

INSULATED FLAT ROOF SECTION 150 mm PIR CORE

Technical Data Sheet

Product proposal — issued for design team review

MANUFACTURER	PRODUCT	DOCUMENT
Cork Canopy, Roof & Moulding Limited, T/A CCRM Structures Unit 8 Carrigeen Business Park, Cappoquin, Co. Waterford, P51 EK07 +353 (0)21 245 5052 info@ccrmstructures.com	Factory-made insulated flat roof section 150 mm PIR core, EPS encasement, polyurea envelope Application: flat roofs over projecting bays, porches and single-storey elements Made to measure for each opening	Revision 0 — PROPOSAL Standard section drawing: 150 mm PIR Flat Roof with EPS 200 wrap Quality management: ISO 9001:2015 Lead time: 15 working days Reference documents: see Section 10

Status of this document

This data sheet describes a product variant incorporating a PIR insulation core. CCRM Declaration of Performance No. 0000022 covers the EPS-core product and **does not extend to this build-up**. There is no CE marking, Declaration of Performance or European Technical Assessment for the composite as described here, and no external fire classification has been established for the assembly. Section 9 sets this out in full. Values shown as **highlighted** are not yet confirmed. Project-specific dimensions, PIR coverage and U-values are confirmed on the project section drawing.

1. System description

A factory-manufactured insulated roof section for use over a projecting single-storey element. A 150 mm polyisocyanurate (PIR) insulation core is encased in ultra-high-density expanded polystyrene (EPS), which forms the falls, the nose profile and the perimeter upstand. The complete assembly is then sealed on all faces with 2 mm spray-applied pure polyurea, giving a seamless, jointless waterproof envelope with no laps, welds or site-formed terminations across the field of the unit. The polyurea is then finished with an aliphatic polyurethane topcoat, which provides the ultraviolet protection the polyurea manufacturer requires (see Sections 3.4 and 7).

Units are made to measure for each opening, manufactured and coated under controlled factory conditions at Cappoquin, and delivered ready for mechanical fixing. Fixing is by steel wall-ties at the rear face, or wherever best suits the supporting structure. The extent of PIR coverage is set for each project, and the section is recessed, jointed and fixed over the area not requiring PIR coverage.

1. System description (continued)

Values below describe the standard section. Length, projection, PIR coverage, upstand height and falls are set to the project requirement and confirmed on the project section drawing.

Element	Nominal	Note
PIR insulation core	150 mm	Thickness; forms the principal thermal layer
PIR coverage, horizontal	To project requirement	From the abutment toward the nose; extent set per project (see Section 2)
EPS encasement	Balance of section	Forms falls, nose and full depth of the nosing
Polyurea coating, all faces	2 mm	Seamless; applied in two layers, cross method
UV-protective topcoat	40–100 µm DFT	Aliphatic polyurethane, applied over the polyurea
Perimeter upstand	75 mm	Standard; adjustable to suit site requirement
Nosing beyond the PIR	130 mm typical	Solid EPS, full depth — see Section 4
Total projection, back to nose	To project requirement	Standard section: 630 mm (500 mm PIR + 130 mm nosing)
Unit length	To project requirement	Made to measure to the external width of the element
Overall depth at the nose	170 mm	Top face to underside, inclusive of coating
Overall depth at the abutment	200 mm	Plus 75 mm upstand; 275 mm overall height
Falls	1:21 standard (30 mm over 630 mm)	Discharging away from the abutment; adjustable
Unit weight	≈ 10.2 kg/m ²	Over plan area; e.g. 18 kg for a 2,790 × 630 mm unit

2. Application and information required

Each unit is manufactured to the dimensions of the opening it covers. The following information is required from the design team before production; dimensions taken from construction drawings must be confirmed by site survey before manufacture.

Item	Note
External width of the element	Sets the unit length
Projection from the main wall face	Sets the unit projection, back to nose
Extent of PIR coverage required	Referenced on the engineer's drawing; confirmation required of the area that requires PIR coverage. The section is recessed, jointed and fixed over the area not requiring PIR
Space below and above the section	Heated or unheated — determines the calculation basis in Section 4
Supporting structure	Sub-structure type, fixing positions and abutment build-up
Upstand height, falls and outlet positions	75 mm upstand and 1:21 fall standard; adjustable
Finish colour	RAL, NCS, BS or other reference for the factory-applied topcoat

Two points the design team should note

1. The unit is supplied to the external face of the element it covers. Where construction drawings dimension the element to different reference faces (for example to the inner leaf), the difference — typically the thickness of the side walls and outer leaf — should be reconciled and both dimensions verified by site survey before manufacture.
2. Where the section covers heated space it is a warm-roof application, U-value is a live compliance matter under Part L, and the internal surface resistance used in Section 4 is the correct one. Where the section forms an unheated canopy, the calculation basis differs.

