



APPLICATION BROCHURE

Insulated envelopes for poultry and agricultural buildings

Walls, roof and ceiling - the panel, the coating for an ammonia house, and how the wall closes on its dwarf wall.

DOCUMENT
TP-BR-POULTRY-AGRI

ISSUED
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PRODUCT
poultry-agri

STATUS
Issued for use

WHY INSULATE A POULTRY HOUSE

The reasons are the ones the farmer already knows, and not one of them is a paperwork exercise.

- The bird is the heater. A house full of birds makes its own heat. The envelope's job is to keep that heat where the birds are and the day's heat out, so the brooders and the fans work less and the temperature curve is one you can actually hold.
- Wash-down and biosecurity. A washable, non-absorbent surface both sides, with no open joint and no exposed insulation for anything to get into.
- Build programme. A dry trade. The envelope goes up in days, and there is no wet work or drying time inside the house.

THERMAL PERFORMANCE

The LiteSpan core is FRCell fire-retardant treated EPS with a thermal conductivity of 0.03524 W/m.K, MEASURED on a heat-flow meter in the SANS 54509 initial type test (OTH-T-2309-04, clause 13.9) - not a catalogue or declared figure. Conductivity is a property of the core, so the same lambda, and the same installed R, apply to the LiteSpan WALL panel and the LiteSpan ROOF panel alike. Choose the thickness from the heat load you are actually trying to hold: brooding temperature, stocking density, ventilation rate and climate.

LITESPAN WALL & ROOF PANEL — INSTALLED R	50 MM	75 MM	100 MM	125 MM	150 MM
m ² K/W	1.6	2.3	3.0	3.7	4.4

The PVC-faced boards run a different core, and the LiteSpan type test does not carry across to them. PolyCool and SuperCool both use the standard FRCell core at 15 kg/m³ unless a project calls for something else - 20 or 30 kg/m³ are available on request - so at the same thickness the two give the same R. Their conductivity of about 0.037 W/m.K is DERIVED, back-calculated from the legacy board data rather than measured, which is the difference between it and LiteSpan's 0.03524. Work from the board-only R and add your own surface and roof-void resistances, so the total stays yours.

CEILING BOARD — BOARD ONLY	35 MM	50 MM	60 MM	75 MM	100 MM
PolyCool (PVC), m ² K/W	0.95	1.35	—	2.03	2.70
SuperCool (PVC), m ² K/W	—	1.35	1.62	2.03	2.70
LiteSpan ceiling (steel), m ² K/W	—	1.42	—	2.13	2.84

THE COATING, IN AN AMMONIA HOUSE

The skins are coated steel, available with Z (galvanised), AZ (aluminium-zinc) or ZAM (zinc-aluminium-magnesium) coatings. ZAM is the one worth discussing for poultry: the magnesium addition gives cut edges and scratches a self-healing behaviour that plain galvanising does not have - and cut edges are exactly where corrosion starts in a house that is washed down and runs at high ammonia.

INSTALLATION

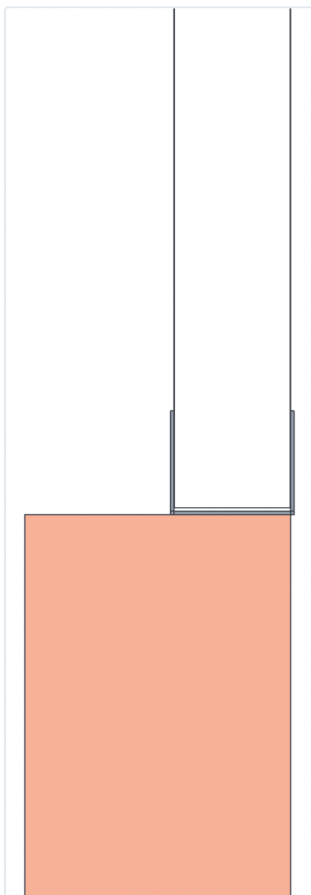
- Dry. No plaster, no screed and no painting inside the house. The panel arrives finished on both faces.

