TECHNOPOL SA
ENERGY SAVING MATERIALS

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INSTALLATION GUIDE

PolyKey Cavity Insulation

A moulded, fire-retardant EPS element, 340 x 1200 mm with a stepped 60/40 mm tongue-and-groove profile, built course-by-course into the cavity of a double-leaf masonry wall as the outer leaf goes up.

DOCUMENT	ISSUED	PRODUCT	STATUS
TP-IG-POLYKEY-CAVITY	2026-08-05	polykey-cavity	Issued for use

BEFORE YOU START

PolyKey is not fixed to a substrate. It is BUILT INTO the wall as the wall goes up, by the bricklaying gang, in the same lift as the brickwork. Before the first element is unwrapped, all of the following must be true. (1) The wall is a new double-leaf (double-skin) masonry cavity wall. If the cavity is already closed, stop - PolyKey cannot be retrofitted and the wrong product has been ordered. (2) The engineer has confirmed the cavity width and the wall-tie type, length and schedule for a cavity that now contains a 60/40 mm element; a tie sized for an empty cavity may be the wrong length. (3) The brickwork gauge is set and the storey rod is marked so that four courses of the delivered brick and joint gauge the 340 mm element height. (4) The DPC, cavity-tray and weep-hole strategy is drawn, including the vertical DPMs at reveals. (5) The foundation and perimeter detail - PolyKey to the foundation wall above DPC, the 50 mm HD EPS sheet under the slab, the 30 mm perimeter board - is either drawn or explicitly deleted. (6) There is dry, covered, off-ground storage on site: EPS left in the sun goes friable at the tongue, and elements that reach the wall wet and muddy will not seat in the T&G.

TOOLS

- Wood saw or fine-tooth hand saw - the element is cut with a wood saw (a hot-wire cutter is a factory tool, not a site one)
- Steel tape; spirit level (1 m and 2 m); plumb bob or laser
- Gauge rod / storey rod marked at the brick course and at 340 mm element lifts
- Line and pins, corner blocks
- Trowel, brick hammer, bolster
- Soft brush, and a cavity batten (a timber batten laid on the ties to catch mortar droppings, lifted out clean at each lift)
- Wall ties, brickforce, DPC roll, vertical DPM strip, cavity trays, weep-hole formers or vents - all to the engineer's specification
- EPS-compatible (water-based) waterproof mastic for frame edges - not a solvent-based sealant
- Frame cramps (for built-in frames), or plastic sleeves and toughened zinc screws (for pre-formed openings)
- Sharp knife for trimming the tongue and groove on cut edges

SEQUENCE

1. Confirm the design and the delivery before you lay a brick

Check that the drawing calls for the PolyKey T&G element (340 x 1200 x 60/40 mm) and not the plain Cavity Wall board (50 / 100 / 150 mm with a 25 mm air gap). They are different products, they are built in differently, and their figures are different. Confirm the wall-tie type and length with the engineer for a cavity that CONTAINS the element. Confirm the tie schedule: Technopol's detail is 5 ties/m2 at 600 mm horizontal x 340 mm vertical centres, and the masonry code and the engineer govern. Get it in writing before the wall goes up, because you cannot add ties afterwards.

CHECK BEFORE MOVING ON

- The drawing names PolyKey element or Cavity board, and the right one is the one on site
- Engineer's tie schedule, tie type and tie length confirmed in writing
- Cavity width on the drawing matches the element thickness plus any required drainage gap
- Element count checked against wall area: 2.45 elements per m2, plus cuts and waste
- Dry, covered, off-ground storage laid on before the load arrives

2. Set out the gauge

Mark the storey rod. The element is 340 mm high and the ties go in at every fourth course, so four courses of brick plus joint must come to 340 mm - 85 mm a course. Every fourth course has to land exactly on the top of an element, because that is where the ties are pressed into the upward tongue. Check the gauge against the bricks actually delivered, not against the rod you used on the last job. If the brick or the joint is different, 340 mm will not divide into four courses, and the ties, the elements and the DPC will fight each other all the way up the wall.

