GEOFOAM

Geofoam - Geotechnical Fill Material
Technical Summary

Product Description

Geofoam is a geotechnical fill material used as an alternative to soil or other fill materials, for soil stabilization, and in many other engineered applications such as flotation assemblies. Extremely lightweight Geofoam is cost effective & fast, usually eliminating pilings, surcharging, preloading, and staging that is necessary with other materials. Geofoam resists moisture, decomposition and many adverse conditions for predictable stress-strain behavior over long service periods.

Manufacturer

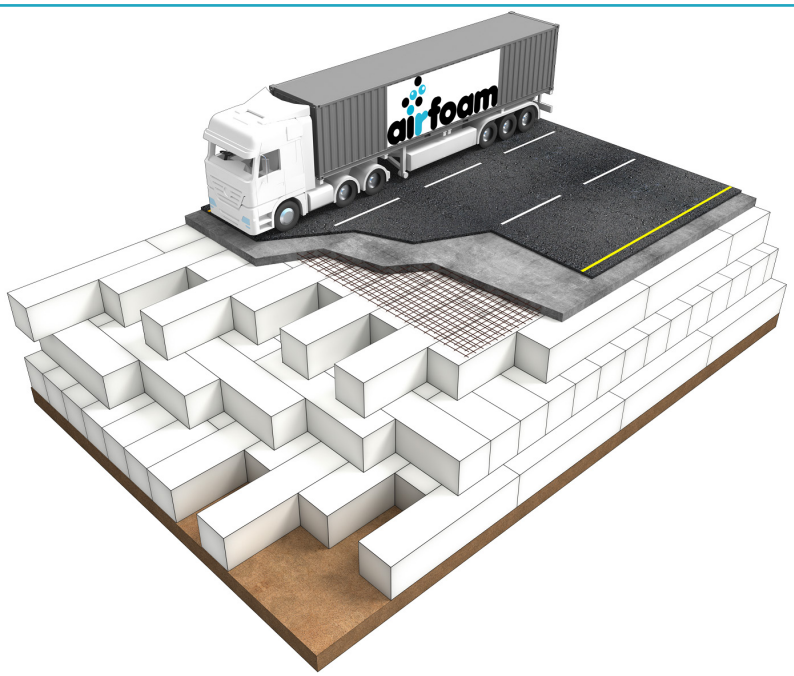
Airfoam Industries Ltd.
19402 - 56 Ave, Surrey BC V3S 6K4 Canada
800.663.8162 or 604.534.8626 | www.airfoam.com

Sizes

The standard EPS-blocks are 48" x 48" x 96" [1.22m x 1.22m x 2.44m], full-size maxima are 48½" x 48½" x 194" [1.23m x 1.23m x 4.92m] but can be custom ordered in any size, including factory-tapered, to meet your project specifications.

Code Compliance

Airfoam's Geofoam is Expanded Polystyrene (EPS) with Surface Burning Characteristics. Refer to Airfoam's Code Compliance Research Report CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf



Material Properties

Airfoam's EPS Geofoam products exhibit the typical physical properties indicated in table below when tested as represented.

