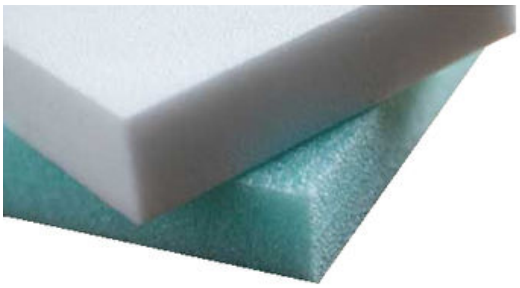
Terrafoam EPE

Expanded Polyethylene Void Form

Non-collapsing, rebounding fill suitable for hydrocarbon exposures



Terrafoam EPE is a foamed polyethylene void form product used in a wide variety of construction applications, including the protection of grade beams, structural slabs, and pile caps. Its purpose is to absorb strain from swelling clays and freezing moist sub-grade materials through elastic compression before damage to structures can occur. Terrafoam EPE is made from low-density closed-cell extruded polyethylene, providing all-weather installation and operational performance, and is particularly well suited to certain hydrocarbon exposure conditions.

Terrafoam EPE does not collapse or crush under compression, but instead offers excellent recovery from compression. This helps prevent water collection and the subsequent expansive forces that can result from ice formation beneath concrete elements. Terrafoam EPE also has long-term buoyancy characteristics, very low water absorption, and provides thermal resistance of approximately R-3.2 per inch (RSI 0.56 per 25 mm).

APPLICATIONS

- Protection of grade beams
- Structural slabs
- Pile caps
- Cold-climate geotechnical applications where soil is prone to heaving
- Applications requiring compressible void fill with recovery after compression
- Applications where resistance to certain hydrocarbon exposures is beneficial

PRODUCT ATTRIBUTES

- Non-collapsing, rebounding compressible fill
- Absorbs strain from swelling clays and freezing moist sub-grades
- Low modulus of elasticity with excellent recovery from large rates of cyclic strain
- Excellent resistance to freeze/thaw cycles
- All-weather performance not affected by water or freezing conditions
- Low water absorption
- Long-term buoyancy characteristics
- Suitable for select hydrocarbon exposure conditions
- Can also function as thermal insulation
- Suitable for cold-climate applications where soil is prone to heaving

INSTALLATION

Install products in accordance with the manufacturer's instructions for each specific application.

CLASSIFICATIONS

- EPE-15
- EPE-22
- EPE-40
- EPE-60

SIZES

Thickness: Available in a variety of thicknesses.
Standard board size: 4' x 9' (1220 x 2740 mm) panels.

PACKAGING, HANDLING AND PROTECTION

Terrafoam EPE must be protected from damage during transit and from UV degradation during storage and after erection.

LIMITATIONS

- Product will burn when exposed to a large continuous flame
- Normal fire precautions and good housekeeping methods should be followed during storage and application

CHEMICAL RESISTANCE PROPERTIES

Chemical resistance properties are based on industry-accepted LDPE exposure data.

Substance	Behaviour @ 20°C	Behaviour @ 60°C
Acetone	Limited Resistance	Not Resistant
Benzene	Limited Resistance	Not Resistant
Bitumen	Resistant	Limited Resistance
Crude Oil	Resistant	Limited Resistance
Diesel Fuel	Resistant	Not Resistant
Fuel Oil	Limited Resistance	Not Resistant
Gasoline	Limited Resistance	Not Resistant
Kerosene	Limited Resistance	Not Resistant
Ketones	Limited Resistance	Not Resistant
Methanol	Resistant	Resistant
MEK	Limited Resistance	Not Resistant
Petroleum	Limited Resistance	Not Resistant
Toluene	Limited Resistance	Not Resistant
Xylene	Limited Resistance	Not Resistant

