

CHROME GPS MATERIAL PROPERTY DATA SHEET

rev080619

PRODUCT NAME

Chrome GPS rigid foam insulation.

MANUFACTURERS

- Beaver Plastics Ltd.
7-26318-TWP RD 531A
Acheson, Alberta, T7X 5A3
888-453-5961
- AMC Foam Technologies Inc.
35 Headingley St.
Headingley Manitoba, R4H 0A8
877-789-7622
- Form Solutions
P.O. Box 358
Port Hope, ON, L1A 3W3
888-706-7709
- Progressive Foam Technologies
1 Southern Gateway Dr.
Gnadenhutten, OH, 44629
800-860-3626
- Form Systems Inc.
330 Cain Drive
Haysville, KS, USA 67060-2004
1-888-838-5038
- Perma R Products Inc.
2604 Sunset Dr.
Grenada, MS, 38901
800-647-6130
- Perma R Products Inc.
106 Perma R Rd.
Johnson City, TN, 37604
800-647-6130

PRODUCT DESCRIPTION

Chrome GPS products are unfaced rigid foam sheathing insulation made from BASF Neopor® 5300 Plus GPS (expanded polystyrene containing graphite), which offers up to 18% more R-value than conventional EPS.

Provides breathable, continuous insulation for building envelopes - breathable up to 5" thick.

BASIC USE

Designed to completely seal and insulate above- and below-grade walls in residential, multi-residential, commercial, and industrial buildings.

- Exterior insulation for above-grade walls
- Interior insulation for foundation walls including crawls spaces.

CODE & 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 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).
- ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- AC 71 Acceptance Criteria For Foam Plastic Sheathing Panels Used As Water-Resistive Barriers
- 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."
- International Residential Code 2015 (IRC 2015)
- International Building Code 2015 (IBC 2015)

CODE EVALUATION APPROVALS

- CCMC 14004-L, QAI Listing B1031-2, QAI Listing 1055-1, UL ER5817-02, ICC-ESR 2784

PHYSICAL PROPERTIES

Conforms to the physical properties shown in Tables 1, 2, and 3.

ENVIRONMENTAL DATA

Produced without the use of chlorofluorocarbon (CFCs), hydrochlorofluorocarbon (HCFCs) or formaldehyde. As a result, Chrome GPS will not produce harmful emissions to the environment.

BASF Neopor 5300 Plus is recognized as a product that produces low chemical emissions by the Greenguard Environment Institute – Neopor 5300 Plus is Greenguard Indoor Air Quality Certified® and Greenguard Children & SchoolsSM Certified product.

INSTALLATION FOR ABOVE-GRADE EXTERIOR INSULATION

Chrome GPS is not structural so a minimal number of fasteners is required to tack Chrome GPS sheets in place – the attachment of cladding, strapping, and house wrap will fully secure Chrome GPS sheets.

Fasten Chrome GPS at the corner edges. The top of the fasteners should be flush to the surface of Chrome GPS.

For detailed fastener information refer to the Fastener Information section in this document.

INSTALLATION FOR FOUNDATION INTERIOR INSULATION

Chrome GPS must be placed directly against the concrete or masonry foundation wall. Prep the wall by removing any protrusions that could damage or prevent Chrome GPS from being placed flush against the wall. And ensure the wall is dry and free of dirt and debris.

Use weather resistant construction glue compatible with expanded polystyrene, such as PL300, to secure Chrome GPS to the wall. If the wall is too rough or uneven concrete screws with washers can be used along with adhesives.

For detailed instructions refer to the Chrome GPS Installation Guide.

USE WITHOUT A THERMAL BARRIER

May be installed on any wall surface as interior insulation without a thermal or ignition barrier applied over Chrome GPS provided Type 1 Chrome GPS is installed at a maximum thickness of 2 1/8 inch. Based on testing to NFPA 286 in accordance with IBC 2015, Section 2603.9 and IRC 2015, Section 316.6.

PRODUCT SIZES

Available in 4x8 sheets, 9/16", 5/8", 1", 1.5 and 2" thick. Custom sizes are available. Contact your local Halo representative for availability.

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CHROME GPS
PROFESSIONAL GRADE GRAPHITE INSULATION

CHROME GPS MATERIAL PROPERTY DATA SHEET

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Table 1: Thermal Insulation¹

Product	R-value @ 75°F (RSI @ 24°C) ²	R-value @ 40°F (RSI @ 4.4°C) ²
Chrome GPS	5 (0.88)	5.2 (0.92)

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) from data provided by BASF.
2. At 1" nominal thickness (actual thickness = 1.06").

