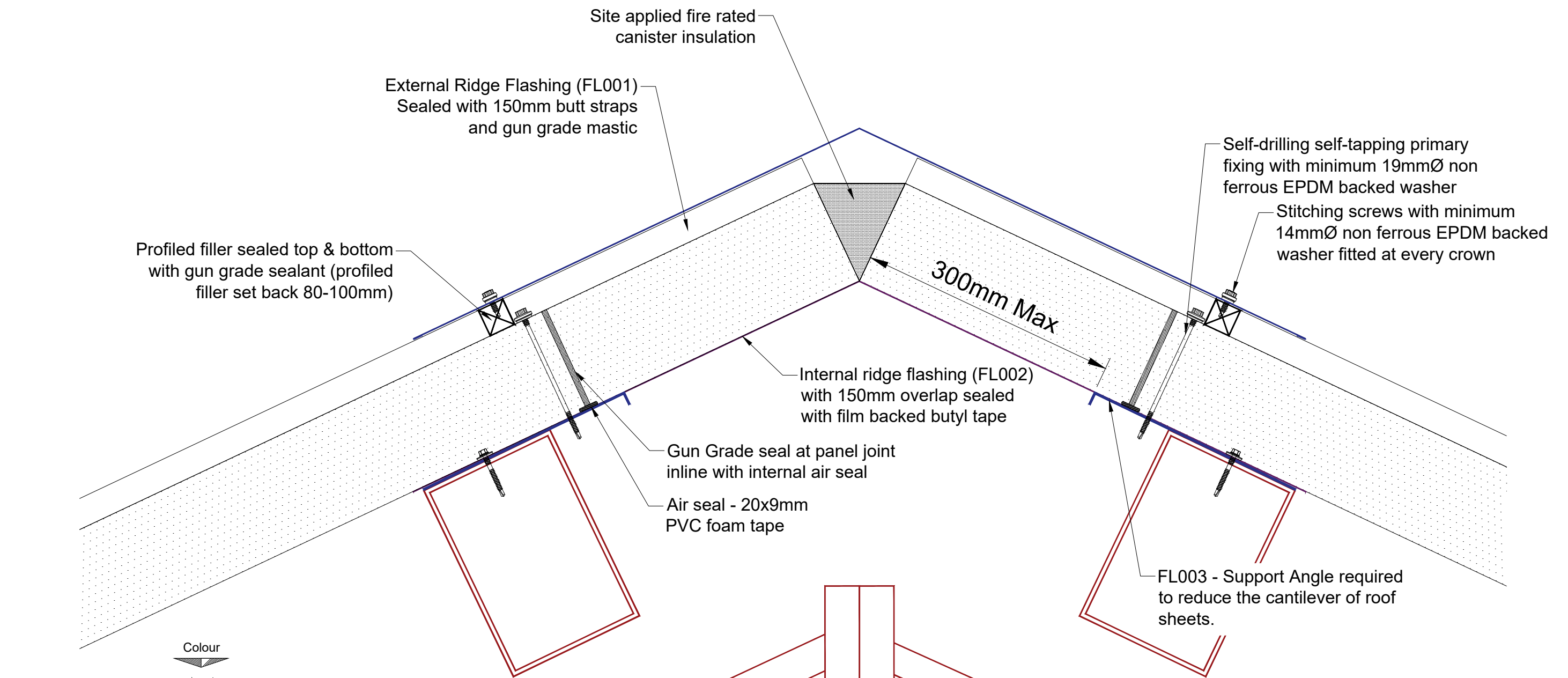
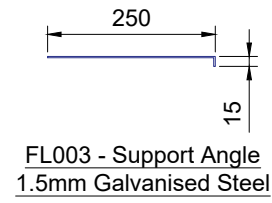
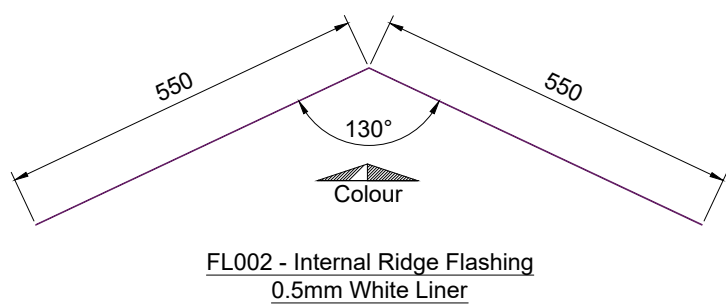
