



Personal Panel Door (insulated EPS sandwich-panel personnel door)

A made-to-measure single-leaf pedestrian door whose leaf is cut from the same Chromadek-faced, fire-retarded EPS (FRCel) sandwich panel as the wall it sits in, hung in a lipped steel C-section jamb that either clips over the cut edge of an EPS panel wall or fits inside a brick reveal.

DOCUMENT	ISSUED	PRODUCT	STATUS
TP-DG-PANEL-DOORS	2026-07-15	panel-doors	Issued for use

INTRODUCTION

This guide is for the engineer, specifier or estimator putting a Technopol Personal Panel Door on a drawing. It sets out the build-up, the sizes, the thermal figures and their source, the fire position, and the places the door does not belong. The short version: the leaf is a cut piece of Technopol's laminated EPS sandwich panel, hung in a lipped steel C-section jamb. It is a good insulated back-of-house and panel-envelope door. It is not a fire door, not a security door and not a freezer door, and it carries no load.

DESIGN VALUES

PARAMETER	VALUE
Steel skins	0.3 / 0.4 / 0.5 (0.5 default) mm
Laminating adhesive application rate	400 per face (800 total) g/m ²
Panel cover / maximum single-piece leaf width	1145 mm
Leaf / core thickness (dimension C)	44 or 50 on the priced configurations; made-to-measure input mm
Core density (state the grade on the order)	15 (wall grade) to 24 (24DV high-traffic grade) kg/m ³
Core thermal conductivity, lambda	0.03524 W/m.K
Leaf R-value, 44 mm core, installed (+Rsi 0.13 +Rse 0.04), centre of leaf	1.42 m ² K/W
Leaf R-value, 50 mm core, installed (+Rsi 0.13 +Rse 0.04), centre of leaf	1.59 m ² K/W
Leaf U-value, 44 mm core, centre of leaf	0.70 W/m ² K [°]
Leaf U-value, 50 mm core, centre of leaf	0.63 W/m ² K [°]
Bare leaf areal mass (0.5 mm skins, 50 mm core, adhesive)	approx. 9.4-9.9 kg/m ²
Bare leaf mass, 2000 x 800 x 50 mm	approx. 15-16 kg [°]
Bare leaf mass, 3000 x 1500 double-door leaf	approx. 42-44 kg [°]
Reaction to fire (SANS 53501-1)	B-s1,d0 Euroclass
Fire resistance (FR minutes / REI)	None - not a fire door and not a fire division [°]
Jamb (frame)	Lipped steel C-section; 44, 50, 60, 75, 100; 6 m lengths; sized to grip the wall panel thickness mm
U-channel / capping channel	40 / 44 / 50 / 54; 6 m lengths; 40 mm capping around the window aperture mm
Window aperture (door-with-window template)	665 x 665, with 40 mm capping and a retaining angle; glass specified by the buyer mm
Hinges	2 per single leaf; 6 on a double door (3 per leaf) - check the duty against the leaf mass -

PARAMETER	VALUE
Ironmongery set	Lever handle on backplate; keyed mortice/cylinder lock with keyhole; backing plates; hinges; perimeter seal; pop rivets. The priced double-door template carries no lockset - order it separately -
Service temperature of the leaf	Below about 70-80 degC°
Structural capacity of the leaf	None - not a spanning or load-bearing element - °
Certification	Agrement SA 2020/609 covers the LiteCore Building System (non-load-bearing wall) and does not cover this door - °

° 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.

DESIGN AND DETAILING

1. What the door is

The leaf is not a bespoke door blank. It is a piece of Technopol's standard laminated sandwich panel - two Chromadek coated-steel skins bonded with a laminating adhesive at 400 g/m² per face to a fire-retarded EPS (FRCel) core, 1145 mm laminated cover, smooth face both sides - cut to size, edge-capped, and hung in a lipped steel C-section jamb that grips the panel edge. The manufacturing drawing (Panel Door Manufacturing Sheet, dated 31/01/2022) gives the leaf material as "Polystyrene".

