

**PRODUCT BROCHURE**

2D Shapes & EPS Sheets (CNC Hot-Wire Cut)

Flame-retardant EPS cut to order: a CNC hot-wire-cut 2D profile to your drawing (bed 3000 x 1240 mm, 10 to 1030 mm thick) or a plain cut-to-size flat sheet from the price-list menu (widths 1200 / 1220 mm, lengths 2000 to 7500 mm, thickness 5 to 600 mm), in nominal density grades 12 to 30 kg/m³.

DOCUMENT
TP-BR-2D-SHAPES**ISSUED**
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2d-shapes**STATUS**
Issued for use

OVERVIEW

2D Shapes & EPS Sheets is a made-to-order cutting service. A heated wire melts a narrow kerf through a block of flame-retardant EPS, so profiles, curves, letterforms and cut-to-size sheets come off the bed to measurement, with no tearing and no crumbling. Three choices define what you get: the EPS grade, the thickness, and the cut profile.

The part is a single monolithic piece of expanded polystyrene shaped by cutting. It is not a laminate, not a faced panel and not a structural member. Technopol cuts it from its standard flat-sheet grades - nominal densities 12, 15, 16, 20, 24 and 30 kg/m³, plus a 27 kg/m³ cornice grade - and the EPS sheeting price list states that all of them are fire-retarded grades.

Grade drives performance. Maximum thermal conductivity runs from 0.045 W/m.K at EPS12 down to 0.033 W/m.K at EPS30, and compressive stress at 10% strain runs from 60 kPa at EPS12 up to 200 kPa at EPS30. Write the grade into the order, not just the thickness.

There are two size envelopes and they are not the same. A CNC hot-wire-cut 2D PROFILE is bound by the hot-wire bed: up to 3000 mm long by 1240 mm wide, and 10 mm (minimum order 10 sheets at that thickness, for packaging strength) to 1030 mm thick. A profile larger than the bed is cut as segments and joined, which puts a joint line in the part. A plain cut-to-size FLAT SHEET is not bound by that bed: the price list runs to standard widths of 1200 and 1220 mm, standard lengths of 2000, 2440, 2500, 3000, 4800, 5000, 6000 and 7500 mm, and a thickness menu from 5 to 600 mm. A 1200 x 6000 x 50 mm board is a price-list item and arrives in one piece.

Enclosed letterforms (A, D, O, P, R) carry a small deliberate break in the perimeter, because the wire has to enter, complete the cut in one continuous pass and exit. The break is made for precise rejoining and is glued closed on installation. Nothing is stocked pre-cut, so lead time follows size and complexity.

KEY FACTS

PROPERTY	VALUE
Cutting method	CNC hot-wire cutting, single continuous pass. Any 2D profile from a supplied drawing or brief.
Material	Expanded polystyrene (EPS), fire-retarded grades
Nominal density grades	12, 15, 16, 20, 24 and 30 kg/m³, plus a 27 kg/m³ cornice grade. Specify the grade explicitly on the order (for example 'EPS20 (20DV), 100 mm').
Thermal conductivity, lambda at 10 C (maximum)	0.045 (EPS12) / 0.040 (EPS15) / 0.038 (EPS16) / 0.035 (EPS20) / 0.034 (EPS24) / 0.033 (EPS30) W/m.K. The table gives lambda as a maximum, so $R = t / \lambda$ returns the minimum material R-value - the conservative figure to carry into a SANS 10400-XA calculation.
Compressive stress at 10% strain	60 / 65 / 80 / 110 / 160 / 200 kPa (min) for EPS12 / 15 / 16 / 20 / 24 / 30. This is a material classification figure, not a working load.
Safe working load at 1% strain	15 / 17 / 21 / 45 / 70 / 100 kPa (min) for EPS12 / 15 / 16 / 20 / 24 / 30. This is the limit to design sustained load against.

PROPERTY	VALUE
Reaction to fire	B-s1,d0 to SANS 53501-1, from the SBI test (SANS 53823) and the ignitability test (SANS 11925-2). Specimen scope: one bare, unfaced 60 mm sheet of FRCel 20DV at +/-18.37 kg/m3. Cite the class with that scope. It is a reaction-to-fire class, not a fire-resistance rating.
Fire resistance (REI, in minutes)	None. Cut EPS carries no fire-resistance rating. Do not specify it as a fire division, a compartment wall or any element that has to hold a rating in minutes.
CNC hot-wire PROFILE cutting envelope	3000 mm long x 1240 mm wide; thickness 10 mm (minimum order 10 sheets) to 1030 mm. A profile larger than the bed is cut as segments and joined.
Plain cut-to-size FLAT SHEET sizes	Standard widths 1200 and 1220 mm; standard lengths 2000 / 2440 / 2500 / 3000 / 4800 / 5000 / 6000 / 7500 mm; thickness menu 5 to 600 mm. A flat sheet within this menu arrives in one piece - only a cut PROFILE is bound by the 3000 x 1240 mm bed.
Cutting tolerance	Agree an acceptance tolerance in writing with the works before cutting starts, and measure the delivered parts against it.
R-value per thickness	Derive it from the grade lambda: $R = \text{thickness} / \text{lambda}$. Example: 100 mm EPS20 = $0.100 / 0.035 = 2.86 \text{ m}^2\text{K/W}$ (material only - it excludes surface resistances and every other layer in the build-up).
Self-weight	Grade density x thickness. Example: 100 mm EPS20 = $20 \times 0.100 = 2.0 \text{ kg/m}^2$ (about 0.02 kPa).
Supply model	Cut to order against a supplied drawing or brief. Nothing is stocked pre-cut; lead time follows size and complexity.
Quality certification	ISO 9001:2015, Reg. no. Q 2016024 (EQCSA, SANAS C22), valid to 2 June 2028. Scope includes EPS Blocks, EPS Sheets and EPS Cornice.