TECHNICAL DATA

Property	Test Method	Units	EPE-15	EPE-22	EPE-40	EPE-60
Density	—	lb/ft³ (kg/m³)	1.7 (27.2)	2.2 (35.2)	4.3 (68.8)	6.3 (100.9)
Compressive Strength @ 25%	ASTM D3575 Suffix D	psi (kPa)	6–8 (45–55)	7–9 (50–60)	13–20 (90–140)	26–30 (179–207)
Compressive Strength @ 50%	ASTM D3575 Suffix D	psi (kPa)	14 (95)	13–16 (90–110)	16–24 (110–165)	36–43 (248–296)
Water Absorption	ASTM D3575 Suffix L	lb/ft³ (kg/m³)	0.06 (0.96)	0.04 (0.64)	0.02 (0.32)	0.02 (0.32)
Thermal Stability	ASTM D3575	%	<2	<2	<2	<2
Service Temperature	—	°F(°C)	-30 to 180 (-35 to 85)	-30 to 180 (-35 to 85)	-30 to 180 (-35 to 85)	-30 to 180 (-35 to 85)
Compressive Creep	ASTM D3575 Suffix BB	%	6	6	0.8	0.8
Compressive Set @ 2 hrs	ASTM D3575 Suffix B	%	21	22	9	10
Compressive Set @ 24 hrs	ASTM D3575 Suffix B	%	16	16	6	7

Material: Low-density closed-cell extruded polyethylene (EPE)
Thermal Resistance: R-3.2 per inch (RSI 0.56 per 25 mm).

TECHNICAL INFORMATION

DESIGN GUIDANCE FOR GEOTECHNICAL APPLICATIONS
Specifying the correct thickness of Terrafoam EPE requires an understanding of the total deformation that may occur as concrete is placed and during the period before the concrete structure becomes self-supporting.

Standard laboratory test methods, including ASTM D1621 and ASTM D3575, provide useful quality control data, but they do not fully predict the real-world performance of polyethylene foam used as void fill. These tests generate short-term laboratory results from rapid deformation, while actual concrete placing loads are sustained over time.

For geotechnical applications, Beaver recommends selecting Terrafoam EPE based on sustained-load deformation data. The void form thickness should account for both the anticipated soil movement and the thickness loss that occurs under the initial concrete placing load.

As a design rule, the minimum thickness of low-density polyethylene void form should be three times the anticipated soil swell, with final product thickness adjusted based on the percentage of thickness remaining after 8 hours under the initial concrete load.

FRESH CONCRETE LOAD CALCULATION
Fresh concrete load can be estimated using the following equation:

Concrete Load (psi) = Concrete Thickness (in.) × 0.087
(Concrete Load (kPa) = Concrete Thickness (m) × 23.6)

TECHNICAL SUPPORT

For technical inquiries please contact:

- productsupport@bvrthermal.com
- (888) 453-5961 Toll Free

Website:
https://bvrthermal.com/

TERRAFOAM EPE 8-HOUR REMAINING THICKNESS

The following values show the approximate percentage of original product thickness remaining after 8 hours under sustained concrete placing loads.

Table 1: Approximate Remaining Thickness After 8 Hours

Concrete Load	EPE-15	EPE-22	EPE-40	EPE-60
17.4 psi (120 kPa)	—	—	—	80.00%
13.9 psi (96 kPa)	—	—	85.60%	91.50%
10.4 psi (72 kPa)	—	—	93.50%	95.90%
7.0 psi (48 kPa)	51.00%	52.60%	96.20%	97.10%
3.5 psi (24 kPa)	71.40%	73.30%	97.90%	98.60%
1.7 psi (12 kPa)	85.50%	86.00%	98.90%	—
1.0 psi (7.2 kPa)	93.00%	94.20%	—	—
0.7 psi (4.8 kPa)	94.90%	95.20%	—	—
0.5 psi (3.6 kPa)	96.20%	96.80%	—	—

TERRAFOAM EPE THICKNESS CALCULATION

The required product thickness is calculated by tripling the anticipated soil swell, then adjusting for the percentage of product thickness remaining after 8 hours under the concrete placing load.

Required Product Thickness = Anticipated Soil Swell × 3 ÷ Remaining Thickness*

**Remaining thickness must be entered as a decimal.*

APPLICABLE STANDARDS

Terrafoam EPE is manufactured to meet or exceed applicable requirements of:

ASTM D3575	Standard Test Methods for Flexible Cellular Materials Made from Olefin Polymers.

MANUFACTURER

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