TECHNOPOL SA
ENERGY SAVING MATERIALS

TECHNICAL DESIGN GUIDE

LiteSpan Insulated Panels

Factory-laminated insulated sandwich panels · roofs, walls & ceilings

A completed LiteSpan 990 Standing Seam roof (Winn Kyalami) — a single panel forms structure, insulation, weatherproofing and the finished ceiling.

LiteSpan is Technopol SA's family of factory-laminated insulated sandwich panels: two coated-steel skins bonded either side of a rigid insulating core. One panel spans between purlins, insulates, weatherproofs and delivers a finished ceiling in a single fixing operation. This guide covers the two 990 mm roof profiles, the tongue-and-groove wall and ceiling panels, single-skin ceiling pans, and the non-combustible StoneWool range — with verified dimensions, thermal data, structural spans, fixing details and honest fire wording for specifiers.

990 IBR roof | 990 Standing Seam | T&G wall & ceiling | Ceiling pans | StoneWool Flat & DPR | FRCel EPS · PIR

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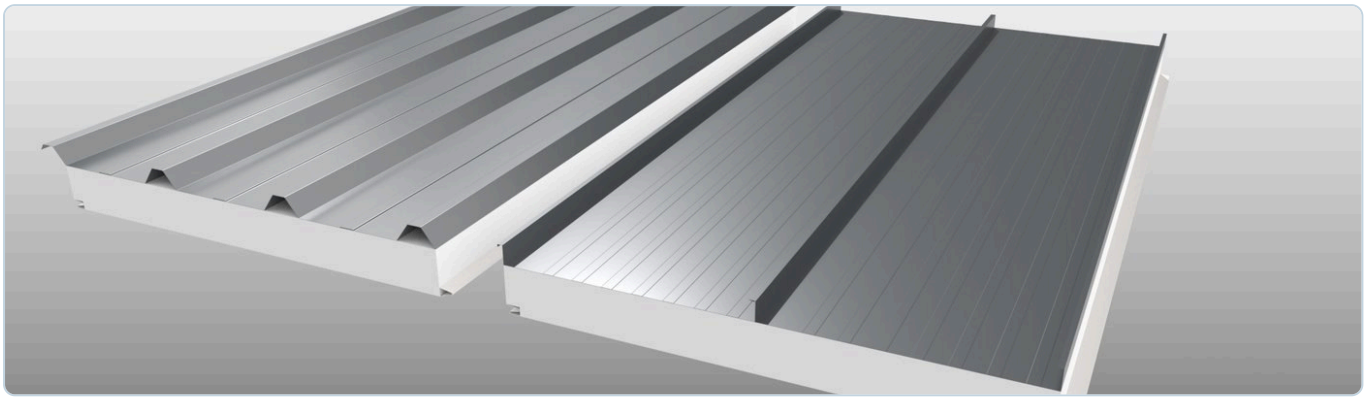
(011) 363-2780/1/2 · Leaders in EPS since 1993

1 · One panel — structure, insulation, weatherproofing & ceiling

A LiteSpan panel bonds two coated-steel facings to a rigid insulating core, so the composite acts as a stressed-skin beam between supports. That single element does the work of a purlin roof, a separate insulation layer, a weather sheet and a ceiling board — fixed in one pass. On a pitched roof the white underside **is** the finished ceiling, with no separate lining, battens or trapped condensation void.



The two roof profiles — 990 IBR composite (left) and 990 Standing Seam (right) — laminated to a white FR EPS core.

Where LiteSpan fits

- Warehouses, factories and logistics buildings
- Agricultural & poultry housing
- Residential roofs, ceilings and cladding
- Temperature-controlled & cold rooms (StoneWool)
- Laboratories / GMP, food processing, hospitals & clinics
- Indoor pools, prefab / modular & office fit-out

