Roofing and Cladding (CA)

Contents

CA Roofing
Simon Butler
simon.butler@cagroup.co.uk
Unit 5
Durham Lane
Armthorpe
Doncaster
DN3 3FE
01388 834242

winvic
winvic.co.uk

Contents

Scope of Works

winvic

winvic.co.uk

Certificates/Warranties/Guarantees

winvic.co.uk

OPERATIONS & MAINTENANCE INFORMATION REQUEST FORM

CA Roofing Services
Evenwood Ind Est
Copeland Road,
Evenwood,
County Durham
DL14 9SF

CONTRACT No:		CONTRACT :	

PLEASE NOTE: All guarantees cannot be registered until all materials have been supplied to site.
This includes any damaged or replacement items during the snagging works nearing final completion.

BUILDING USE:	
BUILDING NAME & ADDRESS:	

MAIN CONTRACTOR:	
CONTRACTORS ADDRESS:	

THE BENIFICIARY MUST BE THE BUILDING OWNERS EMAIL ADDRESS AND NOT THE MAIN CONTRACTOR.

GUARANTEE BENEFICIARY:	
BENEFICIARY ADDRESS:	
EMAIL ADDRESS:	

ARCHITECT:	
ARCHITECT ADDRESS:	

PC DATE:	

PC DATE CA WORKS:	

Complete Assurance Envelope Guarantee

for

Unit 3, Wingates Industrial Estate,

Bolton

SP0567-A-EI-Unit 3, Bolton
Rev: 4.2
October 2020

Guarantee Particulars

Applicant Reference:	CA2548
Commencement Date:	29 February 2024
Guarantee Period:	25 years
Initial Inspection Date:	13 May 2024
Building:	Unit 3, Wingates Industrial Estate
Location:	Great Bank Road, Westhoughton Bolton BL5 3XU
For use as:	Distribution / Warehouse
Design External Environmental Conditions:	Class B - Industrial / Urban
Design Humidity Class:	Class 3 – Building with Low Occupancy
Beneficiary:	Barings Core Fund Bolton S.A.R.L
Occupier:	N/A
Cladding Contractor:	CA Roofing Services
Main Contractor:	Winvic Construction
Architect:	AEW Architects

Definitions

Architect:	means the person or persons named in the Guarantee Particulars
Beneficiary:	means the person or persons named in the Guarantee Particulars
Cladding Contractor:	means the person or persons named in the Guarantee Particulars
Company:	means CA Group Limited
Company Standards	means the Company's standards for quality, temper, gauge, shape, physical and geometric properties, thermal insulation properties and strength current at the date of manufacture of each component part of the System
Competent Inspector	means a person, persons or body employed by the Company with sufficient training, experience and knowledge, in respect of the mechanical and physical properties of the material, components, structure, installation, assembly, inspection, repair and maintenance of the System, including thorough knowledge of safe working practices and statutory requirements.
Competent Person / Competent Contractor	means a person, persons or body with sufficient training, experience and knowledge, in respect of the mechanical and physical properties of the material, components, structure, installation, assembly, inspection, repair and maintenance of the System, including thorough knowledge of safe working practices and statutory requirements. Advice on competent persons is detailed in ACR[CP]005, 'Guidance note for competence and general fitness requirements to work on roofs' covering inspection, new build, maintenance, repair and refurbishment work.
Components	the constituent parts of the System to be supplied by and/or as approved by the Company for use in the System at the Guarantee Commencement Date (inclusive of non-system components manufactured by The Company, as stated in Appendix 3)
Envelope	means those elements of the external weatherproof fabric of the building comprising of the System (as defined herein)
Guarantee	means the Guarantee Particulars, the Guarantee, the Terms and Conditions and Appendices 1 & 2.
Guarantee Commencement Date	means the date of the Company's first acknowledgement of order for the whole or part of the System as stated in the System Guarantee Particulars
Main Contractor	means the person or persons named in the Guarantee Particulars
Non-Fragility	means the performance of the roof assembly as described and detailed in the System Installation Instructions and Technical Information Paper TIP-101, current at time of Guarantee Date ensuring compliance of the System as tested and classified by the Company in accordance with ACR[M]001, 'Test for Non-Fragility of Large Element Roofing Assemblies'
Occupier	means the Beneficiary's tenant stated in the Guarantee Particulars
System	means the envelope product; roof, walls and gutters; as stated in Appendix 3. Not covered by this guarantee are the items supplied by others, such as, but not restricted to Photo Voltaic arrays, solar thermal systems, smoke vents, access hatches and other roof furniture not manufactured by the Company, but with agreed connection details, including fasteners and sealants
System Installation Guidelines	means the Company's Installation Guide(s) current at the System Guarantee Date
Weather Event	A period of severe inclement weather including but not limited to high winds, gales including heavy rainfall or hail or excessive snowfall

Guarantee

1. This Guarantee is given for the building Envelope, comprising of the following system(s) (the **"System"**) when all used together;

   › **Roof**

   - **Twin-Therm® Chronus® Ready Quantum Roof & Rooflights**
     0.18W/m²K roof U-value incorporating CA 17 1000L x 0.4mm liner panel and MatriX Spacer System, with CA 32 1000R external profile.
     Integral GRP Therma-light rooflights incorporating TC-10M intermediate core achieving 1.30W/m²K U-value.

   › **Walls**

   - **Twin-Therm® Chronus® Ready FW15 FireWall**
     0.25W/m²K U-value incorporating - liner panel, MatriX Spacer System and CA 32 1000W & CA 300MR external profile.

   - Colorcoat HPS200 Ultra® and Colorcoat Prisma® weathering sheets and Colorcoat® High Reflect, Colorcoat® PE15 or Bright White Lining Enamel and Components.

   › **Gutters**

   - **Caskade® PREMIER Insulated Gutter System**
     1.2mm thick steel substrate / 1.2mm thick Fatra PVC membrane
     Insulated with 50mm thick Rock Fibre complete with 0.7mm thick steel liner

   - **Caskade® PREMIER Single Skin Gutter System, incorporating**
     1.2mm thick steel substrate / 1.2mm thick Fatra PVC membrane

   - Fatra PVC membrane or Aquatite PVC membrane, Bright White Lining Enamel and Components.

2. In consideration of entering into a contract to manufacture and/or supply the System, the Company has agreed to provide this Guarantee to the Beneficiary.

3. The Company warrants that:
   a. The System supplied for use at the Building / Location, has been designed and manufactured in accordance with the Company Standards.
   b. Provided always that the System has been installed in strict compliance with the System Installation Guide(s), the Company warrants that for a period of 25 years**,** from the Guarantee Commencement Date:
      i. The Company has exercised the reasonable skill and care to be expected of a competent designer of the System, including but not restricted to durability, thermal and structural performance, Non-Fragility and air permeability.
      ii. The Company has exercised reasonable skill and care to be expected of a competent manufacturer and/or supplier of the System.
      iii. The System has been designed in accordance with the design internal humidity and design external environmental conditions as stated in the Guarantee Particulars.
      iv. Any System Components replaced (in part or whole) and installed strictly in accordance with the System Installation Guide(s) for the remainder of the Guarantee period.

4. This Guarantee is conditional on:
   a. The System having been inspected and maintained at all times in accordance with the inspection and maintenance procedures set out at Appendix 1 (Inspection) and Appendix 2 (Maintenance) to this Guarantee.
   b. Any part or parts of the System requiring replacement as identified during an inspection being replaced within such reasonable period of time as the Company may agree, such agreement not to be unreasonably withheld or delayed.
   c. Subject to 4b above, any maintenance and/or repair identified during an inspection being undertaken and completed within one month of the actual date of inspection.
   d. Full comprehensive and complete written record(s) of each and every inspection (mandatory or otherwise) and of any maintenance or repair work subsequently undertaken (such record may be in the form of the Company's 'Inspection & Maintenance Record Template for Building Envelope') shall be made available to the Company at the time the Beneficiary makes a claim under this Guarantee.
   e. The information at Appendix 3 (Building Information) is true and accurate.
   f. The System having been installed strictly in accordance with the System Installation Guide(s), current at time of the Guarantee Commencement Date.
   g. The Beneficiary having signed, dated and returned this Guarantee to the Company within one month of date of the Company's signature to this Guarantee.
   h. Each mandatory inspection having been undertaken within one calendar month of the required inspection date.
   i. The System when installed comprises only of Components supplied by the Company.
   j. The Terms and Conditions of the Guarantee being observed and complied with at all times.

Signed on behalf of the Company:	Head of Technical	28 May 2024 Date
Signed on behalf of the Beneficiary:	Director	Date

Terms and Conditions

1. Any part or parts of any structure supporting the System are excluded from the Guarantee.
2. The Company's liability to the Beneficiary for the Components under or in connection with this Guarantee in contract, tort (including negligence) breach of statutory duty or otherwise howsoever arising shall be no greater than the liability owed by any manufacturer or supplier of such Components owes to the Company.
3. The Company's liability under the Guarantee is limited to replacement or repair of the whole or part of the System, which it shall at its sole discretion decide.
4. The Company shall not be liable to the Beneficiary for any other claims, losses, expenses or damage whether direct, indirect or special howsoever arising from any breach by the Company (of this Guarantee and/or of the contract under which the System is manufactured and supplied) whether in contract, tort (including negligence) breach of statutory duty or otherwise howsoever arising to the extent liability can be limited or excluded at law.
5. Nothing in this Guarantee shall:
   a. relieve the Beneficiary or others of their duty or liability for ensuring the structure supporting the System, in whole or part, is designed to withstand appropriate loadings and constructed in accordance with good engineering practice.
   b. relieve the Beneficiary of his duty or liability for ensuring that any person or persons responsible for installing the System does so in a workmanlike manner, in accordance with good engineering practice and strictly in accordance with the Company's Installation Guide(s) current at Guarantee Commencement Date.
   c. guarantee the performance and durability of any touch up paint, over-paint or repair unless such works are undertaken by the Company or others on behalf of the Company.
6. Any loss or damage to the System and/or Components caused by any of the following is excluded from this Guarantee:
   a. when the Components are subjected to or exposed to contact with harmful liquids, substances, chemicals, fumes, gases, radiations, wet, green or treated timber, internal or external stresses for which the System has not been designed.
   b. during handling, distribution, storage and/or installation or any other events and conditions, which have or may have deleterious effects on the Components.
   c. where Components are generally exposed to temperatures greater than 60°C or less than –20°C unless they are adequately insulated (e.g. for hot/cold flues/pipes).
   d. due to ponding on the weathering sheets.
   e. ponding due to improperly sealed weathering sheet end and side laps, (see System Installation Guide(s)) thereby allowing retention of water and/or other contaminants.
   f. misuse of the System or any wilful damage or negligent act or omission to act.
   g. corrosion or other effects due to other materials comprising the Building being in contact with Component(s).
   h. corrosion due to entrapment (including but not limited to entrapment within overlaps) of pollutants or due to abnormal atmospheric pollution levels or due to contact with deleterious gases, fumes or chemicals.
   i. when the internal lining and/or the underside of the weathering sheets is open and/or exposed to external environmental and or climatic conditions.
   j. without limitation all defects and/or damage caused by water in all its forms, storms, flooding or any other natural occurrence, force majeure, that a prudent person when taking out a building insurance policy would normally include cover for by such insurance.
7. This Guarantee is null and void if:
   a. there has been any change in use of the Building to that as stated in the Guarantee Particulars, without prior written consent of the Company, such consent not to be unreasonably withheld or delayed.
   b. there has been a change in the Building internal Design Humidity Class, and/or the Design External Environmental Conditions, without prior written consent of the Company such consent not to be unreasonably withheld or delayed.
   c. there has been any alteration, extension, modification, re-erection, repair or maintenance work, or attachment made to the System, without the prior written consent of the Company (such consent not to be unreasonably withheld or delayed) and in the event of consent being given the work is not carried out by a competent contractor.
   d. there has been any change to the structure supporting the System and/or the System during the Guarantee Period without the prior written consent of the Company, such approval not to be unreasonably withheld or delayed.
   e. within one month of any person becoming aware of any damage or loss of integrity of the System, remedial work has not been initiated in accordance with Appendix 1 by a Competent Contractor.
   f. any maintenance has been undertaken that was not in accordance with recommendations noted in Appendix 2, was undertaken without the prior written consent of the Company.
   g. the System is fixed to secondary steelwork or supports of less than 1.4mm thick (S450GD) / 1.5mm thick (S350GD) or greater than 10 mm thick.
   h. the Company has not been paid for in full for the manufacture and/or supply (as the case may be) of the whole of the System.
8. The Company shall have no liability whatsoever for claims, losses, expenses or damage, whether direct, indirect or special howsoever arising from any wear and tear to the System.
9. Neither the Company nor the Beneficiary shall assign (whether legal or equitable) this Guarantee without the agreement which will not be unreasonably withheld or delayed.
10. In the event of a claim under this Guarantee, the Beneficiary shall allow the Company and/or its agents, reasonable and sufficient access to the System for the purpose of carrying out inspections, investigations, testing or remedial works during normal working hours. Insofar as possible, the Beneficiary shall not, save for in the case of an emergency, undertake or allow others to undertake any work to the System until such inspections, investigations or testing by or on behalf of the Company have been completed. In the event that emergency repairs are necessary to maintain the integrity of the Building any Components removed must be stored and made available for inspection by the Company.
11. Any notice given under this Guarantee by the Beneficiary must be delivered to the Company's registered office.
12. Nothing in this Guarantee confers or purports to confer any right to enforce any of its terms on any person who is not a party to it.
13. The Law of England and Wales shall be the law applying to this Guarantee.
14. This Guarantee shall be subject to the exclusive jurisdiction of the courts of England and Wales.

APPENDIX 1: 'Inspection'

The Company will contact the Occupier and/or Beneficiary to facilitate such inspections. Following every inspection, a summary report will be issued to the Occupier and/or Beneficiary identifying any remedial works required. Dependent upon the established cause, The Company will also provide costs to undertake any remedial works identified.

When using cleaning, maintenance and repair products, noted throughout Appendix 2 to the Envelope Guarantee, in the interests of personal safety, health & hygiene, product manufacturers'/suppliers' advice and instructions on the use of their products/supplies must be strictly followed.

Inspection of the System

Inspections based upon good practice must be carried out throughout the life of the Building, by the Company's Competent Inspector(s), free of charge, subject to access. Any evidence of change to the local environment which could cause premature degradation of the System.

Inspections of the system must be conducted;

All Systems

1. during installation of the Systems (roofs, rooflights, walls and wall lights)
2. immediately after installation of the Systems
3. at practical completion of the Building
4. on or before the 12 month anniversary of the practical completion of the Building
5. thereafter, every three to five years, based upon findings from previous inspections (up to 25 year guarantee periods. For guarantees beyond 25 years, annual inspections are to be conducted beyond 25 years) and
6. immediately following the occurrence of any Weather Event

Gutters Only

7. during the installation of the System Gutters (including drainage pipework, whether gravity or siphonic);
8. immediately after installation of the System Gutters;
9. at practical completion of the Building;
10. on or before the 12 month anniversary of the practical completion of the Building
11. thereafter, on no less than a once every 12 months basis and
12. immediately following the occurrence of any Weather Event.

The maximum periods between inspections specified above may be reduced to 6 months if, in the reasonable opinion of the Company, the nature, characteristics or situation of the Location or the Building reasonably require that more regular inspections should take place, and must be identified in the inspection report.

APPENDIX 2: 'Maintenance'

Roof, wall cladding & interface junctions

Full and comprehensive written record(s) of each and every inspection (mandatory or otherwise) and of any maintenance or repair work subsequently undertaken (recording may be in the form of the Company's 'Inspection & Maintenance Record Template for Building Envelope').

Washing/Cleaning

Rainfall alone is often sufficient to keep exterior surfaces looking clean and bright. However, to achieve maximum life from the product, it is important that accumulations of dirt and debris which are not removed by normal rain washing are removed regularly by cleaning. This reduces the risk of 'wet poultice' corrosion, i.e. water retention due to debris.

Washing may be carried out with a hose and a soft bristle brush, using fresh water. In areas where heavy industrial deposits dull the surface, a solution of fresh water and good quality household detergent or proprietary cleaner may be applied to ensure thorough cleaning. For household detergents, use a maximum 10% solution; for proprietary cleaners, follow the manufacturer's recommendations. A thorough rinse with clean water must follow the wash. *(Note: only use a household type hose, with normal tap pressure, (i.e. ≤80psi). At no point should pressure washers be used as water pressure being delivered could be ⩾2,000psi, which may result in damage to coatings and or components installed).*

Proprietary cleaners are available from suppliers listed in the Company's 'Inspection & Maintenance Record Template for Building Envelope'. Caution: when cleaning, the following points should be noted:

1. Stronger concentrations of cleaners than those recommended can damage coating surfaces.
2. Rinse thoroughly to remove all detergents after cleaning.
3. Organic solvents and abrasive cleaners should be avoided in cleaning any coated surface. Caulking components, tar and similar substances may be removed with mineral spirits, but wash the surfaces thoroughly afterwards.
4. Always clean coated surfaces from top to bottom and rinse immediately and thoroughly with fresh, clean water.
5. Over-cleaning or scrubbing can do more harm than good.

Mould/Fungal Growth

Some types of local environment are particularly conducive to mould growth, i.e. areas of wet, dark, wooded surroundings or low-lying marshland. In these areas, mould will grow, even on inert materials such as glass.

Mould/fungal growth can be removed by treatment with a basic solution of the following ingredients, by weight, which should be available from local chemical suppliers. Before using the first three of these ingredients, you should refer to the manufacturers' health and safety information.

Good quality household detergent or proprietary cleaner	0.50
Trisodium phosphate	3.00
5% sodium hypochlorite solution	25.00
Fresh water	71.50
	100.00

Before applying this mixture, wash down first, as explained under *Washing* (above), then apply the mixture to all surfaces by low-pressure spray or brush. All surfaces must then be rinsed with cold water within twenty-four hours.

Fasteners/Fixings

Ideally these should be left undisturbed please contact the Company for advice.

Treatment of Edge Corrosion

Corrosion at the edges of the profiled steel cladding may be rectified as described below. However, if edge corrosion is observed contact the Company prior to any remedial work being undertaken.

1. Cut and remove, or abrade, any loose organic coating back to a firm point.
2. Remove all white and red rust by sand blasting to BS 4232 second quality (Swedish Standard ST2) or by abrading to bright, firm metal, ensuring that the surface is not polished. Thoroughly clean and dry these surfaces before applying the specified materials, which must be applied as directed by the recommended paint system manufacturer.
3. Coat the prepared areas with the relevant anti-corrosive primer recommended by the materials supplier.
4. When the first primer coat has dried, apply a further primer coat in a neat band to the prepared area so that the primer extends beyond the prepared area, covering the original surface.
5. Apply a topcoat to the dry, primed area.

Materials are available from the recommended suppliers listed in the Company's 'Inspection & Maintenance Record Template for Building Envelope'. Reparation contractors are listed in the Company's 'Inspection & Maintenance Record Template for Building Envelope'.

Local Damage Touch-Up (Metal Sheets)

During inspections, you may find that the coating has suffered some damage. It is better not to treat the surface of the product if it has been only slightly scuffed. If it is scratched more deeply, say, down to the substrate, the damage can be repaired by applying standard touch-up paint. It is important to ensure that the applied paint is no wider than the original scratch. To achieve this, the paint should be applied with an artist or child's medium to fine paintbrush. Touch-up paints are, of necessity, air-drying; over the years they will change colour differently from the original stoved coating. For this reason, it is good practice to keep the applied area as small as possible.

Should the System have suffered impact or structural damage please contact the Company for further advice. Recommended touch-up systems are available from the suppliers listed in the Company's 'Inspection & Maintenance Record Template for Building Envelope'.

Rooflights: Therma-light (GRP) Weather Sheet Inspection, Maintenance and Protection

The Company recommends inspections be carried out at the same time as the metal weathering sheets and details of inspection – findings and maintenance work undertaken must be recorded in the Company's 'Inspection & Maintenance Record Template for Building Envelope'. In addition we recommend that Therma-lights be inspected following periods of severe inclement weather e.g. high winds and gales.

1. Any build-up of debris, including any debris remaining after the Therma-light has been fixed - such as drilling swarf, loose fixings and rivets - should be carefully cleared from the Therma-light, using a soft brush to avoid scratching the surface of the GRP.
2. Areas retaining dirt should be cleared away with a soft brush / cloth and cleaned with a mild household detergent solution 10% in water to preserve the Therma-light. Rinse off with clean water.
3. Any growth of moss on or around the Therma-light should be carefully removed and the Therma-light cleaned with a mild household detergent solution 10% in water and a soft brush / cloth. Rinse off with clean water.
4. Local Damage ~ replace depending on severity, if in doubt contact the company, else use the following guidelines, which is an extract from Technical Information Paper TIP-104 'GRP Therma-light Rooflight Damage';

Bruises

- A GRP Therma-light with an area of bruising (where the protective film has not been penetrated) no greater than a 50p piece (or a 30mm rooflight washer) will remain serviceable and no further remedial action is required unless unsightly. For aesthetic reasons the client may insist on the Therma-light in question being replaced.
- If the area of damage is completely white (severe bruising) and is less than 30mm diameter, then the Therma-light must be replaced.
- Any Therma-light with an area of bruising greater than a 30mm diameter must be removed and replaced to maintain structural integrity, longevity and Non-Fragility of the assembly.

Punctures

- If the surface of the GRP Therma-light is slightly crazed but still hard then the rooflight can remain, with no detrimental effect.
- If a Therma-light is punctured or if the centre of the impact feels 'soft' (where the resin has been broken away from the glass fibres) or if the surface protection layer has been ruptured, then the Therma-light must be replaced, however small the area of damage.

Side Lap Damage

- Often caused during construction due to rope holding down the packs of rooflights, or indeed individual rooflights until such time they are installed. This damage is generally outside the critical zones for both Non-Fragility and durability, whilst unsightly the rooflights can be left insitu. Additional side lap stitching screws may be required either side to ensure Non-Fragility is not compromised.

5. During inspections, care should be taken to check the condition of fixings including tightness and to replace or tighten them as necessary. Contact the Company for the recommended replacement procedure.
6. Should the Therma-lights suffer any structural or impact damage whatsoever, they must be replaced. Contact the Company for further advice if in doubt.

Wall-lights: Therma-light CF40 Polycarbonate

1. Polycarbonate is vulnerable to scratching. Do not scrub with brushes, abrasive materials or sharp instruments as these will mark/damage the surface. Never use solvents, alkaline cleaners, thinners or abrasive cleaners, white spirit, petroleum ether (BP65), methyl alcohol (methanol), acetone, petrol, benzene.
2. Should the polycarbonate panels suffer any structural or impact damage whatsoever, they must be replaced. Contact the Company for further advice if in doubt.

Gutters

It is a mandatory requirement that the gutters are inspected by the Cladding Contractor after unloading at site and after gutter installation is completed. All mechanical damage etc. occurring during gutter transport, unloading and installation must be repaired immediately before or after installation (whichever is practical).

Gravity drainage system

BS EN 12056-3, Section NE.5.1 states; "Gutters, rainwater pipes, outlets and gratings should be inspected and thoroughly cleaned once a year, or more often if the building is in or near to an industrial area or is near trees or may be subjected to extremes of temperature."

Siphonic drainage system

BS 8490: 2007, Section 12.1 states; "During the first year of operation, it is recommended that inspection, etc. should be carried out four times a year in order to establish an appropriate maintenance regime. The regime should take account of autumn leaf fall and the fact that intense rainfall tends to occur during summer storms."

Maintenance

1. General coating and galvanised material damage – repair as PVC Membrane Repair.
2. Any build up of debris including debris remaining after the roof installation e.g. drilling swarf, loose fixings, rivets – should be cleared from the gutters taking care not to scratch/damage the protective surface.
3. Areas of dirt compaction and any other vegetable matter i.e. soil, twigs, weeds, should be carefully removed and contaminated areas hosed down and cleaned with fresh water.
4. Check outlets are clear and re-protect welds if necessary as PVC Membrane Repair.

PVC Membrane Repair

When repairing damage to the PVC membrane, all repair patches should be fully welded with a minimum weld of 50mm in all directions from any damage i.e. if damage is 2mm wide by 50mm long then the repair patch is required to be a minimum of 102mm wide by 150mm long.

When cleaning out gutters any build-up of detritus should be collected using non-metallic tools, i.e. soft bristled brushes / brooms, PVC shovels (preferably snow shovels).

The recommended method of repair is as follows:

1. Sweep gutters clean of debris.
2. In the area of damage, dry surface and remove any loose coating particles by gently scraping.
3. Remove any zinc salts or rust on exposed galvanised surface by abrasive cleaning using a non-metallic media.
4. Supplies of membrane patches and seam sealer can be obtained from the Company.
5. Wash damaged area with water and washing-up liquid, rinse off and dry thoroughly before commencing any repair work.
6. Repair scratches in membrane with seam sealer (see system Installation Instructions).
7. Where the membrane is badly scuffed, torn, ripped or damaged exposing the galvanised metal, heat weld a membrane patch to an area covering plus 50mm all round the damaged section (refer to gutter installation instructions). Apply seam sealer to the welded edges of the patch.

If in doubt about any aspect of gutter inspection, maintenance or repair, contact 'The Company' for advice.

APPENDIX 3 'Building Information'

Please add / amend text to ALL relevant cells for your guarantee application or use the drop-down facility to select from the lists. Any questions or to submit completed forms please send to guarantees@cagroup.co.uk. Applications can take up to 14 working days to process, failure to complete all the relevant cells on this form may result in your application being delayed.

Building:	Unit 3	Beneficiary/ Owner:	Barings Core Fund Bolton S.A.R.L	Main Contractor:	Winvic Construction
Contact:		Contact:		Contact:	
Email:		Email:	layne@33plus.co.uk	Email:	
Address:	Wingates Industrial Estate Great Bank Road Westhoughton Bolton	Address:	28 Boulevard Raiffeisen Luxembourg	Address:	19 Tenter Road Moulton Park Industrial Estate Northampton
Post Code:	BL5 3XU	Post Code:	L-2411	Post Code:	NN3 6PZ
Occupier:	N/A	Cladding Contractor:	CA Roofing Services	Architect:	AEW Architects
Contact:		Contact:	Roselle Cox	Contact:	
Email:		Email:	Roselle.cox@cagroup.co,uk	Email:	
Address:		Address:	Evenwood Industrial Estate Copeland Road Evenwood Co Durham	Address:	Floor #7 Trinity Court 16 John Dalton Street Manchester
Post Code:		Post Code:	DL14 9SF	Post Code:	M2 6HY

Building Envelope Design: Roof

Period:	25 Years	-	-
System/Specification:	Twin-Therm® Chronus Ready	-	-
Design:	Quantum <110m Radius	-	-
U-value:	0.15W/m²K	-	-
External Coating:	HPS200 Ultra	-	-
Colours:	Goosewing Grey	-	-
Approx. Quantity:	3750 m²	-	-
External Fasteners:	Stainless Steel	-	-
External Fillers:	MP (Modifed Polyethylene)	-	-
Liner Panel:	CA 17 1000L x 0.4mm	-	-
Liner Coating:	Colorcoat High Reflect	-	-
External Rooflights:	6oz (1.83kg) GRP	-	-
Intermediate:	TC-10M	-	-
Internal Rooflights:	8oz (2.44kg) GRP	-	-
Min. Purlin Thickness:	1.5mm S450GD	-	-

Building Envelope Design: Wall

Period:	25 Years	-	-	-
System/Specification:	Twin-Therm® Chronus Ready	-	-	-
Design:	Standard/FW15 FireWall	-	-	-
U-value:	0.16W/m²K	-	-	-
External Coating:	HPS200 Ultra	-	-	-
Colours:	Anthracite Black White	-	-	-
Approx. Quantity:	3750 m²	-	-	-
External Fasteners:	Stainless Steel	-	-	-
External Fillers:	MP (Modifed Polyethylene)	-	-	-
External Profile (1):	CA 32 1000W	-	-	-
External Profile (2):	CA 300MR	-	-	-
External Profile (3):	-	-	-	-
Orientation:	Vertical & Horizontal	-	-	-
Liner Panel:	CA 17 1000L x 0.4mm	-	-	-
Liner Coating:	Colorcoat High Reflect	-	-	-
Min. Purlin Thickness:	1.5mm S450GD	-	-	-

Building Envelope Design: Gutter

Period:	25 Years	25 Years	-
System:	Caskade® Premier	Caskade® Premier	-
Membrane Material:	1.2mm Fatra PVC Membrane on 1.2mm Steel	1.2mm Fatra PVC Membrane on 1.2mm Steel	-
Insulation Type:	Rock Fibre	Single Skin	-
Insulation Thickness:	50mm	-	-

Non-system components manufactured and supplied by The Company

Roof:	-
Walls:	-

Environmental Conditions

Internal Humidity: Class 3 - Building with Low Occupancy

External Conditions: Class B - Industrial / Urban

Class	Type	Min f-value
1	*Dry Storage areas*	*0.30*
2	*Offices / shops*	*0.50*
3	*Buildings with low occupancy*	*0.65*
4	*Buildings with high occupancy*	*0.80*
5	*Special buildings (swimming pools, EFWs, etc)*	*0.90*

Class	Type
A	*Coastal: within 1km of the coast or tidal estuary*
B	*Industrial / urban: areas of industrial activity*
C	*Suburban / rural: away from coast and remote from industrial activity*

Project Information

Date of Order:	19 October 2023	Sales Order Number(s):	CA2548	-	-
Practical Completion:	13 May 2024		-	-	-

Cladding Contractor Declaration

The Company is in receipt of, and has relied on, written confirmation from the Cladding Contractor, that any issues identified in any site visit report(s) and/or set out in e-mail(s) by the Company or an independent inspector to the Cladding Contractor have been rectified in accordance with the Company's recommendations and that the System and all Components have been installed strictly in accordance with the System Installation Guide(s) current at the time of installation.
The Cladding Contractor also declares that all areas including gutters have been cleaned down prior to handover.

CA Group

Evenwood Industrial Estate

Copeland Road

Evenwood

County Durham

DL14 9SF

t: 01388 830222

e: technical@cagroup.co.uk

www.cagroup.co.uk

Confidex Sustain Guarantee Certificate

Confidex Sustain®

This Confidex Sustain® certificate provides a combined guarantee which covers the performance of the Colorcoat® pre-finished steel product, and makes the pre-finished steel building envelope CarbonNeutral®. Tata Steel UK Limited have measured the CO2 emitted by the pre-finished steel building envelope from manufacture through to installation, use and end of life and has invested in a climate friendly project overseas to offset this, ensuring CarbonNeutral® status is achieved.

Using life cycle assessment data for each part of the cladding system, Tata Steel UK Limited can accurately identify how much gas that contributes to global warming has been emitted at each stage of the process. This information provides the basis for calculating the correct amount of CO2 to offset the individual building envelope project.

Confidex® Guarantee

The term "Confidex® Guarantee" refers to a guarantee of the Product against paint delamination and, where applicable, a guarantee against excessive colour change. This certificate validates the Confidex® Guarantee in respect of the Building identified below. This certificate is evidence of the relationship between Tata Steel UK Limited and the Building Owner (which term means Tata Steel UK Limited's original customer or any notified transferee who is the registered freeholder of the Building). Please keep it in a safe place and make a note of the guarantee registration number. The paint delamination guarantee is based on and lasts for the Guarantee Period (as stated below), which is the length of time before a Building Owner needs to consider whether to repaint the Building's exterior. It is guaranteed that, for this period, on any single plane (i.e. one wall or one roof slope), not more than 5% or 100 square metres of the painted surface, whichever is the lesser area, will be affected by paint delamination. If the Product does not meet these criteria, Tata Steel UK Limited will restore the defective material according to the terms of this Confidex® Guarantee.

Guarantee number:	63580	**CO_2 Offset:**	167214.4
Building owner:	Barings Core Fund Bolton S.A.R.L		
Building address:	Unit 3, Wingates Industrial Estate, Great Bank Road, Westhoughton, Bolton, BL5 3XU	**Registration date:**	12 / 06 / 2024
		Completion date:	28 / 05 / 2024
Architect:	AEW Architects	**Guarantee start date:**	28 / 05 / 2024
System manufacturer:	CA Group Ltd		
Main contractor:	Winvic Construction		
Cladding contractor:	CA Roofing Services		

Colorcoat® Assessed systems:
CA 32/1000R
CA 321000/W
CA 300 MR

Product	Application	Colours	Guarantee Period (years)	Local Environment
Colorcoat HPS200 Ultra® Zone 1	Roof	Goosewing Grey	40	Inland
Colorcoat HPS200 Ultra® Zone 1	Walls	Anthracite	40	Inland
Colorcoat HPS200 Ultra® Zone 1	Walls	Black	40	Inland

Colorcoat HPS200 Ultra® Zone 1	Walls	White	40	Inland

The Confidex® Guarantee for the Product requires the Building Owner to perform certain tasks to maintain the benefit of the Confidex® Guarantee.

Obligations of the Building Owner

1. **In general, no inspection or maintenance is required to maintain the validity of the Confidex® Guarantee**, except when material is used in areas subject to build-up of dirt or debris, contact with sea spray or where Colorcoat HPS200 Ultra® or 3 layer Colorcoat Prisma® Solid, Metallic or Matt colours are used on a roof or wall that has a Photovoltaic (PV) installation. For those situations, please see Exclusions 4 and 13 and the Confidex® PV Addendum in addition to this certificate for details of the required inspection and maintenance conditions.
2. Colorcoat Prisma® manufactured in standard colours after 1st October 2017 is guaranteed against excessive colour change for the period and subject to the terms and conditions, limitations and exclusions set out in a Confidex® Guarantee Colour Addendum, which is issued on request where applicable.
3. To invoke this guarantee, the Building Owner or its agent must notify Tata Steel UK Limited in writing within 30 days of the identification of any defect (and in any event, no later than the expiry of the relevant Guarantee Period) indicating a failure of the Product to conform to the terms of the guarantee. The notification must be made using Tata Steel UK Limited's standard form document, must be sent to Tata Steel UK Limited and must include the registration number or a copy of the registration details. Tata Steel UK Limited must then be given a reasonable opportunity to inspect the alleged defect. Any notification received after 10% or 200 square metres of the painted surface (whichever is the lesser area) has been affected by paint delamination will be invalid.
4. In respect of any inspection or repair of the Product by Tata Steel UK Limited its agents or contractors, the Building Owner shall ensure that there is adequate and safe roof access.
5. The Building Owner must notify Tata Steel UK Limited of any change of building use in writing within 90 (ninety) days of such change.

The Confidex® Guarantee for the Product is subject to the following Limitations and Exclusions.

Limitations

1. This Confidex® Guarantee applies only to deterioration of the weatherside of the Product when used in standard cladding applications within Zones 1 and 2.
2. This Confidex® Guarantee includes the condition of the cut edges for the duration of the relevant Guarantee Period in accordance with this clause 2 (not applicable to material with a gauge of 1mm or more). Limited edge peel may arise from normal weathering at sheet overlaps and at eaves. However given the superior corrosion protection provided by the unique Galvalloy® substrate of Colorcoat HPS200 Ultra® and Colorcoat Prisma®, this phenomenon will not impair the functionality of the cladding. In the unlikely event that edge peel is premature and deemed to be excessive by Tata Steel UK Limited, Tata Steel UK Limited will undertake to investigate and carry out any remedial action to ensure that the cladding system will be fully serviceable at the end of the Guarantee Period. Cut edges are defined as those manufactured in factory-controlled conditions using conventional shearing procedures. Cut edges generated by alternative processes or on-site should be subject to best practice, including painting where necessary. Refer to Tata Steel UK Limited for guidance.
3. Only Buildings designed or constructed in accordance with the current guidelines on Tata Steel UK Limited website: www.colorcoat-online.com will be covered by the Confidex® Guarantee. In particular, but without limitation, all cut edges on flashings shall be welted. Flashings are only guaranteed when used in conjunction with Colorcoat HPS200 Ultra® or Colorcoat Prisma® cladding sheets or panels. Because the surface of flashings can emulate roofs, walls or both, their durability is determined by the function they perform. If a single flashing emulates both a roof and a wall, the entire flashing is assumed to have the durability of a roof. Both the design of flashings and their application to the building should follow Tata Steel UK Limited's recommendations.
4. The legal remedy of the Building Owner and the obligation of Tata Steel UK Limited (whether under this Confidex® Guarantee, tort or otherwise) is limited solely to the cost of labour and materials for restoring the defective plane during the Guarantee Period or, where relevant, the colour guarantee period. Tata Steel UK Limited shall be entitled, at its sole discretion, to determine the appropriate measures to be taken in order to provide suitable restoration in the event of failure.
5. Under no circumstances shall Tata Steel UK Limited (or any of its associated companies) be liable for any loss, damage or expense whatsoever incurred or suffered by the Building Owner (including, but without limitation, loss of profit, revenue or goodwill) howsoever such loss, damage, or expense may have been caused (including, but without limitation, any breach of contract, negligence or breach of any duty of Tata Steel UK Limited whatsoever) other than as set out under paragraph 4 above.
6. For Buildings situated at altitudes greater than 900m a 20% reduction in duration of the Guarantee Period applies.

Exclusions

This Confidex® Guarantee does not apply to failure or damage caused by or due to:
1. Fire, lightning, flood, explosion, abnormal winds, earthquake, acts of war, riots, civil commotion, radiation, falling objects, vandalism, ground movement or failure of foundations or other extraneous causes;
2. Misuse, wilful act, negligence or incorrect or unsuitable specification or use of the Product;
3. Any damage whatsoever caused to the Product during or following fabrication, storage, transport or erection;
4. Accumulations of dirt or debris or failure or damage in areas not exposed to washing by rainfall, unless such areas are washed at a frequency commensurate with both the application and external environment of the Product and the local environment of the Building (and the Building Owner's records clearly demonstrate that fact);
5. Ponding on roofs and inadequately sealed overlaps allowing retention of water and other contaminants;
6. Emissions of harmful gases, fumes or chemicals from either natural or man-made sources at or within 400m of the original erection site;
7. Exposure to continuous temperatures howsoever caused greater than: 60°C in the case of Colorcoat HPS200 Ultra®; or 90°C in the case of Colorcoat Prisma®;
8. Any screw, rivet, fastener or other attachment or thing fixed (or attempted to be fixed) to any part of the Product during or after erection, except for PV on a Colorcoat HPS200 Ultra® or Colorcoat Prisma® roof or wall which is fitted and maintained in accordance with the terms and conditions of the Confidex® PV Addendum;
9. Deterioration caused by contact with wet, green or treated timber or due to direct or indirect contact with corrosive materials;
10. Any alteration, extension or modification to or re-erection of the Product after erection, except for the installation of a PV array on a Colorcoat HPS200 Ultra® or Colorcoat Prisma® roof or wall which is fitted and maintained in accordance with the terms and conditions of the Confidex® PV Addendum;
11. The performance of any touch-up paint or overpaint used on the panels before, during or after erection;
12. Corrosion or other effects arising from elements within the Building, corrosion arising from entrapment of pollutants including (without limitation) within overlaps or from abnormal atmospheric pollution or contact with aggressive gases, fumes or chemicals;
13. Direct contact with sea spray (when in a Coastal environment), unless regular washing is undertaken to stop the build-up of salt on the Product and the Building Owner's records clearly demonstrate that fact;
14. Roofs with pitches lower than 1° (one degree);
15. Soffits; or
16. The use of Products manufactured more than 18 (eighteen) months before the Completion Date of the Building.

General

The Confidex® Guarantee sets out the entire agreement and understanding between the parties in respect of the subject matter of the Confidex® Guarantee and will be entered into on the understanding that:
(a) neither party has entered into the Confidex® Guarantee in reliance upon any representation, warranty or undertaking of the other party which is not expressly set out or referred to in the Confidex® Guarantee. Any condition, warranty, statement or undertaking as to the quality of the Product or its fitness or suitability for any purpose however or whenever expressed or which may be implied by statute, custom of the trade or otherwise is hereby excluded, except to the extent such exclusion is prevented by law;
(b) without prejudice to (a) above, no statement or undertaking contained in any national Standard, National edition of a European Standard, ISO Standard, or other standard or technical specification as to the suitability of the Product for any purpose shall give rise to any legal liability of Tata Steel UK Limited, except to the extent such exclusion is prevented by law. The Building Owner shall satisfy itself that the Product is suitable for any product or application for which it is to be used before the Product is incorporated into such product or application;
(c) nothing in this Confidex® Guarantee shall exclude or restrict the liability of Tata Steel UK Limited for death or personal injury caused by Tata Steel UK Limited's negligence or
as otherwise prohibited by law;
(d) neither party shall have any remedy in respect of misrepresentation or untrue statement made by or on behalf of the other party which is not contained in the Confidex® Guarantee nor for any breach of warranty which is not contained in the Guarantee;
(e) this clause shall not exclude any liability for, or remedy in respect of, fraudulent misrepresentation;
(f) the Confidex® Guarantee will only become valid and binding when registered with and issued by Tata Steel UK Limited; and
(g) the Confidex® Guarantee is subject to the most recent limitations and exclusions, available on the Tata Steel UK Limited website atwww.colorcoat-online.com .

This Confidex® Guarantee shall be subject to and construed in accordance with English law; Tata Steel UK Limited and the Building Owner submit to the exclusive jurisdiction of the English courts. Enquiries about this Confidex® Guarantee should be addressed to the Colorcoat Connection® helpline. Tata Steel UK Limited is registered in England under 2280000 with registered office at 18 Grosvenor Place, London, SW1X 7HS, England.

Trademarks of Tata Steel UK Limited

Language English 0720

Confidex Sustain® Guarantee Transfer Notification Form

The Confidex® Guarantee may be enforced by the Building Owner from time to time subject to Tata Steel UK Limited being satisfied that the Building Owner is the original customer or the registered freeholder of the Building. Tata Steel UK Limited owes no duty to any person other than the Building Owner under this Confidex® Guarantee but may respond to requests for its enforcement from registered leaseholders of the Building, in its sole discretion. To notify Tata Steel UK Limited of a change in the registered freeholder of the building please complete all of the sections below. Until notified to the contrary, Tata Steel UK Limited shall be entitled to rely on its records to identify the Building Owner. Please note that the notification of transfer cannot be processed without all of the necessary information.

Original registration number:	Name of new Building Owner (registered freeholder):

Date ownership changed:	Address of new owner (if different from address of building)

Contact details **To help us effect the transfer quickly and accurately, please enter the name, company name, telephone number and email of the person who filled out this form.**

Name:	Company Name:

Telephone:	Email:

Send transfer notification form to:	Alternatively for further enquiries:
Colorcoat Connection® helpline, Tata Steel UK Limited General Office, Shotton Works, Deeside, Flintshire, CH5 2NH	T: +44 (0) 1244 892434 Email: colorcoat.connection@tatasteeleurope.com W: www.colorcoat-online.com

Confidex® Photovoltaic (PV) Addendum used with PV frame modules

This document is an addendum to and must be read in conjunction with the Confidex® Guarantee by Tata Steel

Confidex® Guarantee No. 63580	**PV Addendum Issued** 28 / 05 / 2024

This addendum forms part of the Confidex® Guarantee and provides the additional terms on which the Confidex® Guarantee covers Colorcoat HPS200 Ultra® and 3 layer Colorcoat Prisma® Solid, Metallic and Matt colours launched on 1st October 2017 used on a roof or wall that has a PV installation. Owing to the potentially more aggressive environment created beneath / behind / adjacent to the PV array, additional terms and conditions are required to mitigate the increased risks of corrosion and degradation of the Colorcoat HPS200 Ultra® and Colorcoat Prisma® due to reduced natural wash down.

The inclusion of PV installations on a roof or wall is likely to result in unequal colour fade between those areas of the roof exposed to sunlight and natural weathering and those areas of the roof or wall which are shaded by the PV array. Such differential fading is normal and to be expected.

If a replacement Confidex® Guarantee incorporating this addendum is issued in respect of a retro-fit PV installation on a Colorcoat HPS200 Ultra® or Colorcoat Prisma® roof or wall then the replacement guarantee will be valid for the unexpired period of the original guarantee.

Terms and Conditions

1. The Guarantee applies to Colorcoat HPS200 Ultra® and Colorcoat Prisma® Solid, Metallic and Matt colours when used on a roof or wall on to which PV panels are mounted on a suitable framework supported above and fixed indirectly to the cladding sheets / panels. The guarantee does not apply to Colorcoat HPS200 Ultra® or Colorcoat Prisma® onto which a PV system is directly bonded. The Guarantee does not apply to roofs or walls to which PV is installed if the external cladding sheets/panels are not using Colorcoat HPS200 Ultra® or Colorcoat Prisma®.
2. The PV array must be installed such that effective cleaning and maintenance can be undertaken, including any future repair or maintenance which might be required under the Guarantee. Safe access and roof safety systems must be considered and the building Health and Safety file must include details of the design considerations and risk control measures to allow inspection, cleaning and construction work on the building at any time. Specifically, the design of the array should give adequate regard to the need to clean underneath the PV units to remove any build-up of general contamination and debris, which would invalidate the guarantee.
3. In the unlikely event of a claim arising due to failure of any areas of cladding beneath or adjacent to the PV array, it will be solely the responsibility of the building owner to provide safe and adequate access to allow Tata Steel to investigate and instigate remedial measures as deemed necessary by Tata Steel. In any case, Tata Steel will not be responsible for removing / replacing PV panels, their mounting brackets / framework or cabling to facilitate repair or replacement of cladding sheets or panels.
4. Areas of cladding affected by the PV array should not be considered "maintenance free to maintain the validity of the Confidex® Guarantee" because they are more likely to accumulate debris and dirt and are less exposed to rainfall. Accordingly, roofing or walls covered by PV arrays must be regularly cleaned and accurate records of cleaning must be retained for future reference. The frequency of maintenance / cleaning operations should be commensurate with local environmental conditions. Particularly harsh environments including (but not limited to) heavy industrial exposure, locations subject to salt deposition and areas affected by leaf litter will inevitably require more rigorous and frequent attention to ensure the ongoing validity of the guarantee. Cleaning and maintenance should be carried out in accordance with Tata Steel's Inspection and Maintenance brochure which forms an integral part of this guarantee. The guide can be downloaded from www.colorcoat-online.com
5. The Guarantee does not apply to failure or damage caused by or due to any alteration to the Colorcoat HPS200 Ultra® or Colorcoat Prisma® product caused by the PV array installation including (but not limited to) perforations for mounting brackets, additional fasteners, cabling penetrations and associated sealants.

Technical enquiries

Colorcoat Connection® helpline
T: +44 (0)1244 892434
E: colorcoat.connection@tatasteeleurope.com
W: www.colorcoat-online.com

Cleaning and Maintenance Regimes

winvic.co.uk

Maintenance Regimes

This maintenance schedule for **P23012 Wingates Plot 3** to be followed from PC date **03/06/2024** year on year to ensure all plant and equipment is kept within warranty.
Please keep a log of these inspections so that records can be checked should an issue arise.

Code; ✓ **Blue – Recommended** ✓ **Red – To Maintain Warranty**

Item	Daily	Weekly	Monthly	3 Months	6 Months	9 Months	Annually	5 Yearly	Certificates	Regime
Caskade Premier®							✓	✓		Inspection frequency is – Building handover + 12 month after handover. Following the 12 months inspection, the frequency for all future inspection and cleaning is to be determined based on the local topography. This this is compulsory to maintain the guarantee. Following the establishment of the cleaning regime based on the topography all dirt and detritus should be removed from the gutter using soft bristled brushes and plastic shovels, bagged and removed from the roof
Twin-Therm ® Roof							✓	✓		Inspection frequency is – Building Handover, 12 months post-handover, 48 months post-handover, subsequently (3-5years). Note an inspection should be carried out following a significant weather event. This this is compulsory to maintain the guarantee. Heavy deposits and areas not washed by rain action should be cleaned by hose, soft bristled brush and fresh water, for heavier deposits a mild detergents should be used and rinsed thoroughly. And surface damage or disturbed connections should rectified in line with recommendations

Item	Daily	Weekly	Monthly	3 Months	6 Months	9 Months	Annually	5 Yearly	Certificates	Regime
Twin-Therm® Wall							✓	✓		Inspection frequency is – Building Handover, 12 months post-handover, 48 months post-handover, subsequently (3-5years). Note an inspection should be carried out following a significant weather event Heavy deposits and areas not washed by rain action should be cleaned by hose, soft bristled brush and fresh water, for heavier deposits a mild detergents should be used and rinsed thoroughly. And surface damage or disturbed connections should rectified in line with recommendations
Tata Trimapanel® System							✓			Inspection frequency is – every 12 months Heavy deposits and areas not washed by rain action should be cleaned by hose, soft bristled brush and fresh water, for heavier deposits a mild detergents should be used and rinsed thoroughly. And surface damage or disturbed connections should rectified in line with recommendations
PPC aluminium Portico Flashings				✓						Inspection frequency is – every 3 months The surface of the PPC Aluminium is to be cleaned with warm water, a mild detergent and a soft cloth and washed off with copious amounts of water and dried off with a cloth. This this is compulsory to maintain the guarantee.

