SS 686:2022+C1:2023
(ICS 87.040)

SINGAPORE STANDARD

Specification for water-based enamel paint

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Contents

Foreword

This Singapore Standard was prepared by the Working Group on Water-based Paints set up by the Technical Committee on Surface Coatings under the purview of the Chemical Standards Committee.

This standard provides a water-based greener alternative to the solvent-based enamel paints in standards like SS 7:2021, “Specification for solvent-based gloss enamel paint” and SS 34:1998, “Specification for undercoat paint for gloss enamel”.

This is in line with the global trend of moving towards eco-friendly paints by reducing volatile organic compound (VOC) content, heavy metals and hazardous substances. This is also in tandem with the focus of further improving users’ and occupants’ comfort and well-being through the enhancement of indoor environmental quality per the Building and Construction Authority’s (BCA) green building masterplan. This will encourage the use of water-based paint products and support local sustainability movements which will ultimately help Singapore contribute towards global sustainability efforts.

Furthermore, health and safety issues related to solvent-based paints are increasingly regulated, thus the use of such products are expected to be reduced. The development of this standard will help in efforts to address the effects of VOC content.

This standard is based on a series of laboratory tests undertaken to develop a specification for a water-based enamel paint suitable for use in Singapore’s tropical climate.

In preparing this standard, reference was made to the following publications:

1.	AS 3750.16	Paints for steel structures – Part 16: Waterborne primer and paint for galvanized, zinc/aluminium alloy-coated and zinc primed steel
2.	ISO 1514:1993	Paints and varnishes – Standard panels for testing
3.	SS 7:1998	Specification for paint – Finishing, gloss enamel
4.	SS 34:1998	Specification for undercoat paint for gloss enamel
5.	SS 345:2015	Specification for algae resistant emulsion paint for decorative purposes

Acknowledgement is made to the International Organization for Standardization for their kind permission to reproduce materials from ISO 1514:1993, “Paints and varnishes – Standard panels for testing” into this standard. ISO standards can be purchased from Enterprise Singapore.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "mature standards". Mature standards will not be subject to further review, unless there are requests to review such standards.*

2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*

3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Specification for water-based enamel paint

1 Scope

This specification applies to an air-drying gloss paint for use on suitably prepared and primed interior and exterior metal and wood surfaces.

It is applicable to newly primed and previously coated surfaces.

Varying recoating duration may be experienced depending on the technology used in the paint formulation. It is therefore advised to follow paint manufacturers' recommendation to apply a fresh coat of paint in a timely manner.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 4800	Schedule of paints colours for building purposes
IEC 62321-7-2	Determination of certain substances in electrotechnical products – Part 7-2: Hexavalent chromium – Determination of hexavalent chromium (Cr(VI)) in polymers and electronics by the colorimetric method
ISO 11890-1	Paints and varnishes – Determination of volatile organic compound (VOC) content – Part 1 : Difference method
ISO 11890-2	Paints and varnishes – Determination of volatile organic compound (VOC) content – Part 2 : Gas-chromatographic method
SS 5	Methods of test for paints, varnishes and related materials
	Part A1 : Sampling
	Part A2 : Examination and preparation of samples for testing
	Part A3 : Standard panels for testing
	Part B2 : Determination of non-volatile matter content
	Part B4 : Condition in container
	Part B7 : Density
	Part B9 : Brushing properties
	Part B10 : Spraying properties
	Part B12 : Consistency of paints using the Stormer viscometer
	Part B13 : Fineness of grind
	Part C4 : Determination of low concentrations of mercury in paint by atomic absorption spectroscopy
	Part C6 : Determination of low concentrations of lead, cadmium and cobalt in paint by atomic absorption spectroscopy
	Part D6 : Hard dry time –Test using a mechanical recorder
	Part E1 : Determination of gloss value at 20°, 60°, and 85°

Part E2 : Determination of contrast ratio (opacity) of light-coloured paints at a fixed spreading rate

Part E3 : Visual comparison of the colour of paints

Part F2 : Scratch test

Part F6 : Determination of wet-scrub resistance

Part G11 : Methods of exposure to laboratory light sources – General guidance
Part G12 : Methods of exposure to laboratory light sources – Xenon-arc lamps

NOTE 1 – The review of the SS 5 series was completed in 2020.
NOTE 2 – IEC 62321-7-2 is used for the evaluation of Cr(VI) content in electrotechnical products and is also used for coatings.