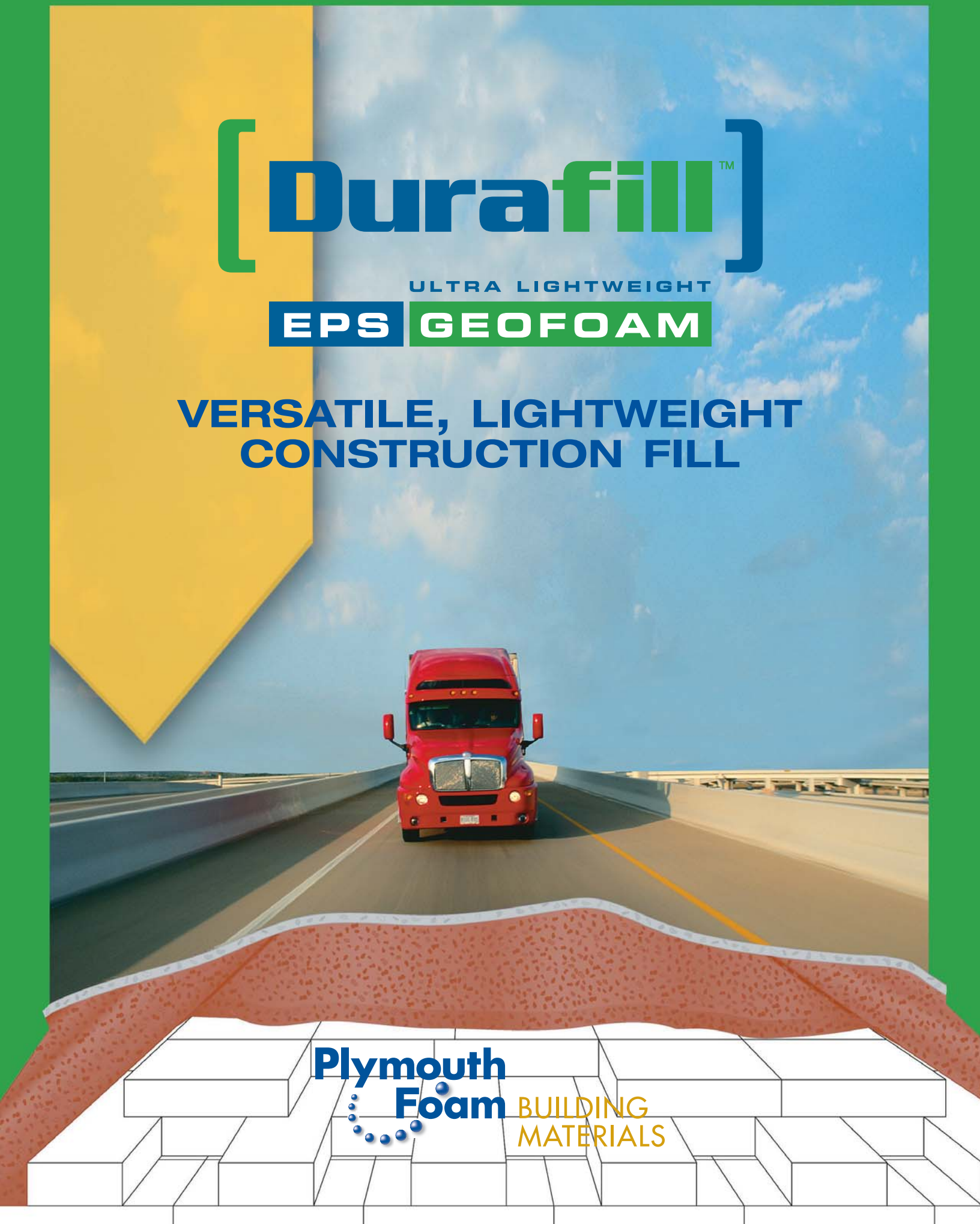
Durafill™

ULTRA LIGHTWEIGHT

EPS GEOFOAM

VERSATILE, LIGHTWEIGHT CONSTRUCTION FILL



Plymouth Foam BUILDING MATERIALS

Durafill: Lightweight, Durable and Versatile

Easy to handle and put in place.

Fill weight reduced by up to 130 lbs. per cubic foot when replacing standard dirt and gravel.

Unmatched compressive strength supports same load burden as standard fill.

Cuts easily around plumbing and other structural elements.

Plymouth Foam's Durafill™ Expanded Polystyrene (EPS) geofoam is a lightweight cellular plastic foam used in block or board form for a wide range of geotechnical applications. Durafill is often used in place of natural fill on building or road construction projects where soft soil exists. Its weight-to-strength load bearing characteristics are uniquely effective in reducing the weight burden on underlying soil without sacrificing compressive strength. EPS has proven to be the most cost-effective, versatile and long-lasting of all the various cellular foam varieties, and the use of EPS geofoam in engineered construction applications is growing rapidly.