That build-up gives the product its one real advantage: the leaf has the same core, the same skins and the same surface fire behaviour as the wall it sits in, so the opening does not become an uninsulated hole in the envelope. It also sets the limits. A 0.3-0.5 mm skin over a 15-24 kg/m³ foam core is a light, easily punctured, combustible-cored element; it is thinner than the wall it replaces; and it carries no fire-resistance or security rating.

Two install configurations are drawn on the ordering sheet. In the panel-wall install, the lipped jamb clips over the cut edge of the EPS panel wall and grips it from both faces; the frame opening is dimension D. In the brick-wall install, the same set is fitted inside a masonry reveal; dimension E is the brick rough opening. The size hierarchy on the drawings is A (leaf) < D (jamb frame opening) < E (brick wall opening).

2. Geometry, ordering and sizes

The door is made to measure, against seven dimensions, all in millimetres. The ordering sheet takes up to seven line items, each with a quantity plus A to G.

MAXIMUM SINGLE-PIECE LEAF WIDTH IS 1145 mm. That is the finished laminated cover width of the panel (the door-leaf calculator runs a 1225 mm roll to a 1145 mm final width, inside and outside). A leaf wider than 1145 mm is made up from more than one panel width, which puts a longitudinal joint in the leaf. If the design depends on that joint - visually, thermally or for stiffness - get the joint detail with the quotation.

LEAF THICKNESS. The priced configurations use a 44 mm or a 50 mm leaf. Dimension C is a made-to-measure input, so state it. Do not read the jamb size list (44, 50, 60, 75, 100 mm) as a leaf-thickness range: those sizes exist to match the WALL panel thickness the lipped jamb has to grip. If your wall is a 100 mm

LiteSpan panel and your leaf is 50 mm, those are two different numbers on the same order - write both down.

JAMB SIZE. Select the jamb to the wall panel thickness it grips, and state that thickness on the order. Jambs are supplied in 6 m lengths, precut or full-length for site cutting.

REF	PARAMETER AS PRINTED	WHAT IT CONTROLS
A	PANEL DOOR WIDTH	Leaf width (max. 1145 mm in one piece)
B	PANEL DOOR HEIGHT	Leaf height
C	PANEL THICKNESS	Core / leaf thickness. State the wall panel thickness the jamb must grip separately
D	DOOR JAMB FRAME OPENING	Overall jamb frame width; the opening to cut in the panel wall
E	BRICK WALL OPENING	Masonry rough opening - brick-reveal install only
F	HANDLE VERTICAL OFFSET	Handle / lock height up the leaf
G	HANDLE HORIZONTAL OFFSET	Handle / lock distance in from the leaf edge

The seven ordering dimensions (A-G), from the Personal Panel Door ordering schedule

3. Priced configurations

The door-leaf calculator prices a small number of standard templates. They are the configurations Technopol builds most often and the quickest to quote. They are not a fixed size range - anything within the A-G schedule can be made - but if your opening is close to one of these, using it will be cheaper and faster. Read the notes: two of the templates carry conditions a specifier will otherwise miss.

CONFIGURATION	LEAF SIZE (MM)	NOTES
Single personnel door	2000 x 800	The standard door. Hinges supplied as a set of 2. A 2032 x 830 leaf on a 44 mm panel is also priced, using a made-up 50 mm jamb (50 mm channel + 19 x 19 angle + U-channel)
Doghouse (low) door	1800 x 600	Reduced-height access. Hinges supplied as a set of 2
Double door with catch	two leaves, each 3000 x 1500	3000 x 1500 mm is the size of EACH of two leaves, so the opening is roughly 3.0 x 3.0 m - not a 3000 x 1500 doorset. 6 hinges; a 50 mm jamb section serves as the catch for the passive leaf. Each 1500 mm leaf is wider than the 1145 mm single-piece width, so each contains a longitudinal joint. Order the lockset separately: the priced template carries no handle, lock, keyhole or backing plates
Door with window	2000 x 800, 75 mm jamb	665 x 665 mm window aperture, 40 mm capping around it, an angle retaining the glazing. Specify the glass yourself - glass type, thickness and unit are the buyer's. The centre-of-leaf R and U figures in section 4 do not cover a glazed leaf

Priced configurations in the 1 May 2026 door calculator. These are templates, not size limits.

