

**MetSkin**

**ALUMINIUM CLADDING**

aluminium  
**facades**

**cladding technical  
manual**

Hook-on Cassettes

Tray Panels

Interlocking Plank Systems

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**VIVALDA**

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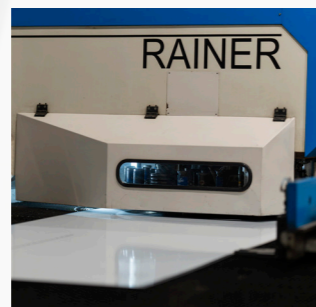
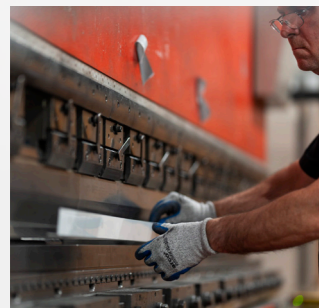
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**MetSkin is supplied as a tested and warrantied system, designed & manufactured in the UK.**



# 1. Company Overview

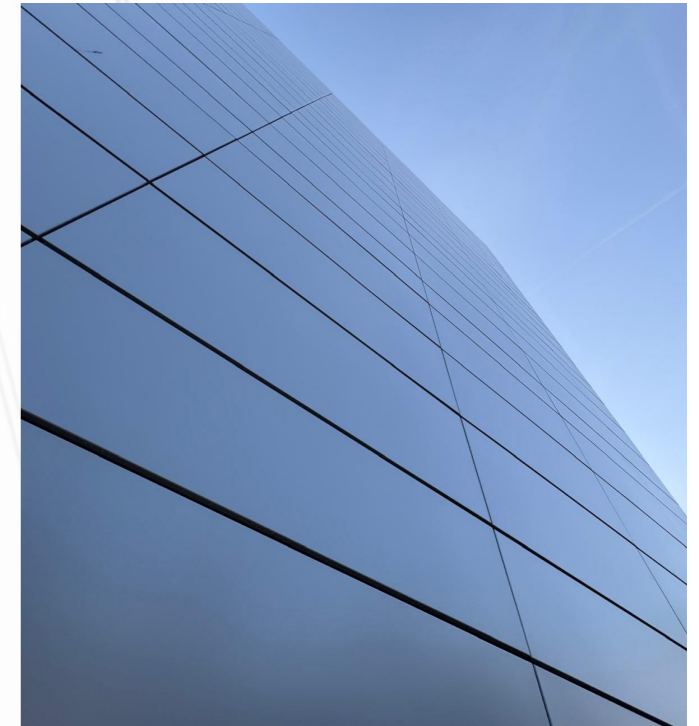
VIVALDA provide a comprehensive range of tested and trusted aluminium façade systems, manufactured by MSP, part of the Vivalda Group.

Benefitting from decades of experience in manufacturing aluminium facades, VIVALDA & MSP are able to provide a solution for any application. New build or refurbishment.

Our innovation in architectural design and construction is the MetSkin range.

These new aluminium façade systems are designed to transform buildings into contemporary projects, offering a perfect blend of aesthetics, durability, and sustainability.

Designed and tested by a trusted brand, we understand the fundamentals of manufacturing and supplying the correct solution for the architect's concept; Perfect sight lines, easy installation and strict tolerances.



All systems have undergone meticulous tests including, hard body impact, soft body impact, wind resistance and water tightness. All systems are CWCT certified.

Metskin opens up a world of design possibilities for architects and builders alike. With XL panel sizes and quality coating applications.

With its sleek, modern appearance and clean lines, the MetSkin range effortlessly enhances the visual appeal of any structure, elevating it to a new level. Whether you're working on a residential high-rise, commercial complex, or public facility, MetSkin is the ideal choice for creating an impressive facade that leaves a lasting impression. The leading systems combine elegance, strength, sustainability, and above all safety.



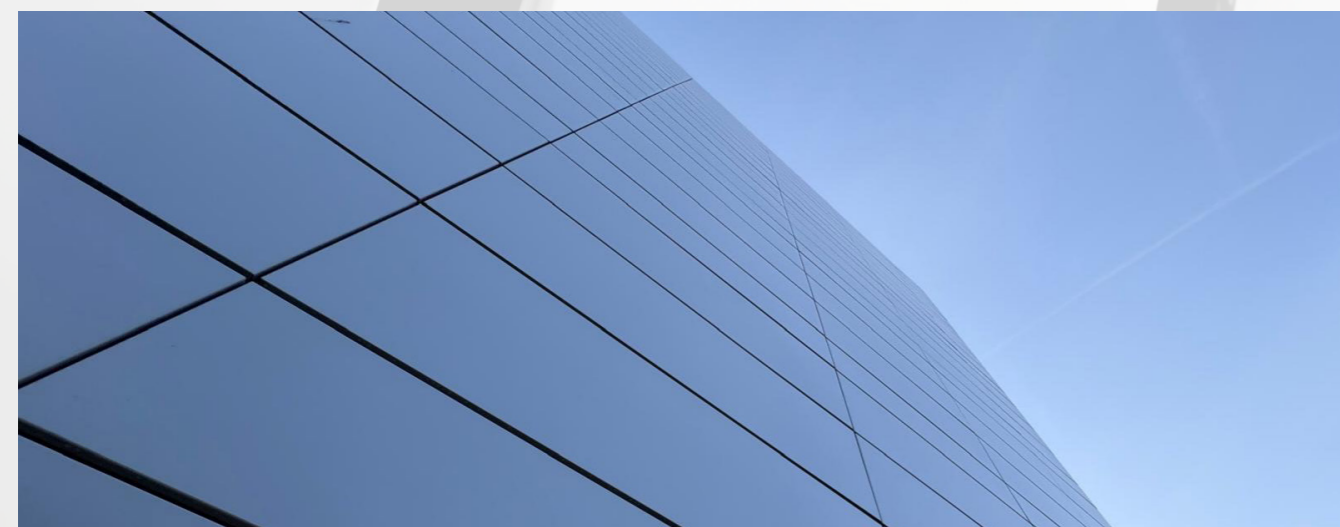
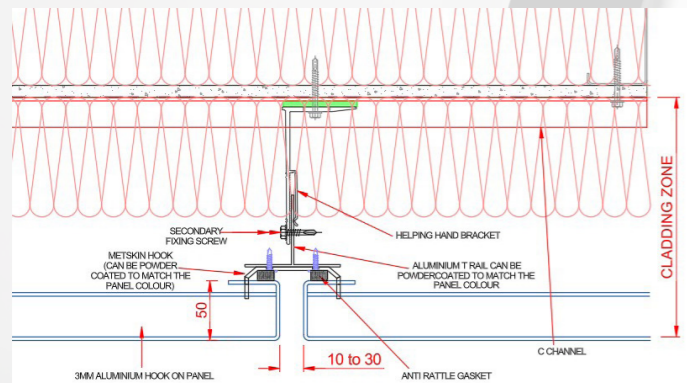
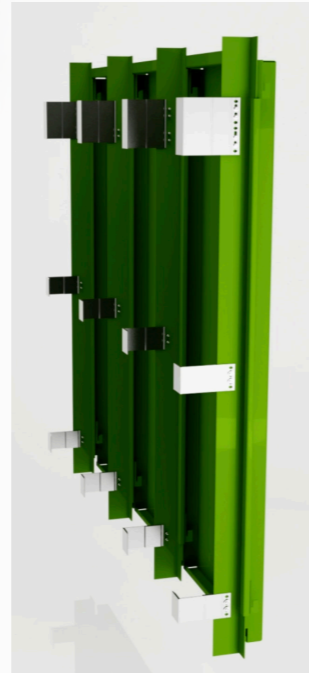
## 2. MetSkin Aluminium Facade System Types

### a. MetSkin Hook-On Cassette System with hidden fixings

The hook-on cassette system presents a contemporary approach to facade design.

Featuring a sleek appearance, this system employs 3D completely concealed fixings to maintain clean lines and a modern aesthetic.

The cassettes are easily attached to a supporting substructure using an in-built hook-on mechanism, ensuring an efficient safe installation and future adaptability.



## 2. MetSkin Aluminium Facade System Types

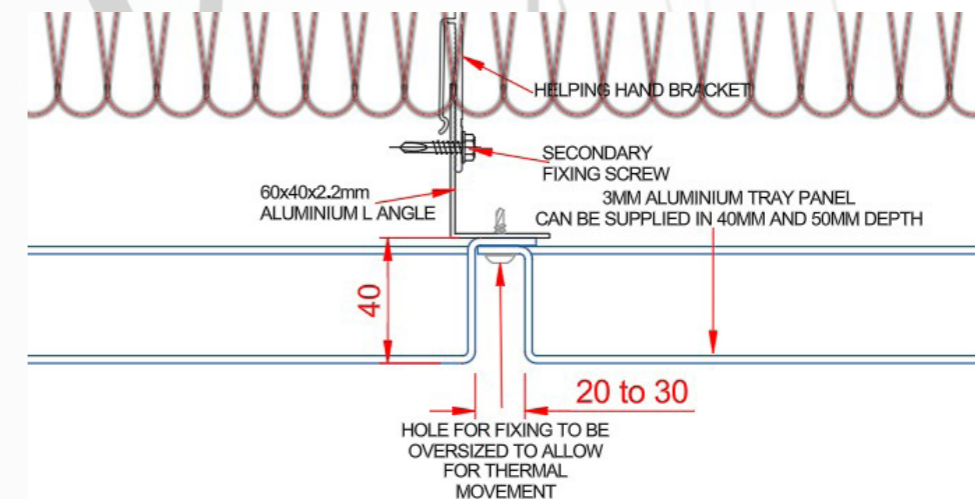
### b. MetSkin Tray Panel System with discreet fixings

The Tray Panel System showcases a combination of functionality and visual appeal.