Table 2: Material Properties

ASTM C578 ¹	Chrome GPS Type I ²	Chrome GPS Type VIII ²	Chrome GPS Type IX ²
Compressive Resistance at 10% def., Min., psi (ASTM D1621)	10	13	25
Flexural Resistance Min., psi (ASTM C203)	25	30	50
Water Vapor Permeance Max., perms (ASTM E96)	5	3.5	2.5
Water Absorption Max., % (ASTM C272)	1.1	1.1	1.1
Dimensional Stability Max., % (ASTM D2126)	2	2	2
Oxygen Index Min., % (ASTM D2863)	24	24	24

CAN/ULC S701 ¹	Chrome GPS Type 1 ²	Chrome GPS Type 2 ²	Chrome GPS Type 3 ²
Compressive Resistance at 10% def., Min., kPa (ASTM D1621)	70	110	140
Flexural Resistance Min., kPa (ASTM C203)	170	240	300
Water Vapor Permeance Max., ng/Pa-s-m ² (ASTM E96)	300	200	130
Water Absorption Max., % (ASTM C272)	1.1	1.1	1.1
Dimensional Stability Max., % (ASTM D2126)	1.5	1.5	1.5
Oxygen Index Min., % (ASTM D2863)	24	24	24

1. Unless noted otherwise, properties are based on 1" thickness. Data provided by BASF.
2. Check availability with your local Chrome GPS supplier.

Table 3: Surface Burning Characteristics

	Flame Spread Index Max.	Smoke Developed Index Max.	Thickness Max.	Density Max.
ASTM E84	5	25	6	2 pcf
CAN/ULC S102.2	230	> 500	102 mm	32 kg/m ³

FASTENER INFORMATION - ATTACHING CLADDING OVER CHROME GPS

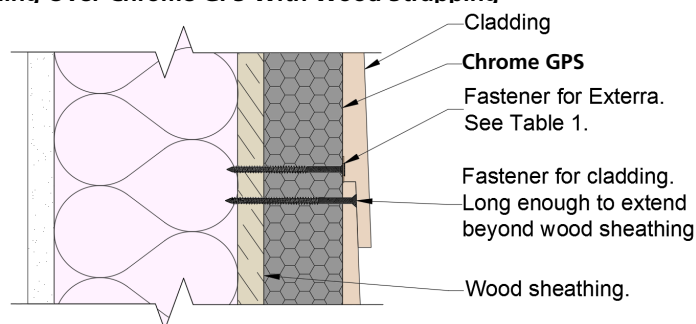
The following is a guide to attaching cladding and wood strapping over Chrome GPS.

Cladding Over Chrome GPS *Without* Wood Strapping

When cladding is attached without wood strapping, nails or screws used to attach cladding directly over Chrome GPS sheets should penetrate the sheets and completely through the wood sheathing.

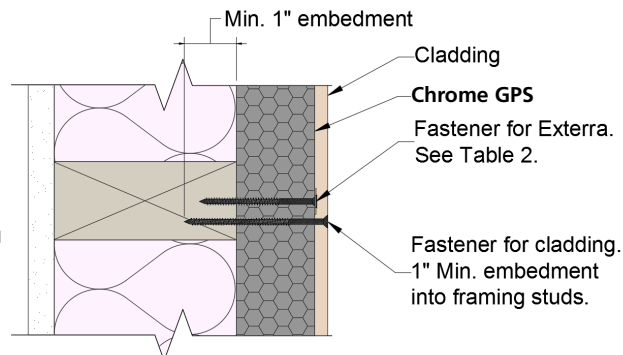
In cases where wood sheathing is not present, the nails or screws should penetrate the Chrome GPS sheets and at least 1" into the framing studs, or blocking between framing studs.

Cladding Over Chrome GPS *With* Wood Strapping



SIDE VIEW

Wood sheathing in wall assembly



PLAN VIEW

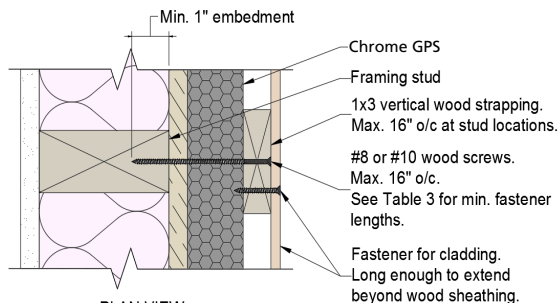
No wood sheathing in wall assembly

When using wood strapping over Chrome GPS, the cladding will be fastened to the strapping.

