subterra® Plus will not produce harmful emissions to the environment.

Physical Properties

			Subterra® Plus 16 Type II (Type 2)	Subterra® Plus 20 Type XIII (Type 3)	Subterra® Plus 25 Type IX (Type 3)	Subterra® Plus 30 Type IX (Type 3)	Subterra® Plus 40 Type XIV (Type 3)
			COMPLIANCE				
			ASTM C578 (CAN/ULC S701)				
THERMAL RESISTANCE	At 75°F (24°C)	ASTM C518	R4.7 (0.83 RSI)				
PHYSICAL	Compressive Resistance at 10% def., Min.	ASTM D1621	16 psi (110 kPa)	20 psi (140 kPa)	25 psi (172 kPa)	30 psi (210 kPa)	40 psi (276 kPa)
	Flexural Resistance Min.	ASTM C203	70 psi (483 kPa)				
	Dimensional Stability Max.	ASTM D2126	2%				
MOISTURE	Water Vapor Permeance Max.	ASTM E96	0.04 perms (<2.1 ng/Pa•s•m2) ^a				
	Water Absorption Max.	ASTM C272	3% (4%)	1% (2%)	2% (2%)	2% (2%)	2% (2%)
	Water Resistance: Hydrostatic Pressure	AATCC 127 ICC ES AC71	Passed - No water leakage was observed at the underside of the Subterra® Plus insulation boards				
FIRE	Flame Spread Index, Max.	ASTM E84 CAN/ULC S102.2	≤25 (<230)				
	Smoke Developed Index, Max.		≤450 (>500)				
	Thickness, Max.		4" (102mm)				
	Density, Max.		2.2 pcf (35 kg/m3)				
	Oxygen Index, Min.	ASTM D2863	24%				
RADON	Radon Resistance	The NRC Radon Diffusion Test Chamber ^b	More than 7 times higher radon resistance than 6 mil polyethylene membranes. Subterra Protection Board: 1.39x108 s/m at 1/2" thickness 6 mil polyethylene vapor barrier: 1.90x107 s/m				

a. Based on independent testing conducted by QAI with laminate 1" (25.4mm) thick GPS
 b. Since 6 mil polyethylene membrane is almost two orders of magnitude thinner than then tested 1/2" (13mm) thick Subterra Protection Board, the NRC project team considers radon resistance a more appropriate radon prevention performance indicator compared to radon diffusion coefficient. As previously mentioned, materials with a higher radon resistance are considered less permeable to radon and therefore can prevent or reduce radon ingress more effectively.

Technical Information

- Halo® products should be protected from reflective or direct UV exposure. Always keep stored Halo® products tarped or covered to protect from weather, and when possible store indoors. Do not use a clear plastic covering film.
- Until Halo® Subterra® Plus is covered the following recommendations will help ensure installed products maintain manufactured dimensions.
- Remove or cover the surface that is casting a reflection on installed Halo® products, or shield the affected Halo® products.
- Cover Halo® Subterra® Plus if left exposed for more than 30 days. Faded printing on Halo® laminates is normal and will not degrade the products properties.
- Ensure all butt joints are tightly fitted and apply sheathing tape or liquid sealant as soon as possible.
- Immediately tape seal or temporarily cover all joints of inside corners until tape sealant is applied.
- Prior to use of adhesives, sealants or other similar products with GPS insulation please verify the compatibility with adhesive manufacturers.
- Halo® Subterra® Plus products are made of combustible materials and may need to be protected from high heat sources. In addition, a thermal barrier may be required when used on the interior of a building. Refer to the local building code for appropriate protection and thermal barrier requirements.

Sizes

	BOARD THICKNESS	BOARD SIZE
Halo Subterra Plus	1-1/16" (27mm), 1-5/8" (41mm), 2-1/8" (54mm)	4' x 8' (1230mm x 2460mm)

Note: Custom sizes are available upon request. Please contact the local Logix Brands representative.

Packaging

Halo® packaging and bundle sizes vary. Please contact your local Halo® manufacturer or dealer to confirm your local packaging specifications and available bundle sizes.

Manufacturers

- AMC Foam Technologies Inc.
35 Headingley St.
Headingley Manitoba, R4H 0A8
877-789-7622
- Beaver Thermal Solutions Inc.
11581-272 St.
Acheson, Alberta, T7X 6E9
888-453-5961
- Beaver Thermal Solutions Inc.
#215-44393 Simpson Rd.
Chilliwack, BC V2R 5M3
888.453.5961

Applicable Standards

ASTM C578	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
ASTM C518	Standard Test Method for Steady-state Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
ASTM D1621	Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
ASTM D2842	Standard Test Method for Water Absorption of Rigid Cellular Plastics.
ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials.
ASTM E96	Standard Test Methods for Water Vapor Transmission of Materials.
ASTM C203	Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
ASTM D2863	Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index).
CAN/ULC-5701	Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
CAN/ULC S102.2	Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.
ASTM C272	Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions

Limited Warranty

Subject to the terms and conditions contained in the Limited Warranty, the Manufacturer (as defined herein) warrants that if the representative thermal insulation value of the Halo® insulation products Halo® Interra®, Halo® Exterra®, or Halo® Subterra® (the "Product" or "Products") varies from the published thermal resistance, the Manufacturer will, when a claim under the attached Limited Warranty is made within fifteen (15) years from the date of manufacture, refund the original purchase price to the first owner of a structure in which the Product has been installed (the "Owner"). For the purposes of the Limited Warranty, the original purchase price of the Product shall be exclusive of taxes and all other costs, including builder mark ups, labor costs and costs to remove the original Product and replace it with new Product.

For more information refer to the [Halo Zero Thermal Drift Guarantee](#).

Disclaimer of Liability

References to "Logix Brands" or the "Company" mean the manufacturer selling the Products to Owner (the "Manufacturer") unless otherwise expressly noted. NO EXPRESS WARRANTIES ARE GIVEN EXCEPT FOR THE ATTACHED LIMITED WARRANTY. ALL OTHER WARRANTIES, EXPRESS, STATUTORY AND IMPLIED, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED. The Owner assumes all risks as to the use of the material. As the Manufacturer has no control over installation design and workmanship, accessory materials or application conditions, the Manufacturer does not warranty the performance or results of any installation containing the Products. The Products must be handled and installed according to the instructions outlined in the applicable Product installation guide and used only for the particular purposes recommended in the Halo Product literature available on [BuildWithHalo.com](#).

Technical Support

For North American technical inquires please contact: techdept@logixbrands.com

Code Evaluation Approvals

- CCMC 14004-L
- QAI Listing B1031-2



THE ADVANCED GRAPHITE INSULATION SYSTEM

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