SLOVENSKI STANDARD
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Barve in laki - Elektrodepozicijski premazi - 12. del: Usedanje na vodoravnih površinah (ISO 22553-12:2020)

Paints and varnishes - Electro-deposition coatings - Part 12: Sedimentation on horizontal areas (ISO 22553-12:2020)

Beschichtungsstoffe - Elektrotauchlacke - Teil 12: Sedimentation auf waagerechten Flächen (ISO 22553-12:2020)

Peintures et vernis - Peintures d'électrodéposition - Partie 12: Sédimentation sur des surfaces horizontales (ISO 22553-12:2020)

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Paints and varnishes — Electro-deposition coatings —

Part 12: Sedimentation on horizontal areas

Peintures et vernis — Peintures d'électrodéposition —

Partie 12: Sédimentation sur des surfaces horizontales

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Foreword

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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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

A list of all parts in the ISO 22553 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Paints and varnishes — Electro-deposition coatings —

Part 12:
Sedimentation on horizontal areas

1 Scope

This document specifies a method for assessing the sedimentation of electro-deposition coating materials on horizontal surfaces used for automotive industries and other general industrial applications, e.g. chiller units, consumer products, radiators, aerospace, agriculture.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 4618, *Paints and varnishes — Terms and definitions*

ISO 22553-1, *Paints and varnishes — Electro-deposition coatings — Part 1: Vocabulary*

ISO 23321, *Solvents for paints and varnishes — Demineralized water for industrial applications — Specification and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and ISO 22553-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

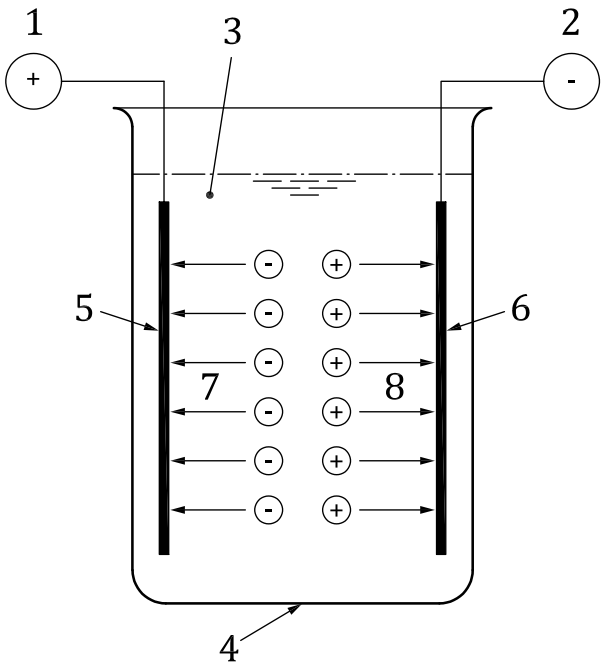
4 Principle

An L-shaped bent test panel is put into the electro-deposition coating material and coated in accordance with the product-specific specifications. After the test panel is stoved, it is visually evaluated for surface defects.

5 Apparatus and materials

Typical laboratory apparatus, together with the following:

5.1 Laboratory deposition system, consisting of a deposition tank with tank recirculation and DC voltage equipment – see Figure 1.



Key

1	anode	5	anode (counter electrode for cathodic e-coat)
2	cathode	6	cathode (test panel for cathodic e-coat)
3	electro-deposition coating material	7	acid
4	deposition tank	8	electro-deposition coating material

Figure 1 — Schematic diagram of a laboratory deposition system with cathodic e-coat material as example

The container of the deposition system shall be filled with the electro-deposition coating material and the tank circulation (stirrer or pump) initiated. Subsequently, the test panels shall be immersed in the container. The deposition conditions shall be adjusted according to the specification and the deposition process initiated. Upon completion of the deposition process the test panels shall be removed from the container and thoroughly rinsed using demineralized water specified in ISO 23321, so that any excess of the electro-deposition coating material (cream coat) is removed.

5.2 Film thickness measuring device, maximum permissible error 0,1 µm.

5.3 Thermometer, with a reading accuracy of 0,1 °C.

5.4 Timer, with a reading accuracy of 1 s.

5.5 Oven in which the test can be carried out reliably and using which the specified or agreed test temperature can be held to within ±2 °C (for temperatures up to 150 °C) or ±3,5 °C (for temperatures between 150 °C and 200 °C).

