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Australian Standard 2105—1980

INORGANIC ZINC SILICATE PAINT

[Title allocated by Defence Cataloguing Authority:
PRIMER COATING (Zinc Silicate): NATO Supply Classification:
8010]

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:

Australian Electrical and Electronics Manufacturers Association

Australian Federation of Consumer Organizations

Australian Paint Manufacturers Federation

Confederation of Australian Industry

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

This standard, prepared by Committee CH/3, Paints, Varnishes and Related Materials, was approved on behalf of the Council of the Standards Association of Australia on 3 April 1980, and was published on 1 July 1980.

AUSTRALIAN STANDARD

INORGANIC ZINC SILICATE PAINT

AS 2105—1980

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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, to supersede AS 2105—1978. It is one of a series being prepared by the committee to provide a system for the protection of iron and steel against atmospheric corrosion.

During the 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 × 72 P, Type 1 Inorganic Zinc Rich Coating.

This edition of the standard differs from the 1978 edition in that the particle size of dry pigment has been reduced from 150 μm to 75 μm, the allowable loss of mass for Type 3 coatings has been increased to 0.40 g, and a method for the determination of the abrasion resistance of aged coatings has been added.

Impact tests and other mechanical tests are still being investigated.

Requirements such as container sizes, product approval schemes and conditions of supply are non-technical matters which are likely to arise during purchasing negotiations. Such requirements are provided for 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 standard.

This standard may require reference to the following standards:

AS 1511	SAA High-strength Structural Bolting Code
AS 1152	Test Sieves
AS 1580	Methods of Test for Paints, Varnishes, Lacquers and Related Materials Method 102.1—Recommended Sampling Procedure 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—Determination of Pencil Hardness of Paint Film Method 458.1—Resistance to Wetting Method 601.1—Metallic Zinc Content
AS 1627	Code of Practice for Preparation and Pretreatment of Metal Surfaces Prior to Protective Coating Part 4—Abrasive Blast Cleaning of Steel Surfaces
ISO/DIS 3549	Zinc Dust Pigment for Paints

*Issued by Canadian Government Specifications Board.
†Issued by New Zealand Ministry of Works.
‡Pittsburgh, Pa (U.S.A.).

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FOREWORD

The preparation of standards 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 standard 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 standard covers four 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.

SECTION 1. SCOPE AND GENERAL

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

NOTES:

1. Supplementary information that is to be supplied by the purchaser 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 standard, 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 as will ensure, after mixing and blending, and if necessary the addition of thinners, that the product is 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.