4. Thermal performance, and the jamb bridge

The figures below come from the measured conductivity of the FRCel core, $\lambda = 0.03524 \text{ W/m.K}$, measured on the core of a 125 mm LiteSpan panel in the SANS 54509 Initial Type Test (Omega Test House OTH-T-2309-04, clause 13.9, heat-flow meter). They are centre-of-leaf values for an unglazed leaf.

What matters more than the centre-of-leaf number is the edge. The jamb is a lipped steel C-section that grips the panel from face to face: a continuous steel path from the inside surface to the outside surface, running around the whole perimeter of the door. That is a linear thermal bridge, and an energy model must catch it. The centre-of-leaf U-value is not the door's U-value - the door's U-value is worse.

The leaf is also thinner than the wall. A 50 mm leaf in a 100 mm LiteSpan wall gives the opening about half the wall's R-value; in a 150 mm wall, about a third. The door is far better than a hollow-core timber door, but it remains the weakest thermal element in the envelope. On an XA-regulated building, model the door as its own element with the jamb bridge included; do not smear the wall's R-value across the opening.

GLAZED LEAF. The door-with-window template puts a 665 x 665 mm aperture (0.44 m²) into a 1.6 m² leaf - over a quarter of its area. The glass is specified by the buyer, so the door has to be calculated as a composite element: leaf, glazing and jamb. The table below does not cover it.

LEAF CORE	R (CORE ALONE), M ² K/W	R (INSTALLED, +RSI 0.13 +RSE 0.04), M ² K/W	U (CENTRE OF LEAF), W/M ² K	THE WALL IT SITS IN
44 mm	1.25	1.42	0.70	-
50 mm	1.42	1.59	0.63	100 mm LiteSpan wall: installed R 3.0 - the door is about half the wall. 150 mm wall: installed R 4.4 - the door is about a third.

Leaf thermal performance, centre of leaf, unglazed. Calculated from the measured core conductivity $\lambda = 0.03524$ W/m.K (Omega Test House OTH-T-2309-04, SANS 54509 ITT, cl. 13.9). Excludes the steel jamb bridge, the perimeter seal, the hardware and any glazed aperture.

5. Fire

Two different things get called a fire rating. This door has one of them, and it is important not to trade one for the other.

REACTION TO FIRE is a material class: how a surface contributes to fire growth, smoke and flaming droplets. The panel the leaf is cut from carries class B-s1,d0 to SANS 53501-1 (Ignis Testing IT 24-06-00029, valid to 2029-06-24). Quote the class with its scope: the specimen tested was the 150 mm faced panel; the report covers insulation panels for cold rooms and names no roof profile; and under report clause 6.13 the class applies where the panel is used as INSULATION, not as a fire division. The FRCel core carries the same class in its own right, tested as a bare 60 mm sheet at approx. 18.37 kg/m³ (Ignis Testing IT 23-08-00009, valid to 2028-08-04).

FIRE RESISTANCE is an assembly rating in minutes - FR30, FR60, REI - for how long a complete element holds a fire back. This doorset carries no fire-resistance rating. It is not a fire door and it must not close a fire division. Where the fire engineer schedules a rated door, use a certified fire-door set tested and labelled to SANS 10177-2 / SANS 1253, hung in its certified frame with its certified ironmongery. Specifying a StoneWool or PIR core does not turn this into that door: a fire-door rating belongs to a tested doorset, not to a core material.

All EPS is combustible. FRCel is fire-retardant treated, not non-combustible: it resists ignition and self-extinguishes, but it will burn. Cap every cut edge so no core is left exposed, keep the leaf clear of flues and other hot surfaces, and keep the leaf below about 70-80 degC, where EPS begins to soften and creep.

