

PLASCOAT PPA 571 ES

Performance Polymer Alloy Coating

GENERAL DESCRIPTION

Plascoat PPA 571 ES is a thermoplastic coating powder which has been specifically designed to provide a long lasting, tough coating for exterior applications to mild steel, galvanised steel and aluminium. It is based on an alloy of acid modified polyolefins. Therefore it is Halogen free and the combustion fumes are low in smoke and have a low toxicity index.

Plascoat PPA 571 ES is resistant to stress cracking, adverse weather conditions, detergents, salt spray and typical airborne pollutants. The coating maintains excellent adhesion to the metal substrate without the need for a separate primer. The material also provides good abrasion and impact resistance.

If PPA571ES oversprayed powder is to be recycled then blend a maximum of 25% of this oversprayed powder with 75% of virgin powder.

TYPICAL USES

Fencing, fan guards.

SUMMARY OF ESSENTIAL COATING REQUIREMENTS

1. The metalwork must be either grit blasted or chemically pretreated prior to coating. *
2. For Corona guns set voltage at 30-50 kV, or use overspray setting, or set amps to 10 to 20 microamps.
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. Adhesion checks should be carried out at regular intervals.*

* See "PPA571 Process Guide"

GUIDE TO TYPICAL COATING CONDITIONS

Recommended Pretreatment:

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 pretreatment is used it is essential to remove any previously applied resin based pretreatment systems. Discuss this with your pretreatment 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 ES can also be applied by Tribocharge guns. The heating schedule should be 160°C to 220°C for 5-40 mins depending on metal thickness. To ensure optimum adhesion, the metal temperature during processing must exceed 150°C. Since Plascoat PPA 571 ES 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 reduce in gloss. It may also cause 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 571 ES. The fumes from such systems can affect the surface of the PPA 571 ES coatings.

TYPICAL PROPERTIES OF THE POWDER

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

TYPICAL PROPERTIES OF THE MATERIAL

Specific Gravity*		0.96 g/cm ³
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 7	1.8
Flammability	UL94 3.2mm moulding	Unrated
	(see also Properties of Coating)	

Electrical		
Dielectric Strength	IEC243 VDE0303	47.8 KV/mm at 370 microns
Volume Resistivity	IEC 93	3 x 10 ¹⁷ Ohm.cm
Surface Resistivity	IEC 93	8 x 10 ¹⁷ Ohm at 200 microns

*These values may vary from colour to colour

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.

HEALTH AND SAFETY

Plascoat PPA 571 ES is supplied as a finely divided powder. Whilst there are no known health hazards associated with PPA 571 ES, 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 Plascoat Health and Safety Data Sheet HS504, available on request.

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

For typical properties of the coating see overleaf.

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Performance Polymer Alloy Coating

TYPICAL PROPERTIES OF THE COATING

The following data applies to a 200 micron coating applied under standard conditions onto 3mm thick steel or aluminium. The pretreatment consisted of degreasing and gritblasting unless otherwise stated.

Recommended Coating Thickness		170-300 microns
Appearance		Smooth/Glossy
Gloss	ISO 2813	70
Impact Strength	Gardner (drop weight) ISO 6272 Direct 23°C (3mm plate) Indirect 0°C (3mm plate) Direct 23°C (0.7mm plate) Indirect 0°C (0.7mm plate)	2.7 Joules 18.0 Joules Greater than 27 Joules Greater than 27 Joules
Abrasion	Taber ASTM D4060/84 H18, 500g load, 1000 cycles	60 mg weight loss
Salt Spray	ISO 7253 Steel - Scribed - Unscribed Aluminium - Scribed - Unscribed	Results after 1000 hours Loss of adhesion less than 10mm from scribe. Under film corrosion 2-3mm 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 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	V ₀ (see also Properties of Material)
Safe Working Temperature	(Continuous in air)	60°C max

*Further technical advice may be obtained from Plascoat concerning the effects of particular chemicals or mixtures.

QUALITY

Plascoat is committed to the manufacture and supply of a wide range of thermoplastic coating powders. This service is backed by the unrivalled experience of over 40 years of powder coating application. With a policy of continuous improvement to its range of products. Plascoat reserves the right to alter or amend any item. Stringent quality control procedures are carried out at every relevant stage of manufacture and Plascoat operates a quality management system approved by BSI in accordance with ISO 9001:2000.