CHECK BEFORE MOVING ON

- Four courses of the delivered brick, dry-laid with a real joint, measure 340 mm within a few millimetres
- Storey rod marked at the course height and at 340 mm element lifts
- Tie positions marked on the rod at every 4th course
- DPC, cavity-tray and lintel levels marked on the same rod, so they land on element joints and not mid-element

3. Foundation and perimeter, then the inner leaf to slab height

Where the detail calls for it, install the perimeter insulation to the foundation wall (above the DPC), the 50 mm HD EPS sheet under the slab, and the 30 mm board around the slab perimeter. The under-slab sheet is a plain HD EPS board, not PolyKey: it is a separate, engineered component, it must be fully encapsulated, and it must be kept clear of ground water, fuel and solvents. Then build the inner (stock brick) leaf up to the required slab height and cast the slab.

CHECK BEFORE MOVING ON

- Under-slab and perimeter EPS fully encapsulated and undamaged; no solvent primer or bitumen used against it
- No PolyKey element below the DPC or in ground contact
- Inner leaf plumb and to gauge at slab height
- Cavity clean - no mortar snots left on the ties or on the leaf faces

4. Raise the outer leaf and build the elements in, course by course

This is the whole method: the element goes in AS the outer face-brick leaf rises - not before it, and not after. Set the first element on a clean, level bed. Engage the tongue and groove on every edge: top, bottom and both ends. Butt the vertical joints tight and stagger them between courses, brick-fashion. Never leave a gap because the plaster will cover it - this joint is inside the cavity forever, and an open joint is a direct convective bypass that shows up as a wet patch on the finished inside face at the first cold snap. Cut elements with a wood saw and trim the T&G on cut edges so the next element still seats. Where the detail requires a residual drainage gap, keep the element off the back of the outer leaf so that gap survives. Lay the cavity batten on the ties before each lift and lift it out clean.

> **CHECK BEFORE MOVING ON**
>
> - Every T&G joint closed - run a hand down each vertical joint before the next brick course covers it
> - Vertical joints staggered between element courses
> - No mortar sitting on top of a tongue where the next element has to seat - brush it off now, not later
> - Cavity batten lifted and cleaned at every lift; no mortar droppings resting on the elements or bridging the cavity
> - Element continuous around external corners and returns - no open corner joint
> - Residual drainage gap maintained where the detail calls for one

5. Wall ties and brickforce

Place the wall ties to the engineer's schedule. Technopol's detail is 600 mm horizontal x 340 mm vertical centres - every fourth course - which is 5 ties per square metre, pressed into the upward tongue of the horizontal joint so that each tie is bedded in mortar in BOTH leaves. The ties are what tie the wall together. The element is not a wall tie, and not one tie may be omitted because the element is there. Lay brickforce to the engineer's specification, over the PolyKey tongue and groove where the detail shows it. Set the ties so they fall away from the inner leaf, so any water on a tie drains outward.

> **CHECK BEFORE MOVING ON**
>
> - Tie count on a measured square metre of wall equals the engineer's number
> - Every tie bedded in mortar in BOTH leaves, not just resting on the element
> - Ties fall outward and are free of mortar bridges that would carry water inward
> - Brickforce laid at the engineer's courses, not when someone remembers

6. DPC, cavity trays and weep holes

Stop the outer leaf one course down to install the DPC. Cut the PolyKey level horizontally with the top of the outer-leaf brick, so the DPC beds flat and is not kinked over a proud element edge - a kinked DPC is a leak. Install the DPC draping from the INSIDE down to the OUTSIDE, so any water reaching it runs out of the wall rather than into it. Then continue the outer leaf, leaving weep holes at 600 mm centres. Fit a cavity tray over every opening and at every interruption of the cavity, with weeps above it. Keep the weeps clear: the cavity's job is still to drain, and an insulated cavity that cannot drain is worse than an empty one.

