

Australian Standard[®]

Paints for steel structures

Part 10: Full gloss epoxy (two-pack)



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 - Business New Zealand
 - Engineers Australia
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Part 10: Full gloss epoxy (two-pack)

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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee CH-003, Paints and Related Materials to supersede AS/NZS 3750.10:1994.

The objective of this Standard is to provide requirements for full gloss epoxy paint intended for use on iron and steel structures. It forms part of a series of product Standards for paints referred to in AS/NZS 2312, *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings*.

See AS/NZS 3750.0 for other published Standards in this series.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard
Paints for steel structures**Part 10: Full gloss epoxy (two-pack)**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for a two-component, full gloss epoxy paint for the protection of iron and steel against exterior atmospheric corrosion in a severe industrial or coastal marine environment. It is suitable for application by brush, roller or spray. Paint specified in this Standard is described in AS/NZS 2312 as Paint Reference C24.

This paint is intended for use as a topcoat in paint systems for the protection of iron and steel against corrosion involving wet and damp areas, high humidity, coastal/marine and industrial fallout.

NOTES:

- 1 This paint may be used as detailed for systems EPF1 in AS/NZS 2312.
- 2 Appendix A contains recommendations and advice on information which should be provided by the purchaser at the time of enquiry or order.
- 3 Additional information on the use and application of epoxy paints is contained in Appendix B.
- 4 The paint is available in a range of colours.
- 5 Full gloss epoxy paints should not be used as a finish coat in exterior applications where retention of colour and gloss is required for long periods of time.

1.2 REFERENCED DOCUMENTS

A list of the documents referred to in this Standard is contained in Appendix C.

1.3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 2310 and those below apply.

1.3.1 Component

The term used to describe each of two parts of the paint, which when mixed together form the pigmented epoxy paint.

1.4 SAFETY PRECAUTIONS

Health and safety aspects referenced in Section 13 of AS/NZS 2312 should be followed in conjunction with the manufacturer's safety data sheets (MSDSs).

SECTION 2 MATERIALS REQUIREMENTS

2.1 GENERAL

The paint shall comply with the requirements detailed in Clauses 2.3 to 2.5 inclusive. These properties and requirements are summarized in Table 1.

2.2 CONDITIONS OF TEST

Unless otherwise specified in this Standard, the following test conditions shall apply:

- (a) The test panel material and its preparation shall be in accordance with Appendix D.
- (b) The type and size of test panels shall be as specified in Table 1.
- (c) Conditions for testing shall be in accordance with AS 1580/NZS.101.5.
- (d) The spreading rate of paint shall be such that when applied by spraying it shall result in a dry film thickness of 40 µm to 50 µm per coat as determined by either AS/NZS 1580.108.1 or AS 1580.108.2.
- (e) Conditions for air-drying shall be in accordance with AS 1580/NZS.101.1.

2.3 LIQUID PAINT

2.3.1 Condition in container

When each component is tested in accordance with AS/NZS 1580.103.1 at the time of delivery from the manufacturer/supplier, it shall be free from gel, coarse particles, skins and foreign matter.

2.3.2 Fineness of grind

When determined in accordance with AS/NZS 1580.204.1, the fineness of grind reading of the mixed paint shall be not greater than 25 µm.

2.3.3 Volume solids

When determined in accordance with AS 1580.301.2, utilizing air-drying conditions of 7 days under routine conditions of AS/NZS 1580.101.1 in lieu of a 3 h drying period at 105°C, the volume solids of the mixed paint shall be within 5% of the manufacturer's specification.

2.3.4 Storage properties

2.3.4.1 Degree of settling

When stored at 23 ±3°C in sealed, unopened containers for 12 months from the date of manufacture, the rating for the settling of either component, when determined in accordance with AS/NZS 1580.211.1, shall be not less than 6.

