

STRUCTURAL · ENGINEERING SPECIFICATION

EPS Void Formers

This specification covers fire-retarded expanded-polystyrene (EPS) void formers — moulded Technoblocks and cut-to-shape blocks/sheets from Technopol's LiteCel/FRCel range — used as permanent, non-structural lightweight void fill cast into reinforced-concrete slabs and as civil geofoam fill.

Verified technical data

Property	Value	Standard
Product / build-up	Custom-cut fire-retardant EPS (expanded polystyrene) blocks & sheets, LiteCel/FRCel range, cut to project size; cast into slabs as lightweight void formers	—
EPS grades / nominal density	Six grades — 12SD, 15SD, 16DV, 20DV (HD), 24DV, 30DV (EHD); nominal density 12–30 kg/m ³	—
Thermal conductivity (λ, max @ 10 °C)	0.033–0.045 W/m·K	—
Compressive stress @ 10% deformation (min)	60–200 kPa	—
Safe working load @ 1% nominal compression (min)	15–100 kPa	—
Reaction to fire	Class B — B-s1,d0	SANS 53501-1
Dimensions	Cut-to-order blocks; raw stock widths 1200 & 1220, thickness 5–600, lengths to 7500 mm	—
Applicable standards / certification	Reaction-to-fire tested to SANS 53501-1 (B1 per SANS 10177-11 at ≤120 mm and ≤18 kg/m ³); manufacturer QMS ISO 9001:2015 (ISO 14001 & 45001 lapsed Mar 2026, recertification in progress)	SANS 53501-1

Scope

- 1.0** This specification covers the supply of moulded Technoblock and cut-to-shape EPS void formers, their material grades, geometry and reaction-to-fire status.
- 2.0** It covers the use of the formers as permanent lost formwork / void fill in suspended reinforced-concrete slabs and as civil geofoam and reusable chamber fillers.
- 3.0** It excludes structural design of the finished slab — spans, rib reinforcement, topping thickness, propping and de-propping remain the responsibility of the project structural engineer.
- 4.0** It excludes any load-capacity, span, deflection or fire-resistance rating for the finished concrete assembly.

Materials

- 5.0** The core material shall be expanded polystyrene (EPS) from Technopol's fire-retarded LiteCel/FRCel range.
- 6.0** The material shall be supplied either moulded to the Technoblock void-former shape or cut to the project's required size from raw EPS flat-sheet stock.
- 7.0** EPS shall be supplied in one of six graded densities — 12SD, 15SD, 16DV, 20DV (HD), 24DV, 30DV (EHD) — nominal density 12–30 kg/m³, selected to the structural specification.
- 8.0** The formers are supplied unfaced (bare EPS); in the structural application the EPS is fully encased in the cast concrete.
- 9.0** The moulded Technoblock's own EPS grade/density is not separately published and shall be nominated by the structural designer.

Performance

10.0 Thermal conductivity (λ , max @ 10 °C) ranges 0.033–0.045 W/m·K across the six grades; compressive stress @ 10 % deformation (min) 60–200 kPa; safe working load @ 1 % nominal compression (min) 15–100 kPa — all grade-dependent.

11.0 Dimensional stability shall be ≤ 1.0 % (7 days @ 80 °C) for all grades; service temperature stable to 80 °C long-term and 100 °C short-term.

12.0 Moulded sizes: TB120 550 × 320 × 120 mm (solid) and TB190 550 × 320 × 190 mm (three Ø80 mm longitudinal cores); cut-to-shape stock widths 1200 and 1220 mm, lengths to 7500 mm, thicknesses 5–600 mm.

13.0 The published compressive-stress and safe-working-load values describe the EPS material only and shall not be taken as a slab load capacity; no void-former-specific span, deflection or load-capacity table is established.

14.0 No Young's modulus, compressive-creep, cyclic-strength or long-term (e.g. 50-year) design values are established in Technopol sources; grade selection to limit creep shall be based on stress at 1 % and 10 % strain.

15.0 No R-value or U-value per-thickness table is established for the void formers; only λ per grade is published, from which $R = \text{thickness}/\lambda$ would be derived.

16.0 Vapour resistivity and vapour transmission are not stated for the 12SD grade.

Fire

17.0 EPS is combustible; fire-retarded FRCel grades shall be specified for fire-exposed uses.

18.0 The material carries a reaction-to-fire classification of Class B (B-s1,d0) to SANS 53501-1, tested on a 60 mm fire-retardant EPS sheet at $\pm 18.37 \text{ kg/m}^3$ (Ignis Test Laboratory, Cape Town; report no. 2023-08-17 Technopol; authorised 17 Aug 2023; classification valid 5 years).

19.0 The company profile additionally cites a B1 fire rating to SANS 10177-11 at $< 120 \text{ mm}$ for the FRCel material.

20.0 This classification is a reaction-to-fire (fire-growth-contribution) property of the EPS material only and is not a fire-resistance (REI integrity/insulation) rating.