Date completed: 4th April 2024

Completed by: Simon Mawson

Data Sheets

winvic

winvic.co.uk

Statement of Verification

BREG EN EPD No.: 000339 Issue 02

This is to verify that the

Environmental Product Declaration

provided by:

Brett Martin Daylight Systems

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

Site Assembled Trilite 1.8 / Cleartherm / Trilite 2.4 GRP Rooflight

Company Address

Sandford Close
Dutton Road
Alderman's Green Industrial Estate
Coventry
CV2 2QU

Signed for BRE Global Ltd	Emma Baker Operator	08 April 2021 Date of this Issue
30 November 2020 Date of First Issue		29 November 2025 Expiry Date

BRE Global Verified EPD

BRE Global Ltd., Garston, Watford WD25 9XX.
T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: Enquiries@breglobal.com

Environmental Product Declaration

EPD Number: 000339

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	**LCA consultant/Tool**
Brett Martin Daylight Systems Sandford Close, Dutton Road, Alderman's Green Industrial Estate, Coventry CV2 2QU	BRE LINA
Declared/Functional Unit	**Applicability/Coverage**
1m^2 of Triple Skin site assembled triple skin unit, comprising Trilite 1.8 weather sheet / Cleartherm thermal interlayer / Trilite 2.4 liner sheet weighing 5.10kg/m^2	Product Average.
EPD Type	**Background database**
Cradle to Gate with options	Ecoinvent v3.2 & BRE LINA database V2.0.62

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Pat Hermon
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑		☐

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Brett Martin Daylight Systems
Sandford Close, Dutton Road,
Alderman's Green Industrial Estate,
Coventry
CV2 2QU

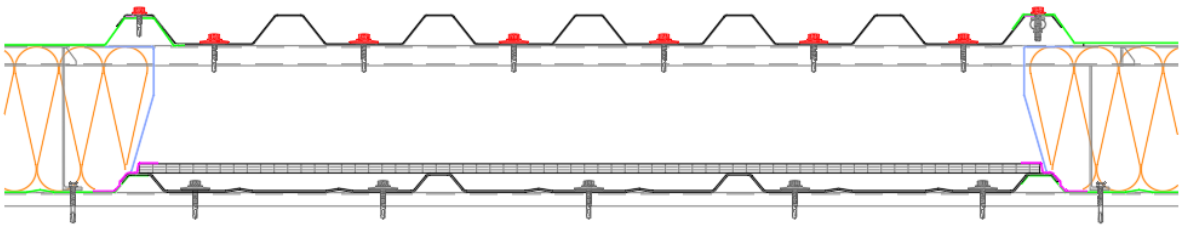
Construction Product:

Product Description

Trilite rooflights are corrugated translucent GRP sheets, and are typically supplied with fire ratings SAB to BS476 part 3 and Class 3 to BS476 part 7, they are also available with fire ratings of SAA or Class 1. Trilite rooflights are available to match most corrugated profiles for roof or wall, and are installed in site assembled applications. Trilite rooflights are typically of width 1000mm.

Technical Information

Property	Value, Unit
Harmonised Technical Specification EN 1013:2012 + A1:2014	N.B. NPD = No performance declared
External fire performance (EN13501 part 5)	$B_{ROOF}(t4)$
Reaction to fire	NPD - UK fire ratings declared separately
Water / Air permeability	Pass
U-value	1.3 W/m^2K
Light Transmission	58%
G-Value	0.55
Large soft body impact resistance (assembly)	NPD. Performance to ACR(M)001 declared separately in accordance with NARM NTD03
Dimensional tolerances	Pass
All other properties	NPD



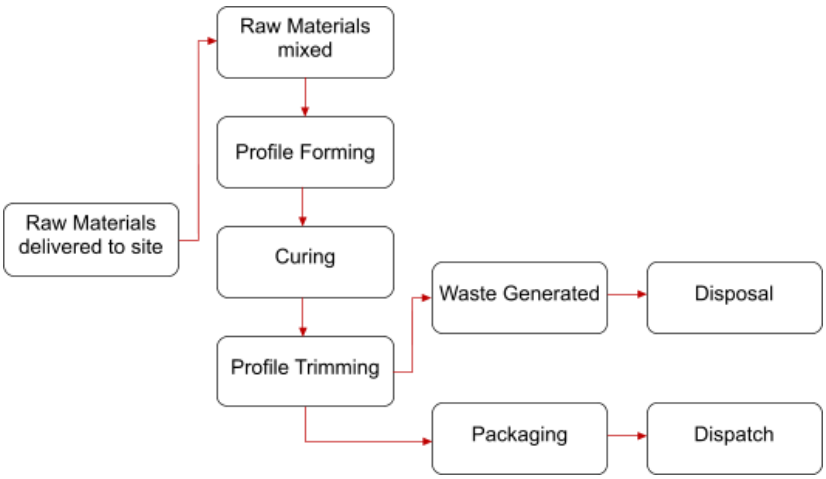
Main Product Contents

Material/Chemical Input	%
GRP Resin	49.8
Glass fibre	27.1
Minor Chemicals	2.7
Film	0.8
Cleartherm thermal interlayer	19.8

Manufacturing Process

The polyester resin and minor chemicals are mixed and deposited on a carrier film. Glass rovings are spread on top and sandwiched by a second film. The flat uncured sheet is then formed to the desired profile and passed through an oven to cure. The edges of the sheet are trimmed and sheets cut to the desired length.

Process flow diagram



Construction Installation

Liner Panel

Main fasteners - Liner panel

Stainless Steel 5.5mm diameter fastener with a large diameter washer, minimum 5 fixings per purlin.

Side Laps - Liner panel

The GRP should overlap the metal on both sidelaps. 50mm wide film backed butyl tape applied over the lap joints.

End Laps - Liner panel

Endlaps should be sealed with a 6x5mm strip of butyl mastic inside the lap along the line of fasteners.

Cleartherm layer

Laid in place after liner panel installed. This can be held in place with 50mm wide film back butyl tape or 9x3mm butyl sealant can be applied to the crown on each side lap of the liner panel.

Outer Sheet

Main fasteners - Outer sheet

Stainless Steel 5.5mm diameter with large diameter washed with bonded seal, typically poppy red colour. Located in the top flange of ashgrid bar, zed spacer or equivalent. Minimum 5 fixings per purlin.

Endlap Sealant - Outer Sheet

End laps should be sealed with 2 row of 6x5mm section UV stable butyl mastic. Located above and below the line of fasteners, no more than 25mm from line of fasteners.

Side stitch fasteners - rooflight overlap

Standard stitching screws should be used at 300mm-400mm centres. Typically poppy red colour.

Side stich fasteners - rooflight underlap

Expanding rubber bolts should be fitted at 300mm-400mm centres

Sidelap sealant - Outer sheet

Single strip of 6x5mm UV stable butyl mastic, positioned on crown of sheet, positioned on the crown of the sheet just outside the line of sidelap fasteners.

Use Information

Maintenance involves cleaning and inspection after one year, then subsequently at an appropriate frequency (depending on results of previous inspections and environmental conditions), typically 2-3 years but more frequently if necessary, and never exceeding 5 years.

The general condition of GRP rooflights, and the security of fasteners and sealants should be checked periodically as part of the overall maintenance program for the structure into which they are incorporated. If a rooflight is found to be damaged it must be replaced in accordance with the original specification.

End of Life

It is assumed that the end of life the GRP rooflights, Cleartherm layer, sealants and fixings will be disposed of via landfill, as this is the worst case outcome.

Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1m^2 of Triple Skin site assembled triple skin unit, comprising Trilite weather sheet / Cleartherm interlayer / Trilite liner sheet, weighing 5.10 kg/m^2.

System boundary

This is a cradle to gate with options EPD (i.e. processes covered in the extraction and processing in modules A1 to A3), the construction stage in modules A4 and A5 and end of life scenario in module C4.

Data sources, quality and allocation

Manufacture-specific data from Brett Martin Daylight Systems covering a production period of 1 year [01/01/2019 to 31/12/2019] from the Coventry site has been used for this EPD.

BMDS offer a range of rooflights, all manufactured at the Coventry site. For inputs where there is no alternative way to scale data, sales data for 2019 has been used to ascertain total resource usage for GRP production.

Once the total value (of energy or water) for the manufacture of GRP is known, then it has been scaled by production output in GRP linear metres, using the below equation.

$$\text{Usage} = \frac{\text{Total GRP usage} \times \text{Production output of product} \times 2}{\text{Total GRP production output}}$$

As BMDS run a large site, it is difficult to apportion waste correctly to the different manufacturing cells and therefore it is difficult to scale the waste correctly. The production waste element has been taken from the scrap allowances in the order processing system, which is based on historical material usage.

Cut-off criteria

Data collected at the Coventry manufacturing site was used. The inventory process in this LCA includes all data related to raw material, packaging material and consumable items, and the associated transport to the manufacturing site. Process energy and water use and direct production waste are included. Environmental impacts due to administration of the manufacturing process are assumed to be below cut off criteria.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts									
			GWP	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO_2 equiv.	kg CFC 11 equiv.	kg SO_2 equiv.	kg $(PO_4)^{3-}$ equiv.	kg C_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	3.40E+01	2.43E-06	1.28E-01	4.52E-02	2.20E-02	5.87E-04	4.91E+02
Construction process stage	Transport	A4	8.82E-02	1.68E-08	3.03E-04	7.98E-05	6.26E-05	1.48E-07	1.38E+00
	Construction	A5	1.51E+00	3.55E-07	8.64E-03	2.58E-03	9.97E-04	3.00E-05	2.15E+01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND	MND
	Disposal	C4	5.53E-01	1.51E-08	4.40E-04	3.81E-02	1.60E-04	8.46E-08	1.37E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND	MND

GWP = Global Warming Potential;
ODP = Ozone Depletion Potential;
AP = Acidification Potential for Soil and Water;
EP = Eutrophication Potential;
POCP = Formation potential of tropospheric Ozone;
ADPE = Abiotic Depletion Potential – Elements;
ADPF = Abiotic Depletion Potential – Fossil Fuels;

LCA Results (continued)

Parameters describing resource use, primary energy								
			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	1.85E+01	7.04E-03	1.85E+01	3.66E+02	1.42E+02	5.08E+02
Construction process stage	Transport	A4	2.08E-02	5.20E-08	2.08E-02	1.37E+00	0.00E+00	1.37E+00
	Construction	A5	3.44E+00	6.69E-06	3.44E+00	2.31E+01	0.00E+00	2.31E+01
Use stage	Use	B1	MND	MND	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND	MND	MND
	Disposal	C4	5.18E-02	1.34E-07	5.18E-02	1.42E+00	0.00E+00	1.42E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND	MND	MND

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

LCA Results (continued)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	5.00E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	3.20E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	3.07E-02
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.57E-03
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG
	Total (of product stage)	A1-3	4.21E-01	1.72E+00	7.27E-04
Construction process stage	Transport	A4	5.17E-04	1.17E-01	9.55E-06
	Construction	A5	8.22E-01	2.16E-01	5.01E-05
Use stage	Use	B1	MND	MND	MND
	Maintenance	B2	MND	MND	MND
	Repair	B3	MND	MND	MND
	Replacement	B4	MND	MND	MND
	Refurbishment	B5	MND	MND	MND
	Operational energy use	B6	MND	MND	MND
	Operational water use	B7	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND
	Transport	C2	MND	MND	MND
	Waste processing	C3	MND	MND	MND
	Disposal	C4	1.07E-03	5.41E+00	9.08E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

LCA Results (continued)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use stage	Use	B1	MND	MND	MND	MND
	Maintenance	B2	MND	MND	MND	MND
	Repair	B3	MND	MND	MND	MND
	Replacement	B4	MND	MND	MND	MND
	Refurbishment	B5	MND	MND	MND	MND
	Operational energy use	B6	MND	MND	MND	MND
	Operational water use	B7	MND	MND	MND	MND
End of life	Deconstruction, demolition	C1	MND	MND	MND	MND
	Transport	C2	MND	MND	MND	MND
	Waste processing	C3	MND	MND	MND	MND
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	MND	MND	MND	MND

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	Weighted average site distance was found to be 95km from Brett Martin's factory in Coventry. Delivery is by Brett Martin's fleet of delivery lorries. An empty return journey is also included, to make the total distance 190km		
	Vehicle type:	Tonnes	>32
	Distance:	km	190
A5 – Installation in the building	This scenario assumes the following energy and packaging waste are associated with the products installation on site. The scenario assumes no installation waste of the rooflight as the product is cut to the correct length in the factory and requires no on site modification.		
	Packaging waste	kg per F.U.	0.00115
	Diesel for crane	MJ per F.U.	2.50E-03
	Electricity for drill battery	MJ per F.U.	2.59E-03
	Stainless Steel Screws	kg per F.U.	0.15
	Sealant	Kg per F.U.	0.153
	Transport of Ancillary materials to site	Road transport - Van	30km
C1 to C4 End of life,	Although there are recycling and energy reclamation options at end of life, the worst case situation is considered. Disposal of GRP rooflight and polycarbonate intermediate layer is assumed to be to landfill.		
	GRP rooflight & polycarbonate intermediate layer to landfill	Kg per F.U.	5.10
	Stainless steel fixings to landfill at End of Life	Kg per F.U.	0.15
	Sealant waste at end of life	Kg per F.U.	0.153

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework. BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines. BS EN ISO 14044:2006. London, BSI, 2006.

SPECIALIST TECHNICAL PRODUCTS LTD

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HQB1 HIGH QUALITY BUTYL TAPE

HQB1 has been assessed, tested and approved by an independent laboratory to NFRC Class "A" standard.

GENERAL DESCRIPTION:

HQB1 is a preformed high performance polyisobutylene (PIB) based sealing tape available in single strand or multi-lane rolls. This product has a multitude of applications where joints need to be formed to seal against air and water ingress. The product is cost effective, non toxic and requires no tools to apply.

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APPLICATIONS:

ROOFING & CLADDING industry where it creates an excellent seal in situations such as side and end lap joints and the bead section is particularly recommended for large corrugated end lap sheet profiles. A copy of the independent test report to the National Federation of Roofing Contractors (NFRC) specification is available on the STP website.

HEATING & VENTILATION market has found this product to be preferable to other methods of sealing flanges on ducting due to its ease of use and solvent free formulation.

AUTOMOTIVE uses include sealing around the frames of sun roofs.

GREENHOUSE manufacturers include this product to seal between the glazing and framework

CARAVAN manufacturers have many applications such as sealing between mouldings and the outer skin, lap joints on the body work and other areas where fittings are attached piercing the outer skin.

FIRE PROTECTION is enhanced by use of an intumescent version **HQB1 FR.**

PRODUCT DATA:

COLOURS	STANDARD COLOURS ARE BLACK, WHITE, AND GREY. MANY OTHER COLOURS AVAILABLE SUBJECT TO QUANTITY.
DIMENSIONS	1mm to 35mm THICK, 5mm to 150mm wide. ROLL LENGTH IS DEPENDANT ON THICKNESS.
SHELF LIFE	24 MONTHS IN AMBIENT CONDITIONS.
LIFE EXPECTANCY	IN EXCESS OF 25 YEARS.
U.V. RESISTANCE	EXCELLENT
SERVICE TEMPERATURE RANGE	-40 TO +90 DEGREES C.
JOINT MOVEMENT	UP TO 15%
COMPATIBILITY	VERY GOOD ADHESION TO MOST SURFACES & COMPATIBLE WITH MOST COMMONLY USED CONSTRUCTION MATERIALS. FOR FURTHER INFORMATION PLEASE CONTACT OUR TECHNICAL DEPARTMENT.
DYNAMIC TENSILE TENSION: SEPARATION RATE 100mm/min @ 20 deg C	24 N/cm^2 TO STANDARD 180 GRIT STAINLESS STEEL
DYNAMIC SHEAR: SEPARATION RATE 200mm/min @ 20 deg C	22 N/cm^2 TO STANDARD 180 GRIT STAINLESS STEEL
MOISTURE VAPOUR TRANSMISSION RATE : INDEPENDENTLY TESTED TO BS 15106-3	0.025 g/m^2/24hr/mm at 25^oC & 75% RH

FEATURES & BENEFITS:

* SELF WOUND ROLL PRESENTATION *

* SOLVENTLESS FORMULATION *

* INSTANT SEAL *

* DIRECT CONTROL OVER QUANTITY OF SEALANT USED IN THE JOINT *

* ENVIRONMENTALLY FRIENDLY *

* EASE OF USE *

* GOOD ADHESION ON BOTH FACES TO MOST BUILDING MATERIALS *

*HIGH PUMPING RESISTANCE *

HQB1 should be applied to surfaces at a temperature range of between +4 and +40^oC. For best performance the surfaces should be clean, dry, and grease free. The product should be unwound and lightly pressed into position leaving the release paper in place. On forming the joint the release paper is removed and the closing surface pushed firmly in place, pressure applied along the length of the joint and mechanically fixed.

PRODUCT DATA SHEET

CA Thermafoil Plus

Version No.3	Revision Date: 15/01/18	Page 1 of 3

DESCRIPTION

CA Thermafoil Plus is an extruded butyl tape laminated with a fixed aluminium foil.

KEY FEATURES

Reduces condensation in built up metal roofing systems by effectively sealing the metal liner to conform with the requirements of the Building Regulations Approved Document L2:2006.	Can be applied in cold conditions without reduction in long term performance.
Prevents air leakage through lap joints in order to conform with the requirements of Approved Document L2:2006.	Unique high tack adhesive for instant grab.
Conforms with the recommendations of the MCRMA Technical Paper No.14 - Guidance for the Design of Metal Roofing and Cladding to Comply with Approved Document L2:2006.	Aluminium foil backing allows the tape to be torn by hand to assist in application.
Outstanding adhesion to coated steel and aluminium sheets without the need for primers.	Supplied in self-wound rolls for easy application.
Very low moisture vapour transmission rate.	Service life can exceed 20 years.

USES

A high performance Air Seal and Moisture Barrier Tape developed especially for sealing side lap joints of metal roof and wall liners to reduce condensation and increase airtightness in buildings.	Thermafoil can be used as recommended in the MCRMA Technical Paper No.14 Guidance for the Design of Metal Roofing and Cladding to comply with Approved Document L2:2006.
Thermafoil can be used on purlins to prevent cold-bridging.	Thermafoil can be used to overtape joints in vapour control layers.
Care must be taken to seal the joints at the eaves, ridge and any pipe or service penetrations in order to provide a completely airtight building.	The use of Thermastrip preformed butyl sealant is recommended for sealing between the end laps of liner trays
Thermafoil Plus can be used to seal sidelaps in steel decking.	

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CA Thermafoil Plus

TECHNICAL APPROVALS

Thermafoil Plus conforms with the following for the sealing of side lap joints:-

MCRMA Technical Paper No. 14 - Guidance for the Design of Metal Roofing and Cladding to Comply with Approved Document L2:2006.

The report recommends that side and end laps/joints and all perimeter joints should be effectively sealed, not only to reduce air leakage to a very low level, but also to provide vapour control.

Approved Document L2:2006, Section 1, Elemental Design Method (Summary).

Thermal bridging at junctions and around openings:-

1.9 Construct the building fabric so that there are no significant thermal bridges or gaps in the insulation layer(s) within the various elements of the fabric, at the joints between elements and at the edges of the elements.

1.11 Adopt robust design practices illustrated in MCRMA Technical paper No. 14 and BRE Information Paper IP 17/01

Building Air Leakage Standards:-

1.17 Buildings should be reasonably airtight to avoid unnecessary space heating and cooling demand and to enable the effective performance of ventilation systems.

1.19a Provide reasonably continuous air barrier in contact with the insulation layer over the whole thermal envelope (including separating walls). Guidance for the design of Metal Cladding and Roofing Systems to minimise air infiltration is given in the MCRMA Technical Paper No. 14.

PERFORMANCE

	UNIT	NOMINAL VALUE	TEST METHOD
Dynamic Shear Adhesion	N/cm^2	10	H15
90° Peel Adhesion	N/cm	9	H48
180° Peel Adhesion	N/cm	10	H41
Specific Gravity	g/cm^3	1.6	H6
Moisture Vapour Transmission Rate	$g/m^2/24hr/mm$	0.15	ISO9932 / BS ISO 15106
Water Vapour Resistance	MN.s/g	3800	ISO9932 / BS ISO 15106
Foil Tensile Strength (MD/CD)	N	170 / 160	H63
Foil Elongation (MD/CD)	mm	6 / 6	H63
Service Temperature Range	℃	-40 to +90	

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CA Thermafoil Plus

APPLICATION

PROPERTIES

Application temperature range: +5ºC to +40ºC

Shelf life: 24 months when stored flat in original packaging in cool, dry conditions.

INSTRUCTIONS

Surface preparation: All surfaces should be clean, dry and free from frost, grease and loose materials. When cleaning contaminated substrates, HS Butyl recommend that propan-2-ol (IPA) is used and allowed to dry prior to the application of the butyl tape.

Application: Apply direct from the reel onto one surface and press sufficiently along its whole length to achieve good initial adhesion. The use of a roller to roll the joint, using firm pressure, is recommended to get a good bond.

PACKAGING

The product is supplied as a self wound reel.

Standard: 1mm x 50mm x 17.5m – 16 rolls per box

1mm x 80mm x 17.5m – 8 rolls per box

The sealant colour is white.

TOLERANCES

Thickness ± 10%

Width: ± 2mm

GENERAL

Thermafoil Plus is part of a range of butyl products for the Industrial Roofing market. For further information, please contact our Customer Care Team or visit our Website.

The information given in this product data sheet is based on laboratory tests and experience which we believe to be correct. Properties quoted are typical and do not therefore constitute a specification. In view of the wide range and variability of substrates, we would advise that our product should be tested by the user to establish suitability for its intended application. E &OE.

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TATA STEEL

TATA

Colorcoat® High Reflect

The optimum reflectivity for an internal liner, maximising daylight and reducing requirements for artificial lighting

Colorcoat® High Reflect is a bespoke liner designed with maximum reflectivity to reduce energy requirements, associated operational costs and CO_2 emissions.

- ≥ 85% reflectance, reducing the amount of energy required to achieve the same level of lighting.
- Significantly reduces CO_2 emissions by 2-3% per year, helping to achieve compliance with tightening regulations.
- Can improve daylight factor by 10%.
- Possible energy savings of up to 12% per annum.
- Smooth 30µm polyester coating.
- Galvanised substrate with Zinc metallic coating or equivalent for very good corrosion resistance.
- High-performance reverse side backing coat specially formulated for use in construction applications providing good adhesion to standard systems.

Typical payback and savings

Lux	Energy savings (%)	CO_2 reduction (%)	Payback (years)
300	11	3*	9.8
500	12	3*	3.8
1000	12	3*	1.1

Based on 4000m^2 building, daytime operation (Payback for 24 hour operation is ≤ 1.5 years).
*Based on SBEM Calculation under NCM conditions for Part L compliance.

Test building with Colorcoat® PE 15 internal liner and Colorcoat® High Reflect.

Close up showing transition from Colorcoat® PE 15 to Colorcoat® High Reflect.

Colorcoat® High Reflect

Colorcoat® reassurance

The Colorcoat® brand provides the recognised mark of quality and expertise from Tata Steel. Encompassing fifty years of innovation, strict testing procedures and manufacturing excellence, Colorcoat® provides a range of pre-finished steel products which have been used on countless projects worldwide.

Product performance

Colorcoat® High Reflect is carefully manufactured in a controlled process to ensure consistent quality and is suitable for interior roof and wall liner trays, cassette systems and composite panels in dry and unpolluted environments. Foam composite panels should not be stacked plastisol to Colorcoat® High Reflect until cool.

Colorcoat® High Reflect is not suitable for external applications and to ensure it is fitted in the optimum condition, outdoor storage should be minimised during the construction process.

Colorcoat® High Reflect can be expected to last the life of the building in normal, controlled, dry and unpolluted environments.

Tata Steel has a range of Colorcoat® products suitable for different environments and applications.

Product statement

A fit for purpose guarantee is available. The actual duration of the guarantee will depend on the environment, geographic location and application.

Product testing

To ensure the integrity of Colorcoat® products, Tata Steel uses laboratory tests to measure their performance against corrosion, effect of sunlight, chemicals and abrasion. All testing of products is carried out in accredited laboratories to international standards.

Typical properties

Colorcoat® High Reflect			Test standard
Nominal organic coating thickness	µm	30	EN 13523 - 1
Specular Gloss (60°)	%	25-35	EN 13523 - 2
Resistance to rapid deformation (Reverse impact)	J	< 9	EN 13523 - 5
Paint adhesion (cross hatch)		No pick off	EN 13523 - 6
Flexibility: Minimum bend radius	T	5T (16°C)	EN 13523 - 7
Adhesion	T	3T	EN 13523 - 7
Reflectance (Y value)	%	≥ 85%	
Pencil hardness (Surface marking)		HB - 5H	EN 13523 - 4
Solvent resistance (MEK rubs)		> 100	EN 13523 - 11
Corrosion resistance:			
Salt spray	hours	500	EN 13523 - 8
Humidity	hours	500	EN 13523 - 26
Reaction to fire		Class A1	EN 13501 - 1
Internal environment classification		CPI2	EN 10169

General notes

1. The figures contained in this table are typical properties and do not constitute a specification. These figures relate to the topcoat. For details on test methods see **www.colorcoat-online.com**

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Registered in England No. 2280000.

www.colorcoat-online.com

June 2020

TATA STEEL

TATA

Colorcoat HPS200 Ultra®

Super durable, guaranteed performance

Unrivalled product performance

Exceptional performance

Designed to withstand even the most demanding and aggressive environments, Colorcoat HPS200 Ultra® pre-finished steel provides super durability and corrosion resistance. Whatever your type of building, from warehouses to retail outlets to processing plants, Colorcoat HPS200 Ultra® demonstrates proven performance and reliability.

Typical properties

Colorcoat HPS200 Ultra®			Test standard
Nominal organic coating thickness	(µm)*	200	EN 13523-1
Specular gloss (60°):			
Non-matt colours	%	20-40	EN 13523-2
Matt colours	%	<10	EN 13523-2
Scratch resistance	(g)	>5000	EN 13523-12
Abrasion resistance (Taber, 250 rev, 1 kg)	(mg)	<12	EN 13523-16
Flexibility:			
Minimum bend radius	(T)	0T (16°C) 1T (0°C)	EN 13523-7 EN 13523-7
Reverse impact	(J)	≥18	EN 13523-5
Adhesion (cross hatch)	(%)	100	EN 13523-6
Maximum continuous operating temperature	(°C)	60	
Corrosion resistance:			
Salt spray	(h)	1000	EN 13523-8
Humidity	(h)	1500	EN 13523-26
Corrosion resistance category		RC5	EN 10169
UV resistance category		Ruv4	EN 10169
Internal environment classification		CPI5	EN 10169

*µm = micron

Notes

1. The figures contained in this table are typical properties and do not constitute a specification. Tested in accordance with EN 13523. For details on test methods visit **www.colorcoat-online.com**
2. For health and safety datasheets contact the Colorcoat Connection® helpline on +44 (0)1244 892434.

Super durability

Colorcoat HPS200 Ultra® has been developed to perform in demanding environments – both external and internal. It has been subjected to comprehensive natural and accelerated testing, often way beyond the required standards. Colorcoat HPS200 Ultra® is used in a wide range of industrial and commercial buildings and real-life scenarios provide further evidence of the product's super durable qualities.

Excellent test results mean that Colorcoat HPS200 Ultra® is classified as a CPI5 product as per EN 10169. This is the highest classified level of corrosion protection for internal environments and means that Colorcoat HPS200 Ultra® is suitable for the most demanding internal applications such as swimming pools, sewage treatment plants, power stations, energy from waste and processing factories.

Today's super durable Colorcoat HPS200 Ultra® comes with comprehensive guarantees and offers a sustainable solution for the building envelope where longevity and durability are imperative.

Double sided option

To support the super durable qualities of Colorcoat HPS200 Ultra® it is provided with a high performance backing coat as standard however is also available double sided. This provides a robust barrier on the reverse side of the steel substrate for buildings with demanding internal and external environments such as manufacturing plants.

Unrivalled corrosion protection

Colorcoat HPS200 Ultra® uses the unique and proven Galvalloy® metallic coating by Tata Steel. Galvalloy® is made with a special mix of 95% Zinc (Zn) and 5% Aluminium (Al) that conforms to EN 10346:2015. The carefully developed proportions of Zinc and Aluminium in Galvalloy® offers a combination of increased barrier and sacrificial protection when compared with conventional Hot Dip Galv (HDG) coatings and provides unrivalled corrosion protection, even at the cut edges.

Colorcoat HPS200 Ultra® with Galvalloy® roof after 7 years.

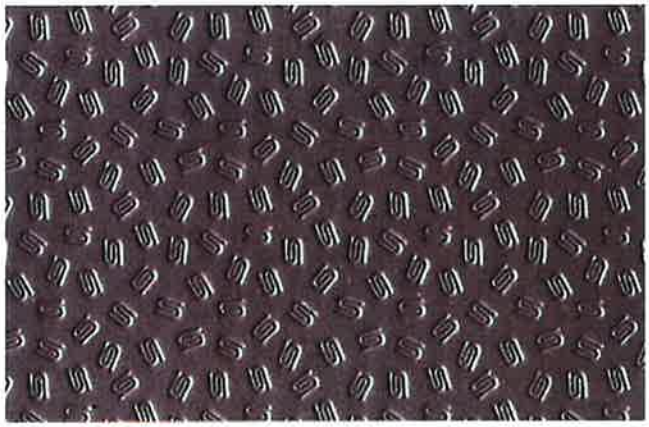
Leathergrain alternative on hot dip galvanised steel substrate roof after 7 years.

Enduring quality

Scintilla®

Unique to Colorcoat HPS200 Ultra® the Scintilla® emboss has been developed with a depth of only nominal 50 microns, which makes it less likely to trap dirt than deeper leathergrain embosses therefore making the pre-finished steel easier to clean whilst being more robust.

Unlike leathergrain patterns the emboss is subtle and does not detract from the overall appearance of the building, looking smooth and creating a modern building appearance from a distance. The Scintilla® emboss provides a unique guarantee of authenticy and an overall thicker protective top coat from Tata Steel.



Fire performance

External fire performance for roof covering products

Colorcoat HPS200 Ultra® when used as a roof covering can be classed as $B_{ROOF}(t1)$, $B_{ROOF}(t2)$, and $B_{ROOF}(t3)$ without further testing, in accordance with Commission Decision 2005/403/EC for all material greater than or equal to 0.4mm gauge and for all colours in the product range for single sided and 200/100 product.

Colorcoat HPS200 Ultra® has been tested to EN 1187 test method 4 and can be classified according to EN 13501-5 as $B_{ROOF}(t4)$ for all material greater than or equal to 0.4mm gauge and for all colours in the product range for all single and double sided products.

Reaction to fire performance

Colorcoat HPS200 Ultra® has been tested to EN 13823 and EN 11925-2 and can be classified in accordance with EN 13501-1 as C-s2, d0. This classification is valid for material ≥ 0.46mm and for all colours on the colour card for single sided product.

Made in the UK

Colorcoat HPS200 Ultra® is exclusively from Tata Steel, and is fully traceable with certification to BES 6001 for Responsible Sourcing. From steel manufacture to processing, Colorcoat HPS200 Ultra® uses some of the most advanced, and sustainable, technologies in the UK for high quality building products with a lower carbon footprint.

Specification

To secure the peace of mind that comes from a rigorously manufactured and world wide tested product from Tata Steel, please ensure Colorcoat® as well as the individual product name is specified: Colorcoat HPS200 Ultra® by Tata Steel with Galvalloy® metallic coating.

British Board of Agrément Certificate

The long-term performance of Colorcoat HPS200 Ultra® has been recognised within BBA certificate 91/2717 as "Colorcoat HPS200 Ultra® coating and metal treatment will protect the steel substrate against corrosion for a period in excess of 40 years in normal industrial, urban, suburban and rural environments."

Peace of mind

The Confidex® Guarantee

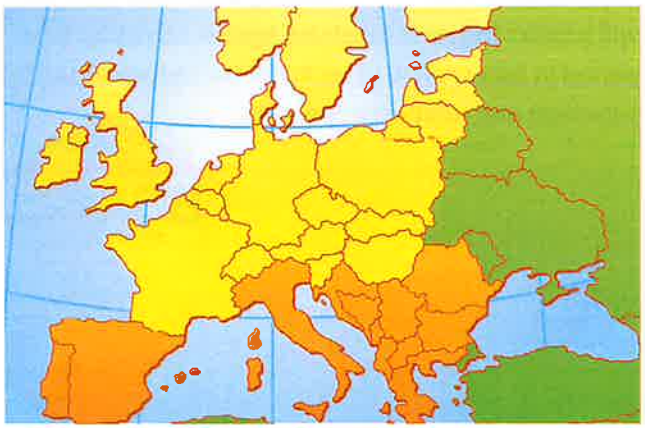
Confidex® is the product performance guarantee for Colorcoat HPS200 Ultra®, when used in an external conventional building envelope application namely roof and wall cladding using single skin, built-up or composite panel construction in industrial and commercial buildings.

Confidex® offers the longest and most comprehensive guarantee for pre-finished steel available in Europe with Colorcoat HPS200 Ultra® being guaranteed for up to 40 years. Dramatic and unrivalled improvements in colour stability and gloss retention are translated into a durable product with great longevity.

The Confidex® Guarantee is project specific and upon registration provides a contractual relationship between Tata Steel and the building owner meaning that in the case of a claim the contact with Tata Steel is direct rather than having to go through the supply chain, saving time and money. What's more this is transferable should the building owner change by simply filling in the form on the back of the guarantee certificate.

Who registers?
Usually the cladding contractor or the cladding system manufacturer, but anyone in the supply chain can apply online at: www.colorcoat-online.com/registration.

If you want to check if your building has been registered contact the Colorcoat Connection® helpline on +44 (0) 1244 892434.

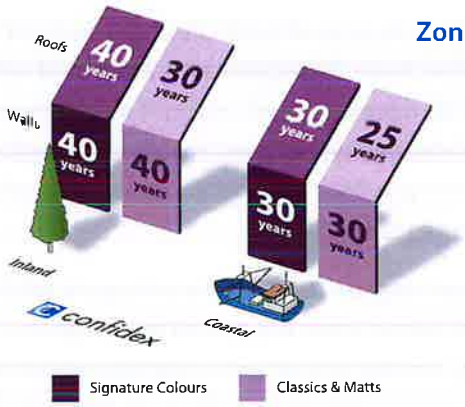


Northern Europe – Zone 1 | Southern Europe – Zone 2

For areas outside of Confidex® zones please contact Tata Steel for more information.

Confidex® zones

Zone 1



Zone 2

Notes

1. Figures under the Coastal heading are for buildings within 1km of any coast.
2. Full terms and conditions of the Confidex® Guarantee are on the online application form, available at www.colorcoat-online.com/registration
3. Confidex® must be registered within 3 months of the building completion date for the guarantee to be valid.
4. The Confidex® Guarantee periods on the diagram above are applicable to Zone 1 and Zone 2. For more information visit www.colorcoat online.com/confidexmap
5. Anthracite Matt is available with a Confidex® Guarantee of up to 40 years in Zone 1 and up to 30 years in Zone 2.

Other warranties

Whilst Confidex® has always been restricted to the weathering performance of the external cladding, we have recognised the growing emergence of demanding internal environment projects, such as energy from waste plants, and may offer a non-Confidex® warranty on a case by case basis for Colorcoat HPS200 Ultra® used internally.

Application specific warranties are also available for non-standard cladding applications; i.e flashings and sectional roller shutter doors.

Please contact the Colorcoat Connection® helpline for guarantees associated with such applications.

Sustainability

Sustainability

At Tata Steel we are committed to making the products society needs and to making them in the most responsible way. Our commitment to sustainability also means we actively manage our impacts and contribution throughout the full life of our products - with our suppliers, within our own operations, through the supply chains we serve and by taking responsibility for recycling steel. Colorcoat HPS200 Ultra® has achieved BES 6001 responsible sourcing certificate which reinforces our commitment to sustainability.

Life Cycle Assessment

We constantly strive to ensure that the manufacturing processes and materials used to manufacture Colorcoat HPS200 Ultra® are the most sustainable available. Moreover, the enhanced robustness and durability of Colorcoat HPS200 Ultra® mean that it significantly outperforms other pre-finished steel in terms of environmental impacts over the full life cycle.

To demonstrate the environmental impacts, Tata Steel have published an Environmental Product Declaration (EPD) for each of the Colorcoat® assessed cladding systems, based on an initial Life Cycle Analysis. Please visit www.colorcoat-online.com/sustain for further details.

System environmental assessment

In the UK all roof and wall systems using pre-finished steel achieve a Green Guide A+ rating. Manufacture and processing of Colorcoat HPS200 Ultra® into building envelope products, through our approved supply chain, can meet the responsible sourcing criteria for BREEAM. Our manufacturing site has an environmental management system which has been certified to ISO 14001.

Recycling

Colorcoat HPS200 Ultra® is truly recyclable without any loss of quality, time after time. There is a well established and very efficient steel recycling infrastructure which ensures that all steel collected at end of life goes back into steel manufacture. Through this efficient recycling of steel, the environmental investment in steel-making is never wasted, making steel the most sustainable construction material.

Photovoltaic

To demonstrate Tata Steel's commitment to the environment and renewable energy offerings, Colorcoat HPS200 Ultra® now provides the comprehensive Confidex® Guarantee for the pre-finished steel that is under the photovoltaic (PV) frame modules on a roof. This provides the building owner with the confidence that installing a PV array will not have a detrimental effect on the performance of the pre-finished steel, and that the product is guaranteed to perform for the same duration of up to 40 years.

If the building owner is considering retrofitting PV in the future, specifying Colorcoat HPS200 Ultra® ensures that your roof is PV ready, future proofing your building, and providing peace of mind that installation will not have a detrimental and costly impact on the pre-finished steel. The Confidex® Guarantee allows PV modules to be installed at any point throughout the Confidex® Guarantee Period, providing it has been registered, and ensures that the full roof will still be covered for the remainder of the Confidex® Guarantee duration.

Colorcoat® services

The Colorcoat® brand is recognised as the exclusive mark of quality and metal envelope expertise and is supported by a comprehensive range of services, technical advice and guidance.

Colorcoat® Business Development Team

The team are readily available to advise you on the design, specification and construction of your metal building envelope. Call the Colorcoat Connection® helpline or visit www.colorcoat-online.com to find out who the representative is for your area.

Colorcoat Connection® helpline

This dedicated helpline offers immediate and easily accessible advice and guidance on a wide range of construction issues. Contact us on +44 (0)1244 892434.

Colorcoat® Technical Papers

We have produced a number of technical papers that can help you address key issues in building design and construction.

Colorcoat® Supply Chain Partners

Colorcoat® products are available through our market-leading supply chain partners, whose CE marked and SCI assessed systems we recommend for the very highest quality and service.

Colorcoat® Accredited Distributors

Our Colorcoat® Accredited Distributors can provide you with any colour from the Colorcoat HPS200 Ultra® range in small quantities, with a 48 hour service guaranteed.

Environmental Product Declaration (EPD)

Tata Steel have published an Environmental Product Declaration (EPD) for Colorcoat HPS200 Ultra® that complies with EN 15804 and ISO 14025. Please visit www.colorcoat-online.com/epd for further details.

BS & RAL reference table

	Colour	BS	RAL
Signature Colours	Alaska Grey		7000
	Albatross	18B17	240 80 05
	Anthracite		7016
	Ardenne		7022
	Black	00E53	9005
	Goosewing Grey	10A05	7038
	Hamlet		9002
	Honesty	10C31	1015
	Ice Blue		230 80 10
	Marlstone	10B15	1013
	Meadowland	12B17	100 80 20
	Merlin Grey	18B25	180 40 05
	Mole Brown		070 40 10
	Moorland Green	12B21	100 60 20
	Mushroom	10B19	080 70 10
	Olive Green	12B27	100 30 20
	Pure Grey		000 55 00
	Straw		080 70 30
	Svelte Grey	10B23	080 50 20
	White	00E55	9003
Classics	Barn Red		030 30 40
	Burano		3004
	Chili	04E56	3000
	Heritage Green		6002
	Ivy		170 20 10
	Jade		150 50 20
	Juniper Green	12B29	140 20 20
	Ocean Blue	18C39	220 30 25
	Petra	04D44	3013
	Raven		7021
	Sargasso		5003
	Solent Blue	18E53	240 40 40
	Terracotta	04C39	040 40 40
	Van Dyke Brown	08B29	8014
	Wedgewood Blue	18C37	220 50 15
Matts	Alaska Grey Matt		7000
	Anthracite Matt		7016
	Green Grey Matt		150 40 10
	Oxidised Matt		050 20 10
	Terracotta Matt	04C39	040 40 40

RAL references
4 digit numbers are RAL Classic references.
7 digit numbers are RAL Design references.
British Standard or RAL reference numbers shown in the table, represent the nearest colours and are not exact matches to Colorcoat HPS200 Ultra®. These colours do not have equivalent BS/RAL references.

Colorcoat HPS200 Ultra®

Colorcoat HPS200 Ultra® pre-finished steel provides exceptional performance and corrosion resistance for building envelope applications. Guaranteed for up to 40 years it is backed up with even more extreme testing and real world global data to demonstrate the best combination of excellent colour stability, gloss retention and outstanding durability.

To make the colour selection process easier the colour palette is grouped as follows: Signature, Classic and further extended Matt colours.

Product features and benefits

- Optimised Galvalloy® metallic coating for exceptional corrosion resistance and cut edge protection.
- Surpasses requirements of Ruv4 and RC5 as per EN 10169 proving excellent colour and gloss retention and corrosion resistance.
- Scintilla® embossed as a mark of authenticity from Tata Steel.
- Made in the UK for a lower carbon footprint and certified to BES 6001 Responsible Sourcing standard.
- Confidex® Guarantee for up to 40 years for the weatherside of industrial and commercial buildings with no inspection or maintenance to maintain its validity.
- Exceeds requirements of CPI5 as per EN 10169 demonstrating excellent barrier properties when used internally.
- Independently tested for liberation of volatile organic compounds (VOC) against EN ISO 16000-9 and achieved an A+ rating.
- Fully REACH compliant & free of chromates including hexavalent chrome.
- Can be used under Photovoltaic (PV) frame modules with no reduction in guarantee length ensuring all parts of the roof are covered for the same duration of the Confidex® Guarantee.
- BBA certified for durability in excess of 40 years.
- Fully recyclable.

Signature colours

White (RAL 9003)

Goosewing Grey (RAL 7038)

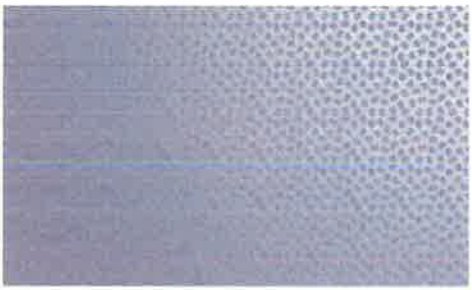
Alaska Grey (RAL 7000)

Anthracite (RAL 7016)

Black (RAL 9005)

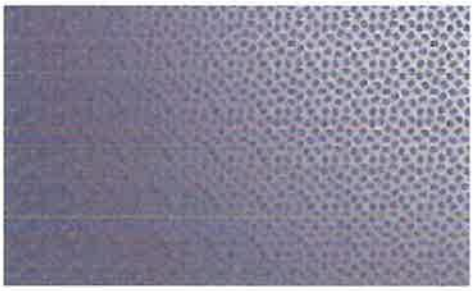
Ice Blue (RAL 230 80 10)

Marlstone (RAL 1013)

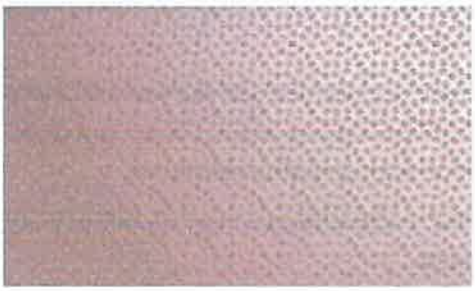


Albatross (RAL 240 80 05)

Honesty (RAL 1015)



Pure Grey (RAL 000 55 00)



Mushroom (RAL 080 70 10)

Merlin Grey (RAL 180 40 05)

Straw (RAL 080 70 30)

Ardenne (RAL 7022)

Mole Brown (RAL 070 40 10)

Classics

Hamlet (RAL 9002)

Chili (RAL 3000)

Meadowland (RAL 100 80 20)

Petra (RAL 3013)

Moorland Green (RAL 100 60 20)

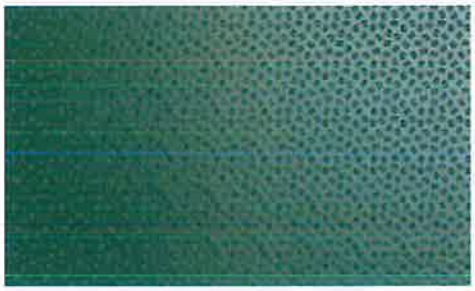
Terracotta (RAL 040 40 40)

Svelte Grey (RAL 080 50 20)

Barn Red (RAL 030 30 40)

Olive Green (RAL 100 30 20)

Burano (RAL 3004)



Jade (RAL 150 50 20)

Solent Blue (RAL 240 40 40)

Heritage Green (RAL 6002)

Wedgewood Blue (RAL 220 50 15)

Juniper Green (RAL 140 20 20)

Ocean Blue (RAL 220 30 25)

Ivy (RAL 170 20 10)

Sargasso (RAL 5003)

Van Dyke Brown (RAL 8014)

Raven (RAL 7021)

Matts

Alaska Grey (RAL 7000)

Anthracite (RAL 7016)

Green Grey (RAL 150 40 10)

Oxidised (RAL 050 20 10)

Terracotta (RAL 040 40 40)

Colour reassurance

Colour availability

All the colours on the colour card are now available on short production lead times, and from our Colorcoat® Accredited Distributors in standard sizes. To check the quickest colour availability for your project contact the Colorcoat Connection® helpline on +44 (0) 1244 892434.

Repertoire®

As an additional service, whether you want your building to stand out, or blend with the surroundings, we can create a unique identity for your building. Through our Repertoire® Colour Consultancy service we can match almost any solid colour for walls or roofs of your building, with a minimum order quantity of 2500m², we can work from either physical swatches or reference standards.

Metal hand samples

Metal hand samples are available for all colours. For a truer representation of colour and effect, please obtain metal hand samples from the Colorcoat Connection® helpline or online at www.colorcoat-online.com/samples

Colour consistency

If tonal consistency is critical, all cladding for a single elevation should come from the same production batch.

Matching components

If accessories made from other materials are to be colour-matched to the roof or wall cladding, the best reference is the actual profiles or panels delivered to site, or material from the same batch.

www.colorcoat-online.com

Printed with biodegradable vegetable inks on material sourced from responsible managed forests, certified in accordance with the FSC. Contains 10% recovered fibre, diverting waste from landfill.

Sales Contact Details
Tata Steel
Shotton Works, Deeside
Flintshire CH5 2NH
United Kingdom
T: +44 (0) 1244 812345

Colorcoat Connection® helpline
T: +44 (0) 1244 892434
E: colorcoat.connection@tatasteeleurope.com

Language English UK 0620

knaufinsulation.co.uk

ROCKSILK® RS45/RS60/RS80/RS100/RS140

July 2021

APPLICATIONS

DESCRIPTION

Rocksilk® Building Slabs are Rock Mineral Wool slabs in a range of densities, designed for use in multiple thermal and acoustic applications where density is critical. They are non-combustible with the best possible Euroclass A1 reaction to fire classification, and are manufactured using Knauf Insulation's unique bio-based binder, ECOSE® Technology.

PERFORMANCE

Thermal

Thermal conductivity:	0.034 and 0.035 W/mK

Fire

Classification:	Euroclass A1 to BS EN 13501-1

Vapour resistivity

Water vapour resistivity:	5.00 MNs/g.m

BENEFITS

- Single slab can be used for multiple applications.
- Can be provided with a factory applied foil or tissue facing, offering solutions for a wide variety of applications.

CERTIFICATIONS, CLASSIFICATIONS AND INDUSTRY STANDARDS

ROCKSILK® RS45/RS60/RS80/RS100/RS140

July 2021

SPECIFICATIONS

Thickness (mm)	Thermal conductivity (W/mK)	Length (mm)	Width (mm)	Pieces per pack	Area per pack (m^2)	Packs per pallet	Product code
Rocksilk® RS45							
150	0.035	1200	600	3	2.160	12	531096
100	0.035	1200	600	5	3.600	12	2411339
75	0.035	1200	600	6	4.320	12	2411328
60	0.035	1200	600	8	5.760	12	2411425
50	0.035	1200	600	10	7.200	12	2411327
40	0.035	1200	600	12	8.640	12	2411326
30	0.035	1200	600	16	11.520	12	2411424
25	0.035	1200	600	20	14.400	12	2411325
Rocksilk® RS60							
100	0.034	1200	600	4	2.880	12	2411331
75	0.034	1200	600	6	4.320	12	2411330
60	0.034	1200	600	7	5.040	12	2411433
50	0.034	1200	600	9	6.480	12	2411329
40	0.034	1200	600	12	6.480	12	2411432
25	0.034	1200	600	18	12.960	12	2411430
Rocksilk® RS80							
100	0.034	1200	600	3	2.160	16	2411332
75	0.034	1200	600	4	2.880	16	2411437
50	0.034	1200	600	6	4.320	16	2411435
Rocksilk® RS100							
100	0.034	1200	600	3	2.160	16	2411334
75	0.034	1200	600	4	2.880	16	2411333
50	0.034	1200	600	6	4.320	16	2411441
40	0.034	1200	600	7	5.040	16	2411440
30	0.034	1200	600	10	7.200	16	2411439
25	0.034	1200	600	12	8.640	16	2411438
Rocksilk® RS100 WTF1							
30	0.034	1200	600	10	7.200	16	528143
Rocksilk® RS140							
100	0.034	1200	600	2	1.440	16	2432553
75	0.034	1200	600	3	2.160	10	2411447
50	0.034	1200	600	4	2.880	12	2411446
40	0.034	1200	600	5	3.600	12	2411445
30	0.034	1200	600	7	5.040	10	2411444

ROCKSILK® RS45/RS60/RS80/RS100/RS140

July 2021

ADDITIONAL INFORMATION

Durability

Rocksilk® Building Slabs are odourless, rot proof, non-hygroscopic, does not sustain vermin and will not encourage the growth of fungi, mould or bacteria. The product will have a life equivalent to that of the wall structure in which it is incorporated.