6. Weight, hardware duty and what the leaf will not do

The leaf spans nothing and carries nothing. It is not a structural element: no load, span or racking figure attaches to it. The LiteSpan load/span design tables size the PANEL that forms the wall around the opening, against a stated load case and support condition; nothing in them transfers to a hinged leaf.

WEIGHT. Work it out before you choose hardware. Two 0.5 mm steel skins at 7850 kg/m³ give 7.85 kg/m²; the adhesive at 400 g/m² per face adds 0.80 kg/m²; a 50 mm core adds 0.75 kg/m² at 15 kg/m³ or 1.20 kg/m² at 24 kg/m³. Bare leaf: approx. 9.4-9.9 kg/m². A 2000 x 800 mm leaf (1.6 m²) is therefore approx. 15-16 kg bare, excluding edge capping, rivets, seal, jamb and ironmongery. A 3000 x 1500 mm double-door leaf (4.5 m²) is approx. 42-44 kg bare - roughly three times the mass, and it is the case that governs hardware.

HARDWARE DUTY. Hinges are supplied as a set of 2 per single leaf and 6 on a double door (3 per leaf). Check the hinge duty against the leaf mass before you hang a double door; the leaf is three times the weight of a standard single leaf and the standard assumption does not carry across.

A leaf this light has almost no inertia, so wind will catch it and slam it. Fit a stay or a hold-open where the door is exposed. And the skin is 0.3-0.5 mm steel over foam: it will not hold a screw on its own. Any surface-mounted item that applies a point load - a door closer, a kick plate, a panic bar - must bear on a spread backing plate, through both skins. No door closer is supplied or rated with this leaf; if one is required, the backing detail is the engineer's or the installer's to design.

7. Moisture, cut edges and cold rooms

Above zero, in a chill room or a conditioned panel building, this door does its job. Below zero it must not be used, and the reason is the jamb.

The jamb is bare lipped steel running from the warm face to the cold face. In a freezer it sits permanently below the dew point of the warm-side air. It will condense, then ice, and the door will progressively bind, freeze shut and corrode from inside the ice pack outward. There is no frame heater, no thermal break and no vapour-tight cold-store gasket in this detail. Freezer and deep-freeze rooms need a purpose-built cold-store door set. That is a specialist item, not this one.

CUT EDGES. Wherever the panel is cut - the wall opening, the leaf edge, the window aperture, any service penetration - bare EPS core is exposed and must be closed with the steel capping / U-channel section (40, 44, 50 or 54 mm; the window aperture uses the 40 mm capping with its retaining angle). Seal the jamb-to-wall joint on both faces with an EPS-compatible PU sealant. Solvent-based products dissolve the core, and they do it out of sight. Exposed core takes up water, gives vermin a start, and is an ignition path into a combustible core.

This doorset carries no declared acoustic (R_w), air-tightness or water-tightness rating. Where a project requires a declared figure, specify a doorset that has one.

8. Model specification clause

Insulated personnel doorset: Technopol Personal Panel Door, made to measure to the A-G ordering schedule. Leaf: laminated sandwich panel, [0.5] mm Chromadek coated-steel skins both faces, smooth finish, bonded with laminating adhesive (400 g/m² per face) to a fire-retarded expanded polystyrene (FRCel) core, grade [15 / 24] kg/m³, leaf thickness [50] mm. Maximum single-piece leaf width 1145 mm; any wider leaf made up from multiple panel widths, joint detail to be supplied with the quotation. Frame: lipped steel C-section jamb sized to grip a [] mm wall panel, supplied [precut / full length], with [40 / 44 / 50 / 54] mm U-channel; all cut edges capped. Ironmongery: lever handle on backplate, keyed mortice/cylinder lock, backing plates, [2]