6 Test specimen

L-shaped phosphated test panel bent by (90 ± 5)° (L-panel) with a horizontal surface width of (70 ± 5) mm (see Figure 2).

Dimensions in millimetres

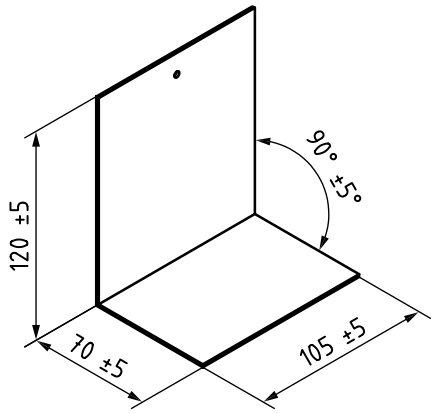


Figure 2 — L-shaped bent test panel

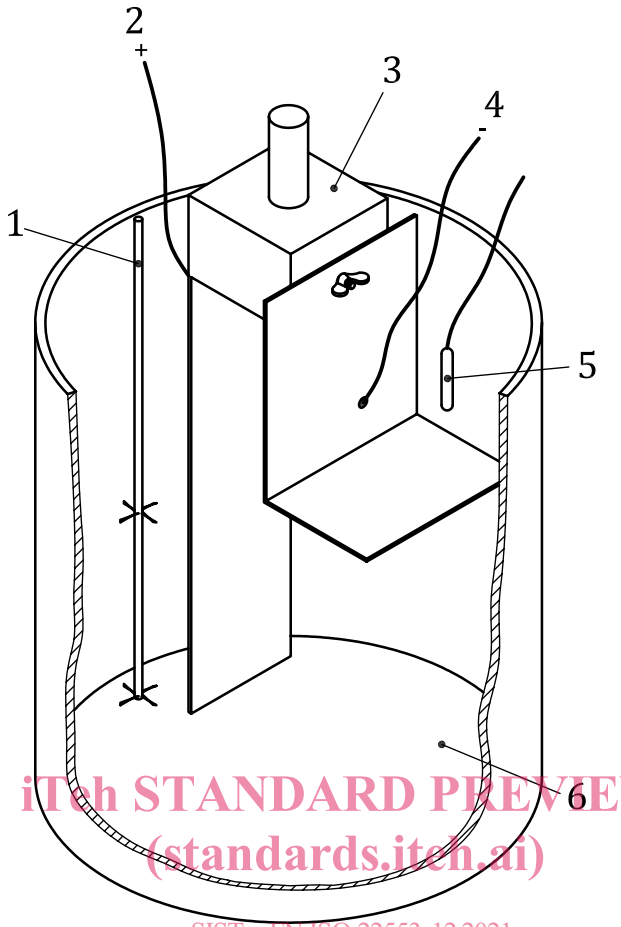
7 Number of determinations

Carry out one single determination.

8 Procedure

Fill the tank with the electro-deposition coating material and homogenize the electro-deposition coating material, e.g. using a stirring machine with paddle stirrer (diameter min. 50 mm) at 500 min^{-1}, so that sufficient tank circulation is visually detectable.

Put the L-panel in the laboratory deposition system and connect the anode and cathode to the current source. Ensure that the horizontal part of the L-panel is facing away from the counter electrode – see Figure 3. Continue stirring the electro-deposition coating material with a stirring machine or a magnet stirrer.



Key

1 stirrer
2 positive pole
3 coating unit consisting of non-conductive rack, L-panel and counter electrode
4 negative pole
5 temperature sensor/thermometer
6 tank

Figure 3 — Example of an L-panel in a laboratory deposition system

Set the bath temperature to the temperature as specifically required for the product, to ±0,5 °C.

NOTE Usually the temperature is in the range of 25 °C to 35 °C.

Select the deposition voltage and deposition time so that the dry-film thickness to be expected of the electro-deposition coating on the L-panel corresponds to the nominal dry-film thickness of the e-coat material.

Increase the voltage to the selected coating voltage (if necessary without series resistor). Maintain this voltage over the selected time.

Remove the L-panel after coating, rinse with demineralized water and dry/stove it in accordance with the specification for the electro-deposition coating material.