

## COATING SPECIFICATION

### ZINC RICH EPOXY PRIMER, EPOXY MASTIC, POLYURETHANE TOP COATING ON STEEL OR CAST IRON

COATING SPECIFICATION: C2

ISSUE: 4

DATE: July 2021

#### 1.0 SCOPE

This document summarises the procedure for the application of 2 pack Zinc Rich Epoxy primer over-coated with 2 pack Epoxy mastic followed by Polyurethane topcoat.

Refer Design Standard, DS95 (Standard for the Selection, Preparation, Application, Inspection and Testing of Protective Coatings on Water Corporation Assets) for additional information or clarification.

It shall be read in conjunction with Water Corporation surface preparation specification **A1 - Surface Preparation for the application of Protective Coatings on Steel or Cast Iron**.

Note: If anti-graffiti properties are required, replace the specified topcoat with 2 coats of 50 microns nominal dry film thickness “Anti-graffiti Polyurethane” with a total thickness of 100 microns as described in Coating Specification J1.

#### 2.0 PURPOSE

This is a multi-coat system for atmospheric corrosivity categories C1 to C5 as described in AS/NZS 2312. For corrosivity categories C4 & C5, Micaceous Iron Oxide (MIO) epoxy mastic is required. [Refer product list in Appendix 4 of DS 95].

Typical Water Corporation applications include above ground clean skin Mild Steel Cement Lined (MSCL) pipe, structural steel other than that used in immersed conditions or exposed to corrosive environment such as Hydrogen Sulphide.

#### 3.0 DEFINITIONS

**ACA:** Australasian Corrosion Association.

**Contractor:** The service provider or its sub-contractor who will undertake the works.

**Corporation:** The Water Corporation and the Principal for the purposes of externally contracted asset delivery.

**DFT:** Dry Film Thickness.

**ITP:** The detailed Inspection and Test Plan(s) for the Works.

**NACE:** National Association of Corrosion Engineers.

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**Superintendent:** The Superintendent for the contract, as defined in the conditions of the contract, who is appointed by the Water Corporation to manage/oversee the work under the contract on behalf of the Water Corporation.

**TDFT:** Total Dry Film Thickness.

**Works:** The surface preparation, coating application and inspection to be undertaken by the contractor to which this coating specification applies.

#### 4.0 SUBSTRATE PREPARATION

- 4.1 Preparation of substrate to be in accordance with preparation specification **A1 - Surface Preparation for the application of Protective Coatings on Steel or Cast Iron**.
- 4.2 All visible mill scale, rust, oxides, paint and other foreign matter shall be removed from the surfaces to be coated by blast cleaning to a **Class 3** (white metal) finish as specified in AS/NZS 1627 Part 4.
- 4.3 The blast cleaned surfaces shall have a uniform metallic appearance, a surface profile which provides satisfactory anchorage for the coating, as per paint manufacturer's recommendation and be otherwise compatible with the coating to be applied.
- 4.4 Coating shall not be applied to any prepared surface(s) exhibiting "flash corrosion" or that has been abrasive blasted more than 4 hours prior to commencement of coating.
- 4.5 Soluble salt testing to be conducted on the prepared blasted surface for C4 or C5 site/plant/yard conditions before coating application unless specified otherwise.
  - Ambient service -  $5\mu\text{g}/\text{cm}^2$

#### 5.0 COATING MATERIALS

- 5.1 Coating materials used for attaining the specified standard shall be selected in accordance with Appendix 3 of DS-95- commonly used coatings in potable water and wastewater infrastructures unless approved otherwise by the Team Leader – Asset Durability. This approval is required before coating commences and to be referenced in the ITP.
- 5.2 The coating components shall be thoroughly mixed in the specified proportions. Material prepared shall be used within the "pot-life" period defined by the manufacturer for the relevant site conditions.

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- 
- 5.3 Coating specifications inclusive of datasheets, coating application method statements and ITPs shall be submitted to the Superintendent for approval at least 10 working days prior to commencement of work.
- 5.4 Surfaces to be coated which will become inaccessible after assembly or erection shall be cleaned and painted before they become inaccessible.
- 5.5 Welding slag, weld spatter, sharp edges and any other surface irregularities which may impair the appearance or performance of the protective coating shall be removed. Sharp edges shall be radiused to a minimum of 2mm.
- 5.6 Welds, edges, crevices, seams, joints and corners shall be brush (stripe) coated on each coat of a multi coat system before the commencement of spray application of the coating.
- 5.7 Mixing, thinning, application of protective coatings shall be carried out in accordance with the manufacturer's recommendations.
- 5.8 Recommended recoat interval times between coats shall not be exceeded.

