

EPS GEOFOAM

ASTM D6817 RIGID CELLULAR POLYSTYRENE GEOFOAM

Lightweight engineered fill material for geotechnical applications

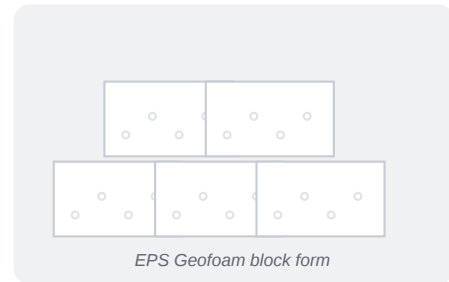
PRODUCT OVERVIEW

EPS Geofoam is a cellular plastic material that is strong but very lightweight - approximately 100 times lighter than traditional earth materials. It is manufactured in block form and meets ASTM D6817, Standard Specification for Rigid, Cellular Polystyrene Geofoam.

EPS Geofoam is a lightweight engineered fill material manufactured from expanded polystyrene (EPS). It is available in a range of ASTM D6817 Types to suit different structural loading requirements while providing a lightweight and cost-effective alternative to traditional fill materials.

DESIGN GUIDANCE

Each project using Geofoam should be designed by a professional engineer. The engineer or project specifications should be consulted to determine the ASTM D6817 Type required for project loading conditions.



DOCUMENT CONTROL

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OFFSHORE & MARINE APPLICATIONS

EPS Geofoam is particularly suited to offshore and marine projects where lightweight, high-compressive-strength materials are required. Typical applications include subsea umbilical packing, seafastening of rigid spools, and support or restraint systems for heavy-lift subsea structures. Compared with conventional heavy steel solutions, EPS Geofoam can significantly reduce the weight of temporary packing and support arrangements, making materials easier to handle, position, shape and modify on site. By selecting the appropriate ASTM D6817 Type for the calculated design load, Geofoam can provide the required compressive performance while reducing reliance on heavy fabricated steel arrangements.

GEOFOAM PROPERTIES - ASTM D6817

Property	Units	EPS12	EPS15	EPS19	EPS22	EPS29	EPS39	EPS46
Density, 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% 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, min.	psi (kPa)	220 (1500)	360 (2500)	580 (4000)	730 (5000)	1090 (7500)	1500 (10300)	1860 (12800)
Flexural strength, 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 by total immersion, max.	volume %	4.0	4.0	3.0	3.0	2.0	2.0	2.0
Oxygen index, 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

Property	Units	EPS12	EPS15	EPS19	EPS22	EPS29	EPS39	EPS46
Compressive resistance @ 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 @ 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)

EPS GEOFOAM - PRODUCT & DESIGN INFORMATION

READY TO USE

Geofoam maximizes onsite installation efficiency: material arrives ready to place, there are no weather delays, materials can be prefabricated or cut at the job site, no staging is required, material can be inventoried, production efficiency improved, and it is easy to handle.

SIZE AND SHAPE

Geofoam is produced in block form and is easily positioned at the work site. Standard sizes include 1.2 m widths; 2.4 m up to 3.0 m lengths; and 25 mm to 600 mm thickness. Other sizes are available on request.

EXPOSURE TO WATER AND WATER VAPOR

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

ADHESIVES, COATINGS, AND CHEMICALS

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

TEMPERATURE EXPOSURE / FLAME RETARDANTS

Geofoam is able to withstand temperature cycling, supporting long-term performance. Although flame retardants used in the manufacture of Geofoam provide an important margin of safety, Geofoam must be considered combustible. The maximum recommended long-term exposure temperature stated in the source datasheet is 74 C.

STORAGE AND BALLAST

Geofoam stands up well to normal short-term weather conditions encountered during installation. Long-term exposure to sunlight causes yellowing and slight embrittlement of the surface due to ultraviolet light, with little effect on mechanical properties. If stored outdoors, cover Geofoam with opaque polyethylene film, tarps, or similar material. Geofoam should be ballasted to prevent displacement by wind or high water conditions, both in storage and during all phases of placement.

QUALITY ASSURANCE

Geofoam meets or exceeds the requirements of ASTM D6817, Standard Specification for Rigid, Cellular Polystyrene Geofoam.

DESIGN LOADS

For most applications, long-term design loads should not exceed the linear elastic range of Geofoam. Combined live and dead load stresses should not exceed the compressive resistance at 1% strain. In general earthwork applications such as levees, dikes and berms, uplift buoyancy force must be counteracted with overburden or restraint devices such as geogrids, geomembranes or hold-down devices.

GEOTECHNICAL APPLICATIONS

Geofoam is used in ground-fill applications where lightweight fill material is required to reduce stresses on underlying or adjoining soils and structures.

ENGINEERED LIGHTWEIGHT FILL

EPS Geofoam provides a very low-density alternative to traditional earth fill. ASTM D6817 Type selection, loading, buoyancy restraint and project-specific details should be determined by the project engineer.