

Plascoat® PPA 571HES

Performance Polymer Alloy Coating

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General Description

Plascoat PPA 571HES is a thermoplastic polyolefin based alloy, designed for application by electrostatic spraying. When correctly applied over a suitably prepared metal surface, Plascoat PPA 571HES provides an excellent long-term corrosion resistant coating.

The coating has excellent adhesion by chemical bonding to the metal substrate without the need for a separate adhesive primer. Plascoat PPA 571 HES Blue 536 is a "Water Byelaws Scheme - WRc Approved Product" for contact with potable water.

Plascoat PPA 571HES differs from PPA 571 in that it is tougher and more scratch resistance. It also has better elastic recovery properties than PPA 571 which makes it ideally suitable for gasket flanged surfaces. Plascoat PPA 571HES has a high melting point and a higher melt viscosity that PPA 571 therefore it is more suitable for metal substrates greater than 5mm.

If PPA 571HES oversprayed powder is to be recycled, then blend a maximum of 25% of over-sprayed powder with 75% virgin powder.

Typical uses

Pipes and Fittings for the water and aqueous chemicals industries.

Summary of essential coating requirements

1. The metalwork must be either grit blasted or chemically pre-treated prior to coating. *
2. Set amps to 10 – 25 micro-amps and voltage to 100kV if both settings are available. For Corona guns with voltage setting only, set voltage at 30-50 kV. Failure to use the correct settings may result in coatings that are too thin or with poor coverage.
3. Heating schedule typically as polyester (See below). Ensure metal temperature exceeds 150°C. *
4. Thickness must be a minimum of 170 microns. (See note 2 re voltage above). This may also require a longer spraying time or increased powder supply. This thickness should be periodically checked.
5. Galvanised substrates may need degassing. Preheat to 30°C higher than the post-heat temperature for at least as long as the post-heat time.
6. Do not use cured resin based pre-treatment systems E.g. acrylic based phosphates or chromates. If the metal-work has been pre-treated with these remove by grit blasting or strong alkaline rinse.
7. Adhesion checks should be carried out at regular intervals.

* See "PPA571 Process Guide"

Guide to typical coating conditions

Recommended Pre-treatment:

The metal must be degreased, and all mill scale and corrosion products removed.

Mild steel should be solvent degreased then either grit blasted to Swedish Standard SA 2½ to 3 or phosphated. Galvanised steel should be either grit blasted at 0.3MPa (40 psi) using a fine grit (0.2 to 0.5mm) or treated with a phosphate system. To achieve maximum long-term adhesion, Plascoat recommend the use of zinc phosphate systems on both steel and galvanised steel. If chemical pre-treatment is used it is essential to remove any previously applied resin based pre-treatment systems. Discuss this with your pre-treatment supplier.

Aluminium should be degreased to remove lubricants and processing soaps. For most purposes no further treatment is necessary. However, for maximum long-term corrosion resistance chromate treatment is recommended.

Coating Conditions:

When the powder is applied using a Corona Discharge gun a negative polarity is required. A voltage of 30-50 kV or 10 to 20 micro-amps is recommended. Plascoat PPA 571 HES can also be applied by Tribocharge guns. The heating schedule should be 180°C to 240°C for 5-40 mins depending on metal thickness. To ensure optimum adhesion, the metal temperature during

processing must exceed 160°C. Since Plascoat PPA 571HES is a thermoplastic there is no crosslinking to take place. Therefore, when the powder has melted to form a smooth coating no further heating is required.

Overheating can cause craters to form in the coating, or the coating to discolour in storage or in service. Thicknesses outside the recommended range may be detrimental to the properties of the coating.

Do not cure thermosetting powder paints with PPA 571HES. The fumes from such systems can affect the surface of the PPA 571HES coatings.

For typical properties of the coating see overleaf.

Typical properties of the powder

Coverage (100% efficiency)	5.2 m ² /kg at 200 microns
Particle Size	95% less than 150 microns
Bulk Density (at rest)*	0.40 g/cm ³
Fluidising Characteristics	Good
Packaging	20 kg cardboard boxes

Typical properties of the material

Specific Gravity*	0.95 g/cm ³	
Tensile Strength	ISO 527	17 MPa
Elongation at Break	ISO 527	700%
Brittleness Temperature	ASTM D-746	-76°C
Hardness	Shore A	98
	Shore D	53
Vicat Softening Point	ISO 306	80°C
Melting Point	105°C	
Environmental		
Stress Cracking	ASTM D1693	Greater than 1000 hrs
Toxicity Index	NES 7	1.8
Flammability	UL94 3.2mm moulding	Unrated
(see also Properties of Coating)		
Dielectric Strength	IEC 243 VDE 0303	39 kV/mm at 500 microns

*These values may vary from colour to colour

Storage

Stored in a clean dry area at 10-30°C and out of sunlight, the material should not deteriorate. However, in the interest of good housekeeping, old stocks should be used first.

Health and Safety

Plascoat PPA 571HES is supplied as a finely divided powder. Whilst there are no known health hazards associated with PPA 571HES, 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 more 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 Health and 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.

Typical properties of the coating

The following data applies to a 300 microns coating applied under standard conditions onto 3mm thick steel or aluminium. The pre-treatment consisted of degreasing and grit blasting.

Recommended Coating Thickness		170-300 microns by electrostatic spray 200-1000 microns by "flock spraying"
Appearance		Smooth/Glossy
Gloss	ISO 2813	60
Impact Strength	Gardner (drop weight) ISO 6272 Direct 23°C	3 Joules Tested on 6 mm thick mild steel plate with a 500 microns coating
Abrasion	Taber ASTM D4060/84 H18, 500g load, 1000 cycles	50 mg weight loss
Salt Spray	ISO 7253 and NF 41-002 Steel - Scribed Aluminium - Unscribed - Scribed - Inscribed	Results after 1000 hours Loss of adhesion less than 10 mm from scribe. Under film corrosion 1.0 mm No loss of adhesion No loss of adhesion No loss of adhesion
Chemical Resistance*	- Dilute Acids 60°C - Dilute Alkali 60°C - Salts (except peroxides) 60°C - Solvents 23°C	Good Good Good Poor
Adhesion	PSL, TM 19	A-1
Weathering	QUV ASTM G53-77 Florida 45° facing South	2000 hrs - No significant change in colour or loss of gloss. 3 years - No significant change in colour or loss of gloss
Burning Characteristics		
Ignitability **	BS476: Pt5: 1979 500 microns coating	P = not easily ignitable
Surface spread of flame **	BS476: Pt7: 1979 300 microns coating	Class 1
Flammability	UL94	V ₀ (see also Properties of Material)
Safe Working Temperature	(Continuous in air)	70°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.*

** *Results based on chemically similar coating material.*

Disclaimer

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