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INORGANIC ZINC SILICATE PAINT

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STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING INDUSTRIAL, SCIENTIFIC, CONSUMER AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Associated Chamber of Manufactures of Australia
Australian Electrical Manufactures of Australia
Australian Federation of Consumer Organizations
Australian Paint Manufacturers Federation
CSIRO, Division of Building Research
Department of Defence
Government Paint Committee
National Association of Australian State Road Authorities
National Association of Testing Authorities
Oil and Colour Chemists Association
Railways of Australia Committee
Royal Australian Institute of Architects
University of Melbourne

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To keep abreast of progress in industry, Australian standards are regularly viewed. Suggestions for improvements to published standards, addressed to the head office of the Association, will be welcomed.

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AUSTRALIAN STANDARD SPECIFICATION

**INORGANIC
ZINC SILICATE PAINT**

AS 2105 — 1978

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PREFACE

This standard was prepared by the Association's Committee on Paints and Varnishes under the direction of the Chemical Standards Board. It is one of a series being prepared by the committee to provide a system for the protection of iron and steel structures and equipment against atmospheric corrosion.

During preparation of the standard the committee considered the following publications:

CGS 1-GP-171d	Standard for Inorganic Zinc Coatings*
ISO/DIS 3549	Zinc Dust Pigment for Paints
CD 502	Self Cure Inorganic Zinc Silicate Paint†
Steel Structures	Painting Council‡—Tentative Specification—SSPC—Paint 20 x 72 P, Type 1 Inorganic Zinc Rich Coating.

The committee is aware that at the time of publication of this standard there is no direct correlation between all laboratory tests and long-term use in the field and it is expected that an early review of the standard will be made. Existing tests and new tests in course of investigation which may need further consideration in the light of field experience include pencil hardness, impact and other mechanical tests.

Matters considered to be contractual in nature and which do not form part of the technical requirements of the specification have not been included in the body of the standard. Such considerations as 'product approval schemes', container sizes and conditions of supply come within this category. Matters which are likely to arise during purchasing negotiations and which require agreement are included in Appendix A.

Independent testing required for the settlement of disputes also requires agreement. It is important to note that there are laboratories registered with the National Association of Testing Authorities, Australia for the fields and classes of test referred to in this specification.

This standard may require reference to the following standards:

AS 1511	SAA High-strength Structure Bolting Code
AS 1152	Test Sieves

*Issued by Canadian Government Specifications Board.

†Issued by N.Z. Ministry of Works.

‡Pittsburgh, Pa (U.S.A.).

- AS 1580** **Methods of Test for Paints, Varnishes, Lacquers and Related Materials**
Method 102.1—Recommended Sampling Procedures
Method 107.3—Determination of Wet Film Thickness by Wheel Gauge
Method 108.1—Measurement of Dry Film Thickness on Iron and Steel Substrates (Permanent Magnet Instruments)
Method 405.1—Abrasion Resistance (Taber Abraser) §
Method 458.1—Resistance to Wetting
Method . . . —Determination of Pencil Hardness of Paint Film §
Method . . . —Determination of Metallic Zinc Content §
- AS 1627** **Code of Practice for Preparation and Pre-treatment of Metal Surfaces Prior to Protective Coating**
Part 4—Abrasive Blast Cleaning of Steel Surfaces
- ISO/DIS 3549** **Zinc Dust Pigment for Paints**

§In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Specification for INORGANIC ZINC SILICATE PAINT

FOREWORD

The preparation of specifications for long-life high duty protective coating systems such as inorganic zinc silicate paint presents considerable difficulties. Field performance cannot be correlated with short-term laboratory tests and there is not sufficient published information available to enable detailed composition specifications to be prepared.

An important criterion in the assessment of inorganic zinc silicate coating systems is the cost per square metre per year of protection. This depends mainly on the amount of zinc per square metre which in turn depends, assuming competent manufacture, on the volume solids content and the zinc content in the dried film. However, the use of this specification, which contains limited composition and performance requirements together with a knowledge of the performance of established coating systems should assist users in the selection of a suitable coating system.

This specification covers four types of inorganic zinc silicate paints, 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 specification 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.

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This specification sets out requirements for inorganic zinc silicate paint intended for use in the protection of iron and steel against atmospheric corrosion.

NOTES:

1. Supplementary information required to complete this specification for the supply of paint is set out in Appendix A.
2. Additional notes on typical uses and information on inorganic zinc rich paints are given in Appendix B.

1.2 DEFINITION. For the purpose of this specification, the following definition applies:

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

1.3 CLASSIFICATION. Inorganic zinc silicate paints shall be classified as follows:

- (a) *Type 1*—a multi-component inorganic zinc silicate waterborne paint which requires the application of heat to effect curing of the paint.
- (b) *Type 2*—a multi-component inorganic zinc silicate waterborne paint which requires the application of a curing agent to a previously applied two-component primer base.
- (c) *Type 3*—a multi-component inorganic zinc silicate waterborne paint which self-cures by loss of water and subsequent reaction with atmospheric moisture.
- (d) *Type 4*—a single-component or multi-component inorganic zinc silicate solvent-base paint which self-cures by loss of solvent and subsequent reaction with atmospheric moisture.

NOTE: Additional information on the composition and use of these paints is contained in Appendix B.

1.4 CONDITION. The product shall be supplied in such a condition that after mixing and blending, and if necessary the addition of thinners, it shall be suitable for application by means of brush, roller or commercial spraying equipment.

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