TWB Finishing
SURFACE TECHNOLOGY
Established in 1945

PROCESS SPECIFICATION FOR ELECTROPHORETIC PAINT ON ZINC, ALUMINIUM OR MAGNESIUM

TWB 8100/ZAM

1. SCOPE

1.1. This specification describes the requirement for Cathodic Electrophoretic Paint coating on Zinc, Aluminium and Magnesium.

2. OBJECTIVES AND DEFINITIONS

2.1. The objective of this process is to apply black epoxy paint to components made of zinc, aluminium or magnesium or alloys thereof.

2.2. Definitions

Significant Surfaces:- The part of the article to be painted which is essential for serviceability and/or appearance.

Reference Area:- The area or areas within which destructive tests may be made.

3. ESSENTIAL INFORMATION TO BE SUPPLIED BY THE CUSTOMER

The customer (in consultation with TWB Finishing Ltd where necessary) must provide the following:

3.1 The reference number of this specification.

3.2 Drawing or marked specimen disclosing:-

3.2.1 Jig witness mark location

3.2.2 Reference Area to perform destructive testing, or test pieces.

3.2.3 Significant Surfaces.

3.3 Any special pre-treatment requirements.

3.4 The condition of parts before processing including details of any lubricant or preservatives.

3.5 The base material specification.

3.6 Packing requirements

3.7 Acceptability (or otherwise) of the use of touch up material.

Note! If any of the above requirements are not given or are unavailable TWB Finishing Ltd will process articles in accordance with best practice. Customer drawing requirements shall take precedence over this specification.

4 PROCESS

4.1 TWB Finishing Ltd will select an appropriate process route giving due consideration to customer requirements, surface condition and the base material of the components.

5 REQUIREMENTS OF THE COATING

Refer to Table 1 for overview of requirements.

5.1 Appearance.

Unless specified otherwise the Significant Surface will pass TWB Finishing Ltd Inspection Method 1.002: Visual Inspection of Paint Films.

Note 1. Rise or blistering of the base material is the responsibility of the customer.

Note 2. Unpainted areas or scratches of less than 2mm x 2mm are permissible as jig witness marks.

Note 3. Colour and Gloss levels are not an inspection criteria.

5.2 Adhesion Test.

Unless specified otherwise parts will be tested to TWB Finishing Ltd Inspection Method 1.005: Cross Hatch Adhesion Test for Paint Films. Adhesion will be better than 10% loss. This to be carried out on the Reference Area or test piece. Marks of the adhesion/hardness test on the test Reference Area are permissible.

5.3 Paint Film Thickness.

Paint thickness will be measured by Eddy Current thickness meter as described in BS 5411 pt3. Results to be within 15-30 microns.

5.4 Hardness.

Unless specified otherwise parts or the test piece shall be tested to TWB Finishing Ltd Inspection Method 1.004: Pencil Hardness Test for Paint Films. Hardness shall be 4H or better. Marks of the adhesion/hardness test on the test Reference Area are permissible.

5.5 Cure and Solvent Resistance.

Unless specified otherwise parts shall meet TWB Finishing Ltd Ltd Inspection Method 1.003: Cure Test for Painted Films.

5.6 Corrosion Resistance.

The paint film shall meet a minimum salt spray resistance of 240 hours with cross scribe with a maximum of 4 mm lift and 480 hours without cross scribe with no loss of adhesion in accordance with ASTM B117.

5.7 Touch-up.

Unless specified otherwise touch up may be carried out to an area of the component on which the paint film does not adhere due to component design, air pockets, jig marks etc. The touch up paint will be approved by the customer.

6 TEST PIECE

In cases where excessive surface roughness on the part prevent exact measurement or a test Reference Area is not allowable, the customer shall supply a test piece which has undergone the same surface treatment as the related part for test purposes. It is strongly recommended that the test piece be of the same material and has undergone the same manufacturing techniques to give accurate results.

7 INSPECTION

7.1 Sampling.

Unless specified otherwise the TWB Finishing Ltd Inspection Plan shall be used for the inspection and tests referred to in clauses 5.1 to 5.5 inclusive.

7.2 Records.

Unless specified otherwise all records of inspection shall be recorded as laid down in TWB Finishing Ltd Inspection Plan.

7.3 Process Change.

Unless agreed otherwise TWB Finishing Ltd are free to review and change process routes, plant, equipment and process parameters without disclosure to the customer provided in so doing the performance of the coating is not impaired.

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Item	Test Duration	Judgement Criteria
Appearance	-	The coating shall be free from blisters, exposed base material and shall be black in colour.
Adhesion (cross-cut test)	-	No peeling off from base material surface and less than 10% loss.
Thickness	As per TWB inspection plan. 2 per flight bar.	Minimum of 15 – 30 microns.
Hardness	-	Hardness shall be 4H or better.
Cure	-	No loss of paint from surface after 10 rubs.
Corrosion resistance	240 hour x-cut 480 hour without x-cut	4 mm loss total from scribe line. No peeling off from base material,
Water Resistance	240 hour	No blisters, peeling.
Humidity Resistance	240 hour	No blisters, peeling.