

UL Evaluation Report

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DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Sub-level 2: 07 20 00 - Thermal Protection

Sub-level 3: 07 21 00 - Thermal Insulation

Sub-level 4: 07 21 13 - Board Insulation

DIVISION: 31 00 00 - EARTHWORKS

Sub-level 3: 31 23 00 - Excavation and Fill

Sub-level 4: 31 23 23 - Fill

COMPANY:

Poliestireno Alfa Gamma Sa De Cv

Armando Del Castillo Franco

Esq. Lerdo De Tejada

Tercera Etapa Parque Industrial Lagunero

Gomez Palacio, Durango 35078 Mexico

i.castro@alfagamma.com.mx

1. SUBJECT:

ALFATERM 50, ALFATERM 130, ALFATERM 150, ALFATERM 250, ALFATERM 400

ALFATERM GPS

ALFATERM T&G, ALFATERM T&G GPS

**ALFATERM 100 EIFS, ALFATERM 130 EIFS, ALFATERM 150 EIFS, ALFATERM 250 EIFS,
ALFATERM 400 EIFS**

ALFATERM EIFS GPS

**ALFAFILL GEOFOAM EPS12, ALFAFILL GEOFOAM EPS15, ALFAFILL GEOFOAM EPS19,
ALFAFILL GEOFOAM EPS22, ALFAFILL GEOFOAM EPS29, ALFAFILL GEOFOAM EPS39,
ALFAFILL GEOFOAM EPS462. SCOPE OF EVALUATION:**



- 2021 and 2018 *International Building Code*® (IBC)
- 2021 and 2018 *International Residential Code*® (IRC)
- 2021 and 2018 *International Energy Code*® (IECC)
- ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)

The products were evaluated for the following properties:

- Surface Burning Characteristics (UL723)
- Physical Properties (ASTM C578)
- Physical Properties (ASTM D6817)
- Physical Properties (ASTM E2430)

3. REFERENCED DOCUMENTS

- ICC-ES:
 - ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)
 - ICC-ES Acceptance Criteria for Quality Documentation (AC10)
- UL:
 - UL723, Standard for Test for Surface Burning Characteristics of Building Materials
- ASTM:
 - ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
 - ASTM D6817, Standard Specification for Rigid Cellular Polystyrene GeoFoam
 - ASTM E2430, Standard Specification for Expanded Polystyrene (EPS) Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems (EIFS)

4. USES

4.1 ALFATERM 50, ALFATERM 130, ALFATERM 150, ALFATERM 250, ALFATERM 400:

ALFATERM cellular polystyrene in the form of blocks or boards is used as nonstructural insulation on the interior or exterior of above grade walls, on the interior or exterior of below grade walls, below concrete slabs, or around concrete slabs except in areas where the probability of termite infestation is defined as “very heavy” in accordance with Section 2603.8 IBC Section R318.1 IRC. Installation shall be in accordance with Section 6.2, 6.3 or 6.5 of this Report.

4.2 ALFATERM GPS:

ALFATERM GPS cellular polystyrene in the form of blocks or boards is manufactured from graphite enhanced expanded polystyrene and is used as nonstructural insulation on the interior or exterior of above grade walls, on the interior or exterior of below grade wall, below concrete slabs or around concrete slab except in areas where the probability of termite infestation is defined as “very heavy” in accordance with Section 2603.8 IBC Section R318.1 IRC. Installation shall be in accordance with Section 6.2, 6.3 or 6.5 of this Report.

4.3 ALFATERM T&G, ALFATERM T&G GPS:

ALFATERM T&G and ALFATERM T&G GPS cellular polystyrene in the form of blocks or boards may be used as nonstructural thermal insulation in buildings of any construction type when the insulation component of a one-coat cementitious exterior wall coating system is required to be recognized as ASTM C578 Type XI, VIII, II, IX or XIV. ALFATERM T&G GPS is manufactured from graphite expanded polystyrene and has demonstrated compliance to a minimum density of 1.35 lb/ft³ and has an ASTM C578 designation of Type II.

4.4 ALFATERM 100 EIFS, ALFATERM 130 EIFS, ALFATERM 150 EIFS, ALFATERM 250 EIFS, ALFATERM 400 EIFS:

ALFATERM EIFS cellular polystyrene may be used on the outside faces of exterior walls as a component in Exterior Insulation and Finish Systems (EIFS) in accordance with ASTM E2430. For eligibility in accordance with ASTM E2430, insulation has demonstrated compliance with the specifications in ASTM C578 for Type I. Installation shall be in accordance with Section 6.4 of this report.