Each panel is individually secured to the substructure using recessed discreet fixings, allowing for efficient installation while maintaining an uninterrupted appearance.

#### Customization:

The panels can be customized in various dimensions and finishes to suit project-specific requirements.

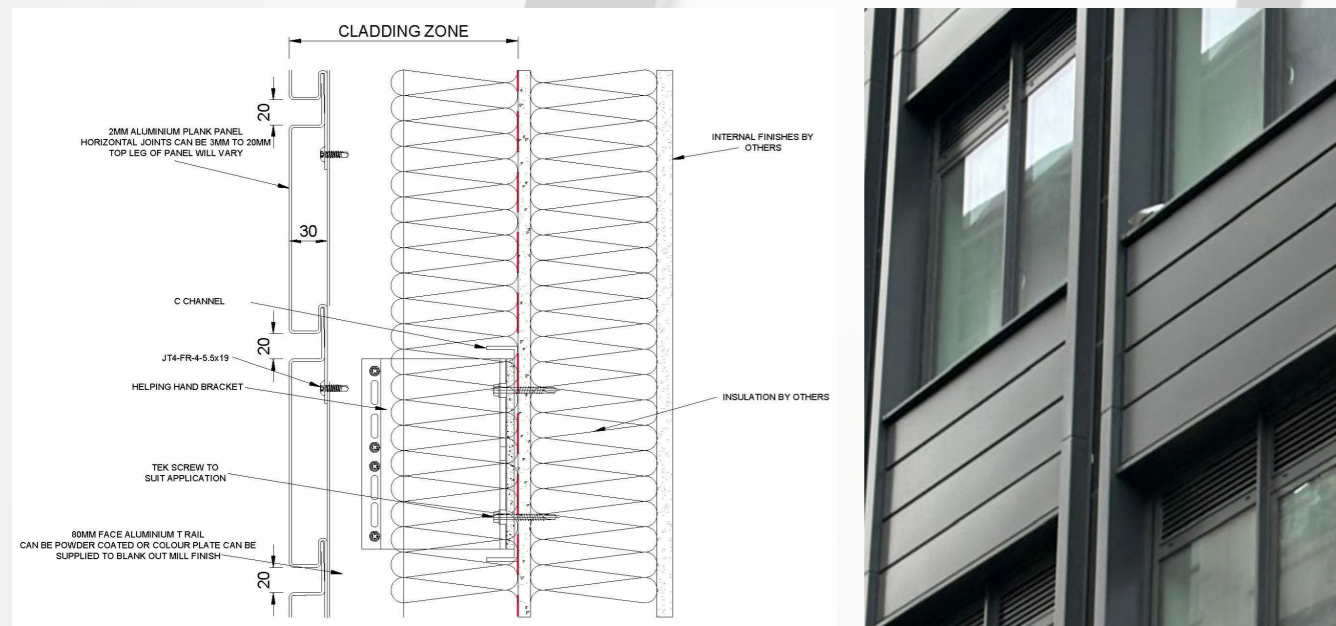


## 2. MetSkin Aluminium Facade System Types

### c. MetSkin Interlocking Plank System

The MetSkin Interlocking Plank System offers a versatile solution with its interlocking design, providing both structural stability and design flexibility. Planks are designed to fit seamlessly together, creating a sleek continuous facade surface.

**Design and aesthetics:**  
This system is particularly well-suited for projects where a linear appearance is desired.



## 3. Technical Specifications

### a. Materials and Finishes:

Our MetSkin aluminium façade systems are crafted from high quality, corrosion resistant aluminium alloys, ensuring longevity and durability.

A range of finishes and powder coated options are available to meet diverse design preferences and environmental conditions.

### b. System components:

Each system is composed of meticulously designed components, including cassettes, panels and planks, engineered to facilitate easy installation, structural integrity and aesthetic requirements.

	Panel Depth	Max Size		Largest Tested	
		Width (mm)	Height (mm)	Width (mm)	Height (mm)
Hook-On Landscape	50	3770	1280	2920	1485
Hook-On Portrait	50	1250	3800	1200	2990
Traypanel Landscape	40	3830	1250	3000	1400
Traypanel Portrait	40	1310	3770	1160	2990
Interlocking Plank Landscape	30	3900	500	3000	400
Interlocking Plank Portrait	30	500	3900	400	3000

Note: Plank panels could physically be formed larger than 500mm, but we have assumed this to be the max suitable

**c. Our systems have been CWCT (Centre for Window & Cladding Technology) certified** ensuring they meet rigorous industry standards and are resilient to extreme weather conditions, maintaining the façade's longevity and appearance. In line with standard rainscreen facade requirements, MetSkin cladding systems are fully drained and ventilated, allowing sufficient ventilation and drainage to the cavity to ensure performance is maintained.

### CWCT tests include:

- Dynamic wind and rain
- Wind and pressure resistance
- Hard and soft body impact testing

### Performance Characteristics:

- Exceptional weather resistance
- Thermal and acoustic insulation
- Safe reaction to fire
- UV Resistance
- Low maintenance requirements

### d. Installation Guidelines:

Comprehensive installation instructions and guidelines are provided to ensure a seamless and efficient installation process. Our systems are designed to accommodate various substructure configurations while maintaining the integrity of the façade.

## 4. The Systems - Hook-On Cassette

### a. Design and Construction

The Hook-on Cassette System consists of precisely engineered cassettes that can be easily attached to a substructure. The concealed fixing system ensures a clean and unobtrusive appearance while allowing for speed of installation and future adjustments.

### b. Installation Process

1. Substructure preparation
2. Hook-On Cassette attachment
3. Interlocking mechanism
4. Fine-tuning and alignment

### c. Hidden Fixing Technology

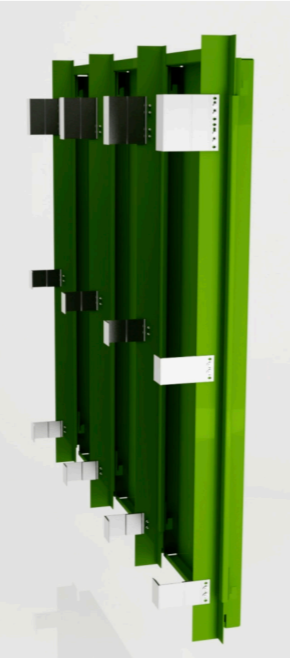
The Hook-on Cassette System presents a contemporary approach to facade design. This system employs fully concealed fixings. Cassettes are easily attached to a supporting substructure through a hook-on mechanism, ensuring efficient installation and future adaptability. The invisible fixing hook-on system has been expertly designed to ensure each panel can be removed and re-fitted individually for cleaning and maintenance if required.

This design allows for a narrow cavity, as the hook can be fitted to almost any flat surface— particularly useful in soffit applications or reduced cavity zones.

MetSkin also offers the option of a half rail as well as a full rail profile with a 40mm face incorporating the hook to affix the panel onto, providing a cost and labour saving solution when abutting to features such as doors and windows in the facade.

### d. Benefits

- Max panel size portrait orientation: 3490mm
- Max panel size landscape orientation: 3460mm
- Adaptability and future modifications
- Half rail profile option
- Allows for a narrow cavity
- Simple to design
- Variable panel sizes to suit the project
- Aesthetically flat, precise panels with no visible fixings

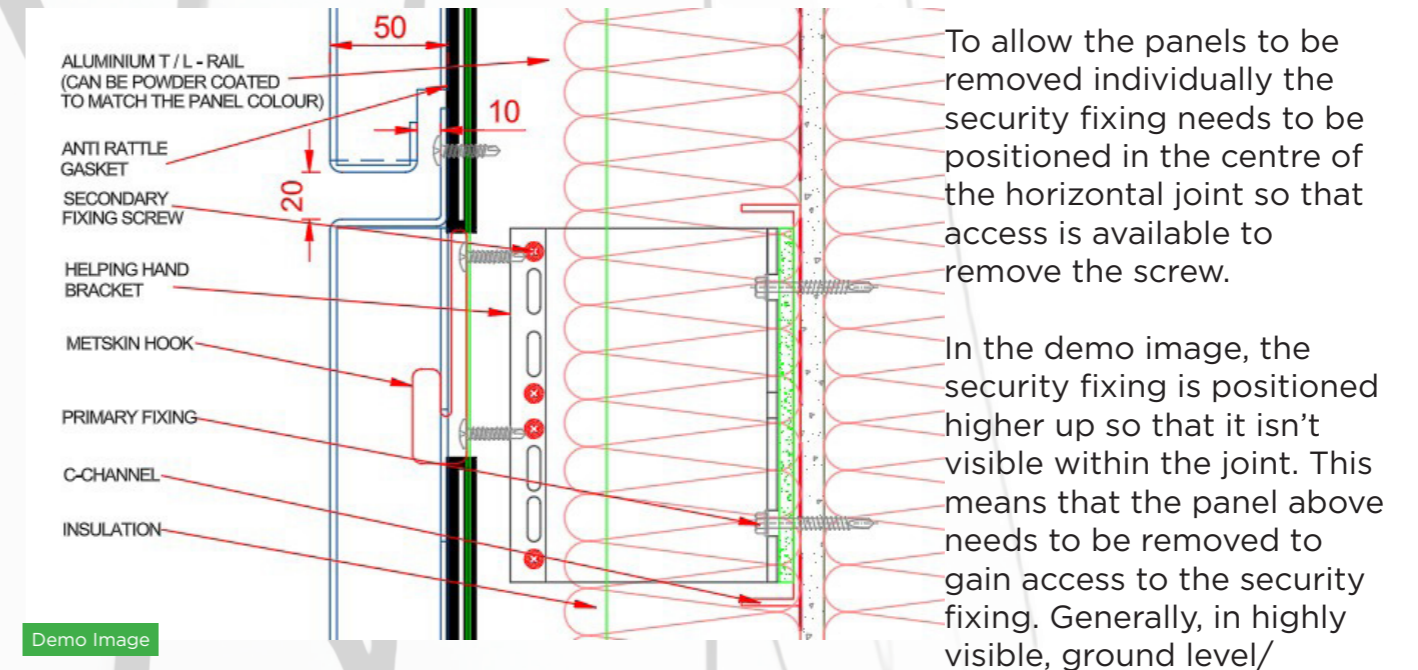


## 4. The Systems - Hook-On Cassette

### e. Technical Details

MetSkin Hook-On panel removal

The panels can generally be removed individually. The thing that affects the ability to remove the panels individually is the location of the security fixing.