Geofoam by Airfoam - Material Properties

Property[1]	Units	Airfoam Types								ASTM Standard
		G12	G15	G19	G22	G24	G29	G39	G46	
Third Party Certified Type			EPS15	EPS19	EPS22		EPS29	EPS39	EPS46	D6817
Density Minimum	kg/m³	11.2	14.4	18.4	21.6	24	28.8	38.4	45.7	D1622
	lbs/ft³	0.7	0.9	1.15	1.35	1.5	1.8	2.4	2.85	
Compressive Resistance @ 1% Strain Minimum	kPa	15	25	40	50	58	75	103	128	D1621 Proc. A
	psi	2.2	3.6	5.8	7.3	8.4	10.9	15	18.6	
	psf	317	518	835	1051	1210	1570	2160	2678	
Elastic Modulus[2] Typical within elastic range	MPa	1.5	2.5	4	5	5.8	7.5	10.3	12.8	D1621
	psi	220	360	580	730	840	1090	1500	1860	
Flexural Strength Minimum	kPa	69	172	207	240	276	345	414	517	C203 Proc. B
	psi	10	25	30	35	40	50	60	75	
Buoyancy Force[3,4] Maximum, dry	kN/m³	9.7	9.67	9.63	9.6	9.57	9.53	9.43	9.36	D1622
	lbf/ft³	61.8	61.5	61.3	61.1	61	60.7	60.1	59.6	
Additional Compressive Resistance Properties[2]										
@ 5% Strain Minimum	kPa	35	55	90	115	138	170	241	300	D1621 Proc. A
	psi	5.1	8	13.1	16.7	20	24.7	35	43.5	
@ 10% Strain Minimum	kPa	40	70	110	135	157	200	276	345	D1621 Proc. A
	psi	5.8	10.2	16	19.6	22.7	29	40	50	
Thermal Resistance[4,5] Minimum R-value at 1" thick at mean temperatures of:										
@ 75°F (when cooling)	ft²•hr•°F/ (BTU•in)	3.1	3.75	3.8	4.04	4.1	4.27	4.27	4.3	C518 or C177
@ 40°F (when heating)	ft²•hr•°F/ (BTU•in)	3.3	4.0	4.2	4.4	4.4	4.6	4.6	4.6	
@ 25°F (when heating)	ft²•hr•°F/ (BTU•in)	3.45	4.2	4.4	4.6	4.6	4.8	4.8	4.8	

[1] The test methods used to determine the above material properties provide a means of comparing different rigid, cellular polystyrene geofoam products. They are intended for use in specifications, product evaluations and quality control but they are not intended to predict end-use product performance. [2] The elastic limit/yield point is between 1% and 2% strain. Compressive resistances at 5% and 10% strain are provided for applications where the intended end-use includes plastic (permanent) deformation under load; to limit it along with creep, use the 1% strain values for design. [3] when EPS remains dry, assuming fresh water ρ=1,000 kg/m³. Where needed protect against uplift/ flotation. 4 not part of the industry consensus standard ASTM D6817 and provided AS-IS solely for informational purposes. 5 based on industry standards for EPS insulation of similar densities. R means resistance to heat flow. The higher the R-value, the greater the insulating power.

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Additional Properties for all Types

Expanded Polystyrene (EPS) **resists mold & fungi** growth per ASTM C1338 and has no nutritional value for insects. To protect against insects/termites and water-vapor, place adequate physical barriers such as membranes around below-grade EPS. Where needed use adequate drainage to limit water absorption.

Capillarity: None

Poisson's Ratio: ν ≈0.12 within the elastic range

Coefficient of Friction: μ ≈0.5-0.7 along clean faces

Max. Service Temperature: Long-Term Exposure 75°C [167°F], Intermittent Exposure 80°C [176°F]

Thermal expansion coefficient: 5-7•10-5/°K

Solubility: Insoluble in water and in general chemically inert. EPS dissolves in hydrocarbons (e.g. fuels, oils, tar), organic solvents (e.g. acetone/ketones, benzene, paint thinner), ethers, esters, aldehydes and amines.

UV-light surface degradation: white EPS can be exposed to direct sunlight for a few weeks. Prolonged exposure to ultraviolet light creates a yellow dust on the surface of EPS which has negligible impact on the products' properties but may require removal before adhering other materials such as coatings or self-adhesive membranes.

GHS Classification: Non-Hazardous

Fire Characteristics

- Limiting Oxygen Index: min. 24% per ASTM D2863. Airfoam's EPS for construction applications contains a polymeric (non-HBCD) fire retardant modifier.

Surface Burning Characteristics

- **Canada**: CAN/ULC-S102.2: Flame-Spread Rating ≤290, Smoke Developed Classification over 500.
- **USA**: ASTM E84 (UL 723)[a]: Flame Spread Index ≤25, Smoke-Developed Index ≤450 up to 6" thick.

