



Geofoam



Geofoam is a versatile lightweight fill material with high compressive strength properties. It is used to alleviate lateral pressures and reduce the need for pre-loading, surcharging and draining.

EPS has been used as a geotechnical material globally since the 1960's with Geofoam being used in UK civil engineering applications for over 30 years.

As a manufacturer our team can work with you to tailor a custom grade to meet the specific requirements of your project and avoid over specification.

Supplied as block, cut sheet or bespoke contour cut pieces

Standard Block Sizes – 2400 x 1200 x 600mm

Geofoam is used in common applications including:-

- Road embankments
- Road Widening
- Rail Embankments
- Bridge Abutments
- Retaining Walls
- Landscaping and Noise Bunds
- Culverts
- Temporary Access Solutions

GEOFOAM	20	45	70	90	100	120	140	160	190
Nominal Density (kg/m ³)	15	20	25	30	35	38	43	48	55
Compressive Strength at 1% nominal compression (kN/m ²) EN 826	20	45	70	90	100	120	140	160	190
Compressive Strength at 10% nominal compression (kN/m ²) EN 826	70	100	150	200	250	300	350	400	500
Shear Strength (kN/m ²) EN 12090	55	75	100	125	170	225	260	300	375
Shear Modulus (kN/m ²)	2100	2800	3400	4100	4800	5400	6100	6800	7400
Youngs Modulus (kN/m ²)	2100	4500	7000	9500	-	-	-	-	-
Bending Strength (kN/m ²) EN 12089	115	150	200	250	350	450	525	600	750
Coefficient of friction μ	0.5								
Poisson's Ratio	0.12								



Design considerations

Compression

For embankments and in landscaping applications the 1% compression figure may be used in the specification of appropriate grade of Geofoam.

Detailed information and guidance on the use of geofoam lightweight fill in road embankments is given in Transport Research Laboratories – Contractors Report 356.

Designing for Long Term Compressive Creep

Where the application requires geofoam to withstand long term imposed loads the designer should take into account long term compressive creep.

Performance of EPS geofoam is tested in accordance with BS EN 1606. This standard allows an extrapolation for compressive creep for 10, 20 and 50 years.

Geofoam will have a deformation less than 2% after 50 years when loaded to 30% of the 10% compression figure.

Compressive strength figures to use when designing for creep are given in the table opposite.

Design Loads for Long Term Compressive Creep (kN/m ²)	
GF20	21
GF45	30
GF70	45
GF90	60
GF100	75
GF120	90
GF140	105
GF160	120
GF190	150

Compressive Strength Under Cyclic Load

Geofoam exhibits stable cyclic load behavior. Under moderate loads (less than 1% deformation) the material remains elastic under cyclic loading.

On the basis of extensive studies it has been concluded that a material factor of 1.25 should be applied to the safe design value which is taken as 35% of the 10% compressive strength.

This maintains a deformation under cyclic loading of less than 0.4%, therefore there will be no permanent deformation in the geofoam.

Values for design and specification are shown on the table opposite.

Factored Design Values for Cyclic Loading (kN/m ²)	
GF20	20
GF45	28
GF70	42
GF90	56
GF100	70
GF120	84
GF140	98
GF160	112
GF190	140

Self Weight

Geofoam is an exceptionally lightweight fill material, being around 1% of the weight of traditional fill materials. Nominal densities of each grade are given in the main properties table. When calculating the total self weight of geofoam blocks allowance should be made for water absorption of 1%/vol.

The lightweight nature of the geofoam blocks reduces possible settlement of poor soils and pressures on existing structures.

A fully compensating design can be achieved where existing soil is excavated to equal the net applied load of the new structure. This type of foundation would be described as "floating".





Environment and Sustainability :

Environmental Product Declaration	<p>Geofoam is produced in a low energy manufacturing process.</p> <p>EPDs produced by EUMEPS on behalf of a group of European EPS Manufacturers including Jablite are available on the website below within the Construction section under Documents http://www.eumeps.org/</p>
Environmental Impact	<p>Compared with traditional fill materials, fewer trucks with lighter loads are required to deliver the same volume of Fillmaster Geofoam. This results in significant reductions in emissions from transportation.</p> <p>Ozone Depletion Potential (ODP) = zero Global Warming Potential (GWP) < 5</p> <p>Geofoam is inert, non-toxic and non-biodegradable. There is no leachate generated in use.</p>
Responsible Sourcing	<p>Environmental Management System Certified (ISO 14401) for Key Process and Supply Chain</p> <p>The ISO certificates are in the Technical Resource Centre on the Jablite website www.Jablite.co.uk</p> <p>Key Process (Manufacture) ISO 14001: Certificate Number EMS 559414</p> <p>Key Supply Chain Process (Main Polymer Production) ISO 14001: Certificate Number 80130-2010-AE-FRA-COFRAC Rev. 4</p>
100%	<p>Geofoam is 100% recyclable, even after use.</p>

Accreditation :

CE marking	<p>Jablite have taken the responsibility of CE marking Geofoam in accordance with harmonised European Standard BS EN 14933 : 2007</p> <p>Declaration of Performance is available on Request.</p>
Quality	<p>All Geofoam products are manufactured in production facilities which are certified to ISO 9001 Quality Management. Certificate of Conformity is available on request.</p>
Compliance	<p>Geofoam conforms to the required properties as defined in BS EN 14933 : 2007 – Thermal insulation and light weight fill products for civil engineering applications – Factory made products of expanded polystyrene (EPS) – Specification.</p>
FIRE	<p>All Geofoam grades are supplied with a flame retardant additive unless specifically requested otherwise. This inhibits the early stages of fire development.</p> <p>In geotechnical applications Geofoam is protected from exposure by soil, concrete or other building materials. Appropriate precautions should be provided on site where open flame procedures such as welding will take place in close proximity to the geofoam installation.</p> <p>The product achieves Euroclass E when tested to BS EN 13501-1.</p>