4.5 ALFATERM EIFS GPS:

ALFATERM EIFS GPS cellular polystyrene in the form of blocks or boards is manufactured from graphite enhanced expanded polystyrene and may be used on the outside faces of exterior walls as a component in Exterior Insulation and Finish Systems (EIFS) in accordance with ASTM E2430. For eligibility in accordance with ASTM E2430, insulation has demonstrated compliance with the specifications in ASTM C578 for Type I. ALFATERM EIFS GPS has demonstrated compliance for a minimum density of 1.35 lb/ft³ and has an ASTM C578 designation of Type II. Installation shall be in accordance with Section 6.4 of this report.

4.6 ALFACELL GEOFOAM EPS12, ALFACELL GEOFOAM EPS15, ALFACELL GEOFOAM EPS19, ALFACELL GEOFOAM EPS22, ALFACELL GEOFOAM EPS29, ALFACELL GEOFOAM EPS39, ALFACELL GEOFOAM EPS46:

ALFACELL GEOFOAM cellular polystyrene in the form of blocks or boards is used as lightweight structural fill in floor cavities. Installation shall be in accordance with Section 6.5 or 6.6 of this report.

5. PRODUCT DESCRIPTION

5.1 General:

All insulation blocks or boards described in this report are molded, closed-cell expanded polystyrene (EPS) blocks or boards having a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 for thicknesses up to 6 inches when tested in accordance with UL723 as required by the IBC Section 2603.3 or IRC Section 316.3, as applicable.

The insulation blocks or boards may be provided with a square or tongue-and-groove (T&G) edge.

5.2 ALFATERM 50 (Type XI), ALFATERM 130 (Type VIII), ALFATERM 150 (Type II), ALFATERM 250 (Type IX), ALFATERM 400 (Type XIV), ALFATERM T&G (Type XI, VIII, II, IX and XIV):

The insulation boards have been found to comply with ASTM C578. The boards are manufactured at minimum densities of 0.70, 1.15, 1.35, 1.80 and 2.40 lb/ft³ and have ASTM C578 designations of Type XI, VIII, II, IX, and XIV respectively. See excerpt from ASTM C578, Table 1:

Table 1 – Thermal Resistance Values - 1°F ft² h/Btu (°K m²/W) ¹
 (For SI: 1 lb/ft³ = 16.018 kg/m³, 1°F ft² h/Btu = 0.176°K m²/W, 1inch = 25.4 mm.)

ASTM C578 TYPE	DENSITY, min., lb/ft³	THERMAL RESISTANCE¹ min., °F ft² h/Btu (°K m²/W)
XI	0.70	3.1 (0.55)
VIII	1.15	3.8 (0.67)
II	1.35	4.0 (0.70)
IX	1.80	4.2 (0.74)
XIV	2.40	4.2 (0.74)

¹Thermal resistance (R) values are based on tested values at 1-inch thickness and 75° F mean temperature and must be multiplied by the installed thickness for thicknesses greater than 1 inch.

5.3 ALFATERM GPS, ALFATERM T&G GPS, ALFATERM EIFS GPS

The insulation boards have been found to comply with ASTM C578. The boards are manufactured at minimum densities of 1.35 lb/ft³ and have an ASTM C578 designation of Type II. See Table 2 below for minimum R-values of the GPS products.

Table 2 – Thermal Resistance Values - 1°F ft² h/Btu (°K m²/W) ¹
 (For SI: 1 lb/ft³ = 16.018 kg/m³, 1°F ft² h/Btu = 0.176°K m²/W, 1inch = 25.4 mm.)

ASTM C578 TYPE	DENSITY, min., lb/ft³	THERMAL RESISTANCE¹ min., °F ft² h/Btu (°K m²/W)
II	1.35	5.0 (0.88)

¹Thermal resistance (R) values are based on tested values at 1.06-inch thickness and 75° F mean temperature and must be multiplied by the installed thickness for thicknesses greater than 1 inch.