3. Materials schedule

3.1 Insulation core — polyisocyanurate (PIR)

Mannok Therm Floor / MF · Mannok, Derrylin, Co. Fermanagh, BT92 9GP · CE marked to EN 13165 · Declaration of Performance 004/20 · Spec Sheet Issue 5, June 2025

Characteristic	Declared	Note
Thermal conductivity	0.022 W/(m·K)	Used in Section 4
Reaction to fire	Euroclass F	BS EN 13501-1. Class 1 to BS 476-7. See Section 5
Compressive strength	> 140 kPa	See Section 6
Dimensional stability	DS(TH)4	EN 1604, to EN 13165
Compressive creep	Tested, 25-year extrapolation	BS EN 1606-1
Core water vapour resistivity	≈ 300 MNs/g·m	Foil-faced both sides
Facings / edge	Composite foil / butt	—
Board size / thickness range	1,200 × 2,400 mm / 20–200 mm	150 mm used in this build-up

The board specified is a floor board

Mannok Therm Floor / MF is declared and illustrated by its manufacturer for floor applications — below and above groundbearing slabs, under timber floating floors, and in suspended beam and block and suspended timber floors. Its thermal and mechanical properties are unaffected by being used in a roof section, but the application is outside those described by the manufacturer, and its Euroclass F reaction to fire is the lowest classification available.

3. Materials schedule (continued)

3.2 Encasement — expanded polystyrene (EPS)

Unilin Hytherm UHD E White Ext Wall · Unilin Insulation Ireland Ltd, Liscarton Industrial Estate, Kells Road, Navan, Co. Meath, C15 NP79 · DoP IRL_DOP_HYA/UHD_July2026_v2 · EN 13163:2012+A2:2016 · AVCP System 3 · Notified Body FIW/Crepim 0751/2137

Characteristic	Declared	Test standard
Thermal conductivity	0.032 W/(m·K)	EN 12667:2001
Reaction to fire	Euroclass E	EN 13501-1:2018
Compressive strength	CS(10/Y)190	EN 826:2013
Dimensional stability	DS(70,90)1	EN 1604:2013

3.3 Waterproofing — pure polyurea

PUREX AM, two-component pure polyurea · Polychem Systems Sp. z o.o., ul. Wołczyńska 43, 60-003 Poznań, Poland · TDS issued 25.11.2014, revised 17.06.2024 · CE marked, Declaration of Performance issued

Property	Declared	Test standard
Tensile strength	≥ 20.5 MPa	EN ISO 527
Elongation at break	≥ 400 %	EN ISO 527
Tear resistance	≥ 68 N/mm	ISO 34-1 (method B)
Hardness	≥ 40 Shore D	EN 868
Pull-off adhesion, concrete	A — cohesive damage	EN 1542
Free rise density	≈ 1,050 kg/m ³	—

Values determined after 48 hours on a 1.8–2.0 mm coating applied in two layers by cross method, at 70 °C component and hose temperature, 190–200 bar. The 2 mm specified for this product therefore sits at the thickness at which these values were measured. Adhesion to EPS is not a declared value; the EN 1542 result above relates to a concrete substrate.

3. Materials schedule (continued)

3.4 Ultraviolet-protective topcoat

Temadur 20, two-component semi-matt polyurethane paint with aliphatic isocyanate hardener · Tikkurila Oyj, P.O. Box 53, Heidehofintie 2, FI-01301 Vantaa, Finland · Product Data Sheet 27.06.2024

Property	Declared	Note
Binder type	Aliphatic polyurethane	Aliphatic chemistry confers ultraviolet stability
Dry film thickness	40–100 µm	Wet film 70–175 µm
Volume solids	57 ± 2 %	ISO 3233
Specific gravity	1.3 ± 0.1 kg/l	Mixture
Mixing ratio	5 : 1 by volume	Base : hardener; pot life 4 hours at 23 °C
Gloss	Semi-matt	—
Colour range	RAL, NCS, BS and others	Allows the finished unit to be colour-matched
Environmental declaration	EPD issued	EN 15804+A2, ISO 14025 / ISO 21930
Adhesion	not declared	No pull-off value given in the product data sheet
Reaction to fire	not declared	No Euroclass given in the product data sheet

Substrate scope of the topcoat

The Temadur 20 data sheet addresses metal substrates throughout. Its surface preparation guidance covers steel, zinc, aluminium, stainless steel and primed surfaces; its recommended primers are metal primers; and its recommended uses are transport and haulage equipment, storage tank exteriors, steel framework, machinery and equipment. Application over a cured polyurea coating on a building envelope product is not among the uses described, and no adhesion value is declared for such a substrate.

