

## Syntha Pulvin | Technical Manual

### CONTENTS

<b><u>INTRODUCTION TO THE SYNTHA PULVIN SYSTEM</u></b> .....	4
<b><u>WHY USE THE SYNTHA PULVIN SYSTEM</u></b> .....	6
<b><u>ENVIRONMENTAL CONSIDERATIONS</u></b> .....	9
<b><u>THE SYNTHA PULVIN PRODUCT RANGE</u></b> .....	11
<b><u>APPROVED APPLICATORS – APPROVAL &amp; REMOVAL</u></b> .....	13
<b><u>APPROVED APPLICATORS – IN-HOUSE USERS</u></b> .....	13
<b><u>TECHNICAL ADVISORY SHEETS</u></b> .....	14
<b><u>DESIGN 1-4</u></b> .....	15
1. Substrate Choice .....	15
2. Design Considerations .....	18
3. Syntha Pulvin Metallics .....	21
4. Film Thickness Specification (Aluminium) .....	23

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<b><u>PERFORMANCE 5-8</u></b> .....	<b>24</b>
5. Certification & Independent Assessment .....	24
6. Fire Resistance .....	25
7. Contact with Copper & Lead .....	26
8. Edge Covering Properties .....	27
<b><u>CUSTOMER CARE 9-14</u></b> .....	<b>28</b>
9. Protection & Packaging .....	28
10. Sealants & Mastics .....	30
11. Maintenance & Cleaning .....	32
12. Removal of Alkaline Deposits .....	33
13. Remedial Systems .....	34
14. Polyamide Thermal Break .....	35
<b><u>GUARANTEE</u></b> .....	<b>37</b>
Guarantee Information .....	38
Marine & Industrial Locations .....	39
Swimming Pool Locations .....	42
<b><u>PRODUCT PERFORMANCE &amp; APPLICATOR REQUIREMENTS SPECIFICATION</u></b> .....	<b>46</b>
1. Performance of the Applied Syntha Pulvin Coating .....	47
2. Requirements of the Approved Applicator .....	49
3. Appendices .....	55
A. Test Panels .....	55
B. Pretreatment of Aluminium .....	57
C. Pretreatment of Hot Dipped Galvanized Steel .....	59
D. Quality Control Report Form/Certificate of conformity .....	61
E. CEN Standards .....	63
F. Reprocessing of Non-Conforming Syntha Pulvin Coated Components .....	65
G. Syntha Pulvin Anti Graffiti .....	67
H. Syntha Pulvin Products Requiring Higher Film Thickness.....	68
<b><u>THE SYNTHA PULVIN SYSTEM IN USE</u></b> .....	<b>69</b>
<b><u>THE SYNTHA PULVIN SPECIFICATION GUIDE</u></b> .....	<b>71</b>
<b><u>THE SYNTHA PULVIN GUARANTEE</u></b> .....	<b>XX</b>

## THE SYNTHA PULVIN SYSTEM

[Contents](#) | [Introduction](#) | [Why Use Syntha Pulvin](#) | [Environmental Issues](#) | [Range of Products](#) |  
[Approved Applications–Approval & Removal](#) | [Approved Applicators & In-house Users](#)

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## INTRODUCTION TO THE SYNTHA PULVIN SYSTEM | [Section Top](#)

### **The SHERWIN-WILLIAMS Company**

The SHERWIN-WILLIAMS Company, is a major producer of powder coatings, supplying on a global basis from facilities in the UK, France, Italy, Poland, Brazil, USA and China.

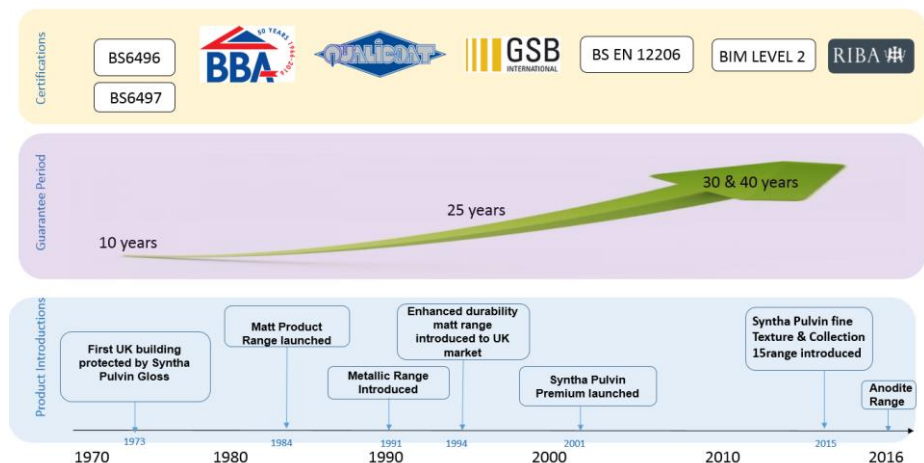
In the United Kingdom, The SHERWIN-WILLIAMS Company is the powder coating trading company, manufacturing an extensive range of powders for the architectural, automotive, appliance, and industrial markets.

### **Syntha Pulvin**

Syntha Pulvin, a registered trademark of the SHERWIN-WILLIAMS Company, is supplied throughout the UK, Ireland and Continental Europe.

Since its inception in the 1970's Syntha Pulvin has been the market leading architectural powder coating and now, with a 40 plus year track record, it has added beauty, elegance and durability to thousands of buildings, large and small.

Syntha Pulvin has maintained its position as a market leading technology through continual product improvement and innovation. The Syntha Pulvin team engages with specifiers and end users to understand and respond to market needs to offer the optimum solution to the fenestration industry.



### **Technical Excellence**

The Sherwin-Williams philosophy is to extend the leading position of Syntha Pulvin, by technical development and the commitment of the Syntha Pulvin team to meeting the demands of the construction industry's professionals.

Some notable landmarks, introduced to the market by Syntha Pulvin, include superdurable technology and the bonding of metallic colors. A wide stock range of products and a 'bespoke' color matching service complement these.

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## **Quality & Resources**

Sherwin-Williams is a quality-committed company. The manufacturing facilities are designed for flexibility and speed, whilst maintaining the high quality standards required by products destined for industries such as automotive, water supply, and domestic appliances in addition to architectural. The facilities operate in compliance to ISO 9001.

## **The Environment**

Caring for the environment is now the responsibility of every manufacturer and individual. Powder coatings, unlike liquid paints, contain no VOC (volatile organic compounds) and therefore present no solvent pollution risk or solvent recovery/disposal costs.

## **Customer Service**

Customer service is a key part of Sherwin-Williams philosophy and it drives the Syntha Pulvin business. Producing what the customer needs, where and when he needs it, is the focus for technical, product range and service development.

Initiatives, such as the Syntha Pulvin sample supply service and major project specification policing, are designed to provide unequalled support and service to those individuals and organizations that use Syntha Pulvin branded products.

## WHY USE THE SYNTHA PULVIN SYSTEM | [Section Top](#)

The specifier today has a large range of finishes to choose from and the suppliers of each will claim that his product is superior. It is true that different products have different benefits but some have more than others. The comparisons on the following pages have been designed to assist specifiers in their pursuit of the most effective specification.

The main choices are:

- The Syntha Pulvin System
  - Syntha Pulvin Matt
  - Syntha Pulvin Metallics
  - Syntha Pulvin Gloss and Satin
  - Syntha Pulvin Fine Texture
  - Syntha Pulvin Anodite
  - Syntha Pulvin Vision 2020
- Other Polyester Powder Coatings
- Anodizing
- PVDF Liquid Coating
- Mill Finish Aluminium
- Stainless Steel
- Others (Liquid coatings such as acrylic or polyurethanes)

The deciding factors when choosing are:

- Suitability (fitness for purpose )
- Cost
- Impact on the Environment
- Life expectancy
- Guarantee availability
- Whether a decorative or a decorative / durable surface finish is required

The use of the Syntha Pulvin System offers an unlimited choice of color alternatives, including the industry standard RAL, and BS ranges, in varying gloss levels. It gives a consistent finish over many surfaces and substrates combining UV resistance with hardness and durability.

NOTE: Syntha Pulvin products are available as standard durable and superdurable quality

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The following table shows how the **SYNTHA PULVIN System** performs when compared to some of the other protective/decorative finishes available.

TEST	SYNTHA PULVIN PE P Q, PE P S, PE P Q FTX	SYNTHA PULVIN PE P M & METALLICS	SYNTHA PULVIN PE P HD, PE P HDM, PE P HDS, PE P HD FTX	PVDF	ANODIZING
Resistance to UV Light	Minimal color change after 1 years Florida exposure	Minimal color change after 1 years Florida exposure	Minimal color change after 3 years Florida exposure	Minimal color change after 5 years Florida exposure	Varies depending upon type of anodizing
Resistance to Mechanical Damage	Good	Good	Good	Poor	Excellent
Location Areas	All	All	All	Not suitable for areas of public access where damage is possible & exposed sites where erosion is expected	All
Color Availability	Wide choice of RAL & BS shades	Wide choice of House colors, RAL, BS shades & Metallics.	Made to order in virtually any color	Made to order in virtually any color	Very restricted range
Color Uniformity	Excellent	Excellent	Excellent	Good	Very Poor
Gloss Level Availability	Gloss, Satin and Fine Texture	Matt	Gloss, Satin, Matt	Matt and Gloss	Restricted
No of Coats	One	One	One	Two, three or four	Electro-chemical process
Film Thickness	Minimum 60 microns	Minimum 60 microns	Minimum 60 microns	30 – 40 microns	Maximum 35 microns
Edge Coverage	Excellent	Excellent	Excellent	Fair	Excellent
Stoving Temperature	200°C	200°C	200°C	Circa 240°C	N/A
Flexibility BS EN ISO1520:1999	>5mm	>5mm	ISO1519 5mm, no adhesion loss	>5mm	>5mm
Adhesion BS EN ISO 2409	Class 0	Class 0	BS3900 pt.E6 Class 0	Class 0	N/A

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*Continued...*

TEST	SYNTHA PULVIN PE P Q, PE P S, PE P Q FTX	SYNTHA PULVIN PE P M & METALLICS	SYNTHA PULVIN PE P HD, PE P HDM, PE P HDS, PE P HD FTX	PVDF	ANODIZING
Impact Resistance EN 12206-1 Part 4.5.7	Pass 20"/lbs	Pass 20"/lbs	AAMA 2604 Pt.7.5 Pass 2.5Nm	Good	Excellent
Scratch Resistance BS 3900 Part E2	Pass 4000 gms	Pass 4000 gms	Pass 4000 gms	Fair	Excellent
Resistance to Mortar	Excellent	Excellent	Excellent	Fair	Very Poor
Full Independently Monitored System	Yes	Yes	Yes	No	No
Repair Characteristics	Excellent	Excellent	Excellent	Good	No system available
Guarantee	30 years	30 years	40 years	Dependent on supplier	Dependent upon supplier



## ENVIRONMENTAL CONSIDERATIONS | [Section Top](#)

### Powder Coatings to Reduce Pollution

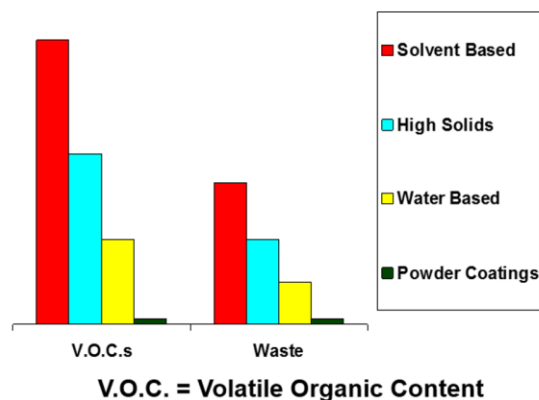
Concern about the environment and health consequences of many traditional processes is nowhere more evident than in the paint and surface coatings industry. Solvent based paint continues to come under increasing attack in consumer and industrial markets, with serious long term implications for the future of the coatings industry. Both the manufacture and use of coatings is likely to become subject to increasingly stringent regulations.

It is already clear, however, that recent developments in polymer science and powder processing will accelerate the developments of powder coatings as highly practical alternatives to liquid solvent based paint systems in many industrial applications.

A principal cause of the environmental problem facing the industry is the formation of excess ozone near ground level. Ozone in the upper atmosphere is essential as a shield against UV radiation from the sun. However, excess ozone near the ground can be a health hazard and can damage crops and other vegetation. Ozone concentrations in the UK have often exceeded World Health Organisation guidelines for air quality.

Ozone and other photochemical oxidants such as smog and peroxides are formed by volatile organic compounds (VOC's) reacting in sunlight with other pollutants. There is a close link with the high level of solvent used by the UK coating industry. About half the VOC's in the air come from solvents and of those, two fifths - some 85,000 tonnes per annum - can be attributed to the paint industry.

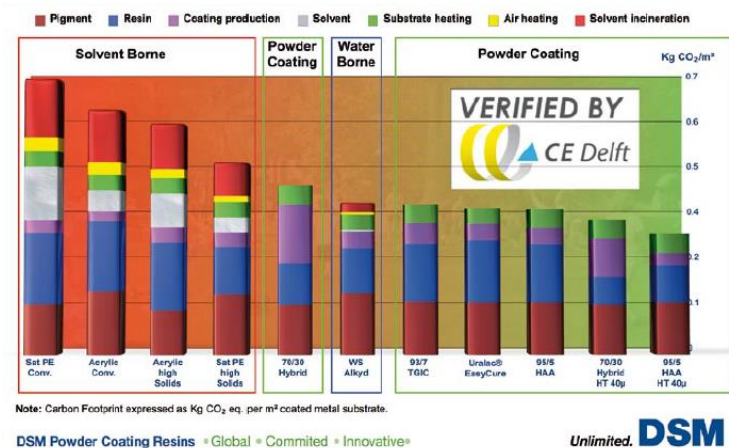
VOC emissions from the manufacture and use of powder coatings are virtually zero and the material is entirely solvent free. Powder coating is already in widespread use in assembly line production in many industries and the expansion of its use is being urgently canvassed and investigated by leading environmental agencies worldwide.



As powder coatings are factory applied finishes and completely reclaimable they afford a very high material efficiency of up to 99%.

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A Life Cycle Assessment <sup>REF1</sup> conducted by a major chemical company confirmed that powder coatings afforded the lowest carbon footprint of the major coating technologies, with the CO<sub>2</sub> emissions from the manufacture and application of powder coatings demonstrated to be as low as 50% of the emissions from traditional liquid coatings.

Overall, powder coatings offer the most environmentally sound solution to the industry's future requirements. The increasing pace of investment in research and development is a reflection of international concern to reduce VOC emissions and many national governments and the EC has already laid down directives to ensure substantial reductions in the future.

The international powder coatings industry is continuing to develop products for a wider range of end uses, thereby increasing the opportunities for further reductions in the environmental impact of coatings.

By specifying the Syntha Pulvin system rather than liquid paints, a further step towards a greener, cleaner environment is easily achieved.

REF 1 – DSM Carbon Footprint Study for Industrial Coatings Applied on a Metal Substrate

## THE SYNTHA PULVIN PRODUCT RANGE | [Section Top](#)

Syntha Pulvin offers the most comprehensive product range in the architectural coatings market, both in terms of product type and finish, ensuring quality products and innovative technologies are always available to meet the current and future needs of the specifier.

The Syntha Pulvin System is available in eight generic grades:

- Syntha Pulvin Matt, guaranteed for up to 30 years and available ex stock in an extensive range of RAL, British Standard and bespoke, Color Consultant designed SP architectural colors.
- Syntha Pulvin Metallics, guaranteed for up to 30 years and available ex-stock in a unique range of single coat exterior grade finishes, designed with the assistance of one of the UK's foremost color consultancy teams.
- Syntha Pulvin PEPHD, guaranteed for up to 40 years and available, made-to-order, in virtually any color, including RAL, BS and metallic colors. Vision 2020 available ex stock
- Syntha Pulvin Gloss guaranteed for up to 30 years and available ex stock in a wide range of RAL and British Standard colors.
- Syntha Pulvin Satin guaranteed for up to 30 years and available ex stock in a wide range of RAL and British Standard colors
- Syntha Pulvin Fine Textures guaranteed for up to 30 years and available ex stock in a wide range of RAL and British Standard colors
- Syntha Pulvin Anodite, introduced in 2016, in response to a market demand for a coating that possessed the performance characteristics of a powder coating and the aesthetic appeal of an anodizing finish. Guaranteed for up to 30 years and available ex stock
- Syntha Pulvin Vision 2020, launched in 2017, is a palette of 48 colors inspired by global color trends. This Collection includes superior-performance architectural coating colors carefully selected by Sherwin-Williams's color experts. Available on stock Vision 2020 products are guaranteed for up to 40 years.

All eight types are formulated to comply as a minimum either with EN 12206-1:2004 and EN 13438:2013, European Standards for architectural powder coating of aluminium and galvanized steel respectively, or, in the case of Syntha Pulvin PEPHD, to AAMA 2604 (American Architectural Manufacturers Association specification for High Performance Organic Coatings on Aluminium Extrusions and Panels). In addition, all these products hold approval certification from Qualicoat (Zurich) and GSB (Germany).

- Syntha Pulvin A.G. is an antigraffiti coating. For full details see APPENDIX G.

The Syntha Pulvin color swatch is available from Sherwin-Williams showing the color range of our matt and metallic powders. In addition, the use of carefully controlled formulation techniques provides the facility to produce any other color in either standard gloss, satin, fine textured, matt or Syntha Pulvin PEPHD technology.

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Due to potential color performance differences between manufacturers we would recommend that only one source of powder coating is specified for any contract with no alternatives being allowed.

So that there is no doubt as to the chosen shade or gloss level, we offer sample panels of all standard Syntha Pulvin colors which can be used for reference purposes throughout the contract. (Where the use of metallic colors is required, please refer to page 18 for further advice). The Syntha Pulvin reference number should, therefore, be quoted on all drawings.

The unique combination of matt and metallic finishes coupled with a comprehensive 30 or 40-year guarantee and wide color choice provides a risk free route to the highest quality of architectural metal finishing.

## **APPROVED APPLICATORS - APPROVAL AND REMOVAL** | [Section Top](#)

Only applicators approved by Sherwin-Williams are eligible to use the Syntha Pulvin system.

Approval to use the Syntha Pulvin system is only achieved after a rigorous technical approval process that is only initiated when any applicant company has satisfied certain financial criteria and achieved ISO 9001 registration.

The details of the process of approval are available from Sherwin-Williams.

## **SYNTHA PULVIN APPROVED APPLICATORS & IN HOUSE USERS**

The Syntha Pulvin System can only be supplied to and applied by Approved Applicators and In-house users. These companies have been approved because of their experience and expertise in this demanding field. All companies listed conform to the requirements of the Syntha Pulvin System, have ISO 9001 and have operational procedures assessed and accredited to the requirements of The British Board of Agrément under Certificate No. 94/3041.

