



INSTALLATION GUIDE

Bulk Insulation — Fire-Retardant EPS Flat Sheets and Boards (FRCel / LiteCel)

Rigid closed-cell fire-retardant expanded polystyrene, moulded in blocks and hot-wire cut to flat sheets and boards, supplied in eleven grade codes across six nominal densities from 12 to 30 kg/m³ as a non-structural thermal infill.

DOCUMENT

TP-IG-BULK-INSULATIO

ISSUED

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PRODUCT

bulk-insulation

STATUS

Issued for use

BEFORE YOU START

Bulk EPS board is a non-structural infill: it must sit on, or be captured by, something that carries it. Before any board goes in, the supporting surface must be **CONTINUOUS** (the board does not span), **CLEAN** (a dusty or muddy face will not bond and will not sit flat), **DRY** enough for the adhesive or the following trade, **FLAT** (proud stones, mortar snots and weld splatter puncture the board and telegraph through a render), and **FREE OF ANYTHING HOT OR SOLVENT-BORNE**. Specifically: under a slab, the subgrade must be compacted and blinded with sand — boards laid straight onto stone get punched through by the concrete. In a cavity, the inner leaf must be clean of mortar squeeze and the cavity clear of droppings. On a warm-roof deck, the deck must be swept and the membrane system confirmed in writing as EPS-compatible — cold-applied, self-adhesive or mechanically fixed, never torch-on and never over a solvent bitumen primer. On an ETICS wall, the substrate must be sound and free of laitance and release agent, and the adhesive cementitious or otherwise solvent-free. If the support is not continuous, stop: the board is not the product for that condition.

TOOLS

- Hot-wire cutter (bench or hand-held) — the clean way to cut EPS and the only way to get a tight butt joint
- Fine-tooth handsaw or a long sharp blade for site trimming
- Rasp or surform for dressing a cut face flat
- Long straightedge, chalk line, tape and a soft (non-solvent) marker — solvent markers eat the board
- Spirit level and string line for setting out cavity boards and ETICS courses
- EPS-compatible cementitious adhesive and a notched trowel (ETICS)
- Mechanical anchor discs with a wide washer plate, plus a hammer drill
- Wall ties to SANS 28 (stainless in coastal exposure) and a small hammer
- Mesh scissors for the glass-fibre reinforcing mesh
- Vapour-barrier sheet, lapping tape and a roller
- EPS-compatible gap filler for butt joints — not a solvent-carried expanding PU foam
- Cavity batten (a board on a string, lifted as the leaf rises) to catch mortar droppings
- Soft brush and rubbish bags: EPS beads travel, and a beaded site is an unhappy neighbour

SEQUENCE

1 • Take the delivery in properly

Check the delivered board against the specification before a single sheet is cut. Confirm the numeric GRADE CODE (20DV, 16DV, 15SD) rather than a letter class. Confirm the thickness by measuring it, not by reading the label. Count the sheets. Reject wet, crushed, yellowed or beaded-up boards: yellowing means the board has already sat in the sun and the surface is friable. Dimensional tolerances are not published for cut EPS sheets, so if flatness or thickness accuracy matters to your assembly, measure a sample now and settle it before you build it in.

CHECK BEFORE MOVING ON

- Grade code on the packaging matches the specified numeric code (e.g. 20DV)
- Measured thickness matches the specified thickness
- Boards dry, square, unyellowed, undamaged
- Any cut-to-order item outside the priced envelope (over 1220 mm wide, over 600 mm thick) is confirmed on the order before it goes in

2 • Store it out of the sun and away from every ignition source

EPS is not UV-stabilised. Boards left in the open chalk, yellow and go friable within weeks, and a friable face will not hold a render bond. Stack flat, off the ground, on a clean level surface, under cover or under an opaque sheet with airflow beneath it. Keep the stack away from hot works: grinding sparks, welding, cutting torches, angle grinders, bitumen kettles. Store below 70 C — a black-sheeted stack on a Highveld summer afternoon will exceed that. Keep petrol, diesel, solvents, thinners and solvent-borne primers physically separated from the stack; a spilled cup of thinners will eat straight through the pallet.

