

# Plascoat® PPA 571

## Performance Polymer Alloy Coating

11/2018

### General description

Plascoat PPA 571 has been specifically designed to provide a long lasting, tough coating for exterior applications to mild steel, galvanised steel and aluminium. It is resistant to stress cracking, adverse weather conditions, detergents, salt spray and typical airborne pollutants.

Plascoat PPA 571 maintains excellent adhesion to the metal substrate without the need for a separate primer. The material also provides a good degree of electrical insulation, abrasion and impact resistance. Plascoat PPA 571 is based on an alloy of acid modified polyolefins and is Halogen free. The combustion fumes are low in smoke and have a low toxicity index.

Plascoat PPA 571 is normally applied by the Fluidised Bed process, but it can also be applied by Flock Spray.

### Typical uses

Fence posts, fencing panels, sign posts, street furniture, balustrading, stadium seating, pipes, fittings, valves & accessories, including those for potable water, cable trays and ducting, garden furniture, gutter brackets and wirework.

### Typical properties of the powder

Coverage (100% efficiency)	3 m <sup>2</sup> /kg at 350 microns
Particle Size	95% less than 250 microns
Bulk Density (at rest)*	0.40 g/cm <sup>3</sup>
Fluidising Characteristics	Excellent
Packaging	20 kg cardboard boxes

\*These values may vary from colour to colour

### Handling and storage

Stored in a clean dry area at 10-25°C and out of sunlight, the material should not deteriorate. However, in the interest of good housekeeping, old stocks should be used first.

Common to all coating powders, there may be the likelihood of agglomerate formation during transportation and storage. The coating powder can be sieved to break up the agglomerates and therefore return the powder to its original condition; this does not affect the quality of the powder. The accumulation of powder particles is a physical phenomenon and may occur as a result of compaction or when cold powder, below 10°C, is brought into direct contact with warm humid air. In this latter situation the powder, still sealed, should be given time to warm up to the ambient temperature before use.

## Health and safety

Plascoat PPA 571 is supplied as a finely divided powder. While there are no known health hazards associated with PPA 571, normal handling precautions for dealing with fine organic powders should be taken - i.e. excessive dust generation and inhaling of the powder should be avoided. Facilities may be required for removing excess dust from the working area during the coating of certain difficult items.

As with all polymeric powders, the material can ignite if brought into contact with a high temperature source or ignition - particularly in the fluidised condition.

Reference should be made to the respective Plascoat GHS Safety Data Sheet, available on request.

Should the coating be required for contact with food or potable water, further details should be obtained from Plascoat.

## Guide to typical coating conditions

### Recommended Pre-treatment

To get the full benefits of the material, mild steel should be blast cleaned to Swedish standard SA 2½-3. The optimum profile is 30 microns. Alternatively degreasing and iron phosphating can be used.

For galvanised steel the surface should be grit blasted with a fine non-ferrous medium at a low pressure. For maximum long-term adhesion, a suitable phosphate (for outdoor applications a zinc phosphate is recommended) or chromate system should be used.

For both types of metal surface, ensure any previously applied resin-based pre-treatment is removed before applying your own in-house pre-treatment. Advice on this can be obtained from your pre-treatment supplier.

### Fluid Bed Batch Operation:

Metal preheat temperature 220°C - 340°C, depending on metal thickness. Dip for 3-8 seconds or as required to achieve the desired coating thickness. A post-heat cycle at 170°C may be required to develop fully the surface finish on thin items.

The process temperatures used should only be the minimum to achieve an acceptable surface finish. However, to ensure optimum adhesion the metal temperature must exceed 150°C. Overheating may cause the coating to discolour later in storage or in service.

Thicknesses outside the recommended range may be detrimental to the properties of the coating.

### Flock Spray method:

After pre-treating the metal as above the substrate should be preheated to a metal temperature of 180 to 220°C. To ensure optimum adhesion the metal temperature must exceed 160°C. The PPA 571 can then be sprayed onto the metal until the coating no longer melts. i.e. has a "sugar-like" appearance. The item is then returned to the oven to fully melt the coating. To obtain thicker coatings more powder can be sprayed onto the molten first coat and reheated. This process can be repeated until the required thickness is achieved.

Alternatively, if post-heating is undesirable, pre-heat to 250°C - 340°C, depending on metal thickness.

For more detailed information on the coating processes please refer to 'A Guide to PPA 571 Processing', available from your Plascoat contact or the Plascoat website.

**Typical properties of the material**

Specific Gravity*		0.93-0.96 g/cm <sup>3</sup>
Tensile Strength	ISO 527	14 MPa
Elongation at Break	ISO 527	800%
Brittleness Temperature	ASTM D-746	-78°C
Hardness	Shore A	95
	Shore D	44
Vicat Softening Point	ISO 306	70°C
Melting Point		105 °C
Tear Strength	ASTM D1938	22 N.mm
Environmental Stress Cracking	ASTM D1693	Greater than 1000 hrs
Toxicity Index	NES 713	1.8
Flammability	UL94 3.2mm moulding	Unrated (See also Properties of Coating)
Dielectric Strength	IEC 243 VDE 0303	47.8 kV/mm at 370 microns
Volume Resistivity	IEC 93	3 x 10 <sup>17</sup> Ohm.cm
Surface Resistivity	IEC 93	8 x 10 <sup>17</sup> Ohm at 350 microns
Water Absorption	ASTM D570-81	<0.03%

\*These values may vary from colour to colour

**Typical properties of the coating**

The following data applies to a 350 microns coating applied under standard conditions onto 3mm thick steel or aluminium. The pre-treatment consisted of degreasing and grit blasting unless otherwise stated.

Recommended Coating Thickness		300-750 microns
Appearance		Smooth/Glossy
Gloss	ISO 2813	70
Impact Strength	Gardner (drop weight) ISO 6272	
	Direct 23°C (0.7mm plate)	Greater than 27 Joules
	Reverse 0°C (0.7mm plate)	Greater than 27 Joules
	Reverse 0°C (3mm plate)	18.0 Joules
Abrasion	Direct 23°C (3mm plate)	2.7 Joules
	Taber ASTM D4060/84	
	H18, 500g load, 1000 cycles	60 mg weight loss
Salt Spray	CS17, 500g load, 1000 cycles	25 mg weight loss
	ISO 9227 and NF 41-002	
	Steel - Scribed	Results after 1000 hours Loss of adhesion less than 10mm from scribe.
	- Unscribed	Under film corrosion 1mm No blistering or corrosion after 10,000 hours
Chemical Resistance*	Aluminium - Scribed	No loss of adhesion
	- Unscribed	No loss of adhesion
	- Dilute Acids 60°C	Good
	- Dilute Alkali 60°C	Good
Adhesion	- Salts (except peroxides) 60°C	Good
	- Solvents 23°C	Poor
Weathering	PSL, TM 19	A-1
Weathering	QUV ASTM G53-77	2000 hrs - No significant change in colour or loss of gloss.
	Florida 45° facing South	3 years - No significant change in colour or loss of gloss.



Burning Characteristics		
Ignitability	BS476: Pt5: 1979 500 micron coating	P - not easily ignitable
Surface spread of flame	BS476: Pt7: 1979 500 micron coating	Class 1
Fire Propagation	BS476: Pt6: 1989 500 micron coating	I = 0.2
Flammability	UL94	Vo (see also Properties of Material)
Safe Working Temperature	(Continuous in air)	60°C max

\*The results given are for full immersion in the chemicals for a prolonged period of time. The coating is resistant to splashes and short-term contact of most chemicals. Further technical advice may be obtained from Plascoat concerning the effects of particular chemicals or mixtures.

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