Application

Rocksilk® Building Slabs are multi-application products for use in built-up metal roofs and walls, pitched roof constructions between rafters, intermediate floors, separating floors, internal stud partitions and light steel frame infill. Rocksilk® Building Slabs are used extensively in OEM applications for fabrication of thermal, acoustic and fire products.

Standards and Certification

Rocksilk® Building Slabs are manufactured in accordance with BS EN 13162, ISO 50001 Energy Management Systems, ISO 14001 Environmental Management Systems, and ISO 9001 Quality Management Systems, as certified by TÜV Nord.

Real Performance

Glass and Rock Mineral Wool are easier to install correctly than other insulants such as rigid boards because they adapt to any slight imperfections in the substrate and knit together, eliminating any air gaps. Evidence shows the absence of air gaps is crucial to achieving real performance in the relevant application.

Environmental

Rocksilk® Building Slabs contains no ozone-depleting substances or greenhouse gases. For further environmental information consult the relevant Environmental Product Declaration, available on our website.

Handling and storage

Rocksilk® Building Slabs are easy to handle and install, being lightweight and easily cut to size, where necessary. Rocksilk® Building Slabs are supplied in recyclable polythene packs (4-LDPE) which are designed for short term protection only. For longer term protection on site, the product should either be stored indoors, or under cover and off the ground. Rocksilk® Building Slabs should not be left permanently exposed to the elements.

with ECOSE® TECHNOLOGY

ECOSE Technology is our unique bio-based binder, that is used in the manufacture of all of our Glass Mineral Wool products and the majority of our Rock Mineral Wool products, to bind insulation strands together. ECOSE Technology contains no added formaldehyde or phenol. It is made from natural raw materials that are rapidly renewable and is 70% less energy-intensive to manufacture than traditional binders, so it is more environmentally-friendly. Products made with ECOSE Technology are soft to touch and easy to handle. They generate low levels of dust and VOCs and have been awarded the Eurofins Gold Certificate for Indoor Air Comfort..

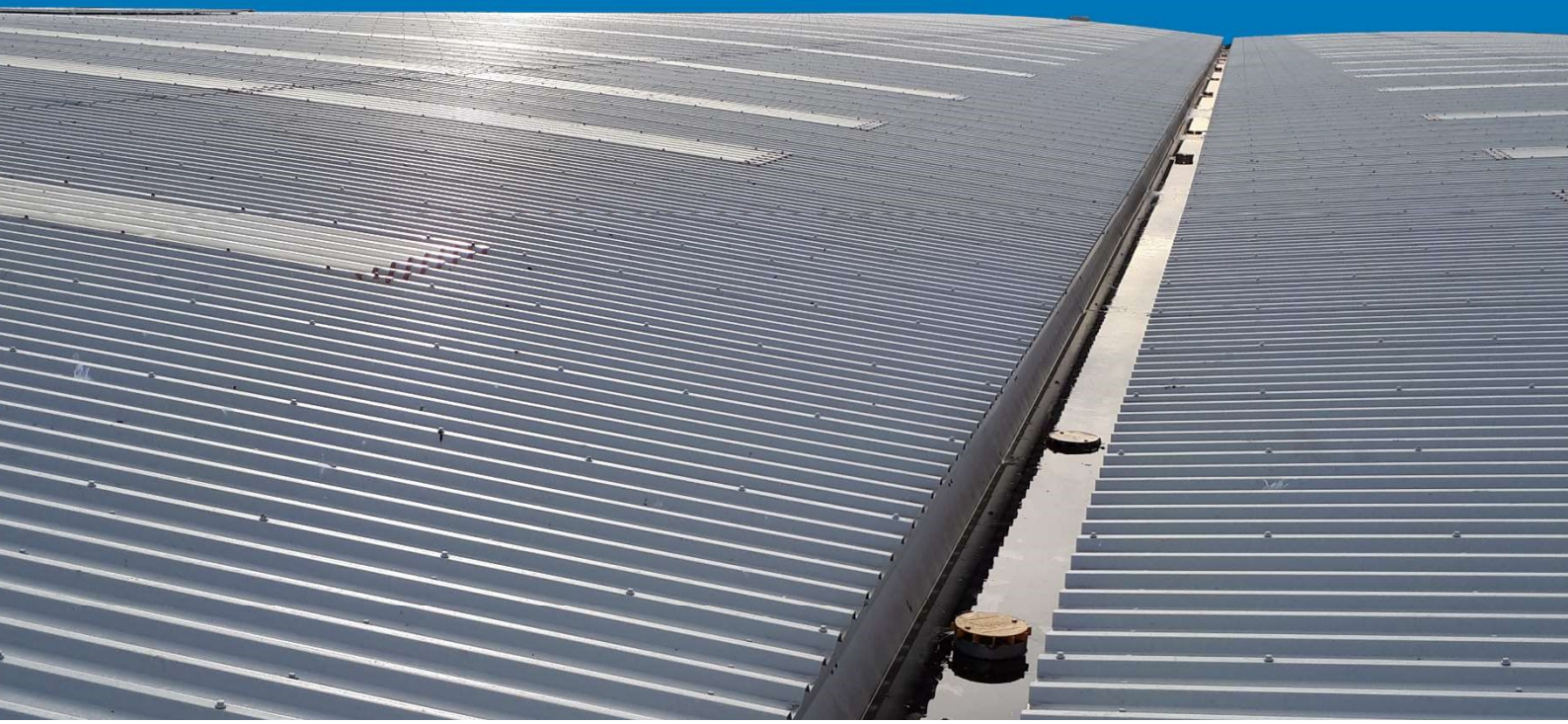
Knauf Insulation Ltd

PO Box 10, Stafford Road, St.Helens,
Merseyside, WA10 3NS. UK

Customer Service: 01744 766 766 Technical Support Team: 01744 766 666

KINE2980DAT-V0721

challenge.
create.
care.



Installation Guide

Caskade® Premier

Gutter System

CA | GROUP

IG-CPG-01
Rev: 5.2
October 2020
Approved

Revision History

Revision	Date	Comment
1	August 2008	-
2	September 2013	-
3	October 2014	-
4	September 2018	Renamed "Installation Guide": IG-CPG Rev 4
5	January 2019	Renamed: "IG-CPG-01 Rev-5" Updated to include: new format, new images/renders, additional important information and pre-weld test.
5.1	March 2019	Update to include: T-foil Plus 50, minimum weld distance
5.2	October 2020	Layout update, incorporation of IG-CPG-02

Contents

1. Important Facts

1.1 Installation Tools

Prior to commencement of installing the Caskade® Premier gutter system, you must ensure you have the appropriate tools. You must also be trained and competent to use all the tools listed below, which completes a typical toolkit for welding membrane gutters:

- Drill
- Riveter
- Soft brush to wipe away swarf
- Generator/uninterrupted site power supply, ideally 5kVa per heat gun, minimum 3kVa
- Leister Triac heat gun (or similar), preferably with a digital temperature control
- 20mm wide slot nozzle
- Silicone rubber pressure roller for hot air welding
- Penny roller
- Wooden corner template/Internal corner tool
- Seam probe tester
- Knife
- Scissors
- Pliers (combination/long nose or similar)
- Small wire brush to clean nozzle

1.2 Product Delivery

Gutters are generally provided 3.0, 3.6 or 4.0m long. Alternatively, CA Building Products can manufacture up to 7.2m lengths, for 8.0m bays, but will be subject to additional cost and delivered on returnable stillages. Where bay centres are greater than 8.0m, the shortfall will be accommodated by increasing the length of the transition pieces.

Typically, one end of each length of gutter is joggled continuously down the side and across the sole, to allow for jointing. Each individual gutter section is marked with an installation location, referenced to the marked-up layout drawings provided by CA Building Products. Refer to "Manual handling of gutters" document for further information: Technical Information Paper TIP-110.

1.3 Accessory Items (joining materials provided by CA Building Products)

Before any welding is carried out, you must ensure you have the following materials:

- Membrane cleaner
- 4.8x12 steel rivets
- T-foil Plus (50)
- 200mm wide PVC jointing strap
- Seam sealer and plastic bottle applicator

1.4 Training

Only trained operatives or those experienced in the use and welding of PVC membrane must complete the Caskade® Premier gutter joints.
For inexperienced operatives, we recommend attending a Basic Competency Program Level 2: Applied Waterproofing Membrane offered by many leading UK membrane manufactures.
CA Building Products offer three types of training:

Type A

The most basic training offered, usually part of the Twin-Therm® and River-Therm® training sessions held at CA Group head office in County Durham.

Type B

This session is aimed at experienced operatives who have a good understanding of membrane welding. This sessions covers theory and practical welding of gutter joint straps.

Type C

The most comprehensive training offered, covers theory and practical welding of gutter joint straps, outlets, stop ends etc. This is aimed at experienced operatives who would like to enhance their knowledge.

Please contact CA Group Field Services Help Desk to arrange your training on 01388 830550.

1.5 Material

CA Building Products manufacture Caskade® Premier gutters using various pre-laminated PVC membranes. Whilst the membranes are of a similar composition, each product will weld slightly differently.

Trained operatives should make themselves familiar with the specific product being used on each project prior to commencing any works, ensuring peel tests are conducted, refer to section 2 'Peel Test'.

Welding of any other flexible PVC membranes not supplied by CA Building Products to the Caskade® Premier gutter system nullifies any guarantees that may be offered for the project.

1.6 Tools and Equipment

As with any installation process, the selection of the correct tools and equipment (refer to section 1.1 'Installation Tools' and 1.3 'Accessory Items') is paramount in executing a watertight membrane joint. Before commencing any works, the trained operative should ensure all tools are inspected and checked that they are in good working order.

Only heat guns designed and manufactured for use of welding PVC membranes should be used. Refer to the heat gun user manual for information regarding the use of the tool.

It is important that the power supply is uninterrupted and of sufficient rating to adequately power the heat gun. Care should be taken when plugging in other appliances into the same power supply as this may decrease the output, ultimately affecting the welding process.

The length of the cable from the power source to the heat gun should be kept to a minimum and should not exceed 30m to minimise the risk of reduced power to the heat gun, which will affect the welding process.

Regular cleaning and maintenance should also be carried out by approved and qualified technicians, ensuring that any worn parts are replaced with approved parts.

1.7 Storage

The Caskade® Premier gutters should be kept in the packaging until ready for use.

The jointing strap supplied by CA Building Products is delivered in the horizontal orientation and should be stored until use in this manner on a platform off the ground and adequately protected from direct sunlight, rain and snow. Only material that will be used during any given working period should be exposed to the weather and environmental conditions.

1.8 Cleaning

Any standing water in the gutter should be removed and the joints completely dried. Prior to welding, all surfaces should be wiped clean using an approved cleaner and soft rag to remove all contamination such as grease, dirt and dust, otherwise the weld will be affected and may prematurely fail.

Ancillary cleaners supplied by membrane manufactures are solvent based and will evaporate within seconds.

It is accepted that soapy water may also be used for lightly soiled areas, however, the surface must be completely dry before any welding commences.

1.9 Weather

The weather can play a major factor in the welding process.

During periods of inclement weather, the weld temperature and or speed of the welding may need to be adjusted accordingly (refer to section 1.11 'Inspection and Testing' for further information).

1.10 Completing the Joint – General Notes

When locating the adjoining gutter section into place on the joint, ensure the corners of the sole are seated correctly and aligned. Once seated correctly, the gutters should be temporarily secured to the purlins before the two sections of gutter are riveted, as indicated in section 3 'Welding the Joints'.

T-foil Plus (50) is applied over the joint in the gutter, to create a weld free zone central to the joint. This allows the joint strap to be welded either side of the T-foil Plus 50, ensuring the central section of the strap remains loose and free to accommodate any differential movement between the two lengths of gutter.

The joining strap should be cut on a hard surface away from the roof and Caskade® Premier gutters to prevent damage to finished surfaces. Caskade® Premier gutter joints should be fully welded prior to the installation of any adjacent roof construction to ensure seal is effective.

On boundary wall gutters with vertical back legs, achieving a tight full weld may prove difficult. Using a wooden corner template will assist in creating a successful weld.

Ash, creases and air pockets in the jointing strap are not acceptable. In the event of an air pocket, 'pop' the pocket with a sharp knife, and depending on the size, either cut it out or weld it back onto the membrane parent material. A repair patch must be welded over the affected area, see section 7 'Patch Repairs'.

To ensure the Caskade® Premier gutters are correctly positioned, regular dimensional checks should be carried out, particularly with factory welded outlets to ensure the correct module is maintained.

1.11 Inspection and Testing

The environmental factors on any given day should be carefully considered prior to the commencement of any works. This can include but are not limited to the membrane material, weather conditions and ambient temperatures, all of which can affect the temperature setting on the heat gun and the weld speed used by the operator.

CA Building Products recommend that prior to commencing gutter joints, a test strip is welded, followed by a peel test. This may be required to be repeated throughout the day each time the heat gun is switched on and during noticeable differences in weather during any given day as a minimum. Please refer to section 2 'Peel Test' for further information.

CA Building Products recommend that all Caskade® Premier gutter joints are visually inspected and physically checked using a suitable probe (refer to section 4 'Checking the Weld'). Any defects should be repaired immediately (refer to Section 7 'Patch Repairs') and in accordance with CA Building Products' recommendations prior to applying the liquid PVC seam sealer to the edge of the jointing strap (refer to section 5 'Sealing the edge').

1.12 Weld Failures

The most common causes of weld failure include, but are not limited to:

- The polymeric membrane does not flow and fuse the two materials due to:
  - Heat gun temperature too low.
  - Excessive welding speed.
- Excessive heat can leave deposits in the weld, creating weak spots.
- No pre-weld will allow the heat to escape when completing the final weld and can result in a weak joint.
- Joint contamination prior to welding.

1.13 Protection

The flexible joint between any two sections of pre-fabricated Caskade® Premier gutters is a vulnerable area and should be protected until the completion of the construction works. Gutters must remain free from roof construction debris, such as fasteners, swarf, flashings ect. Access ladders must be placed on load spreaders. If generators are positioned in the gutter, they should be placed on an adequate drip tray.

Upon completion of the roofing works, the gutters should be given a final sweep to clear all detritus. When cleaning out gutters any build-up of detritus should be collected, using non-metallic tools i.e. soft brushes and PVC shovels. Ensure all detritus is bagged and removed from roof area.

2. Peel Test

CA Building Products recommend that prior to commencing gutter joints, a test strip is welded, followed by a peel test. The peel test should be carried out on a 200mm wide jointing strap welded onto pre-laminated metal. The following is a step by step guide of how to complete the peel test.

Step 1: T-foil Plus (50) is placed 10-15mm from the edge of the gutter purlin flange and a minimum of 125mm from the adjacent joint to be welded.

Mark a line 75mm from the T-foil Plus (50) to show where the edge of the test membrane strap should fall.

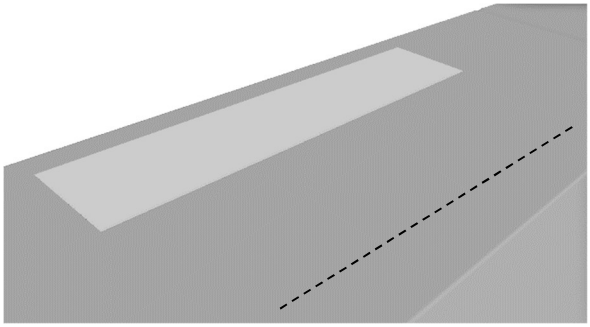


Figure 2.1

Step 2: Position the test membrane strap against the marked line and tack weld either end as shown.

Once tack welded, complete the pre-weld section as indicated in blue, which should be 25mm wide.

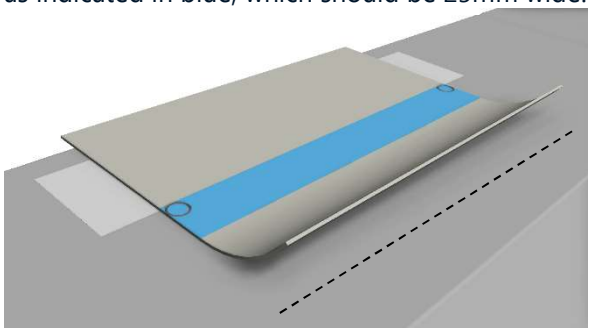


Figure 2.2

Step 3: Complete the welding of the test membrane strap, 50mm full weld (minimum two passes) indicated in green. This completes the 75mm weld required for the Caskade® Premier gutter system.

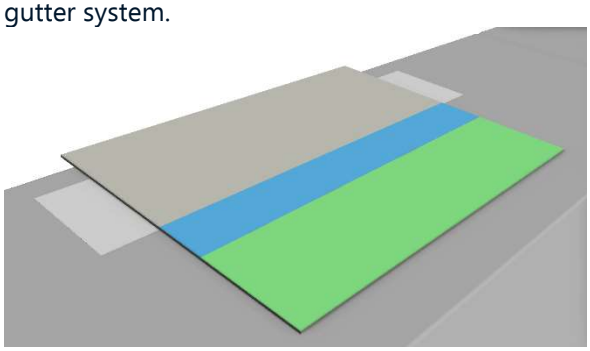


Figure 2.3

Step 4: With a knife, cut a 25-50mm tab in the centre of the test membrane strap, creating a test membrane tab.

Care should be taken not to damage the substrate.

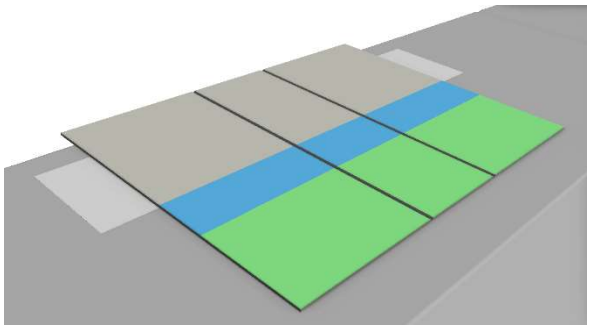


Figure 2.4

Step 5: Using a suitable pair of pliers, lift the test membrane tab and pull until the membrane rips off or delaminates.

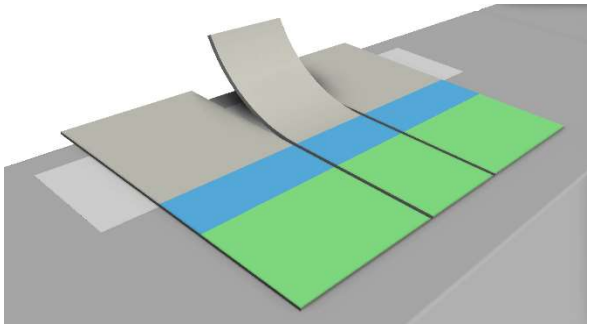


Figure 2.5

Step 6: If the test membrane tab breaks or delaminates within the 50mm fully welded section shown in green, the process must be repeated until a successful weld is achieved.

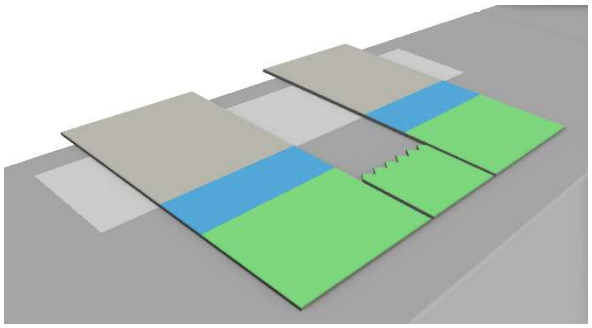


Figure 2.6

Step 7: If welded correctly, the membrane should break before or at the start of the designed 50mm (green) fully welded section, minimum 40mm.

On successful completion of the peel test, the operative should print, sign and date the test section as evidence of the test.

This is deemed a successful weld and allows the operative to commence welding gutter joints following the completion of step 8.

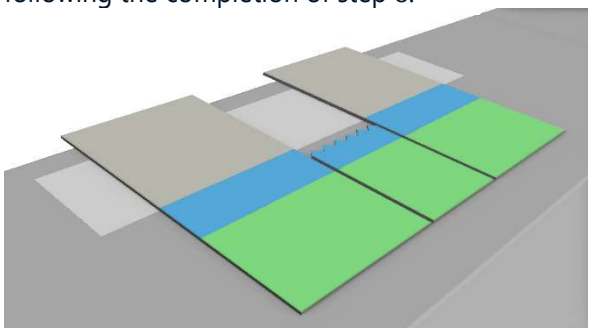


Figure 2.7

Step 8: Prior to installing the roof cladding system, trim back all excess membrane. Inspect membrane for any cuts and seal with liquid PVC seam sealer.

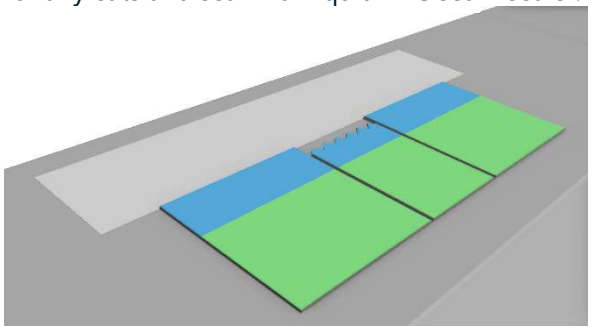


Figure 2.8

3. Welding of Membrane Joints

Step 1: Use pre punched holes in gutter to drill through joggle joint using 5mm diameter drill bit.

Step 2: Commence riveting in one corner of the sole proceeding across the sole then up the sides.

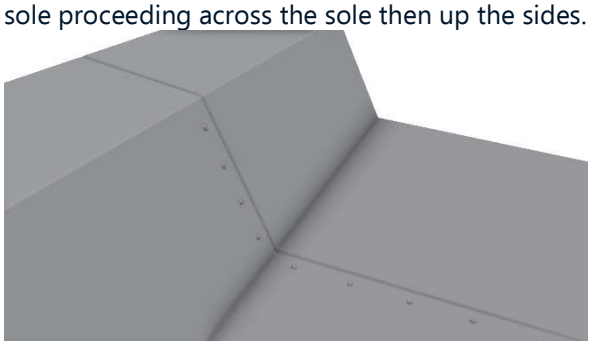


Figure 3.1

Step 3: Apply T-foil Plus (50) centrally over the rivet heads along the joggled joint, stopping 40 mm short of the outer edge either side. Ensuring it fully covers the rivet heads and cut edge of gutter whilst adhering to all surfaces.

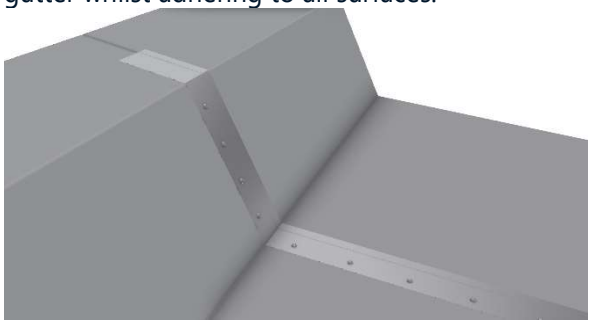


Figure 3.2

Step 4: Cut a suitable sized piece of jointing strap to suit the full gutter profile.

Step 5: Measure out 75mm from the edge of the T-foil Plus (50) and position the edge of the jointing strap to the 75mm mark and lightly tack weld in place.

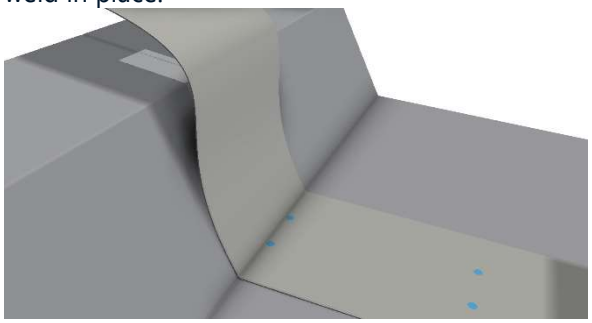


Figure 3.3

Step 6: Using the wooden template / internal corner tool, pre-weld the jointing strap in the corners ensuring tension is maintained in the strap to prevent air pockets.

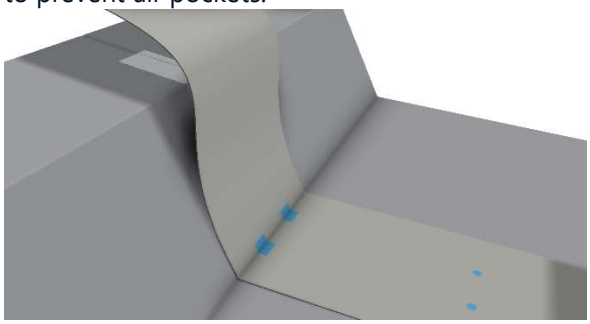


Figure 3.4

Step 7: Complete the final weld (50mm wide) to the corners.

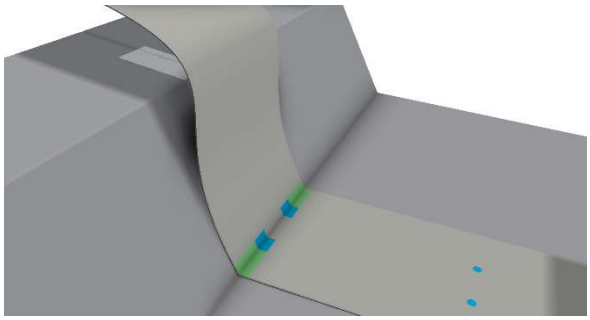


Figure 3.5

Step 8: Pre-weld the jointing strap to the sole (25mm wide). Ensure the weld is as close to the T-foil Plus (50) as possible. Completing one side and then the other.

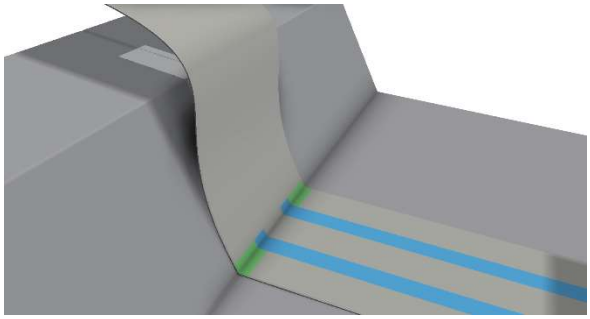


Figure 3.6

Step 9: Complete final weld (50mm wide) to sole of gutter.

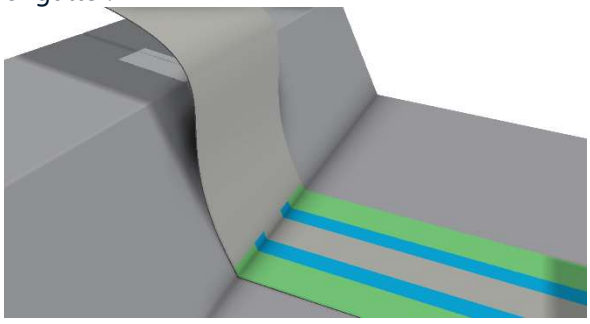


Figure 3.7

Step 10: Pre-weld the sides of the gutter (25mm wide). Ensure the weld is as close to the T-foil Plus (50) as possible. Completing one side and then the other.

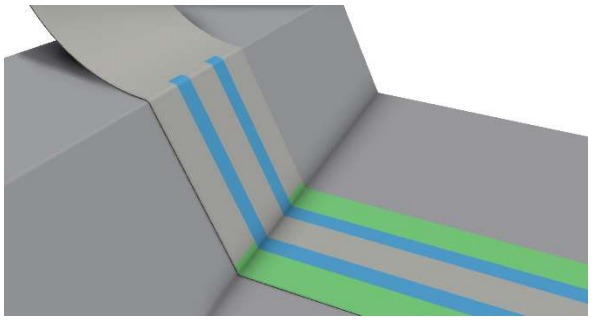


Figure 3.8

Step 11: Complete the final weld (50mm wide) to either side of the joint.

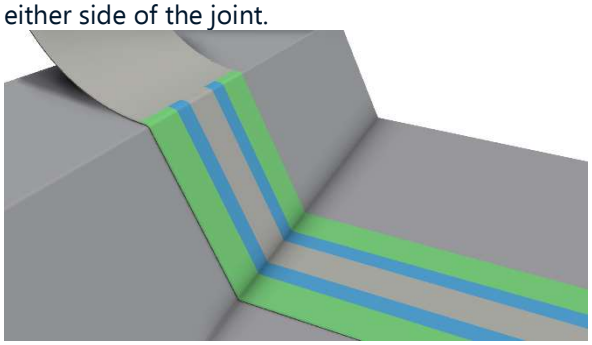


Figure 3.9

Step 12: Pre-weld the purlin bearing leg (25mm wide). Ensure the weld is as close to the T-foil Plus (50) as possible. Completing one side and then the other.

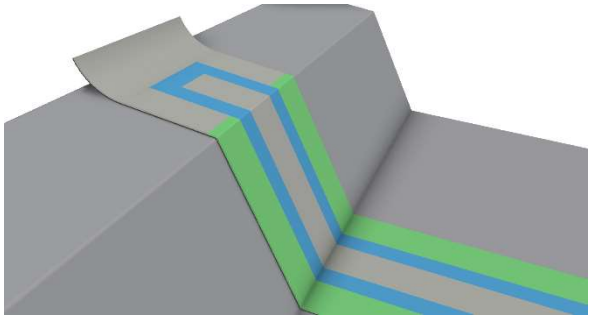


Figure 3.10

Step 13: Fully weld the purlin bearing leg and across the joggled joint.

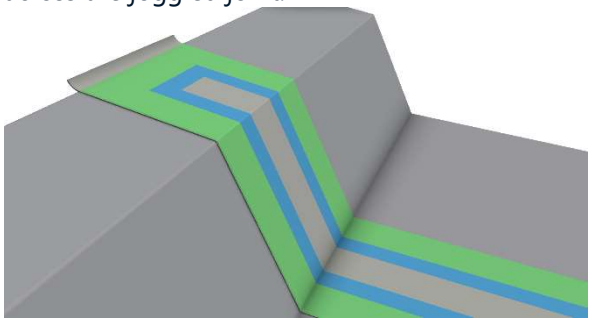


Figure 3.11

Step 14: Trim back any excess jointing strap so it is flush with the edge of the purlin bearing leg.

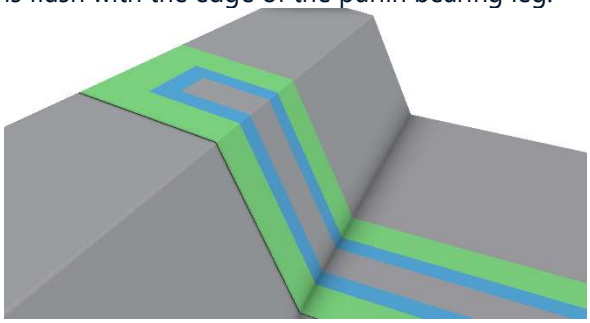


Figure 3.12

4. Checking the Weld

Step 1: When welding is complete and the membrane is cooled, use the probe to check the weld to ensure all areas are fully welded. Perform a visual inspection to check for air pockets, ash, folds and creases.

The weld is to be 50mm, 40mm minimum and be continuous with no defects.

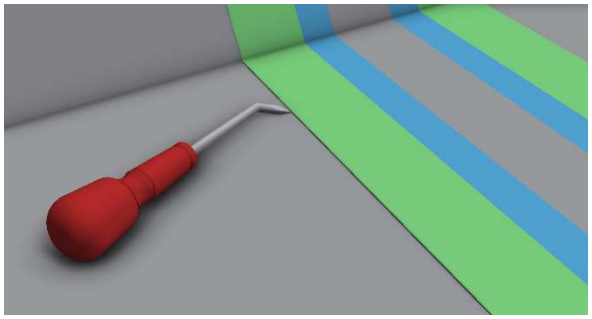


Figure 4.1

Step 2: If there are indications of un-welded areas and or damaged membrane, these areas must be repaired. See section 7 'Patch Repairs' for further information.

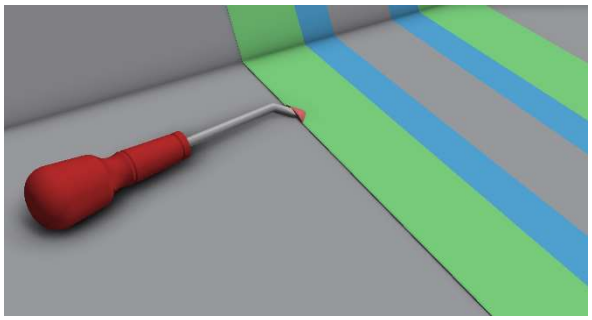


Figure 4.2

5. Sealing the Edge

Step 1: Upon satisfactory inspection of the weld, apply seam sealer to all leading edges of membrane.

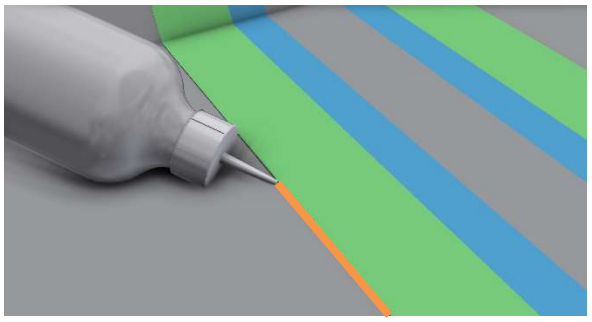


Figure 5.1

6. Completed Joint

The successful 200mm wide membrane welded joint consists of 75mm weld either side of the 50mm weld free zone (over the T-foil Plus 50). The 75mm weld comprises of a 25mm pre-weld (identified in blue) and a 50mm minimum weld (green), finished with the application of seam seal (orange) as indicated.

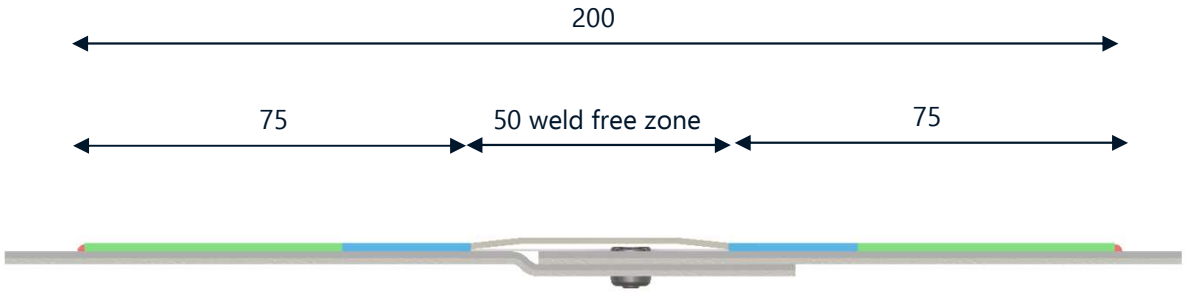


Figure 6.1

Should there be any issues with air pockets or damage to the membrane joint during or post welding, ensure the joint is repaired in accordance with the recommendations outlined in section 7 'Patch Repairs'.

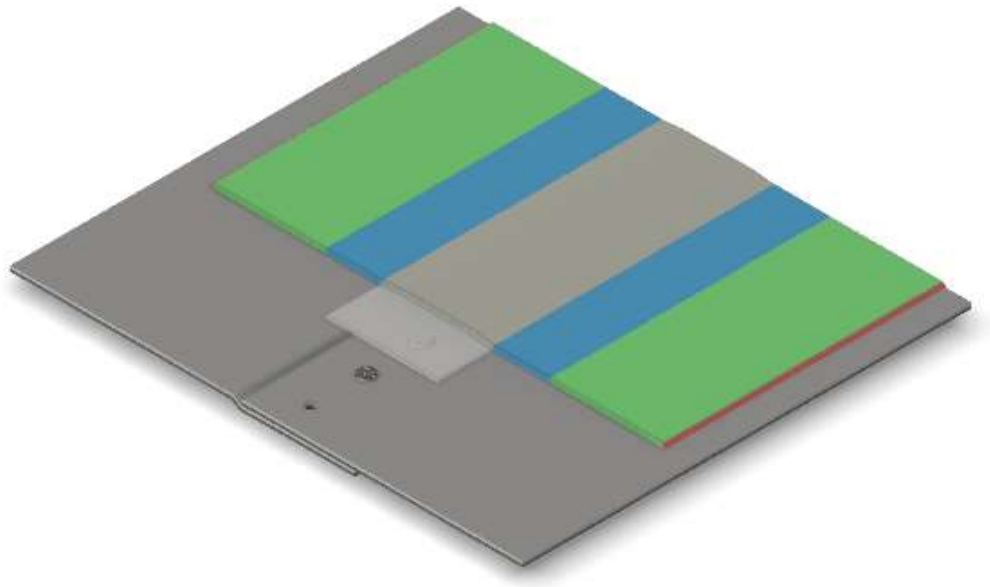


Figure 6.2

7. Patch Repairs

Step 1: Physical damage, ash, creases and air pockets to the pre-laminated membrane or joining strap will require a patch repair.

Figure 7.1

Step 2: Using a piece of jointing strap, cut a suitably sized repair patch ensuring all corners are rounded off.

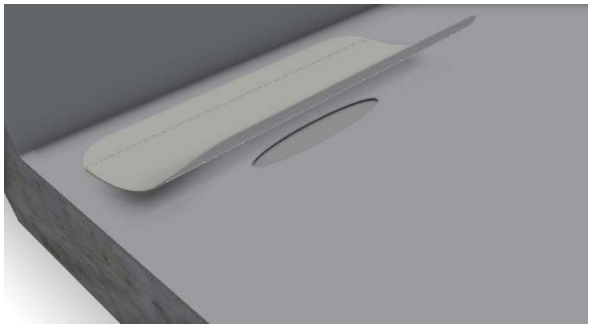


Figure 7.2

Step 3: The repair patch should be big enough to achieve a 75mm overall weld between the edge of the patch and any damage in all direction.

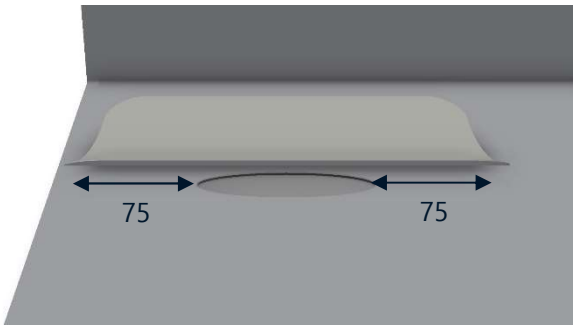


Figure 7.3

Step 4: Place repair patch over the damaged area and tack weld into position.

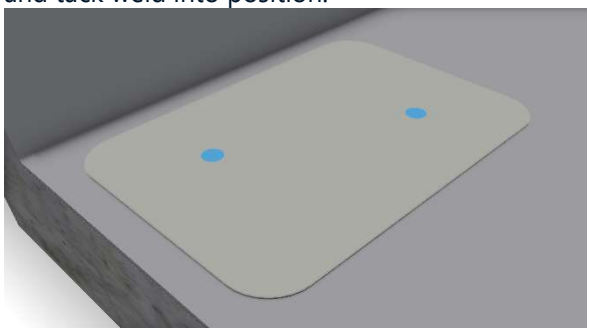


Figure 7.4

Step 5: Pre-weld the repair patch (25mm wide), ensuring the weld is as close to the damaged area as possible.

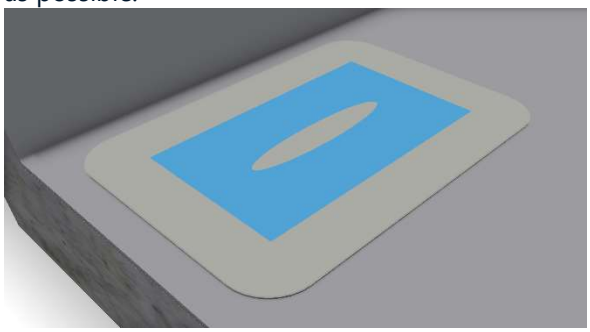


Figure 7.5

Step 6: Fully weld the membrane repair patch.

Upon completion, check the weld to ensure it is fully welded, before applying seam sealer to all edges.

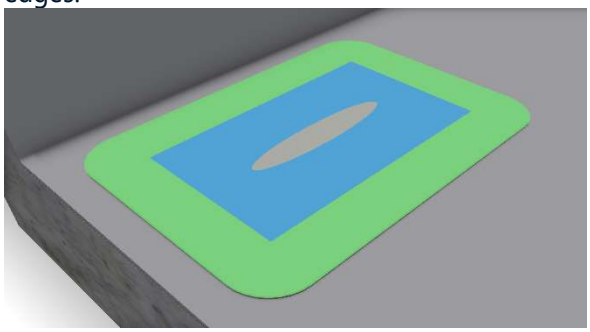


Figure 7.6

8. Overlay Joint Repair

Prior to commencing the overlay joint repair, ensure your pre-weld peel test is conducted as outlined in section 2 'Peel Test'.

Once a successful peel test has been achieved, the joint repair welding can commence. The 400mm size membrane over weld strap consists of 75mm weld either side of the original 200mm welded strap. The 75mm weld comprises of a 25mm pre-weld (identified in blue) and a 50mm minimum weld (green), finished with the application of seam seal (orange) as indicated in figure 8.1.

Follow correct welding procedure outlined in sections 3, 4 and 5.

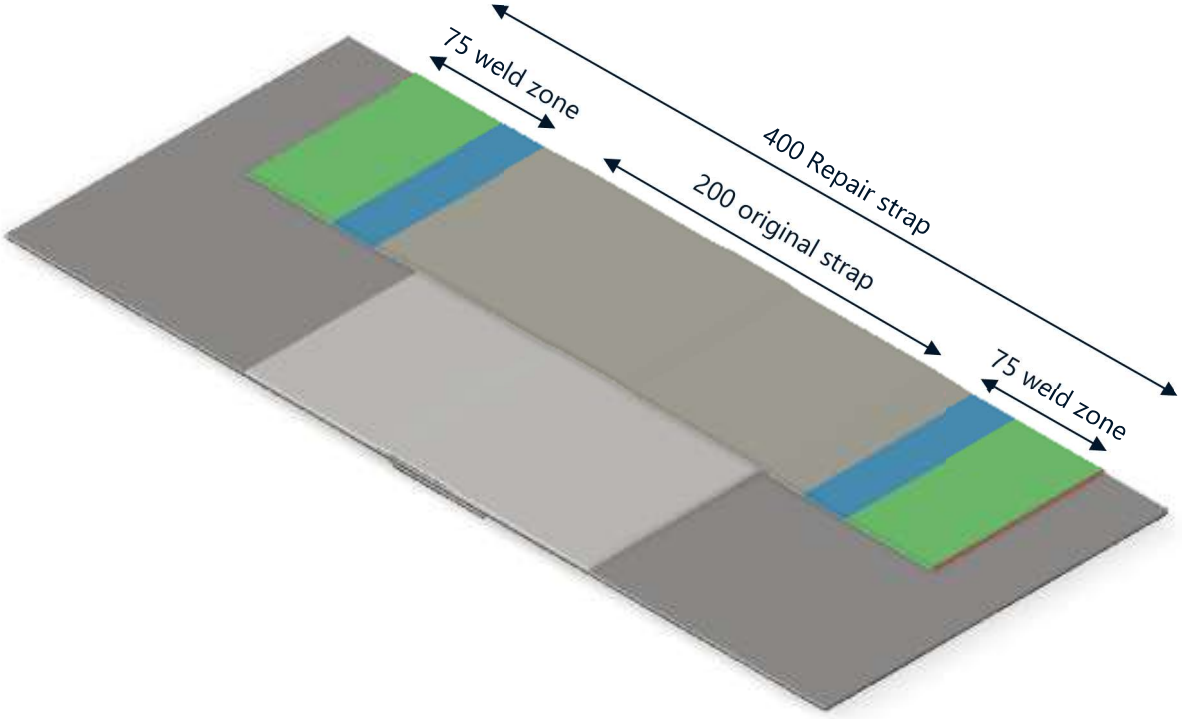


Figure 8.1

Should there be any issues with air pockets or damage to the membrane joint during welding, ensure the joint is repaired in accordance with section 7 'Patch Repair'.

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Installation Guide

Twin-Therm®

CA | GROUP

IG-TT-01
Rev: 1.6
March 2022
Approved

Revision History

Revision	Date	Comment
1	October 2020	Twin-Therm® Roof, Wall, FireWall and SolarWall® installation guides combined – Initial Issue
1.1	November 2020	FireWall revised
1.2	January 2021	FireWall revised
1.3	February 2022	Various changes
1.4	March 2022	Various changes
1.5	March 2022	Images Revised
1.6	March 2022	Security Ratings Revised

Contents

1. Introduction

This installation guide has been produced by CA Group Technical Department to guide installers through a successful installation of Twin-Therm® Roof, Wall, FireWall and SolarWall® systems.

The guide is to be used in conjunction with training provided by CA Group. Training can be arranged through contacting CA Group Field Services Department on 01388 830550, this should be arranged well in advance of the project start date to ensure availability.

All detailing contained in the guide is based on CA Building Products' details which are designed for standard applications of the systems. This however, does not release the cladding contractor from full design responsibility and it is assumed that they will provide fully dimensioned working drawings for each particular project.

It is important to always prioritise safety for operations carried out.

2. Important Information

In addition to system drawings and this installation guide, it is recommended that CA Groups Technical Information Papers (TIP's) are also consulted. These include more information on subjects such as steelwork tolerances, Non-Fragility guidelines, solar mounting options and guarantee requirements. CA Group Technical Information Papers can be found on the resource hub section of the CA Group website: https://www.cagroup.co.uk/register.

The steelwork, to which the Twin-Therm® building envelope systems are to be installed, must be specified, and erected in accordance with the scope of the SCi P346 'Best Practice for the Specification and Installation of Metal Cladding and Secondary Steelwork' and 'National Structural Steelwork Specification for Building Construction – 6th Edition' to ensure the building envelope complies with all pertinent regulatory stakeholder's requirements.

The fixing specifications, location and methods contained in this guide are based on structural tests completed by the manufacturer, combined with the practical experience of cladding contractors to offer the best methods for both quality and speed of installation.

Independent tests commissioned in 2020 resulted in modifications to the FireWall systems offered by CA Building Products. These changes include the omission of rivets across all firewall systems (previously required to seal the side lap of the internal liner profile at 300mm centres), along with the removal of the red base to the MatriX brackets for the Twin-Therm® FW15 (240/15) FireWall system only.

As such, the standard Twin-Therm® wall system has now been tested and assessed to provide up to 240 minutes integrity (E) and 15 minutes insulation (I) performance (240/15), providing the wall is supported by the necessary structural requirements.

When the Twin-Therm® wall cladding system is required to achieve specific fire performance in respect to integrity (E) and/or insulation (I), the wall system **must** include either of the following;

- Base support, or
- Fire protected eaves beam, or
- Fire protected cladding rail

Please refer to Technical Information Paper TIP-201 for further information & guidance.

Twin-Therm® Roof

3. Liner

3.1 Components

Liner panel:	CA 17 1000L CA 32 1000RL	(0.4mm, 0.7mm) (0.7mm)
Fixings:	M27G16 TSL36G16 TSC50G16	into cold rolled into hot rolled optional gutter/purlin
Sealants:	T-foil Plus T-strip T-butyl	(50mm wide) 9x3, 6x5 (white or grey)
Fillers:	17 1000L FRP 32 1000RL FRP	

When installing liner panels, the cover width must be measured regularly to maintain a 1000mm module.

All fixings must be as close to the edge of the pan as possible whilst still allowing the washer to sit flat to the sheet.

Each liner panel must be fully fixed before progressing to the next liner panel.

When correctly installed in accordance with these recommendations the liner acts as a Vapour Control Layer (VCL).

3.2 Fixing locations

CA 17 1000L

Intermediates – 3 No. fixings

Figure 3.2.1

All other locations – 6 No. fixings

Figure 3.2.2

CA 32 1000RL

Intermediates – 3 No. fixings

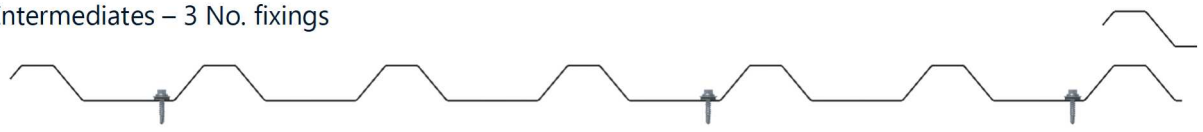


Figure 3.2.3

End laps and apex – 4 No. fixings

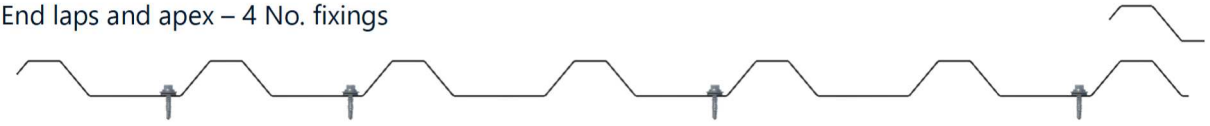


Figure 3.2.4

All other locations – 6 No. fixings

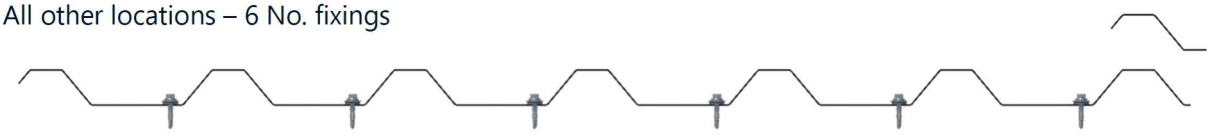


Figure 3.2.5

3.3 End laps

Liner panel end laps are designed as 60mm. The fixing location is to be 30mm* from each sheet edge.