CHECK BEFORE MOVING ON

- Stack flat, off the ground, covered and shaded
- No hot works, welding, grinding or bitumen kettle in the working area of the stack
- No hydrocarbons or solvents stored on or near the boards
- Stack restrained — EPS is light, and a gust will take a whole pallet across the site

3 • Set out and cut

Measure the actual opening, not the drawing. Cut with a hot-wire wherever you can: a hot-wire gives a straight, square, tight-fitting edge and a handsaw does not. Cut tight — the joint should close on friction, not on a smear of adhesive. Dress cut faces flat with a rasp. Stagger vertical joints between courses. Keep the offcuts: an offcut with one factory edge goes back into the run, and clean EPS waste is recyclable and Technopol takes it back.

Cut the hot-fitting clearances now, not later. Every downlight, flue, geyser vent, hot duct and hot pipe gets its clearance cut and its non-combustible collar or hood fitted before the board is closed up. Nobody comes back to do this afterwards.

CHECK BEFORE MOVING ON

- Joints close tight on friction — no gap above about 2 mm
- Vertical joints staggered course to course
- Cut faces dressed flat, not ragged
- All hot-fitting clearances cut and collared before covering

4 4a • CAVITY WALL — build the board in as the outer leaf rises

Set the board flat against the inner leaf and build the outer leaf up against it. **RETAIN THE CLEAR AIR GAP** on the outer face — 25 mm for a flat cavity board. That gap is the drainage path for rain that gets through the outer leaf. It is not a construction tolerance and it may not be closed.

Wall ties to SANS 28 at 340 mm vertical x 600 mm horizontal centres, approximately 5 ties/m². Stainless-steel ties in coastal exposure, per SANS 28 Appendix D. Form a drip in each tie inside the cavity so that water running along the tie falls off before it reaches the inner leaf. Push the tie through a slit cut in the board, not through a torn hole.

At the base: drape the DPC from the inner face down to the outer, stop the outer leaf one course below, and cut the EPS level so the DPC lies flat. Weep holes in the vertical joints at 600 mm centres above the tray. Carry perimeter insulation down the foundation wall where the detail calls for it. Brickforce per the engineer.

KEEP THE CAVITY CLEAN. Lift a cavity batten as the work rises to catch the droppings. One mortar snout bridging the gap will conduct water across to the inner leaf and produce a damp patch that gets blamed on the insulation for the next thirty years.

CHECK BEFORE MOVING ON

- 25 mm clear air gap retained on the outer face — check it with a gauge, not by eye
- Ties at 340 x 600 mm (approx. 5/m²); stainless if coastal; drip formed in the cavity
- Cavity swept clean at every lift — no snots bridging the gap
- DPC draped inside-to-outside, EPS cut level so it lies flat
- Weep holes clear, at 600 mm centres, above the tray

5 4b • UNDER-SLAB / UNDER-SCREED — build the sandwich in the right order

Compact the subgrade and **BLIND IT WITH SAND**. Boards laid on stone get punched through when the concrete lands on them, and afterwards you can neither see it nor fix it.

Lay the DPM on the blinded subgrade, lapped and taped. It goes **UNDER** the board, not over it. Lay the boards tight-butted and staggered, with no gaps — a 5 mm gap is a cold line and a moisture path straight through the assembly. Do not lay a second membrane over the boards - the detail is one DPM, beneath them. Install the 30 mm perimeter board vertically against the wall, full slab depth, to isolate the slab edge and break the thermal bridge. Then cast the slab.

Grade: 20DV or 24DV where the concrete above is more than 20 MPa and more than 75 mm thick; 30DV for high-traffic floors. Never a light grade under a floor — it gives a hollow, drumming, unstable slab.

Check the sustained bearing stress against the safe working load at 1% strain — 45 kPa for 20DV, 70 for 24DV, 100 for 30DV — and not against the 10%-strain figure. Racking, forklifts and vehicles must be designed by a competent civil engineer.

CHECK BEFORE MOVING ON

- Subgrade compacted AND sand-blinded — no stones proud of the surface
- Lower DPM lapped, taped and undamaged
- Boards tight-butted and staggered; no gaps above 2 mm
- Upper vapour barrier laid and lapped **BEFORE** the concrete goes on
- 30 mm perimeter board in place, full slab depth
- Boards not run over with loaded wheelbarrows — lay scaffold boards over the run

6 4c • WARM ROOF — insulation above the deck, below the membrane

This is the correct roof application for EPS. Sweep the deck. Lay the vapour control layer on the warm side, on the deck, below the insulation. Lay the boards tight-butted and staggered, fully supported by the deck. Then lay the waterproofing over them.