What you gain

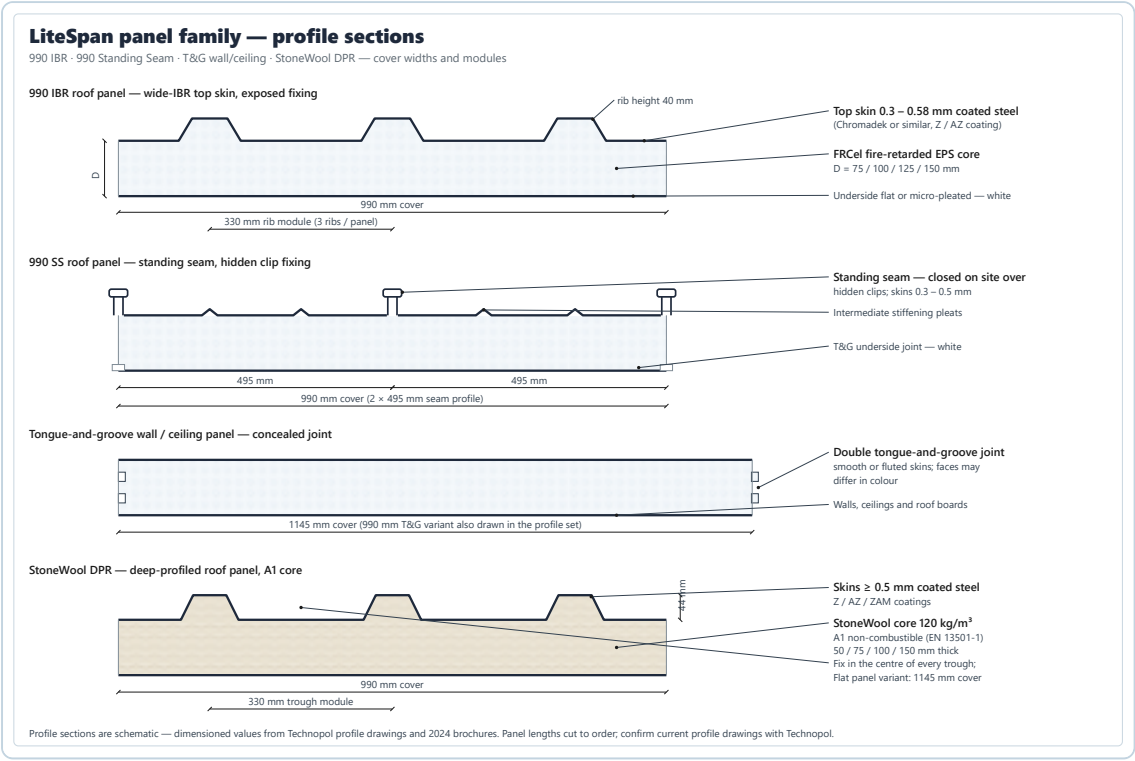
- **One fixing operation** — cladding, insulation and ceiling together
- **Roof is the ceiling** — clean white underside, no separate lining
- **High R-value per mm** — up to R 4.4 at 150 mm (EPS roof)
- **Long clear spans** — fewer purlins, faster erection
- **Light handling** — cut to length, lifted and fixed by hand
- **Factory quality** — consistent bond, gauge and colour

Three cores, one system. The standard core is **FRCel fire-retarded EPS** (lightweight, B-s1,d0 reaction-to-fire). For fire-sensitive and temperature-controlled work the same panel formats are made with a **StoneWool** mineral-fibre core (A1 non-combustible), and **Technopol PIR 32** is available where the highest thermal performance per millimetre is needed. Core selection is covered on page 4.

990 mm	R 4.4	4.0 m	A1 · B-s1,d0
roof panel cover width	installed, 150 mm EPS roof	max free span (150 mm)	non-comb. / reaction-to-fire cores

2 · Roof panels & profiles

Both roof profiles share a 990 mm cover, the same FRCel EPS core depths and identical thermal and structural performance — the choice is the weather-face and fixing method. **990 IBR** uses a wide-IBR top skin fixed with exposed stitch-screws; **990 Standing Seam (SS)** presents two 495 mm seam profiles with hidden clips and is seamed on site for a fastener-free weather face.



LiteSpan panel-family profile sections — 990 IBR, 990 SS, 1145 mm T&G wall/ceiling and StoneWool DPR — with cover widths, core depths and skin gauges dimensioned.