21.0 The classification is scoped to the exact tested sample (a 60 mm generic FR-EPS sheet at $\pm 18.37 \text{ kg/m}^3$) and shall not be generalised to a moulded Technoblock or specific slab assembly.

22.0 In the structural void-former application the EPS is fully encased in structural concrete; any fire-resistance (REI) rating belongs to the finished concrete slab designed by the engineer, not to the bare EPS — no such REI rating for the bare EPS exists in Technopol sources.

Execution / installation

23.0 Pre-stressed lintels (ribs) shall span between supports, or ribs shall be cast in situ on temporary timber shuttering; for a suspended slab over heaving clay the blocks and reinforcement shall be laid on fully propped timber shuttering.

24.0 Technoblocks shall seat between the lintels/ribs via the moulded underside locating notch/key.

25.0 Rib reinforcement (typically 2 × Y12 per rib) and topping mesh (REF 193) shall be placed to the engineer's design.

26.0 Concrete topping shall be cast over and between the blocks (typically 65 mm on the #190 block, 255 mm total).

27.0 Shuttering and props shall be struck to the engineer's de-propping schedule.

28.0 The blocks are ultra-lightweight and placed by hand; the moulded top face is described as 'safe to walk on' during construction.

29.0 No tie-down / anti-flotation fixing detail is documented; measures against block uplift/buoyancy during the concrete pour shall be determined by the designer.

Standards & compliance

30.0 Reaction to fire: SANS 53501-1 — Class B (B-s1,d0), per Ignis report no. 2023-08-17 Technopol (60 mm FR-EPS sheet, ±18.37 kg/m³); company profile additionally cites B1 to SANS 10177-11 at < 120 mm.

31.0 Manufacturer quality management: ISO 9001:2015 is current.

32.0 Manufacturer ISO 14001 (environmental) and ISO 45001 (occupational health & safety) lapsed in March 2026 with recertification in progress; they shall not be cited as current.

33.0 Agrément SA certificate 2020/609 applies to the LiteCore Building System only and does NOT cover EPS void formers, the moulded Technoblock or geofoam; this product is not Agrément-certified in the sources reviewed.

34.0 NCHRP geofoam reports, SAPEM Chapter 10 and ASTM C578 are held only as third-party design-reference literature and are not statements of product conformity.

Specifier's notes — not established in Technopol sources.

- Not established: no void-former-specific span, deflection or load-capacity table exists — structural capacity of the finished slab is engineer-designed; obtain from the project structural engineer.
- Not established: no manufacturing dimensional tolerances (length/width/thickness/squareness/flatness, e.g. an EN 13163 tolerance class) are stated for cut or moulded blocks; obtain externally if required.
- Not established: the moulded Technoblock's own EPS grade/density, and its $\lambda/R/U$ -value, are not published; nominate the grade in the structural design.
- Not established: no Young's modulus, compressive-creep, cyclic-strength or long-term (e.g. 50-year) design values are published; such geofoam design data exist only in third-party references on file and must be obtained externally.
- Not established: no fire-resistance (REI) rating exists for the bare EPS; only the reaction-to-fire classification (B-s1,d0, SANS 53501-1, 60 mm sample) is verified — any REI belongs to the concrete slab assembly.

- Not established: no water-absorption/buoyancy data and no anti-flotation tie-down or reinforcement-fixing detail is documented; uplift during the pour is a designer responsibility.
- Not established: no R-/U-value per-thickness table for the void formers — only λ per grade is published.
- Not established: vapour resistivity and vapour transmission are blank for the 12SD grade.
- Not established: the 'Typical Physical Properties for Expanded Polystyrene' datasheet carries no visible revision date or document number, so its currency/version cannot be confirmed.
- Not established: no published propping/de-propping schedule, minimum bearing or minimum slab-support detail specific to the suspended-slab-over-heaving-clay case, and no formal installation datasheet — these are engineer-designed.
- Unresolved contradiction: the published brochure states the blocks are 'manufactured to EN 13163 / ASTM C578', but no Technopol datasheet, certificate or price list names either as a conformity standard; this conformity claim is unsubstantiated by primary sources and shall not be relied upon as fact.
- Unresolved contradiction: the company profile lists Agrément SA (2020/609) and ISO 14001/45001 as if current at company level, but 2020/609 covers only the LiteCore Building System and both ISO 14001 and 45001 lapsed March 2026 — do not read either as covering this product.
- Unresolved contradiction: the standard rib-and-block detail shows blocks seating on pre-stressed lintels, whereas the suspended-slab-over-heaving-clay case relies on temporary timber shuttering/propping; both are valid but distinct methods and the sources give no single unified installation datasheet reconciling them.

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Figures trace to Technopol technical documentation. Properties listed as "not established" are not covered by Technopol primary sources and must be obtained from a qualified source. Confirm exact figures for your specification with Technopol. Not for construction without project-specific verification.