Plascoat can also offer, through its many factories in Europe, specialist plastic coating equipment, an extensive custom coating service and a size reduction service for plastics and other materials.

Plascoat is a subsidiary member of the IPT Group of companies.

Plascoat is a UK registered trade name.

It should be appreciated that the information given here is, to the best of our knowledge, true and accurate. However, since conditions under which our materials and equipment may be used are beyond our control, recommendations are made without warranty or guarantee.

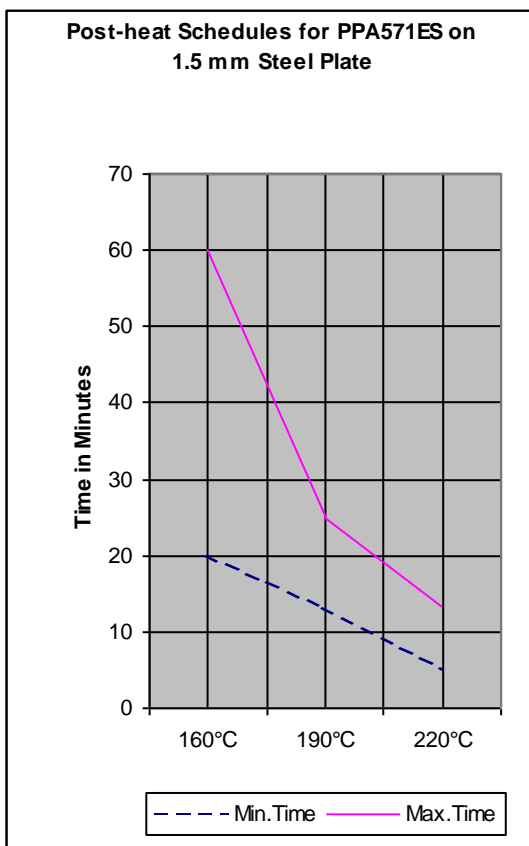
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571ES TIME TEMPERATURE CURVES



TIME & TEMPERATURE GRAPHS COLLATED FROM EMPIRICAL TEST DATA

Application Settings: **30 to 50 kV,**
**10 to 30 microAmps (dependent on profile
of items being sprayed)**

	160°C	190°C	220°C
1.5 mm			
Min. Time	20	13	5
Max. Time	60	25	13

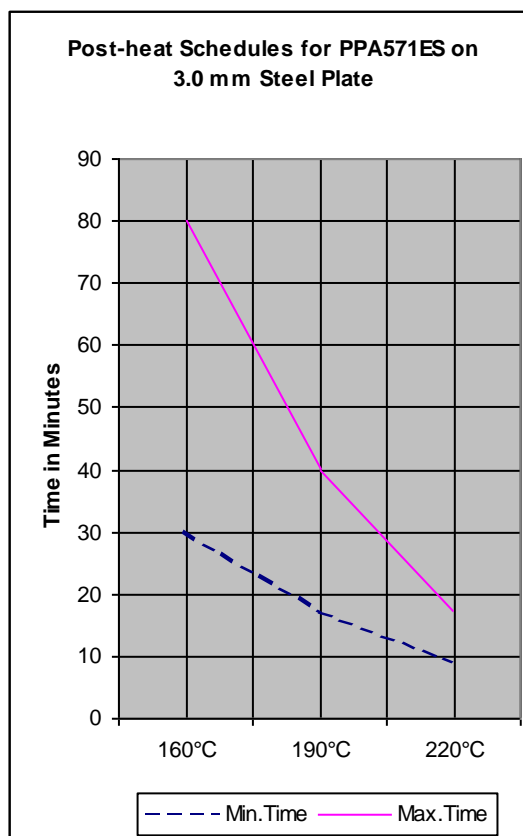
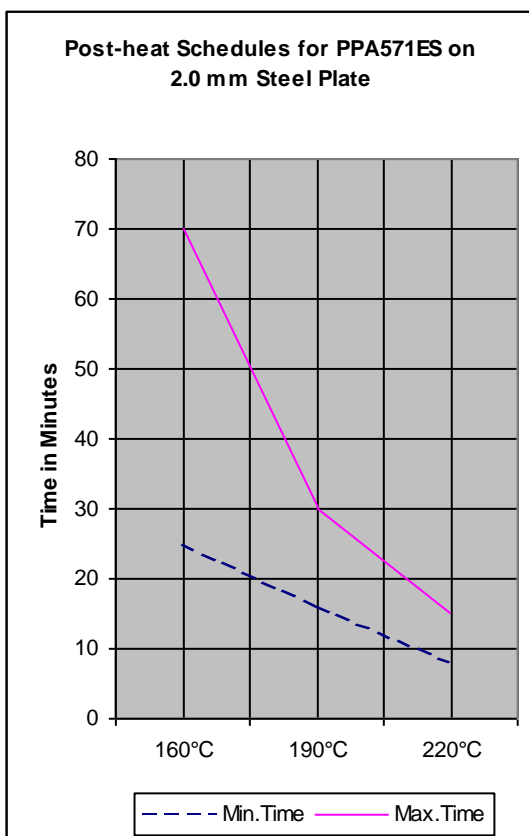
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	160°C	190°C	220°C
2.0 mm			
Min. Time	25	16	8
Max. Time	70	30	15