- Few joints. Panels are made to order and the length is on request, which lets most poultry-house roof planes be laid lap-free - and an end lap avoided is a leak path and a thermal bridge avoided.
- Interlocking. Wall and ceiling panels join on a tongue-and-groove. The roof panel does both at once: the weatherskin side-laps on the IBR profile at 990 mm cover, and the ceiling pan underneath has its own tongue-and-groove interlock, so the joint is closed on the inside as well as the outside.
- One trade. Structure, envelope and closures from one supplier, so responsibility for the joint between them does not fall in a gap.

THE WALL: DWARF WALL, PVC TRACK AND HEAD

This is the detail every farmer asks about first, because it is where a panel system either survives a wash-down or does not. The panel never touches the floor. It stands on a masonry dwarf wall, which takes the wash-down water, the litter and the knocks. A PVC U-channel is fixed to the top of the dwarf wall and the panel sits in it - PVC, not steel, because this is the permanently wet zone. The panel is set FLUSH WITH THE INSIDE FACE of the dwarf wall, so the interior is one flat washable plane from the floor up, with no masonry ledge proud of the lining for litter and wash-down water to sit on. Every other exposed edge, top, verge and around openings, is closed with a U-channel cap in the same coated steel the panel is laminated with, so it matches for colour, corrosion and cleaning.

The result is the point: no exposed EPS anywhere, and the core lifted clear of the floor. Nothing for a rodent to start on.



Base. Masonry dwarf wall, PVC U-channel, and the panel standing in it.



The whole wall: slab, dwarf wall, channel, panel, head cap, ceiling over.



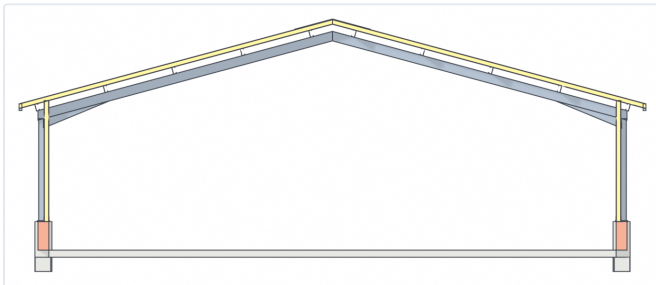
Head. A coated-steel U-cap closes the panel edge against the ceiling line.

NOT YET DOCUMENTED - CONFIRM AT ORDER

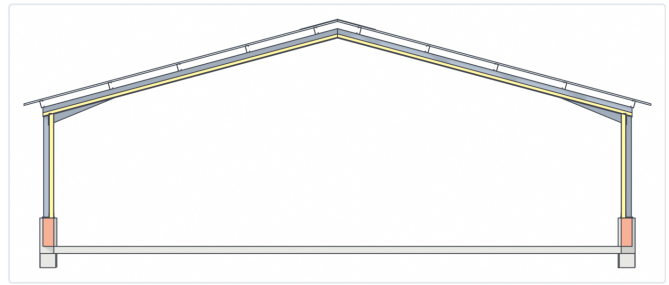
Dwarf-wall height, the fixing type and centres for the PVC channel and the coated-steel caps, and whether the channel joint is sealed. The sections here are drawn indicatively. Ask us for the project detail rather than scaling it off this sheet.

ROOF AND CEILING: TWO ROUTES

A LiteSpan roof panel and a LiteSpan ceiling are two different products. The choice is usually decided by whether the house needs a roof at all, or only a ceiling under one that already exists.