> **CHECK BEFORE MOVING ON**
>
> - PolyKey cut dead level with the top of the outer-leaf brick before the DPC goes down
> - DPC drapes inside, down, then out; continuous; laps sealed; no kinks and no mortar bridging over it
> - Weep holes at 600 mm centres, open, and above the DPC or cavity tray - poke one to prove it
> - Cavity trays over every opening and interruption, with weeps above them

7. Openings - frames, jambs, heads and sills

Frames are either built in as the work proceeds or fitted into a pre-formed opening afterwards.

Built-in frames are plumbed, squared and braced before any brickwork, then the wall is built around them. Secure them with metal cramps fixed to the back of the frame, positioned so each cramp lands on a horizontal brick joint: lay the cramp on the bricks and build on top of it. Get the frame plumb and level here, or you pay for it when the reveals are plastered and the door will not hang.

Frames fitted to pre-formed openings are fixed with a plastic sleeve encasing a toughened zinc screw, then sealed at the outer and inner edges with a waterproof mastic. That mastic must be EPS-compatible - a solvent-based sealant at the reveal will dissolve the element behind it. Cut the elements around the frames with a wood saw.

At jambs, close the cavity with a suitable frame or by returning the inner leaf towards the outer leaf. Where the inner leaf abuts the outer leaf, insert a vertical DPM to stop moisture passing through. It must extend into the cavity so mortar cannot bridge it, and where 100 mm blocks are used the DPM must be 150 mm.

At heads, fit a cavity tray over the opening with weep holes above it, so water caught on the tray leaves the wall instead of running onto the lintel and into the inner leaf.

At sills, the sill must shed rainwater from the frame and away from the wall below. Where the sill is small, bed a cavity-closing brick below the inner window board to give the board a solid base - and insulate that closer from the external face, or you have just built a cold bridge straight through the wall at every window.

> **CHECK BEFORE MOVING ON**
>
> - Built-in frames plumb, square and braced BEFORE the wall was built around them
> - Every reveal where the leaves abut has a vertical DPM extending into the cavity; 150 mm where 100 mm blocks are used
> - Cavity tray and weeps over every opening
> - Cavity closer at sills insulated from the external face
> - Mastic and any primer confirmed EPS-compatible (water-based) - read the tin, not the drawing
> - Elements cut cleanly around frames, with the T&G still engaging on the sound edges

8. Protect, close up and finish

Keep unused elements stacked flat, off the ground and under cover: UV degrades unprotected EPS and a sun-baked element goes friable at the tongue. Keep the element clear of chimneys, flues, boiler and heater vents and any hot service, and provide non-combustible sleeving and the specified clearance at every hot penetration through the cavity. Separate PVC-sheathed cables from the EPS. Then finish the wall - internal plaster or dry lining. The element must end up fully encapsulated between the two masonry leaves and covered. It is never a permitted exposed surface: encapsulation is not a finishing detail here, it is the fire strategy.

> **CHECK BEFORE MOVING ON**
>
> - No element left standing in the sun for weeks, and none built in wet or muddy
> - No solvent adhesive, bitumen primer or PVC cable in contact with any element
> - Clearance and non-combustible sleeving at every flue or hot penetration
> - Internal finish complete - no EPS visible anywhere in the finished building