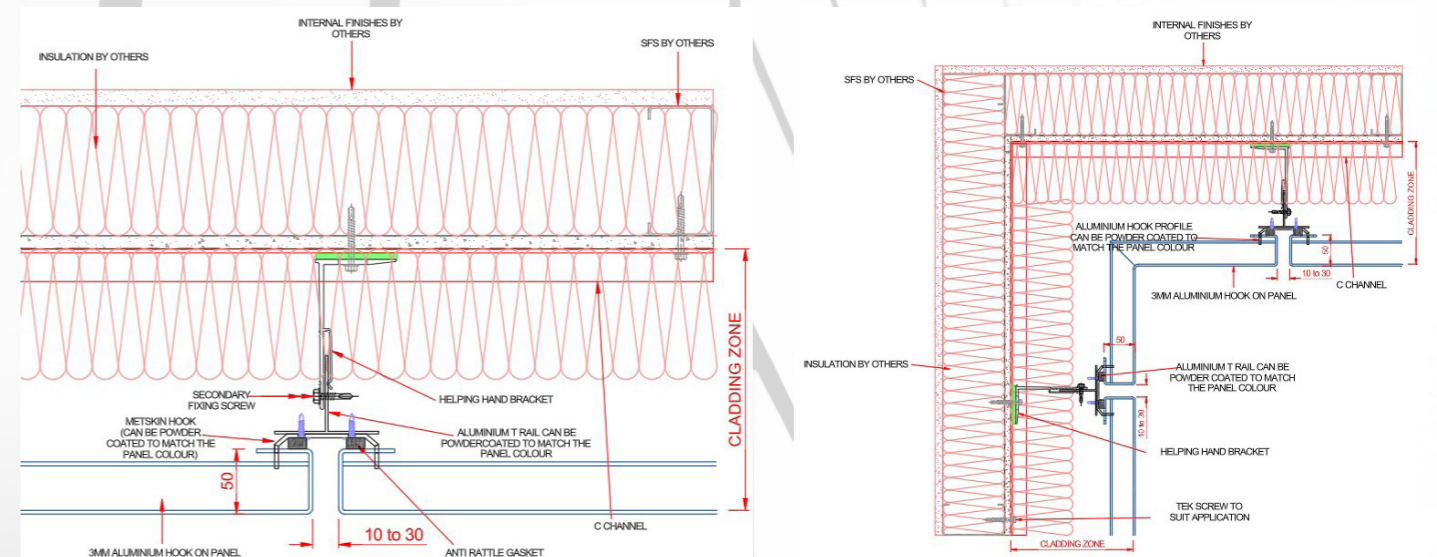


To allow the panels to be removed individually the security fixing needs to be positioned in the centre of the horizontal joint so that access is available to remove the screw.

In the demo image, the security fixing is positioned higher up so that it isn't visible within the joint. This means that the panel above needs to be removed to gain access to the security fixing. Generally, in highly visible, ground level/

accessible areas it's desirable to have the security fixings hidden out of site as per the demo image. For higher up/less prominent positions the security fixings are generally positioned within the joint.

If there is a panel at ground level that needs to be removed and it has a hidden security fixing then the panel/s above will have to be removed to allow access to the hidden security fixing. In a column of five panels high if the bottom panel needs to be removed. The third from bottom panel needs to be removed first, then the second from bottom and then finally the bottom panel.



## 4. The Systems - Hook-On Cassette

### Metskin panel installation sequence

Installing panels often looks straightforward on paper. In reality, without a clear sequence of operations, installation can quickly become inefficient, inconsistent, and prone to errors. That's why we've developed a defined panel installation sequence for MetSkin.



1 Install brackets to substrate, followed by vertical rails, add any thermal breaks required and strips of anti-rattle gasket - all according to the design drawing issued. Single or double hooks are then screwed into place ready to receive the panel. Fit these required hooks in position with a loose fixing first to get the position right, then once lined and levelled fit all the screws into the hooks and fasten prior to presenting the panel to the facade to be hooked down into place.



4 The panel is hooked on with a downward movement and light pressure applied to ensure a secure fit.



5 The panel has been lined and levelled - the fitting is complete.



2 The panel has been pre-fitted with cavity barriers & openings where the panel will drop onto the receiving hooks. There is also a fire cavity barrier fitted within the vertical panel stiffener. This particular panel design includes a pre-fitted return at the base back into the building.



3 Panel is lifted into place, suction devices fitted to the front of the panel can be used for ease and speed.



6 Another level is completed as the installer works up the 11 floors of this residential block.



7 Installation is commonly accessed via scaffolding, scissor lift or mast climbers.

## 4. The Systems - Tray Panel

### a. Design and Construction

The Tray Panel System features individually secured panels with discreet fixings. The system allows for customization in terms of panel dimensions, shapes, and finishes, providing architects with creative freedom.

### b. Installation Process

1. Substructure preparation
2. Tray Panel attachment
3. Fine-tuning and alignment

### c. Discreet Fixing Method

Each panel is attached to the substructure using discreet fixings that maintain the facade's clean lines and visual harmony.

### d. Benefits

- Versatile panel design options
- Efficient Installation
- Half rail profile option
- Perforation patterns available
- Aesthetically flat tray panels with discreet fixings
- Mechanical fixing methods
- Variable sizes to suit the project
- Max panel size portrait orientation: 3440mm
- Max panel size landscape orientation: 3510mm
- Superior quality

### e. Technical Details

The Tray Panel System showcases a harmonious blend of functionality and visual appeal. Each panel is individually secured to the substructure using discreet fixings, ensuring efficient installation while preserving an uninterrupted appearance. The panel design allows for customisation in terms of dimensions, shapes, and finishes, granting architects and designers creative freedom to meet project-specific requirements.

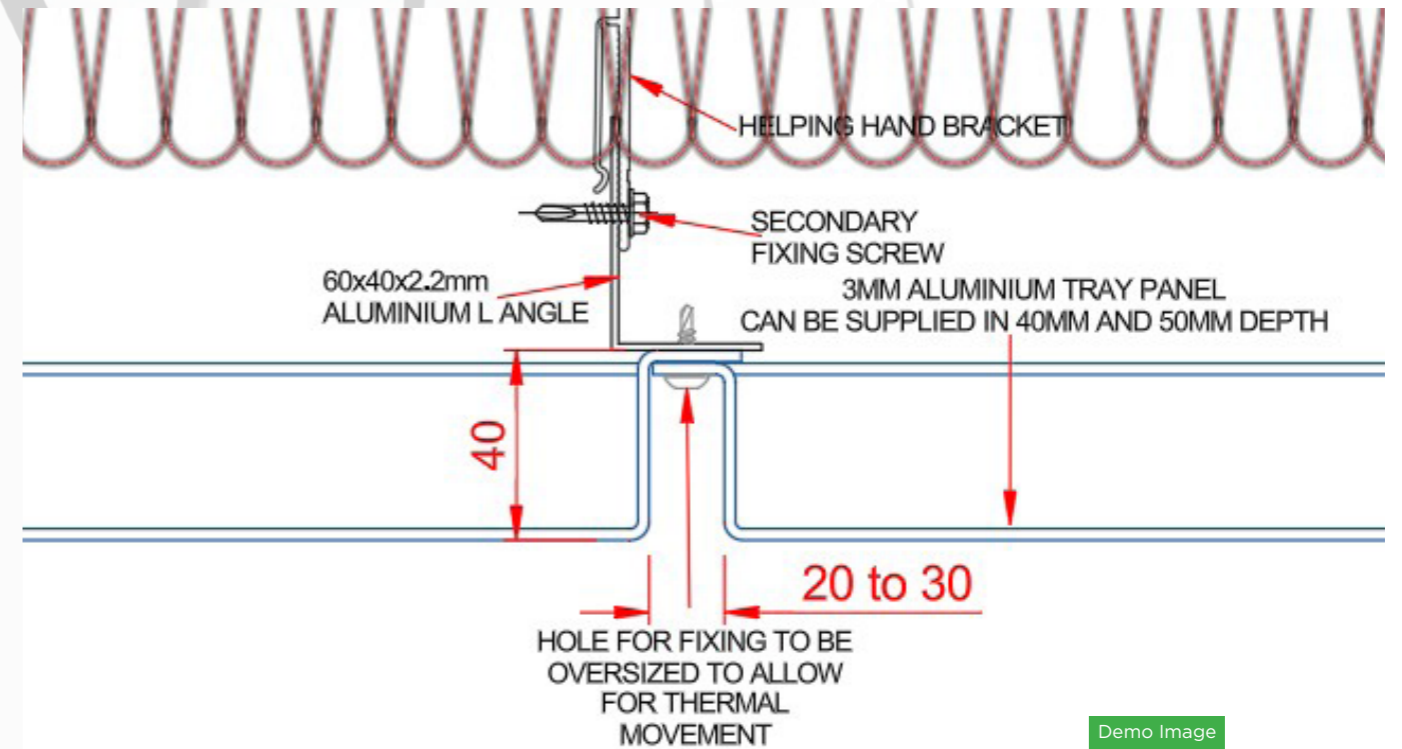
The attachment of each panel to the substructure employs discreet fixings that maintain the facade's clean lines and visual harmony. While discreet fix systems are often chosen for tighter budgets, they do not compromise on quality and aesthetics. The strategically placed, colour matched fixings within the recessed panel joints create a seamless finish.



