SS 5 : Part A3 : 2020
ISO 1514:2016, MOD
(ICS 87.040)

SINGAPORE STANDARD

Methods of test for paints, varnishes and related materials

– Part A3 : Standard panels for testing

Singapore Standards Council

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Published by Enterprise Singapore

ISBN 978-981-48-9478-4

The content of this Singapore Standard was approved on 31 March 2020 by the Chemical Standards Committee (CSC) under the purview of the Singapore Standards Council.

First published, 1970
First revision, 1985
Second revision, 2003
Third revision, 2013
Fourth revision, 2020

CSC consists of the following members:

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Deputy Chairman	:	Er. Lucas Ng	*Individual Capacity*
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Co-opted Members	:	Ms Christina Loh	*Individual Capacity*
		Mr Pitt Kuan Wah	*Individual Capacity*

CSC set up the Technical Committee on Surface Coatings to oversee the preparation of this standard. The Technical Committee consists of the following members:

		Name	Representation
Chairman	:	Mr Lim Eng Kiat	*Individual Capacity*
Secretary	:	Ms Wendy Chai	*Standards Development Organisation @Singapore Chemical Industry Council*
Members	:	Mrs Grace Cheok-Chan	*Green Mark Department, Building and Construction Authority*
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		Mr Yap Chu Ing	*Housing & Development Board*
		Dr Yin Xi Jiang	*Singapore Surface Engineering Association*

The Technical Committee set up the Working Group on Methods of Test for Paints, Varnishes and Related Materials to prepare this standard. The Working Group consists of the following experts who contribute in their *individual capacity*:

		Name
Convenor	:	Dr Li Sihai
Members	:	Ms Guo Yilin
		Dr K A Khider Mohamed
		Ms Calista Lee
		Mr Lee Weyliang
		Ms Shirley Lim
		Mr Simplicio Escano Sala

The organisations in which the experts of the Working Group are involved are:

AdMaterials Technologies Pte Ltd
Akzo Nobels Paints (Asia Pacific)
Haruna Paint Pte Ltd
Nippon Paint (Singapore) Co. Pte Ltd
Pidilite Innovation Centre Pte Ltd
Setsco Services Pte Ltd
TÜV SÜD PSB Pte Ltd

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National Foreword

This Singapore Standard was prepared by the Working Group on Methods of Test for Paints, Varnishes and Related Materials set up by the Technical Committee on Surface Coatings under the purview of CSC.

It is a revision of SS 5 : Part A3 : 2013 "Methods of test for paints, varnishes and related materials – Part A3: Standard panels for testing".

This standard is a modified adoption of ISO 1514:2016, "Paints and varnishes – Standard panels for testing", published by the International Organization for Standardization. The deviations are as follows:

Clause/Subclause	Modification
3.1	*Added* description of steel panels intended for general testing after the first paragraph as follows: "Unless otherwise agreed upon between the purchaser and the seller, the steel shall be of one of the types specified below. Type 1 steel is a commercial quality cold-reduced type with a sheet thickness of 0.60 mm to 1.00 mm. Type CR1 steel, conforming to the requirements of ISO 3574, is a suitable commercial quality cold-reduced steel. The steel shall have a matt finish, with a surface roughness (*Ra*) of 0.63 μm to 1.65 μm. This finish is typical of steel used for painted surfaces on automobiles and appliances. Type 2 steel is a fully killed, cold-reduced type with a sheet thickness of 0.75 mm to 0.80 mm. Type CR4 steel, conforming to the requirements of ISO 3574, is a suitable fully killed cold-reduced steel. The panels shall show a minimum of surface roughness and discoloration. It is recommended that the surface roughness (*Ra*) of the steel, as received, does not exceed 1.2 μm. Type 3 steel is a commercial quality cold-reduced type with a sheet thickness of 0.25 mm to 0.60 mm. The steel shall have a smooth finish, with a surface roughness (*Ra*) not higher than 0.51 μm. This finish is useful for measuring colour, gloss, flexibility or adhesion of coatings, where it is desirable to minimize the effects of variability in the surface finish." Explanation: Provide useful details and easy reference.
5.1	*Added* reference to Annex ZA as follows: Refer to Annex ZA for characterization of some of the zinc and zinc-alloy coatings which are commercially available. Explanation: Provide useful details and easy reference.

12.2 and 13.2	*Replaced* "(23 ± 2) °C and at (50 ± 5) %" with "(27 ± 2) °C and at (80 ± 5) %". Explanation: To reflect the local climatic conditions.
Annex ZA	*Added* Annex ZA (informative) which provides details on characterization of some of the zinc and zinc-alloy coatings which are commercially available. Explanation: Provide useful details and easy reference.

To facilitate identification, the technical deviation is marked by a margin on the left of the standard.

NOTE 1 – Where appropriate, the words "International Standard" are read as "Singapore Standard".

NOTE 2 – Reference to International Standards are replaced by applicable Singapore Standards/Technical References.

NOTE 3 – Where numerical values are expressed as decimals, the comma is read as a full point.

For an overview of other parts to Singapore Standard 5, it is recommended to read the information in SS 5 : Part 0 "General introduction" which is issued separately.

This standard is expected to be used by paint, coatings and inks manufacturers, materials suppliers, test laboratories and related government agencies.

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.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This fifth edition cancels and replaces the fourth edition (ISO 1514:2004), which has been technically revised with the following changes:

a) the preparation by zinc-phosphate and chromate treatment, chromate conversion coating and acid chromating, was deleted;

b) the following materials have been amended: coil-coated panels, plastics panels, glass-fibre reinforced plastics composite panels (GRP), carbon-fibre reinforced plastics composite panels (CFP);

c) the former Annex B on characterization of zinc and zinc alloy coatings has been deleted;

d) a new Annex B on common substrate panel has been added;

e) the normative references have been updated.

Introduction

For many of the test methods most widely used for paints and varnishes, the type of panel used and the particular way in which it is prepared for use can affect the test results to a significant degree. Consequently, it is important to standardize as carefully as possible both the panels and the procedures used to prepare the panels prior to painting.

It is not possible to include in an International Standard all the types of panels and preparation needed for paint testing

This International Standard describes preparation procedures that are known to be reproducible and gives additional guidance in instances where there might still be doubt due to lack of international uniformity of the procedure.

Methods of test for paints, varnishes and related materials – Part A3 : Standard panels for testing

1 Scope

This International Standard specifies several types of standard panel and describes procedures for their preparation prior to painting. These standard panels are for use in general methods of test for paints, varnishes and related products (see Annex B).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1268 (all parts), *Fibre-reinforced plastics — Methods of producing test plates*

ISO 2409, *Paints and varnishes — Cross-cut test*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 4287, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*

ISO 8336, *Fibre-cement flat sheets — Product specification and test methods*

ISO 11949, *Cold-reduced electrolytic tinplate*

EN 520, *Gypsum plasterboards — Definitions, requirements and test methods*

EN 622 (all parts), *Fibreboards — Specifications*

EN 1396, *Aluminium and aluminium alloys — Coil coated sheet and strip for general applications — Specifications*

EN 10205, *Cold reduced blackplate in coil form for the production of tinplate or electrolytic chromium/chromium oxide coated steel*

EN 13523-1, *Coil coated metals — Test methods — Part 1: Film thickness*

EN 13523-22, *Coil coated metals — Test methods — Part 22: Colour difference — Visual comparison*

EN 15283-2, *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Part 2: Gypsum fibre boards*

EN 16245-1, *Fibre-reinforced plastic composites — Declaration of raw material characteristics — Part 1: General requirements*