



PRODUCT BROCHURE

Geofoam — EPS Lightweight Structural Fill

Moulded closed-cell EPS block, 12–30 kg/m³, placed dry as engineered lightweight fill so the weight of an embankment or backfill is designed out instead of the ground being improved.

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TP-BR-GEOFOAM

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PRODUCT
geofoam

STATUS
Issued for use

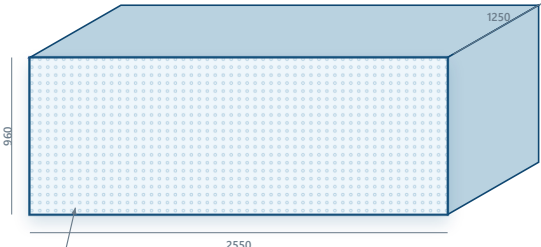
OVERVIEW

Geofoam is moulded expanded-polystyrene block used as engineered lightweight fill. At 12–30 kg/m³ it weighs roughly one percent of compacted soil — about 0.6% at 12 kg/m³ and about 1.6% at 30 kg/m³ against soil at 18–20 kN/m³ — so replacing soil with geofoam removes almost all of the self-weight stress that would otherwise reach a soft subsoil or bear against a wall, culvert or basement roof. It goes in dry, in staggered courses, with no compaction and no consolidation wait, and it is field-cut with a hot-wire cutter or a saw. It is a load-management material: any thermal benefit is incidental.

Geofoam is closed-cell moulded EPS, produced as large blocks rather than cut sheets. Technopol manufactures six grades — 12SD, 15SD, 16DV, 20DV, 24DV and 30DV — at nominal densities of 12, 15, 16, 20, 24 and 30 kg/m³. The grade is not chosen for insulation. It is chosen so that the sustained stress arriving at the top of the block stays at or below that grade's compressive resistance at 1% strain: 15, 17, 21, 45, 70 and 100 kPa respectively on the Technopol datasheet. The typical stock block is 2550 × 1250 × 960 mm; other sizes are cut to order. One block is a one- or two-person lift, so the fill goes in without cranes or compaction plant, and blocks are trimmed on site with a hot-wire cutter, hand saw or chain saw. In the permanent works the blocks are always covered: where a hydrocarbon or solvent spill is credible, a continuous impermeable geomembrane; then a reinforced-concrete load-distribution slab; then pavement, slab or soil. Geofoam is specified internationally to ASTM D6817 (material), ASTM D7180 (geotechnical design) and ASTM D7557 (sampling). Where a project requires conformance to be demonstrated on the blocks that arrive, that is done by batch sampling and testing to ASTM D7557.

Geofoam — engineered lightweight fill

Large moulded EPS blocks used as engineered lightweight fill — at 12–30 kg/m³, roughly 1% of the weight of the soil they replace.



The stock block
2550 × 1250 × 960 mm · other sizes cut to order

A one- or two-person lift.
The fill goes in without cranes or compaction plant, and blocks are trimmed on site with a hot-wire cutter, hand saw or chain saw.

Six grades — chosen by strength, not insulation

GRADE	DENSITY	RESISTANCE @ 1% STRAIN
12SD	12 kg/m ³	15 kPa
15SD	15 kg/m ³	17 kPa
16DV	16 kg/m ³	21 kPa
20DV	20 kg/m ³	45 kPa
24DV	24 kg/m ³	70 kPa
30DV	30 kg/m ³	100 kPa

The grade is picked so the sustained stress arriving on the block stays at or below its resistance at 1% strain. Density is a strength spec here, not an R-value.

Laid in staggered courses like lightweight masonry. In the permanent works the blocks are ALWAYS covered — a reinforced-concrete load-distribution slab spreads point loads, and a geomembrane is added where a fuel or solvent spill is credible. Geofoam is never left as a running surface.

The geofoam stock block (2550 x 1250 x 960 mm) and the six grades. The grade is chosen so the sustained stress arriving on the block stays at or below its compressive resistance at 1% strain - density is a strength specification here, not an insulation value.