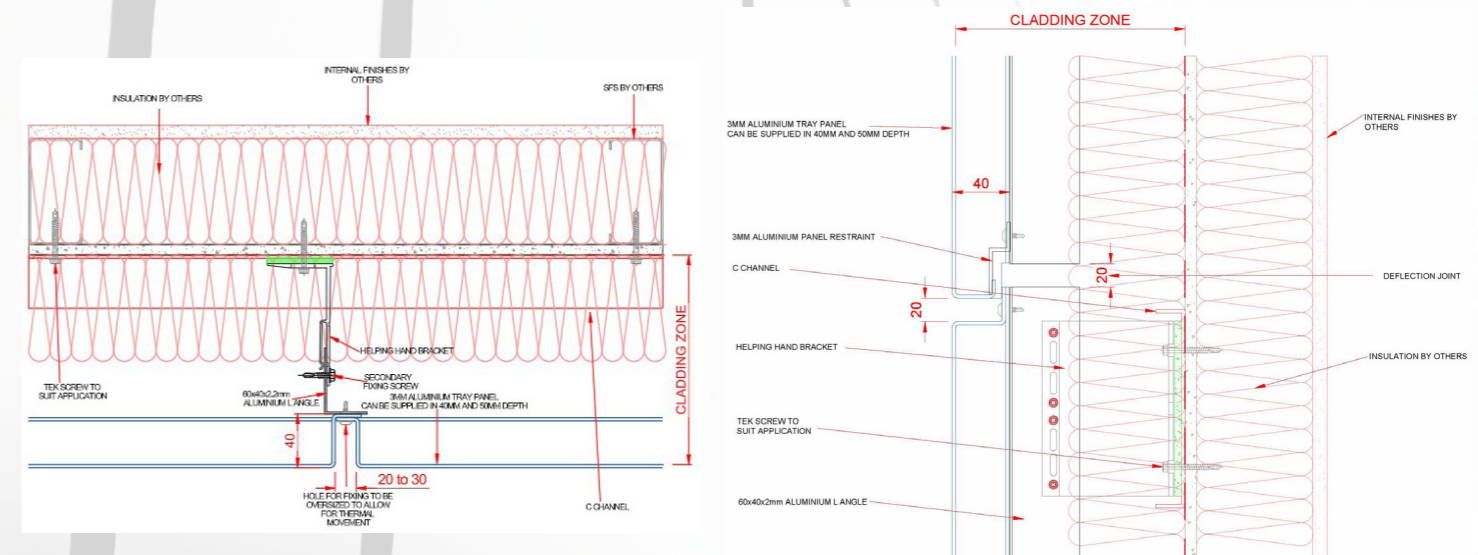
## 4. The Systems - Tray Panel

### MetSkin Tray panel removal

The panels are fixed via a mechanical fixing through the overlapping flanges within a recessed joints as per the demo image.



To remove a panel all fixings need to be removed to loosen it off and to be able to fully remove the panel. Surrounding panels will also have to be removed. In some instances, it may be possible to just loosen off fixings from surrounding panels which will give enough movement to be able to extract the required panel. However on most occasions surrounding panels will have to be removed.



## 4. The Systems - Interlocking Plank System

### a. Design and Construction

The Interlocking Plank System's design ensures structural stability through its interlocking mechanism. Planks are designed to securely fit together, creating a continuous and visually engaging facade.

The planks' interlocking profiles contribute to the facade's robustness and aesthetic appeal, allowing for dynamic architectural designs.

The system's design and high-quality materials offer exceptional resistance to harsh weather conditions, maintaining the facade's longevity and appearance.

### b. Installation Process

1. Substructure Preparation
2. Interlocking Plank attachment
3. Fine Tuning and alignment

### c. Design Flexibility

The Interlocking Plank System offers a versatile solution with its interlocking design, providing both structural stability and design flexibility.

The planks are designed to fit seamlessly together, creating a continuous facade surface. This system is particularly well-suited for projects where a dynamic appearance is desired and offers a cost-effective solution for a sleek linear finish.

The design of the Interlocking Plank System ensures structural stability through its interlocking mechanism. The planks are crafted to securely fit together, forming a continuous and visually engaging facade. Their interlocking profiles contribute to the facade's robustness and aesthetic appeal, allowing for dynamic architectural designs.

### d. Benefits

- Horizontal and Vertical Installation
- Curved and Angled Configurations
- Elongated interlocking panels with discreet fixings.
- Adjustable support system
- Mechanical fixing methods
- Maximum size: 3900mm x 500mm
- Superior quality
- Recyclable



## 4. The Systems - Interlocking Plank System

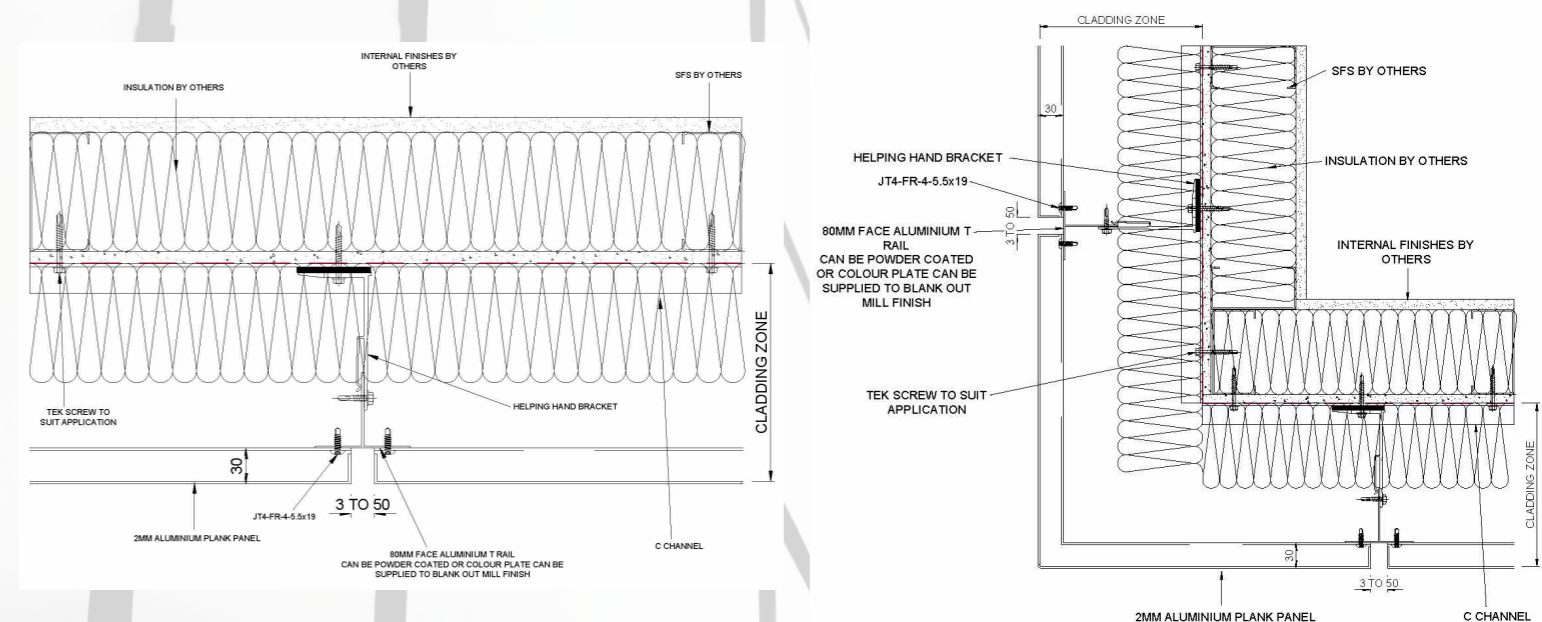
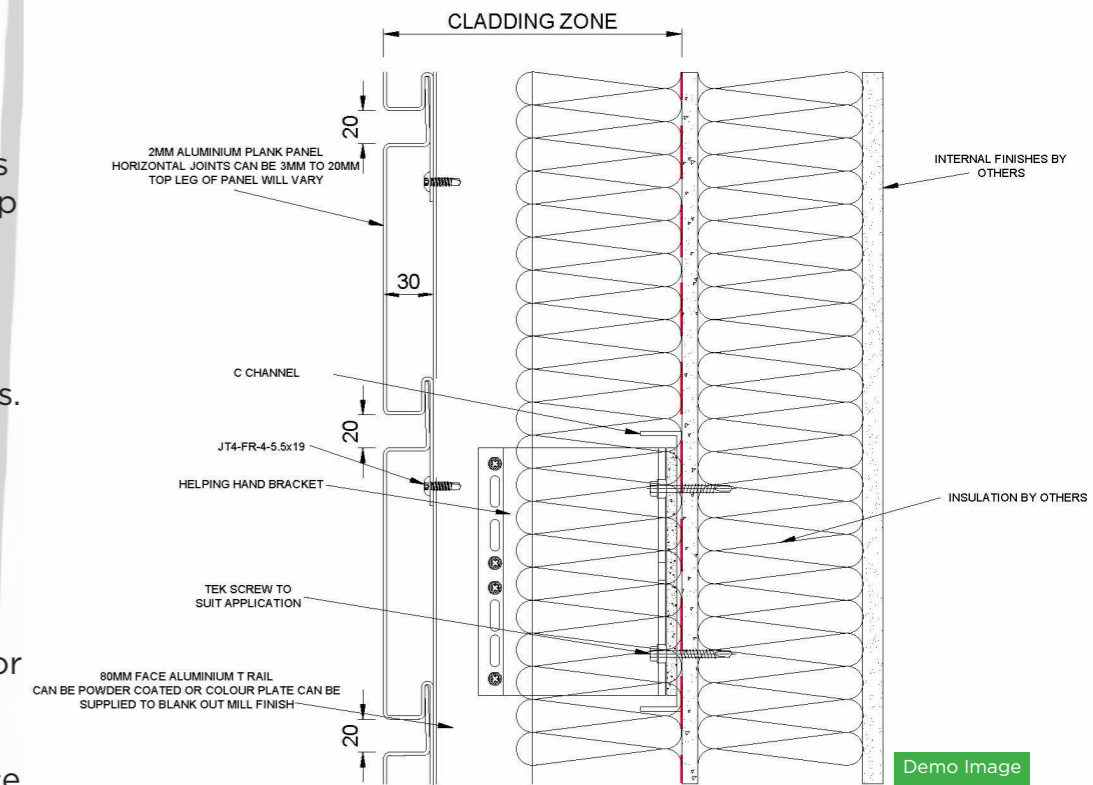
### e. Technical Details

#### MetSkin Interlocking Plank panel removal

Horizontal format panels are installed from the top down and have hidden fixings except for the very last panel that is fitted in position on a vertical column of panels.