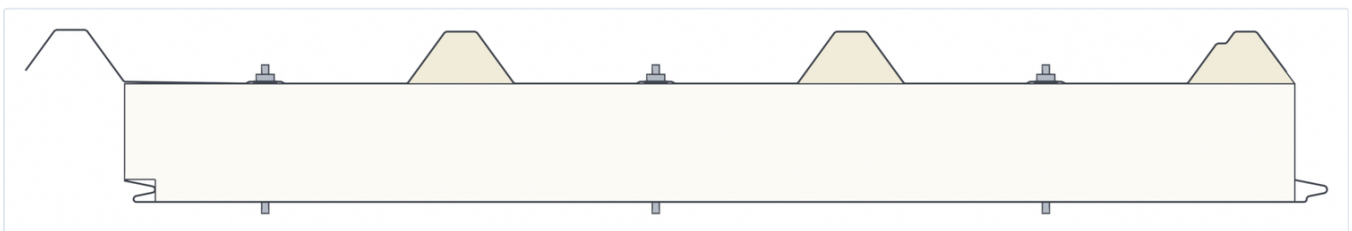


ROUTE 1 through the whole house. The roof panel spans the purlins apex to eave, and there is no roof void.



ROUTE 2 through the whole house. The client's sheeting stays up on the purlins and the ceiling board is carried below it, so a void remains.

ROUTE 1 - LiteSpan roof panel, where the roof IS the ceiling. One piece, apex to eave: roof sheeting, insulation and finished ceiling in a single product laid across the purlins. There is no separate ceiling, no roof void to ventilate and no second trade. The apex gets a ridge closure and the eave a flute closure. 990 mm cover, IBR minimum pitch 5 degrees, cores 50 to 150 mm. Panels are made to order, length on request.



Route 1. Cross-section of the LiteSpan 990 IBR roof panel: coated-steel top skin, the 100 mm insulating core with the rib fillers above it, and the liner sheet beneath. The underside is the finished ceiling - there is nothing else to install.

IF THE UNDERWRITER ASKS FOR A DIFFERENT CORE

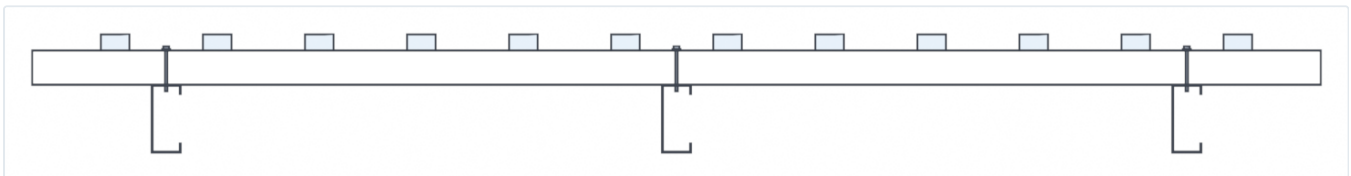
EPS is the standard core, not the only one. Stone wool and PIR cores are available on request, which is the answer where an insurer or an underwriter specifies one. The published load/span tables are calibrated to the EPS core and the 990 IBR profile, so a span-critical panel on either alternative core needs a project-specific structural check.

ROUTE 2 - their sheeting, our ceiling. Where the house already has a roof, or the client buys their own sheeting, we supply the ceiling only - PolyCool, SuperCool or LiteSpan ceiling. There are two ways to carry it, and which one you use is settled by whether the roof is already on.