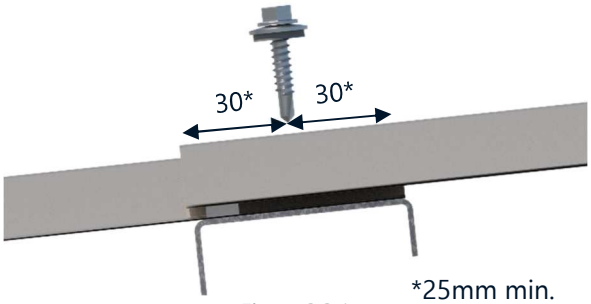


Figure 3.3.1

For CA 17 1000L liner, one run of T-strip 9x3** below the fixing point is used to prevent capillary action, form an air seal, and create a VCL. CA 32 1000RL liner requires T-strip 6x5.

**T-strip 6x5 for Chronus / Chronus Ready.

Edge distance of metal liners at eaves and hips are designed as 55mm*.

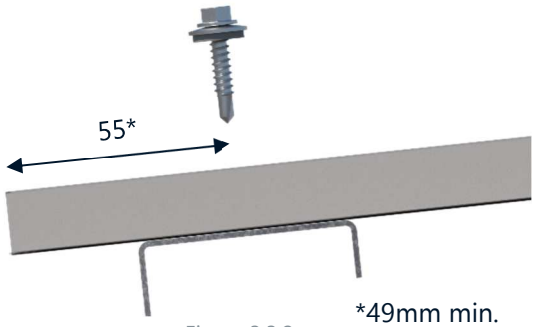


Figure 3.3.2

3.4 Side laps

All liner side laps are to be sealed with T-foil plus 50, ensuring the sealant is fully adhered to both liner panels, thus creating an effective air seal.

CA 17 1000L

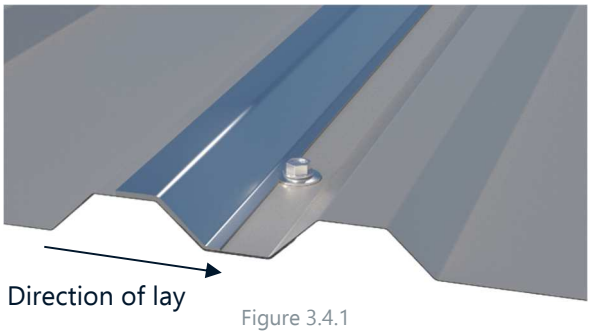


Figure 3.4.1

CA 32 1000RL

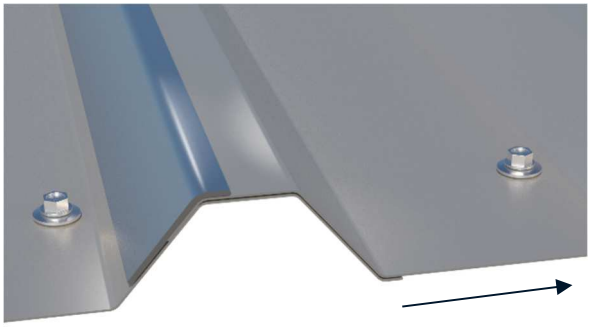


Figure 3.4.2 Direction of lay

3.5 Fillers

An unvented FRP filler should be used, sealed top and bottom with white or grey T-butyl or T-strip.

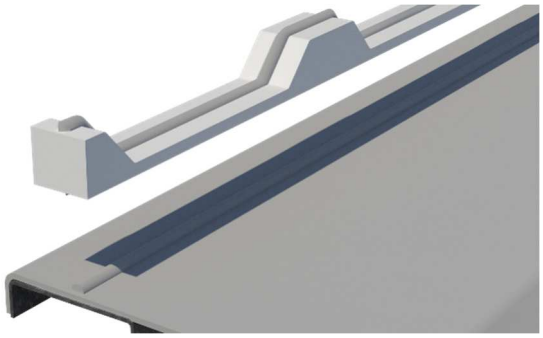


Figure 3.5.1

Fillers are to be positioned adjacent to the fixing line to ensure compression and thus an effective air seal.

4. Rooflight Liner

4.1 Components

Rooflight liner:	T-light 17 1000	CE24 Class 1
	T-light 32 1000	CE24 Class 1
Fixings:	M27G29	into cold rolled
	TSL36G29	into hot rolled
	M27G16	into cold rolled side lap end lap
	TSL36G16	into hot rolled side lap end lap
Sealants:	T-foil Plus	(50mm wide)
	T-strip	9x3, 6x5

When installing liner panels, the cover width must be measured regularly to maintain a 1000mm module.

All fixings must be as close to the edge of the pan as possible whilst still allowing the washer to sit flat to the sheet.

Each rooflight liner must be fully fixed before progressing to the next rooflight liner or metal liner panel.

When correctly installed in accordance with these recommendations the liner acts as a VCL.

4.2 Fixing locations

T-light 17 1000

Intermediates – 5 No. fixings

Figure 4.2.1

End laps – 7 No. fixings

Figure 4.2.2

T-light 32 1000

Intermediates – 6 No. fixings

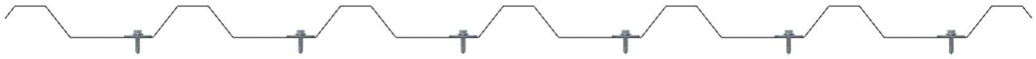


Figure 4.2.3

End laps – 8 No. fixings

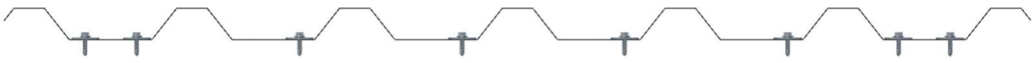


Figure 4.2.4

4.3 End laps

GRP over Metal

The end lap of the GRP liner should be 100mm from the fixing location and the metal liner should be 30mm from fixing location. For CA 17 1000L liner, one run of T-strip 9x3** is to be used. CA 32 1000RL liner requires T-strip 6x5.

**T-strip 6x5 for Chronus / Chronus Ready.

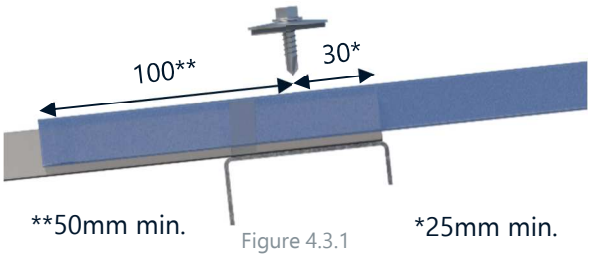


Figure 4.3.1

GRP over GRP

The end lap of the GRP liner should be 100mm from the fixing location. For CA 17 1000L liner, one run of T-strip 9x3** is to be used. CA 32 1000RL liner requires T-strip 6x5.

**T-strip 6x5 for Chronus / Chronus Ready.

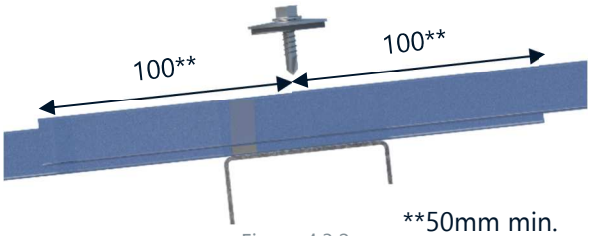


Figure 4.3.2

Metal over GRP

The end lap of the GRP liner should be 100mm from the fixing location and the metal liner should be 30mm from fixing location. For CA 17 1000L liner, one run of T-strip 9x3** is to be used. CA 32 1000RL liner requires T-strip 6x5.

**T-strip 6x5 for Chronus / Chronus Ready.

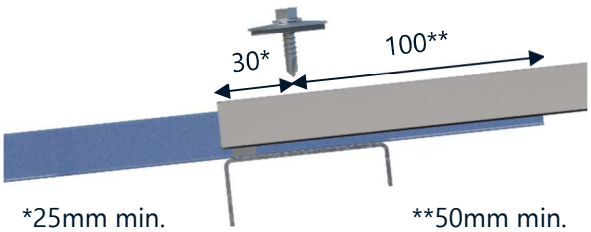


Figure 4.3.3

4.4 Side laps

All GRP liner side laps are to be sealed with T-foil Plus 50. Care must be taken to ensure the sealant is fully adhered to both GRP and metal, creating an effective air seal.

CA 17 1000L

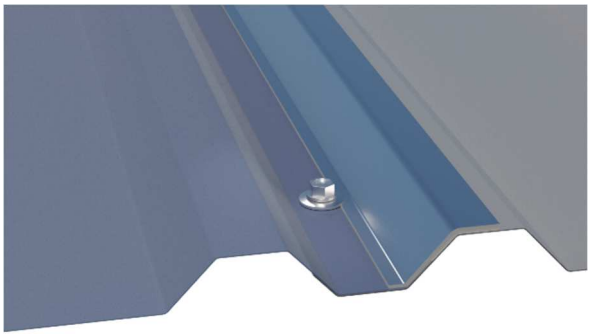


Figure 4.4.1

CA 32 1000RL

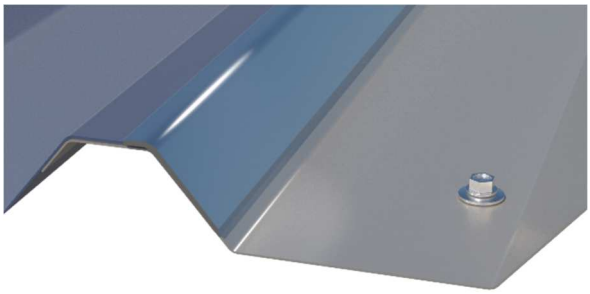


Figure 4.4.2

4.5 Rooflight closure

It is important an **additional fixing** is used to secure the rooflight closure flashing to the purlin through the liner. One fixing is not adequate to fix both flashing and liner panel to the purlin.

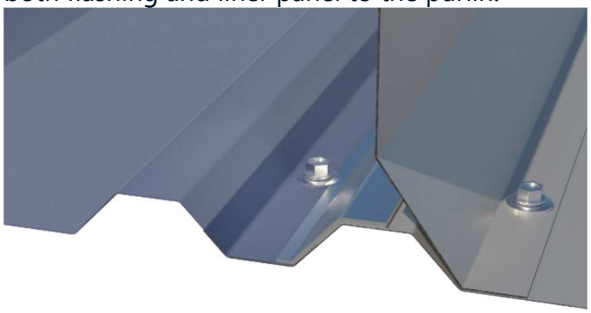


Figure 4.5.1

5. MatriX Spacer System

5.1 Components

Bracket:	MX###	depth to suit construction
Fixings:	M27G16 TSL36G16 TSC50G16	into cold rolled into hot rolled optional gutter/purlin
Bar:	MXSB	Generally 3.6m for CA 17 1000L, 3.5m for CA 32 1000RL
Splice plate:	MXSP	

Only a standard blue MatriX base is to be used on a Twin-Therm® roof.

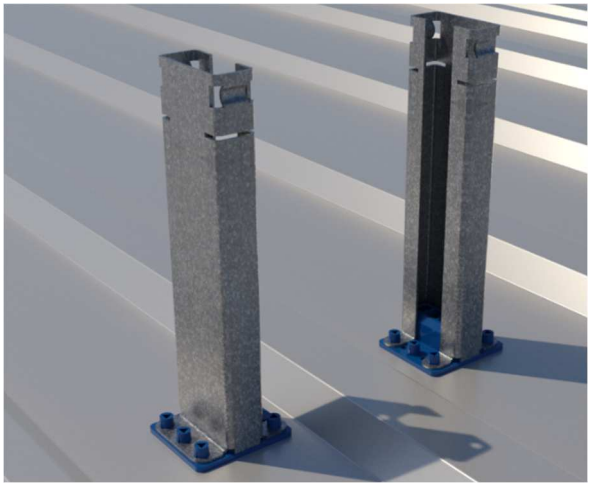


Figure 5.1.1

5.2 Attaching bracket to bar

The MatriX spacer system assembly is installed creating a void for the insulation.

Figure 5.2.1

The MatriX bracket twists to lock into the MatriX bar at the required centres.

5.3 Positioning bars

The MatriX bracket spacings for the MatriX spacer system are typically 1200mm for CA 17 1000L liner and 1167mm for CA 32 1000RL liner. These spacings however, are subject to project specific wind & snow load calculations which can be provided by CA Group Technical Department upon receipt of a project reservation order.

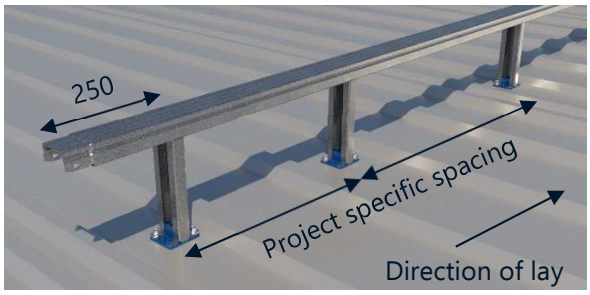


Figure 5.3.1

The overhang from the female end of the bar is 150 ± 50mm.

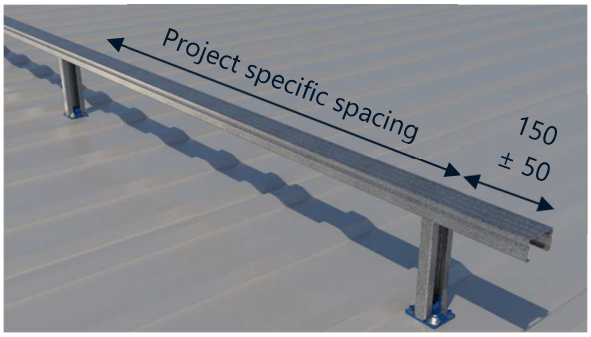


Figure 5.3.2

5.4 Fixing method

Before fixing the MatriX bracket it must be ensured that no other fixings are being fouled.

It is not acceptable to omit liner panel fixings in locations where a MatriX bracket lands.

For Twin-Therm® roof, MatriX brackets require two M27G16 fixings in opposite corners of the bracket base.

Figure 5.4.1

For a CA 32 1000RL liner end lap only, where the bracket (highlighted red) falls within the outer corrugation of the rooflight liner, the bracket must be moved into the metal liner corrugation. In addition to this an extra bracket must be introduced to provide adequate support.

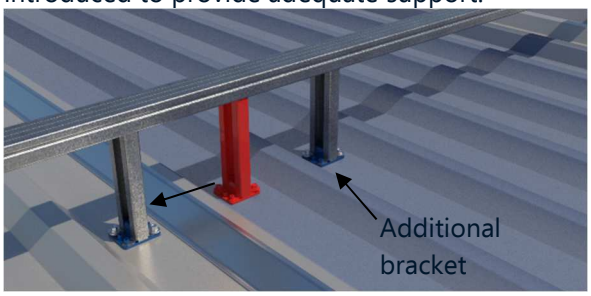


Figure 5.4.2

Should the additional bracket fall in a corrugation near a MatriX bar joint, the additional bracket must be placed in the corrugation closer to the centre of the rooflight.

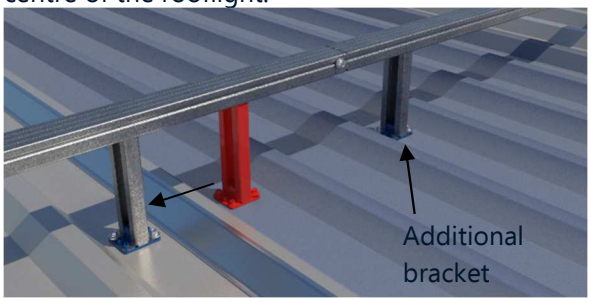


Figure 5.4.3

Two M27G16 fixings should then be fixed through the sides of the bar joint.

6. Insulation

Therma-quilt is to be installed continuous between ridge and eaves, tightly butted together at roll ends and sides. This will allow the external sheet to compress the insulation when fixed.

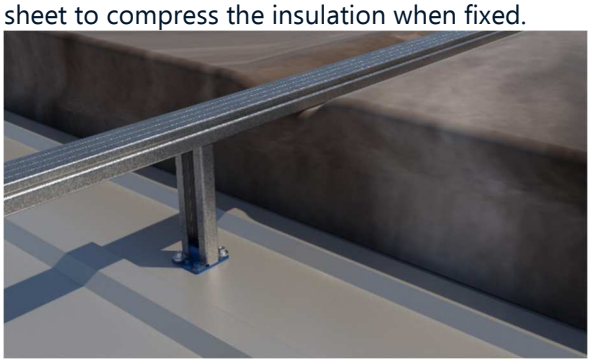


Figure 6.1.1

Therma-quilt should only be laid as required. Foot traffic is to be kept to a minimum; damaged insulation should be replaced before installing external sheets.

It is important the Therma-quilt does not become saturated. Should this happen, the Therma-quilt must be replaced prior to the installation of the external sheets.

Ensure if the Therma-quilt is cut and tucked, this must be done correctly, failure to do so could cause a loss of coverage of 10-12%.

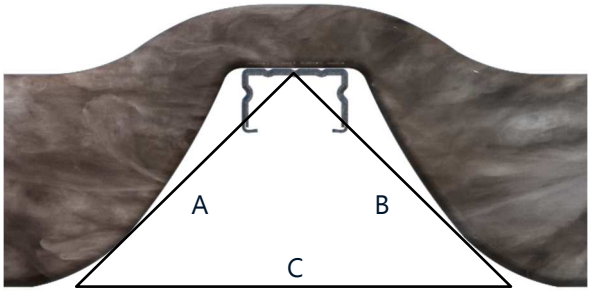


Figure 6.1.2

For example,

Insulation thickness at 180 mm A+B ≈ C + 10%

Insulation thickness at 300 mm A+B ≈ C + 12%

7. Loading Out Methods

7.1 < 5° design pitch

All packs should be placed centrally to the MatriX bracket location. All brackets to be used for loading out purposes must be fixed with four M27G16 fixings.

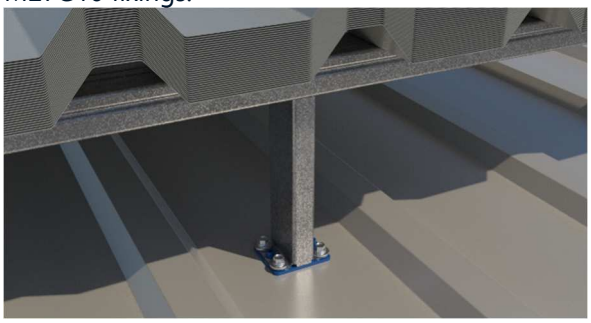


Figure 7.1.1

If the loading out method over the bars is not suitable, the spacer system may be left out and later replaced as in section 7.2.

7.2 ≥ 5° design pitch

When installing the MatriX system, leave a gap to suit MatriX bar lengths, in which to load packs, temporary MatriX brackets may be required.

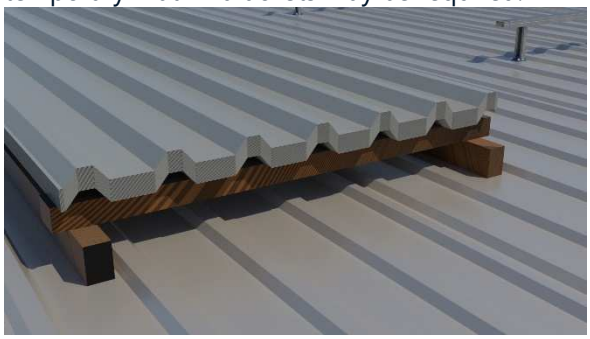


Figure 7.2.1

After loading the MatriX system must be completed. The last bar must be site cut to remove the swaged end.

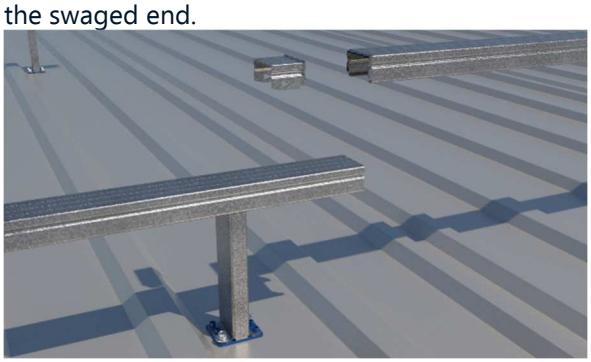


Figure 7.2.2

Working back, a MatriX bar is added following the standard procedure.

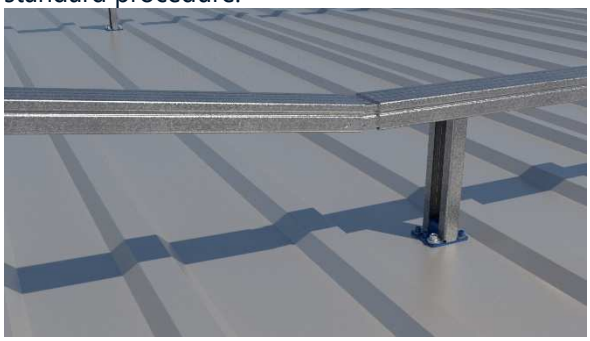


Figure 7.2.3

A MatriX splice plate must be added at the end with the removed swage. This is secured with three M27G16 fixings in each side.

Figure 7.2.4

With the required brackets installed, one M27G16 fixing is added through the side of the MatriX bar.

Figure 7.2.5

8. External Sheets

8.1 Components

External sheet:	CA 32 1000R	(0.7mm)
Fixings:	CSSC28S16	main fix
	CSSS23S16	stitcher
Sealants:	T-strip	6x5
		10x8V
	T-butyl	(black or grey)
Fillers:	32 1000 MP	

8.2 Fixing locations

Intermediates – 3 No. fixings

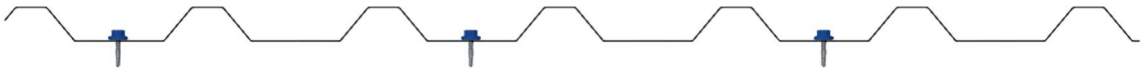


Figure 8.2.1

End laps, apex, eaves and hips – 6 No. fixings

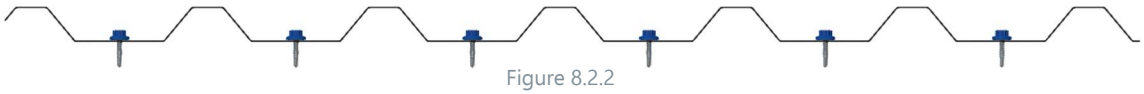


Figure 8.2.2

8.3 End laps

Sheet end laps should be 150mm. The fixing location is to be 75mm from each sheet edge.

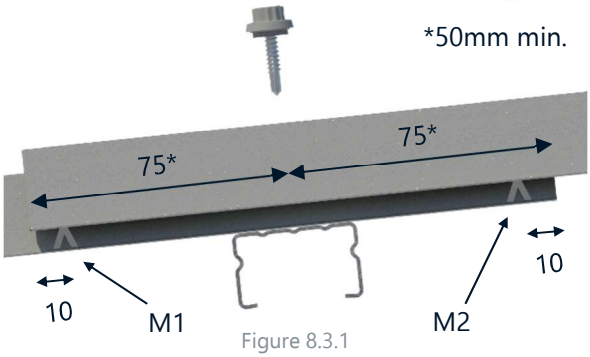


Figure 8.3.1

Roof type	M1	M2
Pitched	T-strip 6x5	T-strip 6x5
<80m rad	T-strip 10x8V	T-strip 6x5
≥80m rad	T-strip 10x8V	T-strip 10x8V

8.4 Side laps

Sheet side laps are to be sealed with T-strip 6x5, with CSSS23S16 stitchers installed at 450mm centres commencing 50-75mm from tail of every sheet. T-strip 6x5 must be installed weather side of the stitcher.

Figure 8.4.1

8.5 Installation

When laying from the left to right, start at the left side lap as shown by the arrows in figure 8.5.1. Overlap the side lap seal by minimum 50mm, running down the side lap to the downslope weather seal. Turn through 90° and dress the seal into the corrugations across the sheet.

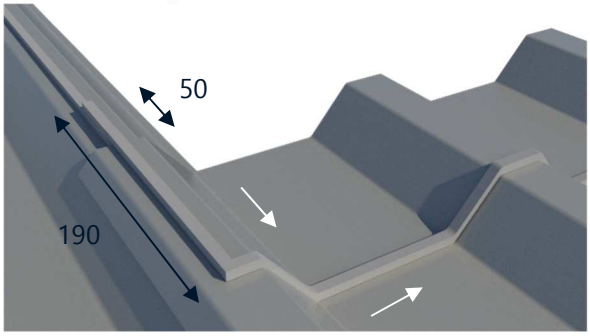


Figure 8.5.1

For the condensation seal, start at the right side lap as shown by the arrows in figure 8.5.2. Starting 190mm from the sheet edge, run the sealant up the side lap, turn through 90° to create the condensation seal. Continue this seal into the corrugations across the sheet to meet up and tightly butt to the seal added in Figure 8.5.1.

It is important to butt side laps and end laps, not overlap. It is also important not to 'string' the sealant across the profile.

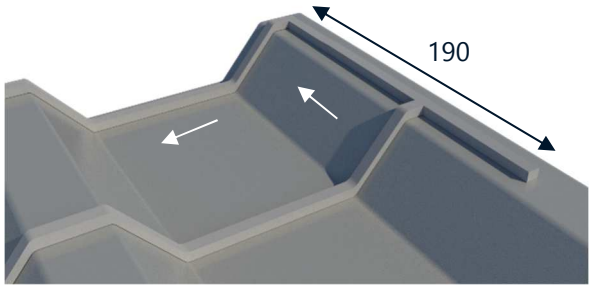


Figure 8.5.2

The next sheet can then be added.

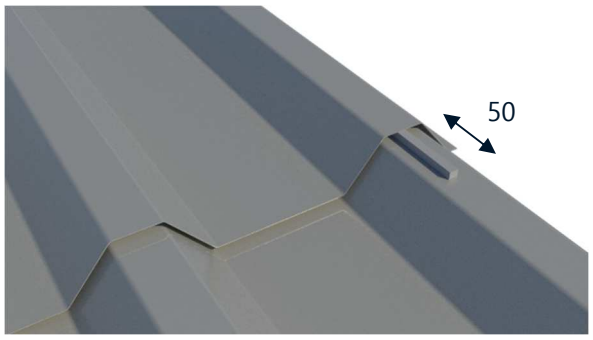


Figure 8.5.3

The side lap sealant can then be installed, ensuring it overlaps the sealant below.

Figure 8.5.4

The next sheet can then be placed and weather seal added in accordance with Figure 8.5.1.

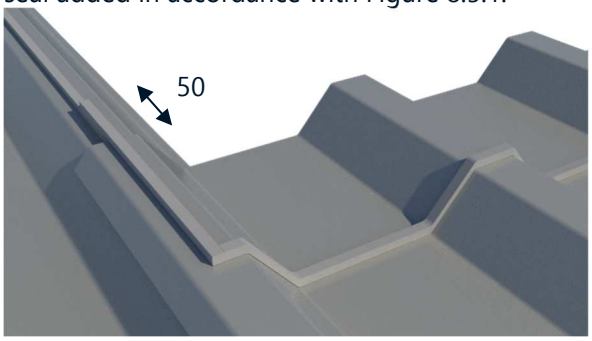


Figure 8.5.5

The condensation seal can then be added in accordance with Figure 8.5.2.

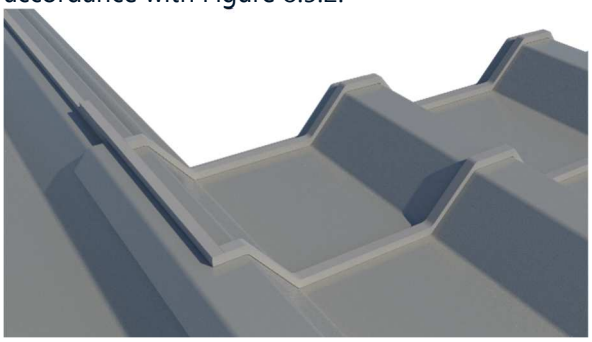


Figure 8.5.6

The overlapping sheet can then be installed.

Figure 8.5.7

This applies to metal over metal end laps in general locations, however, for metal end laps around rooflights, refer to section 9.6.

8.6 Eaves

At eaves locations, vented MP fillers should be bedded using a continuous bead of black or grey T-butyl.

Figure 8.6.1

Fillers should be placed adjacent to the fixing line to ensure compression.

9. External Rooflights

9.1 Components

Rooflight:	T-light 32 1000	CE18E Class 3
Intermediate core:		TC10 TC20 TC30
Fixings:	CSSC28S29	main fix poppy red
	CSSS23S16	stitcher poppy red
Sealants:	T-strip	QR 6x5 QR 18x4U QR 10x8V
	Foam pad	Quantum and Griffon only

9.2 Intermediate core

Intermediate core lengths should be ordered to suit purlin spacing and liner profile.

If the location of the rooflight means no MatriX bracket is present then an additional bracket must be placed within this zone.

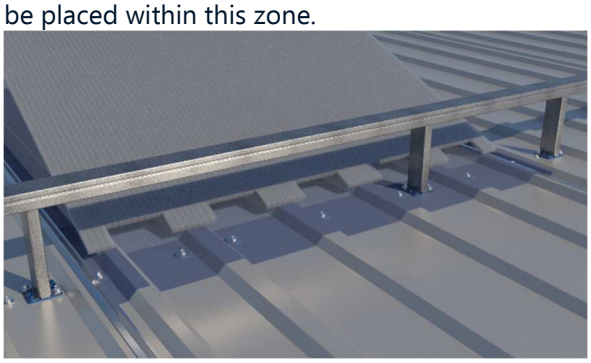


Figure 9.2.1

This is to ensure the intermediate core cannot slip. The intermediate cores can be factory notched to suit bracket location and liner profile and should be placed between the MatriX brackets.

9.3 Fixing locations

All locations – 6 No. fixings

Figure 9.3.1

9.4 End laps

GRP over metal

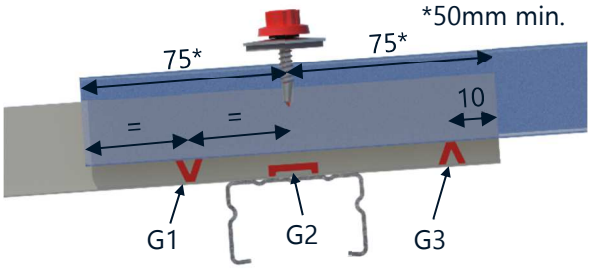


Figure 9.4.1

Roof type	G1	G2	G3
Pitched	QR 10x8V	QR 18x4U	QR 10x8V
<80m rad	QR 10x8V	QR 18x4U	QR 6x5
≥80m rad	QR 10x8V	QR 18x4U	QR 10x8V

GRP over GRP

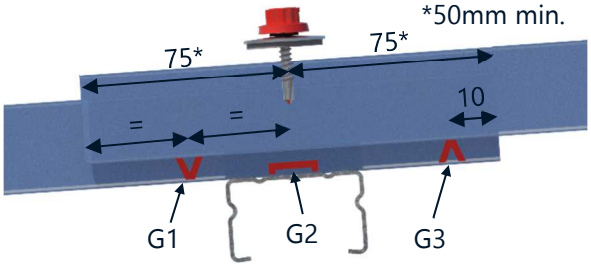


Figure 9.4.2

Roof type	G1	G2	G3
Pitched	QR 10x8V	QR 18x4U	QR 10x8V
<80m rad	QR 10x8V	QR 18x4U	QR 6x5
≥80m rad	QR 10x8V	QR 18x4U	QR 10x8V

Metal over GRP

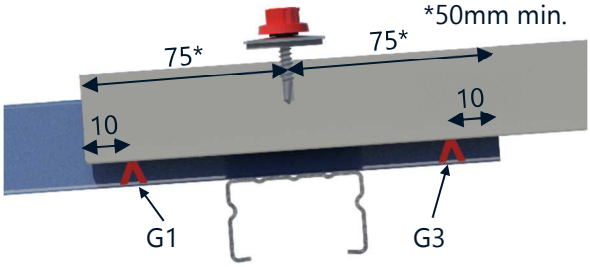


Figure 9.4.3

Roof type	G1	G2	G3
Pitched	QR 10x8V	N/A	QR 10x8V
<80m rad	QR 10x8V	N/A	QR 6x5
≥80m rad	QR 10x8V	N/A	QR 10x8V

9.5 Side laps

Sheet side laps are to be sealed with T-strip QR 6x5, with CSSS23S16 poppy red stitchers installed at 450mm centres commencing 50-75mm from tail of every sheet. T-strip QR 6x5 must be installed weather side of the stitcher.

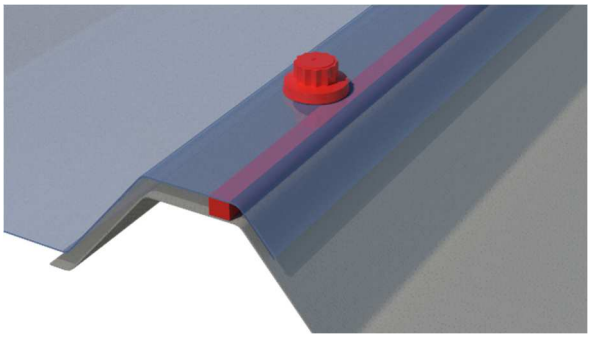


Figure 9.5.1

9.6 Installation

CABP rooflights are installed over – over, therefore the order of sheet installation is critical. The diagram below shows metal (grey) and GRP (blue) sheets, the numbers represent the order in which the sheets and GRP are to be installed.

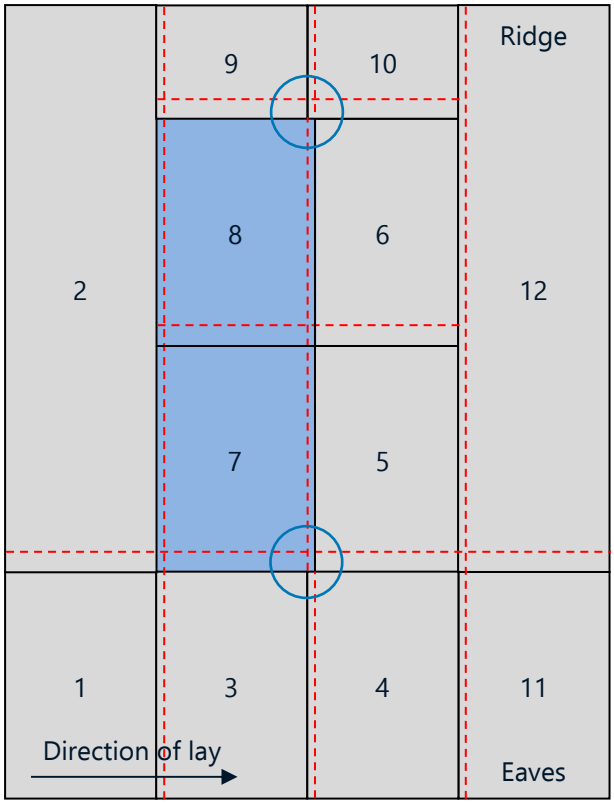


Figure 9.6.1

For the four way laps circled in figure 9.6.1, sheets 1-2 are to be installed in accordance with section 8. In addition to this, sheet 3 requires two additional runs of T-strip installed to the side lap under lap as shown in Figure 9.6.2. These runs are butted tightly to the side lap sealant.

The upslope run is to be positioned 10mm from the sheet edge. The downslope run is to be positioned 110-120mm from the sheet edge.

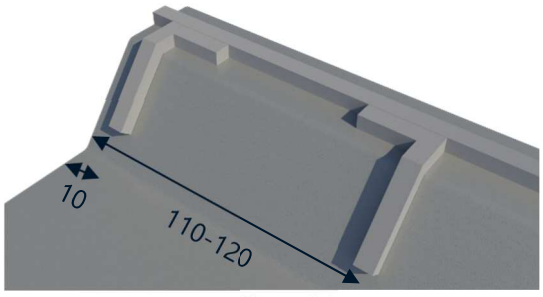


Figure 9.6.2

Sheet 4 from figure 9.6.1 can then be installed.

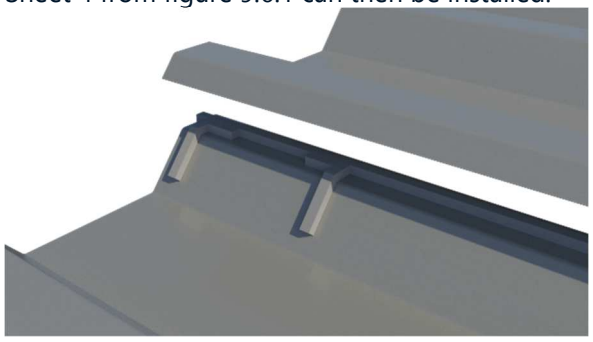


Figure 9.6.3

The end lap sealant can be positioned to sheet 4 in accordance with section 8. The condensation sealant should extend past the edge of the side lap and terminate on top of the condensation sealant shown in figure 9.6.2. The weather sealant should extend past the edge of the side lap sealant and turned to run along the edge of the sheet, as shown in figure 9.6.4.

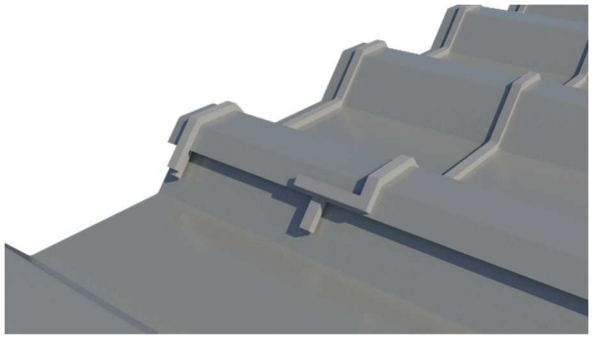


Figure 9.6.4

Install the side lap seal to the joint, ensuring it is tightly butted to the end lap sealant. Sheet 5 from figure 9.6.1 can then be installed.

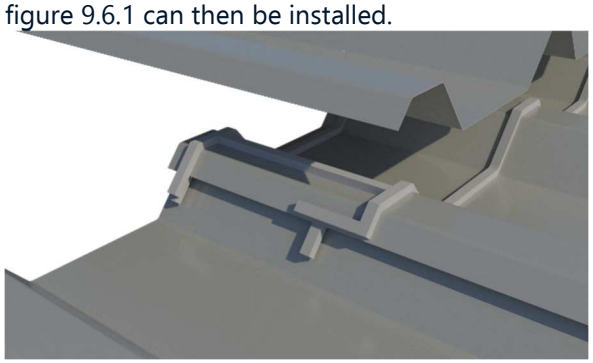


Figure 9.6.5

For the three way lap circled in figure 9.6.6, the following installation technique should be used.

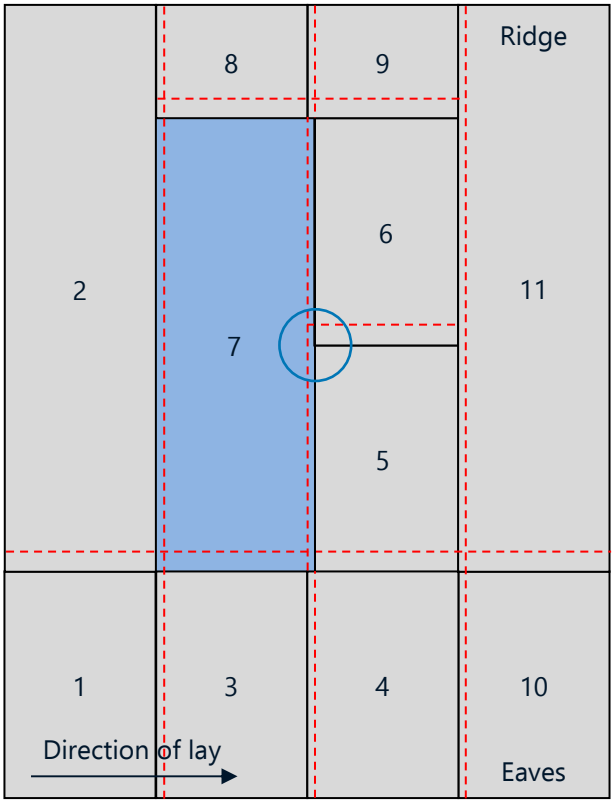


Figure 9.6.6

From figure 9.6.6, sheets 1-5 are to be installed in accordance with Section 8. In addition to this, starting from the condensation seal, a 190mm long section of T-strip is to be introduced to sheet 5 as shown in figure 9.6.7.

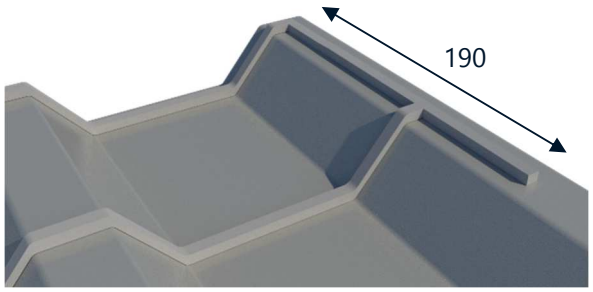


Figure 9.6.7

This is required on both side laps of sheet 5 as shown in figure 9.6.8.

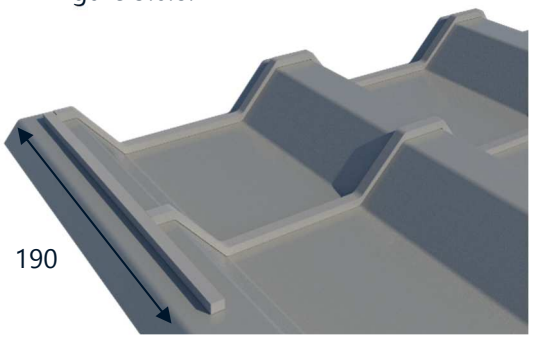


Figure 9.6.8

Sheet 6 can the then be added.

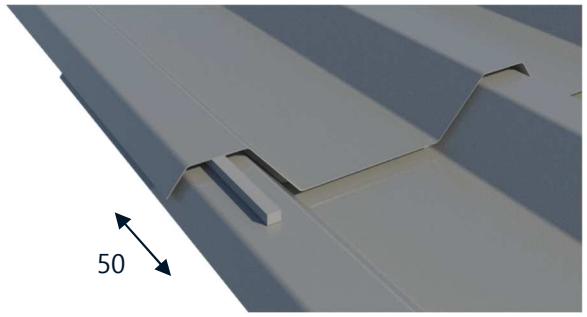


Figure 9.6.9

A run of T-strip QR is then added along the side lap of sheet 5, butting tightly to the T-strip added in figure 9.6.9.

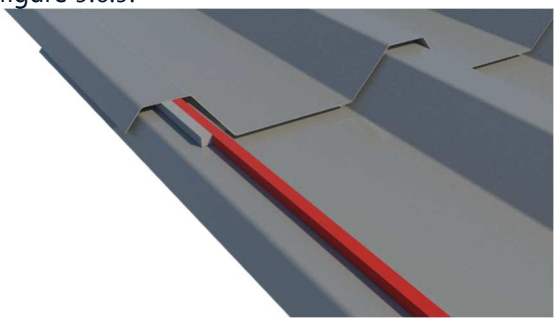


Figure 9.6.10

Another run of T-strip QR* is added along the side lap of sheet 6, overlapping the T-strip added in Figure 9.6.10 by 300mm as shown in Figure 9.6.11.

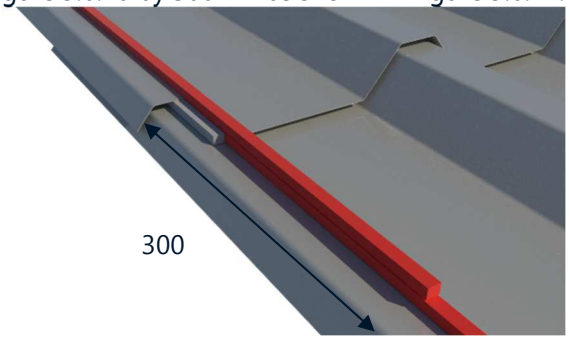


Figure 9.6.11

*For more information refer to pages 16 and 17.

To install the GRP (sheet 7), the T-strip QR end lap sealant should be fully dressed into the corrugation of sheet 3 and stopped short of the outside edge of the side lap.

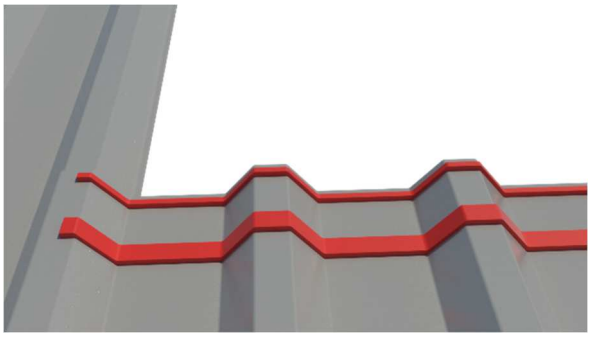


Figure 9.6.12

Position the T-strip QR side lap sealant weather side of the lap, commencing from the edge of the metal over lap and stopping at the next sheet lap.

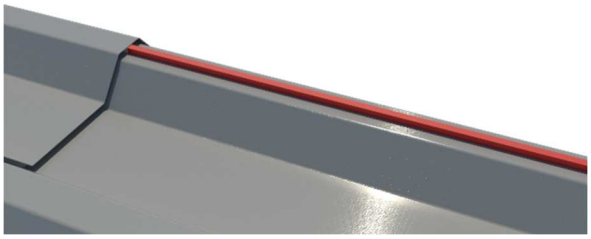


Figure 9.6.13

Install a section of T-strip QR seal approx. 300mm beyond the end lap, ensuring the sealant butts tightly against all end lap sealants installed in Figure 9.6.12. This T-strip QR must be positioned on top of the sealant shown in Figure 9.6.13.

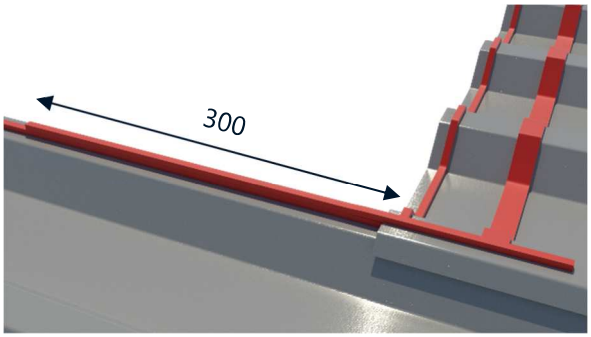


Figure 9.6.14

Starting 300mm downslope from the metal end lap, install side lap sealant on top of the sealant installed in Figure 9.6.13 and then continue up to the next metal end lap. Repeat process until side lap is fully sealed.

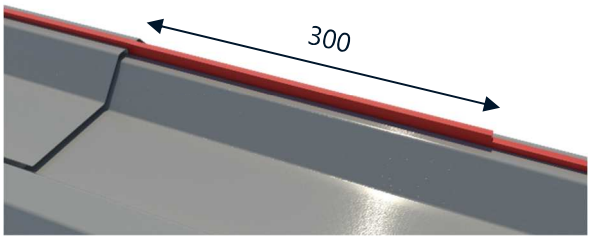


Figure 9.6.15

Install side lap sealant working from metal end lap to the next metal end lap, ensuring the sealant butts tightly against all end lap sealant.

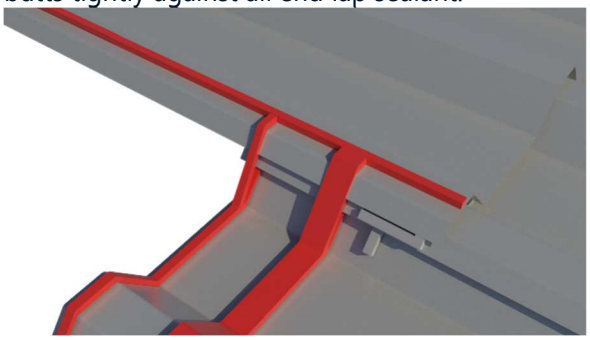


Figure 9.6.16

Starting 300mm downslope from the metal end lap, install side lap sealant on top of the sealant installed in Figure 9.6.12 and then continue up to the next metal end lap. Repeat the process until the side lap is fully sealed.

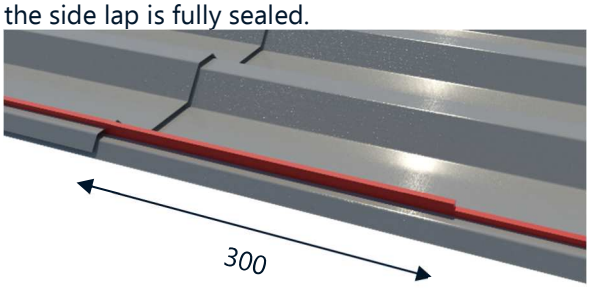


Figure 9.6.17

Install the weather seal T-strip QR end lap sealant on the underside of the GRP as shown in 9.4.1.

