

Australian/New Zealand Standard™

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**Paints for steel structures**

**Part 15: Inorganic zinc silicate paint**

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## AS/NZS 3750.15:1998

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This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CH/3, Paints and Related Materials. It was approved on behalf of the Council of Standards Australia on 20 March 1998 and on behalf of the Council of Standards New Zealand on 2 March 1998. It was published on 5 June 1998.

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The following interests are represented on Committee CH/3:

Australasian Corrosion Association  
Australian Chamber of Commerce and Industry  
Australian Paint Approval Scheme  
Australian Paint Manufacturers Federation  
AUSTROADS  
Building Research Association of New Zealand  
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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

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**RECONFIRMATION**  
**OF**  
**AS/NZS 3750.15:1998**  
**Paints for steel structures**  
**Part 15: Inorganic zinc silicate paint**

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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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Australian Paint Manufacturers' Federation  
Australian Pipeline Industry Association  
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Master Painters New Zealand Association  
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## NOTES

# Australian/New Zealand Standard™

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## Paints for steel structures

### Part 15: Inorganic zinc silicate paint

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH/3, Paints and Related Materials, as part of a series of product Standards for paints referred to in AS/NZS 2312, *Guide to the protection of iron and steel against exterior atmospheric corrosion*.

The objective of this Standard is to revise and supersede the 1992 edition of AS 2105, *Inorganic zinc silicate paint*, by reformatting and taking into account revisions to Standards such as AS/NZS 2312 and the AS/NZS 1580 series of test methods. This Standard introduces an additional category of waterborne paint that cures by loss of water, namely Type 6 paint.

The following Standards in this series have been published:

### AS

- 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 Paints for steel structures
- 3750.0 Introduction and list of Standards
- 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

Proposed Standards in the series are the following:

- Part 16: Waterborne primer and paint for galvanized, zinc/aluminium alloy coated and zinc primed steel
- Part 17: Etch primers (single pack and two-pack)

Other related Standards are the following:

### AS

- 3884 Etch primers (single pack and two-pack) for retreating metal surfaces
- 3885 Paints for steel structures—Galvanized and zinc primed—Latex
- 3887 Paints for steel structures—Coal tar epoxy (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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## FOREWORD

This Standard covers six types of inorganic zinc silicate paint, each typified by high zinc dust content and a basically inorganic vehicle, formulated to provide a hard, corrosion-resistant protective coating for iron and steel.

Inorganic zinc silicate paints consist of zinc in finely divided metallic form dispersed in a matrix of silica.

The term 'inorganic' refers to the material in the matrix, and is intended to exclude paints based on organic matrices, e.g. epoxy, phenoxy or polystyrene. The solvent-borne inorganic zinc silicate paints, described in this Standard as Type 4, are true inorganics. The organic solvent and the organic material combined in the alkyl silicate vehicle are lost by evaporation during drying and by reaction with airborne moisture during curing, thus leaving a completely inorganic film of paint.

Important criteria in the assessment of an inorganic zinc silicate coating are the formation of a relatively hard uniform film and the exhibition of long-term protection of steel from corrosion. In the short-term, laboratory tests which give satisfactory film formation and performance, combined with the insistence on a minimum content of metallic zinc, ensure durability adequate for long-term protection of structural steel.

## STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

**Australian/New Zealand Standard****Paints for steel structures****Part 15: Inorganic zinc silicate paint**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE** This Standard specifies requirements for inorganic zinc silicate paint for use in the protection of iron and steel against exterior atmospheric corrosion. The paint is intended for application by spraying. Types 3, 4 and 6 paints specified in this Standard comply with the provisions of Paint Reference No.1 given in AS/NZS 2312.

Types 3, 4 and 6 may be used as single coat primers.

## NOTES:

- 1 The paint may be used as detailed in systems MP1—A, MP2—A,B, MP3—A-C, MP5—A-D, MP9—A, MP10—A, LP1—A-D, LP2—A-C, LP3—A, LP4—A and LP6—A,B, HR1, HR3, HR5 and HR6 shown in AS/NZS 2312.
- 2 Supplementary information that should be supplied by the purchaser is set out in Appendix A.
- 3 Additional notes giving typical uses and information on inorganic zinc silicate paints are included in Appendix B.
- 4 Alternative methods of determining compliance with this Standard are given in Appendix C.

**1.2 REFERENCED DOCUMENTS** The documents referred to in this Standard are listed in Appendix D.

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

**1.3.1 Inorganic zinc silicate paint**—a material consisting essentially of a dispersion of metallic zinc dust in a silicate medium.

**1.3.2 Weld-through primer**—an inorganic silicate paint that is suitable for use in conjunction with welding procedures.

**1.4 CLASSIFICATION** Inorganic zinc silicate paints shall be classified as follows:

- (a) *Type 1*—a waterborne multicomponent inorganic zinc silicate paint that requires the application of heat to effect curing of the paint.

NOTE: Type 1 inorganic zinc silicate paints are not in widespread use and may be deleted from this classification system in the future.

- (b) *Type 2*—a waterborne multicomponent inorganic zinc silicate paint that requires the application of a curing agent to a previously applied two-component primer base.
- (c) *Type 3*—a waterborne multicomponent inorganic zinc silicate paint that self-cures by loss of water. This differs from recently developed 'high ratio' alkali silicates in that the silica to alkali metal oxide molar ratio in the resin component, based on the extracted binder, is less than 4.7:1.

- (d) *Type 4*—a solvent-borne single or multicomponent inorganic zinc silicate paint which self-cures by loss of solvent and subsequent reaction with atmospheric moisture.
- (e) *Type 5*—a waterborne multicomponent inorganic zinc silicate paint or a self-curing solvent-borne single or multicomponent inorganic zinc silicate paint which is basically similar to Type 3, 6 or Type 4 respectively; it is specifically for use as a weld-through primer.
- (f) *Type 6*—a waterborne two-component inorganic zinc silicate paint that self-cures by loss of water. This type is designated as ‘high ratio’ in that the silica to alkali metal oxide molar ratio, based on the extracted binder, is not less than 4.7:1.

**1.5 COLOUR** To overcome difficulties of differentiating between a coating of paint and a freshly prepared surface, the product may contain suitable tinting pigments.

NOTE: The untinted colour is typically characteristic of the zinc dust pigment contained in the product but has different shades according to the application conditions.