

1. PRODUCT NAME

GeoTech® TerraLite Geofoam.

2. MANUFACTURER

GeoTech Systems Corporation
326 McGhee Road
Winchester, VA 23603
Phone: (703) 759-0300
Fax: (703) 757-0119
Web Page: <http://members.aol.com/geosyscorp>

3. PRODUCT DESCRIPTION

Basic Use: TerraLite Geofoam is used in ground fill applications where a lightweight fill material is required to reduce stresses on underlying soils. Projects involving roads, bridge approach fills, embankments, levees, berms, foundations, landscaping, etc.,

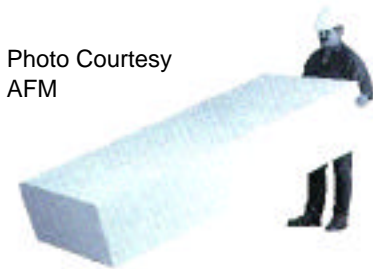


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AFM

can benefit from the use of TerraLite Geofoam.

Geofoam has been used in like applications worldwide for over 30 years. Using TerraLite Geofoam maximizes on-site installation efficiency:

- material arrives ready to place,
- no weather delays,
- material can be prefabricated,
- no staging required,
- material can be inventoried,
- production efficiency is improved,
- easy to handle,
- environmentally gentle,
- predictable engineering properties.

Traditional earth materials used as fill are heavy and can cause undesirable settlement or instability in underlying soils. Other fill materials such as foamed concrete, waste tires, wood chips, wood fiber, etc., have higher densities, are variable in their make-up and are not engineered due to field execution variables. They also have limitations in handling and can be weather sensitive. Both earth and these fill materials may require staged construction, pre-

loading and surcharging, draining, etc.

Composition and Materials: TerraLite Geofoam is a cellular plastic material that is strong, but has very low density (1% of traditional earth materials). It is a manufactured block material meeting the engineered product specification standards of ASTM C 578 and CGSB 51.20. Standard densities and Design values can be found on page 3.

TerraLite Geofoam contains a patented additive that resists termite infestation.

TerraLite Geofoam is unaffected by normally occurring weather at time of installation and will retain its physical properties under pre-engineered conditions of use. TerraLite Geofoam is made under a Quality Assured manufacturing process monitored by a third party laboratory.

Size and Shape: TerraLite Geofoam is produced in block form with dimensions of 901.7mm (35.5") x 1257.3mm (49.5") x 4927.61mm (194.0"). Other sizes and fabrication can be provided by the manufacturer to meet any job site or handling requirements.

Environmentally Safe: TerraLite Geofoam contains no CFC's, HCFC's, HFC's, or formaldehyde. It is inert, non-nutritive and highly stable. It will not decompose, decay, or produce undesirable gases or leachates. TerraLite is recyclable and safe for WTE Systems and landfills.

Limitations and Cautions: TerraLite Geofoam stands up well to normal weather conditions encountered during installation. Long-term (6 months or greater) exposure to UV will cause discoloration. Material should be covered as soon as practical. TerraLite Geofoam is unaffected by freeze thaw cycling, moisture, or road salts. Protect TerraLite Geofoam from exposure to hydrocarbons, highly solvent extended mastics and coal tar pitch. TerraLite Geofoam contains a flame retardant additive; however, it should be considered combustible and should not be exposed to open flame or any source of ignition.

Applicable Standards: TerraLite Geofoam can be manufactured to the following standards: ASTM C 578 (superseding FSHH-I-524 c), CAN



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CGSB 51.20, UL 723 (ASTM E 84), ULC S102.2.

4. TECHNICAL DATA

See Table 1 for typical physical properties of TerraLite Geofoam.

ASTM C 578 Types XI, I, VIII, II, IX
CGSB 51.20* Types 1, 2, 3
* CGSB 51.20 Types 1, 2, and 3 are comparable to ASTM I, II, and IX respectively on Table 1.

Technical Design Notes:

TerraLite Geofoam should be designed with the following density modifications when bulk water will be present in the insitu condition:

- In conditions where TerraLite Geofoam is periodically subjected to submergence from fluctuating ground water, add 30 kg/m^3 (1.87 lb/ft^3) to density.
- In conditions where TerraLite Geofoam is continually below ground water, add 80 kg/m^3 (5.00 lb/ft^3) to density.

These design recommendations are based on potential water absorption and the effects on density when analyzing cases involving downward loading. For analysis cases involving uplift loading, the nominal dry density given in Table 1 should be utilized. TerraLite Geofoam physical properties are unaffected by water.