A comprehensive list of Approved Applicators and In-House Users is available from Sherwin-Williams, Tel 0151 486 0486, Fax 0151 486 0484, or from the Syntha Pulvin website [www.synthapulvin.co.uk](http://www.synthapulvin.co.uk)

## TECHNICAL ADVISORY SHEETS

**Contents** | Design: Substrate Choice | Design Considerations | Syntha Pulvin Metallics |

Film Thickness Specification (Aluminium)

Performance: Certification & Independent Assessment | Fire Resistance |

Contact with Copper & Lead | Edge Covering Properties

Customer Care: Protection & Packaging | Sealants & Mastics | Maintenance & Cleaning

| Removal of Alkaline Deposits | Remedial Systems | Polyamide Thermal Break

## THE SYNTHA PULVIN SYSTEM - SUBSTRATE CHOICE | [Section Top](#)

[Design Considerations](#) | [Syntha Pulvin Metallics](#) | [Film Thickness Specification \(Aluminium\)](#)

The Syntha Pulvin System can be applied to a wide range of metallic substrates. Different metals are often specified in order to meet certain needs, such as strength, visual appearance, corrosion resistance etc. Without doubt aluminium gives the best overall performance in most situations but other metals have been coated with the Syntha Pulvin System giving excellent results.

The following advice is intended to aid specifiers with the choice of substrate. The Syntha Pulvin Guarantee covers the substrates shown below.

### **ALUMINIUM** (For internal/external use)

<b>Conforming to:</b>			
EN 485 (1-4)	EN 515 (2017)	EN 573 (1-4)	EN 754:2016 (1,2,7,8) Specification for wrought aluminium alloys for general engineering purposes, bars, extruded round tube and sections.

This substrate provides the best surface on which to apply the Syntha Pulvin System. The metal must be chemically pretreated in accordance with the Syntha Pulvin Process Guidelines in order to accept a coating, which will be both decorative and give long lasting protection. Syntha Pulvin Approved Applicators follow these procedures rigorously and the resultant products carry a 30 or 40-year guarantee. A British Board of Agrément Certificate No. 94/3041 is available for Syntha Pulvin products.

### **Zinc Over Steel Substrates**

#### **HOT DIP GALVANIZING TO BS EN ISO 1461:1999\* (Previously BS729:1994)#**

This process is widely used in the construction industry for a multitude of different components where long-term protection is required. Essentially, almost any iron or steel components can be hot dip galvanized. Following any necessary cleaning and pickling operations to remove any rust or surface contaminant, the components are preheated and immersed in a vat of molten zinc.

\* For new equivalent CEN standards see Appendix E.

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Technical Advisory  
Sheet | TAS1 1 of 3

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Due to the nature of the process both the film weight of zinc and its surface roughness can vary considerably. The minimum average coating weight of zinc for any individual test area varies depending on the nature of the component being treated.

The application of the Syntha Pulvin System to galvanized work produces a coating that will effectively protect and decorate. It is important to note that only 'unpassivated' grades of galvanizing are suitable for the application of Syntha Pulvin and it must be stressed also, that the smoothness and free flowing characteristics of any coating will be significantly affected by the surface texture of the underlying substrate. There can also be an additional factor, which will influence the overall appearance, which is defined as 'gassing'.

Once the powder coating is applied to the substrate it is then stoved at around 200°C and it is at this stage that the gassing may occur manifesting itself as small pinholes or craters in the cured coating.

It should be noted that the presence of pinholes on galvanized substrates after powder coating is acknowledged in EN 13438:2013 as being inevitable. The Applicator, however, will take all measures to keep this to a minimum.

Preheating of the substrate, known as 'degassing' prior to powder coating, and the application of the powder to the substrate whilst hot, goes a long way to improving this problem. Notwithstanding this, if small craters are apparent, they are not detrimental to the long term life of the coating when the full Syntha Pulvin process has been carried out.

The coating of this substrate when using Syntha Pulvin Gloss, Satin, Matt or Syntha Pulvin Metallic is covered by British Board of Agrément Certificate No. 94/3041.

## **GALVATITE EN 10327, 10143 & 10326**

Specification for 'continuously Hot Dip Zinc coated and iron alloy coated steel, wide strip, sheet/plate and slit wide strip'. Consult your Applicator for the most suitable grade of Galvatite to be used.

Galvatite is manufactured by Tata (formerly Corus & British Steel). In this process the zinc is applied in the molten state to a coil of steel, followed by a rolling operation which produces a more uniform surface than is normally obtained with Hot Dip Galvanizing. Although the phenomenon of 'gassing' can occur on Galvatite it is less frequent. The use of 'Smooth Galvatite' may improve the appearance of the coating. Further advice should be sought from the chosen Applicator.

Due to its production method, this substrate will have unprotected edges, and attempts should be made at the design stage to enclose these edges with the surrounding structure. Once installed any bare edges should be protected with an appropriate sealant or mastic (see TAS10).

The coating of this substrate when using Syntha Pulvin Gloss, Satin, Matt or Syntha Pulvin Metallic is covered by British Board of Agrément Certificate No. 94/3041.

When specifying powder coating onto Galvatite the unpassivated grade should be requested.

Technical Advisory  
Sheet | TAS1 2 of 3



## STEEL

Mild steel (or 'black steel') is a substrate which is occasionally used for architectural components and, though it can be satisfactorily coated with Syntha Pulvin, its unpredictable nature coupled with its readiness to corrode make it an unsuitable substrate where long term decorative coating performance is required. For this reason no Syntha Pulvin guarantees are available for this substrate as a single coating layer.

Sherwin-Williams offer the VALDE STEEL primer to be used in combination with the existing Syntha Pulvin range of products to offer a 2 layer solution for coating steel. This system is approved to the QUALISTEELCOAT specification.

In addition, guarantees are not normally available for the following substrates but more information may be obtained from Sherwin-Williams technical department.

1. Cast Aluminium
2. Zintec/Electro galvanizing
3. Zinc Sprayed Steel
4. Stainless Steel

**THE INFORMATION GIVEN IS BASED ON DATA OBTAINED FROM RELIABLE SOURCES AND IS BELIEVED TO BE CORRECT, HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED.**

## DESIGN CONSIDERATIONS FOR SYNTHA PULVIN COATED COMPONENTS | [Section Top](#)

[Substrate Choice](#) | [Syntha Pulvin Metallics](#) | [Film Thickness Specification \(Aluminium\)](#)

It is recommended that architects and specifiers take careful note of the following, especially when designing new components, which need to be powder coated.

Powder coatings are electrostatically spray applied and certain considerations have to be taken into account in order to ensure that a good quality finish is obtained. We, therefore, draw your attention to the following:

### **Surface Finish on Raw Materials**

The Syntha Pulvin System, whilst having excellent flow properties, may only partially smooth out imperfections in a metal substrate. It is essential that all components must be supplied in the raw state, with a surface condition that reflects the ultimate surface required.

Aluminium is consistently supplied in good uniform quality and generally gives excellent results. It is, however, a soft substrate and should be carefully packed and protected during transportation to avoid surface scratches and blemishes which will inevitably show through the powder coating. Where uncoated aluminium is to be protected by an adhesive film, the suitability of its use should be confirmed by the adhesive film supplier e.g. lifespan after application - adhesive residues, etc.

Hot Dip Galvanized steel is notorious for having a pronounced textured finish. This can vary but should be noted. Pre-batch samples should be requested in order that the specifier can approve an acceptable standard. In certain instances this substrate can be substituted by using Galvatite which generally gives an improved surface appearance (See TAS1 - Substrate Choice).

### **Jigging Points**

To apply the Syntha Pulvin System, it is necessary to hang each item on to a conveyor and so one or two jigging points are required. These are best in the form of drilled holes, or suitable jigging edges, where the contact point does not affect the appearance of the finished product.

When positioning hanging holes on wide assemblies, it is necessary to allow for pretreatment runoff by tilting the component. On extrusions, allowance should be made for hanging points (seek advice from the Syntha Pulvin applicator).

Pretreatment drainage is of extreme importance and as with the previous information, care should be taken during the design stage in order to ensure optimum adhesion of the coating.

All of the approved pretreatments require immersion in, or spraying with aqueous solutions. It is, therefore, necessary that components do not float or retain trapped solutions after treatment. Although hollow components may appear to be watertight, pressure and temperature variations may cause ingress of solutions, which can then boil out during the powder curing cycle, thus spoiling the coating.

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Likewise porous welds can suck in liquid but difficulty occurs when trying to drain these areas. Rivets are another area where pretreatment solutions can become trapped and if sited on 'seen' faces can cause surface marking.

Flat butting surfaces can trap solutions by capillary actions and should be avoided. Most components can be suitably ventilated by 6mm diameter holes permitting total drainage of the components.

Sound deadening or porous filling material such as heat or fire insulation can absorb pretreatment chemicals. Material likely to melt below 250°C cannot be processed due to stoving requirements. Therefore, if any of these processes are required it should be noted at the design stage so that they can be assembled after the powder coating has taken place.

It is important to consider the above recommendations and seek advice from Sherwin-Williams or one of the Approved Applicators. (List of applicators is available from Sherwin-Williams).

## **Powder Penetration**

Powder initially adheres during coating by electrostatic forces. However, a phenomenon known as the 'Faraday Cage' effect can counter the attraction on components with narrow recesses, slots or sharp enclosed corners. Advice should be sought where they cannot be avoided. As a general rule, the width between the two edges should be greater than the depth.

## **Size & Gauge of Components**

Maximum plant dimensions at Syntha Pulvin Applicators are available from Sherwin-Williams. The minimum gauge of aluminium for flat panels and pressings is 1.2 mm. Deformation may occur during stoving if thinner gauges are used and it is advisable, therefore, to seek advice from the Approved Applicator when thin gauge material is to be coated.

## **Dissimilar Metals**

Assemblies consisting of different metals, or plated surfaces, must be avoided. The differing material may require non-compatible pretreatments and electrolytic corrosion may also occur.

## **Heavy Masses**

Heavy components require a longer heating cycle to achieve the required peak metal temperature. The surface appearance (but not color) of the finished item may be slightly different between substrates of differing mass and wall thicknesses greater than 5mm due to variations in the 'heat-up' times. Advice should be sought from an Approved Applicator if heavy and light masses of the same metal need to be mixed on one component.

## **Significant Surfaces**

All drawings should indicate the surfaces where the coating is required on individual components or sections.

## **Steel Components**

When steel is used for an external component, it is recommended that it be galvanized. However, the surface texture of galvanized steel should be

Technical Advisory  
Sheet | TAS2 2 of 3

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taken into consideration at the time of specification (See TAS1 - Substrate Choice). The steel must be galvanized for the Syntha Pulvin Guarantee to be applicable.

Where zinc coated steel components are required to have a smoother surface finish, it is possible to finish i.e. dress back the zinc layer and/or welded joints. This procedure should be carried out with care as these areas would be excluded from the guarantee if the zinc layer film thickness is reduced below that required by EN ISO 1461.

Sherwin-Williams offer the VALDE STEEL primer to be used in combination with the existing Syntha Pulvin range of products to offer a 2 layer solution for coating steel. This system is approved to the QUALISTEELCOAT specification.

## **Slides & Fits**

The coating thickness could, in extreme cases, be in excess of 200 microns. Where sliding or clipping fits are required, allowance should be made for this. In cases of special difficulty, an Applicator should be consulted.

## **Structural Silicone Glazing**

If the coating is applied to components for use in SSG then the specifier must clearly mark all drawings and relevant documents, stating that all surfaces are to be fully coated, not just the seen significant surfaces. Failure to do so could result in the structural silicone being partially applied to mill finish aluminium. If structural silicones are applied to Syntha Pulvin by the component manufacturer, then full testing should be carried out in advance of the project commencing, in order to ensure good adhesion.

Syntha Pulvin systems have been tested for suitability with structural silicone glazing sealants and satisfactory results have been achieved. Test reports are available on request. Specific tests with silicone sealants/adhesives should be carried out by single product on Syntha Pulvin Fine Textured prior to using it.

## **'Orange Peel'**

'Orange Peel' is the term sometimes used to describe the surface finish of a coating. This effect usually occurs as a result of high film thickness or inappropriate plant settings.

Syntha Pulvin has been formulated to provide excellent weathering properties and the ability to give good edge cover and protection whilst, at the same time, produce a minimum of orange peel.

During design, it is helpful to avoid recesses, as in attempting to penetrate these, it is inevitable that a heavier coating will be deposited on the adjacent faces thus causing greater orange peel.

## **Finishing of Aluminium**

Where it is necessary to finish welds on aluminium pressings, it is recommended that 320 grit is used as the final flattening material.

## **The SYNTHA PULVIN System**

To ensure that the appropriate care and attention of the Syntha Pulvin System is received, all drawings should specify Syntha Pulvin

## **SYNTHA PULVIN METALLICS RECOMMENDATIONS FOR SPECIFICATION AND USE | [Section Top](#)**

[Substrate Choice](#) | [Design Considerations](#) | [Film Thickness Specification \(Aluminium\)](#)

Syntha Pulvin Metallics are marketed alongside the established Syntha Pulvin Matt and Syntha Pulvin Gloss, Satin and Fine Textured ranges.

Syntha Pulvin Metallics are produced by the Sherwin-Williams metallic bonding process. Each is manufactured and applied according to the same strict criteria, which have made Syntha Pulvin almost a generic term for product quality, expert application and exemplary customer service.

As an endorsement of the product's suitability as a high performance decorative coating for the building industry, Syntha Pulvin Metallics have been accredited by the British Board of Agrément (certificate number 94/3041), which independently states an anticipated life expectancy of up to 30 years.

The metallics range, including RAL 9006 and RAL 9007 equivalents\*, is displayed in the 'Syntha Pulvin Product Range' color swatch available from Sherwin-Williams. Due to the limitations of printing processes the colors shown give only an indication of shade and gloss.

*\* RAL9006 and 9007 are a representation of RAL9006 and 9007. The shades were not intended by RAL to be used for decorative purposes and consequently, exact color matches for the standard are virtually impossible. However, all Syntha Pulvin Metallics will be reproduced consistently.*

Many contracts have been satisfactorily completed in Syntha Pulvin Metallics, and many more exist where metallics have been specified.

**N.B. As with all metallic finishes, the apparent color will vary dependent on the angle of incident light, a feature known commonly as geometric metamerism, where a different color is seen as the viewing angle changes. Whilst this phenomenon is often the very reason for specifying metallics, care must be taken during the design, application and installation processes. It is important to recognize that metallic polyester powder products produce a variable visual effect and, unlike solid non-metallic colors, individual components may exhibit some shade variation from other components which have been coated at the same time.**

For assistance with specifications the Syntha Pulvin Specification Guide is freely available in printed form, as well as from the Syntha Pulvin website, and Sherwin-Williams provides an architectural specification and advisory service.

When specifying Syntha Pulvin Metallic finishes the following points should be noted for inclusion in specification documents:

Technical Advisory  
Sheet | TAS3 1 of 2

# syntha pulvin

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1. Only Syntha Pulvin Approved Applicators with approval to apply Syntha Pulvin Metallics should be used.

NB. Syntha Pulvin Metallics, like all metallic polyester powder coatings require good process control during application to ensure a consistent appearance. Sherwin-Williams supply detailed guidelines of application requirements to all Syntha Pulvin Approved Applicators.

2. Reference samples of each component should be produced initially by the component supplier / sub-contractor, each sample having been coated on the processing plant of the chosen applicator and representing the color which will be achieved in practice. These samples should receive approval from the contract administrator before proceeding further. It is recommended that, where possible, a single batch of product is used on a project to ensure color consistency.

## FILM THICKNESS SPECIFICATION (ALUMINIUM) | [Section Top](#)

[Substrate Choice](#) | [Design Considerations](#) | [Syntha Pulvin Metallics](#)

With any organic coating it is necessary to specify a minimum film thickness in order to ensure that the coating gives the necessary degree of protection, color uniformity, and overall appearance. Higher film thicknesses do not necessarily equate to improved performance.

The Syntha Pulvin System has been extensively tested at differing film thicknesses. In terms of the guaranteed properties of adhesion, gloss retention, color stability and general weatherability, it has been shown that a minimum film thickness of 60µm offers the best specification for applicator, fabricator and specifier alike. The minimum film thickness is the average of 5 individual readings around a point. The absolute minimum thickness on a single reading must be 48µm or greater. Note, certain colors may require higher thicknesses than 60um to achieve a uniform finish, guidance is available from Sherwin-Williams for these colors, see Appendix H

In order to comply with the terms of the Syntha Pulvin System Guarantee and the Agrément Certificate for the Syntha Pulvin System, the average minimum film thickness should be 60 microns.

A maximum film thickness of 150um is recommended on significant faces to achieve a aesthetically uniform finish and to retain the mechanical properties of the coating. It is acknowledged that it may be difficult to control the coating thickness within this range on geometrically complex components.

## PERFORMANCE

### **CERTIFICATION AND INDEPENDENT ASSESSMENT OF THE SYNTHA PULVIN SYSTEM** | [Section Top](#)

[Fire Resistance](#) | [Contact with Copper & Lead](#) | [Edge Covering Properties](#)

The Syntha Pulvin System was the first process of its type to be awarded the coveted British Board of Agrément approval. This independent assessment of the process states:

***'Syntha Pulvin coated on galvanized steel or aluminium cladding, curtain walling, roofing or window frames will perform effectively with a life expectancy exceeding 30 years.'***

In addition to this, the Syntha Pulvin System is certified to conform to EN 12206-1:2004 and EN 13438:2013 in all respects. Selected Syntha Pulvin PEPHD products conform to AAMA 2604-98, 'High performance Organic Coatings on Aluminum'

Further certification of the Syntha Pulvin System includes classification under various parts of BS 476 Fire Resistance Testing as listed in Technical Advisory Sheet TAS6.

The product has also been independently assessed and approved to Qualicoat Class 1, 1.5 and class 2 and GSB AL631 Standard and Master.

In addition, when submitted to EMMAQUA ® accelerated weathering testing in Florida, Syntha Pulvin Matt and Syntha Pulvin Metallics have produced results equivalent to three years South Florida natural weathering testing, while selected Syntha Pulvin PEPHD products have achieved full compliance with AAMA 2604 5 year Florida performance.



## FIRE RESISTANCE OF THE SYNTHA PULVIN SYSTEM | [Section Top](#)

[Certification & Independent Assessment](#) | [Contact with Copper & Lead](#) | [Edge Covering Properties](#)

In order to be able to specify the Syntha Pulvin System with complete confidence, it is necessary that the specifier is assured of the following:

1. The coating is fit for purpose.
2. The coating presents no fire hazard in the environment to which it is to be used.
3. The coating will not assist the propagation of fire.

The Syntha Pulvin System has been subjected to stringent independent testing by the Warrington Fire Research Centre and has been verified as suitable for use in accordance with various national Building Regulations.

Syntha Pulvin products meet BS 476 as listed below and copies of reports are available on request from Sherwin-Williams.

BS 476:1989 Part 6	Fire Propagation Class 0.
BS 476:1987 Part 7	Surface Spread of Flame Class 1
BS 476:1958 Part 3	Fire tests on building materials and structures – External fire exposure roof test Class A.

