

FOAM CONTROL EPS **GEOFOAM**

Foam-Control EPS Geofoam is a cellular plastic material that is strong, but has very low density (1% of traditional earth materials.) It is a manufactured in block form and meets ASTM D6817, "Standard Specification for Rigid, Cellular Polystyrene Geofoam." Foam-Control EPS Geofoam is available in a range of Types to provide control of structural integrity and cost effectiveness.

The information given is deemed to be timely, accurate, and reliable for the use of Foam-Control EPS Geofoam. Each project using Foam-Control EPS Geofoam should be designed by a professional engineer. The engineer or project specifications should be consulted to determine the ASTM D6817 Type required for your project loading conditions.

Foam-Control EPS Geofoam Properties

Property		ASTM D6817						
		EPS12	EPS15	EPS19	EPS22	EPS29	EPS39	EPS46
Density ¹ , min.	lb/ft ³ (kg/m ³)	0.70 (11.2)	0.90 (14.4)	1.15 (18.4)	1.35 (21.6)	1.80 (28.8)	2.40 (38.4)	2.85 (45.7)
Compressive Resistance ¹ @ 1% deformation, min.	psi psf (kPa)	2.2 320 (15)	3.6 520 (25)	5.8 840 (40)	7.3 1050 (50)	10.9 1570 (75)	15.0 2160 (103)	18.6 2680 (128)
Elastic Modulus ¹ , min	psi (kPa)	220 (1500)	360 (2500)	580 (4000)	730 (5000)	1090 (7500)	1500 (10300)	1860 (12800)
Flexural Strength ¹ , min.	psi (kPa)	10.0 (69)	25.0 (172)	30.0 (207)	40.0 (276)	50.0 (345)	60.0 (414)	75.0 (517)
Water Absorption ¹ by total immersion, max.,	volume %	4.0	4.0	3.0	3.0	2.0	2.0	2.0
Oxygen Index ¹ , min.	volume %	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Buoyancy Force	lb/ft ³ (kg/m ³)	61.7 (990)	61.5 (980)	61.3 (980)	61.1 (980)	60.6 (970)	60.0 (960)	59.5 (950)
Additional Properties for Compressible Applications								
Compressive Resistance ¹ @ 5% deformation, min.	psi psf (kPa)	5.1 730 (35)	8.0 1150 (55)	13.1 1890 (90)	16.7 2400 (115)	24.7 3560 (170)	35.0 5040 (241)	43.5 6260 (300)
Compressive Resistance ¹ @ 10% deformation, min.	psi psf (kPa)	5.8 840 (40)	10.2 1470 (70)	16.0 2300 (110)	19.6 2820 (135)	29.0 4180 (200)	40.0 5760 (276)	50.0 7200 (345)

¹ See ASTM D6817 Standard for test methods and complete information



GEOFOAM

Foam-Control EPS Geofoam is used in ground fill applications where a lightweight fill material is required to reduce stresses on underlying or adjoining soils/structures.

Ready to Use.

Foam-Control EPS Geofoam maximizes onsite installation efficiency: material arrives ready to place, no weather delays, material can be prefabricated or cut at the jobsite, no staging required, material can be inventoried, production efficiency improved, and it is easy to handle.

Design Loads.

For most applications, long-term design loads should not exceed the linear elastic range of Foam-Control EPS Geofoam. Combined live and dead load stresses should not exceed the compressive resistance at 1% strain.

In general earthwork applications (such as levees, dikes, berms, etc.) uplift buoyancy force must be counteracted with overburden or restraint devices, such as geogrids, geomembranes, hold down devices, etc.

Size and Shape.

Foam-Control EPS Geofoam is produced in block form and is easily positioned at the work site. Standards sizes:

- 4' (1.2 m) widths
- 8' (2.4 m) up to 16' (4.8 m) lengths
- 1" (25 mm) to 36" (914 mm) thickness

Other sizes and fabrication can be provided by the manufacturer.

Exposure to Water and Water Vapor.

The mechanical properties of Foam-Control EPS Geofoam are unaffected by moisture. Exposure to water or water vapor does not cause swelling.