2.3.4.2 Re-incorporation after storage

When stored at 23 ±3°C in sealed, unopened containers for 12 months from the date of manufacture, and tested in accordance with AS/NZS 1580.211.2, the components shall be readily re-incorporated and, when mixed in the recommended proportions, shall produce a paint of uniform consistency free from lumps, gel and other defects.

2.3.5 Consistency

When thoroughly incorporated, the mixed paint shall have a consistency, determined in accordance with AS/NZS 1580.214.1 or AS/NZS 1580.214.5, within the range specified by the manufacturer.

2.4 APPLICATION PROPERTIES

2.4.1 General

Application properties shall be assessed using steel test panels prepared in accordance with Appendix D. When applied in accordance with the manufacturer's recommended methods of application and allowed to cure in a vertical orientation, the applied film shall not run, streak, sag or exhibit other undesirable defects when dry, when tested by the appropriate method (see Clauses 2.4.2 to 2.4.4).

2.4.2 Brushing

When thinned, if necessary, and applied to a test panel (see Clause 2.2) in accordance with AS/NZS 1580.205.1, the test paint shall exhibit satisfactory brushing properties and freedom from defects.

2.4.3 Rolling

When thinned, if necessary, and applied to a test panel (see Clause 2.2) in accordance with AS/NZS 1580.205.3, the test paint shall exhibit satisfactory rolling properties and freedom from defects.

2.4.4 Spraying

When thinned, if necessary, in accordance with the manufacturer's instructions, and applied to a test panel (see Clause 2.2) in accordance with AS/NZS 1580.205.2 or AS/NZS 1580.205.4 as appropriate, the test paint shall exhibit good spraying properties and not clog the spray gun.

NOTE: The panel should be retained for assessment of finish (see Clause 2.5.7).

2.4.5 Pot-life assessment

When initially mixed and thinned as appropriate to the method of application, and again at the end of a 6 h standing period, a 4 L volume of the paint shall be tested in accordance with AS/NZS 1580.205.2 or AS/NZS 1580.205.4. When applied at the manufacturer's maximum recommended thickness, it shall exhibit satisfactory spraying properties.

When dry, the film shall be free from sags, runs, pinholes, craters and any other film defect. A slight 'orange-peel' effect is characteristic.

2.5 APPLIED FILM

2.5.1 Surface-dry time

When applied to a tinplate test panel (see Clause 2.2) and tested in accordance with AS/NZS 1580.401.1, one coat of the test paint shall have a surface-dry time not exceeding 3 h.

2.5.2 Hard-dry time

When applied to a tinplate test panel (see Clause 2.2) and tested in accordance with AS 1580.401.5, one coat of the test paint shall have a hard-dry time not exceeding 18 h.

2.5.3 Curing properties

When a coat of test paint is applied to a tinplate test panel, cured for 7 d, and then tested in accordance with Appendix E, the film shall withstand a load of 1.5 kg.

2.5.4 Recoating properties

A steel test panel, prepared in accordance with Appendix D, is coated with test paint and air-dried for 24 h and then recoated with a further coat of test paint and air-dried for a further 6 days.

When tested in accordance with AS/NZS 1580.404.1, the recoated panel shall show no evidence of wrinkling, patchiness or lifting of the previous coat and, when tested in accordance with AS 1580.408.2, the intercoat adhesion rating shall be 0.

2.5.5 Gloss

When a coating of test paint, which has been applied to a glass test panel and air-dried for 7 days, is evaluated in accordance with AS/NZS 1580.602.2 using a 60-degree head, the specular gloss shall be more than 85 gloss units.

2.5.6 Colour

When a coat of test paint applied to a tinplate test panel is air-dried for a minimum of 24 h and assessed in accordance with AS/NZS 1580.601.1, the colour of the panel shall be an approximate match to that specified.

NOTE: AS 2700S provides a range of colour standards which are suitable for specification purposes.

2.5.7 Finish

When a coated test panel prepared in accordance with Clause 2.4.4 is air-dried for 7 days and examined in accordance with AS 1580.603.1, the film shall be of uniform colour and appearance and free from film defects.