5.4 ALFATERM 100 EIFS, ALFATERM 130 EIFS, ALFATERM 150 EIFS, ALFATERM 250 EIFS, ALFATERM 400 EIFS:

ALFATERM EIFS blocks or boards comply with the Type I requirements of ASTM C578 as required by ASTM E2430. The products are manufactured at a minimum density of 0.90 lb/ft³.

5.5 ALFACILL GEOFOAM EPS12, ALFACILL GEOFOAM EPS15, ALFACILL GEOFOAM EPS19, ALFACILL GEOFOAM EPS22, ALFACILL GEOFOAM EPS29, ALFACILL GEOFOAM EPS39, ALFACILL GEOFOAM EPS46:

ALFACILL blocks or boards have been found to comply with ASTM D6817. The product is manufactured at minimum densities of 0.70, 0.90, 1.15, 1.35, 1.80, 2.40, and 2.85 lb/ft³ and has ASTM D6817 designations of EPS12, EPS15, EPS19, EPS22, EPS29, EPS39 and EPS46 respectively. See excerpt from ASTM D6817, Table 2 below.

Table 3 – ASTM D6817 Physical Property Requirements for RCPS Geofoam

ASTM TYPE	DENSITY, min., lb/ft³	COMPRESSIVE RESISTANCE (Minimum psi at 1% Strain)
Type EPS12	0.70	2.2
Type EPS15	0.90	3.6
Type EPS19	1.15	5.8
Type EPS22	1.35	7.3
Type EPS29	1.80	10.9
Type EPS39	2.40	15.0
Type EPS46	2.85	18.6

6. INSTALLATION

6.1 General:

ALFATERM and ALFACILL insulation blocks or boards are installed in accordance with the manufacturer’s published installation instructions and this evaluation report. The manufacturer’s published installation instructions and this report must be strictly adhered to, and a copy of the instructions shall be available on the jobsite during installation.

The insulation boards or blocks must be securely attached to the structure but shall not be used to structurally resist transverse, axial, or shear loads.

The building interior space must be separated from the insulation boards with a thermal barrier as required by IBC Section 2603.4 or IRC Section R316.4.

6.2 ALFATERM 50, ALFATERM 130, ALFATERM 150, ALFATERM 250, ALFATERM 400, ALFATERM GPS, ALFATERM T&G, ALFATERM T&G GPS used on the exterior of above grade walls:

ALFATERM insulation blocks or boards are used on the exterior of above grade walls as follows:

- Exterior Walls of One- and Two-Family Dwellings in accordance with the IRC.
- Exterior walls of one story buildings of Types I, II, III, or IV construction in accordance with IBC Section 2603.4.1.4.
- Exterior walls of Type V construction in accordance with IBC Sections 2603.2, 2603.3, and 2603.4.

6.3 ALFATERM 50, ALFATERM 130, ALFATERM 150, ALFATERM 250, ALFATERM 400, ALFATERM GPS, ALFATERM T&G, ALFATERM T&G GPS used as a vapor retarder:

ALFATERM insulation blocks or boards may be used as vapor retarders based on permeance values described in Table 3, when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are classified in the IBC & IRC as follows:

Class I: 0.1 perm or less Class II: >0.1 perm to 1.0 perm Class III: >1.0 perm to 10.0 perms

Table 3 – Water Vapor Permeance of EPS non-Faced Products

ASTM C578 Type	Density	Maximum Permeance¹
XI	0.70	5.0
VIII	1.15	3.5
II	1.35	3.5
IX	1.80	2.5
XIV	2.40	2.5

¹Water vapor permeance values are based on 1-inch thickness when tested in accordance with ASTM C578 & E96 under desiccant conditions. Actual water vapor permeance values may be calculated based on insulation thickness, by dividing the perm value shown by the installed thickness in inches.

6.4 ALFATERM 100 EIFS, ALFATERM 130 EIFS, ALFATERM 150 EIFS, ALFATERM 250 EIFS, ALFATERM 400 EIFS, ALFATERM EIFS GPS:

ALFATERM EIFS may be installed as part of an EIFS system when the system has been evaluated for the intended applications.

6.5 Residential Basements:

ALFATERM and ALFAFILL EPS insulation boards may be installed on wall surfaces of residential basements with a thermal barrier applied to the foam plastics when all other requirements of the building code for that building are met.