990 IBR & 990 Standing Seam — comparison

Property	990 IBR	990 Standing Seam
Cover width	990 mm	990 mm (2 × 495 mm seam)
Top-skin profile	Wide-IBR, 330 mm rib module (~40 mm rib)	Flat pans + intermediate pleats
Fixing	Exposed stitch-screws in each valley	Hidden 0.8 mm galv clips, seamed on site
Steel skin	0.3–0.58 mm	0.3–0.5 mm
Core depths	75 / 100 / 125 / 150 mm	75 / 100 / 125 / 150 mm
Installed R-value (m^2K/W)	2.3 / 3.0 / 3.7 / 4.4	2.3 / 3.0 / 3.7 / 4.4
Max free span @ 1.6 kN/m^2	2.5 / 3.0 / 3.5 / 4.0 m	2.5 / 3.0 / 3.5 / 4.0 m
Underside	White Chromadek, flat / micro-pleated	White, tongue-and-groove joint

Colours & finish

Chromadek or similar coated steel with Z / AZ / ZAM coatings. Six standard top-face colours — Frost White, Dove Grey, Sandstone Beige, Signal Brown, Quartz Grey and Anthracite Grey — with an extended RAL range available; the panel **underside is white only**. Confirm the current palette and per-colour coating availability with Technopol.

Standing-seam panels in the Chromadek colour range.

3 · Walls, ceilings & the StoneWool range

Tongue-and-groove walls, ceilings & pans (FRCel EPS)

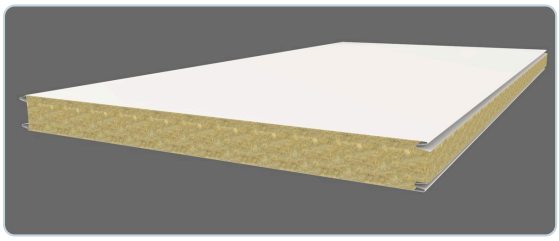
Item	Cover / size	Notes
T&G wall / ceiling panel	1145 mm cover	Double tongue-and-groove; smooth or fluted skins; a 990 mm T&G variant is also profiled
Ceiling pans (single-skin)	282 & 490 mm wide, to 6000 mm	White Chromadek upstand pan on FRCel EPS; hung on rails with adjustable hangers — no battens
Core & coating	FRCel EPS	Z / AZ coatings; core thickness cut to customer specification

StoneWool panels — Flat (1145) & DPR (990)

Where non-combustibility and temperature control govern — cold stores, laboratories, food processing, hospitals — the same formats are supplied with an A1 mineral-fibre core. DPR (Deep Profiled Roof) carries a 44 mm flute for roof use at a minimum 4° pitch; Flat is used for walls and ceilings.

Property	Flat (1145)	DPR (990)
Cover width	1145 mm	990 mm (44 mm flute, 330 mm module)
Thicknesses	50 / 75 / 100 / 150 mm	50 / 75 / 100 / 150 mm
U-value (W/m²K)	0.70 / 0.47 / 0.35 / 0.23	0.70 / 0.47 / 0.35 / 0.23
R-value (m²K/W)	1.43 / 2.14 / 2.86 / 4.29	1.43 / 2.14 / 2.86 / 4.29
Steel skin	≥ 0.5 mm (Z / AZ / ZAM)	≥ 0.5 mm (Z / AZ / ZAM)
Max unsupported wall height*	50 : 3.4 m · 75 : 4.6 m · 100 : 5.7 m	—
Max unsupported ceiling length*	50 : 2.64 m · 75 : 4.10 m · 100 : 5.40 m	—

* StoneWool span/height figures are theoretical estimates (beam theory), to be confirmed by laboratory testing for the project — see page 5. StoneWool panel self-weight varies with skin/core assumption between source documents; confirm with Technopol. 125 mm StoneWool is not offered in these sources.



Flat StoneWool-core panel, mineral-wool core exposed on the long edge.

StoneWool core (verified TDS). 120 kg/m³ (±10%) mineral wool, A1 non-combustible (EN 13501-1), λ ≤ 0.035 W/m·K, compressive strength ≥ 45 kPa at 10% (CS10), max operating temperature 760 °C, water-repellent, rot / mildew / bacteria resistant, chemically inert and CFC/HCFC-free.