KEY FACTS

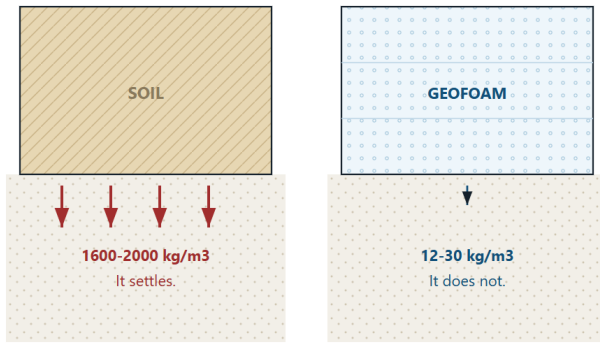
PROPERTY	VALUE
Nominal density, by grade (12SD / 15SD / 16DV / 20DV / 24DV / 30DV)	12 / 15 / 16 / 20 / 24 / 30 kg/m ³

PROPERTY	VALUE
Minimum density, by grade	10.8 / 13.5 / 14.4 / 18.0 / 21.6 / 27.0 kg/m ³ °
Design load limit — compressive resistance at 1% strain, by grade	15 / 17 / 21 / 45 / 70 / 100 kPa (min)°
Compressive stress at 10% strain, by grade — a failure-region strength, never a design load	60 / 65 / 80 / 110 / 160 / 200 kPa (min)°
Cross-breaking (flexural) strength, by grade	80 / 100 / 140 / 150 / 205 / 250 kPa (min)°
Thermal conductivity λ at 10 °C, by grade	0.045 / 0.040 / 0.038 / 0.035 / 0.034 / 0.033 W/m·K (max)°
Unit weight of the fill, for the load take-down	0.12–0.30 kN/m ³ (compacted soil is ~18–20 kN/m ³)
Typical block size	2550 × 1250 × 960 mm; other sizes cut to order°
Handling	One block lifted and placed by 1–2 people. No lifting plant, no compaction plant.°
Cutting and on-site adjustment	Blocks are field-cut with a hot-wire cutter, hand saw or chain saw. Where the profile has to be adjusted on site, Technopol can provide a PORTABLE HOT-WIRE CUTTER so the crew can trim to fit without returning blocks to the factory.
Void filling — permanent or sacrificial	PERMANENT: the block stays in the works as lightweight fill. SACRIFICIAL: the block forms the concrete and is broken out afterwards — removal normally damages or destroys it, so it is bought as a consumable, not as recoverable formwork. Say which you need at enquiry: it changes the grade and the quantity, not the price of a return.
Water absorption	< 4%°
Interface friction coefficient, moulded and cut faces	$\mu \approx 0.5$ °
Sustained service temperature	Keep it below 70–80 °C. EPS softens and creeps above roughly 70–80 °C, and hot-applied bitumen is far above that.°
Governing standards	ASTM D6817 (material) · ASTM D7180 (geotechnical design) · ASTM D7557 (sampling)°
Agrément SA certification	There is no Agrément SA certificate for geofoam. Certificate 2020/609 covers the LiteCore Building System, non-load-bearing, and does not extend to this product.°
Manufacturing quality system — a company credential, not a product approval	ISO 9001:2015; scope includes EPS Blocks and EPS Sheets°

° Catalogue or declared value. Where a figure is load-bearing in your design, confirm it for the material supplied — on a load-bearing application, by testing the product delivered to your site.

WHERE IT IS USED

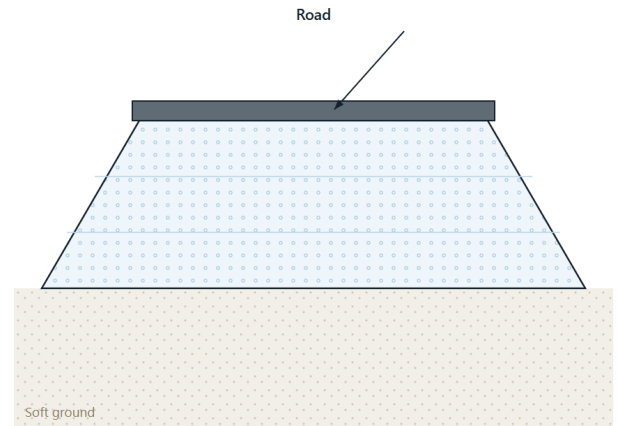
The principle: replace the weight



About 1% of the weight, for the same volume.

Replace the weight. Same volume, about 1% of the mass.