2.5.8 Flexibility and adhesion

When a coat of test paint is applied to a tinplate test panel, air-dried for 7 days, and then tested in accordance with AS 1580.402.1 using a 6 mm diameter mandrel, the paint shall not crack and shall firmly adhere to the metal panel.

2.5.9 Accelerated tests

2.5.9.1 General

The tests in Clauses 2.5.9.2 to 2.5.9.4 shall be performed to demonstrate long-term resistance properties (refer Paragraph B4, Appendix B).

2.5.9.2 Resistance to distilled water

When a steel test panel is prepared and tested in accordance with Appendix F, it shall meet the following requirements after the 30 days immersion period:

Property of coating	Method of test	Requirements
Blistering and wrinkling	—	None present
Adhesion rating	AS 1580.408.2	0
Colour	ISO 105-A02	Rating ≥ 4
Gloss of immersed part	AS/NZS 1580.602.2	$\geq 80\%$ of unimmersed part
Scratch resistance	AS/NZS 1580.403.1	≥ 1.5 g
Corrosion of substrate	—	None visible

2.5.9.3 Resistance to mineral oil

When a steel test panel is prepared and tested in accordance with Appendix G, it shall meet the following requirements after the 24 h immersion period:

Property of coating	Method of test	Requirements
Blistering and wrinkling	—	None present
Adhesion rating	AS 1580.408.2	0
Colour	ISO 105-A02	Rating ≥ 4
Gloss of immersed part	AS/NZS 1580.602.2	$\geq 80\%$ of unimmersed part
Scratch resistance	AS/NZS 1580.403.1	≥ 1.5 g

2.5.9.4 Resistance to alkali/acid

When steel test panels are prepared and tested in accordance with Appendix H, they shall meet the following requirements:

Property of coating	Method of test	Requirements
Blistering and wrinkling	AS/NZS 1580.481.1.9	None present
Adhesion rating	AS 1580.408.2	0
Scratch resistance	AS/NZS 1580.403.1	≥ 1.5 kg
Corrosion of substrate	AS 1580.481.3	None visible

NOTE: This test should not be carried out on aluminium pigmented paints.

2.5.10 Resistance to weathering

When a test panel, prepared and coated in accordance with Appendix I, is continuously exposed, at a 45° angle facing north for 48 months on an exposure rack complying with AS/NZS 1580.457.1 at a site with climatic conditions that comply with AS/NZS 2312 for a marine environment, and assessed with the appropriate methods, the paint system shall meet the acceptance rating requirements of Table 2.

TABLE 1
SUMMARY OF PROPERTIES OF FULL GLOSS EPOXY (TWO-PACK)
PAINT FOR STEEL

Clause number	Property	Requirement	Test method	Test panel material	Minimum test panel size (mm)
2.3.1	Condition in container	Free from gel, coarse particles, skin	AS/NZS 1580.103.1	N/A	—
2.3.2	Fineness of grind	≤ 25 μm	AS/NZS 1580.204.1	N/A	—
2.3.3	Volume solids	Within 5 percent of manufacturer's specification	AS 1580.301.2 (modified)	N/A	—
2.3.4.1	Degree of settling (12 months)	Settlement rating ≥ 6	AS/NZS 1580.211.1	N/A	—
2.3.4.2	Re-incorporation after storage (12 months)	Readily re-incorporated; uniform consistency; free from lumps, gel	AS/NZS 1580.211.2	N/A	—
2.3.5	Consistency	As specified	AS/NZS 1580.214.1 or AS/NZS 1580.214.5	N/A	—
2.4	Application properties	Good application properties free from sags, runs, streaks, pinholes, craters	AS/NZS 1580.205.1 AS/NZS 1580.205.2 AS/NZS 1580.205.3 AS/NZS 1580.205.4	Steel	500 × 500 500 × 500 1000 × 1000 1000 × 1000

(continued)



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