

Australian Standard™

Paints for steel structures

**Part 18: Moisture cure urethane
(single-pack) systems**



STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 3750.18—2002

Paints for steel structures

Part 18: Moisture cure urethane (single-pack) systems

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Technical Committee CH-003 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 25 September 2013.

The following are represented on Technical Committee CH-003:

Australasian Corrosion Association
Australian Paint Approval Scheme
Australian Paint Manufacturers' Federation
Australian Pipeline Industry Association
Water Corporation Western Australia

NOTES

This Australian Standard was prepared by Committee CH-003, Paints and Related Materials. It was approved on behalf of the Council of Standards Australia on 10 June 2002 and published on 15 August 2002.

The following are represented on Committee CH-003:

AUSTROADS

Australian Paint Approval Scheme

Australian Paint Manufacturers Federation

Master Painters Australia

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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. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The following Standards in this series have been published:

AS

- 3887 Paints for steel structures—Coal tar epoxy (two-pack)
- 3750 Paints for steel structures
- 3750.1 Part 1: Epoxy mastic (two-pack)—For rusted steel
- 3750.2 Part 2: Ultra high-build paint

AS/NZS

- 3750.3 Part 3: Heat resisting—Exterior
- 3750.4 Part 4: Bitumen paint
- 3750.5 Part 5: Acrylic full gloss (two-pack)
- 3750.6 Part 6: Full gloss polyurethane (two-pack)
- 3750.7 Part 7: Aluminium paint
- 3750.8 Part 8: Vinyl paints—Primer, high-build and gloss
- 3750.9 Part 9: Organic zinc-rich primer
- 3750.10 Part 10: Full gloss epoxy (two-pack)
- 3750.11 Part 11: Chlorinated rubber—High-build and gloss
- 3750.12 Part 12: Alkyd/micaceous iron oxide
- 3750.13 Part 13: Epoxy primer (two-pack)
- 3750.14 Part 14: High build epoxy (two-pack)
- 3750.15 Part 15: Inorganic zinc silicate paint
- 3750.16 Part 16: Waterborne primer and paint for galvanized zinc-aluminium alloy-coated and zinc-primed steel
- 3750.17 Part 17: Etch primers (single pack and two-pack)

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 18: Moisture cure urethane
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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for one-component, solvent-borne, unmodified moisture cure urethane (MCU) paints intended to be used primarily for the protection of iron and steel against exterior atmospheric corrosion. They are best applied by conventional air or airless spraying, but are also suitable for application by brush or roller.

These paints are intended primarily for use as a paint system for the protection of iron and steel against corrosion involving wet and damp areas, high humidity, coastal/marine and industrial fallout. Some of these products are suitable for burial and immersion. Polyurethane paints are in general more suitable for use in those applications where it is desirable to retain colour and gloss in addition to providing corrosion resistance.

Moisture cure urethane paint, specified in this Standard as zinc-pigmented primer, MIO intermediate and finish coat paint, is described as Paint Reference Nos 38, 39 and 40 respectively in AS/NZS 2312 and may be used with the appropriate systems MCU1 and MCU2.

NOTES:

- 1 'Unmodified MCU paints' are defined in ASTM D16 as Type II.
- 2 Appendix A contains recommendations and advice on information that should be provided by the purchaser at the time of enquiry or order.
- 3 Additional information on the use and application of moisture cure urethane paints is contained in Appendix B.
- 4 Alternative methods for determining compliance with this Standard are given in Appendix C.
- 5 The paints are available in a range of colours.

1.2 OBJECTIVE

The objective of this Standard is to specify requirements for moisture cure urethane paints used on steel structures. It forms part of a series of product Standards for paints referred to in AS/NZS 2312.

1.3 REFERENCED DOCUMENTS

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

1.4 DEFINITIONS

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

1.4.1 Finish coat

Moisture cure urethane finish coat consisting essentially of an aliphatic prepolymer, to cure as a polyurea polymer, designed for use over zinc-pigmented primer or MIO intermediate paints. It is classed as Paint Reference No. 40 in AS/NZS 2312. Finish coat products may contain MIO pigmentation.

1.4.2 MCU accelerator

An additive to accelerate cure and re-coat times and usually added in small quantities. These substances are consumed by the reaction.

1.4.3 MIO intermediate paint

MIO based intermediate paint consisting essentially of an aromatic prepolymer, to cure as a polyurea polymer to be used as an intermediate coat over zinc-pigmented primer paint. It is classed as Paint Reference No. 39 in AS/NZS 2312.

1.4.4 Moisture cure urethane tar

Moisture cure urethane paint consisting essentially of an aromatic prepolymer, to cure as a polyurea polymer, containing refined tar and MIO. It is used as the primer and/or intermediate coat and/or topcoat in a moisture cure urethane paint system, and is applied at 125–175 μm dry film thickness in a single coat. Particularly suitable for use with potable water storage, sewage and other immersed applications.

NOTE: Moisture cure urethane tar can be used in conjunction with zinc-pigmented primer, MIO intermediate and finish coat products; however, for the uses of this type of product, the manufacturer's recommendations should be consulted.

1.4.5 Paint

Single component product as supplied by the manufacturer.

1.4.6 Sealer/primer

Moisture cure urethane paint consisting generally of an aromatic prepolymer, to cure as a polyurea primer, to be used as a sealer/primer over hand- or power-tool-cleaned steel surfaces, galvanizing or thermal sprayed coatings. Sealer/primer is applied at $50 \pm 10 \mu\text{m}$ and is designed to be overcoated by MIO intermediate and finish coat paint.

NOTE: For use of this type of product the manufacturer's recommendations should be consulted.

1.4.7 Zinc-pigmented primer

A moisture cure urethane primer consisting essentially of an aromatic prepolymer, to cure as a polyurea polymer, containing not less than 85% zinc in the dry film. It is classed as Paint Reference No. C38 in AS/NZS 2312.

1.5 SAFETY PRECAUTIONS

Moisture cure urethane paints contain a very small proportion of free isocyanate monomer, less than a two-pack polyurethane, and an organic solvent. The level of isocyanate may increase with the use of an MCU accelerator. Refined tars may contain very small proportions of hazardous materials.

NOTE: The manufacturer's safety recommendations should be followed (see also Appendix B).

SECTION 2 MATERIAL REQUIREMENTS

2.1 GENERAL

Paint shall comply with the requirements of 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 E.
- (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/NZS 1580.101.5.
- (d) The spreading rate of the relevant paint applied by brush, roller or spray shall result in a dry film thickness, as determined by AS/NZS 1580.108.1, of—
 - (i) zinc-pigmented primer 75 ±10 µm;
 - (ii) MIO intermediate paint 75 ±10 µm;
 - (iii) finish coat paint 75 ±10 µm;
 - (iv) sealer/primer..... 50 ±10 µm; and
 - (v) MCU tar 150 ±15 µm.
- (e) Conditions for air-drying shall be in accordance with AS 1580.101.1.

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 Volume solids

When determined in accordance with AS 1580.301.2, utilizing air drying conditions of 7 d under the routine conditions of AS/NZS 1580.101.1 in lieu of a 3 h drying period of 105°C, the volume solids of the mixed paint shall be greater than 60% and within 5% of the manufacturer's product specification.

2.3.3 Storage properties

2.3.3.1 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, when determined in accordance with AS/NZS 1580.211.1 shall be not less than 4.

2.3.3.2 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 products shall be readily re-incorporated and, when mixed, shall produce a paint of uniform consistency free from lumps, gel and other defects.