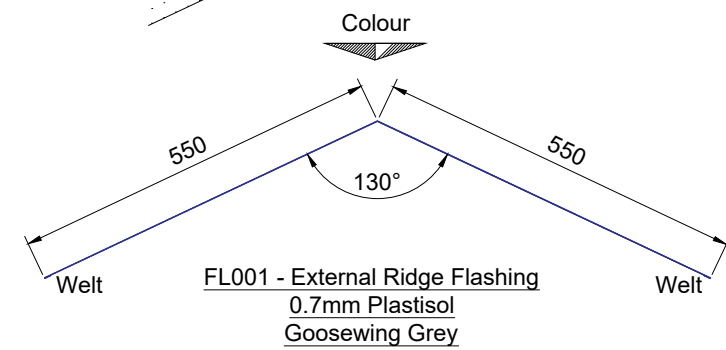
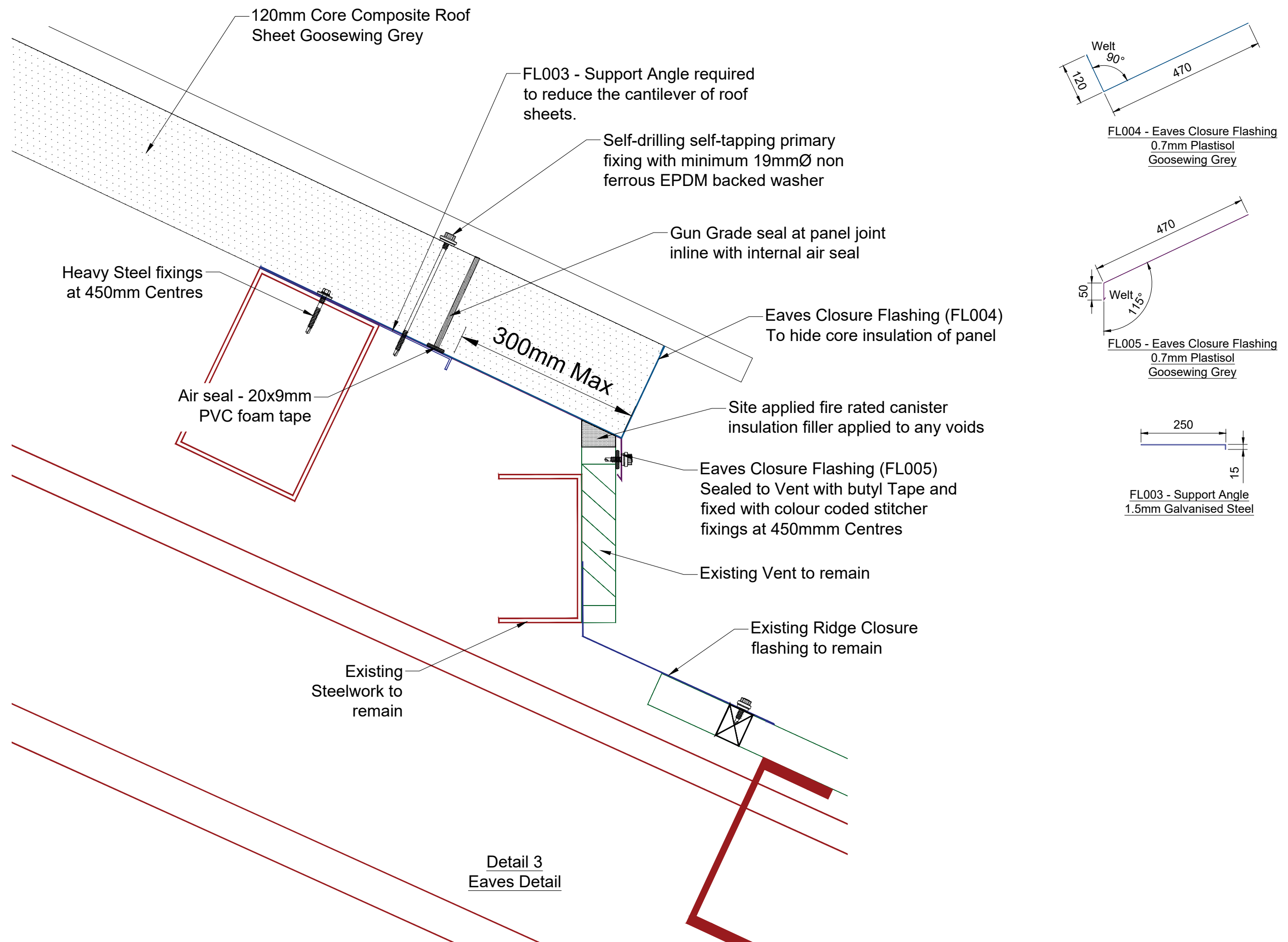