The removal method is the reverse of fitting, with fixings removed from the bottom panel the panel will slip out of place exposing fixings for the panel above. Panels can then continue to be removed in this sequence until access to the required panel is reached. For broken bonded/ brick bond layouts, more panels than just a single vertical column will have to be removed.

Vertical format panels would be installed either right to left or left to right with the removal process in the reverse with the same guidelines as above.



## 5. Operations & Maintenance

### a. Introduction

#### a1. Purpose

This Operation, care and maintenance manual is designed to provide guidelines for the safe installation, operation and proper maintenance of the MetSkin Metal Façade Systems provided by Vivalda Group. It includes essential information to ensure the products longevity, performance and aesthetics.

#### a2. Scope

This O&M manual applies to MetSkin Hook-On, Tray Panel and Interlocking Plank systems. It covers the installation, post installation phase, detailing procedures for its efficient operation, regular inspection, cleaning and maintenance.

#### a3. Product Description

The MetSkin Metal Façade Systems offered by Vivalda Group is a high quality, durable and aesthetically appealing cladding system designed to enhance the appearance and energy efficiency of buildings. It consists of aluminium panels and supporting components, providing excellent weather resistance and structural integrity.

#### a4. Safety Considerations

Prior to any operation of maintenance activity, ensure that all safety precautions are followed. Personal protective equipment (PPE) such as gloves and safety glasses should be worn when handling MetSkin Panels. Avoid using abrasive or corrosive cleaning agents, as they may damage the surface finish.

### b. Installation

#### b1. Pre-Installation Checks

Before installation, verify that the site conditions meet the specified requirements. Ensure the substrate is clean, dry and structurally sound. Confirm that all necessary tools and equipment are available for the installation process.

#### b2. Installation Procedures

Follow the installation guidelines for MetSkin Metal Systems to ensure proper assembly and attachment of the MetSkin System Panels. Improper installation can lead to reduced performance and potential safety hazards.

#### b3. Quality Control

After installation, conduct a thorough quality control inspection to verify that the MetSkin Systems are installed correctly and meet the required standards. Address any issues promptly and consult Vivalda Group Technical Services for advice and support.

## 5. Operations & Maintenance

### b4. Manual Handling

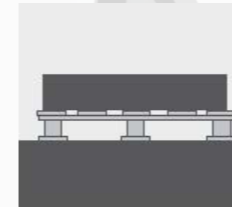
Manual handling risks should be site assessed as some panels may be heavy and awkward to lift. Typical weight of the cladding will not exceed 15 Kg per m<sup>2</sup>.

Care should be taken handling large format panels, especially at height. Ensure enough operators/installers are available for installation of large format panels. Although panels are generally light they can be awkward to move and installation during high winds must be assessed.

Gloves should be worn when handling and installing the product.

### b5. Site Storage

Keep panels on supplied pallets until required to be installed.



Pallets should be stored on a flat, level surface capable of accepting the weight. Pallets should not be stacked unless explicitly stated on packing information.



Care must be taken when storing individual panels 'leaning' against walls with no support across the length/width. Storing panels in this way may cause damage.

Pallets should be moved with suitable equipment and adequately supported across the whole length of the pallet /load. Uneven support may cause issues and damage that only becomes noticeable during installation.

### c. Operation

As the panels form static wall cladding, there are no operating instructions.

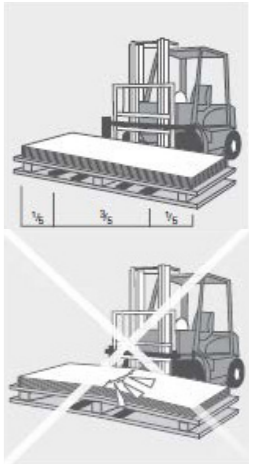
Details on removability and replacement of system elements are included in a later section dealing with replacements.

#### c1. Regular Inspection

Schedule regular inspections of the MetSkin Panels once installed to identify any signs of wear, damage, or defects. Inspect the panels, fixings and support structure.

#### c2. Cleaning and Maintenance

The MetSkin Panels should be cleaned in line with the powder coating manufacturer's recommendations and generally with clear water and a smooth sponge.



## 5. Operations & Maintenance

### Specific Advice:

The Interpon D1036 range of Architectural Powder Coatings are organic coatings that need to be cleaned and maintained regularly to ensure that the decorative and protective properties of the coating are retained.



Specific reference should be made to the terms and conditions of the relevant Interpon D1036 product Guarantee which demands that a routine cleaning & maintenance schedule must be implemented for the guarantee to be valid.

For any particular region or territory, there may be local regulations or local requirements to be met in order to achieve conformance to certain published quality labels or standards. It is the users' responsibility to be aware of such standards.

The frequency of such cleaning will depend on many factors including:

- The geographical location of the building
- The environment surrounding the building, i.e., marine, swimming pool, industrial, or a combination of these environments etc.
- Levels of atmospheric pollution
- Prevailing wind
- Protection of the building by other buildings
- Possibility of airborne debris (e.g. sand/dust etc.) causing erosive wear of the coating
- If the environmental circumstances change during the lifetime of the building (e.g. rural becomes industrial)



The best method of cleaning is by regular washing of the coating using a solution of warm water and mild detergent. All surfaces should be cleaned using a soft cloth or sponge, using nothing harsher than natural bristle brushes. (Cleaning of window sections etc. can be conveniently carried out at the same time as glazing cleaning.)

The frequency of cleaning depends in part on the standard of appearance that is required and also the requirements to remove deposits that could, during prolonged contact with either the powder film or the metal substrate, (if exposed) cause damage.

In hazardous environments the normal frequency of cleaning should be at a maximum of three monthly intervals. However, where there is high atmospheric pollution or an extremely hazardous atmosphere (i.e. a combination of factors above or others) the period between cleaning should be reduced.

## 5. Operations & Maintenance

Where the atmosphere is deemed to be non-hazardous, e.g. rural or a "normal" urban environments, then the period between cleaning can be extended up to a maximum of 12 months. However, if heavy soiling occurs more regular cleaning is required.

The process should be conducted by a professional cleaning contractor and records of all cleaning schedules and frequencies shall be kept and maintained and made available to AkzoNobel if requested.

If the project is subject to any hazardous unusual environmental factors, or is close to salt water, an estuary or marine environments then AkzoNobel must be consulted on an individual project basis.

### c3. Preventative Measures

The extend the lifespan of MetSkin Panels, take the following preventative measures:

- Avoid direct contact with chemicals or solvents that may cause corrosion or discolouration
- Trim vegetation neat the façade to prevent any potential damage
- Ensure gutters and drainage systems are clean and free from debris to prevent water build up or leaking

### d. Troubleshooting

#### d1. Common Issues

Identify potential issues that may arise with the MetSkin System such as:

- Discoloration
- Scratches or abrasions
- Loose or damaged panels

#### d2. Solutions

Address the potential issues as follows:

- Discoloration : Regular cleaning
- Scratches and Abrasions: For minor scratches, consider using a non-abrasive polish or touch up paint. For significant damage, consult with Vivalda Group Technical Services for repair or replacement options
- Loose or damaged panels: Tighten loose fixings and replaced damaged panels promptly to maintain structural integrity

### e. Warranty and Support

The Metskin Aluminium Façade systems come with a standard warranty provided by Vivalda Group. Refer to the warranty documentation for details regarding coverage and terms. For inquiries, support, or assistance contact VIVALDA's Technical Services.

## 6. Supporting Data



### Interpon D Approved Applicators Manual - Aluminium

#### 1. Cleaning and Maintenance Procedures

During the life of the coating it is necessary to ensure the coating is maintained and cleaned.

##### 1.1 Cleaning and Maintenance Guide Interpon D1036

The Interpon D1036 range of Architectural Powder Coatings are organic coatings that need to be cleaned and maintained regularly to ensure that the decorative and protective properties of the coating are retained.

Specific reference should be made to the terms and conditions of the relevant Interpon D1036 product Guarantee which demands that a routine cleaning & maintenance schedule must be implemented for guarantee to be valid.

For any particular region or territory, there may be local regulations or local requirements to be met in order to achieve conformance to certain published quality labels or standards. It is the users' responsibility to be aware of such standards.

The frequency of such cleaning will depend on many factors including:

- The geographical location of the building
- The environment surrounding the building i.e. marine, swimming pool, industrial, or a combination of these environments etc.
- Levels of atmospheric pollution
- Prevailing wind
- Protection of the building by other buildings
- Possibility of airborne debris (e.g. sand/dust etc.) causing erosive wear of the coating

If the environment circumstances change during the lifetime of the building (e.g. rural becomes industrial)

The best method of cleaning is by regular washing of the coating using a solution of warm water and mild detergent. All surfaces should be cleaned using a soft cloth or sponge, using nothing harsher than natural bristle brushes. (Cleaning of window sections etc. can be conveniently carried out at the same time as glazing cleaning.)

