

COATING SPECIFICATION

GLASS FLAKE EPOXY COATING ON STEEL OR CAST IRON

COATING SPECIFICATION: F1

ISSUE: 4

DATE: JANUARY 2023

1.0 SCOPE

This document summarises the procedure for the application of a 2 pack Glass Flake Epoxy coating.

Refer Design Standard, DS 95 (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.**

2.0 PURPOSE

This coating is used on the internal and external surfaces of steel or cast iron, e.g. immersion in saline water.

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.

Spark Testing: Testing of the continuity of a fully-cured coating film for evidence of defects, pin holes, holidays (misses) or damage.

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

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

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4.0 SURFACE PREPARATION

- 4.1 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 1627 Part 4 and Water Corporation Specification A1
- 4.2 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.
- 4.3 Coating shall not be applied to surfaces which have become contaminated or deteriorated after blast cleaning.

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 Principal. This approval is required before coating commences.
- 5.2 The coating components shall be thoroughly mixed in the specified proportions as per manufacture recommendations.
- 5.3 Coating specifications inclusive of datasheets, coating application method statements and ITP's shall be submitted to the Principal 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 assembly or erection.
- 5.5 Recommended drying times between coats for on-site conditions 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;

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- The substrate temperature is above 55°C;
- The surface to be coated is wet or damp;
- Where specified cleanliness of the surface deteriorates;
- If the weather is deteriorating or is unfavourable for application or curing;

7.0 COATING THICKNESS

7.1 The surfaces specified shall be given two or more coats of the 2 pack Glass Flake Epoxy coating to produce a minimum of 1000 microns dry film thickness.

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 Protective Coating and Concrete Repair Services panel member unless approved otherwise by the Principal.

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.

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10.0 INSPECTION AND TESTING OF COATING

10.1 **Visual Testing** - Coatings shall be visually examined for surface defects and any discontinuity arising after curing shall be recorded.

10.2 **Spark Testing** - The finished, fully cured coating shall be holiday tested in accordance with AS 3894.1 or as per of manufacturer's recommendations.

10.3 **Adhesion Testing** – Adhesion testing is a method of confirming integrity of the coating. Testing shall be in accordance with AS/NZS 1580 Method 408.5 and AS 3894.9 Method C. The minimum acceptable adhesion value of Glass Flake Epoxy Coatings on Steel or Cast Iron shall be 5MPa. Water Corporation reserve the right to request that adhesion testing be completed in the event of a catastrophic coating failure. Additional adhesion tests shall be carried out on other valves within the same batch.

10.4 **Finished coating thickness** – Dry film thickness (DFT) shall be determined using suitable instruments standardised (zeroed) on a smooth uncoated metal plate in accordance with AS 3894.3.

11.0 REPAIR OF DEFECTIVE COATINGS 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 Prior to any works commencing, an Inspection Test Plans (ITP) shall be forwarded to the Superintendent for review a minimum of ten working days prior to the commencement of work.

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- 12.2 During the course of the works, the following information shall be recorded:
- Environmental conditions (relative humidity, dew point etc.);
 - Surface preparation;
 - Surface profile;
 - Coating application method;
 - Coating testing results; and
 - General failure.
- 12.3 On completion of the works a report shall be submitted by the Contractor to the Superintendent. This report shall include all coating test results, details of any failures and subsequent repairs if required.

13.0 CONTRACTOR'S RESPONSIBILITY

- 13.1 The Contractor shall supply all necessary plant, equipment, materials and labour, prepare the surface and apply and maintain the protective coating in accordance with this specification.
- 13.2 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.

Document Revision History					
Sect	Issue	Date	Revision Description	RVWD	APROV
8	4	13/12/2022	Amend coating applicator/personnel qualification	AO	SS
10	4	13/12/2022	Amend inspection and testing coating	AO	SS

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