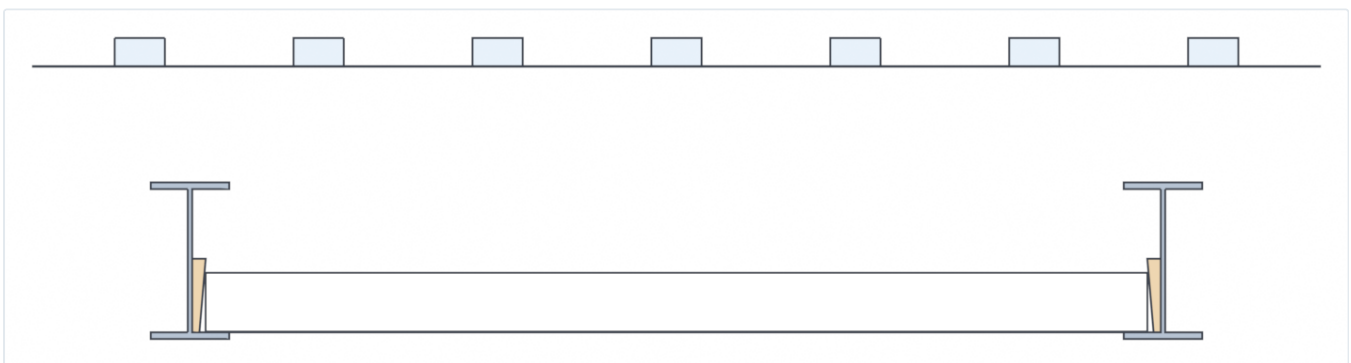
NEW BUILD: LAY THE INSULATION BEFORE THE SHEETING

On a new house the boards go down OVER THE PURLINS first, and the sheeting is laid over them. The insulation becomes a continuous sealed layer over the whole house, and the roofing crew then works over a closed envelope instead of an open one - fewer details improvised on the day, and fewer leak paths left behind. It is the better sequence and it costs nothing to follow.

BETWEEN THE RAFTERS is the retrofit answer. It does not need the sheeting lifted, so a house that is already roofed can be insulated without being opened up.



OVER PURLIN. The board runs apex to eave, across the purlins, and the client's own sheeting is laid straight onto it - one fixing picks up sheet, board and purlin together. The eave end is capped with a flute closure, the same principle as the roof panel.



BETWEEN RAFTERS. The board drops between the rafters onto the top face of the bottom flanges and runs right up to the web, and a filler wedge driven down each edge holds it onto its bearing. From below, only the rafter flanges show.

THE THREE CEILING BOARDS

These three are one family. Each is a fire-retardant treated EPS core with a washable facing laminated to ONE side, the underside - that is what the word ceiling means in the name, unless the order specifies otherwise - each is 1200 mm wide, and each insulates and finishes the house in one pass.

The distinction that matters is the **FACING**. LiteSpan ceiling is faced in **COATED STEEL**. PolyCool and SuperCool are faced in **PVC** - a thin vinyl foil on PolyCool, a 1 mm uPVC sheet on SuperCool. That single difference drives the wash-down duty, the joint, and how much of a knock the ceiling will take.

- **POLYCOOL**, PVC-faced. A white vinyl foil on the standard 15 kg/m³ FRCell core. The foil is thin: it is a wipe-clean face, not a hosing-down face. 35 / 50 / 75 / 100 mm thick, 1200 mm wide (600 also available), made to order with the length on request. Boards are **BUTT-JOINTED**, and the joint is normally centred on a mini top-hat or an H-strip.
- **SUPERCOOL**, PVC-faced. A 1 mm white uPVC sheet bonded with PU adhesive to the same 15 kg/m³ FRCell core. A far heavier facing than PolyCool's foil, and the board to specify where the ceiling is high-pressure washed. 50 / 60 / 75 / 100 mm thick, 1200 mm wide, made to order with the length on request. **TONGUE-AND-GROOVE** edge as standard.
- **LITESPAN CEILING**, **STEEL-faced**. The coated-steel board, and the only one of the three not faced in PVC. It runs the LiteSpan core rather than the 15 kg/m³ one, which is why its R differs at the same thickness. The board to reach for where the ceiling will take knocks.

THE SUPERCOOL JOINT

The tongue-and-groove edge is standard and does not have to be called up as an extra. The side joint is closed by a separate **BISCUIT** - a polystyrene tongue - that sits in the centre of the joint and slides into the groove of both boards at once, connecting the two and sealing the joint in the same move. It has to be driven fully home. A biscuit left half-engaged is worse than a plain butt joint, because the part-open groove forms a channel that carries wash-down water along the ceiling.