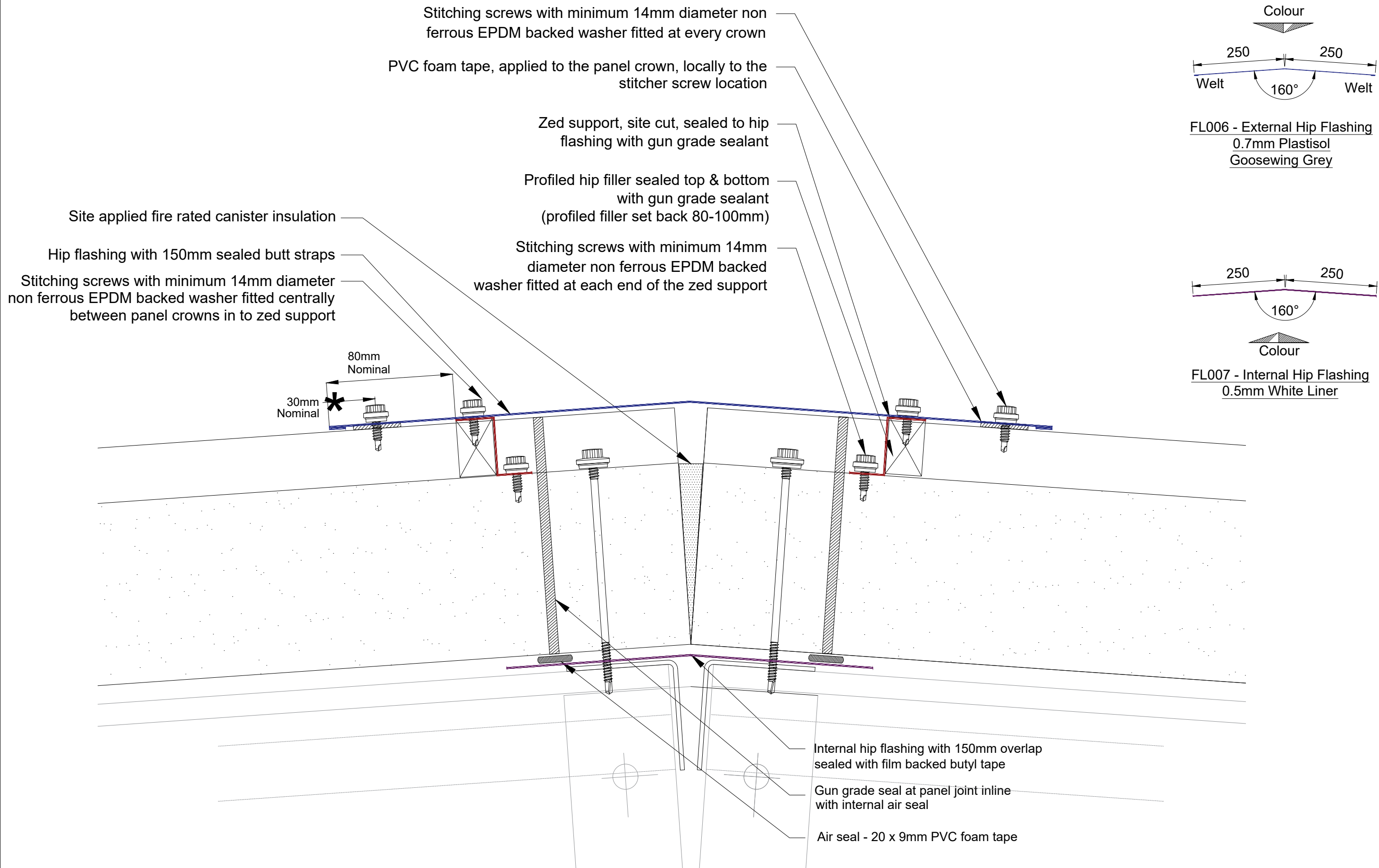
Detail 1
Ridge Detail

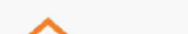


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					MRJ	Tersus Group			
					Checked	Project			
					NW	IOP Swansea			
					Scale	Title			
					NTS	Detail 1 - Ridge Detail			
					Date	Drawing Number	Status	Rev	
					27/09/24	RF1376-D001	APP	P01	
AMENDMENTS									



-	-	-	-	-	-	Drawn	Client			TPS ROOFING LTD, UNIT 38, NINE MILE POINT INDUSTRIAL ESTATE, CWMFELINFACH, NP11 7HZ, TEL:0345 026 8780	
-	-	-	-	-	-	MRJ	Tersus Group				
-	-	-	-	-	-	Checked	Project				
-	-	-	-	-	-	NW	IOP Swansea				
-	-	-	-	-	-	Scale	Title				
-	-	-	-	-	-	NTS	Detail 3 Eaves Detail				
REV	DATE	DESCRIPTION			BY	CHK	Date	Drawing Number	Status	Rev	
		AMENDMENTS					27/09/24	RF1376-D002	APP	P01	



-	-	-	-	-	-	MRJ	Tersus Group			TPS ROOFING LTD, UNIT 38, NINE MILE POINT INDUSTRIAL ESTATE, CWMFELINFACH, NP11 7HZ, TEL:0345 026 8780	
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-	-	-	-	-	-		NTS	Detail 4 Typical Hip Detail			
REV	DATE	DESCRIPTION			BY	CHK	Date	Drawing Number	Status	Rev	
		AMENDMENTS					27/09/24	RF1376-D004	APP	P01	

TATA STEEL



Trisomet®

External roof and wall panel system



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Tata Steel

Tata Steel is Europe's second largest steel producer. Our comprehensive range of high quality products and services are supported by steel making sites in the UK and The Netherlands, a European-wide distribution and service centre network and downstream businesses ranging from tubes and building systems to plating.

Our approach to business is unique. We believe our strength is how we build collaborative relationships that create new success for our customers, adding value to their business and helping them to perform in their markets. As a company, we are dedicated to managing our operations responsibly and to continuously improving our performance. We operate in a way that is safe for our people and which respects the environment, with care towards the communities surrounding our operations and beyond.

Sustainability

Steel is an essential material, intrinsic to our way of life and to the products society will demand in a sustainable future. Steel is a material that is used, not consumed. It is recycled and used again, without any loss of quality, time after time. At Tata Steel, we are committed to making the products society

needs and to making them in the most responsible way possible.

This means, practically, that we commit to:

- Producing steel products for the future.
- Investing in sustainable steel making.
- Improving our existing processes.
- Facilitating the recycling loop.

Building envelope

Tata Steel has extensive panel and profiling manufacturing capabilities. We are the only company able to offer a comprehensive range of insulated panels, built-up systems, façades, structural roof and floor decking profiles from one single UK source, with the support and backing of a truly global company and complete supply chain.

With such a diverse product portfolio and 50 years experience, we are uniquely able to offer the specifier an unbiased solution to meet the design criteria for any project.

Trisomet®

Trisomet® is an insulated panel manufactured as a single component suitable for both roof and wall cladding applications. As a one-fix component its consistency enables speed of installation and with a wide spaced trapezoidal steel external skin provides optimum performance for water drainage, strength and walkability.

Technical Services

Our dedicated building envelope technical team are available to provide support and advice on the best product for your project. They are on hand to help with:

- Detail design.
- Wind and snow loading.
- U-value calculations.
- Load span checks.
- Acoustic SRI predictions.
- Specification writing.
- Advice on meeting Building Regulations, maximising BREEAM credits.
- Assistance with SBEM.
- Condensation risk analysis.
- Assistance in product testing.



Case study

Llanwern House, Llanwern Works, Newport

Llanwern House, the new, energy efficient reception hub at Tata Steel's Llanwern Works in Newport, features a cavalcade of our building envelope and structural solutions.