## THE SYNTHA PULVIN SYSTEM IN CONTACT WITH COPPER AND LEAD | [Section Top](#)

[Certification & Independent Assessment](#) | [Fire Resistance](#) | [Edge Covering Properties](#)

There may be occasions where Syntha Pulvin coated components will come into contact with either copper or lead. This could happen where windows or cladding are adjacent to roofs for instance. The problem of bimetallic corrosion may then arise. In order for this to occur there must be effective electrical contact between the Syntha Pulvin coated substrate and the metal in question.

In such circumstances, however, the properties of both the Syntha Pulvin coating and substrate conversion coating will combine to provide an effective physical insulating barrier to the electrochemical process of corrosion.

In order to determine the corrosion risk, Syntha Pulvin coated aluminium panels were tested in contact with copper and lead under an accelerated weathering regime. Control panels of uncoated aluminium were also tested in contact with copper and lead.

### **RESULTS**

#### *TEST 1*

Exposed copper, lead and aluminium showed signs of attack but the Syntha Pulvin coated panel was unaffected.

#### *TEST 2*

##### Aluminium & Lead and Aluminium & Copper.

The copper, lead and aluminium were all attacked with severe results on the aluminium.

##### Syntha Pulvin coated Aluminium in contact with Lead and Copper

Both the copper and lead showed severe signs of attack. In the case where lead was in contact with the Syntha Pulvin component there was no effect on the coating except a slight staining of the Syntha Pulvin adjacent to the lead. This staining was removed by washing with 5% detergent solution. There was no effect on the Syntha Pulvin coated component adjacent to the copper.

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## EDGE COVERING PROPERTIES OF THE SYNTHA PULVIN SYSTEM |

[Section Top](#)

[Certification & Independent Assessment](#) | [Fire Resistance](#) | [Contact with Copper & Lead](#)

The thickness of coatings on sharp edges will normally be lower than the mean coating thickness. As such, the barrier to corrosive influences is reduced. It is for this reason that the Syntha Pulvin System has been formulated to optimize its edge covering properties. However, the edge coverage depends also on other factors such as extrusion design. Extrusions with radiused rather than sharp edges will facilitate improved coverage at the edges.

At present there is no non-destructive method to measure coating thickness at sharp edges. The only effective method involves sectioning the extrusion and microscopic examination.

If there is any uncertainty about the suitability of a particular profile for coating please contact Sherwin-Williams.

## PROTECTION & PACKAGING OF THE SYNTHA PULVIN SYSTEM |

[Section Top](#)

[Sealants & Mastics](#) | [Maintenance & Cleaning](#) | [Removal of Alkaline Deposits](#) |

[Remedial Systems](#) | [Polyamide Thermal Break](#)

The Syntha Pulvin System is an extremely tough and resilient coating. However, mechanical abuse can cause unsightly scratches and blemishes. The best way to minimize these is by adopting good working practices both during fabrication, transportation and installation. Notwithstanding this, the use of protective packaging can further help to minimize this problem and remove the need for remedial action post installation.

### **Protective Packaging by the Approved Applicator**

Approved Applicators recognize the need to protect coated components during transit and will, as a rule, wrap components in packaging materials that are normally of a relatively neutral pH value in order to eliminate chemical attack should the packaging become damp. Any marks should be easily removable with a damp cloth. Enhanced protection packaging by the Approved Applicator is available on request.

Packaging for coated components must be suitable to prevent scratching, scuffing or other mechanical damage to the coating. All packaging materials should be non-abrasive so as to avoid damage occurring from movement of the components during transit. Particular care should be taken to prevent cardboard directly contacting the paint finish.

### **Protection of Syntha Pulvin Coated Components Post Fabrication**

Protective tapes are used extensively for the protection of architectural products, and are normally applied by the fabricator or window manufacturer. The Syntha Pulvin surface to which they are applied must be free from dirt, oil or other surface contaminants. If necessary, the surface may be cleaned using a soft cloth dampened with white spirit or Isopropyl Alcohol. The surface must be dry before tape application. The applied film should be free of any air bubbles.

### **Care of Taped Coatings**

Tapes should be removed after a period not exceeding six months. If further protection is required new tapes should be applied.

In general, exposure of taped components to direct sunlight, UV light or elevated temperatures should be avoided. When removing protective tape, care must be taken to avoid the possibility of any damage to the coating. Where necessary, any residual adhesive left on the Syntha Pulvin coating following the removal of the protective tapes, should be removed by wiping with a white spirit dampened cloth. Solvents or cleaning solutions containing esters, ketones or chlorinated hydrocarbons must not be used, as these may be detrimental to the coating.

The following tape manufacturers have a range of products that are commonly used on Syntha Pulvin coated components. Sherwin-Williams is unable to recommend specific products. For advice on suitability the individual tape manufacturer should be consulted.

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## Antalis Packaging Limited

41 Road One  
Winsford Industrial Estate Winsford  
Cheshire, CW7 3QB  
[winsford\\_sales@antalis.co.uk](mailto:winsford_sales@antalis.co.uk)  
**Tel: 0870 241 1449**

## John Kilby & Son

192 Alcester Road  
Hollywood  
BIRMINGHAM  
B47 5HH  
**Tel: 01564 823175**

## Poli-Film UK Ltd

Stephenson Close  
Drayton Fields Ind Est  
DAVENTRY  
NN11 5RF  
**Tel: 01327 76071**

## Protective Tapes (UK) Limited

Unit 8 Joiners Square Ind Est  
Hampton Street  
Hanley  
STOKE-ON-TRENT  
ST1 3EX  
**Tel: 01782 279224**

## Scapa Tapes UK Ltd

Manchester Road  
Ashton-Under-Lyne  
Greater Manchester OL7 0ED  
UK  
**Tel: 0161 301 7400**

## Tesa UK Limited

Yeomans Drive  
Blakelands  
MILTON KEYNES  
MK14 5LS  
**Tel: 01908 211333**

## Boston Tapes UK Ltd

Unit 12/Block 2, Wednesbury Trading  
Estate  
Wednesbury  
WS10 7JN  
West Midlands

**Tel: 0121 556 9900**

## Flowstrip Limited

Flowstrip House  
Atkinsons Way  
Foxhills Ind Park  
SCUNTHORPE  
DN15 8QJ  
**Tel: 01724 841860**

## Hadleigh Enterprises Limited

Unit 11 Buckingham Square  
Hurricane Way  
Wickford  
BASILDON  
SS11 8YQ  
**Tel: 01268 572255**

## Novacel (UK) Limited

Unit 6 Dencora Way  
Sundon Business Park  
LUTON  
LU3 3HP  
**Tel: 01582 583294**

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Technical Advisory  
Sheet | TAS9 2 of 2

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## SEALANTS AND MASTICS FOR USE WITH THE SYNTHA PULVIN SYSTEM | [Section Top](#)

[Protection & Packaging](#) | [Maintenance & Cleaning](#) | [Removal of Alkaline Deposits](#) |

[Remedial Systems](#) | [Polyamide Thermal Break](#)

The following companies have all tested several of their products for adhesion to, and compatibility with, Syntha Pulvin products.

As a result of these tests each company has a range of products that it believes are suitable, in various situations, for use in conjunction with the Syntha Pulvin System. For specific details about individual products and their use the company should be contacted.

In all cases the Syntha Pulvin surface to which such products are applied must be free from dirt, oil and other contaminants. The surface should be cleaned with a dry cloth or if necessary a cloth moistened with white spirit or Isopropyl Alcohol. The surface must be dry before and during application.

Sherwin-Williams is unable to recommend specific products. For advice on suitability the individual sealant / mastic manufacturer should be consulted.

### Adshead Ratcliffe International Limited

Derby Road  
BELPER  
DE5 1WJ  
**Tel: 01773 826661**

### Seal Strip Limited

Scotlands Ind Est  
London Road  
COALVILLE  
LE67 3JJ  
**Tel: 01530 813121**

### Scapa Tapes UK Limited

The Woodside Est  
DUNSTABLE  
LU5 4TP  
**Tel: 01582 696666**

### Sika Limited

Watchmead  
WELWYN GARDEN CITY  
AL7 1BQ  
**Tel: 01707 329241**

### Dow Corning Ltd

Cardiff Road  
Barry  
Vale of Glamorgan  
CF63 2YL  
**Tel: (0)1446 732350**

### Trade Sealants Limited

Unit 16 Arnside Road  
WATERLOOVILLE  
PO7 7UJ  
**Tel: 01705 251321**

### Tremco Illbrock Limited

Coupland Road  
Hindley Green  
WIGAN  
WN2 4HT  
**Tel: 01942 251400**

## **Removal of Excess Mastic and Sealant**

Care should be taken to remove the excess before it is fully cured. Removal of the excess after curing may prove difficult without causing damage to the Syntha Pulvin coating.

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Where it is necessary to use a solvent or cleaning solution either white spirit or mild detergent in water is recommended. Solvents or cleaning solutions containing esters, ketones, or chlorinated hydrocarbons must not be used since these may be detrimental to the coating.

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Technical Advisory  
Sheet | TAS10 2 of 2

## CLEANING OF THE SYNTHA PULVIN SYSTEM | [Section Top](#)

[Protection & Packaging](#) | [Sealants & Mastics](#) | [Removal of Alkaline Deposits](#) |

[Remedial Systems](#) | [Polyamide Thermal Break](#)

As with any organic coating, in order to retain the aesthetic qualities and the expected long-term durability of the Syntha Pulvin System, it is important that the coating is cleaned regularly.

The frequency of cleaning depends upon the environment in which the Syntha Pulvin coating is in service.

For areas of 'normal' urban environment we recommend a maximum period of 18 months between cleaning operations, unless any undue soiling is apparent on the coating, in which case cleaning should be more frequent. In areas of high pollution, marine and swimming pool environments cleaning should be carried out every 3 months.

It should be noted that one of the conditions of the Syntha Pulvin Guarantee is that the coating is cleaned at the specified frequency and that the building occupier retains proof of cleaning. These cleaning records would be needed should a claim arise against the guarantee.

Cleaning of the Syntha Pulvin coating is an important part of the routine maintenance of any building. It is for this reason that we advise that only companies who specialise in this type of work are used for large cleaning operations.

### **Cleaning of Small Areas**

The Syntha Pulvin coating can be cleaned by using a solution of mild detergent in warm water. All surfaces should be cleaned using a soft cloth, sponge or a natural bristle brush. Abrasive materials should be avoided, as they will damage the coating. If the Syntha Pulvin coating has become heavily soiled it may be difficult to remove this soiling using only a mild detergent.

In order to overcome this problem any mild, non-abrasive household cleaner may be used (after applying to a small test area first). Cleaners containing esters, ketones or chlorinated hydrocarbons must not be used.

Should oil or grease deposits exist, strong solvents must not be used to remove them. White spirit has been tested and approved for this purpose.

Whilst tests show that products of this type may be used successfully in the removal of heavy surface deposits, particular care must be exercised in their use to avoid any scuffing of the powder coating.

It is recommended that in all cases, such products are reserved for heavy soiling only and should be tested on small areas of the soiled powder coating first to assess their efficiency. After application, all detergents and cleaners must be thoroughly rinsed away with clean water.

For further advice please contact your Approved Applicator or Sherwin-Williams.

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Technical Advisory

Technical Advisory

Sheet I TAS11 1 of 1



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## REMOVAL OF ALKALINE DEPOSITS | [Section Top](#)

[Protection & Packaging](#) | [Sealants & Mastics](#) | [Maintenance & Cleaning](#)

[Remedial Systems](#) | [Polyamide Thermal Break](#)

The Syntha Pulvin coated component is more often than not installed in close proximity to concrete based construction materials. Rainfall can cause alkaline substances to leach from those materials and deposit themselves on the surface of the Syntha Pulvin coating (this usually occurs when the concrete is new). By using the correct process, it should be possible to remove the alkaline deposits without causing damage to the Syntha Pulvin coating.

**Visual effect of alkaline deposit:** Hard glaze/powder deposit.

### **Method of Removal**

The use of specialist cleaning contractors is recommended.

Mild acids can be used, with care, to clean alkaline deposits from Syntha Pulvin following a trial on a small test area first.

(All chemicals should be applied to a small test area before commencing any cleaning procedure and, following application, all chemicals should be rinsed away with clean water.)

### **WARNING**

***Extreme caution should be taken when using strong brick/glass cleaners. When it is necessary to use these materials, which are available in varying concentrations, all adjacent areas coated with the Syntha Pulvin System must be fully protected. Please contact Sherwin-Williams for further advice.***

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## **SITE APPLIED REMEDIAL SYSTEMS (FOR SCRATCHES OR SMALL AREAS OF DAMAGE) | [Section Top](#)**

[Protection & Packaging](#) | [Sealants & Mastics](#) | [Maintenance & Cleaning](#)

[Removal of Alkaline Deposits](#) | [Polyamide Thermal Break](#)

Wherever possible, SYNTHA PULVIN coated items that have been damaged should be reprocessed by a SYNTHA PULVIN Applicator i.e. stripped, pre-treated and re-coated.

However, if the SYNTHA PULVIN coating suffers on site damage and the coated item cannot be removed it should be repaired using a suitable color matched remedial liquid paint system from Sherwin-Williams Invercolor, (tel: 0121 328 5227), Breakwells Paints, (tel. 01922 400444, <http://www.breakwellspaints.co.uk/>) or any other reputable paint supply company.

The particular method of repair, and repair system to be adopted, will be dictated by the nature of the required repair. Comprehensive product data and method statements are available from Sherwin-Williams. Other reputable paint supply companies should be in a position to supply similar information. The method statement will describe:

1. Surface preparation
2. Practice to be adopted if bare substrate is showing
3. Practice to be adopted if impact damage has resulted in indentations that need to be filled.

It is important to recognize that liquid repair systems are unlikely to have durability equivalent to the original Syntha Pulvin coating and, accordingly, repaired areas may weather differently. No warranty is expressed or implied by The Sherwin-Williams Company, relative to the use of repair and remedial paint systems, and it remains the responsibility of the user / specifier to ensure that any repair system is suitable for the purpose intended.

Remedial systems are general-purpose air-drying paints for the repair of the factory applied SYNTHA PULVIN coating. They should be used only to repair small scratches or minor areas of damage. They are not designed to overcoat defective factory applied powder coatings. If there is any query concerning the quality of the SYNTHA PULVIN coating then the Approved Applicator who coated the work should be consulted immediately.

All remedial systems and the areas of metalwork coated in these materials are expressly excluded from the SYNTHA PULVIN guarantee. The SYNTHA PULVIN guarantee will continue to apply to any 'unrepaired' area of SYNTHA PULVIN coating, on any component, where the SYNTHA PULVIN coating has been unaffected by the repair.

## **POLYAMIDE THERMAL BREAK** | [Section Top](#)

[Protection & Packaging](#) | [Sealants & Mastics](#) | [Maintenance & Cleaning](#)

[Removal of Alkaline Deposits](#) | [Remedial Systems](#)

### **Introduction**

Where an aluminium window or curtain wall structure is required to have improved thermal insulation properties, the components may be constructed from two separate extrusions which are joined together with an insulating ‘thermal break’ extrusion.

The original system for thermally breaking windows, curtain walls, etc,... was the system commonly referred to as ‘pour and cut’, where a channel in the aluminium extrusion is filled with an insulating resin. Once the resin is cured, the base of the channel is removed with a ‘debriding saw’ to leave two aluminium sections joined only by the resin thermal break.

The increased insulation value required by Building Regulations has led to a growth in the popularity of polyamide thermal break, where a polyamide extrusion is inserted and crimped between two individual aluminium extrusions designed with channels specifically for this purpose.

The adoption of this type of thermal break practice has led to some issues with the application of powder coatings which hitherto had not been seen with ‘pour and cut’ systems where the thermal break is carried out after the application of the powder coating.

### **Adhesion**

The material which is used in the manufacture of polyamide thermal break extrusions is a nylon based plastic. Not only is it a very poor conductor of heat, but it is also a very poor conductor of electricity. Since the application of a powder coating is by electrostatic spray and requires the target material to be earthed, the polyamide extrusion will not attract the powder coating in the way that the aluminium extrusion will. In addition to its non-conductive properties, polyamide strip has hygroscopic properties and will therefore absorb moisture from the atmosphere or any other source of water to which it is exposed. The liberation of this water during the Syntha Pulvin curing process is very likely to disrupt the coating. Furthermore, Syntha Pulvin, like all architectural powder coatings, is designed for optimum adhesion to pretreated aluminium and galvanized steel substrates, not to plastics.

For these reasons, expectations of the quality of finish on the polyamide strip should not be too high when polyamide thermally broken components are coated after the strip has been rolled into place. Syntha Pulvin guarantees only apply to the aluminium or galvanized steel sections of the component – not to the polyamide strip.

### **Effect of Stoving**

Most manufacturers of polyamide thermal break extrusion produce material which is tolerant of temperatures in excess of 200°C and hence is capable of tolerating the temperatures at which Syntha Pulvin is cured. Applicators must, however,

Technical Advisory  
Sheet I TAS14 1 of 2

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recognize that temperatures in excess of 220°C can soften the polyamide strip and lead to distortion of the component. Careful attention should be paid to oven temperature control and jiggling of the components wherever Syntha Pulvin is applied to any rolled or polyamide-broken aluminium component if distortion is to be avoided. Increasing oven temperatures to speed up the application process is not recommended.

In addition to the distortion issues, the effect of pre-treatment chemicals and curing temperatures can reduce the shear value of the pre-rolled thermally broken section. In service, shear values of the knurled joint will reduce by up to 50%, and this change is accelerated in the curing process. Because the reduction in strength may be seen immediately after curing it is often assumed that the coating application has damaged the joint when it is, in fact, a normal process that has simply been accelerated. It is essential to ensure that, during the rolling process, shear values are achieved that take into account the relaxation of the joint in service.

The shear strength of a polyamide thermal break is achieved by a combination of knurling the aluminium and the pressure applied when rolling the strip into the knurled groove. It is important that the manufacturer's recommendations are followed if optimum shear strength is to be obtained. However, shear strength is likely to reduce after powder coating and it is essential to take this into account at the time the joint is formed.

## **Recommendations**

For purposes of simplification, the production of a 'broken' component which is subsequently coated shall be referred to as 'Roll & Coat'. Where the polyamide strip is applied after coating this shall be referred to as 'Coat & Roll'.

'Roll & Coat' carries with it the risk of distortion of the thermally broken component, disruption of the coating film on the polyamide strip and reduced shear strength. Though careful control of oven temperatures and jiggling will help to eliminate distortion, poor adhesion and disruption of coating on the strip is still likely, as is the reduction in shear strength.

The disruption and reduced adhesion of the cured coating will be significantly improved if a 'coating grade' of polyamide is chosen. Some polyamide suppliers are now producing modified strip which exhibits very significant improvements in coatability, adhesion and final appearance. To improve the finish the thermal break section can be masked prior to coating and the mask removed prior to curing. Specifiers and fabricators should seek advice from their polyamide supplier when 'Roll & Coat' is to be used.