The frequency of cleaning depends in part on the standard of appearance that is required and also the requirements to remove deposits that could, during prolonged contact with either the powder film or the metal substrate, (if exposed) cause damage.

## 6. Supporting Data

In hazardous environments the normal frequency of cleaning should be at a maximum of three monthly intervals. However, where there is high atmospheric pollution or an extremely hazardous atmosphere (i.e. a combination of factors above or others) the period between cleaning should be reduced.

Where the atmosphere is deemed to be non-hazardous, e.g. rural or a "normal" urban environments, then the period between cleaning can be extended up to a maximum of 12 months. However, if heavy soiling occurs more regular cleaning is required. The process should be conducted by a professional cleaning contractor and records of all cleaning schedules and frequencies shall be kept and maintained and made available to AkzoNobel if requested.

If the project is subject to any hazardous unusual environment factors, or is close to salt water, an estuary or marine environments then AkzoNobel must be consulted on an individual project basis.

#### **Do not under any circumstances use strong solvents or solutions containing:**

- Chlorinated Hydrocarbons
- Esters
- Ketones
- Abrasive Cleaner or polish

For fine texture finishes within the D1036, D2525 Futura and Structura collections, it is recommended that spiral wrap is used as an alternative to low tack tape to ensure sufficient protection of the coated parts.

##### 1.2 Cleaning and Maintenance Guide Interpon D2525

The Interpon D2525 Range of Architectural Powder Coatings are organic coatings, which need to be cleaned and maintained regularly to ensure that the decorative and protective properties of the coating are retained.

Specific reference should be made to the terms and conditions of the relevant Interpon D2525 Product Guarantee, which demands that a routine cleaning & maintenance schedule must be implemented for the guarantee to be valid.

For any particular region or territory, there may be local regulations or local requirements to be met in order to achieve conformance to certain published quality labels or standards. It is the users' responsibility to be aware of such standards.

The frequency of such cleaning will depend on many factors including:

- The geographical location of the building
- The environmental surrounding the building i.e. marine, swimming pool, industrial, or a combination of these environments etc

## 6. Supporting Data

### Cleaning Maintenance (Continued)

- Levels of atmospheric pollution
- Prevailing wind
- Protection of the building by other buildings
- Possibility of airborne debris (e.g. sand/dust etc) causing erosive wear of the coating
- If the environmental circumstances change during the lifetime of the building (e.g. rural becomes industrial)

The best method of cleaning is by regular washing of the coating using a solution of warm water and mild detergent. All surfaces should be cleaned using a soft cloth or sponge, using nothing harsher than natural bristle brushes. (Cleaning of window sections etc can be conveniently carried out at the same time as glazing cleaning.) The frequency of cleaning depends in part on the standard of appearance that is required and also the requirements to remove deposits that could, during prolonged contact with either the powder film or the metal substrate, (if exposed) cause damage.

In hazardous environments the normal frequency of cleaning should be at a maximum of three monthly intervals. However where there is a high atmospheric pollution or an extremely hazardous atmosphere (i.e. a combination of factors above or others) the period between cleaning should be reduced.

Where the atmosphere is deemed to be non hazardous, e.g. rural or a “normal” urban environments, then the period between cleaning can be extended up to a maximum of 18 months. However, if heavy soiling occurs more regular cleaning is required.

The process should be conducted by a professional cleaning contractor and records of all cleaning schedules and frequencies shall be kept and maintained and made available to AkzoNobel if requested. If the project is subject to any hazardous unusual environmental factors, or is close to salt water, an estuary or marine environments then AkzoNobel must be consulted on an individual project basis.

Do not under any circumstances use strong solvents or solutions containing:

- Chlorinated Hydrocarbons
- Esters
- Ketones
- Abrasive Cleaner or polish

For fine texture finishes within the D1036, D2525 Futura and Structura collections, it is recommended that spiral wrap is used as an alternative to low tack tape to ensure sufficient protection of the coated parts.

## 6. Supporting Data

### Guide to correct specification of Powder Coated Aluminium

#### Guidance Note:

#### Guide to correct specification of powder coated aluminium

#### Scope

These recommendations cover specification guidance of painted aluminium extrusions and curtain wall panels. The guide is intended for specifying powder coated, architectural and aluminium extrusions such as window frames, door frames, railings and trim as well as curtain wall panels, column covers, spandrels, mullions, louvers, vertical trim, etc.

#### Purpose

These recommendations are intended to assist architects, contractors, owners and building managers who are concerned with the specification of painted, architectural aluminium.

#### General

Powder coating was introduced into the UK in the early 1970's and is the youngest of the surface finishing techniques in common use today. The finish is commonly used in various applications including white goods, automotive, and engineering as well as in construction.

Powder coating is the technique of applying dry paint to a part in the form of a fine powder which is electrically charged. The part is electrically 'earthed' so the powder is attracted to the part and stays in place through static electricity. The part is then placed in an oven and is subject to temperature which melts the polyester and allows the finish to flow and cure before the part is cooled and ready to use.

Powder coating differs from 'wet paints' which typically use a solvent where the solids are in suspension in a liquid carrier which must fully evaporate before the finish is ready to use.

The main advantage of using powder coating is the reduced impact to the environment as powder coating uses no solvent in the application process.

Polyester powder coating is the most commonly used system when coating architectural aluminium.

Polyester powder coating is available in a wide range of finishes from solid colours in various gloss levels, through to textured or metallic effects.

## 6. Supporting Data

### Process

In order to correctly specify a powder coat finish it's useful to understand the basic process of powder coating as finish failure, as rare as it may be, is often not the failure of the powder finish itself.

### Pre-Treatment

Aluminium supplied direct from the extrusion process is often contaminated with oil and other residues which will affect the longevity of the final coating. Unfinished aluminium supplied from stock will have traces of natural oxidisation on the surface. It is vital therefore that the pre-treatment is correctly carried out to a very high standard.

The vast majority of powder coat failures can be put down to poor or inconsistent pre-treatment offers two main benefits:

- Offers an air and watertight 'seal' to the aluminium
- Offers a good 'key' surface to the powder to adhere to

The basic procedure carried out in either immersion baths or vertical spray method is:

1. Clean
2. Rinse
3. Etch
4. Rinse
5. Desmut (only when using alkaline etch)
6. Rinse
7. Chromate or Chrome Free Conversion
8. Rinse
9. Demin Rinse
10. Dry

At all times during the process the concentration of chemicals used in the baths or spray bottles must fall within specified limits.

### Powder Coating

Once dry the pre-treated aluminium is placed on a moving overhead gantry which transfers the aluminium to a spray booth. Powder coating guns coat the aluminium extrusions, cast aluminium or sheet with a fine but controlled surface thickness of powder. Any over-sprayed powder can be collected and re-used giving a coating efficiency that can be in excess of 95%.

Without being handled the aluminium is transferred by the gantry into a continuous oven at between 160 to 210°C. In the oven the temperature heats the aluminium and the powder undertakes four basic stages to full cure, melt flow, gel and cure. Once cooled the finished aluminium can be used immediately.

## 6. Supporting Data

### British Standards

The current British Standard and European Standard for powder coating is covered in:

### BS EN 12206-1:2004

### 'Paints and varnishes - Coating of aluminium and aluminium alloys for architectural purposes'

This replaces the earlier British Standard BS 6496:1984.

The 2004 BS EN standard covers primarily the pre-treatment process and the testing of suitable test samples which accompany the material throughout the process.

### Qualicoat Standard

The Qualicoat standard, which can be downloaded from the European website [www.qualicoat.net](http://www.qualicoat.net), offers a more in-depth specification of the process and importantly encompasses BS EN 12206-1:2004 in its entirety.

The Qualicoat standard is 'adopted' by member of the association in their various countries. Only when members meet the stringent levels laid down in the standard can they use the Qualicoat logo and seal of approval. In the UK all members are regularly visited, without prior notice, by an independent assessor, Exova. If quality standards laid down by Qualicoat are not being met the coater may lose their licence.

Qualicoat also qualify the powder manufacturers and pre-treatment chemical companies in vertical integration to ensure a complete up-stream compliance.

As the Qualicoat standard is constantly being reviewed and improved by its independent membership there need to quote a fixed reference. The use of 'Qualicoat' approved supply is sufficient to ensure material is provided by a Qualicoat Approved supplier in the UK or overseas in accordance with up to date Qualicoat standards.

## 6. Supporting Data

### How to specify

To ensure the correct performance powder coating for architectural use is specified, the following statement should be included:

#### 'Architectural powder coating to Qualicoat standard from approved supplier'

For projects located near to the coast there is a 'Seaside' class which offers a more intensive pre-treatment process, in this instance it should be specified:

#### 'Architectural powder coating to Qualicoat 'Seaside' standard from approved supplier'

All powder coatings, however, will age over time and using higher durability powders will ensure that the surface finish looks better for longer. Higher durability powders can be used on high rise applications, or other places where access could be difficult or where there is a particularly harsh environment.

Powders for architectural coatings fall into three basic classes:

**Class 1** - 1 year 'Florida' - weather exposure - standard

**Class 2** - 3 year 'Florida' - weather exposure

**Class 3** - 10 year 'Florida' - weather exposure

In class 1 the sample must retain at least 50% of its original gloss level at the end of the test, whereas for class 2 powders they must retain at least 75% and class 3 powders at least 90% over the same period of exposure. Colour variation over time is similarly more stringent on classes 2 and 3.

Further guidance on the use of any of the above standards is available from any approved Qualicoat member.

### Disclaimer

The information provided in this document is for guidance only and is not intended to replace any manufacturers recommended procedures. Qualicoat UK & Ireland strongly recommend that a qualified member of the association is contacted and underwrites and procedures which apply to powder coated finishes.