The building has been entirely constructed using solutions by Tata Steel and has three floors.

The ground floor will house conference facilities as well as a visitors' induction area. Floor One and Two feature an open-plan working environment, housing 200 employees.

Client: Tata Steel

Architect: Boyd Pees

Main contractor: Llanwern

Envelope installer: Cove Structures South West Ltd

Decking installer: Composite Profiles Ltd

Cladding system: Trisobuild®, Trisomet®, StrataScreen®, CS2 Profile and WP40 Profile

Decking system: Confidex® 80

Colorcoat® product: Colorcoat Prisma®

Key benefits: Trisomet®

- One fix construction in panel lengths from 300 mm to 20 m to optimise speed of installation and minimise waste for more sustainable construction.
- Core depths from 40 to 135 mm to optimise the design solution. The 135 mm core meets a U-value of 0.15 W/m²K.
- Third party validation of high standards of quality, thermal performance, fire safety, acoustic performance, air-tightness, water penetration and environmental credentials.
- LPCB (Loss Prevention Certification Board) approval to LPS 1181 Part 1 to help reduce insurance premiums and assures reaction to fire performance.
- Fire resistance performance of up to 30 minutes insulation and 4 hours integrity achievable with standard fixing and sealing methods (external side-lap stitched at maximum 300 mm centres).
- Available with Platinum Plus® system guarantee for 25 years, covering a pre-approved range of reputable, high-end components.
- Colorcoat HPS200 Ultra® or Colorcoat Prisma® pre-finished steel used as standard, offering long-term performance with the Confidex® Guarantee and providing peace of mind for up to 40 years.
- Easy installation of photovoltaic (PVs) when used as a roof panel. Scheme specific specifications and funding options can be discussed using PV panels from Tata Power.
- When used in conjunction with Colorcoat HPS200 Ultra®, PV modules can be installed at any point throughout the Confidex® duration and will be covered for the remainder of the guarantee period. Future proofing your building so that it is PV ready.
- Manufactured in factory conditions operating to quality management standard BS EN ISO 9001:2008 and environmental management standard BS EN ISO 14001:2004.
- Product specification and performance in accordance with BS EN 14509, European Product Standard for CE Marking.
- Full traceability of all component materials and certified 'very good' to BRE's responsible sourcing standard BES 6001.
- Certification to BES 6001 provides independent evidence of our corporate responsibility, and helps increase credits under the Responsible Sourcing of Materials section of BREEAM.
- The state of the art PIR core has zero ozone depletion potential (ODP) and a very low global warming potential (GWP) of less than 5 to increase BREEAM credits.





Platinum Plus® system guarantee

Platinum Plus® provides a complete building envelope solution guaranteed for 25 years.

Designed in collaboration with our innovative supply chain of leading component manufacturers, our comprehensive portfolios of high quality products are fully integrated to provide the widest range of roofing and cladding systems.

The Platinum Plus® guarantee includes, amongst others, the following components:

- Trisomet® insulated panel.
- Colorcoat HPS200 Ultra® or Colorcoat Prisma® pre-finished steel.
- Stainless steel fixings.
- Roof lights.
- Sealant.
- Fillers.
- Fall arrests.
- Gutters.

The guarantee is offered directly to building owners, giving a direct link back to Tata Steel as the one point of contact.

For full details of our approved components please contact our technical team on 01244 892199.

To ensure that the building envelope will perform as required by the client, we work with specifiers to tailor a specification that considers the interactions of the components and how they impact the building design and performance. We will then provide a detailed Platinum Plus® specification for use within the project tender package, together with a list of recommended installation contractors.

To guarantee the quality of components used on your building, our team of technical

construction experts will visit the site to check for compliance to specification, reducing the risk of any issues arising in the future.

Once the project is completed the installer will be required to apply for the guarantee using the supplied forms included in the specification document. Tata Steel will then issue the Platinum Plus® guarantee directly to the building owner.

How to raise a specification?

The Platinum Plus® system guarantee needs to be registered with the specifier prior to the tender package being distributed. Please contact our technical team so that we can help you to guarantee the longevity of your building on 01244 892199.



Colorcoat® products and services

Trisomet® is only supplied with Colorcoat® pre-finished steel for the external and internal skin so that we can provide the very highest quality and service to our customers.

Colorcoat® products and services

The Colorcoat® brand provides the recognised mark of quality and metal envelope expertise exclusively from Tata Steel. For nearly 50 years Tata Steel has developed a range of technically leading Colorcoat® pre-finished steel products which have been comprehensively tested and manufactured to the highest quality standards.

Colorcoat HPS200 Ultra®

The latest generation product for roof and wall cladding, Colorcoat HPS200 Ultra® is the only pre-finished steel product to ensure your building envelope maintains its integrity and aesthetic appeal for up to 40 years, without ongoing maintenance or inspection costs. We guarantee it won't let you down. For more information visit www.colorcoat-online.com/ultra

Key benefits include:

- Confidex® Guarantee for up to 40 years including cut edges.
- 40 standard colours in solid and matt shades.
- Surpasses requirements of Ruv4 and RC5 as per EN 10169:2009 proving outstanding colour retention and corrosion resistance.
- Incorporates the most advanced coating technology, to provide twice the colour and gloss retention of standard plastisol products.
- Scintilla® embossed as a mark of authenticity from Tata Steel.
- Repertoire® colour matching service for up to 2000 m².

