HALO MATERIAL PROPERTY DATA SHEET

PRODUCT NAME
Halo rigid EPS foam insulation

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PRODUCT DESCRIPTION
Halo products are rigid foam sheathing insulation made from BASF Neopor expanded polystyrene (EPS), which offers up to 15% more R-value than conventional EPS.

Halo consists of three product lines:
1. Halo Exterra - coated with a perforated clear polypropylene laminate on both sides of the rigid insulation.
2. Halo Interra – coated with a reflective laminate on both sides of the rigid insulation.
3. Halo Subterra – made with denser rigid Neopor EPS to provide a compressive strength of minimum 16 and 30 psi (Subterra 16 and Subterra 30, respectively). Subterra is coated with a woven fabric on both sides.

BASIC USE
Halo products are suitable for use in residential, multi-residential, commercial, and industrial buildings.

Each Halo product is designed to seal and insulate specific walls, ceilings and floors of a building, as shown in Table 1.

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.

Table 1: Halo Applications

Application	Exterra	Interra	Subterra	
			16	30
Roof		x		
Ceiling		x		
Exterior above-grade wall	x			
Interior above-grade wall		x		
Exterior foundation wall			x	x
Interior foundation wall		x		
Above slab		x		
Below slab			x	x

- ASTM D1622 – Standard Test Method for Apparent Density 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 C303 – Standard Test Method for Dimensions and Density of Preformed Block and Board-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-S701 – 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.
- NFPA 286 "Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth".

PHYSICAL PROPERTIES
Halo conforms to the physical properties shown in Tables 2, 3 and 4.

ENVIRONMENTAL DATA
Halo is produced without the use of chlorofluorocarbon (CFCs), hydrochlorofluorocarbon (HCFCs) or formaldehyde. As a result, Halo will not produce harmful emissions to the environment.

BASF Neopor EPS is recognized as a product that produces low chemical emissions by the Greenguard Environment Institute – Neopor EPS is Greenguard Indoor Air Quality Certified® and Greenguard Children & Schools℠ Certified product.

FIRE INFORMATION
Halo 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 in the interior of a building. Refer to your local building codes for appropriate protection and thermal barrier requirements.

INSTALLATION
Halo products are light weight, which makes them easy to handle, cut, and install. Installation is simple and quick, but will vary depending on the application (see Table 1).

PRODUCT SIZES
Halo sheathing are available in 4x8 sheets in varying thicknesses, as shown in Table 2.

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Table 2: Thermal Insulation

Product	R-value[1] @ 75°F (RSI @ 24°C)	R-value[1] @ 40°F (RSI @ 4.4°C)	Thickness (in.)
Exterra	2.8 (0.49)	3.0 (0.52)	0.625 (16)
	4.5 (0.79)	4.8 (0.85)	1.0 (25)
	6.8 (1.2)	7.2 (1.3)	1.5 (30)
	9.0 (1.6)	9.6 (1.7)	2.0[2] (51[2])
Interra	2.8 (0.49)	3.0 (0.52)	0.625 (16)
	4.5 (0.79)	4.8 (0.85)	1.0 (25)
	6.8 (1.2)	7.2 (1.3)	1.5 (30)
	9.0 (1.6)	9.6 (1.7)	2.0 (51)
Subterra 16	4.5 (0.79)	4.8 (0.85)	1.0 (25)
	6.8 (1.2)	7.2 (1.3)	1.5 (38)
	9.0 (1.6)	9.6 (1.7)	2.0 (51)
Subterra 30	4.5 (0.79)	4.8 (0.85)	1.0 (25)
	6.8 (1.2)	7.2 (1.3)	1.5 (38)
	9.0 (1.6)	9.6 (1.7)	2.0 (51)

1. In accordance with ASTM C578, "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation", and CAN/ULC S701, "Standard For Thermal Insulation, Polystyrene, Boards and Pipe Covering", at 75°F (24°C), and at 40°F (4.4°C).
2. Exterra at 2" thickness exhibits vapor barrier properties.

Table 3: Material Properties

ASTM C578[1]	Exterra	Interra	Subterra 16	Subterra 30
Thermal Resistance Min. @ 75°F	4.5[2]	4.5[2]	4.5[2]	4.5[2]
Thermal Resistance Min. @ 40°F	4.8[2]	4.8[2]	4.8[2]	4.8[2]
Compressive Resistance Min., psi	13	13	15	30
Flexural Resistance Min., psi	30	30	35	50
Water Vapor Permeance Max., perms	1.78[3]	0.03[3]	0.04[3]	0.05[3]
Water Absorption Max., %	3	3	2	2
Dimensional Stability Max., %	2	2	2	2
Oxygen Index Min., %	24	24	24	24

CAN/ULC S701[1]	Exterra	Interra	Subterra 16	Subterra 30
Thermal Resistance Min. @ 24°C	0.79[2]	0.79[2]	0.79[2]	0.79[2]
Thermal Resistance Min. @ 4.4°C	0.85[2]	0.85[2]	0.85[2]	0.85[2]
Compressive Resistance Min., kPa	70	70	110	210
Flexural Resistance Min., kPa	170	170	240	350
Water Vapor Permeance Max., ng/Pa-s-m²	102[3]	1.7[3]	2.1[3]	2.7[3]
Water Absorption Max., %	6	6	2	2
Dimensional Stability Max., %	1.5	1.5	1.5	1.5
Oxygen Index Min., %	24	24	24	24

1. Unless noted otherwise, properties are based on 1" thickness without laminate
2. Based on independent testing conducted by Intertek to confirm the higher thermal resistance properties of BASF Neopor EPS.
3. Based on indepent testing conducted by QAI. Water vapor permeance properties tested with laminate and 1" thick Neopor.

Table 4: Surface Burning Characteristics

	Flame Spread Index Max.	Smoke Developed Index Max.	Thickness Max.	Density
ASTM E84	10	40	6 in.	2 pcf
CAN/ULC S102.2	230	>500	102 mm	32 kg/m³