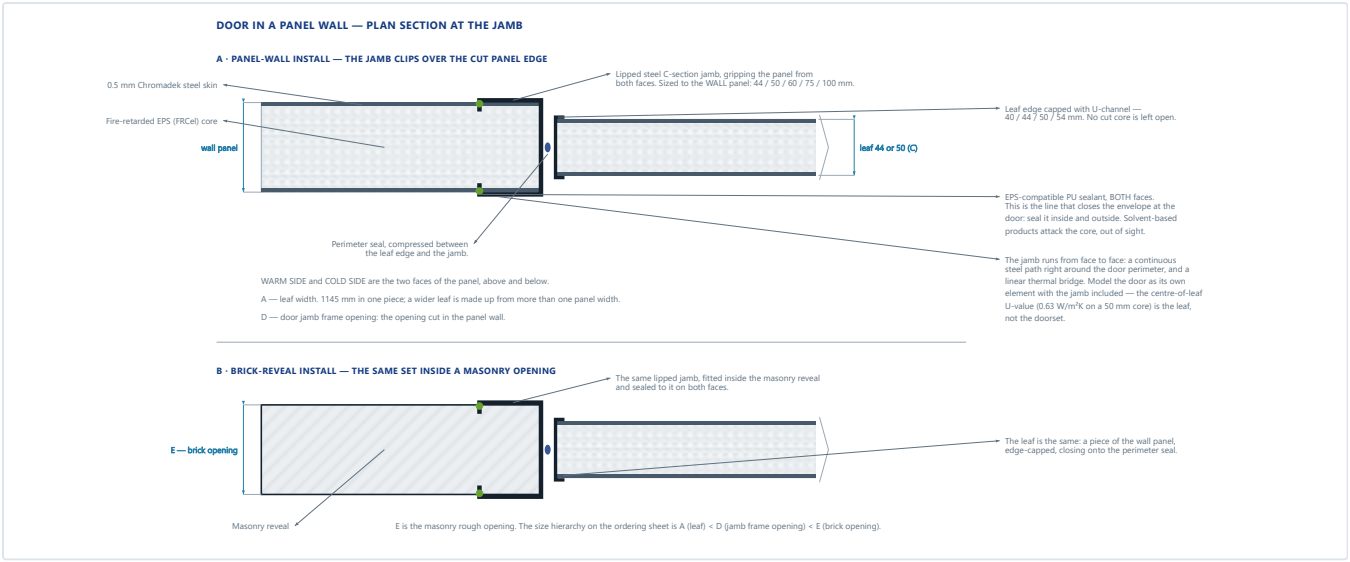
hinges, perimeter seal, pop rivets; handle [left / right] hand, at F = [] mm and G = [] mm. Install: [jamb clipped over the cut edge of the EPS panel wall, frame opening D = [] mm] / [jamb fitted within a masonry reveal, brick opening E = [] mm].

Declared performance. Reaction to fire: class B-s1,d0 to SANS 53501-1, Ignis Testing IT 24-06-00029 (valid to 2029-06-24) - the specimen tested was the 150 mm faced panel; the report covers insulation panels for cold rooms and names no roof profile; and under report clause 6.13 the class applies where the panel is used as insulation, not as a fire division. Thermal: leaf $R = [1.59] \text{ m}^2\text{K/W}$ and $U = [0.63] \text{ W/m}^2\text{K}$, centre of leaf, unglazed, from the measured core conductivity 0.03524 W/m.K (Omega Test House OTH-T-2309-04); the steel jamb is a thermal bridge and the door is to be modelled as its own element.

This doorset carries no fire-resistance (FR-minutes / REI) rating and shall not be scheduled as a fire door, an escape-route door or a security door. No acoustic, air-tightness or water-tightness performance is declared. It is non-load-bearing. Agreement SA 2020/609 covers the LiteCore Building System as a non-load-bearing wall and does not cover this doorset.