THE MINI TOP-HAT

PolyCool is butt-jointed, so the joint needs something under it: normally a mini top-hat, sometimes an H-strip. The mini top-hat is a small steel section, which we specify along with the boards in the material that suits the wall or ceiling it is going into, and it is what actually carries the two board edges where they meet.

It is not a PolyCool-only fitting. A mini top-hat is often useful under SuperCool as well. Which way a job goes depends on the roof the ceiling is going under, and on whether it is a new build or a retrofit - so settle it with us for the specific roof rather than assuming it from the board.

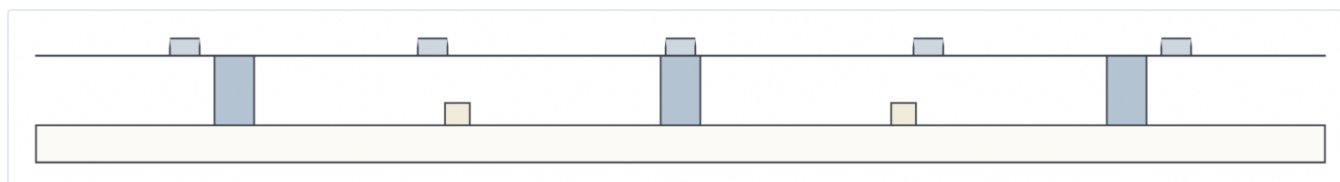
MECHANICAL IMPACT RESISTANCE IS THE TRADE-OFF

All three do the agricultural ceiling job well: light, washable, non-absorbent, and quick to fit. None of them has much mechanical impact resistance - the core behind the facing is EPS in every case. This is where the steel-versus-PVC distinction bites. A vinyl foil or a 1 mm uPVC face takes a knock from a pole, a ladder or a catching crew far less well than a coated-steel face does. Where the ceiling is within reach of traffic, specify the steel-faced LiteSpan ceiling, or protect the board.

PAST ABOUT 1.5 M BETWEEN SUPPORTS, ORDER A REINFORCED BOARD

PolyCool and SuperCool are non-structural: they are carried by their supports and they carry nothing themselves. Where the supports open up past roughly 1.5 m, or wherever the board runs across the beams and has to be partly self-supporting, order a REINFORCED board - normally ribs running the length of the board, at the back. Plain boards sag. A steel-faced LiteSpan ceiling is a composite and is generally comfortable where the single-faced boards are not.

Reinforced boards are an ORDERED EXTRA, never a default, and neither is the reinforcement's capacity something to assume - it is issued with the order. Take the support centres from Technopol for the board and build-up actually ordered, in writing, and not from a brochure table.



A reinforced board. The two elements on the back are the rib reinforcing that lets a single-faced board carry itself across a wider support spacing.

WHAT WE DO NOT CLAIM

- Fire. The core carries reaction-to-fire class B-s1,d0 to SANS 53501-1 (report IT 24-06-00029, on the 150 mm Chromadek/EPS panel), and LiteSpan is the only insulated panel on South Africa's national reaction-to-fire register. That is a reaction-to-fire class, NOT a fire-resistance rating in minutes, and it does not make the panel non-combustible. All EPS is combustible. Keep it clear of brooders, heaters and flues, and sleeve every hot penetration.
- Spans. There is no headline span number, deliberately. Span depends on thickness, profile, end or internal span, wind uplift and the deflection limit you accept. It comes from the LiteSpan load/span tables, calibrated to the SANS 54509 type test.
- Corrosion life. No multiplier against galvanised - specify coating mass and take the coil supplier's warranty.
- Ceiling support centres. No spacing table, deliberately. A maximum spacing means nothing without the load case, the support condition and the deflection limit it was derived against. Get the centres from Technopol with the order.

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