## 6.0 ATMOSPHERIC CONDITIONS

- 6.1 Prior to and during coating application, the contractor shall record details pertaining to environmental conditions including ambient and surface temperature, relative humidity and dew point.
- 6.2 Coating application shall not commence if any one of the following conditions exists:
- The relative humidity is above 85%
  - The substrate temperature is less than dew point plus 3°C
  - The substrate temperature is below 10°C
  - The substrate temperature is above 55°C
  - The surface to be coated is wet or damp
  - Where the full prime coat application cannot be carried out before the specified cleanliness of the surface deteriorates
  - If the weather is deteriorating or is unfavorable for application or curing
  - If the pot life of the paint has been exceeded.

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#### 7.0 COATING THICKNESS

- 7.1 Coating thickness of a nominal dry film thickness of 80 microns of 2 pack Zinc Rich Epoxy primer over-coated with 150 microns of 2 pack Epoxy Mastic followed by 50 microns of Polyurethane topcoat with a total thickness of 280 microns.

**Caution:**

Care should be exercised to avoid the application of Zinc Rich Epoxy primer of Dry Film Thicknesses in excess of 150 microns.

#### 8.0 COATING FINISH

- 8.1 The finished coating shall be of uniform thickness, colour, appearance and gloss. It shall be fully cured, insoluble, adherent, coherent and free from mud cracking, holidays, laps, sags, blistering, checking, wrinkling, overspray, patchiness and any other defects that may impair the performance and/or appearance of the coating.

#### 9.0 COATING APPLICATOR/PERSONNEL QUALIFICATION

- 9.1 Work shall only be carried out by a competent person.
- 9.2 The work shall be undertaken by an approved Water Corporation Corrosion Control Panel Services member, unless approved otherwise by the Team Leader – Asset Durability
- 9.3 The contractor shall nominate a certified coating inspector to perform inspections and maintain appropriate records for the work performed. Coating Inspector engaged in testing, monitoring and verification of surface preparation and coating application shall hold relevant inspection qualifications and current certifications (e.g. NACE or ACA) or approved by the Principal. The coating inspector shall conduct the following:
- Prepare Quality Assurance documentation to meet the specified standards given herein and the required acceptance criteria.
  - Perform inspections and maintain appropriate records for work performed.
  - Testing, monitoring and verification of surface preparation and coating application.

#### 10.0 INSPECTION AND TESTING OF COATING

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- 10.1 Coatings shall be visually examined for surface defects and any discontinuity arising after curing shall be recorded and repaired.
- 10.2 Finished coating thickness shall be determined using suitable instruments standardised (zeroed) on a smooth uncoated metal plate in accordance with AS 3894.3.

#### **11.0 REPAIR OF A DEFECTIVE COATING AND RETESTING**

- 11.1 Coatings with defective areas equal to 20% or more of the total coated surface will be rejected outright.
- 11.2 Defects such as pinholes, cracks, blisters, voids, foreign inclusions and irregular profile peaks shall be marked for repair and retested upon full cure of the repaired coating.

#### **12.0 RECORDING AND REPORTING**

- 12.1 Following testing a report shall be submitted by the Contractor. The Contractor shall keep detailed records and reports including the following:
- Environmental conditions (relative humidity, dew point etc.)
  - Surface preparation
  - Surface profile
  - Coating application
  - Coating testing
  - General failure
- 12.2 To supplement these records, prior to any works commencing, an Inspection Test Plans (ITP) shall be forwarded to the Water Corporation for review a minimum of ten working days prior to the commencement of work.

#### **13.0 CONTRACTOR'S RESPONSIBILITY**

- 13.1 The Contractor shall supply all necessary plant, equipment, materials and labour, prepare the surface and apply, inspect and maintain the protective coating in accordance with this specification.
- 13.2 A list of all items to be inspected and the relevant drawing reference shall be forwarded to the Water Corporation Superintendent prior to the inspection being undertaken.

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- 13.3 The preceding inspection clauses shall not relieve the Contractor of their responsibility to supply materials and perform work in accordance with the requirements of any overriding contract documentation.

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