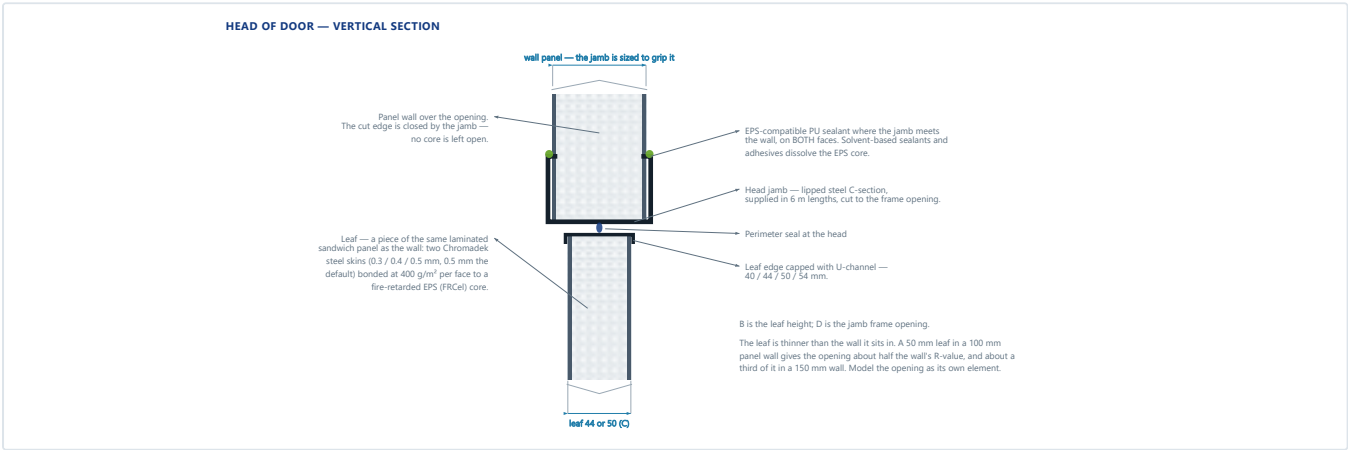
WHERE NOT TO USE THIS PRODUCT

- As a fire door, or in any fire division - an escape-route door, a door in a rated compartment wall, or any door the fire engineer has to schedule. A fire division needs a fire-resistance rating in minutes for the complete assembly; this doorset carries a reaction-to-fire class, which is a different thing. Use a certified fire-door set tested and labelled to SANS 10177-2 / SANS 1253, in its certified frame with its certified ironmongery. A StoneWool or PIR core does not change that.
- In freezer and deep-freeze rooms. The lipped steel jamb runs face to face through the wall with no frame heater, no thermal break and no vapour-tight cold-store gasket, so it sits permanently below dew point: it will condense, ice up, freeze shut and corrode. Use a purpose-built cold-store door set.
- At main entrances, on street-facing openings, as a security door, or in high-traffic and abuse-prone positions. A 0.3-0.5 mm steel skin over a 44-50 mm EPS core resists neither forced entry nor repeated kick and trolley impact. Keep the panel door for internal and back-of-house openings; use a solid-core or purpose-made security steel door at entrances.
- In openings carrying sustained heat - beside flues, in boiler houses, over kilns or bakery ovens, or anywhere the leaf stays above roughly 70-80 degC. EPS softens and creeps in that range: the core deforms and delaminates from the skin.
- Where a declared acoustic (R_w), air-tightness or water-tightness figure is a contract requirement. This doorset carries no such rating.
- Anywhere the door is expected to carry load, brace a wall or resist racking. It is a leaf, not a structural element.
- On a glazed (door-with-window) leaf where a thermal figure must be declared, unless the glazing has been specified and the door calculated as a composite element. The centre-of-leaf R and U figures cover an unglazed leaf only.
- As the cover for a project that requires an Agreement-certified doorset. Agreement SA 2020/609 covers the LiteCore Building System as a non-load-bearing wall; it does not cover this door.



Door in a panel wall — jamb (plan)

The lipped steel C-section jamb clips over the cut edge of the panel wall and grips it from both faces; the same set fits inside a masonry reveal. The leaf is a piece of the same sandwich panel, edge-capped in U-channel, closing onto a perimeter seal. Seal the jamb-to-wall joint on both faces with an EPS-compatible PU sealant — that is the line that closes the envelope at the door. The jamb runs from face to face, so model the door as its own element with the jamb included.