Colorcoat Prisma®

Designed to withstand the rigours of the external environment, versatile, lightweight and strong, Colorcoat Prisma® pre-finished steel is the ideal choice for your building envelope for long lasting colour. With a contemporary new colour range and an optically smooth finish, inspire your imagination. For more information visit www.colorcoat-online.com/prisma

Key benefits include:

- Confidex® Guarantee for up to 30 years including cut edges.
- 27 standard colours in solid, metallic and matt shades.
- All solid and metallic colours surpass requirements of Ruv4 and RC5 as per EN 10169:2009 proving outstanding colour retention and corrosion resistance.
- Reverse side branding making traceability easy, so you can rest assured that your building is protected with the highest quality from Tata Steel.
- Repertoire® colour matching service for up to 2000 m².

Colorcoat® High Reflect

In addition to the standard PE 15, we also offer the Colorcoat® High reflect liner as an option.

Key benefits include:

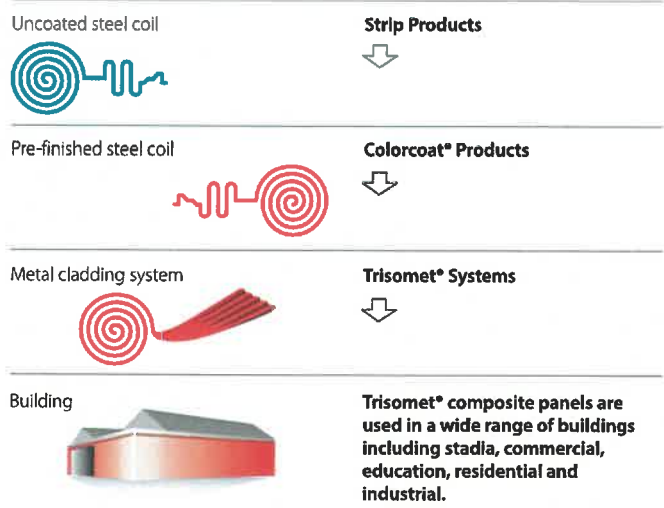
- ≥ 85 % reflectance, reducing the amount of energy required to achieve the same level of lighting.
- Possible energy savings of up to 12 % per year.
- Significantly reduces CO₂ emissions by 2-3 % per year, helping you to achieve compliance with tightening regulations.

Confidex® Guarantee

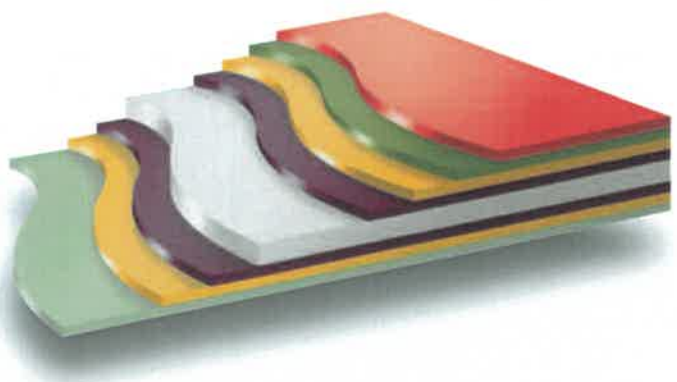
Offers the most comprehensive guarantee for pre-finished steel products in Europe and provides peace of mind for up to 40 years. Unlike other guarantees, Confidex® covers cut edges for the entirety of the guarantee period and does not require mandatory annual inspections.

Includes cover for Colorcoat HPS200 Ultra® pre-finished steel that is under photovoltaic (PV) frame modules, providing the building owner with the confidence that installing a PV array will not have a detrimental effect on the performance of the roof and that the whole roof is guaranteed to perform for the same duration of up to 40 years.

For more information about Colorcoat® products and services call the Colorcoat Connection® helpline on +44 (0) 1244 892434.



Colorcoat® pre-finished steel layers

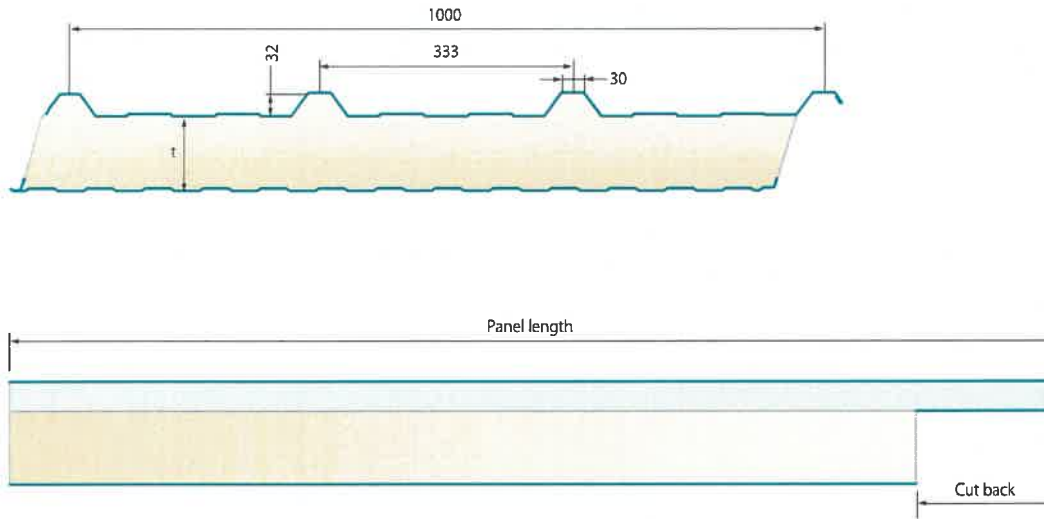


Key

 Topcoat	 Primer	 Pre-treatment
 Metallic coating	 Base substrate	 Backing coat

System performance data

Trisomet®



General panel information

Thickness, t (mm)	40, 60, 80, 100, 120 and 135
Maximum length (mm)*	20000
Minimum length (mm)	300
Cutback (mm)**	
Minimum	25
Maximum	250***
Weight (based on thickness mm) (kg/m ²)	
40	9.23
60	10.01
80	10.40
100	11.22
120	12.03
135	12.76

* The panel length is measured by the length of the external sheet, as shown above. Lengths over 14000 mm will be subject to additional delivery charges.

