Corro-Zinc 97 System

Recommended Process and Process Control Requirements For the Coating of Steel Surfaces with Corro-Zinc 97 System.

To be used in conjunction with Corro-Zinc 97 System product guarantee work

1. STEEL SUBSTRATE

1.1. The steel substrate must be suitable for the pre treatment and coating processes and allow the coating properties to comply with the relevant Technical Properties given in the Product Data Sheet for Corro-Zinc 97 and any properties specified for the Corro-Zinc 97 System .

1.2. Prior to coating, all sharp edges need to be rounded to allow the coating to fully cover the whole object securing adequate film thickness and without leaving holidays.

2. LABORATORY EQUIPMENT

2.1. Equipment necessary for testing of pretreatment chemicals, rinsing water and final result as per chemical suppliers instructions.

2.2. Equipment for test of coating properties incl. pretreatment

2.2.1. Film thickness gauge

2.2.2. Cross cut tester, DIN EN ISO 2409- 2 millimeter spacing

2.2.3. Impact tester, ASTM D 2794 (5/8 inch ball diameter)

2.2.4. Gloss meter, DIN 67530, ISO 2813 with 60° head

2.2.5. Equipment for boiling water test incl. distilled or de-mineralised water

2.2.6. Oven temperature recorder

2.2.7. MEK cure test kit

3. PROCEDURE FOR SURFACE TREATMENT

3.1. Pre-treatment

3.1.1. Blast cleaning to SA 2.5 with a profile of 40-80 micron followed by zinc-phosphate is required. Blast media used shall be sharp and edged, preferably steel grit, to produce an angular anchor pattern. For optimized performance we advise that the phosphate process is equipped with a final de-ionized rinse. The last running water from the object should be tested at 20°C. The readings obtained should measure below 30µS/cm.

3.2. Powder Application and Curing

3.2.1. The pre-treated part is to be transferred to the coating process immediately in a clean and dry state and before the integrity of the pre-treatment process has deteriorated.

3.2.2. A minimum film thickness of 75 micron to maximum of 120 micron for Corro-Zinc 97 is required as primer coat. A minimum film thickness of 60 micron is required for the top coat. Note that more than 60 microns may be required for some top coats, depending on colour, to achieve sufficient hiding power. Total film thickness (primer + top coat) shall be 160 microns minimum.

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3.2.3. The topcoat should be applied immediately after applying the primer to avoid oxidation or contamination that may reduce the adhesion between the two coats. Maximum time before application of topcoat is 12 hours. Refer to Corro-Zinc 97 Product Data Sheet.

3.2.4. It is recommended that the primer is melted and partially cured before application of the top coat. The complete system is then cured according to the specification for the primer or topcoat (whichever is the most stringent). Recommended curing schedule for Corro-Zinc 97 prior to application of top coat is 3-5 minutes at 180°C or 2-3 minutes at 200°C - object temperatures. Refer to Corro-Zinc 97 Product Data Sheet and to Product Data Sheet for top coat used.

4. TESTING PROCEDURE

4.1. Operation and raw materials

4.1.1. Prior to start of a running production and by start-up after stops, necessary test panels shall be pre-treated, coated and cured, in order to control equipment and materials.

4.1.2. Tests shall be conducted on Corro-Zinc 97 alone (5.1) and Corro-Zinc 97 System (5.2)

4.1.3. Testing of pre-treatment chemicals and rinsing stages shall be done according to written instruction from chemical supplier.

4.1.4. The final pre-treatment stage needs to be de-mineralised water. The last running water from the object should be tested at 20°C. The reading should measure below 30 micro Siemens / cm. Testing and recording shall be done at least once per shift, colour or job (if less than one shift is required) and conductivity of rinsing water adjusted if needed.

4.1.5. The drying of the object must not exceed the maximum drying temperature stated in writing by the chemical supplier. Monitoring and recording conditions of the drying oven is required at least once per shift, colour or job (if less than one shift is required). The temperature must be adjusted accordingly.

4.2. Oven control

4.2.1. When the oven is fully loaded, the oven air temperature and object temperatures shall be recorded. Note: Object temperature to be measured on parts with highest metal thickness. In addition to at start up, the oven conditions shall be measured and recorded at least once per shift or towards the end of the coating job (oven still fully loaded) if the job is less than one shift.

4.3. Coated material

4.3.1. At least once per shift, colour or job (if less than one shift is required), tests shall be performed according to 5.3.

4.3.2. On parts with variable thickness and shape, tests shall be performed according to 5.3 on a representative selection.

5. TEST PERFORMANCE

5.1. Testing of Corro-Zinc 97 alone.

Test panels: 0.8 mm zinc phosphated steel panels. Film thickness 60 – 80 microns. NB: Corro-Zinc 97 MUST BE FULLY CURED for these tests. Refer to Corro-Zinc 97 Product Data Sheet for curing conditions

5.1.1. Measuring of gloss ISO 2813 (using an incidence angle of 60°).
Specification: 60±10.

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5.1.2. Adhesion, cross cut test, ISO 2409 – 2 mm. Specification: Gt0

5.1.3. Falling weight impact, ASTM D 2794 5/8" ball. Specification: >60 inch-pounds

5.1.4. Colour shall be controlled visually against Corro-Zinc 97 reference panel.

5.2. Testing of Corro-Zinc 97 System

Test panels: 3 mm grit blasted and zinc phosphated steel panels. Test panels shall be prepared (pretreated and coated) under normal factory conditions and cured under normal oven loading conditions. Total film thickness 160 microns (80 microns + 80 microns).

5.2.1. Measuring of gloss: ISO 2813 (using an incidence angle of 60°.) Specification: As specified for the top coat used.

5.2.2. Adhesion to substrate: cross cut test, ISO 2409-2 mm. Specification : Gt0

5.2.3. Inter-coat adhesion: cross cut test + tape pull test, ISO 2409-2 mm Specification: Gt0

5.2.4. Boiling water test: 2 hours immersion in boiling distilled or de-mineralised water. Specification: No blistering or loss of adhesion (Gt0 when tested according to 5.2.2.)

5.2.5. Cure test: by MEK resistance. Specification: No softening or discoloration after 30 double rubs according to Jotun Powder Coatings` procedures.

5.2.6. Colour shall be controlled visually against top coat reference panel.

5.3. Testing and control of finished goods.

5.3.1. The surface coating shall be continuous, free from damage, even in colour and gloss. Visually controlled.

5.3.2. Decorative appearance shall be visually evaluated on a distance of 5 meter (15 feet) for material for exterior use, and 3 meter (9 feet) for interior use.

5.3.3. Film thickness: Specification: Minimum 160 micron total thickness.

5.3.4. Adhesion and inter-coat adhesion: cross cut. Testing and specification according to 5.2.2 and 5.2.3

5.3.5. Cure test: by MEK resistance. Testing and specification according to 5.2.5.

6. REGISTRATION AND DOCUMENTATION

6.1. Full powder product identification, processing data and test panels, to be kept for the duration of the warranty period.

7. MISCELLANEOUS

7.1. Special care must be taken when loading and unloading the coated components and reasonable care exercised during transport, handling and mounting on site. Each coated component should be packed separately and separated from the other components by tissue paper, plastic sheeting or foam padding to prevent damage during transport or storage.