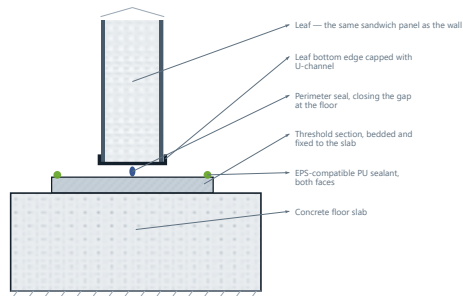
Head of door

The head jamb — the same lipped steel C-section, supplied in 6 m lengths — closes the cut edge of the panel over the opening and grips it from both faces. The leaf, edge-capped in U-channel, closes onto the perimeter seal. Seal the jamb to the wall on both faces with an EPS-compatible PU sealant. The leaf is thinner than the wall it sits in, so model the opening as its own element.

THRESHOLD AND FLOOR JUNCTION

A - CHILL ROOM AND ABOVE-ZERO PANEL BUILDING

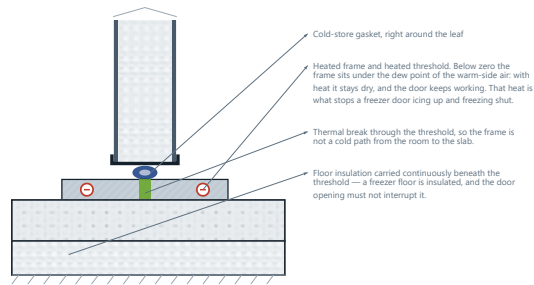
the Personal Panel Door as supplied



Above zero — a chill room, a panel-built room, a poultry house — this door does its job. The leaf has the same core and the same skins as the wall, so the opening is not a hole in the insulation. Cap every cut edge and seal both faces, and the envelope closes at the door.

B - FREEZER AND DEEP-FREEZE ROOMS

specify a purpose-built cold-store doorset — this is the detail people forget



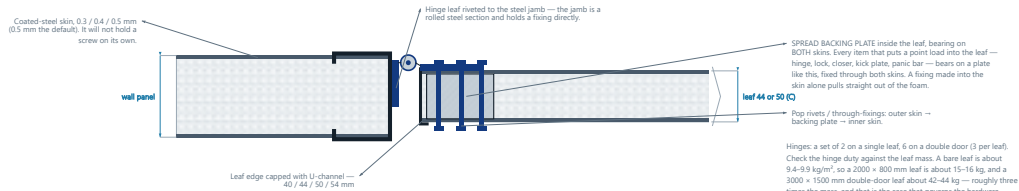
Below zero, specify a purpose-built cold-store door set: a heated frame, a thermal break and cold-store gasketing, over floor insulation that runs on under the opening. The Technopol Personal Panel Door is a chill-room and above-zero door, and that is where it belongs.

Threshold and floor junction

Above zero — a chill room, a panel-built room, a poultry house — the leaf is edge-capped in U-channel and closes onto a perimeter seal at the threshold, with the threshold section bedded to the slab and sealed on both faces. A below-zero room is a different product: specify a purpose-built cold-store doorset with a heated frame and heated threshold, a thermal break and cold-store gasketing, over floor insulation carried continuously beneath the opening. That heat is what stops a freezer door icing up and freezing shut.

HINGE AND HARDWARE FIXING — PLAN SECTION

The leaf is a sandwich, not a solid. The fixing has to reach something that will hold it.



A light leaf has very little inertia, and the wind will catch it and slam it. Fit a stay or a hold-open where the door is exposed.

Hinge and hardware fixing

The jamb is a rolled steel section and holds a fixing directly. The leaf is not: a 0.3–0.5 mm skin over a foam core will not hold a screw on its own. Every item that puts a point load into the leaf — hinge, lock, closer, kick plate, panic bar — bears on a spread backing plate inside the leaf, fixed through BOTH skins. Hinges are a set of 2 on a single leaf and 6 on a double door; check the hinge duty against the leaf mass, which is about 9.4–9.9 kg/m² bare.

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.

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