** Panels will always have one flush end and one cutback end; therefore, they will be handed and should be ordered according to the direction of lay required.

*** Recommended end laps are 50 mm for horizontal, 100 mm for vertical and 150 mm for roof applications.

Panel manufacturing tolerance

Cover width (mm)	±2
Thickness (mm)	±2
Squareness (mm)	<6
Cutback (mm)	-2 +5
Length (mm) < 3 m	±5
Length (mm) > 3 m	±10

Tolerance is in accordance with BS EN 14509.

General reference

All measurements throughout this brochure are referenced in mm unless stated otherwise. Technical illustrations are not to scale.

Span/load tables

The span tables below have been created in accordance with BS EN 14509.

The values are based on a 0.5 mm external face, a 2.0 mm minimum purlin thickness, and a maximum permitted cladding deflection of Span/200 under imposed load.

Safe imposed (positive) loads (kN/m²)

Span condition	Core thickness (mm)	Span (m)												
		1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
Single	40	3.31	2.74	2.32	1.99	1.73	1.51	1.33	1.09	0.88	0.71	0.58	0.47	0.39
	60	4.20	3.59	3.13	2.76	2.45	2.18	1.95	1.69	1.45	1.25	1.08	0.93	0.79
	80	5.10	4.47	3.97	3.55	3.19	2.88	2.60	2.32	2.01	1.76	1.54	1.35	1.20
	100	6.02	5.35	4.81	4.35	3.95	3.59	3.27	2.96	2.60	2.29	2.03	1.80	1.60
	120	6.94	6.25	5.67	5.17	4.72	4.31	3.94	3.60	3.20	2.84	2.53	2.26	2.03
	135	7.64	6.92	6.32	5.78	5.30	4.86	4.44	4.08	3.65	3.26	2.91	2.62	2.36
Double	40	3.06	2.33	1.84	1.50	1.25	1.06	0.91	0.79	0.69	0.61	0.55	0.49	0.44
	60	3.39	2.62	2.10	1.73	1.46	1.24	1.08	0.94	0.84	0.74	0.67	0.60	0.55
	80	3.71	2.90	2.34	1.94	1.64	1.41	1.23	1.08	0.96	0.86	0.78	0.70	0.64
	100	4.00	3.15	2.57	2.14	1.82	1.57	1.37	1.21	1.08	0.97	0.87	0.79	0.72
	120	4.28	3.40	2.78	2.33	1.99	1.72	1.51	1.33	1.19	1.07	0.97	0.88	0.80
	135	4.48	3.57	2.93	2.46	2.11	1.83	1.60	1.42	1.27	1.14	1.03	0.94	0.86
Multi	40	3.31	2.66	2.10	1.71	1.42	1.21	1.04	0.91	0.80	0.71	0.64	0.57	0.52
	60	3.82	2.93	2.34	1.92	1.62	1.39	1.20	1.06	0.94	0.84	0.76	0.69	0.62
	80	4.12	3.19	2.56	2.12	1.80	1.55	1.35	1.19	1.06	0.95	0.86	0.79	0.72
	100	4.39	3.43	2.78	2.31	1.97	1.70	1.49	1.32	1.18	1.06	0.96	0.88	0.80
	120	4.66	3.66	2.98	2.49	2.12	1.84	1.61	1.43	1.28	1.16	1.05	0.96	0.88
	135	4.85	3.83	3.13	2.62	2.24	1.94	1.71	1.51	1.36	1.22	1.11	1.02	0.93

Safe wind suction (negative) loads (kN/m²)

Span condition	Core thickness (mm)	Span (m)												
		1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
Single	40	-3.45	-2.88	-2.46	-2.14	-1.87	-1.65	-1.47	-1.32	-1.19	-1.07	-0.97	-0.85	-0.73
	60	-4.35	-3.75	-3.29	-2.92	-2.60	-2.34	-2.11	-1.91	-1.73	-1.58	-1.44	-1.32	-1.22
	80	-5.27	-4.63	-4.13	-3.72	-3.36	-3.05	-2.77	-2.52	-2.30	-2.11	-1.94	-1.78	-1.64
	100	-6.20	-5.53	-4.99	-4.53	-4.13	-3.77	-3.45	-3.15	-2.89	-2.66	-2.45	-2.26	-2.09
	120	-7.14	-6.44	-5.86	-5.36	-4.91	-4.50	-4.13	-3.80	-3.49	-3.22	-2.97	-2.74	-2.52
	135	-7.85	-7.12	-6.52	-5.98	-5.50	-5.06	-4.65	-4.28	-3.95	-3.64	-3.36	-3.11	-2.80
Double	40	-3.10	-2.38	-1.91	-1.58	-1.35	-1.16	-1.02	-0.91	-0.82	-0.75	-0.68	-0.63	-0.58
	60	-3.44	-2.68	-2.17	-1.82	-1.55	-1.35	-1.19	-1.07	-0.96	-0.88	-0.81	-0.75	-0.69
	80	-3.76	-2.97	-2.42	-2.04	-1.75	-1.53	-1.35	-1.21	-1.10	-1.00	-0.92	-0.85	-0.79
	100	-4.07	-3.23	-2.66	-2.24	-1.93	-1.69	-1.50	-1.35	-1.22	-1.12	-1.03	-0.95	-0.89
	120	-4.36	-3.49	-2.88	-2.44	-2.11	-1.85	-1.64	-1.48	-1.34	-1.22	-1.13	-1.05	-0.97
	135	-4.57	-3.67	-3.04	-2.58	-2.23	-1.96	-1.74	-1.57	-1.42	-1.30	-1.20	-1.11	-1.04
Multi	40	-3.45	-2.70	-2.16	-1.78	-1.51	-1.31	-1.15	-1.02	-0.92	-0.84	-0.77	-0.71	-0.66
	60	-3.85	-2.98	-2.40	-2.00	-1.70	-1.48	-1.31	-1.17	-1.06	-0.97	-0.89	-0.82	-0.77
	80	-4.16	-3.24	-2.63	-2.20	-1.89	-1.65	-1.46	-1.31	-1.19	-1.09	-1.00	-0.93	-0.87
	100	-4.45	-3.50	-2.86	-2.40	-2.07	-1.81	-1.61	-1.44	-1.31	-1.20	-1.11	-1.03	-0.96
	120	-4.73	-3.74	-3.07	-2.59	-2.23	-1.96	-1.74	-1.57	-1.42	-1.31	-1.20	-1.12	-1.05
	135	-4.93	-3.92	-3.23	-2.73	-2.36	-2.07	-1.84	-1.66	-1.51	-1.38	-1.28	-1.19	-1.11