THE MEMBRANE IS NEVER TORCHED. The board's service limit is 80 C; a torch flame is orders of magnitude above that and will melt, shrink and ignite the board under the membrane you are laying. Use a cold-applied, self-adhesive or mechanically-fixed membrane, or interpose a cement-bonded overlay board so the flame never sees the EPS. Solvent-borne bitumen primers dissolve the board: water-based or solvent-free only, confirmed in writing by the membrane manufacturer.

Ballast, fix or cover the boards on the day they are laid. An unballasted EPS board on a roof is a very large, very light sail.

The insulation goes BELOW the waterproofing. Never above it.

CHECK BEFORE MOVING ON

- Vapour control layer on the warm side, continuous
- Boards fully supported and tight-butted; no board bridging a deck opening
- Membrane system confirmed in writing as EPS-compatible — no torch-on, no solvent primer
- Boards ballasted, fixed or covered the same day — never left loose overnight
- Insulation is BELOW the waterproofing, not above it

7 4d • ETICS / EIFS BACKING — bond, anchor, mesh, render

Bond the boards to a sound, clean substrate with an EPS-compatible cementitious adhesive, then mechanically anchor them with wide-washer discs. Set out from a base track with a drip, and terminate the insulation above the splash / ground line — do not run it into the ground.

Stagger the vertical joints and interlock the boards at corners. Rasp the whole face flat before meshing: a step at a board joint telegraphs through a 5 mm render for the life of the building. Bed the glass-fibre reinforcing mesh into the first render coat, lapping it at joints and doubling it at every opening corner, then apply the finishing coat.

Render promptly. Every week the board sits open in the sun is a week of UV degradation, and a friable face will not hold the basecoat. If the board has yellowed, rasp it back to sound material before rendering.

At ground level and in any high-abuse zone — loading yards, plant rooms, public frontages, agricultural buildings — double the mesh or use an armoured base detail. A rendered EPS skin has low impact resistance and it will be punched through.

Know the fire position before you start. The board's B-s1,d0 is a core-material reaction-to-fire class, not a system rating. On a tall or high-consequence facade, the fire strategy is a system-level design with cavity barriers, non-combustible bands or a mineral-wool layer, agreed with the approving authority.

CHECK BEFORE MOVING ON

- Adhesive and primer are solvent-free / EPS-compatible — confirmed in writing, not assumed
- Boards mechanically anchored as well as bonded; joints staggered; corners interlocked
- Face rasped flat — no steps at board joints
- Insulation terminates above the splash line on a base track with a drip
- Mesh lapped at joints and doubled at every opening corner
- Rendered promptly; any yellowed surface rasped back to sound material first

8 5 • Close out the hot fittings and the penetrations

Walk the whole installation before it is covered and check every penetration. Flues, chimneys, geyser vents, recessed downlights, hot ducts, hot pipes: the EPS is held back to the clearance required by the appliance manufacturer and by SANS, and the hot zone is filled with stone wool or a non-combustible collar. Fit a non-combustible fire hood over every recessed luminaire. This is a fire-safety limit and no reaction-to-fire class changes it: B-s1,d0 describes a board in a burn chamber, not a board packed against a hot flue for ten years.

CHECK BEFORE MOVING ON

- Every flue, vent and hot pipe has its full clearance, filled with stone wool
- Every recessed downlight has a non-combustible hood
- No EPS in contact with any surface that will exceed 70–80 C
- Service penetrations sealed with an EPS-compatible, solvent-free sealant

9 6 • Cover it, and hand it over

EPS is always a covered material. Nothing about this product is a finished surface. Get the brick, the screed, the ceiling board, the membrane or the render on as soon as the installation is signed off.

Before covering, PHOTOGRAPH the installed board: grade markings, joints, clearances, tie rows, the DPM under the board, perimeter board. Once the concrete is cast or the outer leaf is up, nobody can inspect this layer again for the life of the building, and the photographs are the only record that it was built as specified.

Sweep up the beads. Bag the offcuts — clean EPS is recyclable and Technopol takes it back.

