



INORGANIC ZINC SILICATE COATING FOR THE LONG-TERM PROTECTION OF STEEL

1 SCOPE

This specification covers inorganic zinc silicate coating systems for application to steel structures on which optimum surface preparation can be achieved, and where the systems are intended to provide a service life in excess of 10 years (for the solvent borne version) or in excess of 25 years (for the water-borne version) under Category C3 (Medium) atmospheric corrosivity conditions.

2 BACKGROUND

- To obtain a broad overview of the Australian Paint Approval Scheme (APAS), refer to APAS document AP-D001.
- To obtain an overview of restricted ingredients in APAS certified products, refer to APAS document AP-D123.
- To obtain the current list of APAS participating manufacturers (and suppliers) and resellers, refer to APAS document AP-D152.
- To obtain an overview of how to participate in the APAS, refer to APAS document AP-D177.
- APAS approval to this specification may be gained by compliance with the requirements detailed in this specification and those in APAS document AP-D192.

3 DESCRIPTION AND GUIDE FOR USERS

3.1 General Requirements

- This specification covers inorganic zinc silicate coating systems for application to steel structures on which optimum surface preparation can be achieved. Under Category C3 (Medium) atmospheric corrosivity conditions (refer AS/NZS 2312.1), the systems are intended to provide a service life in excess of 10 years (for the solvent borne version) or in excess of 25 years (for the water-borne version).
- Approvals under this specification comply to coating systems IZS1 and IZS2 of AS 2312.1, Table 6.3.
- The manufacturer's printed product data sheet or technical data sheet should confirm that the exposure conditions to which the coating system is to be exposed is within the capabilities of that system. Where surface preparation is likely to be marginal and surface tolerant coatings are required, reference should be made to APAS specification AP-S0156.

3.2 Sub-Classes

- This specification does not incorporate any subclass.

3.3 Basis of this Specification

- This specification is based on AS/NZS 3750.15 Type 3 or Type 4, with the following modification:
 - Inclusion of an exterior durability requirement of 72 months
- Paints approved under this specification correspond to Paint Reference Numbers (PRN) C01a or C01b of AS 2312.1.

4 REFERENCED DOCUMENTS

- The following standards are referenced in this document:
 - AS/NZS 1580** – Paints and related materials: Methods of test
 - AS 2312.1** – Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings – Part 1: Paint Coatings
 - AS/NZS 3750.15** – Paints for steel structures – Part 15: Inorganic zinc silicate paint

These documents may be purchased through the Reference Standards Australia website:

<https://www.standards.org.au/>

- The Poisons Standard June 2021:** Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) No. 33, Part 2: Control on Medicines and Poisons, Section Seven / Appendix I Paint or Tinters

This document is available from the Australian Government Federal Register of Legislation web site at:

<https://www.legislation.gov.au/Details/F2021L00650>

- The following APAS documents are referenced in this document:
 - AP-D001 Rules Governing How APAS® Operates
 - AP-D123 Restrictions on Ingredients in Product Formulations
 - AP-D152 APAS® Participating Manufacturers and Resellers
 - AP-D177 Rules Governing How Product Manufacturers participate in APAS®
 - AP-D181 Volatile Organic Compounds (VOC) Limits
 - AP-D192 Rules Governing APAS® Product Certification Scheme
 - AP-S0156 Epoxy Mastic High Build Two-Pack Coating for Rusted Steel

All APAS documents are available for download from the APAS website: <https://vs.csiro.au/apas/documents/>

All APAS specifications are available for download from the APAS website: <https://vs.csiro.au/apas/specifications/>

5 COMPOSITIONAL REQUIREMENTS

5.1 Binder

- Not applicable.

5.2 Volatiles

- The volatile portion shall typically be comprised of water (for Type 3 products) or hydrocarbons (for Type 4 products).
- For VOC content restrictions, refer to APAS document AP-D181.



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5.3 Pigmentation

- a) The pigmentation shall typically be a dispersion of metallic zinc dust in either a single or multi component water-borne or solvent-borne inorganic silicate medium.

5.4 Colour

- a) A high standard of decorative properties is not always required. These products are typically supplied in aluminium or MIO type finishes i.e., a metallic-like appearance.

6 PRODUCT APPROVAL REQUIREMENTS

6.1 General Requirements

- a) The product and its application for approval shall comply with the relevant requirements of APAS document AP-D192 during the life of the approval.