4. Thermal performance

Calculated in accordance with I.S. EN ISO 6946 for the standard section over heated space. Surface resistances $R_{si} = 0.10$ and $R_{se} = 0.04 \text{ m}^2\text{K/W}$ (upward heat flow). The polyurea coating is excluded: at 2 mm per face it contributes less than $0.02 \text{ m}^2\text{K/W}$, under 0.4 % of the total, and no thermal conductivity is declared for it.

EPS is taken at $\lambda_D = 0.036 \text{ W/(m}\cdot\text{K)}$, the declared level assigned by PCBC in test report 416/T/2024 for the coated product, rather than the raw board figure of $0.032 \text{ W/(m}\cdot\text{K)}$ or the measured $\lambda_{90/90}$ of $0.0355 \text{ W/(m}\cdot\text{K)}$. The declared level is the defensible basis for a compliance calculation. PIR is taken at $0.022 \text{ W/(m}\cdot\text{K)}$, the value declared by Mannok for Therm Floor / MF (Section 3.1). The PIR bears directly on the underside of the unit; there is no EPS beneath it.

The section comprises two zones of differing construction, which are assessed separately and then combined by area. Within each zone the EPS wedge varies in depth, so the U-value is integrated across the wedge rather than taken at a mean thickness.

Depths are taken from the standard section: 170 mm at the nose and 200 mm at the abutment, a fall of 30 mm over the 630 mm projection (1:21). Deducting 2 mm of coating at each face, the EPS over the PIR runs from 22 mm at the outer end of the core to 46 mm at the abutment; the nosing is solid EPS of 166 to 172 mm.

Zone	Construction	U-value
A — PIR zone	150 mm PIR + 22–46 mm EPS over	0.127 W/m ² K
B — Nosing	Solid EPS, 166–172 mm	0.207 W/m ² K
Area-weighted, standard section	500 mm PIR + 130 mm nosing	0.143 W/m ² K

PIR coverage is set per project

The area-weighted figure depends on the proportion of PIR zone to nosing and is confirmed for each project on the section drawing. The extent of PIR coverage is referenced in the engineer's drawing, and confirmation is required from the design team of the area that requires PIR coverage. The section is recessed, jointed and fixed over the area not requiring PIR coverage. A project-specific U-value calculation is provided on request once the covered area is confirmed.

Two qualifications on these figures

- No allowance is made for the fixings or the supporting sub-structure, which form a linear thermal bridge at the abutment requiring a ψ -value additional to the figures above.
- Junction detailing at the abutment, the nose and the returns is project-specific and is not assessed in this data sheet.

5. Fire performance

5.1 Reaction to fire

Product / component	Reaction to fire	Source
CCRM Insulated Roof Section, EPS core (DT1.03/04-27)	Class E, $F_s \leq 150$ mm	PCBC test report 416/T/2024, 22.11.2024; CCRM DoP 0000022
EPS encasement (board)	Euroclass E	Unilin DoP IRL_DOP_HYA/UHD_July2026_v2
PIR core	Euroclass F	Mannok Therm Floor / MF, BS EN 13501-1
Polyurea coating	Not declared	Not stated in manufacturer's TDS
UV topcoat	Not declared	Not stated in manufacturer's PDS
Reaction to fire — assembly as supplied	Euroclass F	

Basis of the declared class

No reaction to fire testing has been carried out on the PIR-cored assembly. In the absence of such testing, the assembly is taken at the lowest rated class of its components — Euroclass F, that of the PIR core. This is the conservative position and is the figure that should be used for specification purposes.

The Class E shown above for the EPS-core product is declared under CCRM DoP No. 0000022 on the basis of PCBC test report 416/T/2024, where all specimens carried the 2 mm polyurea coating. It relates to that product-type — ultra-high-density polystyrene coated in polyurea — and is reproduced here for reference only. It is not claimed for the PIR-cored assembly.