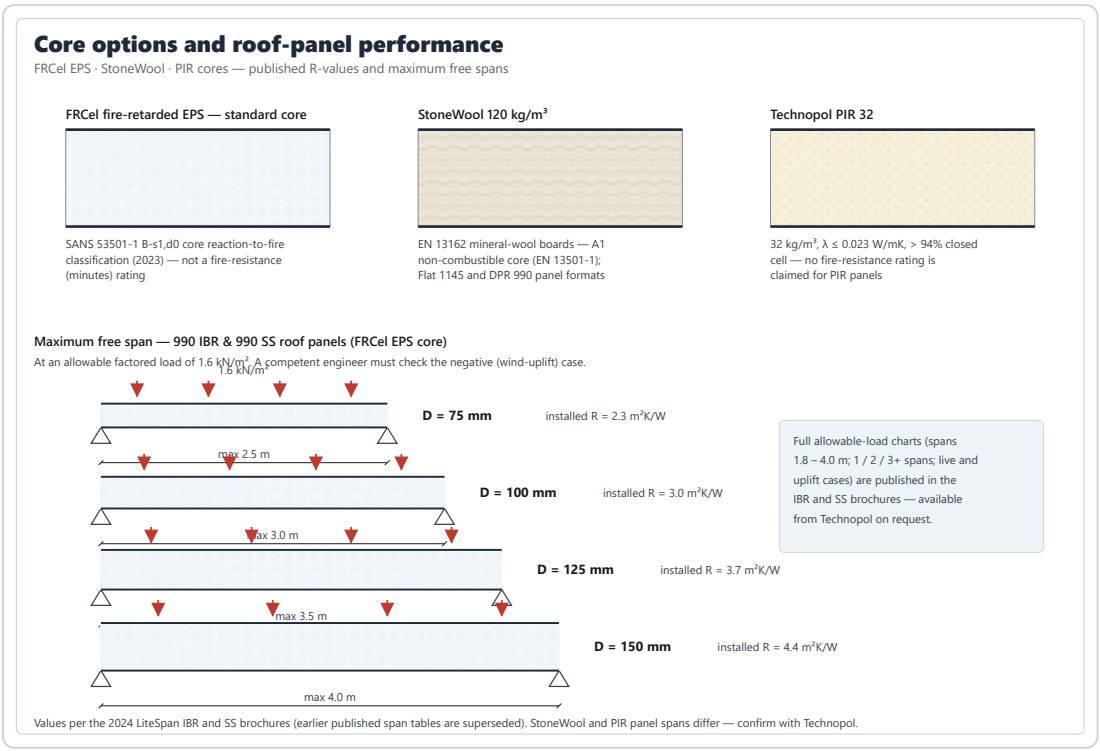
A1	**760 °C**	**U 0.23**	**1145 / 990**
non-combustible StoneWool core	max operating temperature	at 150 mm (W/m²K)	Flat / DPR cover (mm)

4 · Core options, thermal & structural performance

Core comparison

Core	FRCel FR-EPS (standard)	StoneWool	Technopol PIR 32
Type / standard	Fire-retarded EPS	EN 13162 mineral wool	Polyisocyanurate
Density	Lightweight EPS	120 kg/m³ (±10%)	32 kg/m³
λ (W/m·K)	0.033–0.038	≤ 0.035	≤ 0.023
Reaction-to-fire	B-s1,d0 (SANS 53501-1)	A1 non-comb. (EN 13501-1)	B2 (DIN 4102) — combustible
Typical use	Roofs, walls, ceilings, agri	Fire-sensitive / cold rooms	Max thermal per mm

FR-EPS λ is the typical range for fire-retardant EPS; StoneWool and PIR figures are from the verified supplier TDS. **PIR note:** a 100 mm PIR 40 DV panel did not meet SANS 10177-2 fire-resistance criteria — PIR panels carry no fire-resistance claim, and PIR-panel span / R-value-as-panel data is not published; confirm the supplied PIR grade with Technopol.



Core options and the EPS roof-panel free-span ladder at an allowable factored load of 1.6 kN/m², with installed R-values.

