

CHANGES TO SPECIFYING INORGANIC ZINC SILICATES TO AS/NZS 2312

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Introduction

Australian/ New Zealand Standard AS/NZS 2312 *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings* provides guidelines for selection and specification of coating systems for corrosion protection of structural steelwork. The designer can choose from a selection of systems based on exposed service life to first maintenance for various environments. AS/NZS 2312 has recently undergone a major update. A short summary of the major changes to AS/NZS 2312 and use of the standard is provided in Steel Advisor GTG1008. In addition changes have been made to the designation system for Inorganic Zinc Silicates which will be highlighted in this article.

Description of Inorganic Zinc Silicate Systems

A description of inorganic zinc silicate is provided in (El Sarraf, Clifton, 2011). Inorganic zinc silicate paints comprise powdered metallic zinc dispersed in a self curing inorganic silicate medium and are specified in AS/NZS 3750.15. Solvent borne inorganic zinc silicate uses an ethyl silicate medium (Type 4), while water borne inorganic silicate uses an alkyl (sodium, potassium or lithium) silicate medium (Type 3). "High ratio" water borne inorganic zinc silicate paints (Type 6) have a specified minimum silica to alkali metal ratio of 4.7:1 which are suited to high build single coat systems for severe marine environments. Also available is a weld-thru primer (Type 5) which contains lower zinc content and is used specifically for this purpose.

Of the two types of inorganic zinc silicate systems, water and solvent borne, solvent borne systems are generally considered to be more suited for New Zealand conditions. This is due to the high humidity and low temperature experienced in most locations around the country. However, in some parts of New Zealand, especially in summer, water borne systems can be used when a low humidity and higher temperatures are experienced in areas such as Hawkes Bay or similar climates. It is recommended that a Corrosion Specialist and/or Coating Supplier is contacted for advice on the optimum system to use for the given application.

Inorganic zinc silicate systems performance is dependent on a high quality steel surface preparation and on the specified film dry build thickness being achieved.

Changes to Inorganic Zinc Silicate Designation in AS/NZS 2312.1:2014

The superseded AS/NZS 2312:2002 contained three(3) system designations for inorganic zinc silicates. IZS1 designation was used for a solvent borne inorganic zinc silicate system

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with a dry film thickness (DFT) of 75µm. IZS2 designation was used for a water borne inorganic zinc silicate system with a dry film thickness (DFT) of 75µm. IZS3 designation was used for a water borne inorganic zinc silicate system with a dry film thickness of 125µm. There was no designation for a solvent borne inorganic zinc silicate system of the same dry film thickness. The designation system IZS3SB is used in (El Sarraf, Clifton, 2011) and has been commonly specified for where solvent borne inorganic zinc silicate system of 125µm DFT was required.

AS/NZS 2312:2014 contains four(4) designations and now includes a designation (IZS4) for a solvent borne inorganic zinc silicate system of 125µm DFT. The other designations (IZS1, IZS2 and IZS3) remain unchanged.

References

AS/NZS 2312:2002/2004, Guide to the Protection of Structural Steel against Atmospheric Corrosion by the Use of Protective Coatings, incorporating Amendment No 1:2004. Standards New Zealand, Wellington.

AS/NZS 2312.1: 2014 Guide To The Protection Of Structural Steel Against Atmospheric Corrosion By The Use Of Protective Coatings - Paint Coatings, Standards New Zealand, Wellington, 2014

AS/NZS 3750.15:1998; Paints for steel structures – Inorganic zinc silicates paint, Standards New Zealand, Wellington, 1998

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