'Coat & Roll' carries with it none of the problems of 'Roll & Coat' as described above and, since skilled operators will make allowances for the effects of the coating already applied, shear strength values can be maintained at acceptable levels. In addition, since the polyamide strip is not coated its natural appearance is unaffected. If this, usually black, appearance is acceptable then 'Coat & Roll' must be the preferred option. Where a two color component is required (eg external window frame a different color to the internal frame) then 'Coat & Roll' is the only practical option available.

Only one other 'Coat & Roll' issue has been identified: obstruction of the thermal break channel or rebate with deposits of cured coating. This is another issue where the skill of the applicator will dictate the quality of the result. By careful setting up of the powder application equipment and careful jiggling, and where necessary, masking, penetration of these channels can be kept to a minimum and subsequently no interference from the cured powder will be experienced.

Technical Advisory  
Sheet | TAS14 2 of 2

## GUARANTEE

[Contents](#) | [Guarantee Information](#) | [Marine & Industrial Locations](#) |

[Swimming Pool Environments](#)

## THE SYNTHA PULVIN SYSTEM GUARANTEE | [Section Top](#)

### [Marine & Industrial Locations](#) | [Swimming Pool Environments](#)

Sherwin-Williams offers a performance guarantee to cover the main criteria required from any protective/decorative coating used in the architectural market. The Syntha Pulvin System Guarantee relates to the gloss retention, colorfastness and weathering properties of the product and, due to the unique nature of the Syntha Pulvin System, the adhesion of the coating when applied to the substrate by Approved Applicators is also guaranteed.

The guarantee, which is universally applicable to the Syntha Pulvin System when applied to aluminium substrates as specified in EN 485 (1-4), EN 515 (1983), EN 573 (1-4) and EN 754 (1,2,7,8)\* stands out amongst other guarantees by carrying clear, tangible statements defining failures.

The Syntha Pulvin Guarantees are as follows:

- Syntha Pulvin Matt & Syntha Pulvin Metallics on Aluminium & Galvanized Steel is for **30 YEARS**.
- Syntha Pulvin PEPHD on Aluminium and Galvanized Steel is for **40 YEARS**
- Syntha Pulvin Gloss, Satin and Fine Textured on Aluminium & Galvanized Steel is for **30 YEARS**.

These 'standard' guarantees are available without prior request. 'High hazard' guarantees for such locations as coastal (marine), industrial or swimming pools are available, on a project basis, by prior request.

As well as these advantages, the specifier has the security of knowing that the components have been coated by experts in the field of metal preparation and finishing - companies which have operational procedures assessed and accredited against The British Board of Agrément Certificate No. 94/3041 and all of which are approved to ISO 9000.

Many companies offer 'guarantees' but Sherwin-Williams is proud to be able to offer major advantages to the specifier in this important area. Specialist advice is available comparing the Syntha Pulvin System Guarantee with those offered by companies marketing similar products for architectural purposes.

**NB: Guarantees stated here are applicable to installations in the United Kingdom and Eire only. Other countries will have different guarantee periods or may have no guarantee. For details on the guarantee availability for specific countries please contact Sherwin-Williams.**

*\* For new equivalent CEN standards see Appendix E.*

## THE SYNTHA PULVIN SYSTEM IN MARINE & INDUSTRIAL LOCATIONS | [Section Top](#)

[Guarantee Information](#) | [Swimming Pool Environments](#)

There are three overriding factors that affect all organic coatings and their ability to decorate and protect in hazardous locations.

### 1. **Color Stability and Resistance to Chalking**

In marine locations, the effect of ultraviolet radiation on the coating (which is the principle cause of color fading and chalking) is more intense than it is in industrial cities and towns. In towns, a significant proportion of the radiation is absorbed by atmospheric contaminants. Along shorelines reflection from the water can increase the levels of radiation hitting a structure.

### 2. **Corrosive Salts**

Sea salts are very corrosive and affect both ferrous and non-ferrous metals. Again, shoreline installations are particularly at risk as they are frequently exposed to sea salt solutions followed by dry periods. This wet / dry cycle produces a very corrosive environment.

### 3. **Physical Erosion of the Coating**

The combination of wind and seashore debris i.e. sand and shingle, produces a very abrasive force that can physically erode coatings. This can result in corrosive attack of the base metal substrate and eventual structural weakness.

Over the years, numerous different coatings have been developed for harsh coastal environment and the most successful historically have been those where the emphasis is on protection using multi-coat systems. These have, however, left a lot to be desired in decorative terms. Many of the designers of these finishes have also failed to recognize that coatings can be damaged leading to the substrate being exposed to the aggressive nature of the environment. This type of degradation has meant that such systems have required repainting every two to three years. The alternative is Syntha Pulvin.

We would recommend that in such locations only galvanized steel or aluminium substrates be used, and if possible extrusion edges be radiused to facilitate maximum edge protection. With Syntha Pulvin, these substrates are pre-treated to offer the best protection against the corrosive nature of the environment. The applied powder coating is extremely tough and will resist accidental damage and scratches. This we consider to be an essential requirement.

The influence of erosion, in a marine location, has proved to be difficult to replicate in a laboratory. However, research shows that the rate of erosion is dependent upon a variety of factors such as foreshore type, prevailing winds, geographical location and protection from other buildings or landscaping. Syntha Pulvin marine project guarantees take account of these (and other) factors to ensure that the guarantee is relevant and specific.

## **Quality Procedure**

For a Marine/Industrial Environment Guarantee to apply, the Approved Applicator will use a higher level of inspection, quality control and sampling. This inspection procedure shall be at least in accordance with BS 6001:1991 Part 1 Inspection Level III (using appropriate AQL) using Normal, Reduced and Tightened Inspection as required.

## **Marine/Industrial Guarantee Availability**

The Syntha Pulvin Guarantee for coatings on aluminium and galvanized steel will be available for certain locations providing that in Sherwin-Williams's opinion, the proposed position of the site does not constitute any risk to the coating. A guarantee for these locations is given on a contract basis when all of the facts have been evaluated including: distance of the buildings from the shoreline, the nature of the shoreline, prevailing winds, the geographical location, lie of the land etc. or, in the case of an industrial environment, factors such as known pollutants e.g. aircraft exhaust emissions, railway vehicle brake dust, chemical plant effluent etc.

In order to simplify this procedure the marine / industrial guarantee request form must be completed in every case so that a full assessment can be made. The result of this will be made known in writing to the originator with a copy to the Approved Applicator. In order to comply with requirements of the Syntha Pulvin Matt product guarantee certain extra stipulations will apply.

They are:

1. The minimum film thickness is 60 microns.
2. All joints or water traps must be sealed with approved mastic.
3. There shall be no exposed bare metal edges. NB: This excludes mitre joints where the joint is crimped and sealed with an approved 2 pack adhesive or small joint sealer.
4. Fully corroborative documented records showing cleaning periods not exceeding 3 months must be kept.

For full details of these requirements, please contact your applicator or Sherwin-Williams.

Any guarantee offered will be for a period of up to 25 years\*. It will only be considered with the prior knowledge of the proposed Approved Applicator, who will be party to the guarantee and who will have, jointly, assessed the risk.

\*15 years for Syntha Pulvin Gloss, Satin and Fine Textured

**GUARANTEES ARE ONLY OFFERED IN CONJUNCTION WITH THE GUARANTEE OF APPLICATION FROM THE SYNTHA PULVIN APPROVED APPLICATOR AND WILL NOT BECOME OPERATIVE UNTIL CONFIRMATION IS RECEIVED BY SHERWIN-WILLIAMS IN WRITING THAT THE COATING HAS BEEN APPLIED BY AN APPROVED APPLICATOR.**

**THIS CONFIRMATION WOULD NORMALLY COME VIA THE ORIGINATOR OF THE GUARANTEE REQUEST.**



## **REQUEST FOR MARINE/INDUSTRIAL GUARANTEE**

Please complete the following so that an accurate assessment can be made:

NAME OF SYNTHA PULVIN APPLICATOR	
PROJECT NAME AND ANY REF. NO.	
LOCATION INCLUDING FULL ADDRESS	
FABRICATOR(S)	
ARCHITECT	
SUBSTRATE (ALUMINIUM OR GALV.STEEL)	
COMPONENTS TO BE COATED	
PRODUCT AND COLOR REFERENCE	
DISTANCE IN METRES FROM NEAREST SHORE-LINE/CREEK/HARBOUR ETC	
TYPE OF FORESHORE (EG. SAND, SHINGLE, ROCK)	
NUMBER OF FLOOR LEVELS	
DIRECTION BUILDING FACES	
IF INDUSTRIAL ENVIRONMENT GIVE DISTANCE FROM SOURCE OF POLLUTANT	
TYPE OF INDUSTRIAL POLLUTANT	
HAS PROPOSED BUILDING ANY OTHER BUILDINGS OR LANDSCAPE GIVING PROTECTION OR IS THE LAND FULLY EXPOSED	
ARE THERE ANY OTHER ENVIRONMENTAL CONDITIONS TO TAKE INTO CONSIDERATION	

RESULT OF THIS ENQUIRY (To be completed by Sherwin-Williams)
NORMAL GUARANTEE    MARINE GUARANTEE    NO GUARANTEE

THIS FORM MUST BE ACCOMPANIED BY A SCALED PLAN AND/OR ORDINANCE SURVEY MAP MARKING THE PROPOSED PROJECT.  
 ONCE COMPLETED, THIS FORM WILL BE MARKED WITH OUR DECISION AND RETURNED TO ITS ORIGINATOR WITH A LETTER OF RECOMMENDATION AND A COPY TO THE APPROVED APPLICATOR

## THE SYNTHA PULVIN SYSTEM IN SWIMMING POOL ENVIRONMENTS

[Section Top](#)

[Guarantee Information](#) | [Marine & Industrial Locations](#)

Since the early seventies the Syntha Pulvin System has been used successfully in chlorinated atmospheres as found in swimming pool areas. Two of many such examples are the Vale of Glamorgan Leisure Centre, and the Spennymoor Leisure Pool for Sedgefield District Council. On these projects the Syntha Pulvin System was specified for aluminium window and doorframes, screens, balustrades, exterior cladding, guttering and brackets.

Inspections of the above buildings have shown no signs of coating failure and support the suitability of the Syntha Pulvin System in such environments.

In addition to the practical experience gained from these and other similar contracts, laboratory tests have been carried out whereby Syntha Pulvin coated panels were immersed in chlorinated water, as used in the potentially more hazardous swimming pools, for a period of 650 hours, with the water at a constant temperature of 60°C. The test was terminated with no discernible effect on the coating.

In addition, recent methods of disinfection have led to reductions in the levels of chlorination used in swimming pools and the introduction of ozone and ultra violet light as alternative means of ensuring water quality. The Syntha Pulvin System is equally resistant to these methods of pool hygiene.

Sherwin-Williams is prepared to consider guarantees for projects in swimming pool environments on an individual basis, but the following minimum additional requirements should be noted.

1. **Film Thickness**

The **minimum** film thickness of the Syntha Pulvin coating on all significant surfaces, must be **60 microns** (applies to all substrates).

2. **Water Traps**

There shall be no water traps in the design of the windows, curtain walling or any other Syntha Pulvin coated components.

3. **Pool Contents**

Information is required on water composition and operating conditions prior to any Guarantee being given (see attached form).

4. **Jig Points**

These should be avoided wherever possible and in any case only allowed on secondary or unseen surfaces. It is recommended where jig marks occur these should be given remedial treatment after assembly and prior to installation (See Repair Procedure for Syntha Pulvin TAS13).

## 5. **Mechanical Processes**

Whilst every endeavour should be made to avoid any crimping, punching, drilling and sawing etc. after coating, it is recognized a limited amount of work may occur. Where this is the case remedial treatment (See Repair Procedure for Syntha Pulvin TAS13) should take place immediately and suitable inserts must be used to isolate the untreated aluminium from the atmosphere, i.e. drainage slots, etc. Where possible, cut edges should be coated using a suitable coating system prior to assembly and installation. The chosen product manufacturer should confirm suitability for this system. Bare metal edges should be avoided.

## 6. **Damage**

Where damage to the coating occurs, it must be repaired immediately. Should damage occur during fabrication or on site, it is necessary to apply a repair procedure (See Repair Procedure for Syntha Pulvin) immediately. It is suggested that this is carried out by the fabricator/installer.

## 7. **Cleaning**

Cleaning should take place at intervals not exceeding 3 months, with fully documented records being maintained throughout any Guarantee period.

It should be noted that the initial cleaning cycle shall commence at a maximum of 3 months after the first component is installed (See Syntha Pulvin TAS11).

## 8. **Low Tack Tapes**

Where it is necessary to use tapes as a form of protection, these must be of a low tack quality and must not be left in contact with the surface longer than six months (See 'Use of Low Tack Self Adhesive Tapes' on Syntha Pulvin TAS9).

## 9. **Sealants & Mastics**

Where it is necessary to use sealants and mastics on surfaces coated with the Syntha Pulvin System, reference should be made to TAS9.

## 10. **Electrolytic Cells in Fixing**

Every effort should be made to avoid the use of dissimilar metals, thereby setting up electrolytic cells. Where this is unavoidable suitable sealants/ mastics must be used to isolate the various components from each other.

## 11. **Quality Procedures**

For a Swimming Pool Guarantee to apply, the Approved Applicator will use a higher level of inspection, quality control and sampling. This inspection procedure shall be at least in accordance with BS6001 Part 1:1999 Inspection Level III (using appropriate AQL) using Normal, Reduced and Tightened Inspection as required.

## 12. **Galvanized Substrates**

The pretreatment used for galvanized substrates should be as recommended by the respective pretreatment supplier.

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13. **Plant Rooms**

Any coated components, within swimming pool plant rooms, are expressly excluded from any guarantee offered.

14. **Additional Requirements**

It may be necessary, for particular projects, that following evaluation of the specific circumstances related to the project, further technical requirements are specified.

The final guarantee offer of up to 25 years will not be granted without the completion of the attached 'Swimming Pool Environment' request form and full consultation with the proposed Syntha Pulvin Applicator.

Further copies can be obtained from Sherwin-Williams.

## **REQUEST FOR SWIMMING POOL ENVIRONMENT GUARANTEE**

NAME OF SYNTHA PULVIN APPLICATOR	
PROJECT NAME AND ANY REF. NO.	
LOCATION INCLUDING FULL ADDRESS	
CLIENT'S NAME	
FABRICATOR'S NAME & ADDRESS	
ARCHITECT'S NAME & ADDRESS	
TYPE OF SUBSTRATE AND DETAILS OF COMPONENTS TO BE GUARANTEED,(EG. ALUMINIUM OR GALVANIZED STEEL-DOORS, WINDOWS OR HANDRAILS)	
POOL WATER TEMPERATURES - MAIN POOL	
POOL WATER TEMPERATURES - SPA POOLS	
AIR TEMPERATURE INSIDE BUILDING	
HUMIDITY LEVEL	
TYPES & CONCENTRATION OF CHEMICALS USED IN WATER.	
PRODUCT AND COLOR REF. OF POWDER COATING AND GLOSS LEVEL	
DISTANCE OF COATED COMPONENTS FROM POOLSIDES	
IS THE WATER TREATED WITH CHLORINE, BY UV OR OZONE ETC. STATE WHICH	

RESULT OF THIS ENQUIRY (To be completed by Sherwin-Williams)

Swimming Pool Environment Guarantee (delete where applicable) *Granted *Not Granted
Once completed, this form will be marked and dated with our decision and returned to its originator with a letter of recommendation and a copy to the Approved Applicator

## PRODUCT PERFORMANCE & APPLICATOR REQUIREMENTS SPECIFICATION

[Contents](#) | [Performance of Applied Syntha Pulvin Coating](#) |

[Requirements of Approved Applicator](#) | [Appendices](#)

## 1. SYNTHA PULVIN PRODUCT PERFORMANCE & APPLICATOR REQUIREMENTS | [Section Top](#)

[Requirements of Approved Applicator](#) | [Appendices](#)

### 1. Performance of the Applied Syntha Pulvin Coating

#### 1.1a **Test Panels (Aluminium)**

Test panels prepared in accordance with Appendix A1 shall be used to test the performance of the coating both at Sherwin-Williams and the Approved Applicators. Extrusion offcuts will also form part of this test program.

#### 1.1b **Test Panels (Galvanized Steel)**

Test panels and/or sections in accordance with Appendix A2 shall be used to test the performance of the coating at both Sherwin-Williams and the Approved Applicators.

#### 1.2 **Test for Adhesion Cross Hatch**

Test method in accordance with ISO 2409 2013 - no detachment of film from substrate other than debris from the cutting operation. Rating of Class 0 is required.

#### \*1.3 **Test for Flexibility**

Test method in accordance with ISO 6860 2006. No cracking, flaking or film deformation above 6mm.

#### \*1.4 **Erichsen Cupping Test**

Test method in accordance with ISO 1520 2006 using an indentation of 6mm. No cracking of the coating or detachment from the substrate.

#### 1.5 **Scratch Resistance**

Indentation test method in accordance with ISO 1518 2011 using a 4000g weight and a 1mm diameter tungsten ball. No penetration to the substrate.

#### \*1.6 **Impact Resistance**

Test method in accordance with EN 12206-1:2004 Clause 5.7. No cracking or detachment of coating @ 0.23m kg - 20"/lbs impact.

*\*Aluminium substrates only.*

#### 1.7 **Drill, Mill and Saw**

Test panels or sections to withstand drill, mill and sawing action similar to the rigors of fabrication after coating.

#### 1.8 **Mortar Resistance**

Test method in accordance with EN 12206-1:2004 Clause 5.9 and EN 13438:2013 Clause A 4.7.

#### 1.9 **Acetic Acid/Salt Spray Resistance**

Test method in accordance with EN 12206-1:2004 Clause 5.12 for a period of 1000 hours for aluminium substrates and EN 13438:2013 Clause A.4.12.2 for 480 hours for

galvanized steel. On aluminium substrates corrosion creep will be less than 2.0mm from score lines. There shall be no blistering, softening or detachment of the coating. On galvanized substrates there shall be no underfilm corrosion or loss of adhesion beyond 5mm from the scribe and no sign of cracking or blistering on the panel.

## 1.10. **Artificial Environmental Tests**

Light Resistance - ISO 16474-2

Gloss retention of 50% or greater after 1000 hours. A color change may occur in the shade of the coating without affecting the uniform appearance.

Degree of Gloss

The initial gloss level shall be  $\pm 7$  units of the standard when measured using an incidence angle of 60°. Any gloss reduction occurs evenly over the surface, for even exposure to UV radiation, without adversely affecting the uniform appearance of the coating.

### 1.10.1 **Natural Weathering Resistance**

Syntha Pulvin is designed to decorate and protect architectural metalwork exposed to extreme weather and ultraviolet conditions. Rigorously tried and tested including 12 months exposure tests in South Florida with no cracking, crazing or flaking of the coating.

### 1.11 **Humidity Resistance**

Reference EN ISO 6270:2018 / BS 3900 F9. Syntha Pulvin shows no effect after 1000 hours.