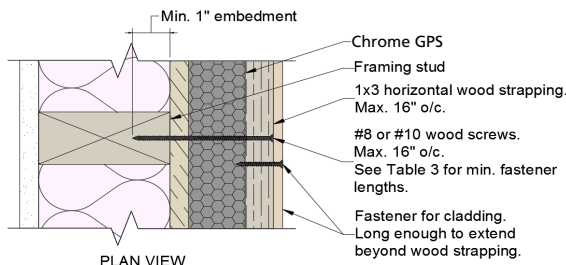
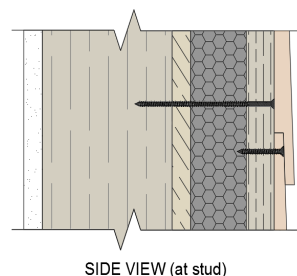
1. Wood Strapping Size: Minimum $\frac{3}{4}$ " thick. 1 x 3 strapping is recommended.
2. Wood Strapping Location: Place vertically or horizontally, as required, and should be spaced a maximum of 16" on center. If placing vertically, align the strapping to the framing studs.
3. Fastener Types: Use #8 or #10 non-corrosive wood screws spaced maximum 16" on center.
4. Fastener Length: Screws should be long enough to penetrate wood strapping, Chrome GPS, and at least 1" into the framing studs.
5. Attach cladding to wood strapping. Ensure the nails or screws fully penetrate the strapping

Table 3: 1x3 Wood Strapping Over Chrome GPS

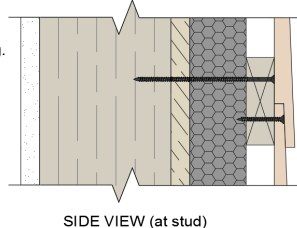
Chrome GPS Thickness	Minimum Fastener Lengths	
	1/2" Wood Sheathing	5/8" Wood Sheathing
9/16" or 5/8"	2 7/8"	3"
1"	3 1/4"	3 3/8"
1 1/2"	3 3/4"	3 7/8"
2"	4 1/4"	4 3/8"



Vertical Strapping



Horizontal Strapping



FASTENER INFORMATION - ATTACHING CHROME GPS

The following is a guide to attaching Chrome GPS over concrete or masonry, and framed walls.

A minimal number of fasteners is required to tack Chrome GPS sheets in place – the attachment of cladding, strapping, and house wrap will fully secure the sheets.

For framed walls fasten Chrome GPS sheets at the corner edges. The top of the fasteners should be flush to the surface of the sheets.

Typical Fastener Types

Typical fasteners include, but are not limited to, plastic cap nails, roofing nails with at least ½" diameter washers, cap staples, and wood screws with metal roof washers. When fastening to metal studs use screws with at least 1" diameter metal washers.

Over Concrete Or Masonry Walls

Use weather resistant construction glue compatible with expanded polystyrene, such as PL 300, to secure Chrome GPS to the wall. If the wall is too rough or uneven concrete screws with washers can be used along with adhesives to help secure Chrome GPS.

Over Wood Sheathing

Fasteners should be long enough to penetrate Chrome GPS and completely through the wood sheathing substrate.

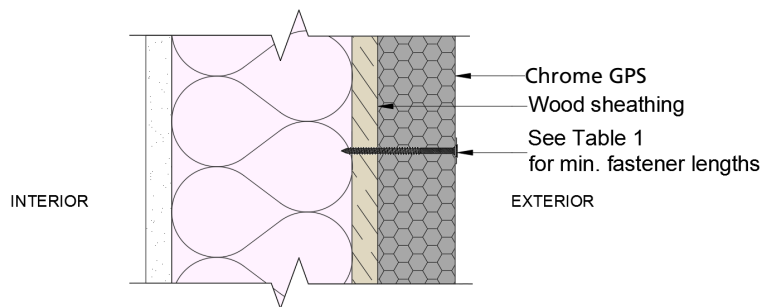


Table 1: Chrome GPS Fastened to Wood Sheathing

Chrome GPS Thickness	Minimum Fastener Lengths	
	1/2" Wood Sheathing	5/8" Wood Sheathing
9/16" or 5/8"	1 1/8"	1 1/4"
1"	1 1/2"	1 5/8"
1 1/2"	2"	2 1/8"
2"	2 1/2"	2 5/8"

Over Framing Studs

Fasteners should be long enough to penetrate Chrome GPS and at least ¾" into the framing studs or blocking between studs.

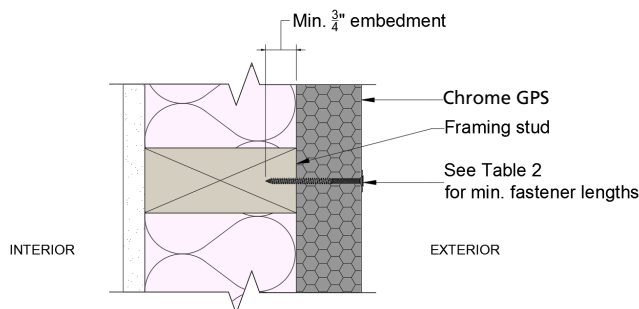


Table 2: Chrome GPS Fastened Direct to Framing Studs

Chrome GPS Thickness	Minimum Fastener Lengths
9/16" or 5/8"	1 3/8"
1"	1 3/4"
1 1/2"	2 1/4"
2"	2 3/4"