Long-term design loads should not exceed the linearly elastic range of TerraLite Geofoam. Design load stresses should not exceed 1% strain of combined live and dead loads.

In general earth work applications such as levees, dikes, berms, etc., uplift buoyancy forces must be considered. TerraLite has a buoyancy of 961 kg/m^3 (60 lbs/ft^3). The buoyancy force must be counteracted with overburden or restraint devices, such as geogrids or geomembranes, etc.

5. INSTALLATION

TerraLite Geofoam is commonly used in the following applications. Other engineered applications may also be appropriate.



Transportation Earth Works

- Embankments
- Side-hill fill
- Approach fill (bridge abutments)
- General fill (roadways, parking, etc.)
- Median and sound barriers

Architectural

- Landscape
- Plaza decks
- Bermed structures

Structural

- Structural fill (foundations, etc.)
- Earth retaining structures

General Earth Works

- Flood Control Levees
- Dikes/Berms

For most applications utilizing solid subgrades the following guidelines apply.

A. 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, 50 mm (2") thickness minimum. Level to ± 10 mm over 3 meters (1/2" per 10') horizontal. Sand pad surface should be above ground water level at time of TerraLite Geofoam placement.

B. Placement of TerraLite Geofoam

1. At time of material delivery, verify Quality Assurance and identification marks on face of the product. Labels on material must comply with manufacturer's data shown on its hard copy Project Certificate Form. Use material of proper type only and as specified.

Field sampling and testing of TerraLite Geofoam will be as specified by the Engineer. Properties of density, compressive strength, and dimensional tolerances shall be verified in accordance with Table 1 of this document.

2. Place material as required by the engineer and as shown on the drawings.

3. Blocks of TerraLite Geofoam should be placed tightly on the prepared sand pad/leveling course (sand must not be frozen). If multiple layers of TerraLite Geofoam are required, orient successive layers with long axis of blocks at 90° to previous layer. Offset block joints between layers.

4. In order to facilitate construction during precipitation or when frost or icing is encountered, horizontal restraint between layers of TerraLite Geofoam may be desired. Use of AFM® Gripper™ Plates¹ placed between horizontal layers of blocks should occur. Consult manufacturer for plate specifications.

5. TerraLite Geofoam should be ballasted in windy conditions both in storage and as placed. Activities involving high heat or open flame should not occur near the material. Heavy equipment should not operate directly on the material surface.

6. Commence with the placement of 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 subbase thicknesses of 500 mm to 800 mm (20" to 32") placed over the TerraLite Geofoam.

6. AVAILABILITY AND COST

Availability: TerraLite Geofoam is available throughout the U.S., Canada

and Puerto Rico.

Cost: Prebid budget counseling and job pricing are developed by GeoTech Systems Corporation, (703) 759-0300.

7. WARRANTY

GeoTech can offer a warranty covering the long-term properties of TerraLite Geofoam. Contact GeoTech for sample warranty forms.

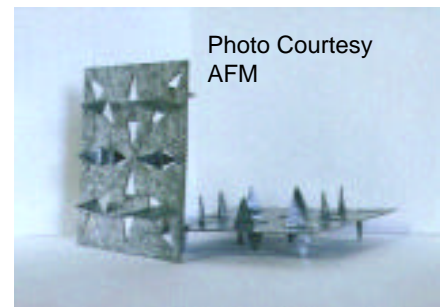
GeoTech provides certified material under its Third Party Certification and Quality Assurance Program. The program meets recognized national and international standards for EPS.

8. MAINTENANCE

Under normal conditions of use, TerraLite Geofoam requires no maintenance for the life of the fill system.

9. TECHNICAL SERVICES

Complete technical services are available from GeoTech Systems Corporation and its licensed manufacturers or distributors. Services include assistance during the design and specification stages. Sales representatives can also work with the contractor through the initial stages of application to assure proper installation. NOTICE: The information contained herein is, to the best of GeoTech's knowledge, accurate and reliable as of April, 1999. Freedom from patents of GeoTech or others is not to be inferred. For any information that may have been developed subsequent to April, 1999, consult the nearest GeoTech sales office.