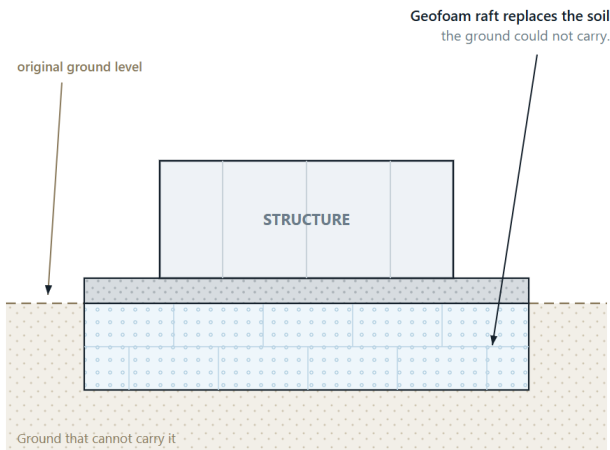
Embankment over soft ground



The embankment is the load. Geofoam fill weighs ~1% of soil, so it goes.

Embankment over soft ground - the embankment's own weight is the load, not the traffic.

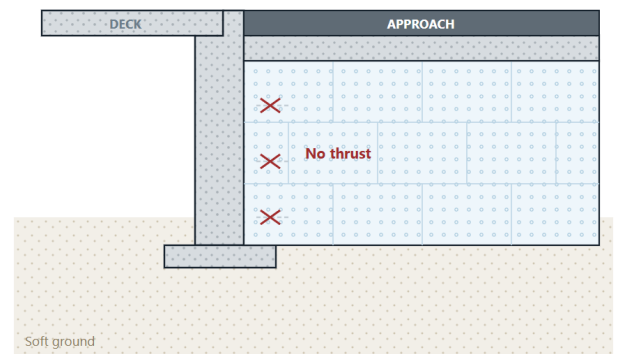
Void fill: the compensated foundation



The soil you dig out weighs more than the building you put back.

Compensated foundation - the soil you dig out weighs more than the building.

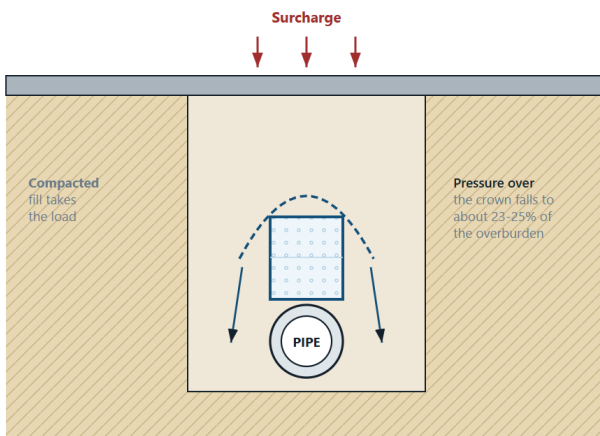
Bridge abutment and approach



The bump at the end of the bridge is the approach fill consolidating.

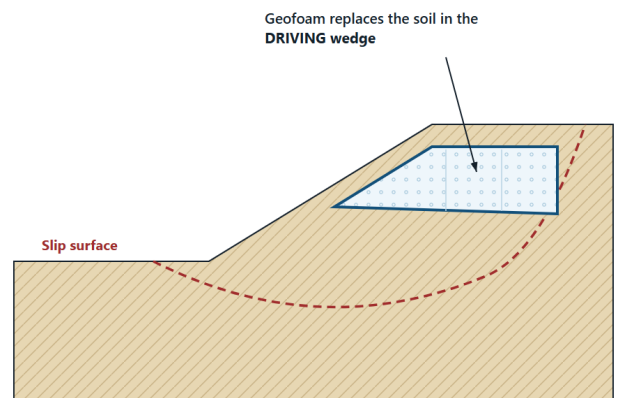
Bridge approach - kills the bump, and the thrust on the stem.

Protecting a buried service



Induced trench - a compressible zone about 1 pipe-diameter wide and 1-1.5 deep; the load arches over the pipe onto the fill either side.