6.6 ALFAFILL GEOFOAM EPS12, ALFAFILL GEOFOAM EPS15, ALFAFILL GEOFOAM EPS19, ALFAFILL GEOFOAM EPS22, ALFAFILL GEOFOAM EPS29, ALFAFILL GEOFOAM EPS39, ALFAFILL GEOFOAM EPS46:

ALFAFILL geofoam boards or blocks are placed loosely on a level surface or existing structural slab. The blocks may be installed in a single layer or in multiple layers.

Structural loads on the ALFAFILL GEOFOAM boards or blocks shall not exceed the compressive resistance at 1% strain in accordance with ASTM D6817. Additional design considerations are included in ASTM D7180, “Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam” and ASTM D7557, “Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens”.

ALFAFILL GEOFOAM boards or blocks may be used in thicknesses less than 4-inches provided the interior of the building is separated from the geofoam with an approved thermal barrier as required by IBC Section 2603.4 or IRC Section R316.4, as applicable.

A thermal barrier is not required when the foam plastic is used in thicknesses less than 4-inches and installed in a masonry or concrete wall, floor or roof system where the foam plastic insulation is covered on each face by not less than 1-inch (25mm) thickness of masonry or concrete as required by IBC Section 2603.4.1.1 and IRC Section R316.5.1.

7. CONDITIONS OF USE

7.1 General:

The EPS insulation blocks or boards described in this report comply with, or are suitable alternatives to what is specified in those codes listed in Section 2 of this report, subject to the following conditions.

The insulation boards or blocks must be produced, identified, and installed in accordance with the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's instructions this report governs.

The boards must be separated from the building interior with a thermal barrier complying with the applicable code, such as minimum ½-inch thick (12.7 mm) gypsum wallboard installed in accordance with the applicable code.

7.2 ALFATERM Blocks or Boards:

For a listing of applicable UL Certifications for ALFATERM insulation products, see UL's Product iQ™ database for the following categories:

- Foamed Plastic, UL Classified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#)), [File R40307](#).
- Polystyrene Thermal Insulation, Rigid Cellular, UL Classified in accordance with ASTM C578 and ASTM E2430 ([QORW](#)), [File R40307](#).

7.3 ALFAFILL GEOFOAM Blocks or Boards:

ALFAFILL GEOFOAM block or boards less than 4-inch thickness must be separated from the building interior with a thermal barrier such as ½ inch gypsum board, as required by IBC Section 2603.4 or IRC Section 316.4, as applicable.

Design loads to be resisted by ALFAFILL GEOFOAM must be determined in accordance with the IBC or IRC, as applicable, and must not exceed the allowable loads noted in this report.

All construction documents specifying the ALFAFILL GEOFOAM must comply with the design limitations of this report. Design calculations and details for specific applications must be furnished to the code official, verifying compliance with this report and the applicable codes. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

For a listing of applicable UL Certifications for ALFAFILL GEOFOAM, see UL's Product iQ™ database for the following categories:

- Foamed Plastic, UL Classified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#)), [File R40307](#).
- Polystyrene Thermal Insulation, Rigid Cellular, UL Classified in accordance with ASTM D6817 ([QORW](#)), [File R40307](#).

7.4 Manufacturing Location:

The products are manufactured at the following location under the UL LLC Classification and Follow-Up Service Program, which includes audits in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC 10:

Table 5 – Manufacturing Location

Location	Plant ID
MAQUILADORS 331 INT A Y B CD INDUSTRIAL NUEVA TIJUANA TIJUANA BC 22500 MX	T

8. SUPPORTING EVIDENCE

- 8.1 Data in accordance with ICC-ES Acceptance Criteria for Form Plastic Insulation (AC12).
- 8.2 UL Classification Reports in accordance with UL 723. See UL Product Certification Categories (BRYX), File R40307.
- 8.3 UL Classification Reports in accordance with ASTM C578, ASTM D6817, and ASTM E2430. See UL Product Certification Categories (QORW), File R40307.
- 8.4 Documentation of quality system elements described in ICC-ES Acceptance Criteria for Quality Documentation (AC10).

9. IDENTIFICATION

Poliestireno Alfa Gamma Sa De Cv insulation described in this evaluation report are identified by a marking bearing the report holder's name (Poliestireno Alfa Gamma Sa De Cv), plant identification, the product name, the ASTM type designation, the UL Certification Mark, and the evaluation report number UL ER40307-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate.

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