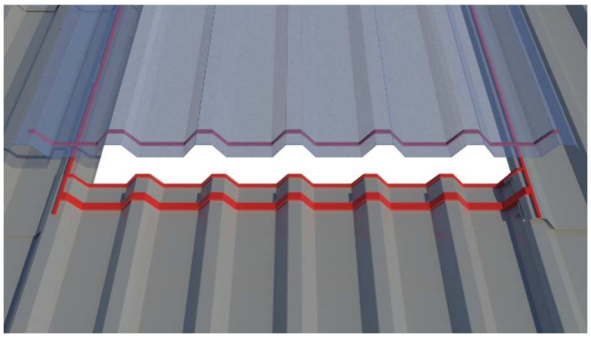


Figure 9.6.18

Install end lap sealant as detailed in Figure 9.4.2. Install a section of T-strip QR sealant approx. 450mm long to the side lap end lap junction. Ensuring the sealant butts tightly against all end lap sealants and overlaps on top of the side lap sealant installed in Figures 9.6.15 and 9.6.17 by 300mm.

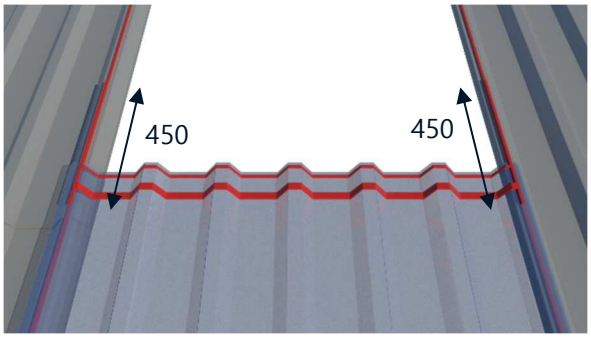


Figure 9.6.19

Install the next GRP rooflight. Repeat until all GRP rooflights are installed.

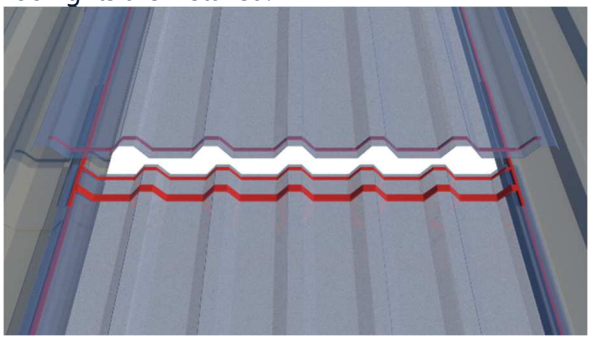


Figure 9.6.20

9.7 Short Sheet

When installing CA 32 1000 Therma-light GRP rooflights as the external skin of the Twin-Therm® assembly, as CA 32 1000RL liners or as a single skin roof, it is always necessary to have a continuous lap across the upper light with asymmetrical sheets. This is only applicable to pitched roofs.

If it does not include the short sheet it will invalidate any guarantees offered for the Twin-Therm® roof cladding system. This is due to the purlin bearing leg of the CA 32 1000R external sheet sitting within the water line, which could lead to premature degradation.

For further information, refer to Technical Information Paper TIP-102.

Figure 9.7.1 highlights this short sheet in blue.

9.8 Ridge

Bedded vented large flute fillers must be installed 80mm from the edge of the ridge flashing.

External ridge flashings should be ordered to suit project requirements. The flashing is fixed with stitchers at 333mm centres. Stitchers must be 50mm from the edge of the ridge flashing.

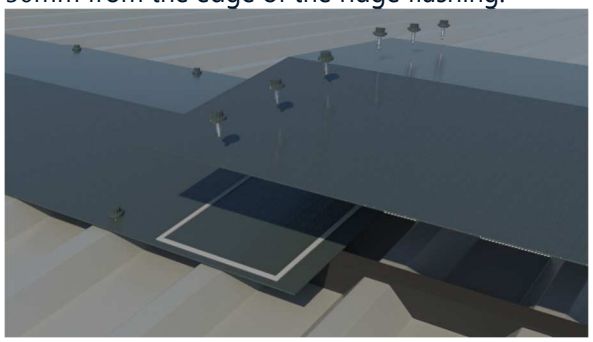


Figure 9.8.1

All flashings should be lapped 167mm using gun grade low modulus neutral cure silicone in a box pattern seal. The stitchers should be installed at 75-100mm centres fixed through into the crown of the external sheet.

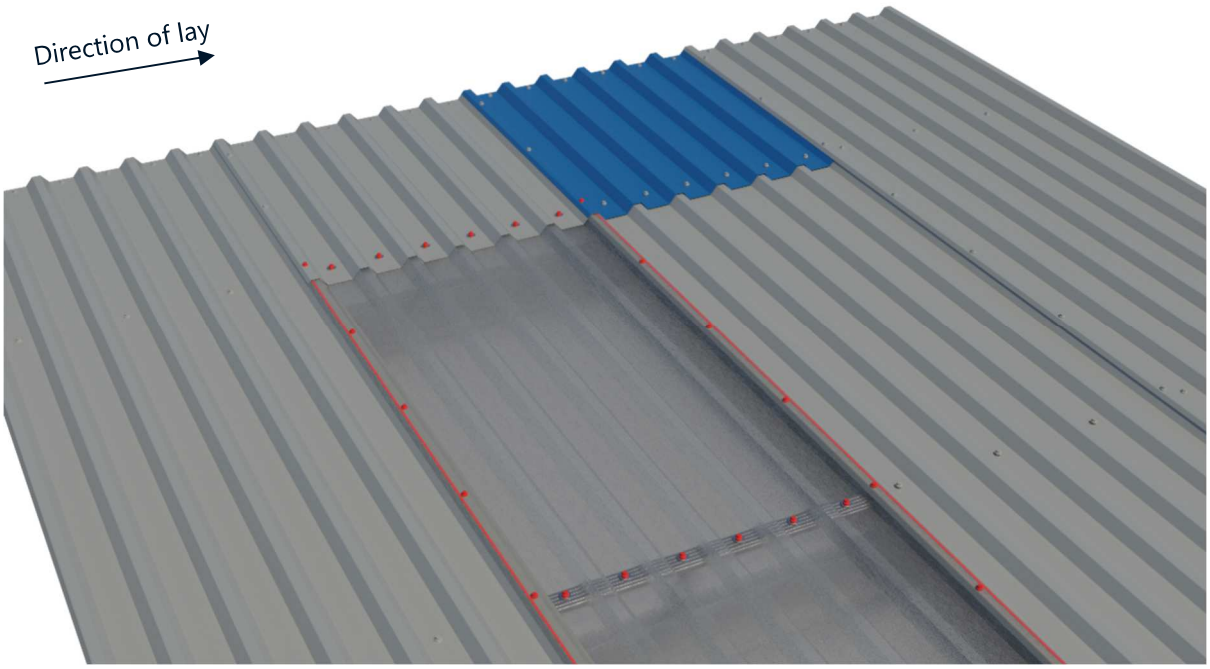


Figure 9.7.1

NB. If CA 32 1000RL liner panel is utilised, short sheet is also required in liner scenario.

Twin-Therm®
Wall, FireWall and SolarWall®

10. Liner

10.1 Components

Liner panel:	CA 17 1000L	(0.4 or 0.7mm)
	CA 32 1000RL	(0.7mm)
Fixings:	M27G16	into cold rolled
	TSL36G16	into hot rolled
Sealants:	T-foil Plus	(50mm wide)
	T-strip	9x3, 6x5
	T-butyl	(white or grey)
Fillers:	17 1000L FRP	
	32 1000RL FRP	

When installing liner panels, the cover width must be measured regularly to maintain a 1000mm module.

All fixings should be as close to the edge of the pan as possible whilst still allowing the washer to sit flat to the sheet.

When correctly installed in accordance with these recommendations the liner acts as a VCL.

10.2 Fixing locations

CA 17 1000L

Intermediates – 3 No. fixings

Figure 10.2.1

End laps – 5 No. fixings

Figure 10.2.2

Filler locations – 6 No. fixings

Figure 10.2.3

CA 32 1000RL

Intermediates – 3 No. fixings

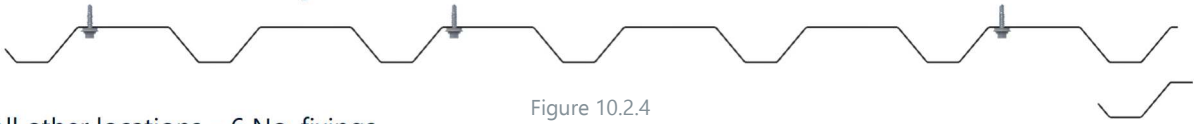


Figure 10.2.4

All other locations – 6 No. fixings

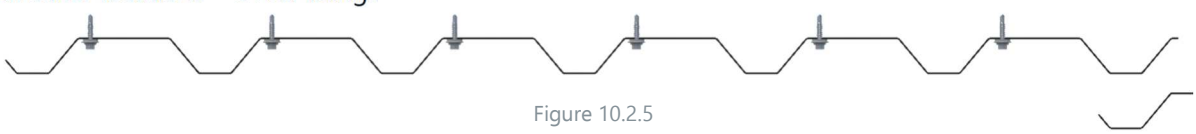


Figure 10.2.5

10.3 End laps

Liner panel end laps should be 60mm with the fixings central to the sheet lap.

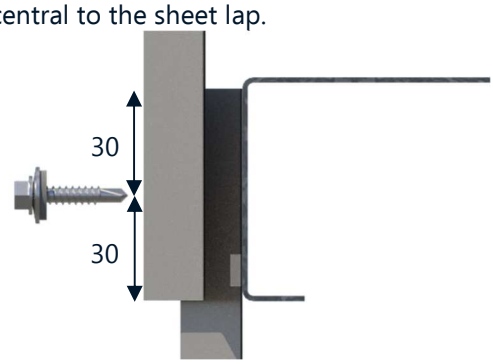


Figure 10.3.1

A run of T-strip 9x3* is used below the fixing point to prevent capillary action and create an effective air seal. CA 32 1000RL liner requires T-strip 6x5.

T-strip 6x5 for Chronus / Chronus Ready*.

10.4 Side laps

All liner side laps are to be sealed with T-foil Plus 50. Care must be taken to ensure the sealant is fully adhered to both liner panels, creating an effective air seal.

CA 17 1000L

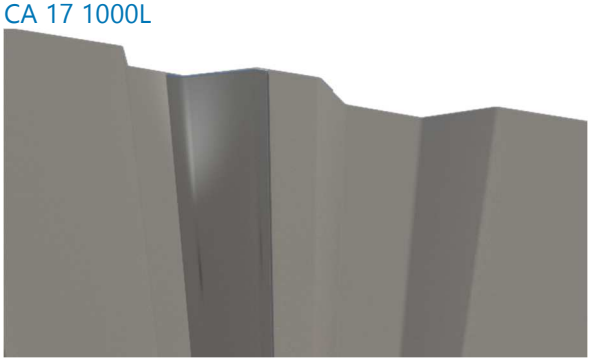


Figure 10.4.1

CA 32 1000RL

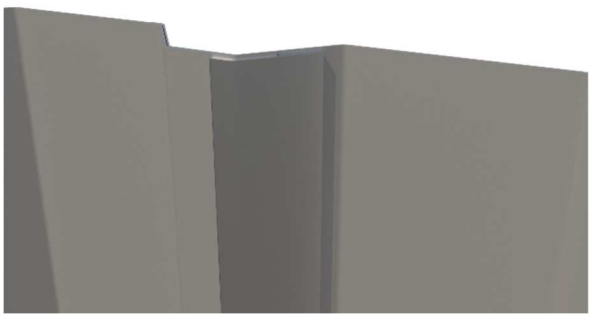


Figure 10.4.2

10.5 Fillers

Where required, unvented FRP fillers should be sealed top and bottom with a continuous bead of white or grey gun grade T-butyl sealant or T-strip.

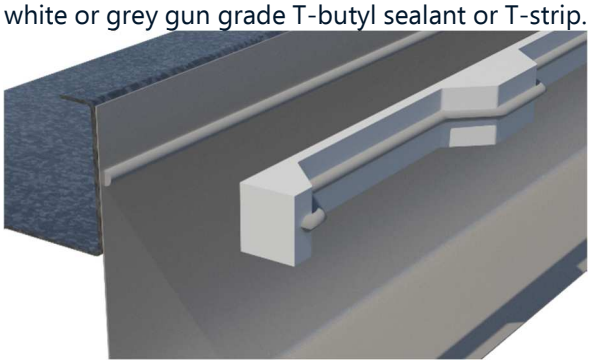


Figure 10.5.1

The fillers are to be positioned adjacent to the fixing line to ensure compression and thus an effective air seal.

11. MatriX Spacer System

11.1 Components

Bracket:	MX###	(Standard) Depth to suit construction
	MX###FW	(FireWall) Depth to suit construction
Fixings:	M27G16	into cold rolled
	TSL36G16	into hot rolled
Bar:	MXSB	
Splice plate:	MXSP	

Figure 11.1.1

The standard MatriX brackets have a blue base whereas the FW60 and FW120 FireWall MatriX brackets have a red fire retardant base.

11.2 Attaching bracket to bar

The MatriX spacer system assembly is installed above the liner panel, creating a void for the insulation.

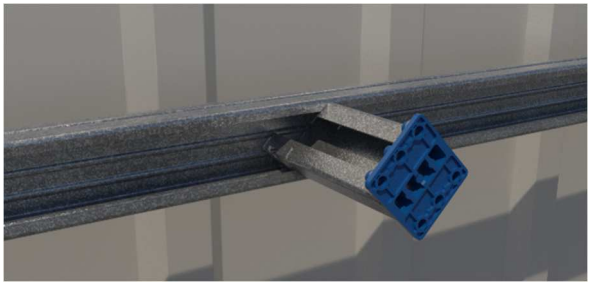


Figure 11.2.1

The MatriX bracket twists to lock into the MatriX bar at the required centres.

11.3 Positioning horizontal bars

MatriX brackets should be positioned according to project specific wind load calculations which can be provided by CA Group Technical Department upon receipt of a project reservation order.

The maximum overhang at the end of the elevation is 250mm.

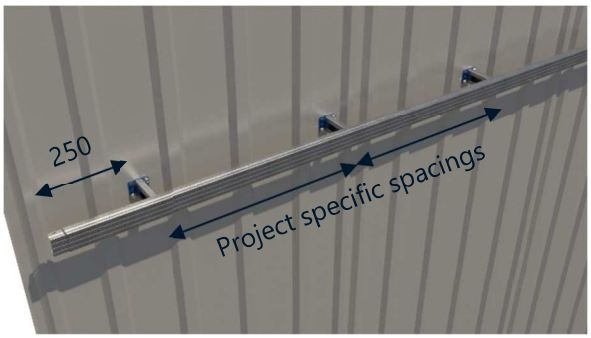


Figure 11.3.1

For intermediate brackets, spacings are typically 1200mm for CA 17 1000L liner and 1167mm for CA 32 1000RL (subject to project specific wind load calculations).

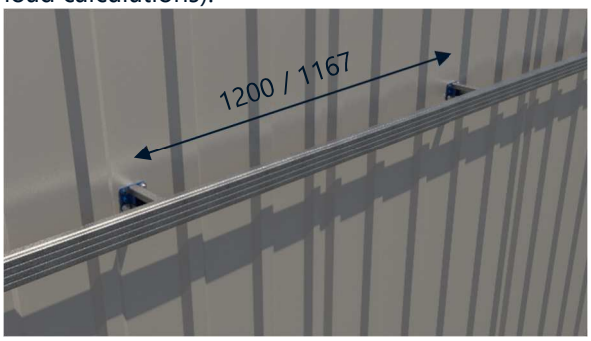


Figure 11.3.2

A bracket must be placed 150 ± 50mm from the female end of each bar for the system to meet its structural requirements. The swaged male end must be fully engaged on every bar.

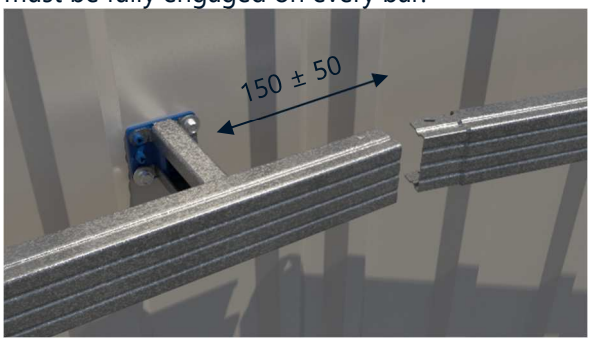


Figure 11.3.4

11.4 Fixing method for horizontal bars

For standard wall, the MatriX brackets must be fixed with two M27G16 fixings in opposite diagonal corners.

Figure 11.4.1

For FW60 and FW120 FireWalls, the MatriX brackets must be fixed with two M27G16 fixings in opposite diagonal corners.

Figure 11.4.2

11.5 Positioning vertical bars

For vertical bars, brackets must be placed at each rail location. The spacing between the bars is typically 1800mm. However, this is subject to project specific requirements such as wind loading. If in doubt, contact CA Group Technical Department.

Figure 11.5.1

Vertical bars require restraint brackets at certain locations. A restraint bracket has four M27G16 fixings in the base and one through each side of the bar, into the bracket head. These restraint brackets are necessary to minimise the rotation of the system.

Figure 11.5.2

A restraint bracket is required at all base rail locations, and every other rail thereafter.

It is also important to note that this applies for each run of MatriX bars, including openings such as windows. Restraint locations are highlighted by red brackets in Figure 11.5.3.

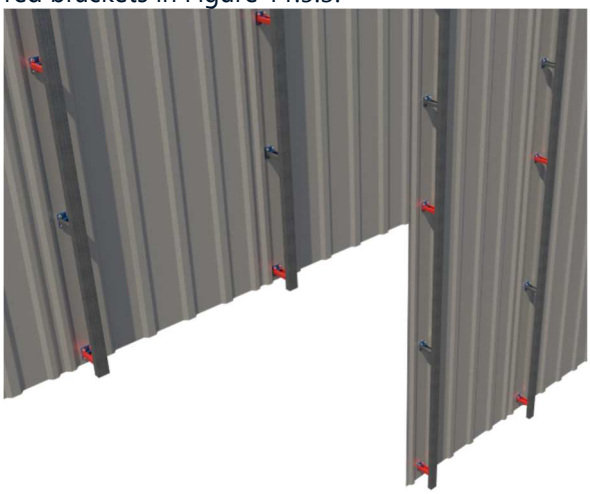


Figure 11.5.3

All vertical bar joints must have a splice plate installed centrally, 900mm max. from rail. This is to ensure the integrity of the system. The splice plate must be fixed to the MatriX bar with four M27G16 fixings.

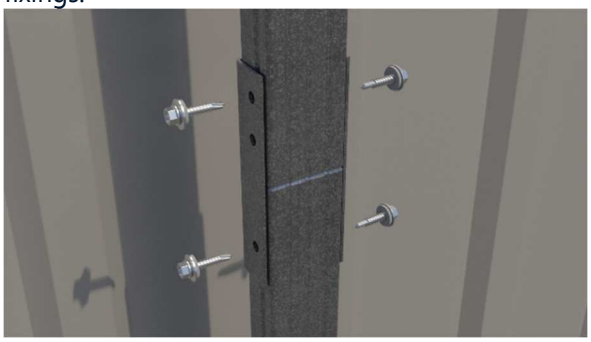


Figure 11.5.4

11.6 Fixing method for vertical bars

All vertical MatriX brackets must be installed recess up. For standard wall the MatriX brackets must be fixed with three M27G16 fixings.

Figure 11.6.1

For FW60 and FW120 FireWalls, the MatriX brackets must be fixed with three M27G16 fixings.

Figure 11.6.2

However, at restraint locations, the MatriX brackets must be installed with four M27G16 fixings into the base and two through the bar into the head of the bracket.

Figure 11.6.3

Figure 11.6.4

12. Insulation

12.1 Therma-quilt

Therma-quilt is to be installed continuous from head to drip, tightly butted together at roll ends and sides. This will allow the external sheet to compress the Therma-quilt when fixed. Therma-quilt should only be laid as required, as per project specific details.

Insulation retainers should be used to hold the Therma-quilt in place prior to final fixing. Two retainers should be fixed at the top of the roll with a 1-2 pattern used thereafter, as shown by the asterisks.

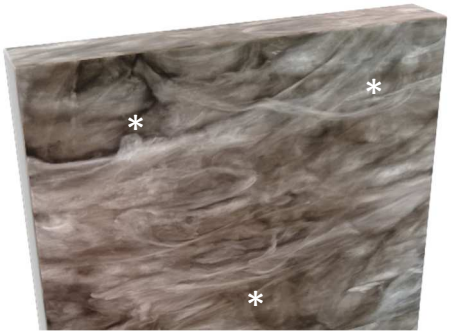


Figure 12.1.1

In all cases, insulation retainers are fixed with an IR38P fixing.

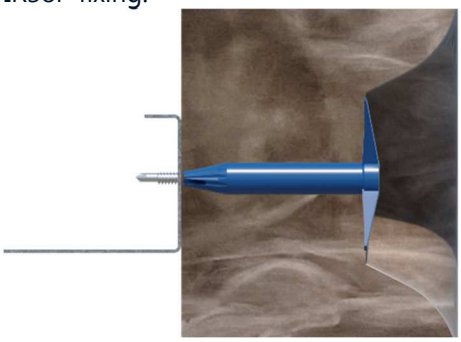


Figure 12.1.2

Therma-quilt can be installed during light rain due to its inherent moisture repellency.

It is important the Therma-quilt does not become saturated. Should this happen, the Therma-quilt must be replaced prior to the installation of the external sheets.

12.2 Therma-rock

Therma-rock is to be used in FireWall systems in accordance with the below table.

System	Insulation density	No. layers
FW60	45kg/m^3	1
FW120	45kg/m^3	2

Therma-rock is to be installed continuous from drip to head, tightly butted together at slab ends and sides.

If two layers of Therma-rock are required, these are to be staggered in a brickwork pattern to ensure continuity.

Figure 12.2.1

Therma-rock should only be laid as required, for horizontal sheeting, insulation retainer angles should be used at max. 1800mm centres.

Figure 12.2.2

It is important the Therma-rock does not become saturated. Should this happen, the Therma-rock must be replaced prior to the installation of the external sheets.

13. External Sheets

It is important to note that horizontally and vertically laid external cladding have differences in build-up methodology. It must be ensured that the relevant sections of the guide are used, if in doubt, contact CA Group Technical Department.

13.1 Components

Profile:	CA 17 1000LM	(0.5* or 0.7mm)
	CA 32 1000W	(0.5* or 0.7mm)
	CA 32 1000R	(0.5* or 0.7mm)
	CA Arc 50 930	(0.7mm)
	CA Sinu 19 990	(0.7mm)
	CA Sinu 42 960	(0.7mm)
	CA 47 900SL	(0.7mm)
	CA 300MR	(0.7mm)

*Vertical cladding only

Fixings:	CSSC28S16	main fix
	CSSS23S16	stitcher
	LPHS25A11	low profile main fix
	LPHS25S11	low profile stitcher
	SSC28S16	CA 300MR
Sealant:	T-strip	9x3
	T-butyl	(black or grey)
	Silicone	low modulus neutral cure
Fillers:	MP	to suit profile

13.2 End laps

Sheet end laps should be 150mm central to fixing location. For horizontal cladding, T-strip 9x3 or black or grey T-butyl must be used 30mm from the sheet edge. This is not required for vertical cladding.

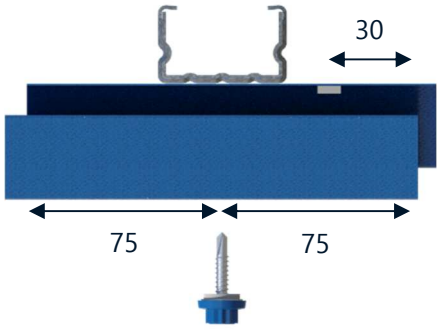


Figure 13.2.1

13.3 Side laps

Figure 13.3.1

Stitchers must be installed at side laps. For horizontal sheeting, spacings smaller than 600mm do not require stitchers. Spacings between 601 and 1200mm require one stitcher at midspan, with spacings between 1201 and 1800mm requiring two equally spaced stitchers. For vertical sheeting, spacings smaller than 1800mm require one stitcher at midspan, with spacings larger than 1800mm requiring two equally spaced stitchers. This also applies to soffits.

13.4 Drip detail

When positioning the external sheet at the drip flashing, it must be ensured that there is a 5mm gap to allow free flow of water along the drip flashing. The gap from the bottom of the drip to the ground works must be 25mm.

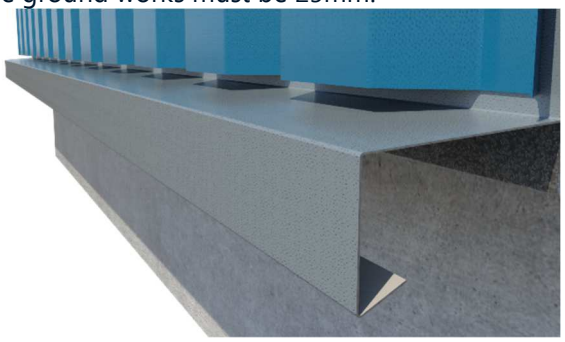


Figure 13.4.1

13.5 Fillers

For certain details a small flute or large flute filler may be required. In both cases, this filler must be unvented and bedded with black or grey T-butyl.

Figure 13.5.1

13.6 Main fixing locations

CA 17 1000LM

For use as an intermediate profile for Prime Rainscreen

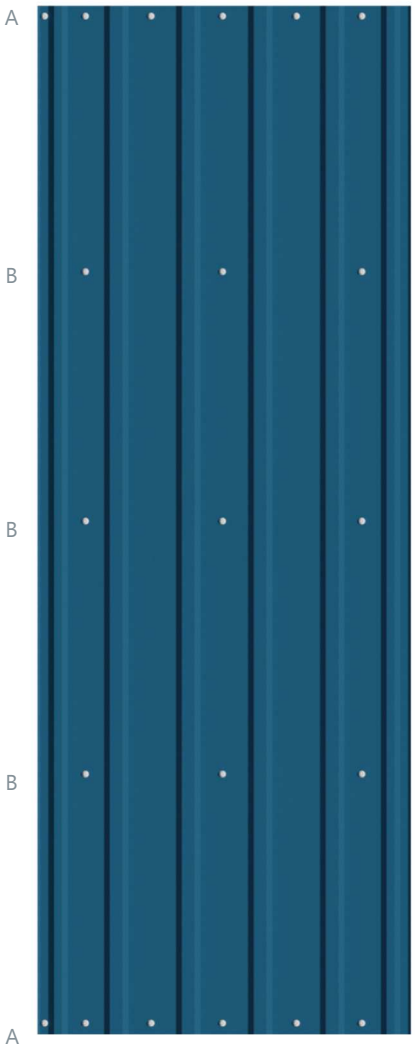


Figure 13.6.1

Vertically laid cladding fixing pattern.
Intermediates – 3 No. fixings

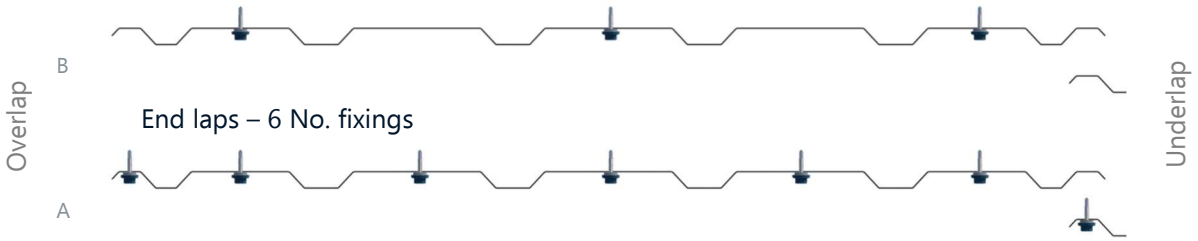


Figure 13.6.2

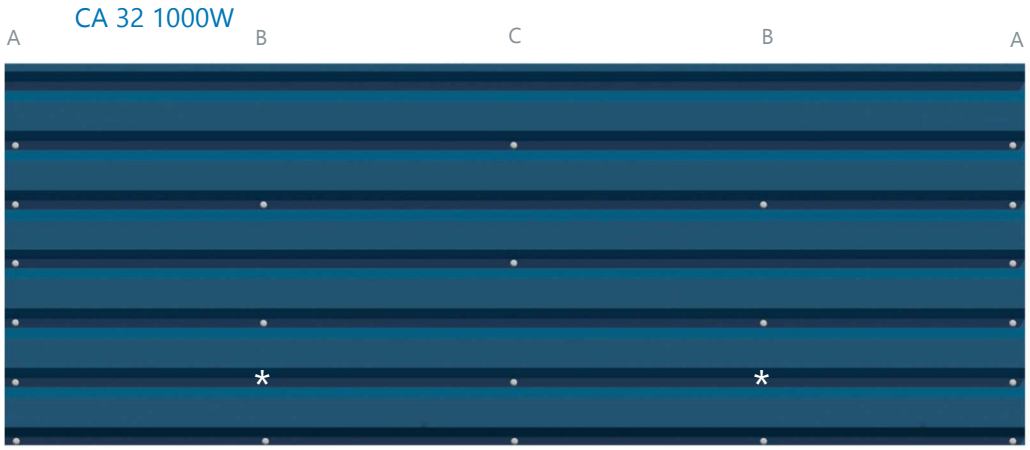


Figure 13.6.3

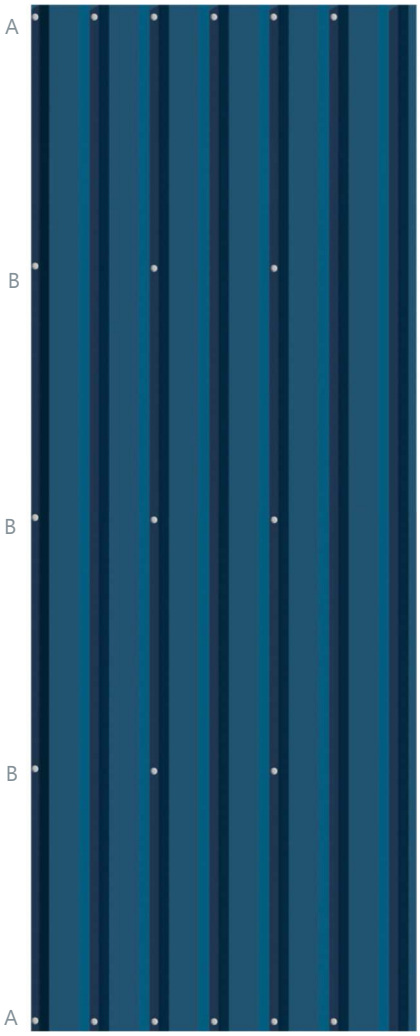


Figure 13.6.4

Horizontally laid cladding diamond fixing pattern.

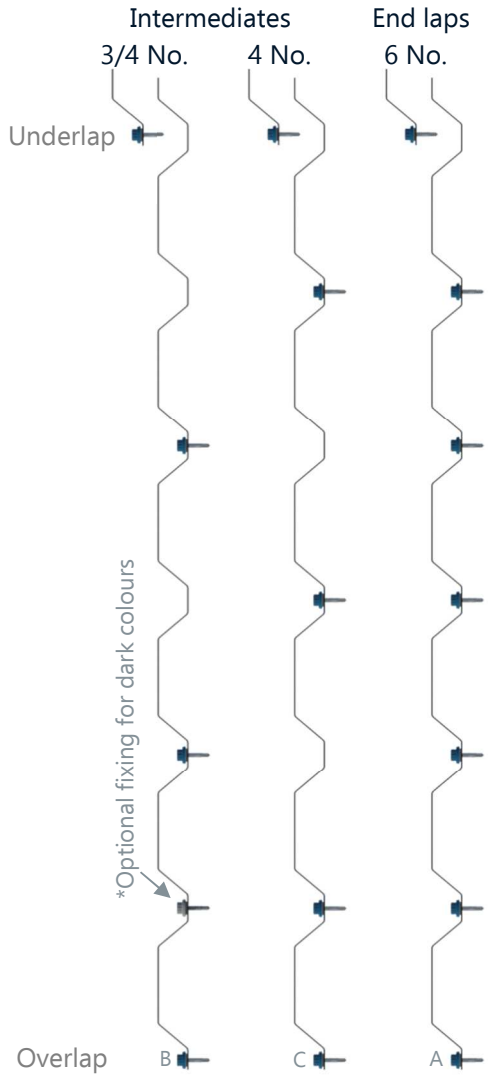
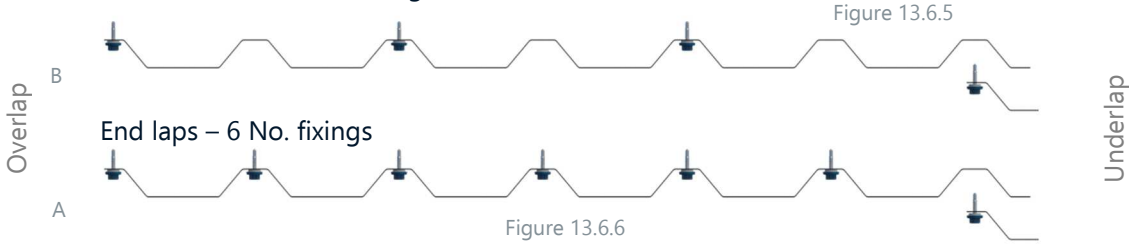


Figure 13.6.5

Vertically laid cladding fixing pattern.
Intermediates – 3 No. fixings



End laps – 6 No. fixings

Figure 13.6.6

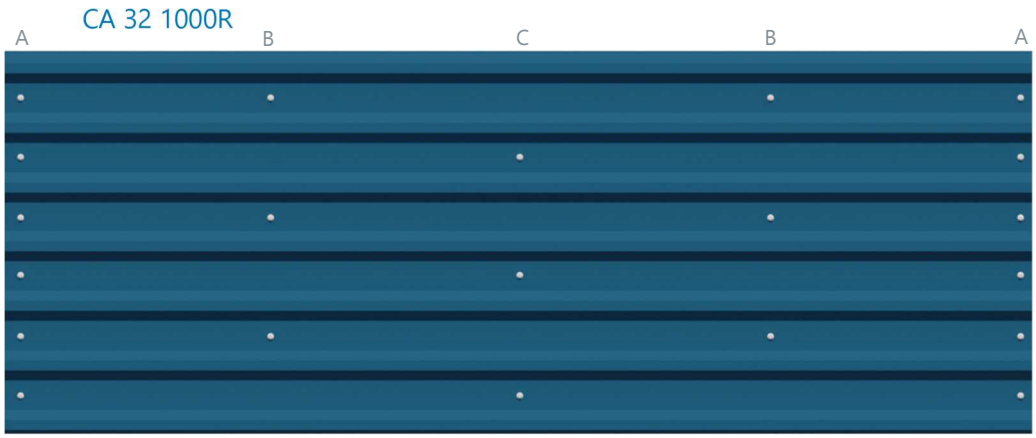


Figure 13.6.7

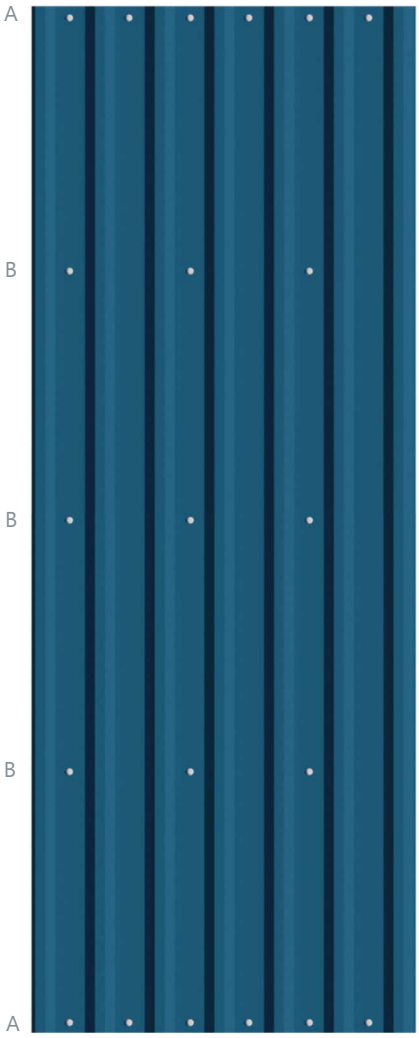


Figure 13.6.8

Horizontally laid cladding diamond fixing pattern.

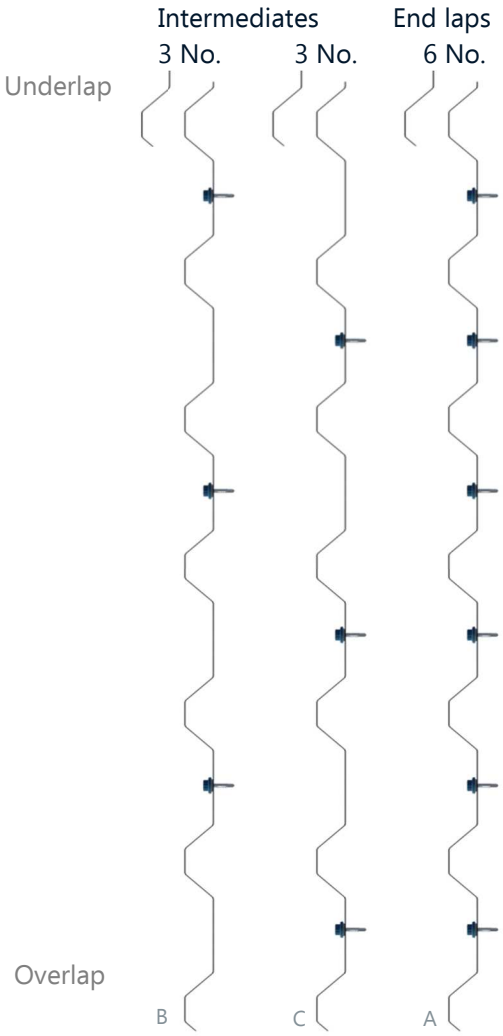


Figure 13.6.9

Vertically laid cladding fixing pattern.
Intermediates – 3No. fixings

End laps – 6 No. fixings

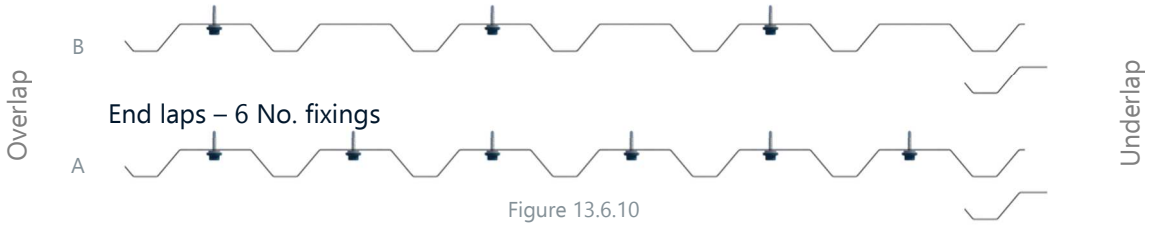


Figure 13.6.10

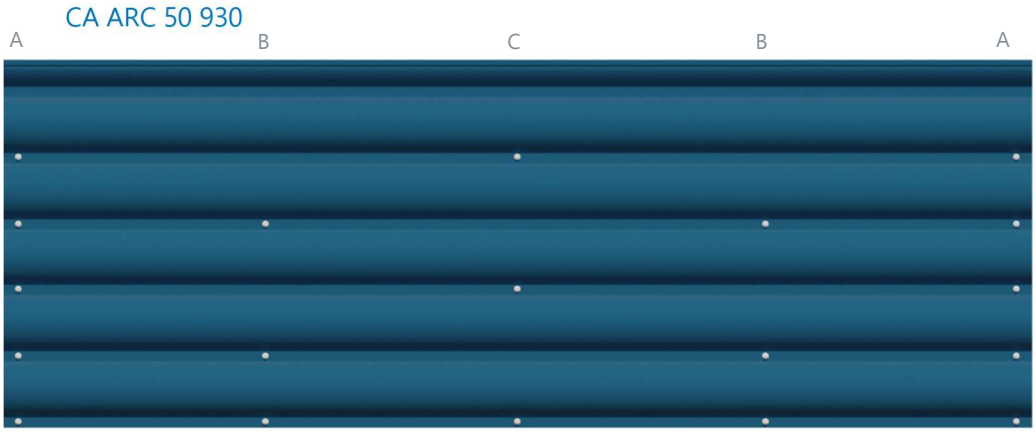


Figure 13.6.11

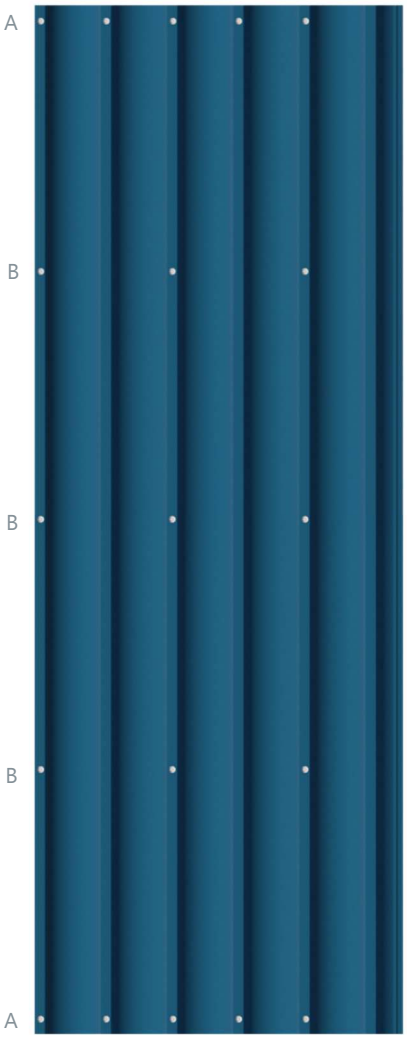


Figure 13.6.12

Horizontally laid cladding diamond fixing pattern.

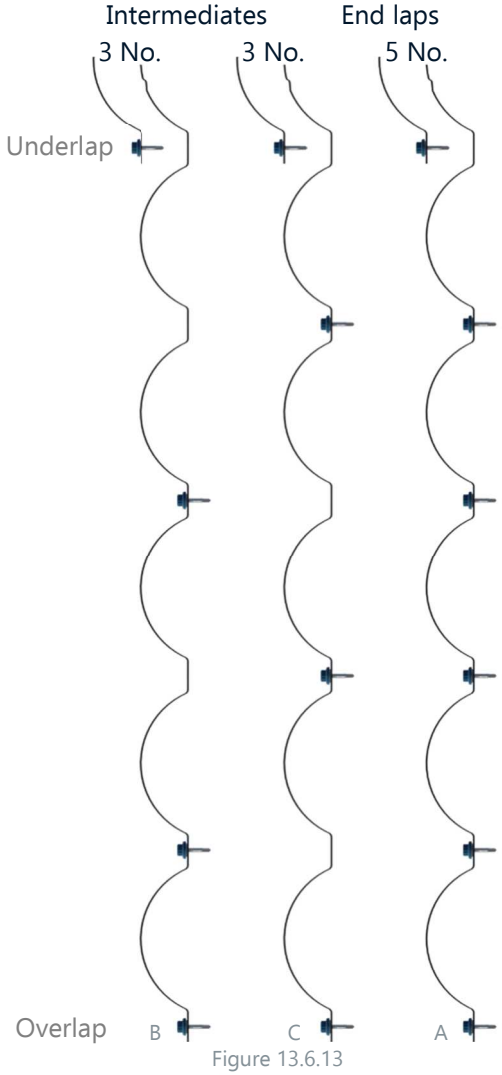


Figure 13.6.13

Vertically laid cladding fixing pattern.
Intermediates – 3 No. fixings

End laps – 5 No. fixings

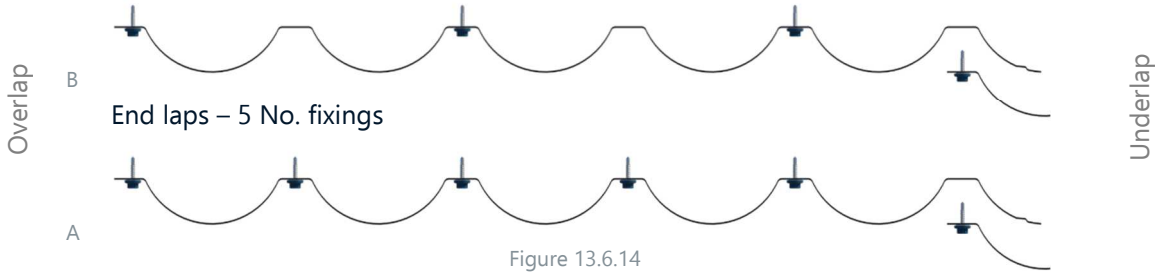


Figure 13.6.14

CA Sinu 19 990

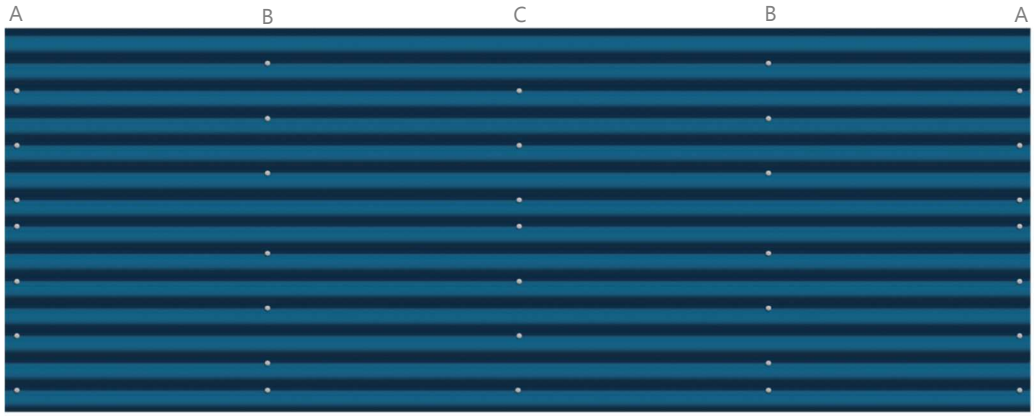


Figure 13.6.15

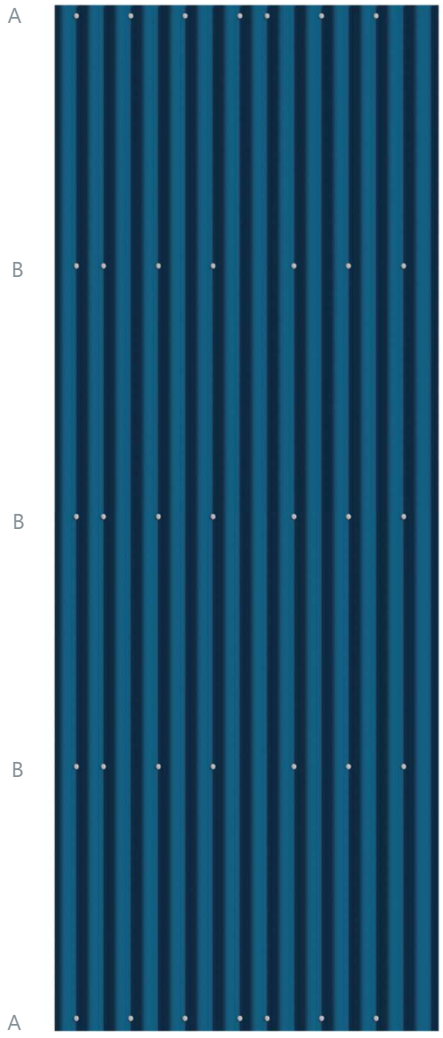


Figure 13.6.16

Horizontally laid cladding diamond fixing pattern.