[a] Ceiling measurement only, conducted through determination of flame spread index and smoke developed index with the removal of any contribution of molten materials ignited on the floor of the Steiner tunnel.

Fire Protection

CAUTION: EPS products are combustible and must not be exposed to excessive heat, sparks, open flames, or any other sources of ignition. If stored/used in closed containers, confined, or low-lying areas, ensure adequate ventilation to prevent accumulation of flammable pentane vapours. Prevent inhalation of smoke, fumes or dust from burning or fabrication activities.

For more information consult Airfoam's CCRR-0379 at www.airfoam.com/Airfoam-Code-Report-CCRR-0379.pdf, your engineer, local building department or call Airfoam at 800.663.8162.

Installation

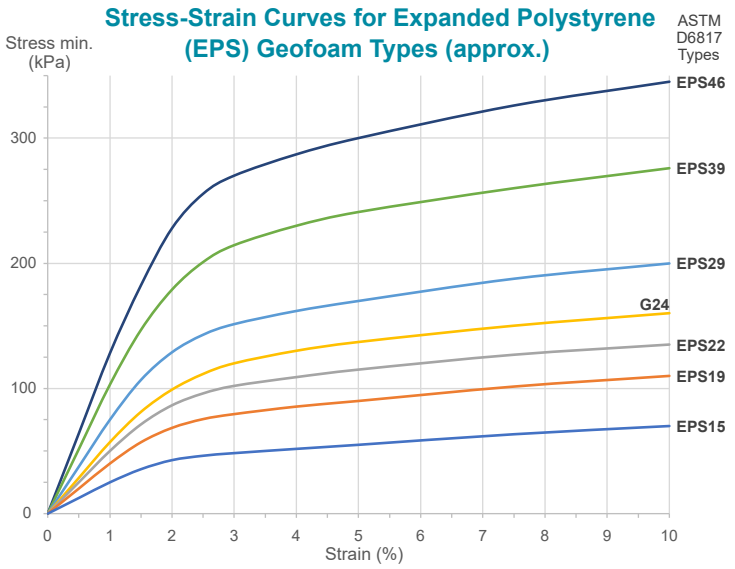
Follow the installation instructions found in Geofoam CSC/CSI Specifications available at www.airfoam.com/geofoam/Geofoam-CSC-Specifications.docx

Install Geofoam in compliance with all applicable building codes and Airfoam's Code Compliance Research Report found at www.airfoam.com.

For safe handling and storage information refer to the Safety Data Sheet (SDS) at www.airfoam.com/SDS.pdf or request a printed copy.

Availability

Geofoam EPS is supplied from Surrey BC. For product availability, call Airfoam at 800.663.8162 or +1.604.534.8626.



Environment Data

EPS has much lower environmental impacts than most other foam plastic materials. The **Environmental Product Declaration** (EPD) has been certified by UL Environment and is available on www.airfoam.com.

Geofoam EPS may contain up to 10% pre-consumer recycled content.

Warranty

Limited warranty applies, see www.airfoam.com/terms for Terms and Conditions of Sale.

Maintenance

No maintenance is required in normal use.

Recycling

Expanded Polystyrene (EPS) can be recycled for reuse in a variety of different applications, from construction and landscaping to packaging and park benches. Airfoam Industries Ltd. is a registered Recycling Facility for EPS materials accepting recyclable #6 white Expanded Polystyrene (EPS) from our customers - free of charge, if it is clean, dry, and not mixed with any other materials.

Technical Services

Airfoam can provide technical information and support to help address questions when using Geofoam EPS. Technical personnel are available to assist with any project. For technical assistance, contact Airfoam at:

Online: www.airfoam.com/EPS-Insulation-Support.php

Phone: 800.663.8162 or +1.604.534.8626

Fax: +1.604.534.1212

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Please contact us for a free estimate or additional information.