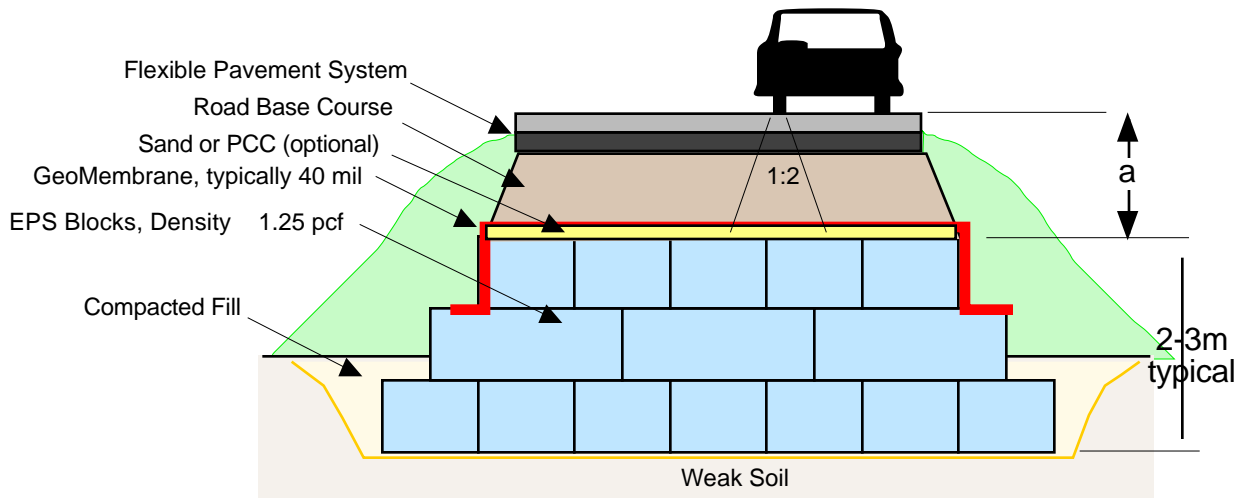
¹ AFM is a registered trademark of the AFM Corporation. AFM® Gripper™ Plates is a trademark of AFM Corporation.

GEOTECH TERRALITE™

Property	ASTM Test	Type XI	Type I	Type VIII	Type II	Type IX
Density kg/m ³ (lbs/ft ³)						
Nominal	C303/D1622	12 (0.75)	16 (1.00)	20 (1.25)	24 (1.50)	32 (2.00)
Minimum		11 (0.70)	15 (0.90)	18 (1.15)	22 (1.35)	29 (1.80)
Thermal Resistance 25.4 mm (1.00 in) thickness minimum k*m ² /W (F*ft ² *h/BTU) @ 4.4°C (40°F) @ 23.9 °C (75°F)	C177/C518					
		0.58 (3.3)	0.70 (4.0)	0.74 (4.2)	0.77 (4.4)	0.81 (4.6)
		0.55 (3.1)	0.63 (3.6)	0.68 (3.8)	0.70 (4.0)	0.74 (4.2)
Compressive Resistance at yield or 10% deformation Min. kPa (psi)	C165/D1621	35 (5.0)	69 (10)	90 (13)	104 (15)	173 (25)
Flexural Strength Min. kPa (psi)	C203	70 (10)	173 (25)	208 (30)	276 (40)	345 (50)
Water Absorption by total immersion Max. Vol %	C272	4.0	4.0	3.0	3.0	2.0
Dimensional Stability (change in directions) Max %	D2126	2.0	2.0	2.0	2.0	2.0
Bouyancy Force kg/m ³ (lbs/ft ³)		988 (62)	984 (61)	980 (61)	976 (61)	968 (60)
Modulus of Elasticity (Young's Modulus) kPa (psi)	D1621	3103 (450)	4655 (675)	5862 (850)	7935 (1150)	10344 (1500)
Stress kPa (psi) @ .5% Strain @ 1% Strain	D1621	17 (2.5) 35 (5.0)	24 (3.5) 48 (7.0)	29 (4.3) 58 (8.5)	41 (6) 82 (12)	55 (8) 110 (16)
Poisson's Ratio		0.05	0.05	0.05	0.05	0.05

Table 1: Properties of TerraLite

EPS Road Embankment Structure



Assume: Fill Density = 130 pcf, Max Tire Load = 100psi over 4x20in² area, 60° Approximation

EPS Type	Density EPS	Stress@1%	Fill Height "a"
I	1 pcf	7.0 psi	69.5cm (27.3 in)
VIII	1.25 pcf	8.5 psi	42.9 cm (16.9 in)
IX	2.0 pcf	16 psi	21 cm (8.31 in)

Fill Height derived from requirement to keep EPS below elastic strain limit of 1%