

SS 685:2022
(ICS 87.040)

SINGAPORE STANDARD

**Specification for water-based primer for metal
and wood**



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Published by Enterprise Singapore

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ISBN 978-981-5073-32-4

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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 primers for metal and wood in standards like SS 494:2001, "Specification for lead and chromate-free primer for iron and steel substances" and SS 38, "Specification for aluminium wood primer for wood".

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 primer 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 34:1998 Specification for undercoat paint for gloss enamel
4. SS 38:1998 Specification for aluminium wood primer
5. SS 494:2001 Specification for lead and chromate-free primer for iron and steel substrates
6. SS 579:2015 Specification for water-based sealer for interior and exterior uses
7. SSPC-Paint 23 Latex primer for steel surfaces, performance-based published by The Society for Protective Coatings

Acknowledgement is made to the following organisations for their kind permission to reproduce materials from the documents stated below:

1. ASTM International

ASTM D6686-01(2019), Standard Test Method for Evaluation of Tannin Stain Resistance of Coatings, ASTM International, West Conshohocken, PA, 2019, www.astm.org.

2. International Organization for Standardization (ISO)

ISO 1514:1993, Paints and varnishes – Standard panels for testing

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.*
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Specification for water-based primer for metal and wood

1 Scope

This specification applies to a ready-to-use paint suitable for use as a primer in the protection of metal and wood surfaces under both indoor and outdoor conditions.

It is also applicable for new surfaces and re-coating of existing paintwork.

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.

ASTM D3359	Standard test methods for rating adhesion by tape test
ASTM D6686	Standard test method for evaluation of tannin stain resistance of coatings
ASTM G85	Standard practice for modified salt spray (fog) testing
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 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 E3 : Visual comparison of the colour of paints
	Part F2 : Scratch test

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.