6.2 Technical Requirements

- a) The product shall comply with **all** the requirements of clause 7, Table 1 below.
- b) Subject to compliance with all the requirements of this specification, the level of Approval appropriate to the application shall be given to the system.

6.3 Health and Safety Requirements

- a) The manufacturer's Safety Data Sheet (SDS) must be studied closely prior to using the product and complied with during use of the product.
- b) As Type 4 products covered by this specification typically contain hydrocarbon solvents, the paint is considered flammable and should be stored away from all sources of heat or ignition.
- c) Containers should be resealed immediately after use and good ventilation provided during use to minimise the risk of fire or explosion and the long-term toxic effects of absorption of the vapour into the lungs.
- d) Care should be taken to avoid contact with the skin using protective clothing and barrier cream. All pumping equipment should be adequately earthed. A full-face air fed respirator should be used when spraying.
- e) Products intended for sale in Australia shall comply with all the requirements of the SUSMP. Products intended for sale in other countries shall comply with all local WHS and environmental requirements.
- f) The product shall comply with all requirements of clause 6.3 and 6.4 of APAS document AP-D192.



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7 TABLE 1: PERFORMANCE PROPERTIES

| TEST | AS/NZS 1580 METHOD | REQUIREMENTS | | | | | | | | | | |
|--|---|---|----------|---|----------|---|------------|---|-------------------|---|-----------|---|
| General Requirements | AS/NZS 3750.15 | Shall comply with all the requirements of the clause 2 Material Requirements , except clause 2.6.5 Slip factor (unless specifically specified by the purchaser as a mandatory requirement). All results shall be reported. | | | | | | | | | | |
| Thinning or Mixing Properties | 208.1 | Using 10% of manufacturers recommended thinner there shall be no signs of incompatibility. | | | | | | | | | | |
| Viscosity | 214.x | State method and record results. | | | | | | | | | | |
| Application after Storage Degree of Setting | AS/NZS 3750.15 2.5.3 2.6.3 | A sample of the product which has been stored at routine conditions for 12 months shall produce a uniform finish typical of the product type when applied by spray. The sprayed film shall still comply with the requirements of: Pot Life: ≥ 4 hrs. Handling Time: As per Table 2 of AS/NZS 3750.15. | | | | | | | | | | |
| Colour - Visual Comparison | 601.1 | Approximate match. | | | | | | | | | | |
| Resistance to Weathering | 457.1 (Cat 1) 481.1.7 481.1.8 481.1.9 481.1.10 481.3 | After 72 months exposure at all three exterior atmospheric exposure sites (listed in APAS document AP-D192, clause 12), the coating shall show no integrity failure i.e., at the end of 6 years, the ratings shall be: <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">Checking</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Cracking</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Blistering</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Flaking & Peeling</td> <td style="text-align: right;">0</td> </tr> <tr> <td>Corrosion</td> <td style="text-align: right;">0</td> </tr> </table> | Checking | 0 | Cracking | 0 | Blistering | 0 | Flaking & Peeling | 0 | Corrosion | 0 |
| Checking | 0 | | | | | | | | | | | |
| Cracking | 0 | | | | | | | | | | | |
| Blistering | 0 | | | | | | | | | | | |
| Flaking & Peeling | 0 | | | | | | | | | | | |
| Corrosion | 0 | | | | | | | | | | | |
| VOC Content | APAS AP-D181 | Refer to APAS document AP-D181 for method and limits. If the APAS specification is not listed on AP-D181, a declaration of VOC content is still required . | | | | | | | | | | |



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8 APPENDIX A

Document History

Status: Current
Version: 9
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| Document Version No.: | Date Published: | Summary of Changes: |
|-----------------------|-----------------|---|
| 9 | 13-09-2021 | <ul style="list-style-type: none">• General format changes• Updated background information in clause 2• Updated SUSMP information• Updated APAS website information |
| 8 | 11-12-2020 | <ul style="list-style-type: none">• Addition of Appendix A Document History and removal of the Editorial Note previously used in specification versions• Updated document to the current format• Updated internal and external document references• Inclusion of VOC Content requirement to Table 1 Performance Properties• Addition of "People + Product = Protection" to Footer |
| 7 | 11-11-2003 | <ul style="list-style-type: none">• Deleted reference to GPC numbering and incorporated a general format update |
| 6 | 11-04-2001 | <ul style="list-style-type: none">• Initiated the second stage of the move to new specification numbering with prominence given to the new number (previously GPC-C-29/8) |