If safe loading shown above is not satisfactory to your requirements, it is possible to adjust performance by using alternative fastener layouts, purlin specifications and/or deflection limits. For further information please contact the Technical Department 01244 892199.

Performance benefits



Thermal performance

Trisomet® complies with the minimum requirements of the conservation of fuel and power sections of the Building Regulations for England and Wales (Part L2) and Scotland (Technical Handbook Section 6 Energy). The panel construction offers highly consistent insulation performance, and the site-formed junctions provide a practical and effective method of ensuring good thermal performance.

Thickness (mm)	U-value (W/m²K)*	Typical application
40	0.46	Unheated building
60	0.33	Min Part L requirement for wall
80	0.25	Min Part L requirement for roof
100	0.20	Enhanced
120	0.16	Enhanced
135	0.15	Enhanced

* Figures computer modelled in accordance with EN ISO 10211 as stated in MCRMA Technical Note 14.



Fire safety

Trisomet® carries Grade EXT-B and EXT-A approval by the LPCB. Fire resistance performance of up to 30 mins insulation and 4 hours integrity is also achievable with standard fixing and sealing methods (external side-lap stitched at maximum 300 mm centres). The panel achieves a Grade AA rating in accordance with BS 476-3, which tests for external surface spread of flame and fire penetration (AA is the best result achievable). The internal surface of the panel complies with Class 'O' in accordance with the Building Regulations when tested to BS 476 Parts 6 & 7 and also achieves a Class B s2 rating in accordance with EN 13501-1.



Acoustic performance

The acoustic performance of Trisomet® has been predicted using software developed by the Department of Applied Acoustics, University of Salford, under a research contract funded by the Metal Cladding and Roofing Manufacturers Association (MCRMA). The results in the table are based on an 80 mm core.

Frequency (Hz)	SRI Values (dB)*	Frequency (Hz)	SRI Values (dB)*
100	12.1	800	27.2
125	13.6	1,000	28.9
160	15.3	1,250	30.6
200	16.9	1,600	32.5
250	18.5	2,000	34.3
315	20.2	2,500	36
400	21.9	3,150	35.9
500	23.6	4,000	33.8
630	25.4	5,000	31.2

Weighted SRI RW = 28.5 dB

* The predicted sound reduction index values should only be used to provide guidance for preliminary design and/or appraisal of cladding systems.



Water penetration

In accordance with product standard BS EN 14509, the water-tightness of a system should be tested to EN 12865. The standard advises that the system should achieve water-tightness to a pressure of 600 Pa for normal conditions. Laboratory testing shows evidence that the Trisomet® system is water-tight up to a pressure of 1200 Pa, which far surpasses this requirement.



Air-tightness

The cladding panel and its junction details must be air-tight so that the air permeability of the building does not exceed 10m³/h/m² at an applied pressure of 50 Pa, in accordance with the Building Regulations for England and Wales (Part L2) and Scotland (Technical Handbook Section 6 Energy). In laboratory tests in accordance with EN BS 12114, the sealed panel show evidence of air leakage as low as 0.43 m³/h/m².

A practical expectation for a finished building, with effective sealing at all junctions would be 3-5 m³/h/m². However enhanced detailing practises on large shed buildings can realise air leakage performance figures of less than 3 m³/h/m².



Environmental credentials

Trisomet® is a sustainable solution with responsible sourcing and traceability of all component materials. All steel elements are produced within the Tata Steel's UK steel production, strip processing, galvanising, coating and profiling facilities. In addition the system's carbon footprint is further minimised by the manufacturing process being situated adjacent to Colorcoat® pre-finished steel production facility.

The PIR insulation within the system has zero ozone depletion potential (ODP) and a very low global warming potential (GWP) of less than 5. Both these factors support the achievement of a high BREEAM rating.

All steel elements are 100 % recyclable back into new steel products, without loss of quality. The insulation can be separated using existing scrap shredding technology, after which the materials can be recovered or recycled.



Summary of Building Regulations requirements for the conservation of fuel and power



Introduction to changes

The latest amendment to the England AD-L2 and Wales Part L Regulations for the conservation of fuel and power (2013) came into effect on 6 April and 31 July 2014 respectively. The revision to Section 6 Scotland is scheduled for 2015.

