# SLOVENSKI STANDARD
# oSIST prEN ISO 22553-8:2021

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**Barve in laki - Elektrodepozicijski premazi - 8. del: Gostota električnega naboja (ISO 22553-8:2020)**

Paints and varnishes - Electro-deposition coatings - Part 8: Electric charge density (ISO 22553-8:2020)

Beschichtungsstoffe - Elektrotauchlacke - Teil 8: Abscheideäquivalent (ISO 22553-8:2020)



Peintures et vernis - Peintures d'électrodéposition - Partie 8: Charge électrique volumique (ISO 22553-8:2020)



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# Paints and varnishes — Electrodeposition coatings —

## Part 8: Electric charge density



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# Foreword

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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 electric charge density provides information about the efficiency of the deposition process during electro-deposition coating.

If measurement of the electrical wet-film resistance in accordance with ISO 22553-7 is necessary, this can be specified in the test assembly provided.

# Paints and varnishes — Electro-deposition coatings —

# Part 8:
# Electric charge density

## 1 Scope

This document specifies a method for determining the electric charge density 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 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, 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**
**electric charge density**
volume electric charge
$\rho_A$
quotient of electrical charge $Q$ and volume $V$:

$$\rho_{\square} = \frac{Q}{V}$$

Note 1 to entry: The electric charge density is expressed in coulombs per cubic metre ($C \cdot m^{-3}$).

Note 2 to entry: $1\ C \cdot m^{-3} = 1\ A \cdot s \cdot m^{-3}$.

**3.2**
**practical dry-film density**
practically determined density of a dried and cured coating

[SOURCE: ISO 3233-3:2015, 3.4, modified: a hyphen was added to the term, between "dry" and "film".]

**3.3**
**theoretical dry-film density**
coating density calculated from the densities of the solvents, coating materials and the non-volatile-matter content of the coating material

[SOURCE: ISO 3233-3:2015, 3.6, modified: a hyphen was added to the term, between "dry" and "film".]

## 4 Principle

A defined area of a test panel is coated and the coating is stoved. The film thickness is measured. The determination is carried out between the minimum and critical current densities.

## 5 Apparatus and materials

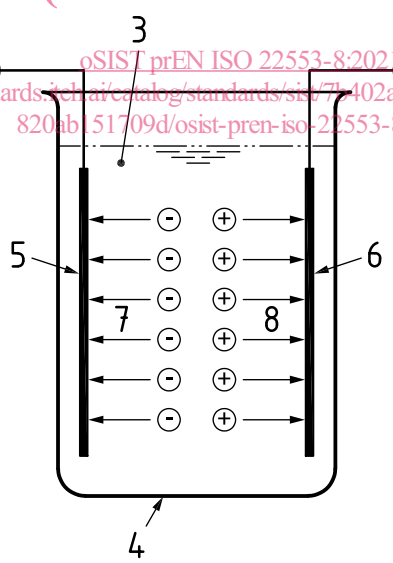
Typical laboratory apparatus, together with the following:

### 5.1 Laboratory deposition system.



A laboratory deposition system consists 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 an 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