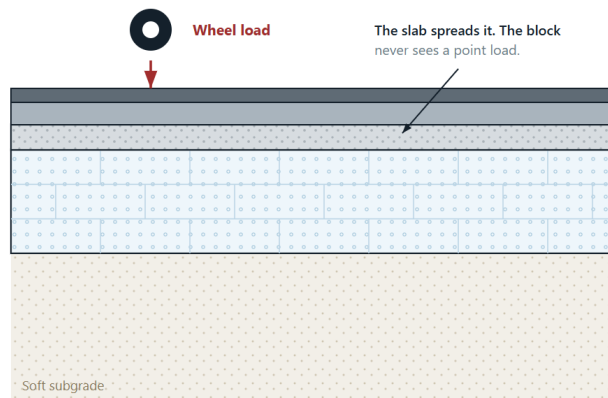
Slope stabilisation



Take the weight off the top rather than add strength at the toe.

Slope stabilisation - remove the driving mass, do not buttress the toe.

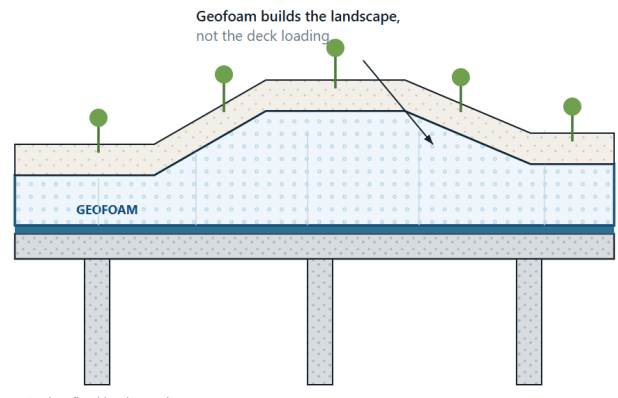
Pavement and parking



A road over soft ground settles under its own weight, not the traffic.

Pavement over soft ground - it settles under its own weight.

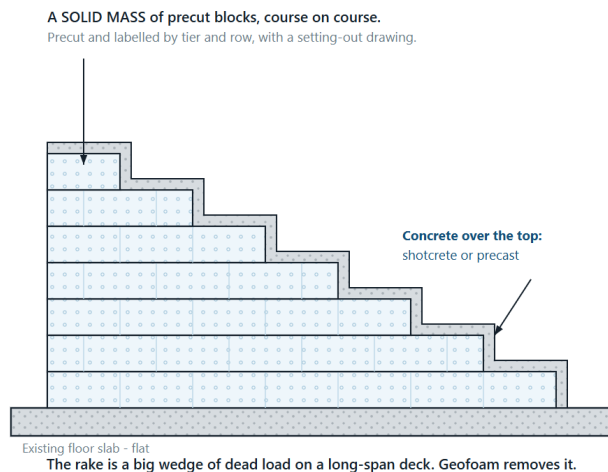
Green roof and podium deck



On a podium the budget is kilograms per square metre, not rands.

Podium deck - the budget is kg/m², not rands.

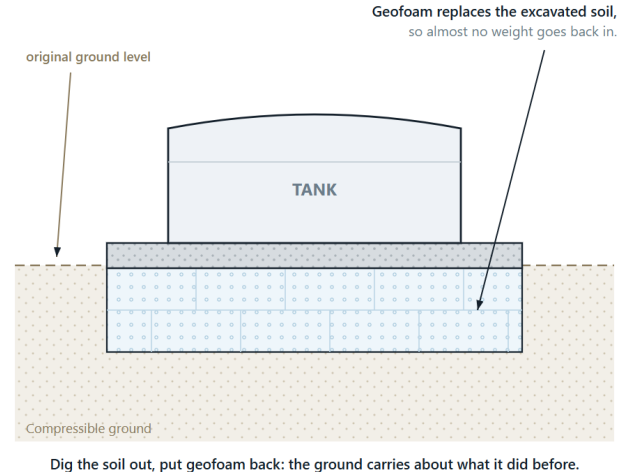
Stadium and auditorium rake



The rake is a big wedge of dead load on a long-span deck. Geofoam removes it.

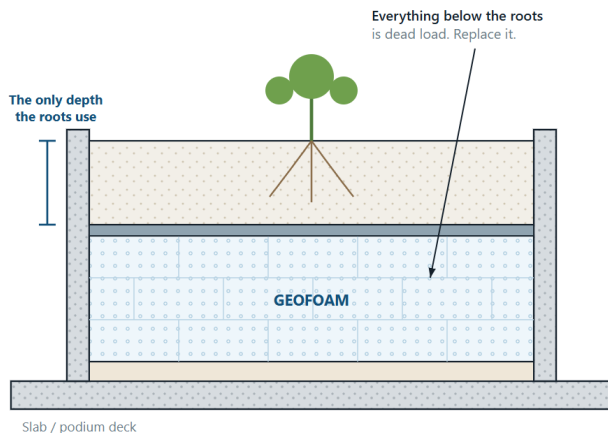
Stadium rake - hot-wire cut to profile, no formwork and no bulk concrete; just a concrete wearing surface over the top.