### 1.12 **Sulphur Dioxide Resistance**

Reference ISO 3231:1993. Syntha Pulvin shows no color change, softening, blistering or loss of adhesion after 576 hours. This test demonstrates the excellent properties of the coating when exposed to an industrial atmosphere.

### 1.13 **Color Consistency**

Color consistency shall be assured not only within one batch but from batch to batch within the delivery for one complete project. Consistency will be judged in general under the conditions described by BS950 Part 1 'Artificial Daylight' for the assessment of color - Illuminant for color matching and color appraisal, ie: inspection under the light of 750 lux to 3200 lux at a color temp of 6500°K @ 45° angle unless otherwise stated. In case of disagreement between the Specifying Officer and the supplier, a calibrated spectrophotometer shall be used.

### 1.14 **Permeability**

Meets the performance requirements of EN 12206-1:2004 Clause 5.10 and EN 13438:2013 5.3.11. "There shall be no blistering of the coating except within 3mm of any edge of the panel".

### 1.15 **Salt Spray**

Reference ISO 9227: Maximum 4mm scribe creep after 1000 hours - demonstrates the excellent corrosion resistance.



## 2. REQUIREMENTS OF THE APPROVED APPLICATOR | [Section Top](#)

[Performance of Applied Syntha Pulvin Coating](#) | [Appendices](#)

### 2.1 Pretreatment of Aluminium

All aluminium components shall be pretreated in accordance with Appendix B.

### 2.2 Pretreatment of Galvanized Steel

All components shall be pretreated in accordance with Appendix C.

### 2.3 Surface Classification

The minimum coating thickness permitted on a significant surface is 60 microns for aluminium substrates and for galvanized steel. However, the Specifying Officer and/or fabricator can specify a minimum in excess of 60 microns if necessary \*.

2.3.1 The significant surface is defined as that surface on any component that is exposed to the external environments or faces the interior of the building in its final installed position. The minimum coating thickness permitted is as stated in Section 2.3. This surface is the most likely surface on which a higher minimum is required. When specifying a higher minimum, consideration must be given to the question of fit or possible problems with sliding components.

2.3.2 All non-significant surfaces shall be defined as those which do not affect the performance of the component when in its final installed position. On those areas the minimum film thicknesses as stated in Section 2.3 are not mandatory unless specified by the Contract Administrator / Specifying Officer / Fabricator and agreed by the Applicator. It should be noted that if components are to be coated for use in a structural silicone glazing situation, all surfaces are classed as significant. See TAS2.

*\* This relates to marine or other hazardous environments and Sherwin-Williams should be contacted for further information. See Page 39 of the technical manual.*

### 2.4 Quality Control Testing

#### 2.4.1 Monitoring of the Process Using Test Panels

The minimum number of samples taken for testing shall be as per the Syntha Pulvin Guarantee. If further samples are required they can be supplied by agreement with the Specifying Officer and Sherwin-Williams. The sampling requirement will depend on the type of test. Coating thickness determination will require the greatest frequency of testing. Coating thickness determination should take place on the actual work, not test panels.

Sample panels shall be prepared as directed by Appendix A1 and A2, ie: in accordance with the process and at the same time as each production run.

A sufficient number of panels shall be prepared to carry out the required tests to comply with the Guarantee.

Test panels are to be used as follows:

- for testing the physical properties of the powder used.
- for pressure cooker pretreatment testing - (Permeability).
- for retaining as a reference sample for a period of the Guarantee plus one year from the date of processing.
- for submission to Sherwin-Williams. These will be retained for a period of three years from the date of receipt.

(The assessment of the process can also be carried out using additional test sections. The use of test panels is, however, mandatory).

#### Note 1

Test panels pretreated in bulk are not acceptable under any circumstances. All test panels must be pretreated and coated concurrently with the job they represent.

#### Note 2

Because the test panels must be produced concurrently with the production job they represent, it is appreciated that the film thickness on the panels may be excessive by nature of the process. Film thickness on the test panels above 80 microns may result in reduced flexibility values being obtained, for which consideration must be given in final assessment.

#### 2.4.2 Assessment of the Physical Properties of the Coating Using Test Panels

All test panels produced must satisfy the tests detailed under 1.2, 1.3, 1.6, 1.7 and 1.14 for aluminium substrates and 1.2, 1.7 and 1.14 for galvanized steel substrates. Compliance with the remaining tests on the appropriate substrate correctly pretreated is certified by Sherwin-Williams.

#### Procedure in the event of failure

If any of the test panels produced do not conform to the requirements detailed above then the actual components coated in production represented by the test panels shall be tested in accordance with 1.2.

The number of components to be tested is as follows:

Quantity in Batch*	Number to be tested	Acceptance Number	Rejection Number
1 – 19	All	0	1
20 – 150	20	0	1
151 – 500	80	1	2
501 – 1000	125	2	3
1001 – 3000	200	3	4

*Note:* Testing of the actual production where possible should be done on a hidden surface to avoid reprocessing should the components pass the test. However,

the lack of a suitable hidden face or surface must not prevent compliance with this requirement.

*\* In the case of test panel failures, the term 'batch' refers to the number of components processed which relate to the failed test panels (usually 4 hours of production).*

## **Action upon Rejection of Batch**

If, after inspection has taken place in accordance with the table shown above, the batch is rejected, all of the coated components represented by the test panels must be reprocessed. Rejected components must be chemically stripped back to bare aluminium before reprocessing takes place. 'Double coating' of rejects is not permitted. Full details on reprocessing can be found in Appendix F of this document.

## **2.5 Assessment of the Finished Product**

The number of components tested from each batch of work shall be based on the guidelines in BS 6001:1999 Part 1 / ISO 2859-1:1999. The Acceptable Quality Level (AQL) shall be 1.0 for normal, reduced and tightened inspection.

The attributes inspected will be coating thickness, surface appearance, gloss level and color.

### **2.5.1 Determination of coating thickness on significant surfaces**

The thickness of the coating shall be determined by the method given in BS EN ISO 2808:2007

The frequency of thickness readings shall be governed by the shape and size of the component being inspected. As a guide, readings should be taken at one meter intervals along stock length extrusions. For other components e.g. panels, the frequency of readings will be determined by the quality inspector who carried out the testing. The inspector must be satisfied that the number of readings taken gives a representative sample of the film thickness on each component.

If any reading is below the minimum value specified, the component shall be rejected.

If any single reading is less than 20% of the minimum average value specified, three further readings shall be taken, each within 5cm of the initial reading.

If any of the 3 further readings are below 20% of the minimum average value specified, the component shall be rejected.

### **2.5.2 Surface Appearance**

Visual inspection under identical and repeatable conditions shall be conducted at a distance of 1.0m under the light of 750 to 3200 lux with a color temperature of 6500°K (artificial daylight) all in accordance with BS950 Part 1. In case of dispute, instrumental inspection shall be carried out in accordance with BS1134 Part 1 & 2 Assessment of surface appearance either by 'Centre Line Average' height (CLA) or any other instrument available for the purpose.

*Note:* Should it prove impossible to simulate the detailed inspection conditions, an alternative agreed method acceptable to the Specifying Officer should be used. Depending on the color used and/or the shape of the profile/component to be

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- coated, a degree of 'orange peel' may be exhibited. The degree of 'orange peel' shall be shown, if necessary, by the provision of samples.
- 2.5.3 On galvanized components the degassing operation (as detailed in Appendix C) will normally minimize the effect of pin-holing. The assessment of the visual appearance of cured coating should be from a distance of 1 meter.

*Note:* A degree of pin-holing is inevitable with this substrate, but generally it is not detrimental to the performance of the coating.

## 2.5.4 Gloss Level

Syntha Pulvin Product	Gloss Range
Gloss	84 +/- 7
Satin	70 +/- 5
Matt	30 +/- 5
Metallic	Visual
Fine Texture	Visual
Anodite	Visual

The measurement should be determined according to ISO 2813 using an incidence angle of 60°.

\*Metallic colors produce a 'light scattering' effect and, for this reason, are best assessed visually in comparison with an approved sample. Though the base (before the addition of metallic) is manufactured to 30 gloss units, instrumental measurement of the applied coating may not give accurate results.

## 2.5.5 Color

The color and gloss of Syntha Pulvin on the significant surface when examined in accordance with BS3900:1978 Part D1 shall closely match that of a previously agreed sample.

## 2.6 Curing of Syntha Pulvin

Unless otherwise stated, the coating must be cured for the minimum amount of time at the metal temperature stated on the product label. The applicator shall, therefore, ensure that the oven(s) is (are) checked within 90 minutes of the start of the production and then every eight hours thereafter using an oven data logger attached to the workpiece. Any shift in temperature must be fully evaluated and the necessary action taken. Full written evidence/log relating to the curing must be retained for inspection by Sherwin-Williams.

## 2.7 Pretreatment Control

The Applicator must keep a daily pretreatment log and use the pretreatment chemicals in strict accordance with the manufacturer's instructions. This log should be retained by the Applicator for inspection by Sherwin-Williams. In addition regular coating weight determinations should be carried out.

The quality of pretreatment should be tested in accordance with Section 1.14.

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## 2.8 **Statement of Compliance**

Where requested, the Applicator will provide a written test certificate/report stating that the Syntha Pulvin coating has been applied in accordance with the manufacturer's instructions confirming that it conforms fully to Section 3, for any production job not less than £1,000 in value to the Applicator.

A specimen copy of the Syntha Pulvin Quality Control Report Form/Certificate can be found in Appendix D of this document.

## **INDEPENDENT INSPECTION OF THE SYNTHA PULVIN SYSTEM**

Whilst high quality is a prerequisite for the architectural market, it is a standard for Syntha Pulvin, the only architectural powder coating system that can demonstrate a proven track record dating back to the early 1970's.

All manufacturers will claim high quality and, in today's contractual climate, quality claims can prove both expensive and sometimes damaging. Delays on site as a result of poor quality coating, inaccurate color and gloss matches, and surface contamination, can result in accumulated costs and even penalty clauses.

Syntha Pulvin is manufactured in a modern and highly efficient powder production facility - and where in-depth quality control processes ensure exacting standards are maintained.

**Raw materials are comprehensively tested, resins, pigments and other ingredients are mixed together, extruded, and ground to a fine powder. At every stage, comprehensive quality control procedures ensure that the product is of the highest quality. During production, each batch is tested for color, gloss and mechanical properties, and test panels are retained.**

Only applicators approved to ISO 9001:2000 standards are considered for Syntha Pulvin Approved Applicator status. Prior to approval, applicators are subjected to a thorough approval process and test panels and extrusions processed by their plants are thoroughly tested for compliance with the Syntha Pulvin performance standards.

The real measure of quality is track record. Since the 1970's, the Syntha Pulvin system has protected and decorated major buildings and projects around the world. To date, no claim has been received against the Syntha Pulvin guarantee. In today's market, the cost of sub-standard quality is the difference between profit and loss. Right first time ensures no penalty claims, no expensive litigation and no delayed payments.

By specifying Syntha Pulvin you will be guaranteed that your project will be protected and decorated by the highest quality architectural powder coating system. Syntha Pulvin is:

- Manufactured and processed by ISO 9001:2000 approved companies
- Independently assessed and certified by the British Board of Agrément
- Processed to meet the requirements of EN 12206-1, EN 13438:2013 and AAMA 2604
- Supported by more than 40 years 'track record' throughout UK and Europe

## APPENDIX A.1

[Appendix B](#) | [Appendix C](#) | [Appendix D](#) | [Appendix E](#) | [Appendix F](#) | [Appendix G](#) | [Appendix H](#)

### **Preparation of Coated Aluminium Test Panels and /or Test Sections used by Sherwin-Williams and the Approved Applicators.**

#### **A 1.1 Panel Material**

Panels, 150mm x 100mm x 1.0mm shall be prepared from aluminium alloy conforming to EN573-3, AA 5005 –H14 (or suitable equivalent)\* unless otherwise agreed with Sherwin-Williams.

In addition to these test panels, each applicator is required to supply, for test, sample offcuts of extrusion & etc. which will, more accurately, represent the standards being achieved on actual work pieces.

#### **A 1.2 Pretreatment**

The aluminium panels shall be thoroughly cleaned by treatment with suitable alkaline or acidic solutions and rinsed as detailed in Appendix B. A conversion coating shall be applied by pretreatment with a solution.

The coating weight deposited will depend on the type of conversion coating used and will be as recommended by the conversion coating chemical supplier.

The conversion coating shall be thoroughly rinsed in deionised water of conductivity not greater than 30 microsiemens and dried at the temperature and time specified by the chemical supplier. When dry, the surface must not be contaminated and application of the powder coating should be carried out as soon as possible.

#### **A 1.3 Coating**

Coat the panels with the powder coating by the appropriate method to give a cured film thickness of between 60-80 microns, when determined by the method described in BS EN ISO 2808:2007. Condition the panels by allowing to cool to a temperature of 20-25°C for a period of at least one hour before carrying out the tests.

*\* For new equivalent CEN standards see Appendix E*

*\* Or an approved Chrome-free system*

## APPENDIX A2

[Appendix B](#) | [Appendix C](#) | [Appendix D](#) | [Appendix E](#) | [Appendix F](#) | [Appendix G](#) | [Appendix H](#)

### **Preparation of Galvanized Test Panels and/or Sections.**

#### **A 2.1 Test Panels**

Panels 100mm x 150mm x 1.6mm nominal size shall be prepared from steel sheet galvanized to EN 10327 or EN ISO 1461:2009 (formerly BS2989:1992 (unpassivated)).

#### **Test Sections**

Window section F4 or similar, of a nominal 150mm length shall be hot-dip galvanized to EN ISO 1461:2009 (unpassivated).

#### **A 2.2 Pretreatment**

The test panels or sections shall be pretreated in accordance with Appendix C.

#### **A 2.3 Galvanizing Thickness Determination**

Due to the nature of the process the galvanizing thickness will vary over relatively small areas. It is, therefore, necessary to determine both the galvanizing thickness and the powder coating thickness in exactly the same place. Location of the position on the test section can be achieved by the use of a suitable template.

Along an imaginary center line on the uncoated panel and/or the widest face of the test section, determine the galvanizing thickness at 50mm intervals using the eddy current method described in EN ISO 2808:2007 or ISO 2360:1982. The imaginary center line on the specified six test panels and/or sections will be 150mm in length giving the two determinations. These should be recorded together with the locations from which the readings were taken.

#### **A 2.4 Powder Coating Thickness**

Coat the panels or sections with the powder coating by the appropriate method to give a cured film of a minimum thickness of 60 microns.

The powder coating thickness should be determined using the same instrumentation and data obtained from Section A 2.3. Condition the panels by allowing to cool to a temperature of 20-25°C for at least 1 hour before carrying out the tests.



## APPENDIX B

[Appendix A](#) | [Appendix C](#) | [Appendix D](#) | [Appendix E](#) | [Appendix F](#) | [Appendix G](#) | [Appendix H](#)

### **Specification for the Pretreatment of Aluminium**

#### **(Aluminium in accordance with EN 515\*, EN 573)**

1. Immersion Pretreatment Process
  - a) **Degreasing**  
With acidic or alkaline aqueous solutions, organic solvents or aqueous emulsions.
  - b) **Rinsing#**  
With cold water (omitted after degreasing with organic solvents).
  - c) **Etching**  
Alkaline or acidic.
  - d) **Rinsing#**  
Omitted if no etching.
  - e) **Desmutting**  
As required, e.g. nitric acid.
  - f) **Rinsing with DI water#**
  - g) **Chemical Conversion# #<sup>1</sup>**
  - h) **Rinsing#**  
With cold water.
  - i) **Rinsing#**  
With demineralised water. The conductivity reading of the initial drain-off water of the final rinse must not exceed 30 microsiemens at 20°C.
  - j) **Drying**  
Maximum 100°C metal temperature.

*# Rinsing must be performed carefully in order to avoid carry-over of chemicals and corrosion damage.*

*## Treated components should not be handled or exposed for more than 16 hours before subsequent coating. ALL CHEMICALS USED IN THE PROCESS MUST BE USED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND KNOWLEDGE.*

*\* For new equivalent CEN standards see Appendix E*

## **Specification for the Pretreatment of Aluminium**

**(Aluminium in accordance with EN 515\*, EN 573\*)**

### 2. Spray Pretreatment Process

a) **Degreasing/Etching**

Combined alkali cleaner/etch, may be used.

b) **Rinse#**

Cold water.

c) **Rinse in DI water#**

Cold water.

d) **Chemical Conversion# #<sup>1</sup>**

e) **Rinse#**

Cold water.

f) **Final Rinse#**

With demineralised water. The conductivity reading of the initial drain-off water of the final rinse must not exceed 30 microsiemens at 20°C.

g) **Drying**

Maximum 100°C metal temperature.

*# Rinsing must be performed carefully in order to avoid carry-over of chemicals and corrosion damage.*

*## Treated components should not be handled or exposed for more than 16 hours before subsequent coating.*

**ALL CHEMICALS USED IN THE PROCESS MUST BE USED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND KNOWLEDGE.**

*\* For new equivalent CEN standards see Appendix E*

### 3 Pre-anodise - Anodic Pretreatment

Anodic pretreatment can be used to apply a thin (3 to 8µm) anodic layer to the aluminium after removing all impurities from the surface. Care must be taken during rinsing to ensure all acid is removed from the structure and the drying process controlled to prevent sealing of the pores.

## APPENDIX C

[Appendix A](#) | [Appendix B](#) | [Appendix D](#) | [Appendix E](#) | [Appendix F](#) | [Appendix G](#) | [Appendix H](#)

### **Recommended Specification for the Pretreatment of Hot-Dip Galvanized Hot Rolled Steel, Complying with ISO1461 & Hot-Dip Galvanized Preformed Steel Sheet, Complying with EN 10327**

1. **Degassing#**  
At a metal temperature of not less than 220°C for a minimum of 7 minutes. This operation should be carried out after the application of the conversion coating as recommended by the conversion chemical supplier.
2. **Degreasing/Cleaning**  
With acidic or alkaline aqueous solutions.
3. **Rinsing# #**  
With cold water.
4. **Etch Clean # # #**  
With acidic or alkaline aqueous solutions. This process can be omitted at the discretion of the Applicator.
5. **Rinsing # #**  
With cold water.
6. **De-Smut (as required)**  
With acidic aqueous solution.
7. **Rinsing# #**  
With cold water.
8. **Conversion Coating# # # #**
9. **Rinsing# #**  
With cold water.
10. **Rinsing# #**  
With demineralised water (conductivity of the initial drain-off water must not exceed 30 microsiemens at 20°C).
11. **Drying**  
Up to a maximum metal temperature of 100°C.

*# Degassing is an essential procedure as it normally minimises the incidence of pinholing in the subsequent cured powder film.*

*## Rinsing must be performed carefully in order to avoid carry-over of chemicals and corrosion damage.*

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**###** *Materials complying with EN 1SO 1461:2009 may need to be etch cleaned to remove any passivation. Etch cleaning should be carried out with great care so as not to remove all of the zinc layer. This stage can be omitted if the galvanizing has not been passivated.*

*We would advise that material complying with EN 10327 (formerly BS2989:1992) should not be etch cleaned due to the relatively thin layer of zinc which may be totally removed by the etch cleaner.*

*If 'white rust' is likely to be present on the zinc layer then the Applicator should be consulted as it may be impossible to remove the 'white rust' without also removing the zinc layer.*

**####** *Pretreated components must not be handled or exposed for more than 12 hours before subsequent coating.*

**Note:** It is recommended that all batches of work are noted to show that they have been supplied as conforming to EN 10293 or EN 10327 for future reference.