Temperature Exposure/Flame Retardants.

Foam-Control EPS Geofoam is able to withstand the rigors of temperature cycling, assuring long-term performance.

Although flame retardants used in the manufacture of Foam-Control EPS Geofoam provide an important margin of safety, Foam-Control Geofoam must be considered combustible.

The maximum recommended long-term exposure temperature for Foam-Control EPS Geofoam is 165°F (74°C).

Adhesives, Coatings, and Chemicals.

Solvents which attack Foam-Control EPS Geofoam include esters, ketones, ethers, aromatic, and aliphatic hydrocarbons and their emulsions, among others. If Foam-Control EPS Geofoam is to be placed in contact with materials (or their vapors) of unknown composition, pretest for compatibility at maximum exposure temperature.

Quality Assurance.

Foam-Control EPS Geofoam meets or exceeds the requirements of ASTM D6817, "Standard Specification for Rigid, Cellular Polystyrene Geofoam."

Foam-Control EPS is monitored for Quality Control and Listed by Underwriters Laboratories Inc.



Resistance to Termites, Mold, and Mildew.

Foam plastics have been shown to become termite infested under certain exposure conditions. Foam-Control EPS with Perform Guard® provides resistance to termite infestation. Please review literature on Foam-Control EPS with Perform Guard for complete information.



Foam-Control EPS Geofoam will not decompose and will not support mold or mildew growth. Foam-Control EPS Geofoam provides no nutrient value to plants or animals.

Storage and Ballast.

Foam-Control EPS Geofoam stands up well to normal short-term weather conditions encountered during installation.

Long-term exposure to sunlight causes yellowing and a slight embrittlement of the surface due to ultraviolet light. This has little effect on mechanical properties. If stored outdoors, cover Foam-Control EPS Geofoam with opaque polyethylene film, tarps, or similar material.

Foam-Control EPS Geofoam should be ballasted to prevent displacement by wind or high water conditions, both in storage and during all phases of placement.

Warranty.

Foam-Control EPS Geofoam Licensees offer a product warranty ensuring physical properties.

SPECIFICATIONS

SECTION 31 23 23.43 EPS GEOFOAM

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes expanded polystyrene (EPS) Geofoam.
- B. Related Sections: Sections related to this section include:
 - 1. Earthworks: Division 31 Earthworks sections.

1.02 REFERENCES

- A. ASTM D6817 - Standard Specification for Rigid, Cellular Polystyrene Geofoam.

1.03 SUBMITTALS

- A. Submit EPS Geofoam manufacturer's product literature and TechData, including:
 - 1. Physical properties in compliance with ASTM D6817 Type specified.
 - 2. 10-year physical property warranty.
- B. Shop drawings showing EPS Geofoam block layout.
- C. Quality Assurance: Submit the following:
 - 1. Test Compliance: Summary of test compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Manufacturer shall supply a product certificate showing evidence of Third Party Quality Control.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver EPS Geofoam labeled with material Type.
- B. Store above ground, and protected from moisture and sunlight prior to installation.
- C. Product should not be exposed to open flame or other ignition sources.

1.05 WARRANTY

- A. Provide EPS Geofoam 10-year warranty covering the long-term physical property of expanded polystyrene Geofoam.

PART 2 - PRODUCTS

2.01 MANUFACTURER

Note to Specifier Insert the name and address of the local Licensed Foam-Control EPS Geofoam supplier.

- A. Local Supplier: _____
- B. AFM Corporation
 - 211 S. River Ridge Circle, Suite 102
 - Burnsville, Minnesota 55337
 - Telephone (800) 255-0176; Fax (952) 474-2074
 - www.foam-control.com

2.02 EPS GEOFOAM

- A. Foam-Control EPS Geofoam in compliance with ASTM D6817.
- B. Select one or more of the Foam-Control EPS Geofoam Types from the listings as follows, as required by the project:
 - 1. Foam-Control EPS Geofoam: ASTM D6817 [Type EPS12], [Type EPS15], [Type EPS22], [Type EPS29], [Type EPS39].
- C. All Foam-Control EPS Geofoam blocks shall be treated by the manufacturer with a tested and proven termite treatment for below grade applications, 3 year minimum field exposure. The treatment shall be EPA registered, meet requirements of ICC ES EG239, and be recognized in an ICC ES report.

