SLOVENSKI STANDARD
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Barve in laki - Elektrodepozicijski premazi - 7. del: Električna upornost mokre plastii filma (ISO 22553-7:2020)

Paints and varnishes - Electro-deposition coatings - Part 7: Electrical wet-film resistance (ISO 22553-7:2020)

Beschichtungsstoffe - Elektrotauchlacke - Teil 7: Nassfilmwiderstand (ISO 22553-7:2020)

Peintures et vernis - Peintures d'électrodéposition - Partie 7: Résistance électrique du film frais (ISO 22553-7:2020)

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Paints and varnishes — Electrodeposition coatings —

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Peintures et vernis — Peintures d'électrodéposition —

Partie 7: Résistance électrique du film frais

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Contents

Page

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.

Introduction

The electrical wet-film resistivity provides information about the deposition behaviour of electro-deposition coatings, i.e. about film thickness and changes in film thickness, throwing power and possibly also the deposition performance under defined conditions.

Paints and varnishes — Electro-deposition coatings —

Part 7:
Electrical wet-film resistance

1 Scope

This document specifies a method for determining the wet-film resistivity of an electro-deposition coating (e-coat) 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 1514, *Paints and varnishes — Standard panels for testing*

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, ISO 22553-1 and the following 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/

3.1
electrical resistance
R
ratio of the potential difference along a conductor and the current through the conductor

Note 1 to entry: Resistance is given by Ohm's law shown in Formula (1):

$$R=\frac{U}{I} \tag{1}$$

where

U is the potential difference;

I is the current.

The unit of electrical resistance is the ohm (Ω), given by:

$$1\,\text{ohm} = \frac{1\,\text{volt}}{1\,\text{ampere}}$$

The electrical resistance depends on the material of the conductor, its dimensions (length and cross-section) and its temperature.

[SOURCE: ISO 15091:2019, 3.1]

3.2
resistivity
ρ
resistance per unit length of a material of cross-sectional area

Note 1 to entry: Resistivity is given by Formula (2):

$$\rho = R \cdot \frac{A}{l} \tag{2}$$

where

A is the cross-sectional area of the conductor;

l is the length of the conductor.

The unit of electrical resistivity is the ohm · metre (Ω·m).

[SOURCE: ISO 15091:2019, 3.2]

3.3
electrical wet-film resistance
R_w
measured total *electrical resistance* (3.1) of the electro-deposition coating including substrate, pre-treatment and other coats

Note 1 to entry: When the electrical resistance is being measured, the technical measurement conditions also have an influence, e.g. membrane, measurement electrode.

Note 2 to entry: The unit of electrical wet-film resistance is the ohm (Ω).

3.4
dynamic electrical wet-film resistance
$R_{w,\,dyn}\,(t)$
measured total *electrical resistance* (3.1) of the electro-deposition coating including substrate, pre-treatment and other coats as a function of the deposition time

Note 1 to entry: The unit of *electrical wet-film resistance* (3.3) is the ohm (Ω).

3.5
static electrical wet-film resistance
$R_{w,\,sta}\,(t_{end})$
measured total *electrical resistance* (3.1) of the electro-deposition coating including substrate, pre-treatment and other coats as read off at the end of the deposition time

Note 1 to entry: The unit of *electrical wet-film resistance* (3.3) is the ohm (Ω).