Structural design basis

- EPS roof panels share one allowable-stress chart (IBR & SS), spans 1.8–4.0 m, cores 75–150 mm, 1 / 2 / 3+ span
- Maximum free span at 1.6 kN/m²: **2.5 / 3.0 / 3.5 / 4.0 m** for 75 / 100 / 125 / 150 mm
- The negative (wind-uplift) case **must be checked by a competent engineer**
- StoneWool Flat & DPR load tables are theoretical (beam theory) — confirm by laboratory testing

SA design reference

- TPMA / AAAMSA cold-store envelope specification (Sept 2006)
- Load factors **1.50 live / 1.35 dead**; deflection limit **L/240**
- Minimum support (bearing) width **50 mm**
- Walk-on ceiling criterion **0.25 kN/m² UDL + 0.9 kN** centre point (BS 6399)

Superseded data. Older 2021 IBR / SS Pan brochures published free spans of 5.0 / 6.5 / 7.5 / 8.0 m at "+1.8 kPa". Those are superseded by the current 2.5 / 3.0 / 3.5 / 4.0 m at 1.6 kN/m² values above — do not design to the older figures.

5 · Design, fixing & site considerations

Supports & bearing

Fix to steel or timber purlins / rafters at the design span. Provide a minimum **50 mm bearing** at every support. StoneWool DPR roofs require a minimum **4°** pitch. Keep panels continuous over supports where possible; splice only over a purlin (see page 7).

Fixing — IBR roof

Stitch-screws in the flute valleys and peaks. At walls, double 14 × 125 mm hex-flange-head Class 4 tek screws with seals in every valley into 2 mm wall-plate angles, anchored with M8 throughbolts both sides at **1.5 m** centres.

Fixing — Standing Seam

Hidden 0.8 mm galvanised clips (60 mm) at each purlin; panels are clipped then **seamed on site** so no fastener penetrates the weather face.

StoneWool fixing

Fix-through Class 3/4 tek screws with seals, 3 per support (centre of every DPR trough); 150 mm end laps, side laps stitched at 500 mm c/c. Fire-rated walls use steel (not aluminium) fixings, ≥ 1.6 mm angles and stainless rivets.

Condensation & thermal bridging

The continuous core and sealed T&G / seam joints suppress the cold-bridge and condensation risk of a lined purlin roof. Seal end laps and penetrations; maintain the sealant and closure details shown in the drawings.

Handling, storage & protection

Store flat on pallets under cover, off the ground; protect from UV, water and mechanical damage; keep the protective film on until fixed and remove it promptly after. Cut and drill so swarf is cleared to avoid rust staining the coated face.

Durability

Coated-steel facings (Z / AZ / ZAM) to the specified environment; white underside only on roof panels. High-pressure washable ceiling pans suit hygiene-critical rooms.

> **Fire — honest wording.** The FRCel EPS core carries a **Class B-s1,d0 reaction-to-fire** classification to **SANS 53501-1** (engineer-authorised, Aug 2023); the StoneWool core is **A1 non-combustible** (EN 13501-1). These are **reaction-to-fire** classes, **not fire-resistance (minute) ratings**. EPS and PIR cores are combustible. LiteSpan does not currently claim an FRxx rating; StoneWool fire-resistance test data is on file but under revalidation — **available on request**. Do not fit downlighters or recessed fittings into combustible-core ceilings.

Model specification clause (edit to project)

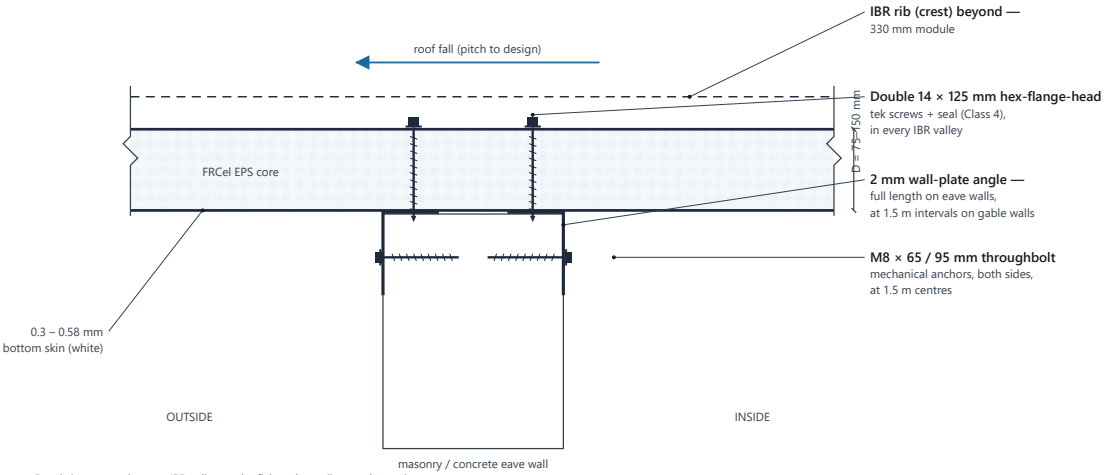
"Roof / wall panels shall be Technopol **LiteSpan** factory-laminated insulated sandwich panels — profile **990 IBR / 990 Standing Seam / T&G** — with a **___ mm** core of **FRCel fire-retarded EPS / StoneWool mineral fibre / PIR** and coated-steel facings of **___ mm** (Z / AZ / ZAM) to **colour** ___, underside white. Panels shall be fixed to supports at not more than the design span with a minimum **50 mm bearing**, in accordance with the Technopol fixing details, and spliced only over a support. The **negative wind-uplift case shall be verified by a competent engineer**. Fire performance is stated as **reaction-to-fire only** (FRCel EPS Class B-s1,d0 to SANS 53501-1; StoneWool A1 to EN 13501-1); no fire-resistance (minute) rating is claimed unless a current test report for the specified panel is provided."

