
**Paints and varnishes —
Electro-deposition coatings —**

**Part 1:
Vocabulary**

*Peintures et vernis — Peintures d'électrodéposition —
Partie 1: Vocabulaire*



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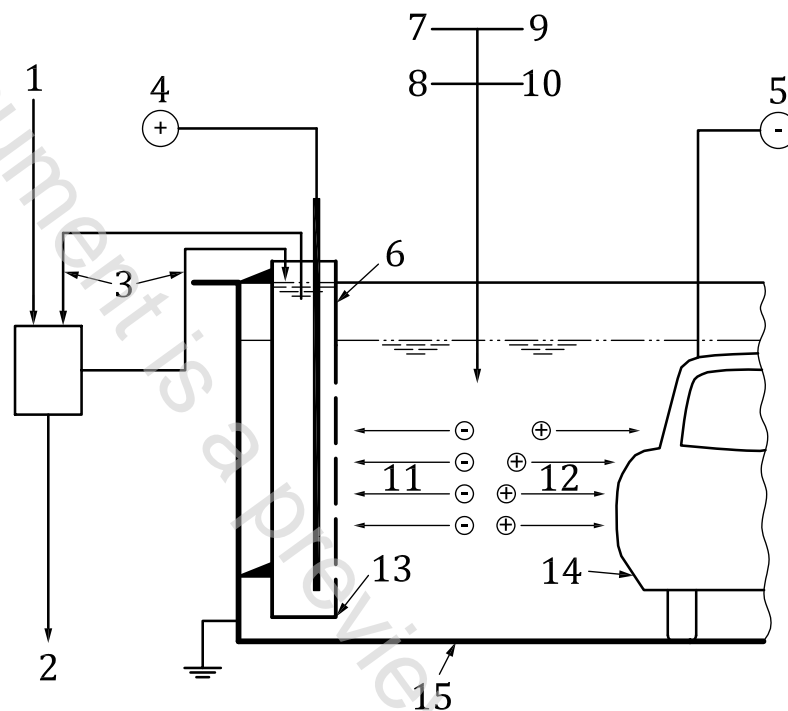
This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

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

During the electro-deposition coating process, the non-volatile matter content from water-thinnable electro-deposition coating materials is deposited on the workpiece caused by an electrophoretic process. During that process, the areas on the inside as well as on the outside of the workpiece, including all cavities, are reached. Depending on whether the workpiece is used as cathode or anode, it is distinguished between cathodic or anodic deposition. The cathodic electro-deposition coating process is commonly used (see [Figure 1](#)).



Key

- | | |
|------------------------|--|
| 1 demineralized water | 9 solvent |
| 2 wastewater treatment | 10 demineralized water |
| 3 anolyte circulation | 11 acid |
| 4 anode | 12 electro-deposition coating material |
| 5 cathode | 13 ion-selective membrane |
| 6 anode box | 14 vehicle body |
| 7 binder | 15 cathodic e-coat tank |
| 8 pigment | |

Figure 1 — Example of a deposition processes during cathodic electro-deposition coating

With the combination of binder, pigment and deposition process, a very resistant coating is generated on the workpiece after hardening, which significantly contributes to the corrosion protection in interior and exterior areas.

The electric properties of the material are also significant for the electric power consumption of the process (density of volume charge).

Since the e-coat is jointly responsible for the total appearance of the coating system, a good run of the coating without visible defects is generally emphasized.

Consequently, for extensive corrosion protection and for sealing the workpiece, an additional application of seam-sealing materials, adhesives or foams is recommended.

Inside the e-coat tanks, there is a possibility of bacterial contamination due to the dragged-in material and the physical conditions (heat, aqueous media, sources of carbon, etc.).

This document specifies terms and definitions for electro-deposition coatings. The subsequent parts of the ISO 22553 series specify methods for the characterization of electro-deposition coatings and test methods. An overview on the test methods is given in [Annex A](#).

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Paints and varnishes — Electro-deposition coatings —

Part 1: Vocabulary

1 Scope

This document defines terms for electro-deposition coatings.

It is applicable to electro-deposition coatings for automotive industries and other general industrial applications, e.g. chiller units, consumer products, radiators, aerospace, agriculture.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

density of volume charge

ρ_A

quotient from an electrical charge, Q , and a volume, V , as shown by the formula:

$$\rho_A = \frac{Q}{V}$$

Note 1 to entry: The density of volume charge is expressed in coulombs per cubic metre (C/m³).

Note 2 to entry: 1 C/m³ = 1 A·s/m³.

3.2

deposition voltage tank voltage

U

voltage adjusted on the respective device, in order to deposit an *electro-deposition coating material* (3.9), by an anodic or cathodic method, with a film thickness specified for that coating material

Note 1 to entry: The deposition voltage is given in volts (V).

3.3

deposition time

time necessary to obtain the required film thickness

3.4

anodic electro-deposition coating process anodic e-coating process

variant of the electro-deposition coating where the coated component is connected as the anode and the counter electrode is connected as the cathode