Geofoam has performed extremely well in projects where conventional earth fills such as foamed concrete, wood chips, waste tires and cinders have shown a history of poor performance and failure.

Durafill gives engineers and designers a unique product that works in conjunction with more traditional materials to solve construction problems such as soft or unstable ground, frost-heave and lateral movement of approach fill at bridge abutments with unprecedented strength and flexibility.

Reduces lateral pressure when used around building foundations.

Durafill Applications

Durafill is often used as lightweight fill for building and road construction on soft and unstable soil, ground stabilization and pavement or sub-slab insulation.

Road Embankments

Durafill is up to 50 times less massive than traditional lightweight fills (chipped bark, sawdust, cinders, cellular concrete, etc.), providing:

- **Maximum available right-of-way**
- **Faster construction schedule**
- **Lower traffic impact**
- **Cleaner construction**
- **Reduced labor**
- **Minimal future maintenance**

Retaining Wall or Abutment Backfill

Durafill positioned behind retaining structures and below-grade walls reduces lateral pressure, lowers settlements, improves waterproofing and provides better insulation. Durafill can also limit horizontal forces against retaining structures during earthquakes.

Slope Stabilization

Durafill's extremely low density makes it highly effective in improving the stability and safety of slope construction by minimizing the potential of failure surfaces between driving blocks and resisting blocks in a slope.

Pavement Insulation

Durafill is often used as highway, airport runway and parking lot pavement subgrade insulation, reducing subgrade stress and deformation and to protect against frost heaving.

Other Uses Include:

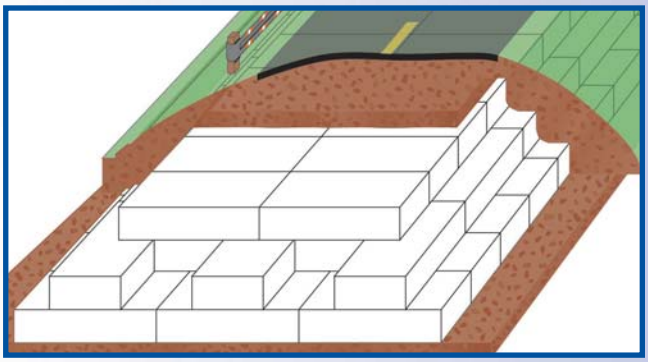
- **Roadway Sound Barriers**
- **Foundation Fill / Insulation**
- **Plaza Decks**
- **Levees / Dikes / Berms**
- **Landscape Design**
- **Utility Protection**
- **Shallow Foundations**
- **Lateral Pressure Reduction**
- **Rail Foundation and Damping**

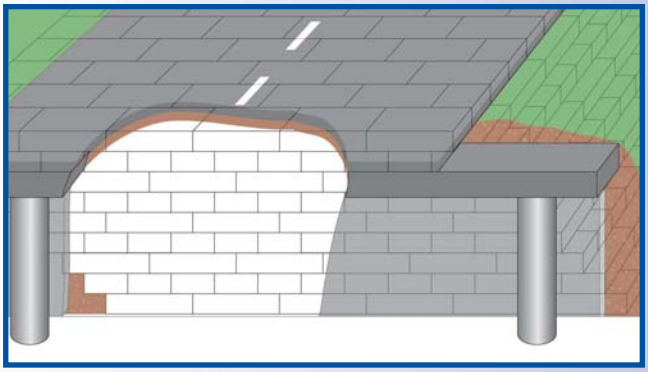
Types of Durafill Geofoam:

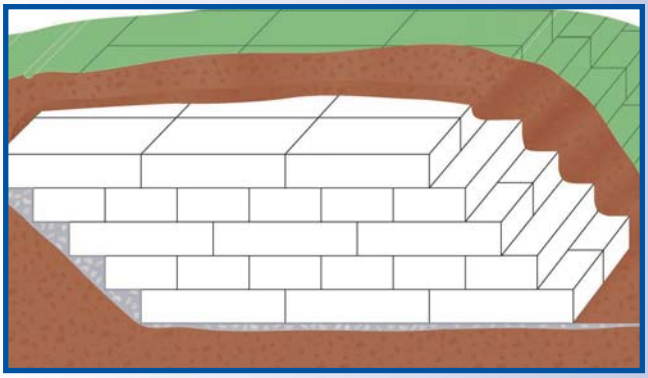
[Durafill] 12 [Durafill] 15

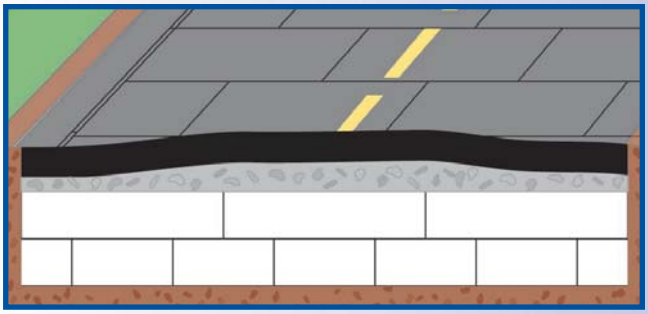
[Durafill] 19 [Durafill] 22

[Durafill] 29 [Durafill] 40









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Durafill Advantage

- **Low Density/High Strength**
  The density of Durafill ranges from 1 to 2% of the density of soil and rock, making it a superior, ultra lightweight fill material that significantly reduces the stress on underlying subgrades. The lighter load reduces settlements and increases stability against bearing and slope failures.
- **Thermal Insulation**
  Durafill is 98-99% air by volume, making it a highly efficient thermal insulator.
- **Variable Densities**
  Durafill geofoam can also be produced in a range of densities to meet varying needs. Higher densities, for example, provide higher R-values for greater insulation properties and lower deformation.
- **No Leachates**
  Will not contaminate the surrounding environment
- **Durable**
  High compressive strength makes Durafill durable and resistant to damage and shifting over time.
- **Low moisture absorption**
  Moisture absorption rates decrease as density increases, but are still minimal.
- **Low interface friction**
  In direct shear tests the interface friction between sand and Durafill is comparable to the internal friction of sand alone.
- **Inert**
  Experiences no physical breakdown during prolonged burial.
- **Design Flexibility**
  Typically is used in block form that can be cut into various shapes and sizes as needed.

Durafill™ Geofoam Physical Properties

Property			ASTM D6817						
			Durafill 12	Durafill 15	Durafill 19	Durafill 22	Durafill 29	Durafill 39	Durafill 46
Density, minimum		lb/ft³	0.70	0.90	1.15	1.35	1.80	2.40	2.85
		kg/m³	11.2	14.4	18.4	21.6	28.8	38.4	45.7
Compressive Resistance @ 10% deformation, min.		psi	5.8	10.2	16.0	19.6	29.0	40.0	50.0
		psf	840	1470	2300	2820	4180	5760	7200
		kPa	40	70	110	135	200	276	345
Compressive Resistance @ 5% deformation, min.		psi	5.1	8.0	13.1	16.7	24.7	35.0	43.5
		psf	730	1150	1890	2400	3560	5040	6260
		kPa	35	55	90	115	170	241	300
Compressive Resistance @ 1% deformation, min.		psi	2.2	3.6	5.8	7.3	10.9	15.0	18.6
		psf	320	520	840	1050	1570	2160	2680
		kPa	15	25	40	50	75	103	128
Flexural Strength, min.		psi	10.0	25.0	30.0	35.0	50.0	60.0	75.0
		kPa	69	172	207	240	345	414	517
Elastic Modulus, min.		psi	220	360	580	730	1090	1500	1860
		kPa	1500	2500	4000	5000	7500	10300	12800
Oxygen Index, min.		volume %	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Water Absorption by total immersion		volume %	4.0	4.0	3.0	3.0	2.0	2.0	2.0
Buoyancy Force		lb/ft³	61.7	61.5	61.3	61.1	60.6	60.0	59.5
		kg/m³	990	980	980	980	970	960	950
			ASTM C578						
Thermal Resistance (R-Value), min. per 1.0" thickness	25 deg. F	F.ft².h/Btu	3.5	4.2	4.4	4.6	4.8	4.8	4.9
		K.m²/W	0.61	0.74	0.77	0.81	0.84	0.84	0.86
	40 deg. F	F.ft².h/Btu	3.3	4.0	4.2	4.4	4.6	4.6	4.7
		K.m²/W	0.58	0.7	0.74	0.77	0.81	0.81	0.83
	75 deg. F	F.ft².h/Btu	3.1	3.6	3.8	4.0	4.2	4.2	4.3
		K.m²/W	0.55	0.63	0.67	0.70	0.74	0.74	0.76
Water Vapor Perm. of 1" thickness, max. perm.			5.0	5.0	3.5	3.5	2.5	2.5	2.5

See ASTM D6817 and ASTM C578 for test methods and complete information. The information in this bulletin is presented in good faith, and is believed to be accurate. All statements are made without warranty expressed or implied. Each project using Durafill Geofoam should be designed by an engineer.

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