2.03 GEOGRIPPER PLATES

- A. GeoGripper® plates shall be used to restrain EPS Geofoam from moving laterally in layer over layer applications. The GeoGripper plate shall be manufactured by AFM Corporation. The plate shall be made of galvanized or stainless steel with two-sided multi-barbed design capable of piercing geofoam. Each plate shall be capable of a lateral holding strength of 60 lbs.

Note to Specifier It is the responsibility of the designer/engineer to determining the suitability and number of GeoGripper Plates. Two plates for each 4' x 8' section of EPS block is a minimum recommendation to minimize block to block movement during installation.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's EPS Geofoam product data; including technical bulletins.

3.02 PREPARATION AND INSTALLATION

- A. Site Verification of Conditions: Verify conditions of substrate, grade and other conditions which affect installation of geofoam.
- B. Installation: [Specify instructions to suit project requirements.]
- C. Ballast: Foam-Control EPS Geofoam should be ballasted to prevent displacement by wind or high water conditions, both in storage and during all phases of placement.

3.03 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction as required.

INSTALLATION GUIDELINES

Installation.

Please refer to ASTM D7180, "Standard Guide for use of Expanded Polystyrene (EPS) Geofoam in Geotechnical projects."

For most applications utilizing solid subgrades the following guidelines apply.

Subgrade Preparation.

1. Clear and grub site.
2. Excavate existing soil if required.
3. At design engineer's discretion, place geotextile over graded surface, i.e., soft soils, etc.
4. Dewater site as required.
5. Place a sand pad/leveling course over the prepared surface, 2" (50 mm) thickness minimum. Level to +1/2" per 10' (10 mm per 3 meters) horizontal. Sand pad surfaces should be above ground water level at time of Foam-Control EPS Geofoam placement.

Placement.

1. At time of material delivery, verify identification marks on face of the product. Use material of proper Type only and as specified. Field sampling and testing of the Foam-Control EPS Geofoam will be as specified by the Engineer. Properties of density and compressive resistance shall be verified in accordance with the specification.

2. Material is placed as required by the engineer and as shown on the drawings.
3. Blocks of Foam-Control EPS Geofoam should be placed tightly on the prepared sand pad/leveling course (sand must not be frozen). If multiple layers of Foam-Control EPS Geofoam are required, orient successive layers of blocks at 90° to previous layer. Offset block joints between layers.
4. Geofoam must receive temporary ballast during all phases of construction to prevent displacement by wind or high water conditions.
5. In order to facilitate construction during precipitation or when frost or icing is encountered, horizontal restraint between layers of Foam-Control EPS Geofoam may be desired. Use of GeoGripper Plates placed between horizontal layers of blocks should occur. Consult GeoGripper Plate literature for plate specifications.
6. Commence with the placement of permanent overlying materials as quickly as practical.
7. In pavement design for cold regions where differential icing may occur, provide an adequate thickness of a well graded (must contain a high degree of fines) subbase mix which will retain moisture. Most designs are adequate with sub-base thickness of 20" to 32" (500 mm to 800 mm) placed over the Foam-Control EPS Geofoam.

Disclaimer

Guidelines provided herein give basic information and illustrate examples of Foam-Control EPS Geofoam installation. The basic information provided herein is not intended to cover every potential use and application of Foam-Control EPS Geofoam. It is the responsibility of the installer to become familiar with his specific application and determine if Foam-Control EPS Geofoam is suitable. By commencing work, the installer accepts full responsibility for the proper and safe installation of Foam-Control EPS Geofoam at his job site. Furthermore, it is the sole responsibility of the installer to meet all federal and local regulatory requirements for job site safety for himself, his workers and any others on the job site while in the execution of all phases of the Foam-Control EPS Geofoam installation.



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GF05-12/11-E

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