



SLOVENSKI STANDARD

oSIST prEN ISO 4528:2021

01-september-2021

Steklasti in porcelanski zaključni emajli - Vodilo za izbor preskusnih metod za emajlirane površine izdelkov (ISO/DIS 4528:2021)

Vitreous and porcelain enamel finishes - Guide to selection of test methods for vitreous and porcelain enamelled areas of articles (ISO/DIS 4528:2021)

Emails und Emaillierungen - Leitlinie zur Auswahl von Prüfverfahren für emaillierte Flächen von Erzeugnissen (ISO/DIS 4528:2021)

Finitions en émail vitrifié - Guide pour le choix des méthodes d'essai applicables aux surfaces émaillées de pièces (ISO/DIS 4528:2021)

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ICS:

25.220.50 Emajlne prevleke Enamels

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Vitreous and porcelain enamel finishes — Guide to selection of test methods for vitreous and porcelain enamelled areas of articles

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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ISO/DIS 4528:2021(E)

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).

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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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

ISO 4528 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 4528:2015), which has been technically revised.

Introduction

Standard test methods are required for measuring and controlling the properties and hence also the quality of vitreous and porcelain enamelled finishes.

To ensure that these finishes meet the requirements of various applications, test methods have to be chosen to measure the properties that are important to the function of a specific enamelled article.

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Vitreous and porcelain enamel finishes — Guide to selection of test methods for vitreous and porcelain enamelled areas of articles

WARNING — This International Standard might not be compliant with some countries' health and safety legislation and calls for the use of substances and/or procedures that can be injurious to health if adequate safety measures are not taken. This International Standard does not address any health hazards, safety, or environmental matters and legislations associated with its use. It is the responsibility of the user of this International Standard to establish appropriate health, safety, and environmentally acceptable practices and take suitable actions to comply with any national and international regulations. Compliance with this International Standard does not of itself confer immunity from legal obligations.

1 Scope

This International Standard is a guide to the selection of test methods for evaluating the performance of vitreous and porcelain enamelled finishes in different applications. It references the test methods available for measuring the properties of these finishes and correlates these properties to the requirements of specific enamelled articles.

It is limited for the most part to test methods that are described in ISO International/European Standards and does not provide acceptance criteria or performance limits for the properties.

This International Standard applies to all enamelled articles irrespective of their basis metals.

2 Selection of test methods

The properties of enamelled surfaces are listed in [Table 1](#), along with the numbers of the ISO test methods by which they may be measured. The table identifies the tests that should be performed to assess the performance of 30 specific enamelled articles. Suitable standard test methods are selected by noting the specific tests recommended in the column for each of the enamelled articles.

The following symbols are used in [Table 1](#).

- + testing in accordance with the method given is suitable;
- (+) the test method that is cited may need to be modified to take into account special requirements of a specific application;
- - the test is not applicable and/or the test method is not suitable.

Table 1 — Test methods for assessing the properties of enamelled articles

No.	Property	ISO or EN test method	Number and description of enamelled article			
			1 Cookers (top plate)	2 Cookers (baking compartment ^a , grills, burner caps, pan supports, accessories)	3 Cookers [other components (excluding cookware)]	4 Room heating equipment
Methods of assessing resistance to chemical attack in various solutions						
1	Cold citric acid	ISO 28706-1	+	+	+	+
2	Cold sulfuric acid	ISO 28706-1	-	-	+ ^b	+ ^b
3	Boiling citric acid	ISO 28706-2	-	-	-	-
4	Boiling sulfuric acid	ISO 28706-2	-	-	-	-
5	Condensing hydrochloric acid vapour	ISO 28706-2	-	-	-	-
6	Condensing products of combustion vapour	EN 1856-1, Annex A	-	-	-	-
7	Hot sodium hydroxide	ISO 28706-4	-	-	-	-
8	Boiling water	ISO 28706-2:	-	-	-	-
9	Water vapour	ISO 28706-2	-	-	-	-
10	Hot standard detergent	ISO 28706-3	-	-	-	-
11	Liquid cleaners	^c	+	+	+	+
12	Weathering resistance	^d	-	-	-	-
13	Special corrosive substances	ISO 28706-4	-	-	-	-
14	Special corrosive substances	ISO 28706-5	-	-	-	-
15	Release of metal-ions for food contact articles	ISO 4531	-	+	-	-
16	Release of lead and cadmium	ISO 4531	-	-	-	-
Methods of assessing thickness and other properties						
17	Thickness	ISO 2178, ISO 2360	+	+	+	+
18	Reflectivity and gloss	ISO 2813	-	-	-	-
19	Waviness	^c	-	-	-	-
20	Colour	ISO 105-J03/ISO 7724 (all parts)	+	+	+	+
21	Defects (visual inspection)	^c	+	+	+	+
2	Continuity and porosity (low voltage test)	ISO 8289-1	-	-	-	-
23	Continuity and porosity (low voltage test)	ISO 8289-2	-	-	-	-
24	Continuity and porosity (high voltage test)	ISO 2746	-	-	-	-
25	Resistance to thermal shock	ISO 2747	-	-	-	-
26	Resistance to thermal shock	ISO 28763, Annex A	+	+	-	+
27	Resistance to thermal shock	ISO 13807	-	-	-	-
28	Resistance to heat	ISO 4530	+	+	+	+
29	Temperature class	EN 1859	-	-	-	-
30	Resistance to impact	ISO 4532	+	+	+	+
31	Adherence	EN 10209, Annex C	+	+	+	+
32	Abrasion resistance	^c	+	+	+	-
33	Subsurface abrasion resistance	ISO 6370-2	-	-	-	-
34	Scratch resistance	ISO 15695	-	-	-	-
35	Scratch hardness	EN 15771	-	-	-	-