AD-L2 follows the principle of the 2010 Regulations but with significant changes in the definition of the types of buildings that make up the aggregate mix. As before, the whole building is assessed using the SBEM 'whole building methodology' that expresses the energy performance. Since it is the building elements that emit CO₂ and not the building elements, the total energy building performance takes account of the CO₂ emission resulting from the provision of heating, hot water, ventilation, cooling and lighting. It is therefore based on the building's use in occupation.

In Part L 2010, two notional buildings were defined for top-lit (warehouses) and side-lit (all other) buildings. In Part L 2013 notional buildings reflect the different energy profiles and building services plant likely to be found in the buildings and are defined for:

- Toplit (warehouses – further defined by size)
- Sidelit (heated only)
- Sidelit (heated and cooled)

For 2013, the aggregate approach to CO₂ reductions introduced for the 2010 revision have been retained. This means that the CO₂ emissions across the predicted building mix will be 9% lower than the same building mix constructed to 2010 standards.

The total building stock emissions are based on a set of standard building types and occupancy profiles which are defined in the national calculation methodology (NCM)

The actual improvement of a building constructed to 2013 requirements may be more or less than 9%.

There is no correlation for individual buildings. The 9% improvement is an aggregated average across the stock which would be achieved if all buildings were constructed to the notional building specification.

The notional building specification is used to calculate the CO₂ emission target for a building. The designer does not have to use the notional building specification for the actual building but must ensure that the actual building emission rate is ≤ the target emission rate.

For Wales the improvement factor is 20% reduction. The specification for the notational building to achieve this is the same as for England but includes a 5.3% Gross Internal Area (GIA) of PV. Welsh regulations have also introduced a Target Primary Energy Consumption (TPEC) set by the notional building.

In order to achieve the 9% target improvement in energy/carbon emissions for 2013, the set values in the notional building have been further improved compared to 2010, including:

- Lower air permeability rate.
- Improvements to lighting and controls.
- Improved efficiency of services and controls.
- Limitations on the effect of solar gain.

However fabric U-values have been retained at 2010 levels.

Envelope U-values

The U-values used in the 2013 notional (non-domestic) buildings together with the backstop values are the same as the 2010 levels with the exception of window U-values, see Table 1. There is no differentiation between heated only and heated and cooled buildings in the notional building.

Air Permeability

In AD-L2:2013 for non-domestic buildings air permeability is the only part of the fabric performance that has been improved beyond the 2010 levels. The major change is that air permeability levels are defined according to 'Gross Internal Area' (GIA) becoming lower as the GIA increases. Following the research shown below and representation from EPIC and MCRMA the levels for smaller top-lit buildings (below 250 m²) have been relaxed to 7 m³/m²/h.

Table 2 illustrates the changes which are shown in m³/(h.m²) at 50 Pa according to GIA. There is a backstop level of 10 m³/(h.m²) at 50 Pa. The 10 m³/(h.m²) limit is a mandatory requirement for all new buildings except those below 500 m² for which 15 m³/(h.m²) can be adopted without testing.

In Scotland, air permeability is expressed as a 'recommended limit' of 10 m³/(h.m²) - the same value as that used in SBEM for Scotland. Testing became mandatory for warrants made after 1 May 2011.

Table 1

Fabric U-values and backstop levels

AD-L2A England & Wales	2013 notional building values		Toplit	2013 Backstop values
	Sidelit/unlit (spec. is heating only)	Sidelit/unlit (spec. includes cooling)		
Roofs	0.18 W/m ² K	0.18 W/m ² K	0.18 W/m ² K	0.25 W/m ² K
Walls	0.26 W/m ² K	0.26 W/m ² K	0.26 W/m ² K	0.35 W/m ² K
Floors	0.22 W/m ² K	0.22 W/m ² K	0.22 W/m ² K	0.25 W/m ² K
Glazing	1.6 W/m ² K	1.6 W/m ² K	N/A	2.2 W/m ² K
Rooflight	N/A	N/A	1.8 W/m ² K	2.2 W/m ² K
Rooflight (max. area)	N/A	N/A	12 % area	N/A
Renewable energy (Wales only)	5.3	5.3	5.3	5.3
TPEC (Wales only)				
Section 6 Scotland ⁽¹⁾		Requirements	Max. area weighted values ⁽³⁾	
Roofs (Scotland)		Pitched - 0.16 W/m ² K – Flat ⁽²⁾ - 0.25 W/m ² K ⁽²⁾	0.20 W/m ² K	
Walls (Scotland)		0.30 W/m ² K	0.27 W/m ² K	

(1) Values for Scotland are the 2010 levels, due for revision in 2015.

(2) 'Flat' is defined as 'flat roofs with integral insulation' and includes insulated panels.

(3) Maximum area weighted values for all elements of the same type (see clause 6.2.1).

Table 2

Air permeability levels by Gross Internal Area (GIA)

	2013 notional building values		
	Side lit/unlit (heating only)	Side lit/unlit (inc. cooling)	Toplit
GIA ≤ 250 m ²	5 m ³ /(h.m ²)	5 m ³ /(h.m ²)	7 m ³ /(h.m ²)
250 m ² < GIA ≤ 3500 m ²	3 m ³ /(h.m ²)	3 m ³ /(h.m ²)	7 m ³ /(h.m ²)
3500 m ² < GIA ≤ 10000 m ²	3 m ³ /(h.m ²)	3 m ³ /(h.m ²)	5 m ³ /(h.m ²)
10000 m ² < GIA	3 m ³ /(h.m ²)	3 m ³ /(h.m ²)	3 m ³ /m ² /h