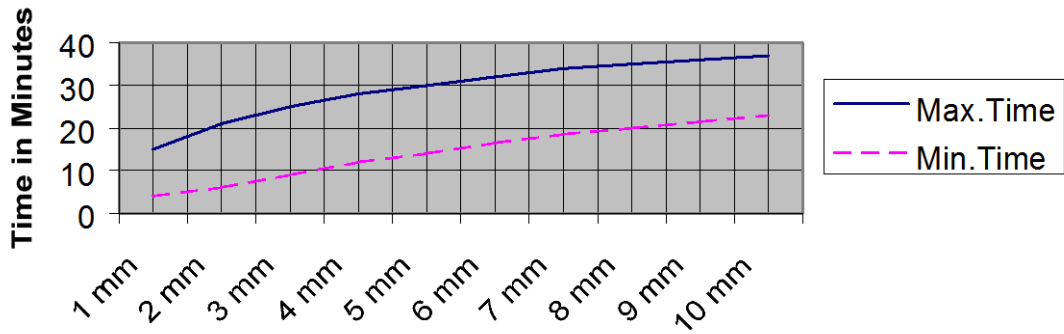
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	160°C	190°C	220°C
3.0 mm			
Min. Time	30	17	9
Max. Time	80	40	17

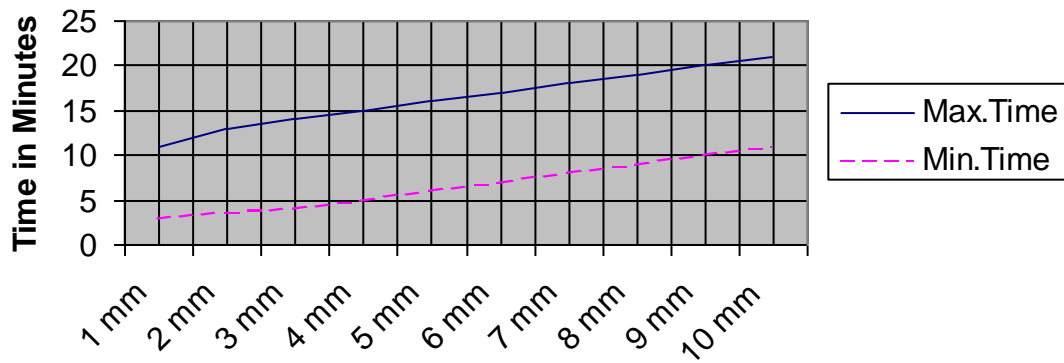
(in minutes)



Post-heat Schedules for PPA571ES on Wires of Various Diameters at 160°C



Post-heat Schedules for PPA571ES on Wires of Various Diameters at 190°C



Post-heat Schedules for PPA571ES on Wires of Various Diameters at 220°C