ALL THE CHEMICALS USED IN THE PROCESS MUST BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND KNOWLEDGE.

## APPENDIX D

[Appendix A](#) | [Appendix B](#) | [Appendix C](#) | [Appendix E](#) | [Appendix F](#) | [Appendix G](#) | [Appendix H](#)

### Syntha Pulvin Quality Control Report Form

#### DECLARATION OF CONFORMITY (EN 45014:1998)

All details to be recorded by The Syntha Pulvin Approved Applicator during production.

Syntha Pulvin We: \_\_\_\_\_ Report No. \_\_\_\_\_  
Approved Applicator: \_\_\_\_\_  
(Name & Address) \_\_\_\_\_  
\_\_\_\_\_

Customer: \_\_\_\_\_ Order No. \_\_\_\_\_

Main Contractor: \_\_\_\_\_

Project Name: \_\_\_\_\_

Process Date/Time: \_\_\_\_\_ Despatch Date: \_\_\_\_\_

Substrate: \_\_\_\_\_ Item: \_\_\_\_\_

Pretreatment: \_\_\_\_\_

Powder Code: \_\_\_\_\_ Batch No. \_\_\_\_\_ Box No. \_\_\_\_\_

Recommended Curing Schedule: \_\_\_\_\_

Oven Recording: \_\_\_\_\_

Line No. \_\_\_\_\_

Completed by: \_\_\_\_\_ Position: \_\_\_\_\_  
(Authorised Person)

Signed: \_\_\_\_\_

Date: \_\_\_\_\_ 19 \_\_\_\_\_

Place of Issue: \_\_\_\_\_

The coating applied to the materials on the above Order No. conforms to the requirements of sections 10.2 - 10.8 inclusive of EN 12206-1:2004, EN 13438:2013 sections 6.5.2 to 6.5.6), to the Syntha Pulvin Product Performance & Applicator Requirements (September 1994) and to all respects of the contract or order as specified by the customer.

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## Assessment of Finished Material

Visual Appearance : (EN 12206-1:2004 Part 4.5.2)

\_\_\_\_\_ (EN 13438:2013 Part 6.5.2)

Color: (EN 12206-1:2004 Part 4.5.3)

\_\_\_\_\_ (EN 13438:2013 Part 6.5.3)

Specified Gloss: \_\_\_\_\_ Actual Gloss: \_\_\_\_\_ (EN 12206-1:2004 Part 4.5.4)  
(EN 13438:2013 Part 6.5.5)

Specified Film Thickness: \_\_\_\_\_

Actual Film Thickness: \_\_\_\_\_ (EN 12206-1:2004 Part 4.5.5)  
(EN 13438:2013 Part 6.5.4)

## **Assessment of Test Panels**

Test panels to be prepared in accordance with Syntha Pulvin Product Performance & Applicator Requirements (October 2003).

<u>Test</u>	<u>Specification</u>	<u>Result</u>
Visual Appearance	EN 12206-1:2004 Part 4.5.2 /EN 13438:2013 Part 6.5.	_____
Color BS3900 Part D1:1978	EN 12206-1:2004 Part 4.5.3 / EN 13438:2013	_____
Gloss ISO2813:2014	EN 12206-1:2004 Part 4.5.4 EN 13438:2013 Part 6.5.5	_____
Film Thickness ISO 2808:2007 _____	EN 12206-1:2004 Part 4.5.5/ EN 13438:2013 Part 6.5.4	_____
Adhesion ISO2409:2013	Classification 0	_____
Impact EN 12206-1:2004 Part 4.5.7* No cracking/detachment		_____
Conical Mandrel ISO6860: 2006* No cracking at 6mm		_____
Drilling	No Flaking	_____
Milling	No Flaking	_____
Sawing	No Flaking	_____
Permeability	EN 12206-1:2004 Part 4.5.8 No Blisters - EN 13438:2013 Part 5.3.11 except within 3mm of edges	_____

\* These tests are not applicable to galvanized substrates

## APPENDIX E

[Appendix A](#) | [Appendix B](#) | [Appendix C](#) | [Appendix D](#) | [Appendix F](#) | [Appendix G](#) | [Appendix H](#)

### **Packages of European Standards to Replace Existing British Standards Concerning Aluminium & Aluminium Alloys for General Engineering Applications.**

**BS1470:1987 Wrought aluminium & aluminium alloys for general engineering purposes—plate, sheet & strip.**

- EN 515** Aluminium & aluminium alloys - Wrought products - Temper designations
- EN 573-3** Aluminium & aluminium alloys - Chemical composition & form of wrought products. Part 3: Chemical composition
- EN 573 - 4** Aluminium & aluminium alloys - Chemical composition & form of wrought products. Part 4: Forms of Products
- EN 485 - 1** Aluminium & aluminium alloys - Sheet, strip & plate  
Part 1: Technical conditions for Inspection & Delivery
- EN 485 - 2** Aluminium & aluminium alloys - Sheet, strip & plate  
Part 2: Mechanical Properties
- EN 485 - 3** Aluminium & aluminium alloy - Sheet, strip & plate  
Part 3: Tolerances on shape and dimensions for hot rolled products
- EN 485 - 4** Aluminium & aluminium alloys - Sheet, strip & plate  
Part 4: Tolerances on shape and dimensions for cold rolled products

**BS1471:1972 Specification for wrought aluminium & aluminium alloys - Drawn tube**

- EN 515** Aluminium & aluminium alloys - Wrought iron products - Temper designations
- EN 573 - 3** Aluminium & aluminium alloys - Chemical composition & form of wrought products. Part 3: Chemical composition
- EN 573 - 4** Aluminium & aluminium alloys - Chemical composition and form of wrought products. Part 4: Forms of products
- EN 754 - 1** Aluminium & aluminium alloys - Cold drawn rod/bar & tube  
Part 1: Technical conditions for Inspection & Delivery
- EN 754 – 2** Aluminium & aluminium alloys - Cold drawn rod/bar & tube  
Part 2: Mechanical Properties
- EN 754 - 7** Aluminium & aluminium alloys - Cold drawn rod/bar & tube  
Part 7: Seamless tubes, tolerances on dimensions & form
- EN 754 - 8** Aluminium & aluminium alloys - Cold drawn rod/bar & tube

## Part 8: Porthole tubes, tolerances on dimensions & form

### BS1474:1987 Specification for wrought aluminium & aluminium alloys for general engineering purposes: bars, extruded round tubes & sections

- EN 515** Aluminium & aluminium alloys - Wrought iron products - Temper designations
- EN 573 - 3** Aluminium & aluminium alloys - Chemical composition & form of wrought products. Part 3: Chemical composition
- EN 573 - 4** Aluminium & aluminium alloys - Chemical composition and form of wrought products. Part 4: Forms of products
- EN 755 - 1** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 1: Technical conditions for Inspection & Delivery
- EN 755 - 2** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 2: Mechanical Properties
- EN 755 - 3** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 3: Round bars, tolerances on dimensions & form
- EN 755 - 4** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 4: Square bars, tolerances on dimensions & form
- EN 755 - 5** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 5: Rectangular bars, tolerances on dimensions & form
- EN 755 - 6** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 6: Hexagonal bars, tolerances on dimensions & form
- EN 755 - 7** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 7: Seamless tubes, tolerances on dimensions & form
- EN 755 - 8** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 8: Porthole tubes, tolerances on dimensions & form
- EN 755 - 9** Aluminium & aluminium alloys - Extruded rod/bar, tube & profiles  
Part 9: Profile, tolerances on dimensions & form
- EN 12020 - 1** Aluminium & aluminium alloys - Extruded precision profiles in alloys  
EN AW6060/EN AW 6063 - Part 1: Technical conditions for Inspection & Delivery
- EN 12020 - 2** Aluminium & aluminium alloys - Extruded precision profiles in alloys  
EN AW 6060/EN AW 6063 - Part 2: Tolerances on dimensions & form



## APPENDIX F

[Appendix A](#) | [Appendix B](#) | [Appendix C](#) | [Appendix D](#) | [Appendix E](#) | [Appendix G](#) | [Appendix H](#)

### **The Re-Processing of Non-Conforming Syntha Pulvin Coated Components**

As with all processes, the application of Syntha Pulvin powders to the chosen substrate will sometimes produce components that will be rejected because the applied Syntha Pulvin powder does not meet all the requirements of the Syntha Pulvin Product Performance & Applicator Requirements e.g. low film thickness, inclusions, etc.

During the inspection process at the Approved Applicator, any such components will be classed as non-conforming and will be subjected to the relevant procedures as stated in the Approved Applicators Quality Manual.

In the majority of cases this will involve re-processing. There are two methods of re-processing rejected powder-coated materials as follows:

#### **1. Double Coating**

This involves the rejected material being sent through the coating booth and curing oven for a second time. The intercoat adhesion between the first layer of powder and the second layer of powder will be very poor as powder coatings are formulated to give good adhesion to metallic substrates and not to other powders. This poor intercoat adhesion may lead to delamination of the top layer after a short period of time.

Components treated in this way do not meet the requirements of the Syntha Pulvin Product Performance & Applicator Requirements, and are not covered by the Syntha Pulvin Guarantee.

#### **2. Chemical Stripping**

This involves the rejected material being immersed in a chemical solution, which attacks the Syntha Pulvin coating and consequently removes it from the substrate. The components are then withdrawn from the solution and all traces of the original powder coating, and pretreatment chemicals, are removed using a high-pressure water jet. Any traces of pretreatment remaining on the metal surface will reduce the effectiveness of the subsequent pretreatment processing.

This chemical stripping can be carried out either in-house at the Approved Applicators (if the facilities are available) or by a specialist sub-contractor. In either case it is vitally important that the chemicals are used in strict compliance with the manufacturer's instructions. It is also important that the stripped components are handled carefully and are completely free from the original coating as any residual deposits may cause problems during further stages of re-processing.

When the component has been reduced back to bare metal it is processed in the same way as virgin material i.e. pretreatment, powder coating, curing. This method of reprocessing is the only method that is approved by Sherwin-Williams. Work that has

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been processed in this way will carry the Syntha Pulvin Guarantee at the discretion of the Approved Applicator concerned.

There are some instances where chemical stripping may not be possible. These include when materials have been thermally broken, and when steel is used which has a very thin layer of zinc. i.e. zintec or galvatite. In these cases the stripping solution may attack the materials and render them unfit for use.

Any queries on reprocessing should be addressed to an Approved Applicator or Sherwin-Williams.

## APPENDIX G

[Appendix A](#) | [Appendix B](#) | [Appendix C](#) | [Appendix D](#) | [Appendix E](#) | [Appendix F](#) | [Appendix H](#)

### **Syntha Pulvin Anti-Graffiti Coatings**

Over recent years the Syntha Pulvin product range has been regularly tested for use in underground railway and railway vehicle applications.

The major hazards, in underground stations and railway vehicles, tend to be of smoke emission from fire, spread of flame, toxic fumes and general wear and tear from the millions of passengers who use railway services each year. The complete product range from Syntha Pulvin has been tested, extensively, against these hazards and has achieved high performance and certification for use in these locations.

Unfortunately, areas of public access now often suffer from another problem, that of GRAFFITI. Several coating products are currently available, and these offer some protection. However, the harsh cleaners and chemicals used to remove felt tip marker pen and aerosol spray paint often damage the surface of the affected component.

Late in 1995, Sherwin-Williams submitted to London Underground Limited, a revolutionary new coating called Syntha Pulvin A.G. (Anti-Graffiti). Not only did it pass all of the safety testing, but it also achieved exemplary results in the demanding graffiti removal tests (The full cycle of testing is rarely completed without failure). Following this test program, L.U.L. described Syntha Pulvin A.G. as the most graffiti resistant powder coating that the authority had ever tested.

Syntha Pulvin A.G. now readily available through any one of the Syntha Pulvin Approved Applicators on the list of applicators available from Sherwin-Williams, has already been used extensively on railway vehicles for Scotrail, Gatwick Express, Virgin (West Coast) and Southwest Trains.

It is suitable for all the usual substrates situated internally, and is available to order in RAL, NCS and BS 4800 satin (60 gloss units) shades as well as some metallics.

Syntha Pulvin A.G. fully meets the L.U.L. Code of Practice for Fire Safety on the Underground when used on aluminium.

A technical data sheet is available from Sherwin-Williams on request. Sample panels showing color and finish can be obtained by contacting our sales fax number 0151 486 0484.

## APPENDIX H

[Appendix A](#) | [Appendix B](#) | [Appendix C](#) | [Appendix D](#) | [Appendix E](#) | [Appendix F](#) | [Appendix H](#)

### **Syntha Pulvin Products Requiring Application At > 60um to Achieve a Uniform Appearance**

Syntha Pulvin Range / Product	Color Reference	Minimum Required Film Thickness

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## THE SYNTHA PULVIN SYSTEM IN USE

### Contents

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## SYNTHA PULVIN IN USE | [Contents](#)

Further information relating to completed contracts and the use of Syntha Pulvin is available on the Syntha Pulvin website: [www.synthapulvin.co.uk](http://www.synthapulvin.co.uk)

Further product information can be found in

'RIBA PRODUCT SELECTOR'  
(RIBA Information Services)

Syntha Pulvin specifications are contained within NBS PLUS format and subscribers to 'Specification Manager' and 'Specification Writer' can locate the information within NBS Sections H10, H11, H13, L10, L20, L30, R10 & Z31

Building Information Modelling (BIM)

The British Board of Agrément

Qualicoat

GSB International

## SPECIFICATION GUIDE

*Syntha Pulvin powder coatings for aluminium alloy and galvanized steel.*

[Contents](#) | [General Guidance Notes](#) | [Introduction](#) | [Definitions of Abbreviations](#) |

[Reference Documents](#) | [Specification Guidance/Clauses](#) | [Work Section Z31](#) |

[Powdered Coatings Disclaimer](#)

CI/SfB | Vu1 | (A3u) | CAWS Z31

## SPECIFICATION GUIDE | [Section Top](#)

### Specification for **Syntha Pulvin**

[Definitions of Abbreviations](#) | [Reference Documents](#) | [Specification Guidance/Clauses](#) | [Work Section Z31](#) | [Powdered Coatings Disclaimer](#)

### **GENERAL GUIDANCE NOTES**

It is important that the details given in any specification ensure that the components installed on site meet the stated requirements of the specifier and the clients; equally important is the need to comply with the recommendations of the manufacturer and advisory bodies and with the restrictions or limitations set by certifying, assessment or testing bodies and issuers of guarantees.

For finishing with Syntha Pulvin, it is not merely the color, gloss level and generic type of treatment which must be specified, but also a range of conditions, set out in the guidance notes.

### INTRODUCTION

#### **The Sherwin-Williams Company**

The Sherwin-Williams Company is one of the largest global coatings manufacturers in the world, providing coatings and coating intermediates to a wide variety of customers. Since 1866, Sherwin-Williams has been dedicated to bringing customers the latest innovations, the finest quality, and the best customer service in the coatings industry.

With more than 60,000 employees in over 133 locations around the world, Sherwin-Williams is in a truly unique position to supply customers with the coating solutions they need.

Sherwin-Williams is a major world-wide producer of thermosetting powder coatings, marketing on a world-wide basis from manufacturing plants in the USA, Europe and China

Sherwin-Williams manufacture an extensive range

of powders for automotive, appliance, industrial and architectural markets.

#### **SYNTHA PULVIN**

SYNTHA PULVIN is a registered trademark of Sherwin-Williams and marketed worldwide by Sherwin-Williams.

SYNTHA PULVIN, since its inception in the 1970's, has been the pacesetter in terms of innovation, quality and color. It has over 40-years track record and has added beauty, elegance and interest to thousands of prestigious buildings.

SYNTHA PULVIN product development also works in unison with designers, ensuring innovative technologies and finishes are always available to meet the future needs of the specifier.

SYNTHA PULVIN dominates the architectural market place for polyester powders and can justifiably claim to have changed the face of British architecture.



## TECHNICAL EXCELLENCE

The Sherwin-Williams philosophy is to extend its market leading position by ensuring that a competitive technical edge is maintained. New technology and new applications demand a constant re-appraisal of products and services and a policy of innovation in every department. The company is committed to meeting the challenge of technical development and changing customer requirements.

The focus on technical excellence is reflected in the wide range of products and services provided. Sherwin-Williams offer a technically advanced bonding process for metallic finishes and an advanced range of superdurable polyester designed to decorate and protect architectural metalwork, in addition to our comprehensive range of stock products

## QUALITY & RESOURCES

Sherwin-Williams has a wide range of manufacturing equipment in modern and highly efficient powder production facilities

The factories are designed for maximum flexibility and speed producing powders that not only satisfy the needs of a wide range of customers but also profit making rapid batch turnaround and manufacturing efficiency.

Sherwin-Williams has accreditation for ISO 9001 Quality Assurance standards, a comprehensive evaluation concerned not just with the quality, but with every aspect of company operations. This is a key factor in the constant effort to maintain exceptional standards of quality and service.

The SYNTHA PULVIN system, the leading architectural polyester powder coating, has British Board of Agrément certification, a further confirmation of product quality and manufacturing systems. It is a matter of pride that the SYNTHA PULVIN system has so far had no claims on its guarantee during the 40 years of its existence.

## THE ENVIRONMENT

Caring for the Environment is now a responsibility for governments, industry and the individual. Powder coatings have major environmental benefits over traditional paints and often a parallel cost benefit. Liquid paints generally contain up to 50% solvents to enable dispersion of the resins and pigments and facilitate application. These solvents evaporate completely into the atmosphere resulting in major environmental concerns. The SYNTHA PULVIN system has zero VOC (Volatile organic content), therefore solvent emissions become a thing of the past thereby creating a cleaner and safer environment

## SYNTHA PULVIN “INNOVATION WITHOUT COMPROMISE”

SYNTHA PULVIN Superdurable, with its impressive technical superiority, surpasses any similar product available today.

- Superdurable formulation - 40 year Guarantee period
- Complies fully with the requirements of the British Standards EN1 2206-1:2004, EN 13438:2013, Qualicoat, GSB
- Tried and tested in South Florida testing, 3 years exposure
- Manufactured to ISO 9001
- Available only via 'Approved Applicators' and 'In-House Users' with ISO 9001 accreditation
- Awarded BBA Agrément Certificate No. 94/3041
- Wide range of colors ex-stock, including an exclusive range of Color Consultant designed 'house' shades, SYNTHA PULVIN metallic finishes, plus RAL and BS colors

SYNTHA PULVIN is only applied by selected 'Approved Applicators' and 'In-House Users' each of whom carries out strict quality control procedures, as detailed in the SYNTHA PULVIN "Product Performance and

Applicator Requirements” Section 2 – “Requirements of the Approved Applicators”, and is monitored by Sherwin-Williams. This ensures total control over the preparation and application procedures.