FIXINGS AND FASTENERS

Wall ties - spacing	**5 ties/m2: 600 mm horizontal x 340 mm vertical centres, i.e. every 4th course. The engineer's schedule and the masonry code govern - get it in writing before the wall goes up.**
Wall ties - placement	**Pressed into the upward tongue of the horizontal joint; bedded in mortar in BOTH leaves; falling outward so water drains away from the inner leaf.**
Wall ties - type and length	**Per the project engineer, sized for a cavity CONTAINING a 60/40 mm element and for the exposure's corrosion category. A tie chosen for an empty cavity may be the wrong length.**
Brickforce	**Per the engineer's specification; laid over the PolyKey tongue and groove where the detail shows it.**
Cavity DPC at slab	**Draped from the inside DOWN to the outside. Outer leaf stopped one course down; PolyKey cut level horizontally with the top of the outer-leaf brick so the DPC beds flat.**
Weep holes	**600 mm centres in the outer leaf, above the DPC or cavity tray, and kept clear.**
Cavity trays	**Over every opening and at every interruption of the cavity, with weep holes above them.**
Vertical DPM at reveals	**Required wherever the inner leaf abuts the outer leaf. Extends into the cavity to prevent mortar bridging. 150 mm where 100 mm blocks are used.**
Frames - built in as work proceeds	**Metal frame cramps fixed to the back of the frame, each cramp landing on a horizontal brick joint; laid on the bricks and built over.**
Frames - pre-formed openings	**Plastic sleeve encasing a toughened zinc screw; frame edges then sealed inside and out with waterproof mastic.**
Sealants, mastics, primers, adhesives	**EPS-compatible (water-based) only. No solvent-based sealants, no bitumen or petroleum primers - they dissolve EPS inside a cavity nobody can inspect.**
Fixing the element itself	**None. The element is not screwed, nailed or glued to either leaf - it is bedded and keyed into the mortar courses as the wall rises.**
Cutting	**Wood saw. Trim the tongue and groove on cut edges so the adjoining element still seats.**

WHAT ACTUALLY GOES WRONG ON SITE

- Ordering it for a retrofit. It cannot be posted into a closed cavity - it is bedded into the mortar courses as the leaves rise. If the wall is already up, the wrong product has been bought.
- Leaving mortar sitting on the tongue. The next element rides high, the joint stands open, and there is now a permanent convective bypass inside the wall. It shows up months later as a damp patch on the inside face, by which time the wall is plastered and painted.
- Letting the brick gauge drift. Four courses must equal the 340 mm element. Once the gauge slips, the ties stop landing on the tongue and the DPC stops landing level, and every fix from there is a bodge.
- Butting elements loosely and telling yourself the plaster will cover it. It is inside the cavity forever. Nobody will ever see it, and everybody will feel it.
- Omitting wall ties because the element is in the cavity. The element ties nothing. The detail requires 5 ties/m2 and not one may be left out.
- Bedding the element hard against the back of the outer leaf where the detail calls for a residual drainage gap, so water crossing the outer leaf now has a path to the inner leaf.

- Bridging the DPC with mortar, or blocking the weep holes with droppings. An insulated cavity that cannot drain is worse than an empty one.
- Kinking the DPC over a proud element edge, because the PolyKey was not cut level with the top of the outer-leaf brick.
- Forgetting the vertical DPM where the inner leaf returns to abut the outer leaf at a reveal, or fitting it short so mortar bridges it. 150 mm where 100 mm blocks are used.
- Leaving the cavity closer at a small sill uninsulated from the external face. That is a straight cold bridge at every window.
- Using a solvent-based mastic, a bitumen primer or a contact adhesive anywhere near the element, or running PVC-sheathed cable against it. The EPS dissolves out of sight.
- Building the element in below the DPC or into ground contact. It belongs above the DPC, out of standing water; below-ground EPS is a separate, engineered component.
- Stacking elements in the sun for a fortnight. UV makes the surface friable and the tongue crumbles on assembly.
- Building the element up against a flue or a chimney breast. EPS softens and creeps above roughly 70-80 C, and all EPS is combustible - the fire-retardant grade is treated, not non-combustible.
- Passing R = 2.0 m2K/W up the line as the whole wall's R-value. It is the element's figure, measured with the wall ties in place. The masonry leaves, the internal finish and the surface resistances sit outside it, and a wall U-value for a submission has to be modelled from the assembly.

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