\*Guidance taken from Qualicoat Guide: September 2010.

## 6. Supporting Data

### MetSkin Data Sheet



## PRODUCT PROPERTIES

### MetSkin offers three primary system types:

- Hook-On Cassette System with Secret Fixings
- Tray Panel System with Discreet Fix
- Interlocking Plank System with Discreet Fix



Features:	Hook On	Tray	Plank
Fixings	Concealed	Discreet	Discreet
Max Size	Portrait: 3490mm Landscape: 3460mm	Portrait: 3440mm Landscape: 3510mm	3900mm x 500mm
Aluminium	Thickness: 2mm/3mm Grade: 1050 and 3000 series		
Weight	5.5/kg/m <sup>2</sup> to 8.3kg/m <sup>2</sup> based on thickness and grade		
Finishes	A1 Anodized Aluminium A1 PVDF Pre-Coated Aluminium A2 Aluminium Polyester Powder Coated		
Application	Horizontal or Vertical		
Substrate	Masonry, concrete, SFS		
Substructure	Nvelope SFS or equal approved by MetSkin/Vivalda		
Insulation	Approved fire rated insulation		
Testing	CWCT Sequence B testing		
Fire	Capable of achieving A1 or A2 classification under EN 13501		

## 6. Supporting Data

### PRODUCT PROPERTIES



#### Fire performance:

Aluminium facades are widely used in modern construction due to their lightweight, durable and aesthetic qualities. Generally, MetSkin panels, suitable support structure and ancillary items are capable of achieving an A1 or A2 classification under EN 13501.

#### CWCT Testing:

Our systems have been tested to CWCT (Centre for Window & Cladding Technology) standards ensuring they meet rigorous industry standards and are resilient to extreme weather conditions, maintaining the façade's longevity and appearance. In line with standard rainscreen requirements, MetSkin cladding systems are fully drained and ventilated, allowing sufficient ventilation and drainage to the cavity to ensure performance is maintained.

CWCT tests include:

- Dynamic Wind and Rain
- Wind Resistance
- Hard and Soft Body Impact Testing

#### Materials and Finishes:

MetSkin manufactured by MSP Façade Solutions, benefits from the services of their in-house powder coaters 'Prism Powder Coating', Scotland's most accredited powder coaters.

Prism Powder Coating has been producing the highest quality powder coating for decades. The chrome free environmentally friendly in-house facility has achieved both Qualicoat accreditation and Akzo Nobel approved applicator status. The only Powder Coater in Scotland to hold both accolades and 1 of only 20 in the UK. The complete production process is managed on the same site which benefits from minimal handling and gives the manufacturer complete control, contributing to a faster turnaround time.

#### Finishes:

- Anodized Aluminium
- PVDF Pre-Coated Aluminium
- Powder Coated Aluminium



## 6. Supporting Data

### Fire performance of MetSkin material & supporting data

Aluminium is generally considered non-combustible: it is listed as such in the CON-SLEG: 1996D0603 –12/06/2003 document, which is readily available online. Aluminium facades are widely used in modern construction due to their lightweight, durable and aesthetic qualities. Generally, MetSkin panels, suitable support structure and ancillary items are capable of achieving an A1 or A2 classification under EN 13501.

EN 13501-1 is a European standard that classifies construction products based on their reaction to fire. The standard defines several parameters that contribute to the overall reaction to fire classification, including:

- Ignitability (SBI Test)
- Flame Spread (SBI Test)
- Heat Release Rate (HRR)
- Smoke Production (SBI Test)
- Droplet/Particle Formation (SBI Test)

## 6. Supporting Data

### CWCT Test Certification for MetSkin Hook-On Cassette System

#### Certificate of Testing



**Certificate Number:** 2023/121  
**Date:** 24<sup>th</sup> May 2024  
**System:** Vivalda MetSkin Hook-on Cassette  
**System supplier:** MSP (Scotland) Limited  
1-9 Telford Road  
East Lenziemill  
Cumbernauld  
G67 2AX  
**Tests performed:** Wind resistance – serviceability ✓  
Wind resistance – safety ✓  
Watertightness – dynamic ✓  
Soft body impact ✓  
Hard body impact ✓

In accordance with 'Standard for Systemised building envelopes' CWCT, 2006

 Test Witness

 Director

Centre for Window and Cladding Technology, The Studio, Entry Hill, Bath, BA2 5LY  
Tel: 01225 330945, email: [cwct@cwct.ac.uk](mailto:cwct@cwct.ac.uk) [www.cwct.co.uk](http://www.cwct.co.uk)

Company registered in England at RSM, Third Floor, Priory Place, New London Road, Chelmsford, CM2 0PP  
Number 13816347; VAT number: 431 7993 73

## 6. Supporting Data


### CWCT Test Certification for MetSkin Plank System


#### Certificate of Testing



**Certificate Number:** 2023/119  
**Date:** 23<sup>rd</sup> August 2024  
**System:** Vivalda MetSkin Plank System  
**System supplier:** MSP (Scotland) Limited  
1-9 Telford Road  
East Lenziemill  
Cumbernauld  
G67 2AX  
**Tests performed:** Wind resistance – serviceability ✓  
Wind resistance – safety ✓  
Watertightness – dynamic ✓  
Soft body impact ✓  
Hard body impact ✓

In accordance with 'Standard for Systemised building envelopes' CWCT, 2005

 Mark Elliot  
Test Witness

 David Metcalfe  
Director

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Tel: 01225 330945, email: [cwct@cwct.ac.uk](mailto:cwct@cwct.ac.uk) [www.cwct.co.uk](http://www.cwct.co.uk)

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Number 13816347; VAT number: 431 7993 73

## 6. Supporting Data

Consolidated text produced by the Consleg system of the office of Official Publications of the European Communities.

CONSLEG: 1996D0603 - 12/06/2003



Office for Official Publications of the European Communities



Available on [www.bbri.be](http://www.bbri.be)

1996D0603 — EN — 12.06.2003 — 002.001 — 1

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**► B** **COMMISSION DECISION**  
of 4 October 1996  
establishing the list of products belonging to Classes A ‘No contribution to fire’ provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products  
(Text with EEA relevance)  
(96/603/EC)  
(OJ L 267, 19.10.1996, p. 23)

Amended by:

	Official Journal		
	No	page	date
<b>► M1</b> Commission Decision 2000/605/EC of 26 September 2000	L 258	36	12.10.2000
<b>► M2</b> Commission Decision 2003/424/EC of 6 June 2003	L 144	9	12.6.2003

## 6. Supporting Data

▼ B

**COMMISSION DECISION**  
of 4 October 1996  
establishing the list of products belonging to Classes A ‘No contribution to fire’ provided for in Decision 94/611/EC implementing Article 20 of Council Directive 89/106/EEC on construction products  
(Text with EEA relevance)  
(96/603/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products <sup>(1)</sup>, as amended by Directive 93/68/EEC <sup>(2)</sup>,

Having regard to Commission Decision 94/611/EC of 9 September 1994 implementing Article 20 of Council Directive 89/106/EEC on construction products <sup>(3)</sup>, and in particular Article 1 (1) thereof,

Whereas Article 3 (2) of Directive 89/106/EEC states that in order to take account of different levels of protection for the construction works that may prevail at national, regional or local levels, each essential requirement may give rise to the establishment of classes in the interpretative documents and the technical specifications;

Whereas point 4.2.1 of Interpretative Document No 2 ‘Safety in case of fire’, contained in the Communication of the Commission with regard to the interpretative documents of Council Directive 89/106/EEC <sup>(4)</sup>, justifies the need for different levels of the Essential Requirement as a function of the type, use and location of the construction work, its layout, and the availability of the emergency facilities;

Whereas point 2.2 of Interpretative Document No 2 lists a number of interrelated measures for the satisfaction of the Essential Requirement ‘Safety in case of fire’ which, together, contribute to the definition of a fire-safety strategy that can be developed in different ways in Member States;

Whereas point 4.2.3.3 of Interpretative Document No 2 identifies one of the measures prevailing in Member States that consists in limiting the generation and spread of fire and smoke within the room of origin (or in a given area) by limiting the contribution of construction products to the full development of a fire;

Whereas the definition of classes of the Essential Requirement depends partially on the level of such limitation;

Whereas the level of limitation may be expressed only by different levels of product performance, in the products end-use conditions, in reaction to fire;

Whereas point 4.3.1.1 of Interpretative Document No 2 specifies that to enable the reaction-to-fire performance of products to be evaluated, a harmonized solution will be developed which may utilize full or bench-scale tests that are correlated to relevant real fire scenarios;

Whereas this solution lies in a system of classes which are not included in the interpretative document but which were adopted in Decision 94/611/EC;

Whereas in the system of classes contained in Decision 94/611/EC, the category ‘No contribution to fire’ was established with a view to

<sup>(1)</sup> OJ No L 40, 11. 2. 1989, p. 12.

<sup>(2)</sup> OJ No L 220, 30. 8. 1993, p. 1.

<sup>(3)</sup> OJ No L 241, 16. 9. 1994, p. 25.

<sup>(4)</sup> OJ No C 62, 28. 2. 1994, p. 1.



Available on [www.bbri.be](http://www.bbri.be)

▼ B

covering products which do not need to be tested for their reaction to fire and which are referred to as Classes A in Tables 1 and 2 and, additionally, in Table 1 as ‘list of non-combustible products’;

Whereas Article 20 (2) of Directive 89/106/EEC indicates the procedure to be followed for the adoption of the provisions necessary for the establishment of classes of requirements in so far as they are not included in the interpretative documents;

Whereas the measures provided for in this Decision are in accordance with the opinion of the Standing Committee on construction,

HAS ADOPTED THIS DECISION:

*Article 1*

▼ M1

The materials, and products made from them, that are listed in the Annex to this Decision, shall, on account of their low level of combustibility and subject to the conditions also set out in the Annex, be classified in Classes A1 and Class A1<sub>FL</sub> as provided for in Tables 1 and 2 of the Annex to Decision 2000/147/EC.