° Catalogue or declared value — Technopol holds no test report for this figure. It is the value we publish for the grade, not a measurement of the delivered batch. Where a figure is load-bearing in your design, specify batch testing. Every test report and certificate we do hold, with its current status, is at technopol.co.za/verify.

WHERE IT IS USED

- Cut-to-size EPS insulation sheets and boards - price-list sizes: widths 1200 / 1220 mm, lengths to 7500 mm, thickness 5 to 600 mm
- Tapered, cut-to-falls boards and upstand fillets for a warm-roof build-up (insulation above the deck, below the membrane). The membrane must be cold-applied, self-adhesive, loose-laid and ballasted, or mechanically fixed - or the EPS must be overlaid with a separating board (cement-bonded or fibre-reinforced) before any torch-on work. Hot-applied bitumen never goes directly onto EPS. Plasticised PVC membranes need a separating layer. Keep the sustained stress from ballast, pavers and maintenance traffic at or below the grade's safe working load at 1% strain.
- Hot-wire-cut pipe insulation and lagging profiles
- EPS cornices and 2D architectural mouldings
- 2D letters, signage, display shapes and suspended ceiling features
- Decorative work - tapered cones, pillars, cake dummies, block stock
- Protective packaging and void fill
- Bushes and refractory pattern work

- Void formers, tapered transition wedges, battered abutment faces and service cut-outs alongside geofoam block fill

WHERE NOT TO USE IT

- Not for use as a spanning or load-bearing element of any kind. Cut EPS carries no span and no load capacity. If you need an insulated panel that spans between purlins, that is a different product (LiteSpan), and every span for it comes from the ITT-calibrated load/span design tables, quoted with its load case and its support condition.
- Not for use as a fire division. A fire division needs a fire-resistance rating in minutes (E / I / R); cut EPS carries a reaction-to-fire class, which is a different thing. Keep it out of fire divisions, compartment walls, boundary walls and escape routes, and out of any position where non-combustible insulation is required. All EPS is combustible - the fire-retardant grade is treated, not non-combustible.
- Not for use above roughly 70-80 C. EPS softens and creeps there. Keep it clear of flues, hot pipework, roof-plant discharge, halogen luminaires, hot-applied bitumen and hot works.
- Not for use with solvent-based finishes or adhesives - lacquers, contact adhesives, polyester resin, aerosol spray cans, solvent primers. Aromatic solvents dissolve EPS on contact: the surface pits and craters within minutes and cannot be repaired to a finish standard. Use water-based, EPS-safe products, or hard-coat the part first and only then apply a solvent-based topcoat. Test on an offcut every time.
- Not for use uncoated outdoors. EPS degrades under prolonged UV. Hard-coat or render every part that stays outside.
- Not for sustained load designed off the 10%-strain compressive figure. The 60-200 kPa numbers are the failure region. Sustained stress must sit at or below the 1%-strain safe working load (15-100 kPa by grade), or the part creeps.
- Not for permanently wet duty - inverted (protected-membrane) roofs, submerged fill, freeze-thaw exposure. Long-term immersion lets EPS take up moisture, which adds mass and reduces its thermal resistance. Use XPS for that layer, or move the insulation below the membrane in a warm-roof build-up where it stays dry.
- Not for a cut PROFILE bigger than the hot-wire bed - over 3000 x 1240 mm, or thicker than 1030 mm. It has to be cut as segments and joined, and those joint lines telegraph through thin paint and skim coats. Put the joints on a shadow line, or use the 3D-milling service, where puzzle-jointed builds are standard. This limit does not apply to plain flat sheet: standard sheets run to 1220 x 7500 mm, 5 to 600 mm thick, in one piece.

How to read this document. Every technical value carries a label saying where it came from — whether an accredited laboratory measured it, whether Technopol measured it, or whether it is simply the figure the standard tabulates for that class of material. Values we have not tested are marked as such rather than presented as test results.

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