6 · Application details

6.1 990 IBR roof — fixing at an eave wall

990 IBR — fixing at the eave wall

Double tek screws per valley into 2 mm wall-plate angles, throughbolted to the wall



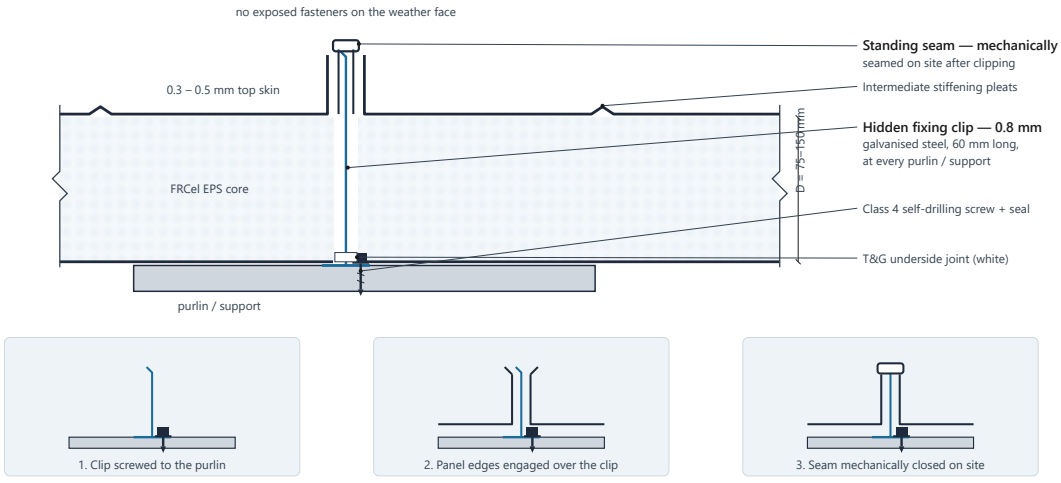
- Panel shown cut along an IBR valley — the fixing plane; ribs run down-slope.
- Stitch screws at every flute valley and peak per the 2024 brochure fixing schedule.
- From: IBR Composite Panel — Fixing Detail (Technopol drawing). Flashings by blind rivets or stitching screws.

Panel cut along an IBR valley: double 14 × 125 mm hex-flange tek screws into 2 mm wall-plate angles, with M8 throughbolt anchors at 1.5 m centres.

6.2 990 Standing Seam — hidden clip & site seaming

990 SS — hidden clip and standing seam

0.8 mm galvanised clips at every purlin; panel seamed on site — concealed fixing



From: 990 Standing Seam Sandwich Panel — Flashing Details (Technopol drawing, 2022). Seam module 495 mm; 990 mm cover per panel.