Tank and silo bases



Tank base - heavy, stiff, and it cycles full to empty.

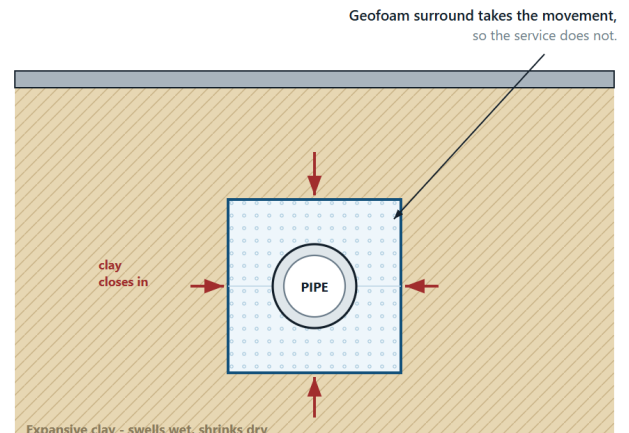
Planters and raised beds



Saturated soil is ~2000 kg/m³. Geofoam is 12-30. The planting depth is unchanged.

Planters - the roots only use the top. Everything below is dead load.

Isolating a service from ground movement



Full surround - a different job from the induced trench: here the clay MOVES, and the foam absorbs it instead of the pipe.

WHERE NOT TO USE IT

- Anywhere fuel, oil, solvent or hot bitumen can reach the blocks and no impermeable membrane is designed in — fuel forecourts, tank farms, workshop aprons, hydrocarbon-contaminated ground, oil-filled cable trenches. Petrol, diesel and aromatic solvents dissolve EPS on contact. The lost volume shows up as sudden local collapse of the pavement above, with no slow warning.
- Below the design groundwater or flood level, or anywhere the fill can be submerged, without permanent ballast designed for uplift. At 12–30 kg/m³ the blocks float. Buoyancy, not bearing, is usually the check that governs.
- Where the sustained design stress would exceed the specified grade's compressive resistance at 1% strain — including any fill sized off the 10%-strain figures (60–200 kPa). Those are failure-region strengths. A fill designed to them creeps for the life of the structure above it.
- Where the sustained stress at the top of the block exceeds 100 kPa. That is the limit of 30DV, the strongest grade Technopol makes. ASTM lists grades above EPS30; Technopol does not manufacture them and cannot supply them.
- Above roughly 70–80 °C, or in contact with hot-applied bitumen, steam lines, hot-process pipework, boilers or flues. EPS softens and creeps well below the temperature of hot bitumen, and the melted zone becomes a void.
- As permanently exposed fill, or under a surface that will be left open. EPS is combustible, UV-degradable and mechanically soft, and geofoam is not rated as a fire-resisting element. The permanent works must cover it with slab, pavement or soil.
- As the answer to a thermal requirement. Geofoam is not rated as an insulation product: there is no declared R-value or U-value per thickness for it, and nothing may be claimed toward SANS 10400-XA on it. If insulation is the objective, specify a board product with a declared λ and a stated thickness.
- Where the specification requires an Agrément SA certificate for the fill. There is no Agrément certificate for geofoam, and 2020/609 (LiteCore, non-load-bearing wall) is not cover for it.
- Where the specification requires third-party certified ASTM D6817 conformance on delivery and project batch testing will not be accepted. On this product, conformance is demonstrated by sampling and testing the delivered blocks to ASTM D7557.

How to read this document. Where a figure is load-bearing in your design, confirm it for the material actually supplied — on any load-bearing application, by testing the product delivered to your site. That is the right way to buy from anybody, including us.

This is product information, not a design. It does not replace a competent person. Technopol SA (Pty) Ltd · info@technopol.co.za · +27 11 363 2780 · The test reports and certificates cited here are held by Technopol and their current status is available on request.