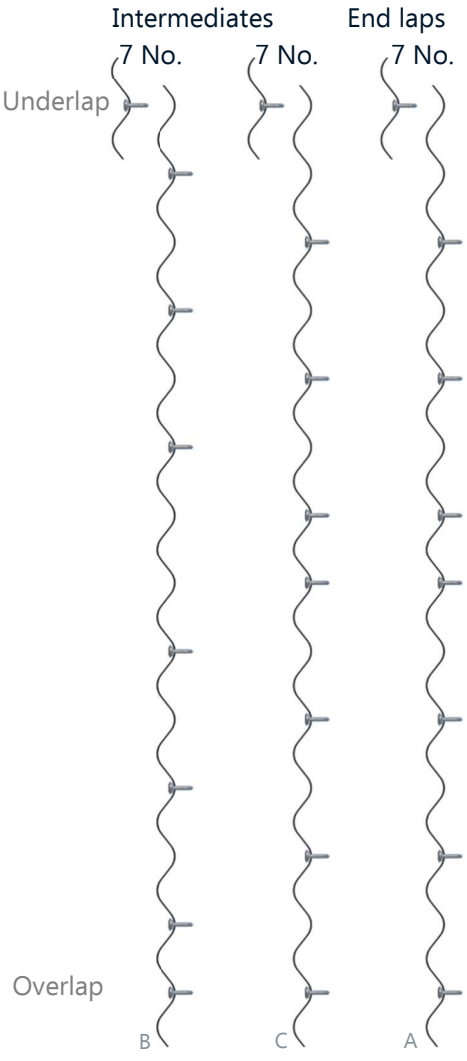


Figure 13.6.17

Vertically laid cladding fixing pattern.
Intermediates – 7 No. fixings

End laps – 7 No. fixings

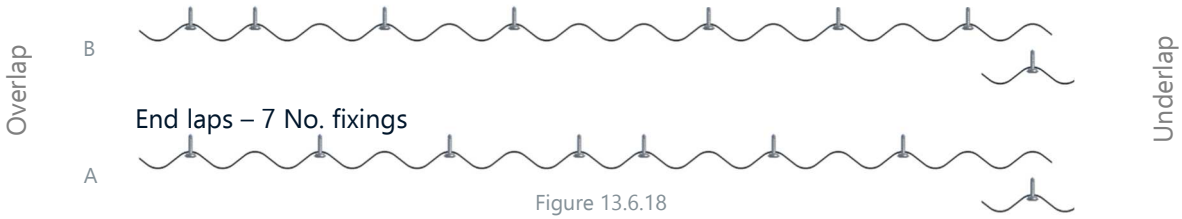


Figure 13.6.18

CA Sinu 42 960

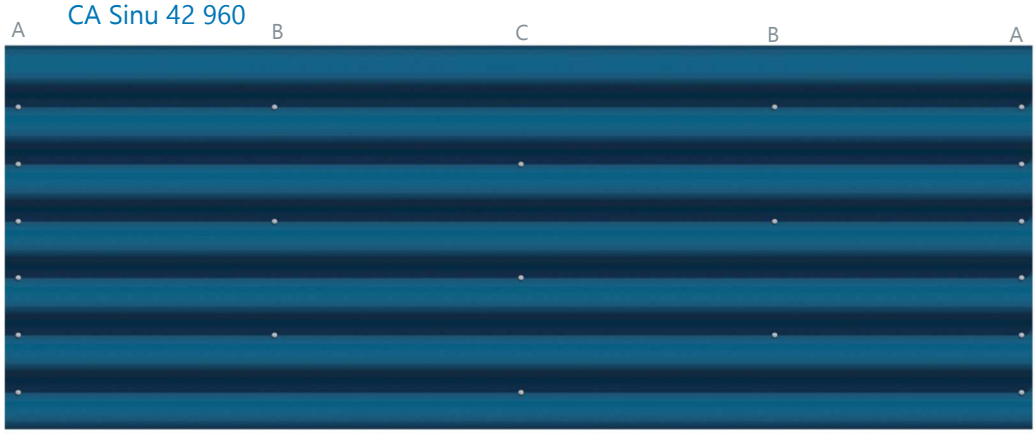


Figure 13.6.19

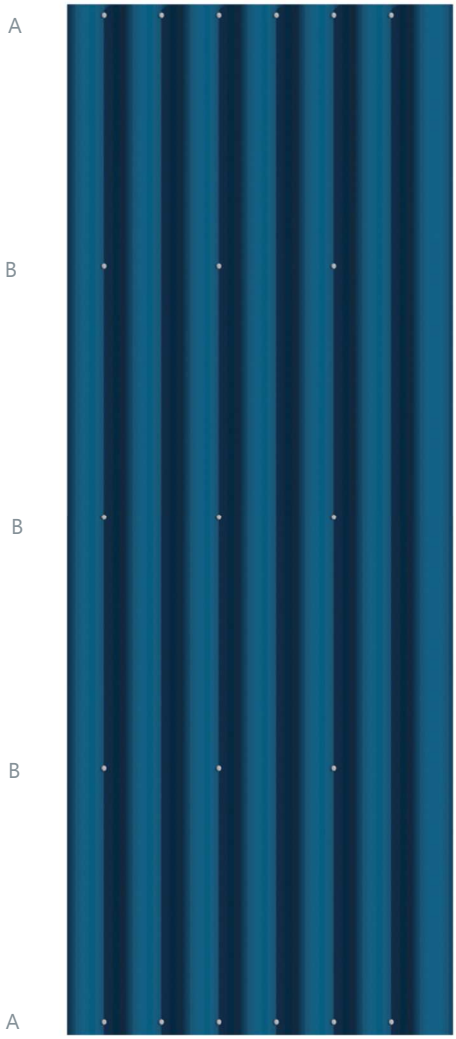


Figure 13.6.20

Horizontally laid cladding diamond fixing pattern.

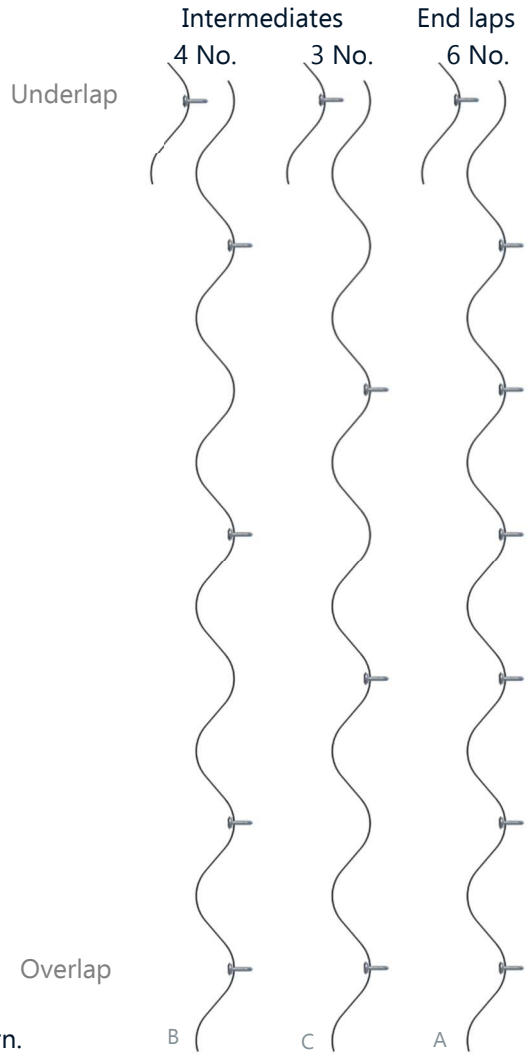


Figure 13.6.21

Vertically laid cladding fixing pattern.
Intermediates – 3 No. fixings

End laps – 6 No. fixings

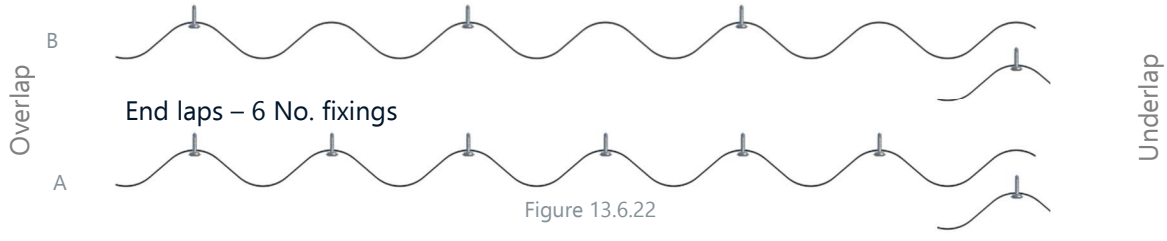


Figure 13.6.22

CA 47 900SL

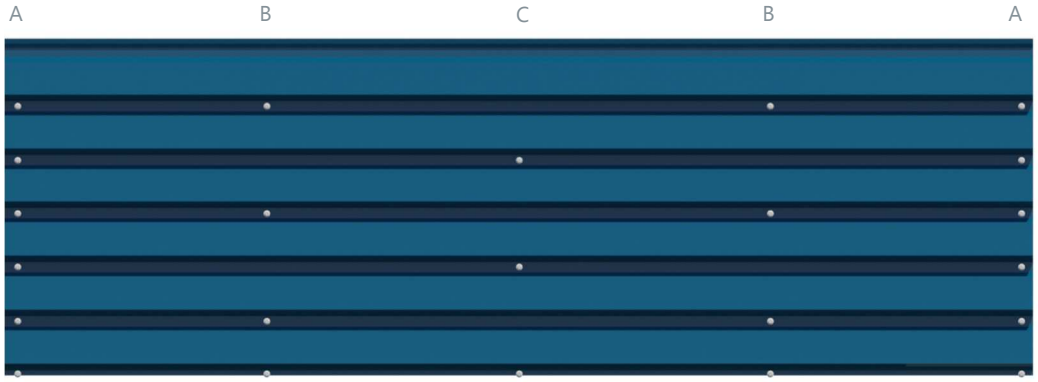


Figure 13.6.27

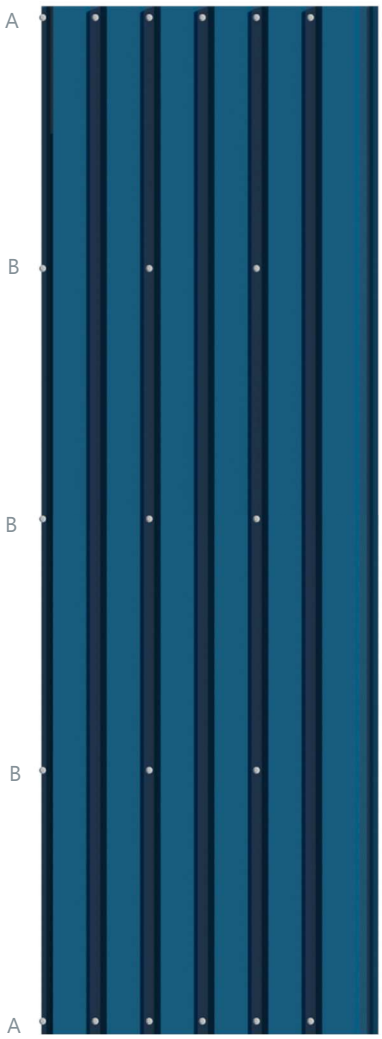


Figure 13.6.28

Horizontally laid cladding diamond fixing pattern.

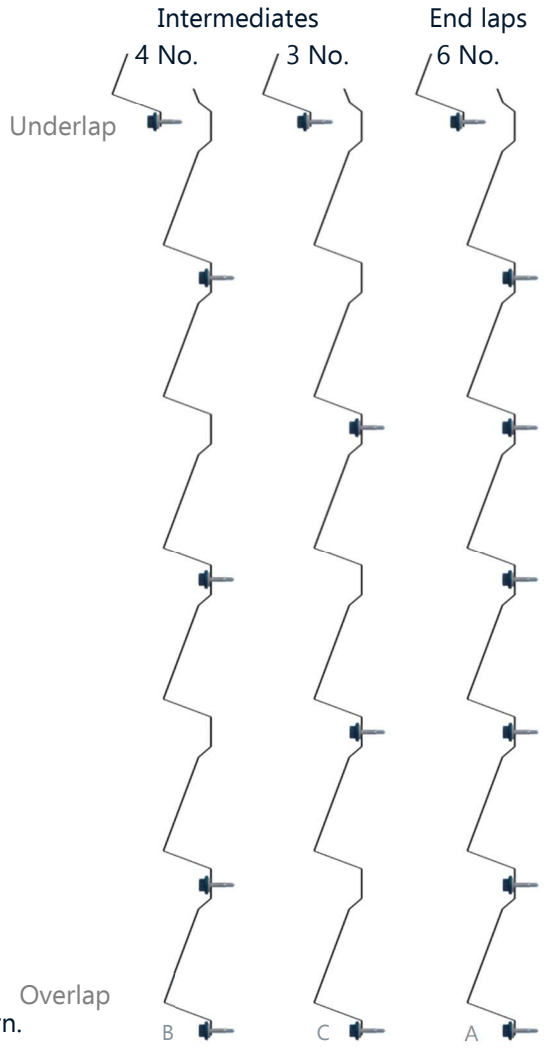


Figure 13.6.29

Vertically laid cladding fixing pattern.
Intermediates – 3 No. fixings

End laps – 6 No. fixings

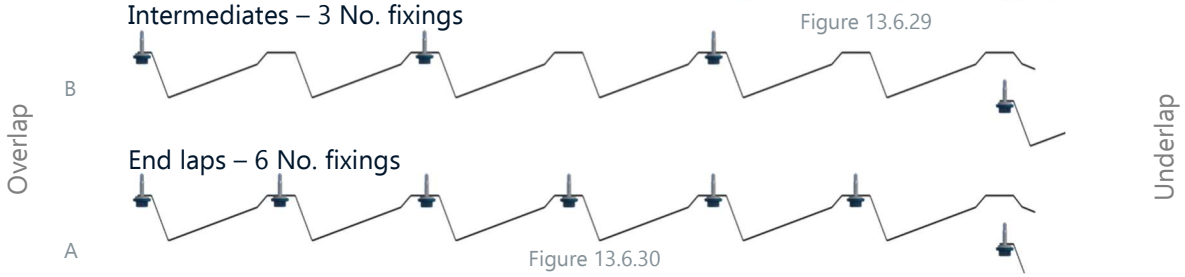


Figure 13.6.30

13.7 CA 300MR

The CA 300MR starter clip is fixed to the base drip ensuring a 5mm gap is maintained. Fixings should be near the top of the starter clip to prevent fouling on the CA 300MR panel.

When setting out the CA 300MR panels, consideration should be given to the position of any openings such as windows and doors to ensure the head drip aligns with the CA 300MR joint correctly.

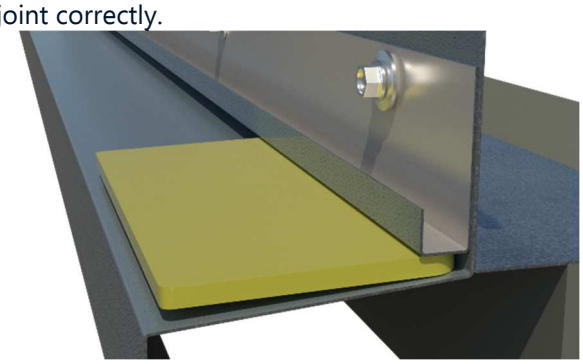


Figure 13.7.1

The first panel should be offered to the starter clip.

Figure 13.7.2

To secure the panel, a CA 300MR installation tool should be used. This allows the panel to be held in place prior to fixing, without bending the sheet. This also reduces the amount of swarf falling into the channel.

Figure 13.7.3

It is important that the fixing is installed as close to the top of fixing leg as the washer allows. Any swarf must be removed with a soft brush.

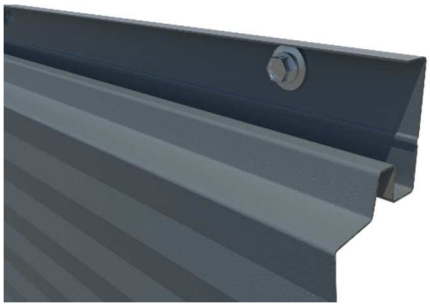


Figure 13.7.4

A bead of silicone should be applied in the joint channel prior to the fitting of the following panel, positioned to suit the detail: top hat or flashing.

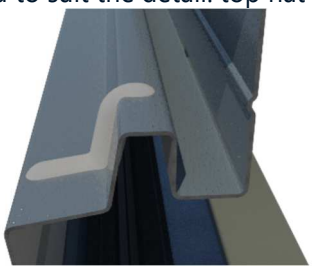


Figure 13.7.5

Every CA 300MR panel must utilise a filler at sheet ends. This filler must be bedded with black or grey T-butyl.

Figure 13.7.6

Top hats and all other types of flashings should be fixed at 300mm centres in line with panel joints. A fixing is also required 100mm up from the base.

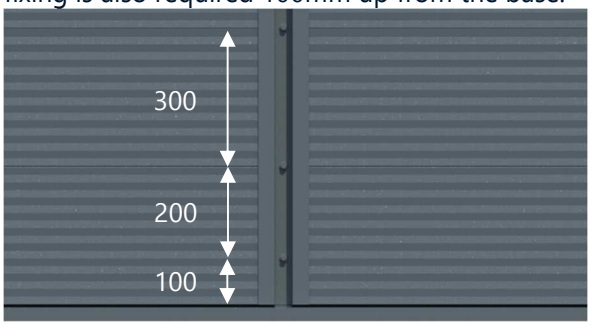


Figure 13.7.7

14. Twin-Therm® SolarWall®

14.1 Components

Intermediate profile:		CA 32 1000RM
Intermediate profile sealants:		T-butyl (black or grey)
Intermediate profile fillers:		MP
Fixings:	CSSC28S16 LPHS25A11 M27G16	profile profile supports
Support stool:		S-stool
Support top hat:		Top hat Splice plate

14.2 Intermediate profile fixing locations

CA 32 1000RM

All locations – 3 No. fixings

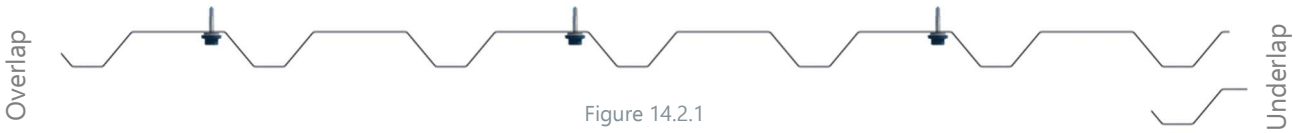


Figure 14.2.1

Where required an unvented MP filler should be bedded with a continuous bead of black or grey T-butyl.

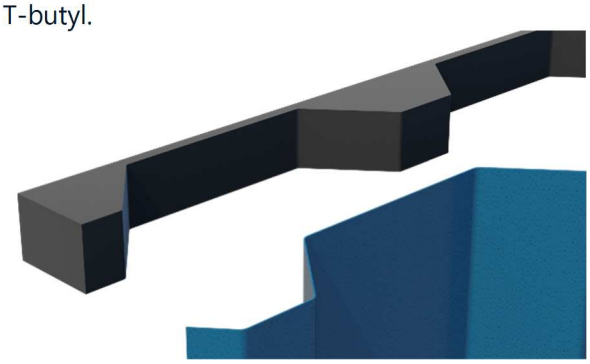


Figure 14.2.2

The filler is to be positioned adjacent to the fixing line to ensure compression and thus an effective air seal.

Sheet end laps should be 150mm central to fixing location. Horizontal and vertical sheet end laps are unsealed.

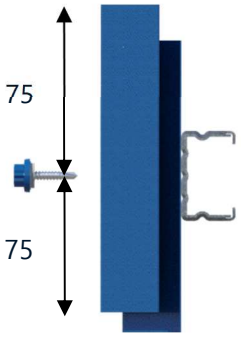


Figure 14.2.3

Sheet side laps are unsealed.

14.3 Vertical support bar

For horizontal external sheeting, vertical support bars must be used. This consists of a support stool.

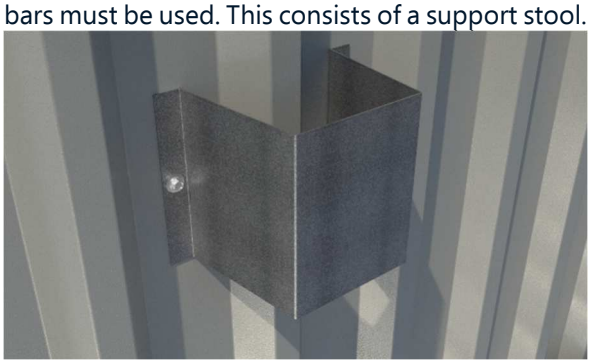


Figure 14.3.1

A continuous vertical top-hat achieved by using a top-hat and splice plate detail.

Figure 14.3.2

The vertical support bars must be spaced according to wind load recommendations. If in doubt, contact CA Group Technical Department.

14.4 Horizontal support bar

For vertical external sheeting, horizontal support bars must be used. This consists of a support stool.

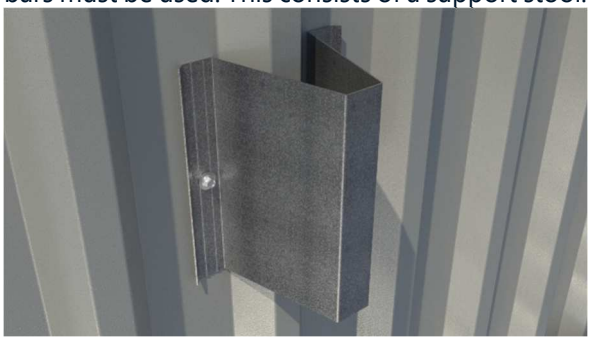


Figure 14.4.1

A continuous horizontal top-hat achieved by using a top-hat and splice plate detail.

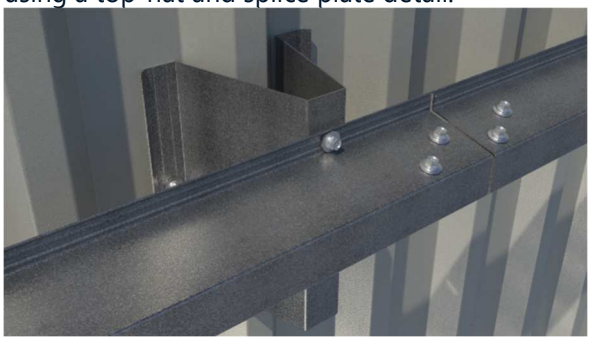


Figure 14.4.2

The horizontal support bars must be spaced according to wind load recommendations. If in doubt, contact CA Group Technical Department.

14.5 External sheet

SolarWall® external sheets are fitted as per standard external profiles and in accordance with Section 13.6.

Additional Offerings

15. Security Rated

To achieve a Twin-Therm® SecureRoof™ with Security Rating SR1 or SR2, the specification below must be used.

Security Rating	Liner panel		External sheet	
	Steel substrate (0.7mm)	GRP	Steel substrate (0.7mm)	GRP
SR1	CA 17 1000L	CE24	CA 32 1000R	CE30E
SR2	CA 32 1000RL	CE36	CA 32 1000R	CE45E

To achieve a Twin-Therm® SecureWall™ with Security Rating SR1 or SR2, the specification below must be used.

		Liner Panel (0.7mm)	
		CA 17 1000L	CA 32 1000RL
External Sheet (0.7mm)	CA 300MR	SR1	SR1
	CA 32 1000W	SR1	SR1
	CA Sinu 19 990	SR1	SR1
	CA 32 1000R	SR1	SR2
	CA 47 900 SL	SR1	SR2
	CA ARC 50 930	SR2	SR2
	CA 65 321DL	SR2	SR2

In addition to this, all openings must be surrounded by woven mesh, at least 1200mm in all directions. An example of this is shown in Figure 15.1. For more information refer to R-DD-TTSRWH-02 and R-DD-TTSRWV-02.

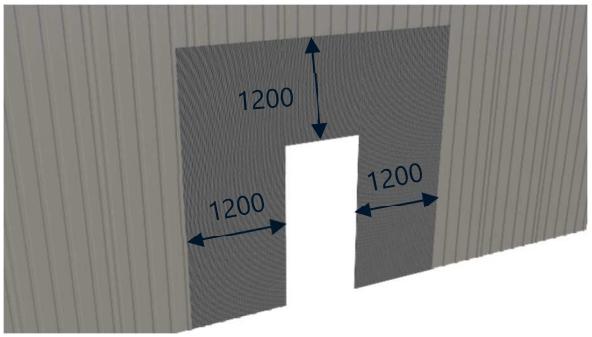


Figure 15.1

Secured by Design

16. FM Approved

Twin-Therm® can become FM Approved with the following changes.

On the roof, MatriX brackets must be fixed with three M27G16 fixings as shown in Figure 16.1.

Figure 16.1

In all cases, CE24E external rooflights must be used.

On the walls, for horizontal bars, brackets require three M27G16 fixings to the MatriX brackets as shown in Figure 16.2.

Figure 16.2

For vertical bars, MatriX brackets are still to be fixed with three M27G16 as in accordance with section 11.6.

Restraint brackets must still be fixed in accordance with section 11.6.

FM APPROVED

Converting Chronus® Ready to Chronus®

17. Roof

17.1 Components

External sheet:	CA 32 1000RP	(0.7mm)
Fixings:	CSSC28S30	main fix poppy red
	CSSS23S16	stitcher poppy red
Sealants:	T-strip	QR 6x5
		QR 10x8V

17.2 Over-skinning

The first stage in the process to convert a Chronus® Ready roof into a Chronus® roof is to remove the external GRP rooflight, T-strip QR and poppy red fixings.

Figure 15.2.1

Therma-quilt of the relevant depth to the MatriX spacer system is added to fill the cavity.

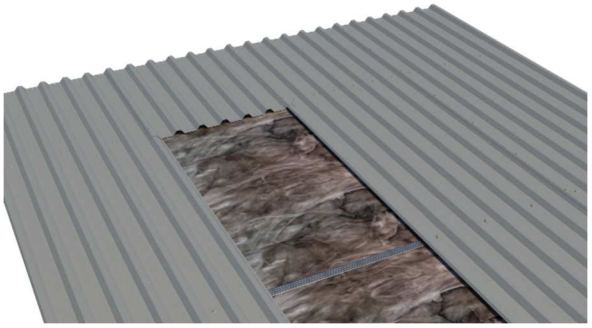


Figure 15.2.3

The CA 32 1000RP external sheet is to be fitted over-over at the side laps, ensuring the short sheet above laps over the CA 1000RP sheet in accordance with Section 9.7. Figure 15.2.4 highlights this short sheet in blue.

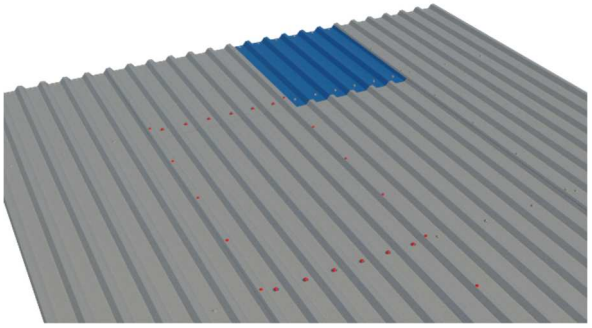


Figure 15.2.4

17.3 Fixing locations

All locations – 6 No. fixings

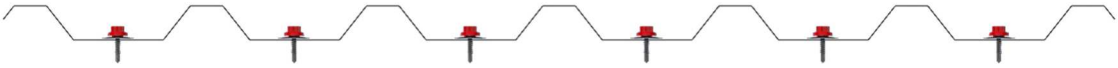


Figure 15.3.1

17.4 End lap

Sheet end laps should be 75mm central to fixing location.

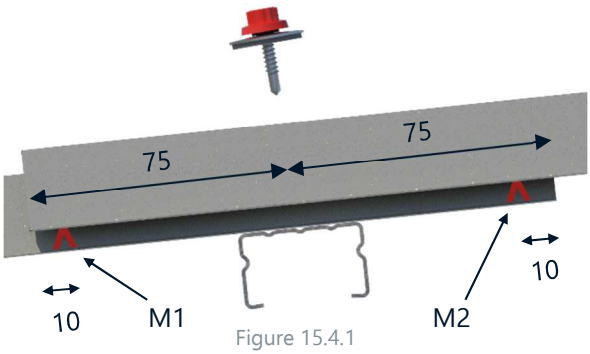


Figure 15.4.1

Roof type	M1	M2
Pitched	QR 6x5	QR 6x5
<80m rad	QR 10x8V	QR 6x5
>80m rad	QR 10x8V	QR 10x8V

17.5 Side lap

Sheet side laps are to be sealed with T-strip QR 6x5, with CSSS23S16 stitchers installed at 450mm centres.

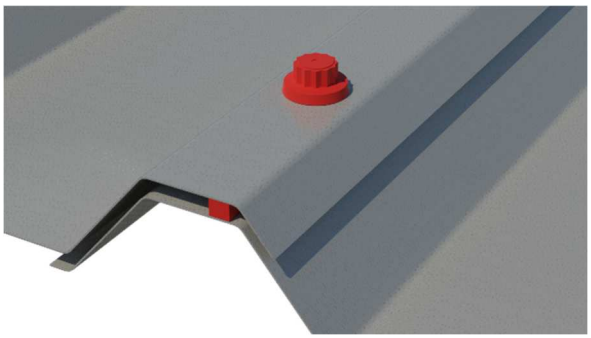


Figure 15.5.1

CA Group

Evenwood Industrial Estate

Copeland Road

Evenwood

County Durham

DL14 9SF

t: 01388 830222

e: technical@cagroup.co.uk

www.cagroup.co.uk

Twin-Therm® Wall Horizontal 32 1000R - 0.7mm Gauge Profile - 1.5mm MatriX Bar

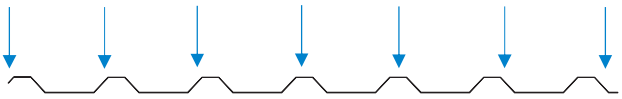
Visual

Load Span Table

Bar Centres	Load	Cladding Rail Span (m) / Loading (kN/m2)								
		0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20
0.6	Imposed	8.91	8.91	8.91	8.43	5.66	3.58	1.97	1.63	1.36
	Suction	9.31	6.98	5.59	4.65	3.99	3.16	2.39	1.84	1.39
0.8	Imposed	5.95	5.95	5.95	5.95	4.24	2.69	1.48	1.23	1.02
	Suction	6.32	5.24	4.19	3.49	2.99	2.37	1.79	1.38	1.04
1	Imposed	4.29	4.29	4.29	4.29	3.40	2.15	1.18	0.98	0.82
	Suction	4.59	4.19	3.35	2.79	2.39	1.90	1.43	1.10	0.83
1.2	Imposed	3.26	3.26	3.26	3.26	2.83	1.79	0.99	0.82	0.68
	Suction	3.51	3.49	2.79	2.33	1.99	1.58	1.19	0.92	0.70
1.4	Imposed	2.56	2.56	2.56	2.56	2.43	1.54	0.84	0.70	0.58
	Suction	2.77	2.77	2.39	1.99	1.71	1.35	1.02	0.79	0.60
1.6	Imposed	2.07	2.07	2.07	2.07	2.07	1.34	0.74	0.61	0.51
	Suction	2.25	2.25	2.09	1.75	1.50	1.18	0.89	0.69	0.52
1.8	Imposed	1.71	1.71	1.71	1.71	1.71	1.19	0.66	0.54	0.45
	Suction	1.87	1.87	1.86	1.55	1.33	1.05	0.80	0.61	0.46

1. Loadings provided include relevant safety factors in accordance with Eurocodes.
2. Loading covers the Twin-Therm® system, elements included are: Profile, MatriX Bar, MatriX Bracket and fixings.
3. Loadings are based on the system fixed in accordance with CA Group installation guides IG-TT-01
4. Loadings assume the system is fixed into a steel purlin of grade S450 with a minimum thickness of 1.5mm.
5. Deflection for imposed load has been calculated at span/90.
6. Deflection for suction load has been calculated at span/90.

Load Direction



Imposed

Suction

Twin-Therm® Wall Vertical 32 1000R - 0.7mm Gauge Profile - 1.5mm MatriX Bar

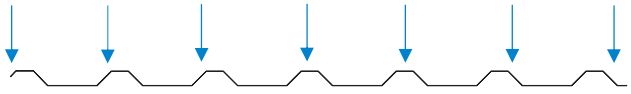
Visual

Load Span Table

Bracket Centres	Load	Purlin Span (m) / Loading (kN/m2)								
		0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20
0.6	Imposed	8.91	5.95	4.29	3.26	2.56	2.07	1.71	1.44	1.23
	Suction	9.31	6.32	4.59	3.51	2.77	2.25	1.87	1.58	1.35
0.8	Imposed	8.91	5.95	4.29	3.26	2.56	2.07	1.71	1.44	1.23
	Suction	6.98	5.24	4.19	3.49	2.77	2.25	1.87	1.58	1.35
1	Imposed	8.91	5.95	4.29	3.26	2.56	2.07	1.71	1.44	1.23
	Suction	5.59	4.19	3.35	2.79	2.39	2.09	1.86	1.58	1.35
1.2	Imposed	8.43	5.95	4.29	3.26	2.56	2.07	1.71	1.44	1.23
	Suction	4.65	3.49	2.79	2.33	1.99	1.75	1.55	1.40	1.27

1. Loadings provided include relevant safety factors in accordance with Eurocodes.
2. Loading covers the Twin-Therm® system, elements included are: Profile, MatriX Bar, MatriX Bracket and fixings.
3. Loadings are based on the system fixed in accordance with CA Group installation guides IG-TT-01
4. Loadings assume the system is fixed into a steel purlin of grade S450 with a minimum thickness of 1.5mm.
5. Deflection for imposed load has been calculated at span/90.
6. Deflection for suction load has been calculated at span/90.

Load Direction



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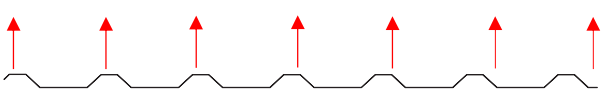

Suction

Twin-Therm® Wall Vertical 300MR - 0.7mm Gauge Profile - 1.5mm MatriX Bar

Visual

Load Span Table

Bracket Centres	Load	Purlin Span (m) / Loading (kN/m2)								
		0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20
0.6	Imposed	5.02	3.45	2.54	1.96	1.57	1.28	1.07	0.91	0.78
	Suction	5.19	3.59	2.66	2.07	1.66	1.37	1.15	0.98	0.84
0.8	Imposed	5.02	3.45	2.54	1.96	1.57	1.28	1.07	0.91	0.78
	Suction	5.19	3.59	2.66	2.07	1.66	1.37	1.15	0.98	0.84
1	Imposed	5.02	3.45	2.54	1.96	1.57	1.28	1.07	0.91	0.78
	Suction	5.19	3.59	2.66	2.07	1.66	1.37	1.15	0.98	0.84
1.2	Imposed	5.02	3.45	2.54	1.96	1.57	1.28	1.07	0.91	0.78
	Suction	4.65	3.49	2.66	2.07	1.66	1.37	1.15	0.98	0.84

1. Loadings provided include relevant safety factors in accordance with Eurocodes.
2. Loading covers the Twin-Therm® system, elements included are: Profile, MatriX Bar, MatriX Bracket and fixings.
3. Loadings are based on the system fixed in accordance with CA Group installation guides IG-TT-01
4. Loadings assume the system is fixed into a steel purlin of grade S450 with a minimum thickness of 1.5mm.
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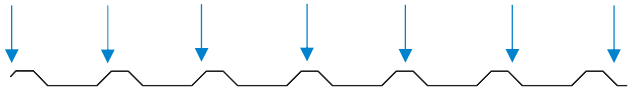
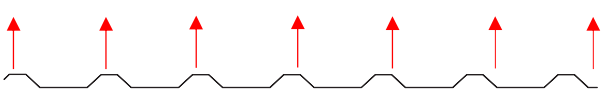
Load Direction



Imposed



Suction

SAFETY DATA SHEET (SDS)

SDS Compliant with REACH Regulation (EC) No 1907/2006 – Nº 453/2010

SEAMSEAL BR

SECTION 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product identifier.	Product Name: Seamseal BR.	
1.2. Relevant identified uses of the substance or mixture and uses advised against.	Identified uses: Cartridge applied sealant / adhesive. Uses advised against: Any other uses other than the advised purpose.	
1.3. Details of the supplier of the datasheet.	Hodgson Sealants (Holdings) Limited Belprin Road Beverley East Yorkshire HU17 0LN	Tel: + 44 (0)1482 868321 Fax: + 44 (0)1482 679337 E-mail: SDS@hodgsonsealants.com
1.4. Emergency Phone Number (UK Office Hours Only: 9am to 5pm)	Tel: + 44 (0)1482 868321 E-mail: SDS@hodgsonsealants.com	

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture. **2.1.1. Classification according to regulation (EC) No 1272/2008 [CLP].**	Flam. Liq.3
2.2. Label elements. **2.2.1. Classification according to regulation (EC) No 1272/2008 [CLP].**	 **GHS02** Signal word; **Warning** **Hazard statements;** H226: Flammable liquid and vapour. **Precautionary Statements – Prevention;** P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P243: Take precautionary measures against static discharge. **Precautionary Statements – Response;** P370+P378: In case of fire: Use foam, dry powder or CO2 to extinguish. **Precautionary Statements – Storage;** P403+P235: Store in a well-ventilated place. Keep cool. **Precautionary Statements – Disposal;** P501: Dispose of contents/container in accordance with local/regional/national/international regulations. **Additional Labelling;** Contains: Hydrocarbons, C9-C11, n-alkanes, isoalkanes,cyclics, <2% aromatics.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.2. Mixtures
Description of mixture: Homogeneous mixture of mineral filler, synthetic rubber, liquid polymer and white spirit.
Hazardous ingredients:

Name	CAS No.	EC No.	REACH Registration No.	% (weight)	Classification according to 67/548/EEC	Classification according to Regulation (EC) No 1278/2008 (CLP).
Hydrocarbons, C9-C11, n-alkanes, isoalkanes,cyclics, <2% aromatics.	-	919-857-5	01-2119463258-33-xxxx	<15	Xn; R10, R65, R66, R67.	Flam. Liq.3; H226. Asp. Tox.4; H304. STOT-SE.3; H336.

Additional information: For full text of H-statements and R-phrases: see SECTION 16.

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures	
Following inhalation:	Remove to fresh air. Get medical attention if any discomfort continues.
Following skin contact:	Wipe off with soap and water. Seek medical advice if irritation persists.
Following eye contact:	Flush with water. Seek medical attention if irritation persists. Immediately flush with plenty of water for 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention if any discomfort continues.
Following ingestion:	Get medical attention if discomfort continues.
4.2. Most important symptoms and effects, both acute and delayed.	If in eyes: Contact with the eyes may cause temporary irritation. If on skin: Repeated or prolonged contact may lead to drying of the skin. If inhaled: Inhalation of large concentrations of vapour may cause drowsiness. If ingested: May cause discomfort if swallowed.
4.3. Indication of any immediate medical attention and special treatment needed.	In case of accident or if patient feels unwell, seek medical advice immediately.

SECTION 5. FIREFIGHTING MEASURES

5.1. Extinguishing media **Suitable extinguishing media;**	Carbon dioxide, foam, dry powder or fine water spray. Water can be used to cool containers.
Unsuitable extinguishing media;	Water jets.
5.2. Special hazards arising from the substance or mixture	
Hazardous combustion products;	Carbon oxides and traces of incompletely burned carbon compounds.
5.3. Advice for firefighters	A self-contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Move undamaged containers from fire area if this can be done safely. Keep fire exposed containers cool by spraying with water. Do not allow product or run-off to enter drains, sewers or watercourses

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures.	
6.1.1. For non-emergency personnel.	
Protective equipment:	Wear proper protective equipment.
Emergency procedures:	Wear proper protective equipment.
6.2. Environmental precautions:	Prevent material from entering surface waters, drains and soil.
6.3. Methods and material for containment and cleaning up.	
6.3.1. For containment:	Scrape up and place in a container fitted with a lid. Dispose of in accordance with local regulations.
6.3.2. For cleaning up:	Scrape up and place in a container fitted with a lid. Dispose of in accordance with local regulations.
6.3.3. Other information:	No further data available.
6.4. Reference to other sections	See SECTION 8 and 13.

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling	
Measures to prevent fire:	Take precautions against static discharges.
Measures to prevent aerosol and dust generation:	Not necessary.
Measures to protect the environment:	Prevent material from entering surface waters, drains and soil.
7.2. Conditions for safe storage, including any incompatibilities.	Keep container closed and store in cool dry conditions away from moisture.
7.3. Specific end use(s).	Cartridge applied sealant / adhesive.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Maximum airborne concentrations at the workplace: This product does not contain any substances with critical values that have to be monitored at the workplace.

Name	CAS No.	Type	Mg/m³	ppm
-	-	-	-	-

Derived No-Effect Level (DNEL); This product does not contain any substances with any identified hazard or DNEL value.

	Workers				Consumers			
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	-	-	-	-	-	-	-	-
Inhalation	-	-	-	-	-	-	-	-
Dermal	-	-	-	-	-	-	-	-

Predicted No Effect Concentration (PNEC); This product does not contain any substances with any identified hazard or PNEC value.

Environmental protection target	PNEC Value
Fresh water	-
Freshwater sediments	-
Marine water	-
Marine sediments	-
Food chain	-
Microorganisms	-
Soil (agricultural)	-
Air	-

8.2. Exposure control	
8.2.1. Appropriate engineering controls:	Not necessary.
8.2.2. Personal protection equipment:	Protective equipment is not normally necessary. Gloves should be worn where repeated or prolonged contact can occur.
8.2.2.1. Eye face protection:	Not normally needed. Wear safety glasses if contact with the eyes is likely.
8.2.2.2. Skin protection:	Protective equipment is not normally necessary. Gloves should be worn where repeated or prolonged contact can occur.
8.2.2.3. Respiratory protection:	Not necessary.
8.2.2.4. Thermal hazards:	None known.
8.2.3. Environmental exposure controls:	Refer to SECTION 6 & 12.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties.

a) **Appearance:** Stiff paste.
b) **Odour:** Slight solvent.
c) **Odour Threshhold:** No data available.
d) **pH:** 6-8.
e) **Melting point / freezing point:** No data available.
f) **Initial boiling point and boiling range:** No data available.
g) **Flash point:** >23°C - <60°C (IP524 / ISO 3680).
h) **Evaporation rate:** No data available.
i) **Flammability (solid, gas):** No data available.
j) **Upper / lower flammability or explosive limits:** No data available.
k) **Vapour pressure:** No data available.
l) **Vapour density:** No data available.
m) **Relative Density:** 1.52g/ml @ 20°C. (water = 1).
n) **Solubility (ies):** 0g/l @ 25°C (water).
o) **Partition coefficient: n-octanol / water:** No data available.
p) **Auto-ignition temperature:** No data available.
q) **Decomposition temperature:** No data available.
r) **Viscosity:** No data available.
s) **Explosive properties:** No data available.
t) **Oxidising properties:** No data available.

9.2 Other Information:	No data available.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity	If stored and handled in accordance with standard industrial practices no hazardous reactions are known.
10.2 Chemical stability	Stable at room temperature.
10.3 Possibility of Hazardous Reactions	No data available.
10.4 Conditions to Avoid	Heat sources, sources of ignition and direct sunlight.
10.5 Incompatible Materials	No data available.
10.6 Hazardous decomposition products	During combustion carbon monoxide and carbon dioxide will be generated.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:	Not classified. The product does not contain ingredients classified as toxic above the classification thresholds
Irritation:	Not classified. The product does not contain ingredients classified as irritant above the classification thresholds.
Corrosivity:	Not classified. The product does not contain ingredients classified as corrosive above the classification thresholds.
Sensitisation:	Not classified. The product does not contain ingredients classified as sensitising above the classification thresholds.
Repeated dose toxicity:	Not classified. The product does not contain ingredients classified as toxic above the classification thresholds.
Carcinogenicity:	Not classified. The product does not contain ingredients classified as carcinogenic above the classification thresholds.
Mutagenicity:	Not classified. The product does not contain ingredients classified as mutagenic above the classification thresholds.
Toxicity for reproduction:	Not classified. The product does not contain ingredients classified as repro. toxic above the classification thresholds
Further toxicological information:	No further data available.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity:	Not classified. The product does not contain ingredients classified as toxic above the classification thresholds.
12.2. Persistence and degradability:	No data available.
12.3. Bioaccumulative potential:	No data available.
12.4. Mobility in soil:	No data available.
12.5. Results of PBT and vPvB testing:	Not applicable.
12.6. Other adverse effects:	No data available.
12.7. Additional information:	No additional data available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods:	Dispose of in accordance with local regulations. Do not empty product into drains.
13.1.1. Product / packaging disposal: **Waste codes / waste designations according to LoW:**	According to the European catalogue, waste codes are not product specific. The user should assign waste codes, preferably in discussion with waste disposal authorities.
13.1.2. Waste treatment-relevant information:	No data available.
13.1.3. Sewage disposal-relevant information:	No data available.
13.1.4. Other disposal recommendations:	No further data available.

SECTION 14. TRANSPORT INFORMATION

	Road ADR	**Railway RID**	**Sea - IMGD Code**
14.1. UN Number	UN1993	UN1993	UN1993
14.2. UN proper shipping name	FLAMMABLE LIQUID N.O.S.	FLAMMABLE LIQUID N.O.S.	FLAMMABLE LIQUID N.O.S.
14.3. Transport hazard class(es)	3 LQ: 5L E1	3 LQ: 5L E1	3 LQ: 5L E1
14.4. Packing Group	III	III	III
14.5. Environmental hazards	Not applicable	Not applicable	Not applicable
14.6. Special precautions for user	-	-	-
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code"	Not intended for bulk transportation.	Not intended for bulk transportation.	Not intended for bulk transportation.

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture	The product has been assessed in accordance with CHIP and CLP.
15.2 Chemical Safety Assessment.	A chemical safety assessment has not been carried out.

SECTION 16. OTHER INFORMATION

Indication of changes:
Section changed from previous version: SECTIONS 2 & 16.

Abbreviations / Acronyms used:
CLP – Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
CAS# - Chemical Abstracts Service number.
PBT - Persistent, Bioaccumulative and Toxic substance.
VPvB - Very Persistent and Very Bioaccumulative.
UN - United Nations.
REACH – Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.

Relevant R-phrases and/or H-statements (number and full text):
According to Regulation (EC) No 1278/2008 (CLP/ GHS);
H226; Flammable liquid and vapour
H304; May be fatal if swallowed and enters airways
H336; May cause drowsiness or dizziness
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243: Take precautionary measures against static discharge.
P370+P378: In case of fire: Use foam, dry powder or CO2 to extinguish.
P403+P235: Store in a well-ventilated place. Keep cool.
P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

This Product Safety Data Sheet was prepared in compliance with article 31 and Annex II of the EU REACH regulation as well as their relevant amendments, on the approximation of laws, regulations and administrative provisions relative to the classification, packaging and labelling of dangerous substances and preparations.
This product should only be used as stated in Hodgson literature. It is the responsibility of the persons in receipt of this Product Safety Data Sheet to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose of or in any way come in to contact with the product. If the recipient subsequently produces a formulation containing the Hodgson product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from the Hodgson Product Safety Data Sheet to their own Product Safety Data Sheet in compliance with article 31 and Annex II of the EU REACH regulation.
All information and instructions provided in the Product Safety Data Sheet are based on the current state of scientific and technical knowledge at the date indicated on the present Product Safety Data Sheet. Hodgson shall not be held responsible for any defect in the product covered by this Product Safety Data Sheet, should the existence of such defect not be detectable considering the current state of scientific and technical knowledge.

Technical Information Paper

TIP-102

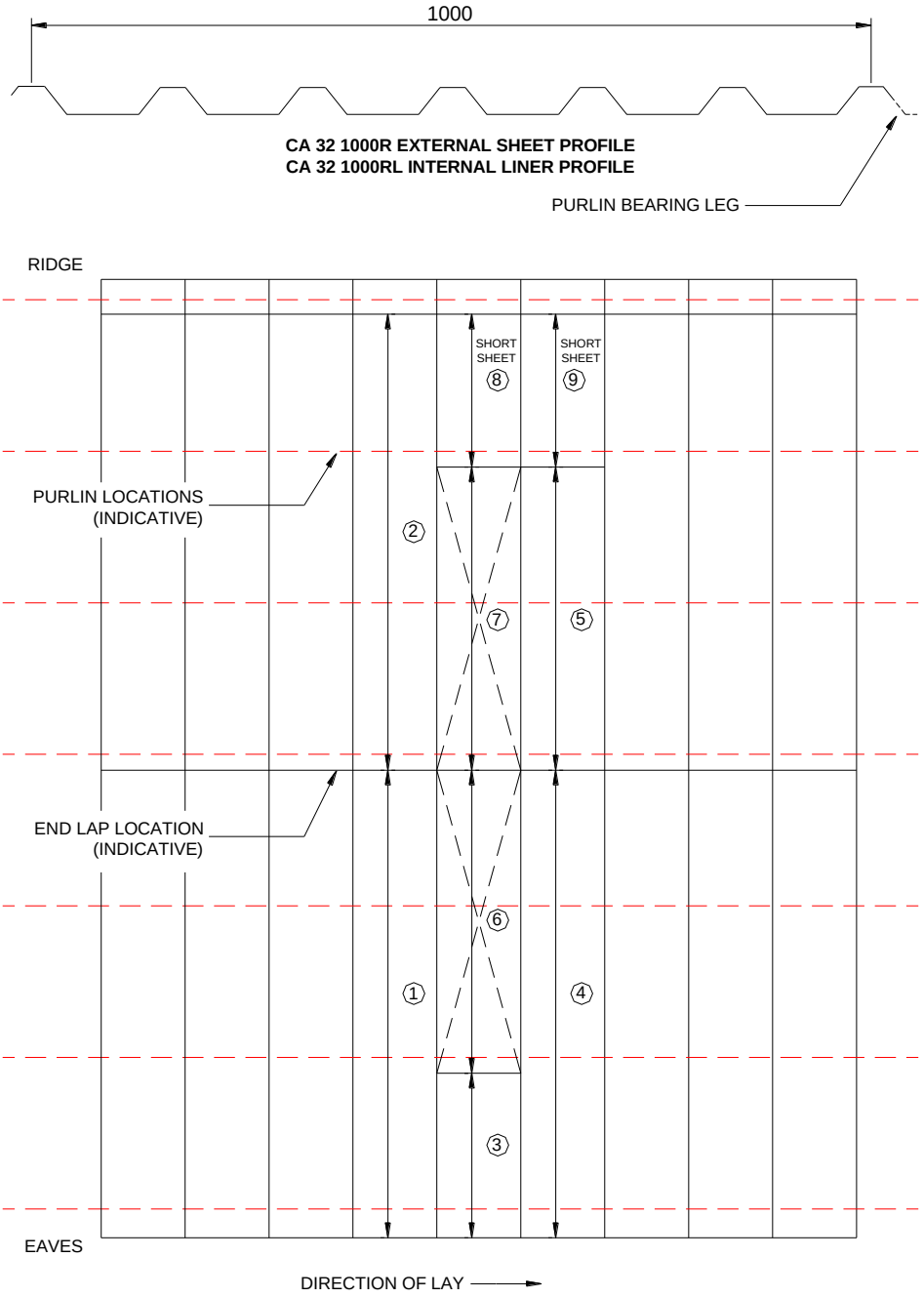
Therma-light Rooflight Installation

CA | GROUP

TIP-102
Rev: 4
October 2020
Approved

CA Building Products recommend all Therma-light GRP rooflights both liner and external sheets overlap the steel sheets at both side laps, plus double and multi-spanning rooflights are all stipulations for Non-Fragility in accordance with ACR[M]001:2019 'Test For Non-Fragility of Profiled Sheeted and Large Element Roofing Assemblies [fifth edition]', refer to Technical Information Paper TIP-101 for CABP System Non-Fragility Tolerances.