External fire performance

No external fire classification exists for this assembly. There is no $B_{\text{roof}}(t_4)$ result to I.S. EN 13501-5. Reaction to fire and external fire performance are separate classifications, and the Euroclass above does not answer the roof question. Where a project requires either classification, testing of the PIR-cored build-up should be agreed before the product is specified.

6. Mechanical performance

The values below are the declared levels assigned by PCBC in test report 416/T/2024 for the **EPS-core product**, tested as the finished composite with its 2 mm polyurea coating, across nominal thicknesses of 50 to 300 mm. They are reproduced for reference.

Characteristic	Declared (EPS-core product)	Test standard
Compressive stress at 10 % deformation	CS(10/Y) 280 Results 934.2 kPa at 50 mm falling to 282.6 kPa at 300 mm	PN-EN ISO 29469:2023-05
Long-term water absorption by immersion	WL(T) 1.0 Results 0.3–0.6 % V/V	EN ISO 16535:2019-08
Bending strength	1,214–1,389 kPa No declared level assigned	PN-EN 12089:2013-07

Compressive strength falls markedly with thickness: 934 kPa at 50 mm, 478 at 100, 351.5 at 150 and 282.6 at 300. The declared level of CS(10/Y) 280 reflects the weakest result across the range, and is the figure that should be quoted rather than any single thickness result.

6.1 Structural role

The roof section is non load bearing. It is supported on a prepared sub-structure — typically battens over cement board carried on a joist or bearer off the wall construction — and neither spans nor cantilevers. The unit carries its own weight (approximately 10.2 kg/m² of plan area) together with imposed wind and snow loading, and transfers these to the structure beneath.

No cantilever or span calculation is therefore required of the roof section itself. The adequacy of the supporting structure, and of the fixings between the two, remains with the designer of that structure.

For the PIR core, Mannok declare a compressive strength exceeding 140 kPa, with compressive creep tested to BS EN 1606-1 on a 25-year extrapolation. **The PIR is therefore the weakest layer of this build-up in compression**, below both the EPS board at CS(10/Y)190 and the coated product's declared CS(10/Y) 280. Any foot-traffic or point-load rating for this section must be derived from the PIR core, not from the figures in the table above.

Outstanding for this build-up: compressive and bending performance of the composite PIR-cored section as manufactured, and a foot-traffic or point-load rating for maintenance access. Because the PIR core is the weakest layer in compression, any such rating must derive from it.

7. Waterproofing and durability

Seamless polyurea envelope, fully bonded to the substrate, with no joints, laps or site-formed terminations across the field of the unit. Coating service temperature to 140 °C and occasionally 180 °C, although the assembly is limited well below this by the EPS. Chemical resistance to diluted acids, alkalis, detergents, alcohols and oil-related chemicals; the full immersion table is given in the coating manufacturer's technical data sheet. Hygiene certificate for potable water contact, PZH B-BK-60210-1168/19.

7.1 Ultraviolet exposure

The polyurea manufacturer states that the coating changes colour or darkens under ultraviolet light, that this may affect its mechanical properties, and recommends protection by a further UV-resistant coating to preserve colour and mechanical performance.

CCRM specification: the polyurea is finished with Temadur 20, a two-component polyurethane with an aliphatic isocyanate hardener (Section 3.4). Aliphatic polyurethanes are inherently ultraviolet-stable, and an aliphatic topcoat over polyurea is the established means of addressing this. The topcoat is factory-applied, and its colour range allows the finished unit to be matched to the project palette.

Two points remain open on the topcoat

- **Suitability over polyurea is not documented.** The topcoat data sheet addresses metal substrates and declares no adhesion value for a polyurea substrate. Its manufacturer asks that written confirmation of suitability be obtained for uses outside those described. That confirmation, and preferably a pull-off test on the actual build-up, should sit in the technical file.
- **No recoating interval is specified.** At 40–100 µm dry film the topcoat is a sacrificial layer protecting a 2 mm membrane, not a permanent one. CCRM's maintenance regime calls for painted finishes to be re-painted "when necessary" rather than at a defined interval; a design team assessing service life on an exposed roof may ask for a stated period.

7.2 Maintenance

The roof section follows the same maintenance regime as CCRM window sills, set out in the CCRM Structures Installation & Maintenance Guide 2026. Annual maintenance is required for optimal performance.

