
COATING SPECIFICATION

INORGANIC ZINC SILICATE COATING ON STEEL OR CAST IRON

COATING SPECIFICATION: B1

ISSUE:4

DATE: DECEMBER 2022

1.0 SCOPE

This document summarises the procedure for the application of Inorganic Zinc Silicate (IZS) coating on steel or cast iron structures.

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.**

2.0 PURPOSE

This coating may be used as a single coat (primer) or anti-corrosive coating for atmospheric corrosivity categories C1 to C4 as described in Australian Standard AS 2312.

Typical Water Corporation applications include above ground clean skin Mild Steel Cement Lined (MSCL) pipe and structural steel which does not require a top coat.

Caution:

- Do not overcoat IZS with oil based synthetic resin like alkyds.
- Excessive film build-up will result in “Mud Cracking” type coating failure.

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.

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

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/NZS 1627 Part 4.
- 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 any prepared surface(s) exhibiting "flash corrosion" or that has been abrasive blasted more than 4 hours prior to commencement of coating.

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 application commences.
- 5.2 The coating components shall be thoroughly mixed in the specified proportions. The Material prepared shall be used within the "pot-life" period claimed by the manufacturer for the relevant site conditions.
- 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 Mixing, thinning, application and curing of protective coatings shall be carried out in accordance with the coating manufacturer's recommendations.

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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 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;
 - Surface cleanliness deteriorates;
 - If the weather is deteriorating or is unfavorable for application or curing;
 - If the pot life of the paint has been exceeded.

7.0 COATING THICKNESS

- 7.1 The surfaces to be coated shall be given one coat of the approved Inorganic Zinc Silicate paint to produce 80 microns dry film thickness (DFT). The Contractor shall specify and ensure the allowable maximum dry film thickness based on the coating manufacturer's recommendation is not exceeded.
- 7.2 Finished coating thickness shall be determined using suitable instruments that are standardised (zeroed) on a smooth uncoated metal plate in accordance with AS 3894.3. The steel surface profile height shall be considered and allowed for when taking the dry film thickness readings. The specified DFT is the film thickness plus the peak profile height.

8.0 COATING FINISH

- 8.1 The finished coating shall be of uniform thickness, colour, and appearance. 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's Protective Coating and Concrete Repair Panel.

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- 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 REPAIR OF A DEFECTIVE COATING AND RETESTING

- 10.1 Coatings shall be visually examined for surface defects and any discontinuity arising after curing shall be recorded.
- 10.2 Coatings with defective areas equal to 20% or more of the total coated surface will be rejected outright.
- 10.3 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.

11.0 RECORDING AND REPORTING

- 11.1 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; and
 - General failure
- 11.2 To supplement these records, prior to any works commencing, an Inspection Test Plan (ITP) shall be forwarded to the Water Corporation for review and approval a minimum of 10 working days prior to the commencement of work.

12.0 CONTRACTOR'S RESPONSIBILITY

- 12.1 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.

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- 12.2 A list of all items to be inspected and the relevant drawing reference shall be forwarded to the Water Corporation Coating Inspector prior to the inspection being undertaken.
- 12.3 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.

Document Revision History					
Sect	Issue	Date	Revision Description	RVWD	APROV
9	4	01/12/2022	Amend coating applicator/personnel qualification	AO	SS
7	4	12/12/2022	Amend coating thickness	AO	SS
10	4	12/12/2022	Amend and re-position Inspection and Testing of Coating	AO	SS

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