When installing CA 32 1000R external Therma-light GRP rooflights as the external skin of the Twin-Therm® assembly, as CA 32 1000RL liners or as a single skin roof, it is always necessary to have a continuous lap across the top of the upper light with asymmetrical sheets (refer to Fig 1).



* NUMBERS INDICATE SEQUENCE OF ERECTION
* ARROWS INDICATE OVERALL SHEET LENGTH

Fig. 1 – Correct Installation

Image 1 indicates the additional short sheet above and to one side of the rooflight, which is the standard recommendation for the Twin-Therm® roof cladding system, as stated above. Image 2 does not include the recommended additional short sheet, which invalidates any guarantees offered for the Twin-Therm® roof cladding system, as the purlin bearing leg of the CA 32 1000R external profiled sheet is effectively on the water line of the roof, which will lead to premature degradation of the steel coated sheet.

In addition, when installing Twin-Therm® external Therma-light GRP rooflights in a curved (or barrel vault) application it is always necessary to have a continuous run of PVC foam pad on top of MatriX Bars, to prevent the GRP from bruising of fracturing over the MatriX Bar (refer to Twin-Therm® specification drawings for information).

Image 1 – Acceptable (with short sheet)

Image 2 – Not acceptable (without short sheet)

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Technical Information Paper

TIP-106

Walkable, Non-walkable & Walking on Roof Cladding

CA | GROUP

TIP-106
Rev: 7
October 2020
Approved

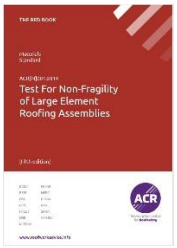
Technical Information Paper

Walkable, Non-walkable & Walking on Roof Cladding

The following information has been compiled to assist roofing contractors, building owners and / or tenants to access the CABP roof cladding systems safely, without damaging the roof system.

Most importantly if you are unsure ask someone with competence and the relevant experience. Always think safety first!

Detailed guidance / information is available in the following documentation regarding roof work;

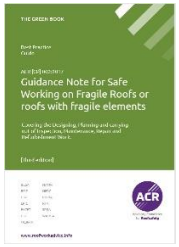


Red Book

ACR[M]001:2019 'Test For Non-Fragility of Profiled Sheeted and Large Element Roofing Assemblies [fifth edition]', which summarises the testing criteria for Non-Fragility classification of roof assemblies.

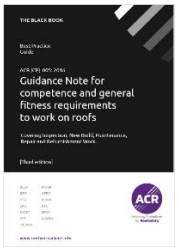
Orange Book

ACR[CP]001: 2016 Rev 5, 'Recommended Practice for work on Profiled Sheeted Roofs', which outlines the responsibilities of all concerned with a building, pre and post construction.



Green Book

ACR[CP]002: 2017 Rev 3, 'Guidance Note for Safe Working on Fragile Roofs or roofs with fragile elements' [second edition] which covers Designing, Planning and carrying out of Inspection, Maintenance, Repair and Refurbishment Work.



Black Book

ACR[CP]005: 2016 Rev 3, 'Guidance note for competence and general fitness requirements to work on roofs' covering inspection, new build, maintenance, repair and refurbishment work.

(The ACR documents can be downloaded free of charge from the Advisory Committee for Roofsafety (ACR) website here; www.roofworkadvice.info/html/publications.html).

Among the more popular misconceptions within the metal roofing and cladding industry, the following reigns supreme: "0.70mm Liner Panels are Walkable and, therefore, Non-Fragile – stands to reason, doesn't it!" Or does it?

The two critical parts of the dichotomy can be summarised like this:

Non-Fragile

A roof assembly, if tested to ACR[M]001:2019 'Test For Non-Fragility of Profiled Sheeted and Large Element Roofing Assemblies [fifth edition]' and supported by the correctly completed Annex "C" from ACR[CP]001:2016 Rev 5 'Recommended Practice for Work on Profiled Sheeted Roofs', can be trusted to prevent a person from falling through the fully and finally fixed assembly, i.e. is Non-Fragile, however, is NOT walkable, particularly on shallow liner panel profiles (17-20mm deep).

CA Building Products have proven by test for Non-Fragility and air leakage that our CA 17 1000L 0.4mm liner contributes to extremely good results.

The ductility of the metal consistently absorbs the load imposed by the ACR[M]001:2019 test. At the same time, the ability of the profile to flex caters for the vagaries of the steelwork tolerance, proving its overall practical contribution.

Walkable

This is an assembly that, when walked upon correctly, will neither fail nor show visual damage. Usually a walkable liner panel is an external weather sheet profile (32mm deep minimum) used as a liner. It CAN NOT be guaranteed to be Non-Fragile unless tested. Built up through-fix roof designs such as Twin-Therm® benefit from using 0.4mm / 0.7mm liners (17mm deep) Non-Fragile, but not Walkable. River-Therm®, favours the Non-Fragile and Walkable 0.7mm liner panel (32mm deep) as there is a greater need to walk around the roof to install these more complex roof designs.

Many people believe this is not within their scope but the reason why it most definitely should be considered is very simple:

Be SELFISH - it may be you inspecting a roof on a liner panel that you have been informed is walkable, when in fact it may not be.

Ask yourself the question - is it also Non-Fragile?

In accordance with the principles of ACR[M]001:2019, CA Building Products' Twin-Therm®, River-Therm® and single skin roof cladding systems have been extensively tested, incorporating GRP rooflights and are classified as a Class B Non-Fragile assemblies. For further information refer to CABP Technical Information Paper TIP-101.

With regard to walking on completed roof assemblies, please refer overleaf for appropriate "how to" and "how not to" advice.

Twin-Therm®

Twin-Therm® is designed to withstand the loadings in accordance with the new Euro Codes to EN 1991 (wind & snow). Project specific calculations are required however based on location, height, purlins spans, etc. In addition Twin-Therm® is also designed to accept the point load as described in BS 5427: 0.9kN / 125mm square.

River-Therm®

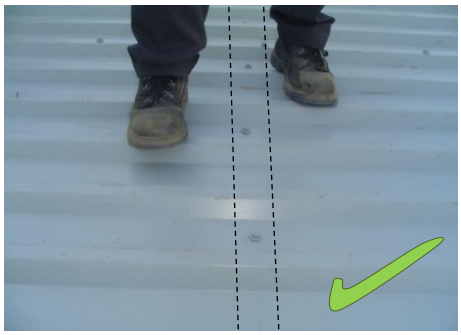
River-Therm® is designed to withstand the loadings in accordance with the new Euro Codes to EN 1991 (wind & snow). Project specific calculations are required however based on location, height, purlins spans, etc.

In addition River-Therm® is also designed to accept the point load as described in BS 5427: 0.9kN / 125mm square.

Where not to walk

The following is sound practical advice for walking across all roof types. Do not walk on or about . . .

General Access:

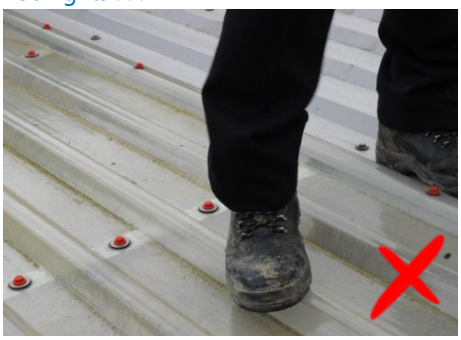


To traverse across the slope (verge to verge) keep your feet adjacent to the fixing line or as close to the fixing line as possible.

General Access:

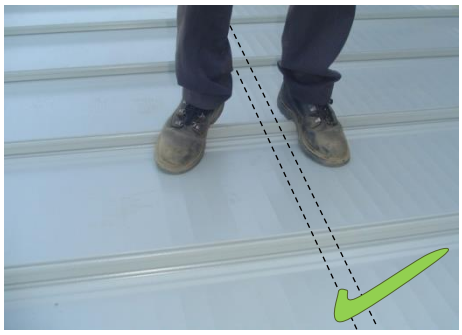
Generally River-Therm® can be walked upon in any position whether it is across the slope, traversing, ascending / descending (eaves to ridge) it is recommended to walk in the pan of the sheet.

Rooflights . . .



. . . Keep clear of all rooflights which are denoted by red fixings around the perimeter. Although the GRP rooflights may well be Non-Fragile, walking across rooflights may affect the seals and could damage them, resulting in premature degradation of the rooflight assembly.

To ascend or descend (eaves to ridge) the slope, keep your feet into the bottom of the sheet pan or as much as is possible, this will prevent localised damage of the crowns on single spanning sheets.



It is possible to walk on the profile itself provided this is on or immediately adjacent to the support stools/purlin line.

Flashings . . .

Do not walk mid span of fixing lines, this will induce localised damage of the crowns on single spanning sheets.

Walking mid span of purlin lines will damage the profile of the sheet.

. . . ridge flashings are not strong enough to support the weight of a man without affecting the fixings and seals.

The Competent Person

Before commencing maintenance or remediation works attention is drawn to the Black Book ACR[CP]005: 2016 Rev 3, 'Guidance note for competence and general fitness requirements to work on roofs' which identifies the requirement for a competent workforce.

It has been assumed that proper and adequate 'Risk Assessments' and 'Method Statements' are produced prior to accessing any roof and are specific to suit each particular project for the safety of site operatives who may undertake any activities at roof level. Where horizontal life lines have been installed and are to be utilised as part of the safe system of work, ensure the system has been validated and the correct PPE is available. Check the maximum number of users that the system has been designed for!

Fully Tested Horizontal Life Line Systems

All testing of horizontal life lines systems on metal cladding must be conducted in accordance with the guidelines set out by the Advisory Committee for Roofsafety (ACR), specifically relevant to the Magenta Book; https://www.the-acr.org/publications/the-magenta-book/

Unless fully designed (in conjunction with CA Group Technical Department) and fully tested systems are used, then any CA Group Limited guarantees offered with a CA roof system will be invalidated, notwithstanding the issue surrounding safety of the individuals operating a non-tested safety line system.

The current proprietary horizontal life line systems that have been fully tested in accordance with ACR guidance which are also based on agreed connection details (in no particular order) that can be installed on our Twin-Therm® roof cladding system are;

- SFS SOTER system (https://www.sfsintec.co.uk/mo/uk/en/web/fall_protection/products/horizontal_systems/horizontal_systems.html)
- Roodsafe system (https://www.roodsafe.com/products/working-at-height-safety-systems/horizontal-and-vertical-8mm-cable-based-fall-arrest-systems)
- 3M Roofsafe Spiratech system (https://www.3m.com/3M/en_US/fall-protection-us/products/permanent-lifeline-systems/)
- MSA Latchways® Constant Force system (https://gb.msasafety.com/p/000460000200001001)

Similarly, the proprietary horizontal life line systems that have been fully tested in accordance with ACR guidance which are also based on agreed connection details (in no particular order) that can be installed on our River-Therm® roof cladding system are;

- SFS SOTER system (https://www.sfsintec.co.uk/mo/uk/en/web/fall_protection/products/horizontal_systems/horizontal_systems.html)
- Roodsafe system (https://www.roodsafe.com/products/working-at-height-safety-systems/horizontal-and-vertical-8mm-cable-based-fall-arrest-systems)
- MSA Latchways® Constant Force system (https://gb.msasafety.com/p/000460000200001001)

Any system not mentioned above, must not be installed onto any of our roof cladding systems.

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Technical Information Paper

TIP-201

FireWalls

CA | GROUP

TIP-201
Rev: 6.2
March 2021
Approved

Technical Information Paper
FireWalls

The information contained within this technical information relates to the 'Fire Resistance Performance of the Lightweight External Wall Assemblies' supplied by CA Building Products. Over many years, CA Building Products have commissioned Warringtonfire to undergo numerous full scale furnace tests in accordance with BS 476-20:1987 'Fire tests on building materials and structures. Part 20: Method for determination of the fire resistance of elements of construction (general principles)' and BS 476-22: 1987 'Fire tests on building materials and structures. Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction' (refer to TIP-200 for further reading on fire testing and standards).

Tests commissioned in early 2020 resulted in modifications to the FireWall systems offered by CABP. Primarily these changes include the removal of riveting the liner panel side laps at 300mm centres and the removal of the red base to the MatriX spacer system brackets, for the Twin-Therm® FireWall that achieves 15 minutes insulation Integrity. This has resulted in the Twin-Therm® FW15 FireWall being withdrawn and replaced by the standard Twin-Therm® wall.
The table below represents the CA Building Products FireWall offering;

System	Twin-Therm® Wall *	Twin-Therm® FW60 **	Twin-Therm® FW120
Structural Integrity (Minutes)	240	240	240
Insulation Integrity (Minutes)	15	60	120
Liner Riveted/Stitched @ 300mm centres	No	No	No
MatriX Bracket Base	Blue	Red	Red
Insulation Type	Therma-quilt	Therma-rock @ 45kg/m^3	Therma-rock @ 45kg/m^3
Minimum Insulation Thickness (mm)	120	100	2 x 50
Minimum U-value (W/m^2K)	0.35	0.35	0.35

* Twin-Therm® Wall supersedes Twin-Therm® FW15
** Twin-Therm® FW60 available subject to minimum order quantities and limited to a 0.35 W/m^2K U-value/construction depth – refer to Table 3 & 4 below for further information and/or contact CA Building Products.

Image 1: Twin-Therm® Wall Test Set Up

Image 2: Twin-Therm® Wall Test @ 240mins

Image 3: Twin-Therm® FW120 Test Set Up


Image 4: Twin-Therm® FW120 Post-Test

Further system parameters are detailed here. Please note the restricted system build-up, in particular the FW60 system.

Twin-Therm® Wall

CA Building Products' Twin-Therm® standard wall design, which supersedes Twin-Therm® FW15, achieves 240 minutes integrity and 15 minutes insulation integrity, incorporating a single layer of Therma-quilt insulation (refer to TIP-502 for further information). Table 2, provides pertinent information to the available system constructions, based on U-value requirements. Note: refer to FireWall Support on system requirements.

Table 2: Twin-Therm® Wall

U-value (W/m^2K)	0.35	0.30	0.26	0.24	0.21	0.19	0.18	0.16	0.15	0.14
T-quilt	TQ120	TQ140	TQ160	TQ180	TQ200	TQ220	TQ240	TQ260	TQ280	TQ300
MatriX Bracket	MX120	MX140	MX160	MX180	MX200	MX220	MX240	MX260	MX280	MX300

Twin-Therm® FW60

CA Building Products' Twin-Therm® FW60 FireWall design achieves 240 minutes integrity and 60 minutes insulation integrity, incorporating a single layer of semi-rigid Therma-rock stonewool insulation @ min. $45kg/m^3$. Table 4, provides pertinent information to the available system constructions, based on U-value requirements. Note: refer to FireWall Support on system requirements.

Table 4: Twin-Therm® FW60

U-value (W/m^2K)	0.35	0.30	0.26	0.24	0.21	0.19	0.18	0.16	0.15	0.14
T-rock @ $45kg/m^3$	TR45-100	-	-	-	-	-	-	-	-	-
MatriX Bracket	MX120FW	-	-	-	-	-	-	-	-	-

Twin-Therm® FW120

CA Building Products' Twin-Therm® FW120 FireWall design achieves 240 minutes integrity and 120 minutes insulation integrity, incorporating a double layer of semi-rigid Therma-rock stonewool insulation @ min. 45kg/m^3. Table 5, provides pertinent information to the available system constructions, based on U-value requirements. Note: refer to FireWall Support on system requirements.

Table 5: Twin-Therm® FW120

U-value (W/m^{2}K)	0.35	0.30	0.26	0.24	0.21	0.19	0.18	0.16	0.15	0.14
T-rock @ 45kg/m^3	2 x TR45-50	2 x TR45-60	TR45-60 TR45-80	2 x TR45-80	TR45-80 TR45-100	2 x TR45-100	-	-	-	-
MatriX Bracket	MX120FW	MX140FW	MX160FW	MX180FW	MX200FW	MX220FW	-	-	-	-

Warringtonfire Tests & Assessments

The information provided in this paper relates to the Warringtonfire tests to BS 476-22 and subsequent assessment reports for the systems, based on physical tests to BS 476-22: 1987. Assessment reports allow system providers to cover variations in specification and design, without the need to actually test every deviation in system design, such as;

- Liner panel profile variants; ≥ 0.4mm thick
- External profile variants; ≥ 0.5mm thick
- External profile orientation; horizontal, vertical and diagonal
- U-value (construction depths tested)
- Incorporation of 2 or 3mm thick aluminium PPC feature bands
- Twin-Therm® SolarWall® applications
- Twin-Therm® Prime Rainscreen applications

All Warringtonfire fire test and assessments reports are available upon request from CA Group Technical Department.

FireWall Support

All Warringtonfire assessments are based on the following assumptions in terms of support to the wall;

'...any supporting structure is capable of providing the necessary support for the external wall, without detriment to its ability to satisfy the integrity criterion for the required period of 240 minutes.'

'Sheeting rail components may be provided with slotted fixing holes where they are affixed to cleats on the structural steel columns to allow for adequate free expansion, however based on successful test evidence on 'unslotted' fixings this detail is not a prerequisite.'

'Walls which are not fully supported along their bottom horizontal edge, or which are not supported from a fire protected eaves beam in the case of no support at the bottom edge, may have a detrimental influence on the overall fire performance of the wall. It is therefore assumed that the proposed walls will be provided with horizontal base support, or in the absence of any base support a fire protected eaves beam (or cladding rail)*.'*

Typical Base Support Details

Typically, minimum 50mm edge beam, the base support detail will be dependent upon the level of performance required from the system. For instance, there are many applications that require 60 minutes structural integrity and 15 minutes insulation (60/15), in lieu of the tested 240/15. The liner closure flashing must be amended to suit the structural integrity period required;

Table 6: Liner Closure Flashing				
Structural Integrity (minutes)	60	90	120	240
Closure Flashing Material	0.7mm Pre-coated steel	0.9mm galv. steel	1.2mm galv. steel	1.6mm galv. steel

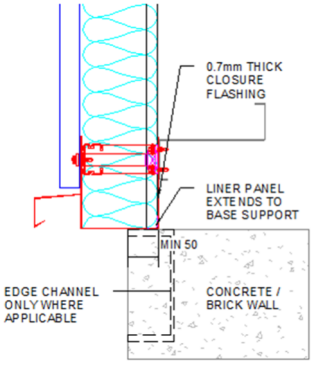

Image 5: 60 minutes structural integrity

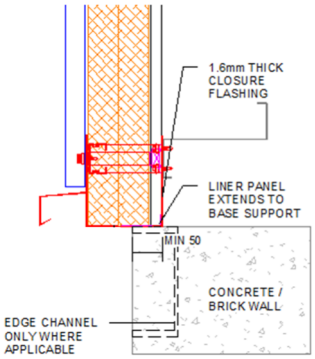

Image 6: 240 minutes structural integrity

For further guidance please contact CA Group's Technical Department at technical@cagroup.co.uk

Technical Information Paper

TIP-302

Inspection & Maintenance

CA | GROUP

TIP-302
Rev: 4.2
October 2020
Approved

Summary Overview of Inspection Frequency Requirement

Inspection and maintenance are mandatory requirements of guarantees available for materials supplied for the building envelope by CA Group. Too often roofs and gutters are neglected which can only lead to premature degradation of the system.
The following is a summary overview of the requirements to inspect and maintain the materials incorporated within the building envelope, further detailed clarification of the actions required are given within the body of this document.
Roof and Wall Cladding including ACM
The CA Group roof and wall cladding systems guarantee inspections to be carried out as follows;

- Building Handover
- 12 months after building handover
- 48 months from building handover
- Following the completion of this inspection the frequency of future inspections (typically 3 years / maximum 5 years) should be established for the remainder of the building life

Inspection and maintenance requirements stated are a specific requirement of the CA Group Limited guarantee, which are based on a competent person's assessment of deterioration of the system(s) and not that of the Confidex® Guarantee for external coatings. System specific maintenance procedures are outlined within the product guarantee documentation.

Gutters

CA Group recommends that the gutter inspection should be carried out in conjunction with the main building envelope inspections. Details of inspectorate, inspection, findings, repair and maintenance work undertaken must be recorded as described in product guarantee documentation. If maintenance is not undertaken on a regular basis you may encounter problems such as those indicated in the Images contained in this document, which impact on the drainage of the roof leading to water entering the building;
CA Group gutters require more frequent inspections than the roof and wall cladding systems, as follows;

- Building Handover
- 12 months after building handover
- Following the completion of this inspection the frequency of future inspections and maintenance (within a 12 month period) should be established for the remainder of the building life.

Polyester Powder Coated Items

Details of inspectorate, inspection, findings, repair and maintenance work undertaken must be recorded as described in product guarantee documentation. The material should be cleaned at regular intervals of not more than three months

Inspections

We recommend all inspections and any work undertaken on buildings are only carried out by competent persons trained for such purpose and that adequate and appropriate safe access is provided at all times. Safety precautions must be taken for the whole duration of inspections and works. HSG 33 'Health & Safety in Roofwork', available from the HSE, provides detailed advice in this subject.

Maintenance

If for any reason it is necessary to remove any external roof sheets Therma-lights and internal lining, the work should always be undertaken by competent persons. If in doubt, advice should be sought from CA Group as to the method of proper removal and replacement of the components to ensure the integrity of the system and any system guarantee applicable.

When using cleaning, maintenance and repair products noted throughout the system guarantee appendices. In the interests of personal safety, health and hygiene, product manufacturers' advice and instructions on the use of their products must be strictly followed.

When washing or cleaning is required, only use a hose (with normal tap pressure, i.e. up to 80psi), at no point should pressure washers be used as this will cause damage due to the water pressure being delivered which could be in excess of 2,000psi.

Safety

The summary of routine maintenance advice (within the inspection and maintenance requirements for the systems) makes no recommendations in respect of site safety requirements to access and traverse the roof safely during maintenance inspections and working procedures. Competent persons / bodies undertaking such maintenance inspections and working procedures should prepare proper and adequate risk assessments and method statements for each maintenance inspection and working procedure. Further information giving clarification on traversing the roofing systems can be found in TIP-106 - Walkable, Non-Walkable & Walking on Roof Cladding.

General Guidance on Inspection

CA Group recommend all inspections and any work undertaken on buildings are only carried out by competent persons trained for such purpose and that adequate and appropriate safe access is provided at all times, for further information refer to Advisory Committee for Roofsafety, ACR[CP]005, 'Guidance note for competence and general fitness requirements to work on roofs' covering inspection, new build, maintenance, repair and refurbishment work.

Safety precautions must be taken for the entire duration of any inspections and work.

Advice on this subject is detailed in Health & Safety Guide 33, 'Health & Safety in Roofwork' and Advisory Committee for Roofsafety ACR[CP]001 'Recommended Practice for Work on Profiled Sheeted Roofs. These documents are available from the HSE and ACR websites.

When using cleaning, maintenance and repair products, noted throughout the Appendices of the System Guarantee, in the interests of personal safety, health & hygiene, product manufacturers'/suppliers' advice and instructions on the use of their products/supplies must be strictly followed.

Inspection of the System

Inspections based upon good practice must be carried out throughout the life of the building, by competent persons. Inspections are undertaken to highlight for instance any changes in the condition of the system, particularly as you approach the end of the period of guarantee, which is the length of time before a building owner needs to consider whether to repaint or refurbish.

Roof and wall cladding system inspections should be conducted during and after the cladding is installed by the cladding contractor, at building handover, 12 months after building handover and 48 months from building handover. Following the completion of this inspection the frequency of future inspections (typically 3 years / maximum 5 years) should be established for the remainder of the building life, but also 12 months after building handover, then typically every three years to maximum every five years, depending upon the competent person(s) assessment of deterioration to the system(s), since the previous inspection. Whereas gutter system inspections, should be carried out at building handover and 12 months after building handover. Following the completion of this inspection the frequency of future inspections and maintenance (within a 12 month period) should be established for the remainder of the building life, would be conducted on a maximum 12 monthly basis. Additionally Powder Coated items should have Inspection and maintenance carried out at building handover and every 3 months following building handover.

The assessment should include any evidence of change to the local environment, which could cause premature degradation of the system(s). In addition, we recommend buildings, particularly roofs, are inspected following periods of severe inclement weather e.g. high winds, gales, etc.

Within 1 month of discovery of any damage to the system(s), effective and appropriate remedial work must be implemented and completed. A written record must be kept in respect of all inspections, maintenance, cleaning and repair work stating the following information (refer to Inspection along with the Maintenance Record Template for Building Envelope):

1. Name and details of competent person/inspector/inspection body
2. Date of inspection
3. Inspection report findings
4. Details of all cleaning replacement, repair and maintenance work
5. Date item 4 was undertaken
6. Name and details of competent persons/bodies undertaking item 4
7. Competent person and Beneficiary signature for item 6

Prior to conducting any inspections, particularly on roofs, ensure proper and adequate method statements and risk assessments are in place and that access is suitable and any horizontal life line systems have been checked and the test certification has been validated within the last twelve months, i.e. are approved for use. Prior to accessing the roof to undertake the inspection please read CABP Technical Information Paper TIP-106 'Walkable, Non-Walkable & Walking on Roof Cladding', which states; do not walk on rooflights, flashings, etc.

Inspection Record Template for Building Envelope

Project	**Competent Person / Inspector**
Area / Grid Lines	**Date of Inspection**

Description	Checked for Compliance Yes	No	Comments	Date Closed Out	Signed Off By
Gutters - check condition of					
joints, coatings, detritus and blockages					
Actions Ensure all detritus from the gutter and any blocked outlets is bagged and removed from the gutters. Check integrity of gutter joint for rips and gouges Check integrity of gutter coating for scratches and gouges					
Roof (Metal) - check condition of					
sheets and fixings					
Actions Check the surface of the sheets have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Check sheets for corrosion to the edges of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					
Roof (GRP rooflights) - check condition of					
sheets and fixings					
Actions Check the surface of the sheets have been washed by rain action on the surface.					

Heavy deposits of dirt or mould should be noted. Check sheets for damage to the surface or damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					
Description	**Checked for Compliance Yes**	**No**	**Comments**	**Date Closed Out**	**Signed Off By**
Roof Interfaces - check condition of					
ridge, eaves, parapet, verge and penetrations					
Actions Check the surfaces have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted Check fillers have not become loose or dislodged. Review penetrations are free flowing and not allowing build-up of debris behind.					
Roof attachments - check condition of					
pv's, safety line systems etc.					
Actions Connections and fixings should ideally be left undisturbed, however, if loose, faulty or inappropriate components used this should be noted					
Walls - check condition of					
sheets and fixings					
Actions					

Check the surface of the sheets have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					

Description	Checked for Compliance Yes	No	Comments	Date Closed Out	Signed Off By
Wall Interfaces - Check condition of					
Door, window, drip and feature flashings also penetrations					
Actions Check the surfaces have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted Check fillers have not become loose or dislodged. Review penetrations are free flowing and not allowing build-up of debris behind.					
Wall - CF40 - Check condition of					
Actions Check the surface of the sheets have been washed by rain action on the surface. Heavy deposits of dirt or mould should be noted.					

Check sheets for damage to the surface or damage to the structure of the sheet. Check the surfaces of the frame have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted.					

Wall – SolarWall® or Prime Rainscreen - Check condition of					
Actions Check the surface of the sheets have been washed by rain action on the surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted Check fillers have not become loose or dislodged.					
Description	**Checked for Compliance** **Yes**	**No**	**Comments**	**Date Closed Out**	**Signed Off By**

Polyester Powder Coated Items - Check condition of					
Actions The coating is to be closely examined for abrasions, scratches or scuffs and any anomalies noted. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					

Other

Any concern not specifically noted above. Contact The Company for advice.					

Date of next Inspection

Maintenance Record Template for Building Envelope

Project		**Competent Person / Inspector**	
Area / Grid Lines		**Date of Inspection**	

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Gutters - check condition of					
joints, coatings, detritus and blockages					
Actions Clear all detritus from the gutter along with any blocked outlets then bag and removed from the gutters. Check integrity of gutter joint for rips and gouges and repair by welding a membrane patch over effected area as recommended. Check integrity of pre laminated gutter coating for scratches and gouges, repair by welding a membrane patch over effected area as recommended.					
Roof (Metal) - check condition of					
sheets and fixings					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. Damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Corrosion to the edges of the sheet. Repair as recommendations Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Roof (GRP rooflights) - check condition of					
sheets and fixings					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If there is damage to the surface or damage to the structure of the sheet. Replace as per recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations.					
Roof Interfaces - check condition of					
ridge, eaves, parapet, verge and penetrations					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If sheets have damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations. If fillers have become loose or dislodged, reinstate or replace as recommendations. If penetrations are not free flowing therefore allowing build-up of debris behind and damming contact the company for recommendations					
Roof attachments - check condition of					
pv's, safety line systems etc.					

Actions Following assessment of connections and fixings, if loose, faulty or inappropriate components used, recommendations for repair or replacement should be sought from the system manufacturer					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Walls - check condition of					
sheets and fixings					
Actions If the surface of the sheets have been not washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. Damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations					
Wall Interfaces - Check condition of					
Door, window, drip and feature flashings also penetrations					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If sheets have damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations. If fillers have become loose or dislodged, reinstate or replace as recommendations.					

If penetrations are not free flowing therefore allowing build-up of debris behind and damming contact the company for recommendations					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Wall - CF40 - Check condition of					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If there is damage to the surface or damage to the structure of the panel. Replace as recommendations. If the surface of the frame has not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended.					
Wall – SolarWall® or Prime Rainscreen - Check condition of					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If sheets have damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations. If fillers have become loose or dislodged, reinstate or replace as recommendations.					
Polyester Powder Coated Items - Check condition of					
Actions If coating has abrasions, scratches or scuffs, contact the company for recommendations of repair The surface is subject to regular cleaning at intervals of not more than three months using a mild detergent and warm water					

Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations.					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Other					
Any concern not specifically noted above. Contact The Company for advice.					

Date of next Inspection	

Maintenance

Roof, wall cladding & interface junctions

A written record must be kept in respect of all cleaning, replacement, repair and maintenance work stating the date and by whom the work was undertaken: refer to *Inspection* along with the *Maintenance Record Template for Building Envelope*. Any actions opposed to the recommendations noted, except as agreed, in writing, by The Company, will invalidate The Guarantee.

Washing/Cleaning

Rainfall alone is often sufficient to keep exterior surfaces looking clean and bright. However, to achieve maximum life from the product, it is important that accumulations of dirt and debris which are not removed by normal rain washing are removed regularly by cleaning. This reduces the risk of 'wet poultice' corrosion, i.e. water retention due to debris.

Washing may be carried out with a hose and a soft bristle brush, using fresh water. In areas where heavy industrial deposits dull the surface, a solution of fresh water and good quality household detergent or proprietary cleaner may be applied to ensure thorough cleaning. For household detergents, use a maximum 10% solution; for proprietary cleaners, follow the manufacturer's recommendations. A thorough rinse with clean water must follow the wash. *(Note: only use a household type hose, with normal tap pressure, (i.e. ≤80psi). At no point should pressure washers be used as water pressure being delivered could be ≥2,000psi, which may result in damage to coatings and or components installed).*

Caution: when cleaning, the following points should be noted:

1. Stronger concentrations of cleaners than those recommended can damage coating surfaces.
2. Rinse thoroughly to remove all detergents after cleaning.
3. Organic solvents and abrasive cleaners should be avoided in cleaning any coated surface. Caulking components, tar and similar substances may be removed with mineral spirits, but wash the surfaces thoroughly afterwards.
4. Always clean coated surfaces from top to bottom and rinse immediately and thoroughly with fresh, clean water.
5. Over-cleaning or scrubbing can do more harm than good.

Mould/Fungal Growth

Some types of local environment are particularly conducive to mould growth, i.e. areas of wet, dark, wooded surroundings or low-lying marshland. In these areas, mould will grow, even on inert materials such as glass.

Mould/fungal growth can be removed by treatment with a basic solution of the following ingredients, by weight, which should be available from local chemical suppliers. Before using the first three of these ingredients, you should refer to the manufacturers' health and safety information.

Good quality household detergent or proprietary cleaner	0.50
Trisodium phosphate	3.00
5% sodium hypochlorite solution	25.00
Fresh water	71.50
	100.00

Before applying this mixture, wash down first, as explained under *Washing* (above), then apply the mixture to all surfaces by low-pressure spray or brush. All surfaces must then be rinsed with cold water within twenty-four hours.

Image showing area of heavy deposits not cleaned by rain action

Image showing buildup of heavy deposits and detritus

Local Damage Touch-Up (Metal Sheets)

During inspections, you may find that the coating has suffered some damage. It is better not to treat the surface of the product if it has been only slightly scuffed. If it is scratched more deeply, say, down to the substrate, the damage can be repaired easily by applying standard touch-up paint. It is important to ensure that the applied paint is no wider than the original scratch. To achieve this, the paint should be applied with an artist or child's medium to fine paintbrush. Touch-up paints are, of necessity, air-drying; over the years they will change colour differently from the original stoved coating. For this reason, it is good practice to keep the applied area as small as possible.

Should the system have suffered impact or structural damage please contact The Company for further advice.

Image showing damage to sub structure that will require rectification

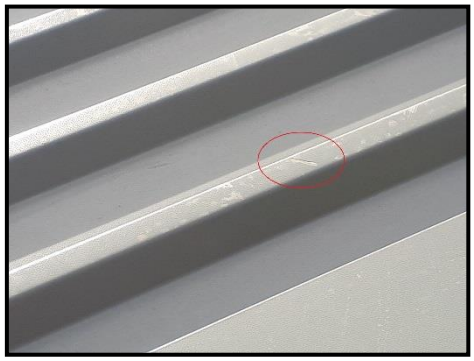

Image showing a scuff which has not penetrated the coating surface

Fasteners/Fixings

Ideally these should be left undisturbed please contact The Company for advice.

Treatment of Edge Corrosion

Corrosion at the edges of the profiled steel cladding can be rectified and should be carried out by a specialist contractor, therefore, if edge corrosion is observed contact The Company prior to any remedial work being undertaken.

Image showing cut edge delamination

Image showing rectified cut edge delamination

Graffiti

Graffiti can be removed with specialist cleaners, and overpaint systems are available. These fall into three categories:

- Specialist graffiti products such as solvents and gels
- Waxy sacrificial anti-graffiti treatments can be post applied to pre-finished steel. These can be washed off, removing graffiti and the treatment at the same time. Re application of the treatment would then be required.
- Anti-graffiti coatings can also be applied. These render any graffiti easy clean off, using hot water or cleaning solutions and do not need re-application after the graffiti is removed.

Over-painting

External Sheets

Surface preparation and over-painting of cladding should be carried out by specialist contractors using approved maintenance paints. Please contact CA Group Technical Department for further information.

Bright White Lining Enamel

Bright white lining enamel has been designed for easy over-painting. When over-painting is deemed necessary, the panels or trays should be cleaned as explained under Washing (above) and painted with brush, roller or spray using a standard household undercoat and finish system. Cellulose-based paints should not be used.

High Reflect Liner

Surface preparation and over-painting of high reflect liner should be carried out by specialist contractors using approved maintenance paints. Please contact CA Group Technical Department for further information.

Rooflights

This inspection advice is based upon good practice. It must be carried out throughout the life of the building.

All items should be checked at building handover, 12 months after building handover and 48 months from building handover, then typically every three years to maximum every five years depending upon the competent person(s) assessment of deterioration to the system(s), since the previous inspection. Any actions opposed to the recommendations noted, except as agreed, in writing, by The Company, will invalidate The Guarantee.

Therma-light (GRP) Weather Sheet Inspection, Maintenance and Protection

1. We recommend inspection be carried out at the same time as the metal weathering sheets and details of inspection – findings and maintenance work undertaken must be recorded as *Inspection* along with the *Maintenance Record Template for Building Envelope*. In addition we recommend that Therma-lights be inspected following periods of severe inclement weather e.g. high winds and gales.

2. Debris - Any build-up of debris, including any debris remaining after the Therma-light has been fixed - such as drilling swarf, loose fixings and rivets - should be carefully cleared from the Therma-light, using a soft brush to avoid scratching the surface of the GRP.

3. Dirt Retention - Areas retaining dirt should be cleared away with a soft brush or cloth and cleaned with a mild household detergent solution 10% in water to preserve the Therma-light. Rinse off with clean water.

4. Moss/Mould Growth - Any growth of moss on or around the Therma-light should be carefully removed and the Therma-light cleaned with a mild household detergent solution 10% in water and a soft cloth. Rinse off with clean water.

5. Local Damage - replace depending on severity, if in doubt contact the company, alternatively use the following guidelines, which is an extract from Technical Information Paper TIP-104 'GRP Therma-light Rooflight Damage';

Bruises

- A GRP Therma-light with an area of bruising (where the protective film has not been penetrated) no greater than a 50p piece (or a 30mm rooflight fixing washer) will remain serviceable and no further remedial action is required unless unsightly. For aesthetic reasons the client may insist on the Therma-light in question being replaced.

- If the area of damage is completely white (severe bruising) and is less than 30mm diameter, then the Therma-light must be replaced.

- Any Therma-light with an area of bruising greater than a 30mm diameter must be removed and replaced to maintain structural integrity, longevity and Non-Fragility of the assembly.

Punctures

- If the surface of the GRP Therma-light is slightly crazed but still hard then the rooflight can remain, with no detrimental effect.

- If a Therma-light is punctured or if the centre of the impact feels 'soft' (where the resin has been broken away from the glass fibres) or if the surface protection layer has been ruptured, then the Therma-light must be replaced, however small the area of damage.

Side Lap Damage

- Often caused during construction due to rope holding down the packs of rooflights, or indeed individual rooflights until such time they are installed. This damage is generally outside the critical zones for both Non-Fragility and durability, whilst unsightly the rooflights can be left insitu. Additional side lap stitching screws may be required either side to ensure Non-Fragility is not compromised.

6. Conditions of fixings - During inspections, care should be taken to check the condition of fixings including tightness and to replace or tighten them as necessary. Contact The Company for proper replacement procedure.

7. Should the Therma-lights suffer any structural or impact damage whatsoever, they must be replaced. Contact The Company for further advice if in doubt.

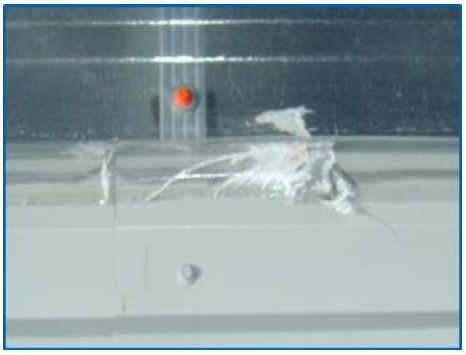

Image showing damage to GRP materials

Gutters

Gravity drainage system

Ensure all pipework is inspected in accordance with BS EN 12056-3, Section NE.5.1 states; "Gutters, rainwater pipes, outlets and gratings should be inspected and thoroughly cleaned once a year, or more often if the building is in or near to an industrial area or is near trees or may be subjected to extremes of temperature."

Siphonic drainage system

Ensure the system (outlets, tailpipes, horizontal carrier pipes, etc) is inspected in accordance with BS 8490: 2007, Section 12.1 states; "During the first year of operation, it is recommended that inspection, etc. should be carried out four times a year in order to establish an appropriate maintenance regime. The regime should take account of autumn leaf fall and the fact that intense rainfall tends to occur during summer storms."

When repairing damage to the membrane gutter coating, all repair patches should be fully welded with a minimum weld of 50mm in all directions from any damage i.e. if damage is 2mm wide by 50mm long then the repair patch is required to be a minimum of 102mm wide by 150mm long.

When cleaning out gutters any build-up of detritus should be collected using non-metallic tools, i.e. soft bristled brushes / brooms, PVC shovels (preferably snow shovels), etc. and ensure all detritus is bagged and removed from gutters and roof area.

Maintenance

1. General coating and galvanised material damage – repair as Gutter repair (Membrane).
2. Debris – any build up of debris including debris remaining after the roof installation e.g. drilling swarf, loose fixings, rivets – should be cleared from the gutters taking care not to scratch/damage the protective surface.
3. Dirt – areas of dirt compaction and any other vegetable matter i.e. soil, twigs, weeds, should be carefully removed and contaminated areas hosed down and cleaned with fresh water.
4. Outlets – check outlets are clear and re-protect welds if necessary as Gutter repair (Membrane).

Gutter repair (Membrane)

It is a mandatory requirement that the gutters are inspected after unloading at site and after gutter installation is completed. All mechanical damage etc. occurring during gutter transport, unloading and installation must be repaired immediately before or after installation (whichever is practical). The recommended method of repair is as follows:

1. Sweep gutters clean of debris.
2. In the area of damage, dry surface and remove any loose coating particles by gently scraping.
3. Remove any zinc salts or rust on exposed galvanised surface by abrasive cleaning using a non-metallic media.
4. Supplies of membrane patches and seam sealer can be obtained from 'The Company'.
5. Wash damaged area with water and washing-up liquid, rinse off and dry thoroughly before commencing any repair work.
6. Repair scratches in membrane with seam sealer (refer to gutter installation guide).
7. Where the membrane is badly scuffed, torn, ripped or damaged exposing the galvanised metal, heat weld a membrane patch to an area covering plus 50 mm all round the damaged section (refer to gutter installation guide). Apply seam sealer to the welded edges of the patch.
8. If the white paint coating to the inner gutter lining enamel is scratched or damaged, clean as (3) and repair by painting in line with recommendations.

If in doubt about any aspect of gutter inspection, maintenance or repair, contact 'The Company' for advice.

Image showing lack of cleaning in gutter potentially reducing capacity

Buildup of organic matter around outlet that will effect performance

Wall-lights – CF40

This inspection advice is based upon good practice. It must be carried out throughout the life of the building.

All items should be checked at building handover, 12 months after building handover and 48 months from building handover, then typically every three years to maximum every five years depending upon the competent person(s) assessment of deterioration to the system(s), since the previous inspection. Any actions opposed to the recommendations noted, except as agreed, in writing, by The Company, will invalidate The Guarantee.

Therma-light CF40 Polycarbonate Panel Inspection, Maintenance and Protection

1. We recommend inspection be carried out at the same time as the metal weathering sheets and details of inspection – findings and maintenance work undertaken must be recorded as detailed in *Inspection* along with the *Maintenance Record Template for Building Envelope*. In addition we recommend that Therma-light CF40 polycarbonate panels be inspected following periods of severe inclement weather e.g. high winds and gales.

2. Debris - Any build-up of debris, including any debris remaining after the Therma-light CF40 polycarbonate panels have been fixed - such as drilling swarf, loose fixings and rivets - should be carefully cleared from, using a soft brush to avoid scratching the surface.

3. Dirt Retention - Areas retaining dirt should be cleared away gently with a sponge or soft cloth and cleaned with a mild household detergent solution 10% in water to preserve the polycarbonate. Rinse off with clean water and dry off with a soft cloth.

4. Moss/Mould Growth - Any growth of moss on or around the polycarbonate should be carefully removed and the polycarbonate cleaned with a mild household detergent solution 10% in water and a sponge or soft cloth. Rinse off with clean water and dry off with a soft cloth.

5. Polycarbonate is vulnerable to scratching. Do not scrub with brushes, abrasive materials or sharp instruments as these will mark/damage the surface. Never use solvents, alkaline cleaners, thinners or abrasive cleaners, white spirit, petroleum ether (BP65), methyl alcohol (methanol), acetone, petrol, benzene.

6. Should the polycarbonate panels suffer any structural or impact damage whatsoever, they must be replaced. Contact The Company for further advice if in doubt.

Image showing CF40 interface

Aluminium Composite Material (ACM)

Cleaning and Maintenance of Stove-Lacquered Surfaces

Expert and regular cleaning not only maintains the aesthetic and representative finish of stove-lacquered surfaces, but also preserves their value and service life by removing dirt and aggressive deposits that are not washed away by rainwater.

Annual inspection

The inspection of roofing and walls should take place at least once a year. This will depend on local environmental conditions.

Cleaning

Annual cleaning is recommended. The surfaces should be cleaned either manually using a soft brush or a thorough rinse with clean water. (Note: only use a household type hose, with normal tap pressure, (i.e. ≤80psi). At no point should pressure washers be used as water pressure being delivered could be ≥2,000psi, which may result in damage to coatings and or components installed).

If necessary, a mild cleaning agent (pH 6-7) may be added, up to max. 10%. For details please contact your supplier. Cleaning should take place from top to bottom. After cleaning, rinse with clean water to remove any cleaning agent residue. Generally, we recommend trying out the cleaning agent on an unobtrusive part of the object to be cleaned to check whether the surface appearance is affected. Do not clean surfaces heated by the sun (> 40 °C) – the quick drying process may cause blemishes!

Non-suitable cleaning agents

Please do not use highly alkaline cleaning agents such as potassium hydroxide, sodium carbonate or caustic soda, any strong acid products or highly abrasive cleaning agents such as household cleaning products that corrode paint.

Removal of graffiti

As a general rule, the following cleaning steps will enable you to remove graffiti from stove-lacquered, ACM fluoropolymer surfaces.

Preferably, a test should be carried out on a small area first, remove any coarse particles of dirt with water to prevent the surface from being scratched during the following cleaning steps. Then wipe the panels dry.

Apply solvents to the sprayed graffiti using cellulose wadding soaked in a solvent (for suitable solvents, please see below). The solvent is rubbed in until the sprayed graffiti has largely been dissolved and can no longer be recognized in its original appearance. Remove the mixture of lacquer and solvent using dry, cellulose wadding. Renew the cellulose wadding, if required.

Suitable solvents depending on the lacquer quality

- Ethanol (methylated spirits) for slight soiling
- Hexane (petroleum ether or white spirit)
- Methyl glycolic acid
- Graffiti Neumann GmbH, DEKONTAMINOL

Clean the surface again using clean, cellulose wadding moistened with small amounts of solvent until any remaining lacquer has been removed. The ACM coating then needs to regenerate for at least 24 hours, independent of the cleaning result reached. Owing to the absorption of solvent, the ACM coating is swollen and in this state, it is sensitive to mechanical stress. The swelling is reversible and has no influence on the long-term stability of the lacquer coating. If there is any remaining paint, the process above should be repeated, but not until the lacquered coating has regenerated.

General information

After cleaning, traces or shaded parts of the former graffiti are possibly still visible on the ACM coating. This appearance is caused by organic dyes that can be in the spray paint and are slightly susceptible to migration. Therefore, cleaning should take place as soon as possible to prevent the spray paint from migrating. According to experience, however, these dyes are only slightly lightfast; subsequently, the dye susceptible to migration is altered and decomposed by solar radiation, thus causing the shading effect to disappear.

Large areas of graffiti sometimes lead to producing considerable amounts of cellulose wadding containing residues of solvent and paint. Larger amounts have to be disposed of properly according to Waste Code No. 18702.

Image showing ACM panels


CA | GROUP

Technical Information Paper

TIP-409

Adaptable Building Solutions

CA | GROUP

TIP-409
Rev: 5.4
October 2020
Approved

The demand for large-scale warehousing has doubled in the last ten years[A] in particular, the need for temperature controlled space has increased as with growth in the retail sector, which currently accounts for 35% of warehousing stock in the UK[B]. An increase in online commerce has meant the fast-moving consumer goods (FMCG) market has evolved and there is much greater focus on supply chain support services, as well as storage. These market factors are some of the reasons why the demand for large distribution centres have become increasingly complex, with building requirements evolving to not only focus on the external building structure but to place equal emphasis on the quality and control of the internal storage space. Buildings servicing retail and food enterprises now need to efficiently manage / maintain a range of temperature and climatically controlled spaces, with sophisticated M&E equipment.

[A] Online Shopping Drives Demand For Warehousing Space, BBC News online, 27th August 2018
[B] The Size and Make Up of the UK Warehousing Sector UKWA

Over recent years, Developers have requested cold store and chill store specifications with little understanding of requirements for the building and its envelope, simply by specifying a 'box-within-a-box'.
There are three categories of temperature-controlled storage; 'ambient', 'cold', and, more recently, 'chill' store:

i. 'Ambient' storage space is essentially unconditioned and provides 'room temperature' and normal storage conditions, typically only constructed with frost protection (usually ≥5°C) i.e. from +5°C, up to +20°C. It is often required for a range of commercial sectors, including office, industrial, manufacturing, logistics, retail (non-perishable food and non-foods). With regard to the building envelope, there are no special requirements for temperature control. This is how many buildings have traditionally been constructed and is widely used in commercial space.