Recommended	Not permitted
Wash with mild soap and water, Milton, or very mild bleach	Excessive force when cleaning
Maintain painted finishes and re-paint when necessary	Paint thinners, lacquer thinner, gasoline, kerosene or other harsh chemicals
Inspect annually and make good any surface damage	Jet cleaners or power washers

CCRM products carry a 10-year warranty, conditional on correct installation and regular maintenance. The warranty excludes damage from negligent storage or handling, installation contrary to the guidelines, tampering with the product, contractor error at installation, and external factors including force majeure, subsidence and organic contamination. Full terms are in the Installation & Maintenance Guide.

7.3 Vapour control and interstitial condensation

The assembly is vapour-tight on all faces: the PIR core is foil-faced with a core water vapour resistivity of approximately 300 MNs/g·m, and the polyurea envelope seals the unit completely. Any moisture entering during manufacture or through a penetration therefore has no path out. An interstitial condensation risk assessment should be carried out for the junction between this section and the abutting wall construction; the PIR manufacturer offers this as part of their technical support service. No expected working life or root resistance is declared for this assembly.

8. Manufacture and installation

The unit weighs approximately 10.2 kg/m² over its plan area — 18 kg for a typical 2,790 × 630 mm unit. It is therefore a two-person lift without mechanical assistance, and the dead load it imposes on the supporting structure is an order of magnitude below a precast concrete or natural stone equivalent of the same dimensions.

Insulation cut and assembled, and polyurea applied, under controlled factory conditions at Cappoquin. Coating is applied at an ambient temperature of 5–40 °C onto a substrate at 5–35 °C, held at least 3 °C above the dew point, at a relative humidity not exceeding 80–85 %. The ultraviolet-protective topcoat is applied in the factory under comparable conditions: ambient, surface and paint above 5 °C, relative humidity not exceeding 80 %, and the substrate at least 3 °C above the dew point. Units are delivered complete and are set on a prepared sub-structure designed by others, and mechanically fixed at the rear face or wherever best suits the supporting structure. Falls, outlet positions and upstand heights are set to the project requirement. Abutment, outlet and nose detailing: **[to confirm per project]**. Standard lead time 15 working days from confirmed dimensions.

9. Certification status

CCRM Declaration of Performance No. 0000022, product-type DT1.03/04-27, covers ultra-high-density polystyrene coated in polyurea under EN 13163. It does not cover a PIR core. PIR falls under EN 13165, a different harmonised standard.

The underlying type testing is PCBC test report 416/T/2024, issue 1 of 17 December 2024, carried out by PCBC as Notified Body No. 1434 for thermal conductivity, compressive stress, water absorption and reaction to fire. Dimensional stability and bending behaviour were tested but fall outside the notified scope stated in the report.

Test report 416/T/2024 names Poly Passive Mouldings Ltd, Midleton, Co. Cork as customer and manufacturer. CCRM Structures subsequently acquired the product line and manufacturing plant from that company, and manufactures the product on the same equipment. The type testing therefore relates to the same product-type and the same production process. The basis on which CCRM relies on that testing is evidenced in the technical file.

The EPS board and the polyurea coating are each CE marked by their own manufacturers under valid Declarations of Performance.

- **There is no CE marking, Declaration of Performance or European Technical Assessment for the composite assembly as described in this data sheet.**
- No external fire classification ($B_{\text{roof}}(t_4)$, I.S. EN 13501-5) exists for the assembly.
- For a coated roof product, assessment under EAD 030350-00-0402 (Liquid applied roof waterproofing kits, superseding ETAG 005) is the route that carries declared working-life categories W2 and W3. CCRM does not currently hold such an assessment.

10. Reference documents

Standard section drawing	150 mm PIR Flat Roof with EPS 200 wrap (project revision issued with each order)
PIR spec sheet	Mannok Therm Floor / MF, Issue 5, June 2025 (DoP 004/20)
EPS Declaration of Performance	Unilin IRL_DOP_HYA/UHD_July2026_v2
Polyurea technical data sheet	Polychem Systems PUREX AM, revised 17.06.2024
UV topcoat product data sheet	Tikkurila Temadur 20, 27.06.2024
Maintenance regime	CCRM Structures Installation & Maintenance Guide 2026
CCRM Declaration of Performance	No. 0000022 (EPS-core product)
Type test report	PCBC 416/T/2024, issue 1 of 17 December 2024, Notified Body 1434

Project-specific information — dimensions, PIR coverage, support arrangement, architectural and structural drawings — is recorded on the project section drawing and in the project-specific issue of this data sheet.