▼ B

For the purpose of this classification, no reaction-to-fire testing of those materials and products made from them shall be required.

*Article 2*

This Decision is addressed to the Member States.

▼ B

*ANNEX*

▼ M1

Materials to be considered as reaction to fire Classes A1 and A1<sub>FL</sub> as provided for in Decision 2000/147/EC without the need for testing

▼ B

*General notes*

Products should be made only from one or more of the following materials if they are to be considered as ► M1 Class A1 and Class A1<sub>FL</sub> ◄ without testing. Products made by gluing one or more of the following materials together will be considered ► M1 Class A1 and Class A1<sub>FL</sub> ◄ without testing provided that the glue does not exceed 0,1 % by weight or volume ► M1 (whichever is the more onerous) ◄.

Panel products (e.g. of insulating material) with one or more organic layers, or products containing organic material which is not homogeneously distributed (with the exception of glue) are excluded from the list.


Products made by coating one of the following materials with an inorganic layer (e.g. coated metal products) may also be considered as ► M1 Class A1 and Class A1<sub>FL</sub> ◄ without testing.

None of the materials in the table is allowed to contain more than 1,0 % by weight or volume ► M1 (whichever is the more onerous) ◄ of homogeneously distributed organic material.

## 6. Supporting Data

Material	Notes
Expanded clay	
Expanded perlite	
Expanded vermiculite	
Mineral wool	
Cellular glass	
Concrete	Includes ready-mixed concrete and precast reinforced and prestressed products
Aggregate concrete (dense and lightweight mineral aggregates, excluding integral thermal insulation)	May contain admixtures and additions (e.g. PFA), pigments and other materials. Includes precast units
Autoclaved aerated concrete units	Units manufactured from hydraulic binders such as cement and/or lime, combined with fine materials (siliceous material, PFA, blast furnace slag), and cell generating material. Includes precast units.
Fibre cement	
Cement	
Lime	
Blast furnace slag/pulverized fly ash (PFA)	
Mineral aggregates	
Iron, steel and stainless steel	Not in finely divided form
Copper and copper alloys	Not in finely divided form
Zinc and zinc alloys	Not in finely divided form
Aluminium and aluminium alloys	Not in finely divided form
Lead	Not in finely divided form

## 6. Supporting Data



UK Aluminium Industry Fact Sheet 11

# Aluminium and Fire

**ALFED**  
ALUMINIUM FEDERATION

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## 6. Supporting Data

### Introduction

Aluminium and its alloys are the most commonly used non-ferrous metal materials and they find wide application in transport, building, packaging, general and electrical engineering. The excellent physical and mechanical properties of aluminium alloys lead to their widespread use. The alloys are light but strong and their use in transport saves fuel over the whole of the vehicle lifetime. The alloys can be fabricated or cast by all conventional processes, joined by welding or adhesive bonding and given a variety of surface coatings. These coatings, together with the inherent high degree of resistance to corrosion by the alloys, allow the use of aluminium components in aggressive environments. Finally, after use even over many years, the aluminium can be recycled, with a saving of energy of 95% of that required through the primary smelter production route.

Because of the widespread use of aluminium alloys in building, transport, home appliances and offshore structures, it is necessary to address the issue of aluminium and fire and to answer the question, 'does aluminium burn?'

The answer is, of course, "No". Each year hundreds of thousands of tonnes of aluminium scrap are fed into remelt furnaces and heated up to and beyond the melting point. The aluminium melts when the temperature exceeds the melting point, it does not burn. If it did, the recycling of aluminium would not be possible.

During and following the Falklands conflict between Great Britain and Argentina, several misleading statements appeared in the press, suggesting that aluminium alloys, used in the superstructure of some of the ships that were sunk, had burned and contributed to the loss of these ships. Of the nine ships sunk in this conflict, only three had aluminium superstructures. All three vessels had steel hulls and in each case the damage inflicted suggested that these vessels would have sunk regardless of the materials of the superstructure. In no case did aluminium burn. HMS Sheffield, the first British destroyer to be sunk, was widely reported to have an aluminium superstructure. This was, in fact, an all-steel ship with a steel hull and a steel superstructure. The Defence White Paper published on 14 December 1982 concluded, 'there is no evidence that aluminium has contributed to the loss of any vessel'. Similar conclusions were reached by the Ministry of Defence Working Party convened to review ship design. The Chairman of that Working

Party was reported in the Financial Times, 24 December 1982, 'I am not aware of any evidence to suggest that any ship was lost because of the use of aluminium in its construction, nor was there any evidence that aluminium or aluminium alloys had burned or suffered from a series of small explosions. Aluminium, like any other material, has advantages and disadvantages in any given set of circumstances. Where the balance is in favour, aluminium should be used in warships or elsewhere.'

In fire tests on aluminium materials, when the temperature exceeds the melting point, in the range 600-660°C, the aluminium surface exposed to the fire can be seen to melt, but it does not burn. At the end of the fire test, the metal remains as a resolidified pool.

Aluminium in the form of finely divided powder or flake oxidises exothermically, but this is a very special case because of the very large surface-area-to-weight ratio. Aluminium then behaves in a similar way to other finely divided materials such as iron and titanium, tea, flour and coal, all of which will also readily oxidise exothermically in the powder form.

### Aluminium in a Fire

If aluminium is involved in a fire and the temperature rises to above its melting point, the metal begins to melt. The melting point of a metal, like its density, strength, or corrosion resistance, is a characteristic which can be measured and used to design the most effective component for any particular application.

The thermal conductivity of aluminium is around four times that of steel and its specific heat twice that of steel. This means that heat is conducted away faster and a greater heat input is necessary to bring the same mass of aluminium to a given temperature, compared with steel. Where an aluminium structure is exposed to the heat of a fire, the relatively high thermal conductivity enables the heat to be rapidly conducted away from the exposed area. This helps to reduce hot spots where significant localised property loss could occur, so extending the serviceability period. It will, however, cause the temperature to rise elsewhere. The extent of dissipation of heat elsewhere in the structure will depend on the degree of thermal insulation provided to the aluminium elsewhere in the structure, necessary to provide fire protection in that area. The high reflectivity of weathered

## 6. Supporting Data

aluminium is 80% to 90%, compared with 5% for painted steel and 25% for stainless steel. This is of considerable benefit and will assist in prolonging endurance of an aluminium structure in a fire.

The attached photograph is a good example of the behaviour of aluminium in the massive form in a fire. A car, with aluminium alloy wheels, was caught in a forest fire that swept over the car and moved on. Afterwards it was found that the aluminium wheels had melted, molten aluminium had run off and collected in a pool of metal which solidified as the fire moved on and the temperature fell. The aluminium had not burnt.

### Aluminium in Building

Aluminium alloy components are widely used in building as cladding and roofing materials, windows and doors. As defined by BS 476: Part 4 and the 1974 SOLAS Convention (as amended) aluminium alloys are 'non-combustible' and also provide Class 1 surface spread of flame to BS 476: Part 7. In addition, BS 476: Part 3 covers external fire exposure roof tests and the classifications laid down in the standard range from AA to DD. The first letter refers to the fire penetration performance and the second letter to the surface spread of flame. Aluminium and its alloys are rated AA, the highest possible under this classification system. Materials are also tested for fire propagation performance to BS 476: Part 6 (1989) and coating systems are taken into account. Aluminium achieves excellent ratings under this Standard.

Three principal methods of fire protection are employed, using fire resistant insulating layers protecting an underlying aluminium component. Examples have used ceramic fibre, intumescent coatings applied to the aluminium element or composite systems with aluminium external skins. The latter have been demonstrated to be applicable both as load-bearing elements and as add-on panel systems. The aluminium skin on the exposed fire side of the system is sacrificial and melts, revealing a supported fire insulation material which provides the required period of fire performance and protects the remaining aluminium elements of the system. A small increase in insulation thickness is usually required to take account of the lower maximum working temperature limit of aluminium compared to steel. The use of radiation shielding around structures such as stair towers and walkways can provide protection, not only to personnel during a fire but prevent the temperature of the aluminium structure



exceeding the working limits during the design time period.

As with all metallic materials, as the temperature increases the strength of aluminium alloys is reduced at a rate dependent on the alloy. The structural aluminium alloys have useful maximum working temperature limits that range from 200° to 250°C. Above this temperature the strength is significantly reduced.

### Aluminium in Marine and Offshore Applications

Aluminium alloys, particularly the aluminium-magnesium alloys, have been used since the 1930s in many marine applications. In offshore structures aluminium alloys are used in many applications such as helicopter landing decks, stairs and walkways, link bridges, housings for electrical equipment and even complete living quarter modules. Considerable cost savings can accrue by the use of aluminium without any increased fire risk. The use of aluminium also keeps the total weight down and keeps the centre of gravity as low as possible.

For information on Fire Resistance Testing we suggest contacting <http://www.warringtonfire.net/>

**Further information about aluminium and aluminium alloys, their production, fabrication and end use can be obtained from:**

- (1) European Aluminium Association in Brussels  
[www.eaa.net](http://www.eaa.net)
- (2) International Aluminium Institute in London  
[www.world-aluminium.org](http://www.world-aluminium.org)

## UK & Ireland Distributors:

Get in touch with our team today to learn more about how our Aluminum Facade Cladding systems can work for your project.



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**MetSkin is manufactured by MSP Facades Solutions, part of the Vivalda Group.**  
**MetSkin distributors provide nationwide support covering the UK & Ireland.**  
**Benefitting from decades of experience in manufacturing and distributing façade materials, our exclusive distributors can provide design assistance and support for any application.**