Not only has each applicator been independently assessed and accredited with ISO 9001 certification but their operations and procedures form part of the assessment in the granting of the current British Board of Agrément Certificate No. 94/3041.

It is not possible to obtain SYNTHA PULVIN coated products from any applicator other than those ‘Approved Applicators’ or ‘In-House Users’ whose names are available from Sherwin-Williams.

## **SPECIFYING SYNTHA PULVIN**

In view of the foregoing points, it is vitally important to include all relevant issues in your contract specification, in order to ensure that you have SYNTHA PULVIN applied to your building.

**NO OTHER SPECIFICATION SHOULD BE USED FOR THE SYNTHA PULVIN SYSTEM.**

The 30 year SYNTHA PULVIN Guarantee\* will only automatically apply to work coated to the SYNTHA PULVIN specification as issued by Sherwin-Williams.

This Specification includes the points that must be made clear to all parties in the contract specification in order to ensure that SYNTHA PULVIN from Sherwin-Williams is used.

\*30 year guarantee applies to Syntha Pulvin Matt, Gloss, Satin, Fine Textured and Syntha Pulvin Metallics.

## **THIS SPECIFICATION**

Specification for SYNTHA PULVIN Superdurable Polyester Powder Coating for Aluminium and Galvanized Steel.

It is based on the Sherwin-Williams specification text to suit current specification and Polyester powder coating practice.

It has been prepared for use on CPI (Co-ordinated Project information) organized projects using CAWS (Common Arrangement of Work Sections) SMM7 (Standard Method of Measurement edition 7) arranged specification texts.

It is intended as a stand-alone specification, however, with the introduction of work section Z31 Powder Coating in the NBS (National Building Specification) Clause Library, this Specification has been numbered to enable integration with the NBS Specification.

If integration with the NBS work section is adopted, care must be taken to ensure that the clauses selected do not contradict or undermine each other.

It will be seen that some clauses are intended as substitutes for existing NBS Clauses and others can complement the NBS clauses.

## **WORD PROCESSING TEXT AVAILABLE**

To enable rapid production of project specific text within designer’s, specifier’s or purchaser’s offices, the specification text is available on the internet for download at [www.synthapulvin.co.uk](http://www.synthapulvin.co.uk)

## **PROJECT SPECIFIC TEXT WRITING SERVICE**

In cases where designers, specifiers or purchasers feel unable to prepare project specific text for SYNTHA PULVIN using this specification guide, an alternative service is available from Sherwin-Williams, Goodlass Road, Speke, Liverpool, L24 9HJ  
Tel: 0151 486 0486, Fax: 0151 486 0484.

## DEFINITIONS OF ABBREVIATIONS | [Section Top](#)

Abbreviations used in the guidance notes, reference documents and specification clauses.

AMD – Amendment (usually of a BS or CP)	CP – Code of Practice (from BSI)
EU – European Union	EN – European Standard (from CEN)
BBA – British Board of Agrément	ISO – International Standards Organization
BS – British Standards	OS – Ordnance Survey
BSI – British Standards Institution	UK – United Kingdom

## REFERENCE DOCUMENTS

[Specification Guidance/Clauses](#) | [Work Section Z31](#) | [Powdered Coatings Disclaimer](#)

### **The BSI/CEN/ISO documents referred to in work section Z31 are:**

ISO 1464:1994 Hot dip galvanized coatings on steel articles (ISO 1459, 1460, 1461)

### **BS 1470:1987 Wrought Aluminium & Aluminium Alloys for General Engineering Purposes – Plate, Sheet & Strip.**

EN 515	Aluminium & aluminium alloys – Wrought products – Temper designations.
EN 573-3	Aluminium & aluminium alloys – Chemical composition & form of wrought products. Part 3: Chemical composition.
EN 573-4	Aluminium & aluminium alloys – Chemical composition & form of wrought products. Part 4: Forms of Products
EN 485-1	Aluminium & aluminium alloys – Sheet, strip & plate. Part 1: Technical conditions for Inspection & Delivery.
EN 485-2	Aluminium & aluminium alloys – Sheet, strip & plate. Part 2: Mechanical Properties.
EN 485-3	Aluminium & aluminium alloys – Sheet, strip & plate. Part 3: Tolerances on shape and dimensions for hot rolled products.
EN 485-4	Aluminium & aluminium alloys – Sheet, strip & plate. Part 4: Tolerances on shape and dimensions for cold rolled products.
BS 1471:1972	Specification for Wrought Aluminium & Aluminium Alloys – Drawn Tube.
EN 515	Aluminium & aluminium alloys – Wrought products – Temper designations
EN 573-3	Aluminium & aluminium alloys – Chemical composition & form of wrought products. Part 3: Chemical composition
EN 573-4	Aluminium & aluminium alloys – Chemical composition & form of wrought products. Part 4: Forms of products
EN 754-1	Aluminium & aluminium alloys – Cold drawn rod/bar & tube. Part 1: Technical conditions for Inspection & Delivery

- EN 754-2 Aluminium & aluminium alloys – Cold drawn rod/bar & tube.  
Part 2: Mechanical Properties
- EN 754-7 Aluminium & aluminium alloys – Cold drawn rod/bar & tube.  
Part 7: Seamless tubes, tolerances on dimensions & form
- EN 754-8 Aluminium & aluminium alloys – Cold drawn rod/bar & tube.  
Part 8: Porthole tubes, tolerances on dimensions & form

## **BS 1474:1987 Specification for Wrought Aluminium & Aluminium Alloys for General Engineering Purposes: Bars, Extruded Round Tubes and Sections.**

- EN 515 Aluminium & aluminium alloys – Wrought products – Temper designations
- EN 573-3 Aluminium & aluminium alloys – Chemical composition & form of wrought products.  
Part 3: Chemical composition
- EN 573-4 Aluminium & aluminium alloys – Chemical composition & form of wrought products.  
Part 4: Forms of products
- EN 755-1 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 1: Technical conditions for Inspection & Delivery
- EN 755-2 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 2: Mechanical Properties
- EN 755-3 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 3: Round bars, tolerances on dimensions & form
- EN 755-4 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 4: Square bars, tolerances on dimensions & form
- EN 755-5 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 5: Rectangular bars, tolerances on dimensions & form
- EN 755-6 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 6: Hexagonal bars, tolerances on dimensions & form.
- EN 755-7 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 7: Seamless tubes, tolerances on dimensions & form.
- EN 755-8 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 8: Porthole tubes, tolerances on dimensions & form.
- EN 755-9 Aluminium & aluminium alloys – Extruded rod/bar, tube & profiles.  
Part 9: Profile, tolerances on dimensions & form
- EN aaa-1 Aluminium & aluminium alloys – Extruded precision profiles in alloys.  
EN AW6060/EN AW 6063. Part 1: Technical conditions for Inspection & Delivery
- EN aaa-2 Aluminium & aluminium alloys – Extruded precision profiles in alloys.  
EN AW6060/EN AW 6063. Part 2: Tolerances on dimensions & form.

## **BS 3900 Method of Tests for Paints**

- :1989 Part O General Introduction
- Group C Test associated with paint film formation
- :1997 Part C5 Determination of film thickness = ISO 2808
- Group D Optical tests on paint films
- :1997 Part D5 Measurement of specular gloss of non-metallic paint films @ 20o, 60o and 85o = DIN 67530 = ISO 2813:2014
- Group E Mechanical tests on paint films
- :1995 Part E6 Cross-cut test = ISO 2409:1995

BS 4800:1989 ISO 9001:2000	Schedule of paint colors for building purposes Quality Management Systems – Requirements
EN 12206-1:2004	Paints and varnishes- coating of aluminium and aluminium alloys for architectural purposes
EN 13438:2013	Paints and varnishes. Powder organic coatings for hot dip galvanized or sherardized steel products for construction purposes
BS 7514:1989 EN 10143:1993	General criteria for suppliers' declaration of conformity = EN 45014 Continuously hot-dip metal coated steel sheet and strip. Tolerances on dimensions and shape.

**The BRITISH BOARD OF AGREEMENT DOCUMENTS referred to in work section Z31 are:**

**CERTIFICATES:**

94/3041:1994	The SYNTHA PULVIN System Product Sheet 1 Product Sheet 2 Product Sheet 3
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**OTHER DOCUMENTS referred to in work section Z31 are:**

British Coatings Federation:  
Code of Safe Practice – Application of powder coatings by electrostatic spraying

**MANUFACTURER'S TECHNICAL INFORMATION referred to in work section Z31 is:**

2015 "The SYNTHA PULVIN system" Technical Manual.

## THE SYNTHA PULVIN SPECIFICATION | [Section Top](#)

### **Work Section A10 PRELIMINARIES: PROJECT PARTICULARS**

#### **GUIDANCE NOTES**

**111 THE PROJECT TITLE AND LOCATION**  
Complete the clause to describe the nature of the project and its location. If known, give the ordnance survey reference. See guidance notes to clause Z31/212

**141 CONTRACT ADMINISTRATOR (CA):**  
This may be the Architect, Project Manager or other party. Insert contact name, company, address, phone and fax number

**200 MAIN CONTRACTOR**  
Complete if and when known. Insert contact name, company, address, phone and fax number.

**201 SUB-CONTRACTOR**  
The SYNTHA PULVIN powder coating applicator may not necessarily be a sub-contractor; this is largely dependent on whether he is also the metalwork fabricator, a number of companies have fully integrated extrusion/finishing/fabrication operations with SYNTHA PULVIN 'In-House User' status. The specifier may choose the SYNTHA PULVIN Applicator, or influence the choice, by the conditions set out in the Contract Preliminaries on Warranties and Quality Assurance. He may leave the choice to the Tenderer to allow competitive sub-tendering. The choice may be down to the size of objects to be galvanized, pre-treated and/or coated and sizes of plant available at 'Approved Applicators' works. Complete if and when known. Insert contact name, company, address, phone and fax number.

**220 FABRICATOR**  
Complete if and when known. Insert contact name, company, address, phone and fax number.

**230 APPROVED APPLICATOR**  
See also Guidance notes to A10/210 and Z31/214 & 221. Special equipment and expertise is required for the application of SYNTHA PULVIN powder coatings. It must be carried out by a specialist 'Approved Applicator' in factory conditions under a quality control system. See Guidance notes to clause A10/210.  
Complete if and when known. Insert contact name, company, address, phone and fax number.  
A list of SYNTHA PULVIN 'Approved Applicators' is available on request from Sherwin-Williams and may also be found on the 'SYNTHA PULVIN' website: [www.synthapulvin.co.uk](http://www.synthapulvin.co.uk)

#### **SPECIFICATIONS CLAUSES**

**111 THE PROJECT TITLE AND LOCATION:**  
A Project title .....  
B Type of project: .....  
C Site Location: .....

**141 CONTRACT ADMINISTRATOR (CA):**  
A Contact Name: .....  
B Company: .....  
C Address: .....  
D Phone No: .....  
E Fax No: .....

**200 MAIN CONTRACTOR:**  
A Contact Name: .....  
B Company: .....  
C Address: .....  
D Phone No: .....  
E Fax No: .....

**201 SUB CONTRACTOR**  
A Contact Name: .....  
B Company: .....  
C Address: .....  
D Phone No: .....  
E Fax No: .....

**220 FABRICATOR**  
A Contact Name: .....  
B Company: .....  
C Address: .....  
D Phone No .....  
E Fax No: .....

**230 APPROVED APPLICATOR:**  
A Contact Name: .....  
B Company: .....  
C Address: .....  
D Phone No: .....  
E Fax No: .....

## **Work Section Z31 SUPERDURABLE POLYESTER POWDER COATING**

### **GUIDANCE NOTES**

#### **121 POWDER COATING TO:**

Repeat the clause as often as is necessary to cover each coating type, background or color used, to indicate all variations. In each case add a revision letter or increase the number so each version of the clause has a unique number to help identify it when cross referencing e.g. 121A, 121B or 122, 123 etc. Describe the application in the title e.g. CURTAIN WALLING, DOORS etc.,

- A Select the relevant background and delete other. If both are used repeat the clause to describe each application.
- H Reference number defines type of finish, gloss level and color.
- I Use to allow double checking of the reference number by all parties
- K Insert 60 for aluminium backgrounds, 60 for galvanized steel.
- L Select the relevant product and delete the other.

### **GENERAL WORKMANSHIP REQUIREMENTS**

#### **211 CONFORMITY REQUIREMENTS:**

- A It is important to check if alternative coatings offered by the contractor meet all of the requirements of EN 12206-1:2004. See clause 245. Obtain a certificate of conformity or declaration of conformity. See clauses 216, 475 or 476.

#### **212 GUARANTEE:**

A 30 year guarantee will be given for all SYNTHA PULVIN MATT, GLOSS, SATIN, FINE TEXTURE and SYNTHA PULVIN METALLICS finishes in normal environments when requested Please refer to the Guarantee Section of the SYNTHA PULVIN Technical Manual.

Projects in marine or heavy industrial environments will be assessed separately for guarantee purposes.

Submit a pre-printed questionnaire with OS Map and site plans to Sherwin-Williams for evaluation of terms of the Guarantee in marine and heavy industrial environments.

A copy of the pre-printed questionnaire can be found in the SYNTHA PULVIN Technical Manual or can be obtained separately from Sherwin-Williams at the address given at the beginning of this specification. See Guide Notes to clause 242 & 531.

#### **213 AGRÉMENT CERTIFICATE:**

The application of the 'SYNTHA PULVIN System' by Approved Applicators is accredited with Agrément Certificate No: 94/3041. A copy of this certificate should be requested by the specifier. Copies are available from Sherwin-Williams.

### **SPECIFICATION CLAUSES**

#### **Z31 SUPERDURABLE POLYESTER POWDER COATING**

Clauses in work Z31 to be read with the Preliminaries A10-A55 and the Contract general conditions.

### **SUPERDURABLE POLYESTER POWDER COATING SYSTEMS**

#### **111 CLAUSES IN Z31:**

Cover items general to all specification work sections dealing with galvanized mild steel or aluminium commodities to be polyester powder coated. They are to be read as part of those work sections.

#### **121 SUPERDURABLE POWDER COATING TO: \_\_\_\_\_**

A Type: *Polyester powder to EN 12206-1:2004 (Aluminium)*

*Polyester Powder to EN 13438:2013*

*(Galvanized steel)*

- B Manufactured by an ISO 9001 (9002) certified company
- C Agrément Certificate No: 94/3041
- D Conformity requirement: See clause 211
- E Processing Conditions. See clause 320 & 321
- F Certificate of compliance. See clause 216 & 475
- G Guarantee requirements. See clause 212
- H Coating reference number: \_\_\_\_\_
- I Color: \_\_\_\_\_
- J Gloss Level: As product TDS. See clause 248
- K Coating thickness: \_\_\_\_\_ microns. See clause 443
- L Reference: SYNTHA PULVIN Matt or SYNTHA PULVIN Metallics
- M Manufacturer: Sherwin-Williams Powder Coatings Ltd.

### **GENERAL WORKMANSHIP REQUIREMENTS**

#### **211 CONFORMITY REQUIREMENTS:**

Ensure the product and its application conforms to all relevant requirements, restrictions and recommendations of:

- A EN 12206-1:2004 (Aluminium)
- B EN 13438:2013 (Galvanized Steel)
- C Agrément Certificate No. 94/3041
- D 'The SYNTHA PULVIN System' technical manual
- E The SYNTHA PULVIN Guarantee
- F British Coating Federation: Code of Safe Practice

#### **212 GUARANTEE**

Provide a guarantee for a period of 30 years to the CA for approval Ensure the coating work is carried out by the SYNTHA PULVIN 'Approved Applicator' in accordance with the requirements of the SYNTHA PULVIN Guarantee

## 213 AGRÉMENT CERTIFICATE:

Ensure the product and its application conforms to all relevant restrictions and recommendations of: Agrément Certificate No. 94/3041  
Provide a copy of the Agrément Certificate to the CA for approval.

## 216 QUALITY CONTROL REPORT:

A copy of the report can be found in the 'SYNTHA PULVIN system' Manual Appendix D. This report should be completed and attached to each declaration of conformity and sent with each delivery of coated materials. See clause 476.

## 221 SYNTHA PULVIN APPROVED APPLICATOR:

See SYNTHA PULVIN 'Approved Applicators' published by Sherwin-Williams. See guidance notes to clause 214.

## 240A TESTING & COMPARISONS WITH CONTROL SAMPLES:

Where disputes arise as to whether the coating meets this specification, Sherwin-Williams will carry out tests which will form the basis of a final decision.

## 241 TESTING OF COATED COMPONENTS:

B4 See clause 243.

## 214 TENDER AND CONTRACT INFORMATION:

Ensure the name of Sherwin-Williams and the color reference number(s) specified are on all documents, together with the name of the SYNTHA PULVIN 'Approved Applicator' when known.

## 215 DOCUMENTATION

Ensure all documents submitted to the 'Approved Applicator' clearly state the name of the Project / Development.

## 216 QUALITY CONTROL REPORT:

Supply to the CA when requested a copy of the quality control report from the 'Approved Applicator' verifying that the finish complies with the SYNTHA PULVIN process as defined in:

- A EN 12206-1:2004 (Aluminium)
- B EN 13438:2013 (Galvanized Steel)
- C 'The SYNTHA PULVIN system' Technical Manual
- D The British Board of Agrément Certificate No.94/3041.  
Attach to Declaration of Conformity. See clause 476.

## 221 SYNTHA PULVIN APPROVED APPLICATOR:

Ensure that the applicator:

- A is a SYNTHA PULVIN 'Approved Applicator'
- B complies fully with the SYNTHA PULVIN 'Product Performance and Applicator Requirements'

## 231 SAMPLES

Submit representative samples of the following with the tender, obtain CA's approval prior to ordering any materials required for the works:

- A Coated samples of components to be used in the works showing various grades and forms of:
  - 1 Aluminium
  - 2 Galvanized mild steel
- B Color(s) including attached information on:
  - 1 Color name(s)
  - 2 Reference number(s)
  - 3 Gloss level(s)
  - 4 Product reference(s)
  - 5 Manufacturer's name

Retain sample panels until Contract Completion. Ensure that delivered materials and coatings match samples. See also clause 325 & 441

## SAMPLES AND TESTING

### 240A TESTING AND COMPARISONS WITH CONTROL SAMPLES:

In the event of any dispute contact Sherwin-Williams to arbitrate.