CHECK BEFORE MOVING ON

- Photographic record taken of the installed layer BEFORE covering
- No EPS left exposed as a finished surface anywhere
- Site swept; beads and offcuts bagged, not blown into the neighbour's yard

FIXINGS AND FASTENERS

Cavity wall ties	SANS 28 wall ties at 340 mm vertical x 600 mm horizontal centres (approx. 5 ties/m²). Stainless steel in coastal exposure (SANS 28 App. D). Form a drip in the cavity. Push the tie through a cut slit, not a torn hole.
Cavity air gap	Retain 25 mm clear on the outer face of a flat cavity board. It is the drainage path, not a tolerance, and it may not be closed.
Weep holes	In the vertical joints of the outer leaf at 600 mm centres, immediately above the DPC / cavity tray.
Under-slab	No mechanical fixing. Boards tight-butted and staggered on a sand-blinded, compacted subgrade over a DPM laid under the board, plus a 30 mm perimeter board at the slab edge, full slab depth.
Warm roof	Boards fully supported on the deck; vapour control layer below them. Membrane cold-applied, self-adhesive or mechanically fixed only. Ballast, fix or cover the same day.
ETICS / EIFS	EPS-compatible cementitious adhesive PLUS mechanical anchor discs with a wide washer plate. Glass-fibre reinforcing mesh bedded in the first render coat, lapped at joints, doubled at every opening corner.
Adhesives and sealants	Solvent-free / EPS-compatible only — a cementitious adhesive, or Technopol's two-part PU adhesive. Never a solvent-borne bitumen primer, a solvent-carried mastic, or a torch.
Joint filling	Cut tight so the joint closes on friction. Where a gap must be filled, use an EPS-compatible filler, not a solvent-carried expanding foam.
Support	Continuous. The board does not span and carries no span rating. Do not set a support spacing from its cross-breaking strength, and do not carry one across from a composite panel. Where an element must span, use LiteSpan and its load/span design tables.

WHAT ACTUALLY GOES WRONG ON SITE

- Designing sustained load against the 10%-strain crush figure (60–200 kPa) instead of the 1%-strain safe working load (15–100 kPa). This is the classic one. Nothing fails on the day — the slab just keeps settling for the next ten years.
- Mortar droppings bridging the cavity air gap. One snot conducts water across to the inner leaf and produces a damp patch that gets blamed on the insulation forever. Lift a cavity batten as the work rises.

- Torching a bitumen membrane onto EPS, or priming the deck under it with a solvent bitumen primer. The board melts and dissolves under a membrane you have already laid, and nobody sees it until the thermal survey.
- Laying under-slab board straight onto unblinded stone. The concrete punches the board through, and the insulation you paid for is now a set of holes under an intact slab.
- Leaving butt joints open. A 5 mm gap is a thermal bypass and a condensation line. Cut with a hot-wire and close the joints on friction.
- Leaving the board in the sun for weeks before rendering. The face goes friable, the basecoat lets go, and the render debonds in sheets two years later.
- Packing insulation tight around downlights, geyser vents and flues because it was easier than cutting the clearance. EPS is combustible and softens from about 70–80 C.
- Substituting a lighter grade on site because "it's just insulation". At the same thickness, 12SD gives about 27% less R than 30DV (λ 0.045 against 0.033) and roughly a seventh of the sustained-load capacity (15 kPa against 100 kPa).
- Ordering by a letter class ("SD", "HD") instead of the numeric grade code. Specify 30DV, 24DV, 20DV, 16DV, 15SD or 12SD, exactly as written — those are the six codes with declared properties, and codes at the same density are not interchangeable.
- Assuming 100 mm of board on the ceiling equals SANS 10400-XA compliance. XA:2021 asks for a TOTAL assembly R of 3.7 m².K/W in every zone (2.7 only in Zone 5H humid-coastal, and only with a ventilated roof); XA:2011 was zone-specific. A board R is not an assembly R.
- Standing racking legs, plant feet or paver pedestals over insulation without a load-spreading slab. A 30 kN rack foot puts about 190 kPa onto the board even after spreading through 150 mm of concrete — nearly twice the design limit of 30DV, the densest grade made.
- Treating a warm roof as an inverted roof by putting the insulation above the waterproofing. The board is not an immersion board, and the R-value you specified is not the R-value you will have in year ten.
- Using the board as a spanning element between purlins or rafters. It is continuously supported, full stop. Where something must span, that is LiteSpan and its load/span tables.
- Covering the layer without photographing it. Once the slab is cast or the leaf is up, nobody will ever see it again.

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