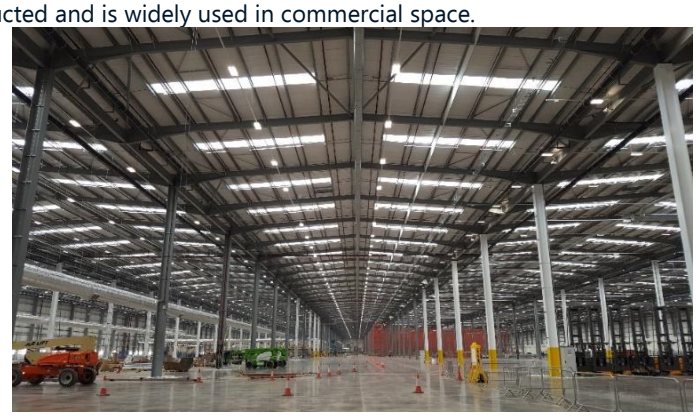

Image 1
Example of an 'Ambient' warehouse during fit-out

ii. 'Cold' storage space is designed to respond to a need for temperature-controlled space within a building that requires either ambient, cooled, sub-zero or a combination of temperature-controlled zones within a building. This space is typically demanded by the retail, pharmaceutical, leisure and logistics sectors. It is achieved through the construction of a secondary build inside the building; effectively creating an internal 'box' that is typically used as a refrigeration unit or freezer for the storage and control of perishable goods, commonly called a 'box-within-a-box'. This solution has been widely adopted in the construction industry. Temperatures typically range between -30°C, up to +1°C.

Image 2
Example building with an internal 'Cold Store', visible through the glazing

iii. 'Chill' storage is a relatively new concept of an internal environment. Chill stores can cater for temperature ranges between typically +2°C, up to +8°C. The advantage a chill store has is that the entire internal environment can be temperature-controlled, without the need for an additional internal 'box'. This would typically be required for foodstuffs, for example, fresh produce, as well as horticultural, agricultural and pharmaceutical supplies.

Image 3
Example of a 'Chill store' prior to fit out.

The Building Envelope

As specialists in building envelope design, development and installation, CA Group recently embarked on planned evolution of the Twin-Therm® systems to create a more economical, environmentally efficient and flexible building system that offers a 'next generation' of temperature controlled storage buildings. The aim: to provide a building envelope system specially designed to deliver multi-temperature controlled internal spaces that are more commercially viable and commercially attractive to property developers, as well as delivering environmental benefits.

Typical ambient buildings and cold stores both require standard construction methods, built in accordance with the need of the Client, Developer, Building Regulations and Local Authority Building Control (LABC) requirements. CA Group buildings meet all these specifications as standard with Twin-Therm®. Continuous investment in product design, development and installation have enabled the company to create a system that goes beyond this, offering dynamic and 'Adaptable Building Solutions'[C], for internal temperature applications between 0°C and +5°C.

[C] 'Designing for Adaptability' article, June 2019 (https://issuu.com/lapthornmedia/docs/ap_719/96)

The need to design for adaptability is fundamental in being able to attract a diverse range of prospective occupiers and allow flexibility to change to suit the needs of the existing tenant, which over time can increase retention. Buildings that can offer ease of conversion and be adapted readily provide enhanced opportunities for the Developer, i.e. there is less limitation and reliance on certain types of occupants, instead much greater scope and therefore potential demand.

Recognising the need to better meet the demands of the marketplace, CA Group began a process of research and development to better understand the impact of the external envelope on internal temperature controlled buildings. The aim was to provide a robust solution that would meet with the strict performance requirements of a chill store building, with internal temperatures as low as 0°C, whilst delivering high quality, technically-advanced and simplified construction solution. In particular, due consideration was given to the implications on twin-skin cladding systems and the management of condensation within the construction – an area fraught with complications (see 'Condensation Management' below).

Condensation Management

To develop the new generation Twin-Therm® Chronus® Ready*[pat.pend]* & Twin-Therm® Chronus®*[pat.pend]* specifications, CA Group needed to overcome the key challenges concerning condensation management and devise a solution that would not only reach performance requirements, but that would also offer flexible building adaptability. Firstly, through one of the UK's independent leading authorities in condensation, we assessed the impact of the internal environment change and its effect on the standard Twin-Therm® roof and wall cladding system, the key outcomes provided below.

The condensation drive within the construction for typical buildings (calculated to British & European Standards, with 0°C external and 20°C internal temperatures) is to the underside of the external sheet as shown in Image 4.

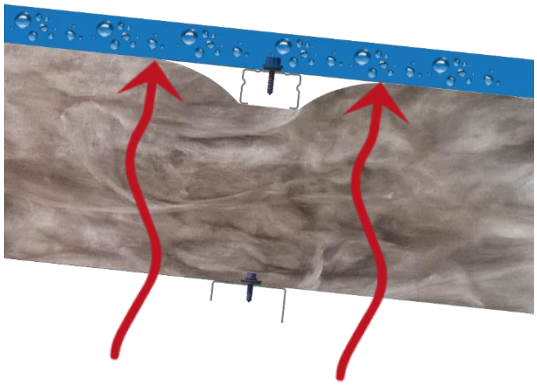

Image 4
Normal Condensation Drive

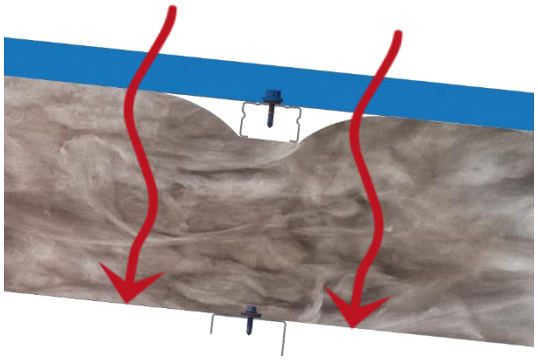

Image 5
Reversed Condensation Drive

However, when the internal environment is a 'Chill store', the condensation drive is reversed as seen in Image 5, resulting in condensation forming on the outside face (or the cavity face) of the liner panel and therefore must be controlled.

Twin-Therm® Chronus® Ready*[pat.pend]* and Twin-Therm® Chronus®*[pat.pend]* (or Chronus® Ready*[pat.pend]* and Chronus®*[pat.pend]*) engineered systems evolved following completion of the programme of development, testing and certification, working with specialists in the field to determine the exact specification required to achieve a robust, but adaptable, building solution to meet with multi-temperature requirements.

The Benefits

Chronus® Ready*[pat.pend]* and Chronus®*[pat.pend]* present a 'first' and 'unique' solution to Developers and overcomes many of the associated challenges, risks and costs of alternative solutions; new build, extension or costly building modification, which can impact on business continuity and require additional investment.

Space is maximised without the need for implementing a secondary build internally, therefore reducing build costs and freeing up internal space, further optimising storage.

Both systems minimise the need for expensive off-site storage solutions or the installation of additional facilities.

Build time is reduced, as there is no need to build an internal 'box' and so handover can be achieved far earlier.

Adaptable Building Solutions can increase site capacity, provide greater flexibility for internal layout planning, and offer greater freedom of movement for the packing, picking and transfer of products around the building.

As the building is more readily converted, there is wider sector suitability, thus providing Developers with an 'Adaptable Building Solution' that can broaden the market appeal of their property.

This combination of building materials and its component parts are exclusive to CA Group. The installation of which is carefully controlled and managed by CA Group and the company's trained installers to maintain quality and system integrity and without compromising building envelope performance and associated building guarantees.

At the time of publication, CA Group is unaware of any other system that can achieve this performance with the benefit of a simplified construction process. Chronus® Ready *[pat.pend]* and Chronus®*[pat.pend]* systems offer a highly appropriate and exclusive solution for the warehousing market, bringing with it the additional benefits to both the Developer and the end-user in terms of construction cost savings, operational cost savings and a reduced carbon footprint.

For further assistance, contact CA Group Technical Department with regard to your 'Adaptable Building Solution' specification.

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Technical Information Paper

TIP-503

Roof Pitch & Curve Parameters

CA | GROUP

TIP-503
Rev: 4.4
October 2020
Minor Change

Technical Information Paper

Roof Pitch & Curve Parameters

Minimum Roof Pitch (at end laps)

The principle functions of profiled roofing and cladding is to create a weather tight envelope, keep the heat in and brace the frame.

In order to make a building weather tight, the actual pitch at end laps must be considered; since the introduction of steel profiled sheeting as a roof waterproof layer, industry has limited end laps to a minimum of 4° after deflection, however, in recent years profile manufacturers have developed roof systems which take into account all components used in the tested assembly and in some cases it is possible to design a roof with a pitch lower than the historical recommendation.

The following information is guidance for roof cladding systems utilising Twin-Therm®, Twin-Therm® Quantum, Twin-Therm® Griffon or River-Therm®;

System	Design	After Deflection
Twin-Therm®	4.5°	3.0°
Twin-Therm® Quantum	4.0°	2.5°
Twin-Therm® Griffon	4.0°	2.5°
River-Therm®	2.5° [1]	1.0° [1]
Single Skin Canopies	3.5° [2]	2.0° [2]

[1] these figures are based on panel ends, for curved roofs the system requires a positive fall from the apex.
[2] not recommended by NARM and can only be achieved effectively by the use of single length sheets, spanning ridge (or top of slope) to eaves, without end laps (including rooflights).

Where a system is not being selected the roofing contractor should retain the minimum industry standards regarding to roof pitch and sheeting laps.

Steelwork Considerations

Care must be taken to minimise deflection on purlins, as you may well encounter steelwork tolerance issues when installing both pitched and curved roofs. In some instances, particularly with facetted rafters, purlin cleats can be as deep 500mm. Even a small misalignment can have a significant effect to the position of the top flange of the purlin where the roof cladding is fixed, further exacerbated on deeper constructions.

To ensure this does not occur, the steelwork contractor must be aware of the system requirements, as a consequence we always recommend collaboration between the client, architect, main contractor, steelwork contractor and system supplier to ensure the project is delivered without any tolerance issues.

All built up metal roofing assemblies require a positive fall from apex to gutter, whether on a pitched or curved roof, the simplest way is for the steelwork contractor to ensure a purlin (or purlins) be located close to the apex.

Additionally purlin position at first end lap either side of apex is critical. Secondary steelwork should be adapted to take into account possible deviation, this could be done by using purlins with larger top flanges to minimise the effects of any potential movement.

CABP Technical Information Paper TIP-107 provides further information on required/ acceptable steelwork tolerances.

CABP Cladding System Curving Parameters

Twin-Therm®: Self Curved

Convex 45m radius minimum
90m radius max[3]
130m radius max[4]
4.5° end lap min. (designed)
Concave 25m radius minimum

Below are a few examples of radius v's sheet length to achieve a required 4.5° external sheet end lap for the apex roof sheet (also applies to rooflight end lap positions);

Radius (m)	4.5° End lap (Designed) Sheet Length (m)
45	7.219
60	9.575
90	14.287[3]
115	18.214[4]
130	20.570[4]

[3] Standard transportable lengths
[4] Extendable trailer required

Twin-Therm®: Crimp Curved

Convex 20m radius minimum
4.5° end lap min. (designed)

Concave Not recommended due to the crimps creating a trough for ponding / standing water, within the profile, which will invalidate any warranties offered.

Twin-Therm® Rooflights

With regard to rooflights, both liner and top sheet will self-curve as stated above. When installing the top sheet GRP rooflight, a PVC foam pad must be installed locally over the MatriX Bar to prevent bruising / damage.

Twin-Therm® Quantum

Specifically designed end laps on the apex sheet allows for larger radii than the standard Twin-Therm® system.

Convex 105m radius maximum[3]
4.0° end lap min. (designed)
2.5° end lap min. (after settlement)

Twin-Therm® Griffon

Generally used on large spans, comprising of traditional portal frame (propped if required) with a curved apex. Specifically designed end laps allow for lower designed roof pitches over that of the standard Twin-Therm® system.

Convex 105m radius maximum[3]
14.5m sheet across apex[3]
4.0° end lap min. (designed)
2.5° end lap min. (after settlement)
Straight 4.0° end lap min. (designed)
2.5° end lap min. (after settlement)

River-Therm®: Self Curved

Convex	30m radius minimum (aluminium)[5]
	2.5° min (designed)[1]
	1.0° min (after settlement)[1]
Concave	45m radius minimum (aluminium)[5]
	45m radius minimum (steel)[5]

River-Therm®: Mechanically Smooth Curved

Convex	5m radius minimum (aluminium)[5]
	6m radius minimum (steel)[5]
	2.5° min (designed)[1]
	1.0° min (after settlement)[1]
Concave	Contact CA Group Technical Department for project design options.

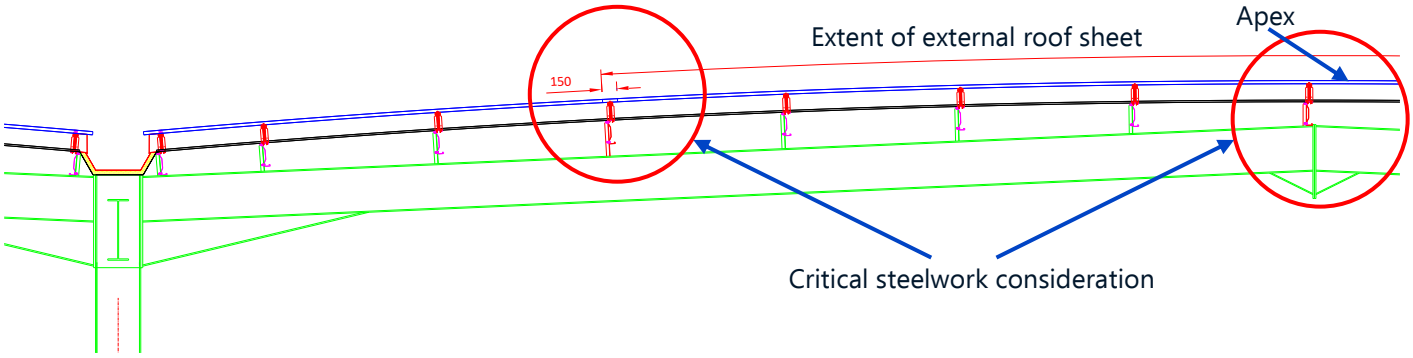
[5] Liner panel self curved and crimp curved minimum radii as per standard Twin-Therm® information.

For designs outside of these parameters, confirmation must be sought from CA Group Technical Department on a project by project basis.

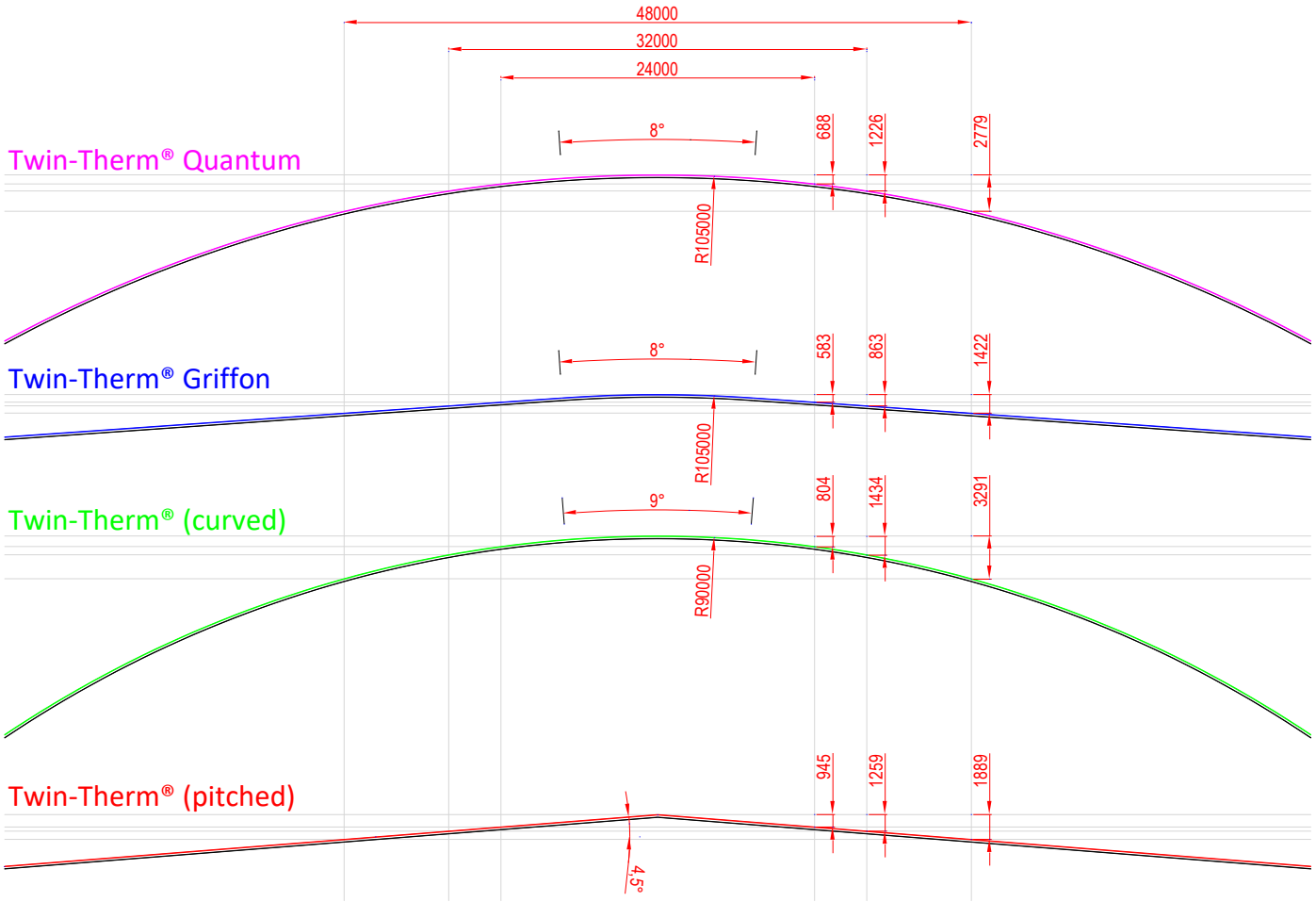
Further information on steelwork tolerances can be found on CABP Technical Information Paper TIP-107 and the SCi publication P346, 'Best Practice for the Specification and Installation of Metal Cladding and Secondary Steelwork'.

Additional information regarding System Life is detailed in CABP Technical Information Paper TIP-301.

Steelwork Design Consideration – Curved roofs with facetted primary steelwork



Standard Drawing Layout – Twin-Therm® roof systems



Height Difference - external sheet only (does not include for the steelwork zones, gutter depth or insulation zones, for full height calculations contact CA Group Technical Department).

Span	6.0° Pitch (m)	Standard 4.5° Pitch (m)	Twin-Therm® Curved 90m radius (m)	Twin-Therm® Quantum	Twin-Therm® Griffon
24	1.261	0.944	0.804	0.688	0.583
32	1.682	1.259	1.434	1.226	0.863
48	2.523	1.889	3.259	2.780	1.422
60	3.153	2.361	5.147	4.377	1.841
70	3.679	2.755	7.084	6.005	2.191
80	4.204	3.148	9.377	7.918	2.541
90	4.730	3.542	12.058	10.132	2.890
100	5.255	3.935	15.167	12.669	3.240

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Twin-Therm® Safety Information For: O&M Manual

The cladding on this building has been designed and installed in accordance with the principles of the Construction Design and Management Regulations (CDM) to facilitate ease of safe renovation, maintenance, dismantling and demolition of the cladding installation and comprises Twin-Therm® roof cladding, Twin-Therm® wall cladding.

Where a horizontal life line (HLL) system has been installed, this must always be used by personnel requiring access to the roof, for whatever reason. The HLL section in the O&M manual must always be consulted prior to roof access.

Summary of residual risks when accessing the roof for maintenance, cleaning, renovation, dismantling and demolition of cladding installation: -

- Falls through cladding
- Falls from building
- Installation of access equipment
- Falls from access equipment
- Falling material, debris, and equipment
- Cuts and abrasions
- Manual handling
- Removal and disposal of materials.

CAUTION

It is incumbent upon the tenant / building operator during periods of heavy snow to assess the risk associated with accumulation of snow around the perimeter of the roof to appropriate actions to mitigate any risk associated with snow/ice sliding off the roof especially above personnel or vehicular access doors and/or walkways. If snow has accumulated, it needs to be removed quickly in a safe manner.

At the same time ensure that any icicles that may have formed around the building, particularly on overhanging eaves/verge details are carefully removed to eliminate the risk of them becoming dislodged and falling in the vicinity of personnel or vehicular access doors and/or walkways.

Snow loads: design loads checked, including drift to EN 1991-1-3: Snow Loads. The cladding has been verified with capacity of roof system.

CA Roofing Services recommend the building owner/operator develops a snow removal plan, e.g build up falling from accumulation at eaves:

- Cordon area off, safe for pedestrian access routes, public, vehicular access doors, etc
- Risk assessment for building required
- RAMS required for snow removal – if required

CA Roofing Services also recommend the building owner/operator evaluates the risk areas;

- Low to high bay abutment
- Canopies
- Lean-to's
- Stair towers
- Entrance canopies
- Accumulation at eaves details

All maintenance cleaning, renovation, dismantling and demolition of cladding on all buildings must carried out by trained competent personnel and that adequate and appropriate safe access and equipment is provided. CA Group Limited provides maintenance services which delivers confidence to the continuity of any guarantees offered.

Appropriate safety precautions must be taken for the duration of all roofing and cladding works. HSG33 "Health & Safety in Roof Work" available from the HSE and 'ACR[CP]001: 2016 Rev 5', provides detailed advice on this subject.

Note: *Any form of dismantling is classed as demolition and the HSE must be notified of all demolition, prior to commencement*

Technical Information Paper

TIP-302

Inspection & Maintenance

CA | GROUP

TIP-302
Rev: 4.2
October 2020
Approved

Summary Overview of Inspection Frequency Requirement

Inspection and maintenance are mandatory requirements of guarantees available for materials supplied for the building envelope by CA Group. Too often roofs and gutters are neglected which can only lead to premature degradation of the system.
The following is a summary overview of the requirements to inspect and maintain the materials incorporated within the building envelope, further detailed clarification of the actions required are given within the body of this document.
Roof and Wall Cladding including ACM
The CA Group roof and wall cladding systems guarantee inspections to be carried out as follows;

- Building Handover
- 12 months after building handover
- 48 months from building handover
- Following the completion of this inspection the frequency of future inspections (typically 3 years / maximum 5 years) should be established for the remainder of the building life

Inspection and maintenance requirements stated are a specific requirement of the CA Group Limited guarantee, which are based on a competent person's assessment of deterioration of the system(s) and not that of the Confidex® Guarantee for external coatings. System specific maintenance procedures are outlined within the product guarantee documentation.

Gutters

CA Group recommends that the gutter inspection should be carried out in conjunction with the main building envelope inspections. Details of inspectorate, inspection, findings, repair and maintenance work undertaken must be recorded as described in product guarantee documentation. If maintenance is not undertaken on a regular basis you may encounter problems such as those indicated in the Images contained in this document, which impact on the drainage of the roof leading to water entering the building;
CA Group gutters require more frequent inspections than the roof and wall cladding systems, as follows;

- Building Handover
- 12 months after building handover
- Following the completion of this inspection the frequency of future inspections and maintenance (within a 12 month period) should be established for the remainder of the building life.

Polyester Powder Coated Items

Details of inspectorate, inspection, findings, repair and maintenance work undertaken must be recorded as described in product guarantee documentation. The material should be cleaned at regular intervals of not more than three months

Inspections

We recommend all inspections and any work undertaken on buildings are only carried out by competent persons trained for such purpose and that adequate and appropriate safe access is provided at all times. Safety precautions must be taken for the whole duration of inspections and works. HSG 33 'Health & Safety in Roofwork', available from the HSE, provides detailed advice in this subject.

Maintenance

If for any reason it is necessary to remove any external roof sheets Therma-lights and internal lining, the work should always be undertaken by competent persons. If in doubt, advice should be sought from CA Group as to the method of proper removal and replacement of the components to ensure the integrity of the system and any system guarantee applicable.

When using cleaning, maintenance and repair products noted throughout the system guarantee appendices. In the interests of personal safety, health and hygiene, product manufacturers' advice and instructions on the use of their products must be strictly followed.

When washing or cleaning is required, only use a hose (with normal tap pressure, i.e. up to 80psi), at no point should pressure washers be used as this will cause damage due to the water pressure being delivered which could be in excess of 2,000psi.

Safety

The summary of routine maintenance advice (within the inspection and maintenance requirements for the systems) makes no recommendations in respect of site safety requirements to access and traverse the roof safely during maintenance inspections and working procedures. Competent persons / bodies undertaking such maintenance inspections and working procedures should prepare proper and adequate risk assessments and method statements for each maintenance inspection and working procedure. Further information giving clarification on traversing the roofing systems can be found in TIP-106 - Walkable, Non-Walkable & Walking on Roof Cladding.

General Guidance on Inspection

CA Group recommend all inspections and any work undertaken on buildings are only carried out by competent persons trained for such purpose and that adequate and appropriate safe access is provided at all times, for further information refer to Advisory Committee for Roofsafety, ACR[CP]005, 'Guidance note for competence and general fitness requirements to work on roofs' covering inspection, new build, maintenance, repair and refurbishment work.

Safety precautions must be taken for the entire duration of any inspections and work.

Advice on this subject is detailed in Health & Safety Guide 33, 'Health & Safety in Roofwork' and Advisory Committee for Roofsafety ACR[CP]001 'Recommended Practice for Work on Profiled Sheeted Roofs. These documents are available from the HSE and ACR websites.

When using cleaning, maintenance and repair products, noted throughout the Appendices of the System Guarantee, in the interests of personal safety, health & hygiene, product manufacturers'/suppliers' advice and instructions on the use of their products/supplies must be strictly followed.

Inspection of the System

Inspections based upon good practice must be carried out throughout the life of the building, by competent persons. Inspections are undertaken to highlight for instance any changes in the condition of the system, particularly as you approach the end of the period of guarantee, which is the length of time before a building owner needs to consider whether to repaint or refurbish.

Roof and wall cladding system inspections should be conducted during and after the cladding is installed by the cladding contractor, at building handover, 12 months after building handover and 48 months from building handover. Following the completion of this inspection the frequency of future inspections (typically 3 years / maximum 5 years) should be established for the remainder of the building life, but also 12 months after building handover, then typically every three years to maximum every five years, depending upon the competent person(s) assessment of deterioration to the system(s), since the previous inspection. Whereas gutter system inspections, should be carried out at building handover and 12 months after building handover. Following the completion of this inspection the frequency of future inspections and maintenance (within a 12 month period) should be established for the remainder of the building life, would be conducted on a maximum 12 monthly basis. Additionally Powder Coated items should have Inspection and maintenance carried out at building handover and every 3 months following building handover.

The assessment should include any evidence of change to the local environment, which could cause premature degradation of the system(s). In addition, we recommend buildings, particularly roofs, are inspected following periods of severe inclement weather e.g. high winds, gales, etc.

Within 1 month of discovery of any damage to the system(s), effective and appropriate remedial work must be implemented and completed. A written record must be kept in respect of all inspections, maintenance, cleaning and repair work stating the following information (refer to Inspection along with the Maintenance Record Template for Building Envelope):

1. Name and details of competent person/inspector/inspection body
2. Date of inspection
3. Inspection report findings
4. Details of all cleaning replacement, repair and maintenance work
5. Date item 4 was undertaken
6. Name and details of competent persons/bodies undertaking item 4
7. Competent person and Beneficiary signature for item 6

Prior to conducting any inspections, particularly on roofs, ensure proper and adequate method statements and risk assessments are in place and that access is suitable and any horizontal life line systems have been checked and the test certification has been validated within the last twelve months, i.e. are approved for use. Prior to accessing the roof to undertake the inspection please read CABP Technical Information Paper TIP-106 'Walkable, Non-Walkable & Walking on Roof Cladding', which states; do not walk on rooflights, flashings, etc.

Inspection Record Template for Building Envelope

Project	**Competent Person / Inspector**
Area / Grid Lines	**Date of Inspection**

Description	Checked for Compliance Yes	No	Comments	Date Closed Out	Signed Off By
Gutters - check condition of					
joints, coatings, detritus and blockages					
Actions Ensure all detritus from the gutter and any blocked outlets is bagged and removed from the gutters. Check integrity of gutter joint for rips and gouges Check integrity of gutter coating for scratches and gouges					
Roof (Metal) - check condition of					
sheets and fixings					
Actions Check the surface of the sheets have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Check sheets for corrosion to the edges of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					
Roof (GRP rooflights) - check condition of					
sheets and fixings					
Actions Check the surface of the sheets have been washed by rain action on the surface.					

Heavy deposits of dirt or mould should be noted. Check sheets for damage to the surface or damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					
Description	**Checked for Compliance Yes**	**No**	**Comments**	**Date Closed Out**	**Signed Off By**
Roof Interfaces - check condition of					
ridge, eaves, parapet, verge and penetrations					
Actions Check the surfaces have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted Check fillers have not become loose or dislodged. Review penetrations are free flowing and not allowing build-up of debris behind.					
Roof attachments - check condition of					
pv's, safety line systems etc.					
Actions Connections and fixings should ideally be left undisturbed, however, if loose, faulty or inappropriate components used this should be noted					
Walls - check condition of					
sheets and fixings					
Actions					

Check the surface of the sheets have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					

Description	Checked for Compliance Yes	No	Comments	Date Closed Out	Signed Off By
Wall Interfaces - Check condition of					
Door, window, drip and feature flashings also penetrations					
Actions Check the surfaces have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted Check fillers have not become loose or dislodged. Review penetrations are free flowing and not allowing build-up of debris behind.					
Wall - CF40 - Check condition of					
Actions Check the surface of the sheets have been washed by rain action on the surface. Heavy deposits of dirt or mould should be noted.					

Check sheets for damage to the surface or damage to the structure of the sheet. Check the surfaces of the frame have been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be noted.					

Wall – SolarWall® or Prime Rainscreen - Check condition of					
Actions Check the surface of the sheets have been washed by rain action on the surface. Heavy deposits of dirt or mould should be noted. Check sheets for damage to the coated surface or mechanical damage to the structure of the sheet. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted Check fillers have not become loose or dislodged.					
Description	**Checked for Compliance** **Yes**	**No**	**Comments**	**Date Closed Out**	**Signed Off By**

Polyester Powder Coated Items - Check condition of					
Actions The coating is to be closely examined for abrasions, scratches or scuffs and any anomalies noted. Fixings should ideally be left undisturbed, however, if loose, faulty or inappropriately installed this should be noted					

Other

Any concern not specifically noted above. Contact The Company for advice.					

Date of next Inspection

Maintenance Record Template for Building Envelope

Project		**Competent Person / Inspector**	
Area / Grid Lines		**Date of Inspection**	

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Gutters - check condition of					
joints, coatings, detritus and blockages					
Actions Clear all detritus from the gutter along with any blocked outlets then bag and removed from the gutters. Check integrity of gutter joint for rips and gouges and repair by welding a membrane patch over effected area as recommended. Check integrity of pre laminated gutter coating for scratches and gouges, repair by welding a membrane patch over effected area as recommended.					
Roof (Metal) - check condition of					
sheets and fixings					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. Damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Corrosion to the edges of the sheet. Repair as recommendations Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Roof (GRP rooflights) - check condition of					
sheets and fixings					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If there is damage to the surface or damage to the structure of the sheet. Replace as per recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations.					
Roof Interfaces - check condition of					
ridge, eaves, parapet, verge and penetrations					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If sheets have damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations. If fillers have become loose or dislodged, reinstate or replace as recommendations. If penetrations are not free flowing therefore allowing build-up of debris behind and damming contact the company for recommendations					
Roof attachments - check condition of					
pv's, safety line systems etc.					

Actions Following assessment of connections and fixings, if loose, faulty or inappropriate components used, recommendations for repair or replacement should be sought from the system manufacturer					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Walls - check condition of					
sheets and fixings					
Actions If the surface of the sheets have been not washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. Damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations					
Wall Interfaces - Check condition of					
Door, window, drip and feature flashings also penetrations					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If sheets have damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations. If fillers have become loose or dislodged, reinstate or replace as recommendations.					

If penetrations are not free flowing therefore allowing build-up of debris behind and damming contact the company for recommendations					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Wall - CF40 - Check condition of					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If there is damage to the surface or damage to the structure of the panel. Replace as recommendations. If the surface of the frame has not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended.					
Wall – SolarWall® or Prime Rainscreen - Check condition of					
Actions If the surface of the sheets have not been washed by rain action on the coating surface. Heavy deposits of dirt or mould should be removed as recommended. If sheets have damage to the coated surface or mechanical damage to the structure of the sheet. Repair or replace as recommendations. Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations. If fillers have become loose or dislodged, reinstate or replace as recommendations.					
Polyester Powder Coated Items - Check condition of					
Actions If coating has abrasions, scratches or scuffs, contact the company for recommendations of repair The surface is subject to regular cleaning at intervals of not more than three months using a mild detergent and warm water					

Fixings, if loose, faulty or inappropriately installed should be tightened (don't over tighten) or replaced as recommendations.					

Description	Checked for Compliance		Comments	Date Closed Out	Signed Off By
	Yes	No			
Other					
Any concern not specifically noted above. Contact The Company for advice.					

Date of next Inspection	

Maintenance

Roof, wall cladding & interface junctions

A written record must be kept in respect of all cleaning, replacement, repair and maintenance work stating the date and by whom the work was undertaken: refer to *Inspection* along with the *Maintenance Record Template for Building Envelope*. Any actions opposed to the recommendations noted, except as agreed, in writing, by The Company, will invalidate The Guarantee.

Washing/Cleaning

Rainfall alone is often sufficient to keep exterior surfaces looking clean and bright. However, to achieve maximum life from the product, it is important that accumulations of dirt and debris which are not removed by normal rain washing are removed regularly by cleaning. This reduces the risk of 'wet poultice' corrosion, i.e. water retention due to debris.

Washing may be carried out with a hose and a soft bristle brush, using fresh water. In areas where heavy industrial deposits dull the surface, a solution of fresh water and good quality household detergent or proprietary cleaner may be applied to ensure thorough cleaning. For household detergents, use a maximum 10% solution; for proprietary cleaners, follow the manufacturer's recommendations. A thorough rinse with clean water must follow the wash. *(Note: only use a household type hose, with normal tap pressure, (i.e. ≤80psi). At no point should pressure washers be used as water pressure being delivered could be ≥2,000psi, which may result in damage to coatings and or components installed).*

Caution: when cleaning, the following points should be noted:

1. Stronger concentrations of cleaners than those recommended can damage coating surfaces.
2. Rinse thoroughly to remove all detergents after cleaning.
3. Organic solvents and abrasive cleaners should be avoided in cleaning any coated surface. Caulking components, tar and similar substances may be removed with mineral spirits, but wash the surfaces thoroughly afterwards.
4. Always clean coated surfaces from top to bottom and rinse immediately and thoroughly with fresh, clean water.
5. Over-cleaning or scrubbing can do more harm than good.

Mould/Fungal Growth

Some types of local environment are particularly conducive to mould growth, i.e. areas of wet, dark, wooded surroundings or low-lying marshland. In these areas, mould will grow, even on inert materials such as glass.

Mould/fungal growth can be removed by treatment with a basic solution of the following ingredients, by weight, which should be available from local chemical suppliers. Before using the first three of these ingredients, you should refer to the manufacturers' health and safety information.

Good quality household detergent or proprietary cleaner	0.50
Trisodium phosphate	3.00
5% sodium hypochlorite solution	25.00
Fresh water	71.50
	100.00

Before applying this mixture, wash down first, as explained under *Washing* (above), then apply the mixture to all surfaces by low-pressure spray or brush. All surfaces must then be rinsed with cold water within twenty-four hours.

Image showing area of heavy deposits not cleaned by rain action

Image showing buildup of heavy deposits and detritus

Local Damage Touch-Up (Metal Sheets)

During inspections, you may find that the coating has suffered some damage. It is better not to treat the surface of the product if it has been only slightly scuffed. If it is scratched more deeply, say, down to the substrate, the damage can be repaired easily by applying standard touch-up paint. It is important to ensure that the applied paint is no wider than the original scratch. To achieve this, the paint should be applied with an artist or child's medium to fine paintbrush. Touch-up paints are, of necessity, air-drying; over the years they will change colour differently from the original stoved coating. For this reason, it is good practice to keep the applied area as small as possible.

Should the system have suffered impact or structural damage please contact The Company for further advice.

Image showing damage to sub structure that will require rectification

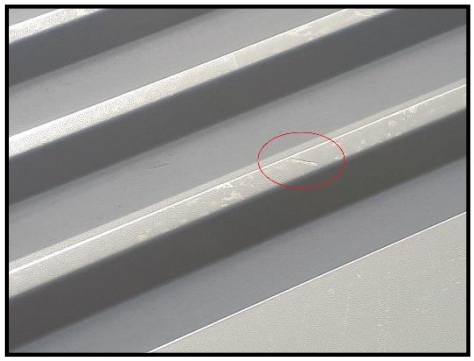

Image showing a scuff which has not penetrated the coating surface

Fasteners/Fixings

Ideally these should be left undisturbed please contact The Company for advice.

Treatment of Edge Corrosion

Corrosion at the edges of the profiled steel cladding can be rectified and should be carried out by a specialist contractor, therefore, if edge corrosion is observed contact The Company prior to any remedial work being undertaken.

Image showing cut edge delamination

Image showing rectified cut edge delamination

Graffiti

Graffiti can be removed with specialist cleaners, and overpaint systems are available. These fall into three categories:

- Specialist graffiti products such as solvents and gels
- Waxy sacrificial anti-graffiti treatments can be post applied to pre-finished steel. These can be washed off, removing graffiti and the treatment at the same time. Re application of the treatment would then be required.
- Anti-graffiti coatings can also be applied. These render any graffiti easy clean off, using hot water or cleaning solutions and do not need re-application after the graffiti is removed.

Over-painting

External Sheets

Surface preparation and over-painting of cladding should be carried out by specialist contractors using approved maintenance paints. Please contact CA Group Technical Department for further information.

Bright White Lining Enamel

Bright white lining enamel has been designed for easy over-painting. When over-painting is deemed necessary, the panels or trays should be cleaned as explained under Washing (above) and painted with brush, roller or spray using a standard household undercoat and finish system. Cellulose-based paints should not be used.

High Reflect Liner

Surface preparation and over-painting of high reflect liner should be carried out by specialist contractors using approved maintenance paints. Please contact CA Group Technical Department for further information.

Rooflights

This inspection advice is based upon good practice. It must be carried out throughout the life of the building.

All items should be checked at building handover, 12 months after building handover and 48 months from building handover, then typically every three years to maximum every five years depending upon the competent person(s) assessment of deterioration to the system(s), since the previous inspection. Any actions opposed to the recommendations noted, except as agreed, in writing, by The Company, will invalidate The Guarantee.

Therma-light (GRP) Weather Sheet Inspection, Maintenance and Protection

1. We recommend inspection be carried out at the same time as the metal weathering sheets and details of inspection – findings and maintenance work undertaken must be recorded as *Inspection* along with the *Maintenance Record Template for Building Envelope*. In addition we recommend that Therma-lights be inspected following periods of severe inclement weather e.g. high winds and gales.

2. Debris - Any build-up of debris, including any debris remaining after the Therma-light has been fixed - such as drilling swarf, loose fixings and rivets - should be carefully cleared from the Therma-light, using a soft brush to avoid scratching the surface of the GRP.

3. Dirt Retention - Areas retaining dirt should be cleared away with a soft brush or cloth and cleaned with a mild household detergent solution 10% in water to preserve the Therma-light. Rinse off with clean water.

4. Moss/Mould Growth - Any growth of moss on or around the Therma-light should be carefully removed and the Therma-light cleaned with a mild household detergent solution 10% in water and a soft cloth. Rinse off with clean water.

5. Local Damage - replace depending on severity, if in doubt contact the company, alternatively use the following guidelines, which is an extract from Technical Information Paper TIP-104 'GRP Therma-light Rooflight Damage';

Bruises

- A GRP Therma-light with an area of bruising (where the protective film has not been penetrated) no greater than a 50p piece (or a 30mm rooflight fixing washer) will remain serviceable and no further remedial action is required unless unsightly. For aesthetic reasons the client may insist on the Therma-light in question being replaced.

- If the area of damage is completely white (severe bruising) and is less than 30mm diameter, then the Therma-light must be replaced.

- Any Therma-light with an area of bruising greater than a 30mm diameter must be removed and replaced to maintain structural integrity, longevity and Non-Fragility of the assembly.

Punctures

- If the surface of the GRP Therma-light is slightly crazed but still hard then the rooflight can remain, with no detrimental effect.

- If a Therma-light is punctured or if the centre of the impact feels 'soft' (where the resin has been broken away from the glass fibres) or if the surface protection layer has been ruptured, then the Therma-light must be replaced, however small the area of damage.

Side Lap Damage

- Often caused during construction due to rope holding down the packs of rooflights, or indeed individual rooflights until such time they are installed. This damage is generally outside the critical zones for both Non-Fragility and durability, whilst unsightly the rooflights can be left insitu. Additional side lap stitching screws may be required either side to ensure Non-Fragility is not compromised.

6. Conditions of fixings - During inspections, care should be taken to check the condition of fixings including tightness and to replace or tighten them as necessary. Contact The Company for proper replacement procedure.

7. Should the Therma-lights suffer any structural or impact damage whatsoever, they must be replaced. Contact The Company for further advice if in doubt.

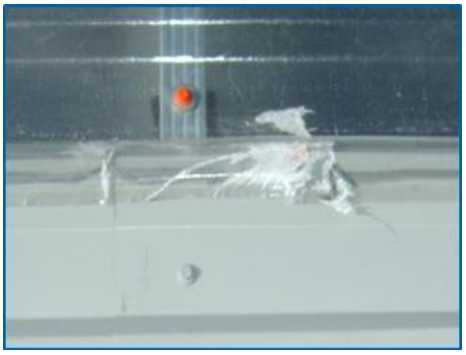

Image showing damage to GRP materials

Gutters

Gravity drainage system

Ensure all pipework is inspected in accordance with BS EN 12056-3, Section NE.5.1 states; "Gutters, rainwater pipes, outlets and gratings should be inspected and thoroughly cleaned once a year, or more often if the building is in or near to an industrial area or is near trees or may be subjected to extremes of temperature."

Siphonic drainage system

Ensure the system (outlets, tailpipes, horizontal carrier pipes, etc) is inspected in accordance with BS 8490: 2007, Section 12.1 states; "During the first year of operation, it is recommended that inspection, etc. should be carried out four times a year in order to establish an appropriate maintenance regime. The regime should take account of autumn leaf fall and the fact that intense rainfall tends to occur during summer storms."

When repairing damage to the membrane gutter coating, all repair patches should be fully welded with a minimum weld of 50mm in all directions from any damage i.e. if damage is 2mm wide by 50mm long then the repair patch is required to be a minimum of 102mm wide by 150mm long.

When cleaning out gutters any build-up of detritus should be collected using non-metallic tools, i.e. soft bristled brushes / brooms, PVC shovels (preferably snow shovels), etc. and ensure all detritus is bagged and removed from gutters and roof area.

Maintenance

1. General coating and galvanised material damage – repair as Gutter repair (Membrane).
2. Debris – any build up of debris including debris remaining after the roof installation e.g. drilling swarf, loose fixings, rivets – should be cleared from the gutters taking care not to scratch/damage the protective surface.
3. Dirt – areas of dirt compaction and any other vegetable matter i.e. soil, twigs, weeds, should be carefully removed and contaminated areas hosed down and cleaned with fresh water.
4. Outlets – check outlets are clear and re-protect welds if necessary as Gutter repair (Membrane).

Gutter repair (Membrane)

It is a mandatory requirement that the gutters are inspected after unloading at site and after gutter installation is completed. All mechanical damage etc. occurring during gutter transport, unloading and installation must be repaired immediately before or after installation (whichever is practical). The recommended method of repair is as follows:

1. Sweep gutters clean of debris.
2. In the area of damage, dry surface and remove any loose coating particles by gently scraping.
3. Remove any zinc salts or rust on exposed galvanised surface by abrasive cleaning using a non-metallic media.
4. Supplies of membrane patches and seam sealer can be obtained from 'The Company'.
5. Wash damaged area with water and washing-up liquid, rinse off and dry thoroughly before commencing any repair work.
6. Repair scratches in membrane with seam sealer (refer to gutter installation guide).
7. Where the membrane is badly scuffed, torn, ripped or damaged exposing the galvanised metal, heat weld a membrane patch to an area covering plus 50 mm all round the damaged section (refer to gutter installation guide). Apply seam sealer to the welded edges of the patch.
8. If the white paint coating to the inner gutter lining enamel is scratched or damaged, clean as (3) and repair by painting in line with recommendations.

If in doubt about any aspect of gutter inspection, maintenance or repair, contact 'The Company' for advice.

Image showing lack of cleaning in gutter potentially reducing capacity

Buildup of organic matter around outlet that will effect performance

Wall-lights – CF40

This inspection advice is based upon good practice. It must be carried out throughout the life of the building.

All items should be checked at building handover, 12 months after building handover and 48 months from building handover, then typically every three years to maximum every five years depending upon the competent person(s) assessment of deterioration to the system(s), since the previous inspection. Any actions opposed to the recommendations noted, except as agreed, in writing, by The Company, will invalidate The Guarantee.

Therma-light CF40 Polycarbonate Panel Inspection, Maintenance and Protection

1. We recommend inspection be carried out at the same time as the metal weathering sheets and details of inspection – findings and maintenance work undertaken must be recorded as detailed in *Inspection* along with the *Maintenance Record Template for Building Envelope*. In addition we recommend that Therma-light CF40 polycarbonate panels be inspected following periods of severe inclement weather e.g. high winds and gales.

2. Debris - Any build-up of debris, including any debris remaining after the Therma-light CF40 polycarbonate panels have been fixed - such as drilling swarf, loose fixings and rivets - should be carefully cleared from, using a soft brush to avoid scratching the surface.

3. Dirt Retention - Areas retaining dirt should be cleared away gently with a sponge or soft cloth and cleaned with a mild household detergent solution 10% in water to preserve the polycarbonate. Rinse off with clean water and dry off with a soft cloth.

4. Moss/Mould Growth - Any growth of moss on or around the polycarbonate should be carefully removed and the polycarbonate cleaned with a mild household detergent solution 10% in water and a sponge or soft cloth. Rinse off with clean water and dry off with a soft cloth.

5. Polycarbonate is vulnerable to scratching. Do not scrub with brushes, abrasive materials or sharp instruments as these will mark/damage the surface. Never use solvents, alkaline cleaners, thinners or abrasive cleaners, white spirit, petroleum ether (BP65), methyl alcohol (methanol), acetone, petrol, benzene.

6. Should the polycarbonate panels suffer any structural or impact damage whatsoever, they must be replaced. Contact The Company for further advice if in doubt.

Image showing CF40 interface

Aluminium Composite Material (ACM)

Cleaning and Maintenance of Stove-Lacquered Surfaces

Expert and regular cleaning not only maintains the aesthetic and representative finish of stove-lacquered surfaces, but also preserves their value and service life by removing dirt and aggressive deposits that are not washed away by rainwater.

Annual inspection

The inspection of roofing and walls should take place at least once a year. This will depend on local environmental conditions.

Cleaning

Annual cleaning is recommended. The surfaces should be cleaned either manually using a soft brush or a thorough rinse with clean water. (Note: only use a household type hose, with normal tap pressure, (i.e. ≤80psi). At no point should pressure washers be used as water pressure being delivered could be ≥2,000psi, which may result in damage to coatings and or components installed).

If necessary, a mild cleaning agent (pH 6-7) may be added, up to max. 10%. For details please contact your supplier. Cleaning should take place from top to bottom. After cleaning, rinse with clean water to remove any cleaning agent residue. Generally, we recommend trying out the cleaning agent on an unobtrusive part of the object to be cleaned to check whether the surface appearance is affected. Do not clean surfaces heated by the sun (> 40 °C) – the quick drying process may cause blemishes!

Non-suitable cleaning agents

Please do not use highly alkaline cleaning agents such as potassium hydroxide, sodium carbonate or caustic soda, any strong acid products or highly abrasive cleaning agents such as household cleaning products that corrode paint.

Removal of graffiti

As a general rule, the following cleaning steps will enable you to remove graffiti from stove-lacquered, ACM fluoropolymer surfaces.

Preferably, a test should be carried out on a small area first, remove any coarse particles of dirt with water to prevent the surface from being scratched during the following cleaning steps. Then wipe the panels dry.

Apply solvents to the sprayed graffiti using cellulose wadding soaked in a solvent (for suitable solvents, please see below). The solvent is rubbed in until the sprayed graffiti has largely been dissolved and can no longer be recognized in its original appearance. Remove the mixture of lacquer and solvent using dry, cellulose wadding. Renew the cellulose wadding, if required.

Suitable solvents depending on the lacquer quality

- Ethanol (methylated spirits) for slight soiling
- Hexane (petroleum ether or white spirit)
- Methyl glycolic acid
- Graffiti Neumann GmbH, DEKONTAMINOL

Clean the surface again using clean, cellulose wadding moistened with small amounts of solvent until any remaining lacquer has been removed. The ACM coating then needs to regenerate for at least 24 hours, independent of the cleaning result reached. Owing to the absorption of solvent, the ACM coating is swollen and in this state, it is sensitive to mechanical stress. The swelling is reversible and has no influence on the long-term stability of the lacquer coating. If there is any remaining paint, the process above should be repeated, but not until the lacquered coating has regenerated.

General information

After cleaning, traces or shaded parts of the former graffiti are possibly still visible on the ACM coating. This appearance is caused by organic dyes that can be in the spray paint and are slightly susceptible to migration. Therefore, cleaning should take place as soon as possible to prevent the spray paint from migrating. According to experience, however, these dyes are only slightly lightfast; subsequently, the dye susceptible to migration is altered and decomposed by solar radiation, thus causing the shading effect to disappear.

Large areas of graffiti sometimes lead to producing considerable amounts of cellulose wadding containing residues of solvent and paint. Larger amounts have to be disposed of properly according to Waste Code No. 18702.

Image showing ACM panels


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