## 241 TESTING OF COATED COMPONENTS

- A Whenever possible carry out testing on the actual components or suitable test pieces, in accordance with:
  - 1 The SYNTHA PULVIN 'Product Performance and Applicator Requirements' Section 2.4 "Quality Control Testing"
  - 2 EN 12206-1:2004 Parts 4.5 (Aluminium)
  - 3 EN 13438:2013 Parts 6.5.2 to 6.5.6 (Galvanized steel)
- B Where test pieces are not available, or are unsuitable for physical testing, use test panels as follows:
  - 1 Alloy designation as in EN 12206-1:2004 Part 4.1
  - 2 Galvanized steel to EN 10143 (formerly BS2989) as in EN 13438:2013 Part 4, 275 g/m<sup>2</sup>
  - 3 Sheet to be:
    - (a) 1 mm thick in aluminium
    - (b) 1.6 mm in galvanized steel
  - 4 Each to be coated to:
    - (a) 60 microns minimum (aluminium)
    - (b) 60 microns minimum (Galvanized steel)
- C Retain test pieces or panels. See clause 325

## 242 FILM THICKNESS:

Every effort must be made to achieve the recommended film thickness on significant surfaces. See clause 431. Any item of work processed where the film thickness is out of specification is rejected and must be stripped and



reprocessed. This assessment is confined to significant surfaces and specified surfaces only i.e. those requiring coating to the full specification requirements. See clause 431.B

The agreed significant surfaces must be known to the tester and the relevant information be available to Sherwin-Williams if required.

D2 & E3 Those surfaces with coating in excess of 120 microns will still be covered by the SYNTHA PULVIN Guarantee.

#### 243 VISUAL APPEARANCE:

Inspection of the visual appearance is essential. The visual appearance may vary slightly according to the color in use, therefore, the tester/inspector must have available a standard panel or extrusion of each color coated to the specified film thickness for comparative appraisal.

Metallic colors shall be visually assessed for gloss and color. Due to the 'light scattering' effect of these products, instrumental measurement may not give accurate results.

#### 245 IMPACT TEST:

It is important to check this is achieved by any alternative product offered by the sub-contractor if different to that specified.

#### 246 PRE-TREATMENT QUALITY:

Where disputes arise as to whether the coating meets this specification, Sherwin-Williams will carry out tests which will form the basis of a final decision.

#### 248 GLOSS LEVEL.

SYNTHA PULVIN METALLICS colors produce a 'light scattering' effect and, for this reason, are best assessed visually in comparison with an approved sample. Though the 'base' (before addition of metallic) is manufactured to 30 gloss units, Instrumental measurement of the applied coating may not give accurate results.

### BACKGROUNDS, COATINGS & MATERIAL COMPATIBILITY

#### 251 MATERIAL TO BE COATED:

##### Aluminium:

BS1470: alloy 1200 or 3103

BS1471: alloy 6063

BS1474: alloy 6063 TE or TF

##### European alloys:

EN 485: Parts 1, 3 & 4: alloys EN AW 1200 or EN AW 3103

EN 754: Parts 1,2,7 & 8: alloys EN AW 6063

EN 755: Parts 2-9: alloys EN AW 6063

##### Each with:

EN515

EN573: parts 1 & 4 (draft),

##### Galvanized steel to:

BS729

BS2989 (replaced by BS EN10143)

EN10143 (formerly BS2989).

Suitably protect materials prior to coating as to avoid scratches and blemishes which would be visible through the coating.

#### 242 FILM THICKNESS:

Test the coated test pieces or panels in accordance with:

A ISO 2808:2007

B EN 12206-1:2004 Part 4.5.5 (Aluminium)

C EN 13438:2013 Part 6.5.4 (Galvanized steel)

D Requirement on test panels: see EN 12206-1:2004 and EN 13438:2013

#### 243 VISUAL APPEARANCE:

Test the coated test piece or panel(s) in accordance with:

A EN 12206-1:2004 Parts 4.5.2, 4.5.3 & 4.5.4 (Aluminium)

B EN 13438:2013 Parts 6.5.2, 6.5.3, 6.5.4 (Galvanized steel)

C Compare the work with an approved sample standard panel or extrusion of each color coated to the specified film thickness for comparative appraisal. See clause 441.

#### 244 ADHESION:

Test the coated test piece of panel(s) in accordance with the procedure described in:

A BS3900:Part E6 Cross hatch test, using 2mm parallel cuts,

B EN 12206-1:2004 Part 4.5.6 (Aluminium only)

C EN 13438 Part 6.5.6 (Galvanized steel)

D Value required: Class 0

#### 245 IMPACT TEST:

Test the coated test piece or panel(s) in accordance with:

A EN 12206-1:2004: Part 5.7, Test to 20"/lb or 23 cm/kg

B EN 12206-1:2004 Part 4.5.7 (Aluminium only)

C Cracking of the finish or any detachment of film from the substrate at this test level will constitute failure.

#### 246 PRE-TREATMENT QUALITY:

Test the coated test piece or panel(s) in accordance with:

A EN 12206-1:2004 Part 4.5.8 (Aluminium)

B EN 13438:2013 Part 6.1 (Galvanized steel)

C Test by pressure cooker described in EN 12206-1:2004 Clause 5.10

D Any blistering except within 3 mm of any edge will constitute failure.

#### 248 GLOSS LEVEL:

Test the coated test piece or panel(s) in accordance with:

A ISO 2813:2014

B EN 12206-1:2004: Part 4.5.4 (Aluminium)

C EN 13438:2013 Part 6.5.5 (Galvanized steel)

- D Required gloss level: as per TDS at 60 degrees
- E See clause 240A

## BACKGROUNDS, COATINGS & MATERIAL COMPATIBILITY

### 251 MATERIAL TO BE COATED

- A Ensure the substrates to be coated with the SYNTHA PULVIN system are made from materials to the appropriate British Standard(s)
- B Ensure the materials and alloys are all in a suitable condition for the application of the SYNTHA PULVIN System and are able to withstand curing temperatures of approx. 200 degrees Centigrade.

### 260 SEALANT COMPATIBILITY

Where sealants are used these are to be of a color agreed with the CA.

## PREPARATION OF SURFACES

### 320 PROCESSING CONDITIONS: PRE TREATMENT:

See clause 246 for test method.

### 325 RETENTION OF RECORDS:

The correct pre-treatment procedure will automatically be carried out when work is processed by SYNTHA PULVIN 'Approved Applicator' Details of the chemical process can be found in the 'SYNTHA PULVIN System': 'Product Performance and Applicator Requirements'.

## APPLICATION OF POWDER COATINGS

### 431 SIGNIFICANT SURFACES

Any item of work processed where the minimum film thickness is out of specification is reject and must be stripped and reprocessed. This assessment is confined to significant surfaces and specified surfaces only i.e. those requiring coating to the full specification requirements. The agreed significant surface must be known to the tester and the relevant information be available to Sherwin-Williams if required

- C The SYNTHA PULVIN color reference must be clearly marked on the drawings.

### 260 SEALANT COMPATIBILITY

Obtain written confirmation from the sealant manufacturer as to their suitability for use in conjunction with the 'SYNTHA PULVIN System' Use the products from the manufacturers list in SYNTHA PULVIN Technical Advisory Sheet No.10: 'Sealants & Mastics for use with the SYNTHA PULVIN System'.

### 320 PROCESSING CONDITIONS: PRE TREATMENT:

Ensure all material is pre-treated in full accordance with the requirements of the SYNTHA PULVIN process.

### 321 PROCESSING CONDITIONS: COATING:

- A Ensure the finish meets the criteria laid down by Sherwin-Williams
  - 1 The 'SYNTHA PULVIN System' Technical Manual: 'Product Performance and Applicator Requirements'
- B Ensure the finish conforms in all respects with EN 12206-1:2004 (Aluminium) or EN 13438:2013 (Galvanized steel)
- C The SYNTHA PULVIN 'Approved Applicator' must ensure that the curing schedule is achieved when processing the component(s), as laid down by Sherwin-Williams
- D Ensure the cured finish is equivalent to the color control samples
- E Ensure the color control samples are available when requested by the CA

### 325 RETENTION OF RECORDS:

Retain test panels, report forms and process control records for the period for the guarantee and make them available for inspection by the CA or any nominated persons prior to fixing of the fabricated products and throughout the guarantee period.

## APPLICATION OF POWDER COATINGS

### 431 SIGNIFICANT SURFACES

- A Supply drawings with the components to be coated with SYNTHA PULVIN
- B Clearly mark which surfaces are the 'significant surfaces'
  - 1 All visible surfaces
  - 2 Other surfaces that require a 'full coating'
- C Indicate SYNTHA PULVIN MATT, SYNTHA PULVIN METALLICS or SYNTHA PULVIN GLOSS, SATIN & FINE TEXTURE color reference and thickness
- D Sliding fittings or other areas where a high coating thickness which may cause tolerance problems must be clearly indicated
- E Obtain approval from the CA before commencing coating

### 432 JIGGING POINTS, VENTING AND DRAINAGE HOLES:

- A No areas of uncoated metal will be accepted on 'significant surfaces' under any circumstances.
- B In any area where coating is carried out after machining, satisfactory jigging points must be agreed in advance between the fabricator and applicator
- C Provide pre-treatment and galvanizing venting and drain holes where necessary
- D Obtain agreement of all parties for the location of all jigging, vent and drain holes.

- E Wherever possible ensure drainage holes are in unseen areas, but in positions to give the most satisfactory result
- F Ensure holes are in areas that will not weaken joints, sections or assemblies.  
Submit representative sample(s) of component(s) and section(s) with the tender for CA's approval.  
Samples must show design characteristics in relation to pre-treatment and galvanizing drainage and jiggling points.

#### 441 APPEARANCE:

- A Inspection of the visual appearance is essential.  
The visual appearance may vary slightly according to the color in use, therefore, the tester/inspector must have available a standard panel or extrusion of each color coated to the specified film thickness for comparative appraisal.
- B This practice ensures all parties are fully aware before the work starts of what is acceptable and what can be consistently achieved during normal production.

#### 442 COLOR AND GLOSS LEVEL:

See clauses 243 & 248 for test methods and guidance on metallic products.

#### 443 COATING THICKNESS:

- A Insert the clause number of the last of the clauses based on clause 121 describing the applications.  
Every effort must be made to achieve the recommended film thickness on significant surfaces.  
This assessment is confined to significant surfaces and specified surfaces only i.e. those requiring coating to the full specification requirements.  
The agreed significant surface must be known to the tester and the relevant information be available to Sherwin-Williams if required.  
The SYNTHA PULVIN Guarantee will not cover any area of coated metal that is over-coated.  
Where the SYNTHA PULVIN film thickness on a significant surface of any item of processed work does not meet the minimum film thickness, it will be rejected and must be stripped and reprocessed.  
Stripping, reprocessing and recoating of rejects is an acceptable alternative to disposal of components and will be eligible for the SYNTHA PULVIN Guarantee. See clause 531.

#### DELIVERY CERTIFICATION:

##### 476 DECLARATION OF CONFORMITY:

- B See Clause 216.  
A standard form is included in the 'SYNTHA PULVIN' Manual, Appendix D. It can be completed and attached to the Declaration of Conformity.

##### 441 APPEARANCE:

- A Ensure all visible finished surfaces are free from blisters, craters, pinholes or scratches when viewed with normal or corrected vision from a distance of 1 meter.
- B Submit samples complying in all respects to the 'SYNTHA PULVIN System' illustrating the surface appearance when required, for signed approval of the CA before any coating work commences.

##### 442 COLOR AND GLOSS LEVEL:

- A Ensure the finish of the SYNTHA PULVIN coated products match the samples supplied by Sherwin-Williams and held by the CA
- B See clause 243 for testing color values & clause 248 on testing gloss levels
- C In the event of any dispute contact Sherwin-Williams to arbitrate

##### 443 COATING THICKNESS:

- A Ensure the SYNTHA PULVIN coating has a minimum continuous film thickness on all specified surfaces of:
  - 1 60 microns on Aluminium
  - 2 60 microns on Galvanized steel, unless specified otherwise, see clause(s) 121 \_\_\_\_\_
- B No double coating of processed work will be accepted as this invalidates the SYNTHA PULVIN Guarantee.

##### 455 FABRICATION REQUIREMENTS:

- A Fabrications may be from:
  - 1 pre coated stock lengths of metal cut after coating
  - 2 pre-cut lengths coated after cutting, at the recommendation of the fabricator to suit the environmental conditions.
- B State in the tender which method is to be adopted, for CA approval

#### DELIVERY CERTIFICATION

##### 475 CERTIFICATE OF COMPLIANCE:

- Supply to the CA when requested a Certificate of compliance to:
- A EN 12206-1:2004 (Aluminium)
  - B EN 13438:2013 Part 7 (Galvanized steel)
  - C The 'SYNTHA PULVIN System' Technical Manual
  - D British Board of Agrément Certificate No.94/3041
  - E The SYNTHA PULVIN Specification
- See also clauses 216 & 476.

##### 476 DECLARATION OF CONFORMITY:

- A Ensure that all relevant specifications are submitted to manufacturers or suppliers and/or

standards to be achieved are stated in purchase orders.

- B Indicate that a declaration of conformity to ISO/IEC 17050 will be required with the deliveries, with any test results attached,
- C Obtain evidence of currency of certificates from the issuing agency for commodities carrying product or system quality marks e.g. BBA Certificate(s)
- D Collect together (and/or obtain) and provide all declaration of conformity or other evidence supplied with each delivery, for inclusion in Operating and Maintenance manuals, to the CA to forward to the Employer.

## INSTALLATION

### 481 PROTECTION AFTER COATING:

Powder coated surfaces may be damaged during handling, fixing or by other building operations and therefore should be fully protected until completion of all other work in the area of the installation.

A list of tape suppliers who have a range of products which are commonly used on the SYNTHA PULVIN coated components is available on request from Sherwin-Williams and is contained in the 'SYNTHA PULVIN System' Technical Manual – Technical Advisory Sheet No.9

## PROTECTION AND MAINTENANCE

### 512 PROTECTION DURING AND AFTER FIXING:

It is possible that damage may occur to the SYNTHA PULVIN coated surface during handling, fixing or by other building processes carried out nearby. To reduce the risk of damage to SYNTHA PULVIN, coated surfaces should be fully protected until completion of all other work in the area of the installation.

A list of tape suppliers who have a range of products which are commonly used on the SYNTHA PULVIN coated components is available on request from Sherwin-Williams and is contained in the 'SYNTHA PULVIN system' Technical Manual – Technical Advisory Sheet No.

### 513 REMOVAL OF PROTECTIVE TAPES:

See the 'SYNTHA PULVIN System' Technical Manual, Technical Advisory Sheet 9.

### 531 RECTIFICATION OF DAMAGE:

Over coating with repair system is unacceptable as it invalidates the SYNTHA PULVIN Guarantee. See clause 212 & 242. Stripping, reprocessing and recoating of rejects is an acceptable alternative to disposal of components and will be eligible for the guarantee.

Site rectification is not covered by the SYNTHA PULVIN Guarantee.

### 541 CLEANING DOWN:

The SYNTHA PULVIN Customer Care Manual is available upon request from Sherwin-Williams or the Approved Applicator.

This clause may need to be modified to reflect the parties involved in the contract and the procurement method adopted on the Project.

Take care to ensure this clause does not contradict any clause in the preliminaries or contract.

### 550 MAINTENANCE OF THE SYNTHA PULVIN SYSTEM:

The SYNTHA PULVIN Customer Care Manual is available upon request from the Approved Applicator or direct from Sherwin-Williams.

## INSTALLATION

### 481 PROTECTION AFTER COATING:

Ensure the SYNTHA PULVIN coated surfaces are taped or otherwise protected and the following recommendations shall be adopted:

- A Ensure protective tapes are applied by the fabricator or manufacturer.
- B Ensure the SYNTHA PULVIN coated surfaces to which they are applied are free from dirt, oil, cement or other surface contaminants.
- C If necessary clean the surfaces using a soft cloth dampened with white spirit.
- D The surface must be dry before tape application
- E Fully protect the SYNTHA PULVIN coated surfaces which are likely to be damaged during handling or fixing. See also clause 512.

## PROTECTION AND MAINTENANCE

### 512 PROTECTING DURING AND AFTER FIXING:

Ensure the SYNTHA PULVIN coated surfaces are taped or otherwise protected and the following recommendations shall be adopted:

- A Fully protect the SYNTHA PULVIN coated surfaces  
Which are likely to be damaged during handling, fixing or by other building processes being carried out nearby until completion of all other work in the area of the installation.
- B If during fixing any tape is removed from the components, renew it afterwards and leave in position.
  - 1 for up to a further 6 months
  - 2 until final removal when instructed by the Main Contractor. Ensure tapes are removed at the end of a period not exceeding 6 months.

- C Apply new tapes if further protection is required after the 6 months. See clause 481 Items B-D.
- 513 REMOVAL OF PROTECTIVE TAPES:
- A Do not allow tapes to remain on the SYNTHA PULVIN coated surface for longer than 6 months.
  - B Where necessary, remove any residual adhesive left on the SYNTHA PULVIN coating following removal of the protective tapes by wiping with a white spirit dampened cloth.
  - C Solvents or cleaning solutions containing esters, ketones, chlorinated hydrocarbons or alcohols must not be used, as these will be detrimental to the coating.
- 531 RECTIFICATION OF DAMAGE:
- A During fixing, glazing or sealant work, rectify any damage that occurs immediately, do not leave until the end of the installation.
  - B Only carry out site rectification of damage with the CA's prior approval and in accordance with the recommendations in SYNTHA PULVIN Technical Advisory Sheet No: 13: SYNTHA PULVIN Remedial Systems.
- 541 CLEANING DOWN:
- A Ensure the sub-contractor maintains the SYNTHA PULVIN coated components until practical completion, after which protection will be the Main Contractor's responsibility until hand-over.
  - B Liaise with the Main Contractor to ensure that other sub-contractors cannot damage the work prior to practical completion and thereafter until handover.
  - C Ensure cleaning down is carried out in accordance with the SYNTHA PULVIN System Customer Care Manual and the SYNTHA PULVIN Guarantee.
- 550 MAINTENANCE OF THE SYNTHA PULVIN SYSTEM
- Ensure the appointed sub-contractor supplies copies of the SYNTHA PULVIN System Customer Care Manual to the Main Contractor covering cleaning and maintenance of the coated surfaces.
- END OF WORK SECTION Z31**

## SHERWIN-WILLIAMS POWDER COATINGS LTD DISCLAIMER | [Section Top](#)

The information given in this document is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this document and without prior arrangement with Sherwin-Williams does so at his own risk. Please contact Sherwin-Williams for further information about the product.

Whilst we endeavor to ensure that all information and advice we give about the product (whether in this document or otherwise) is correct, it is liable to modification from time to time in the light of our experience and our policy of continuous product development. We specifically draw your attention to the fact that we have no control over the quality or condition of the substrate or many factors affecting the use and application of the product, and accordingly we cannot accept liability for any loss or damage by them.

We provide a guarantee for the product, as set out in this letter, and we acknowledge our liability for death or personal injury caused by our negligence, and any liability under the Consumer Protection Act 1987. We do not however accept any other liability, whether for negligence, failure of the product to be of merchantable quality or fit for any particular purpose, misrepresentation, or otherwise, howsoever, and subject to the foregoing we shall under no circumstances be liable for any consequential or indirect loss or damage, including loss of business or profits.

VALIDITY DATE: It is a company policy to update this product documentation when necessary.

**SYNTHA PULVIN IS A REGISTERED TRADEMARK OF SHERWIN-WILLIAMS Company.**