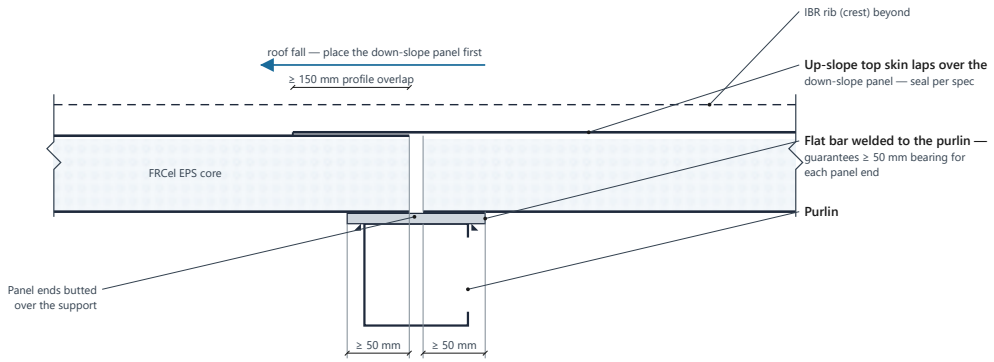
A 0.8 mm galvanised 60 mm clip at each purlin, with the three-step site-seaming sequence (clip / engage / close) — no exposed weather-face fasteners.

6 · Application details (cont.)

6.3 IBR panel splice over a purlin

IBR panel splice at a purlin

Minimum 150 mm profile overlap · welded flat bar gives each panel 50 mm bearing



From: IBR Panel Splicing Detail / Panel Splicing Detail (Technopol drawings). Butt joints only over supports; fasten and flash per the fixing schedule.

Where a run exceeds panel length, lap the IBR profile a minimum 150 mm over a purlin with a welded flat bar guaranteeing 50 mm bearing to each panel end.

Construction sequence

- Set out from a true eave; check purlin line and 50 mm bearing at every support
- Lay panels tight; engage the T&G / seam joint fully before fixing
- IBR: stitch each valley; SS: clip every purlin, then seam the full run on site
- Splice only over a purlin with the welded flat-bar detail; 150 mm minimum lap
- Fit closures, flashings and Z-closures; seal end laps and penetrations
- Remove protective film promptly once panels are fixed

Quality & protection

- Confirm core depth, skin gauge and colour per delivery against the order
- Keep flame and hot-works away from EPS / PIR cores during the build
- Clear all drilling swarf to prevent rust staining the coated face
- Maintain minimum 4° pitch for StoneWool DPR roofs
- Store flat, off the ground, under cover; protect from UV until fixed

Accessories. A full closure and flashing family is drawn for each profile — eave and head-wall closures, gable / barge flashings, flute-sealing steel + foam closures, gutter end closures and brackets, Z-closures and ridge / apex closures — fixed by blind rivets or stitching screws with sealant. Request the accessory schedule for your profile.

7 · LiteSpan in the field

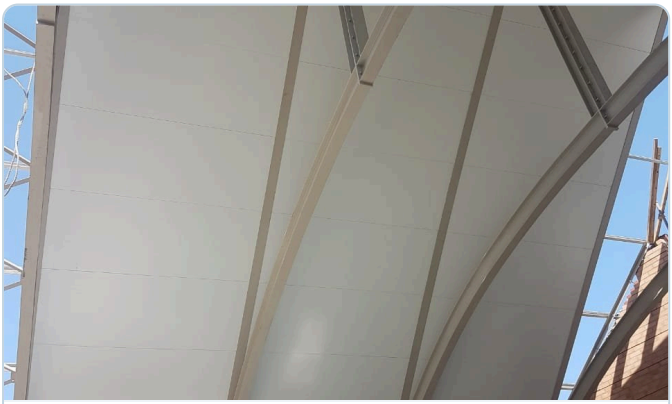
Technopol LiteSpan panels on South African projects — roofs, walls and ceilings delivered as finished insulated elements and fixed in a single operation.

Wall cladding — two-storey off-grid cabin fully clad in LiteSpan wall panels with an IBR roof.

Long-span commercial — panels as walls and roof over lattice trusses in a sports hall.

Installation — a white roof panel placed over blockwork; light enough to handle by crew.

Roof is the ceiling — the white panel underside as the finished pitched ceiling, no separate lining.



Curved roofs — cranked panels on arched rafters, clean white underside.

Clean elevations — horizontal wall-panel joints and a mono-pitch panel roof.

Bring your project to Technopol — profile & core selection, panel schedules, closures & site support · info@technopol.co.za · +27 11 363 2780 · technopol.co.za