INTERNATIONAL STANDARD

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# Paints and varnishes — Electrodeposition coatings —

## Part 11: Bath stability

*Peintures et vernis — Peintures d'électrodéposition —*

*Partie 11: Stabilité du bain*



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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.

# Paints and varnishes — Electro-deposition coatings —

# Part 11:
# Bath stability

## 1 Scope

This document specifies a method for assessing the bath stability of electro-deposition coatings 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 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content*

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

ISO 14680-1, *Paints and varnishes — Determination of pigment content — Part 1: Centrifuge method*

ISO 14680-2, *Paints and varnishes — Determination of pigment content — Part 2: Ashing method*

ISO 15091, *Paints and varnishes — Determination of electrical conductivity and resistance*

ISO 19396-1, *Paints and varnishes — Determination of pH value — Part 1: pH electrodes with glass membrane*

ISO 22518, *Paints and varnishes — Determination of solvents in water-thinnable coating materials — Gas-chromatographic method*

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

ISO 22553-5, *Paints and varnishes — Electro-deposition coatings — Part 5: Determination of sieve residue*

ISO 22553-8[1)], *Paints and varnishes — Electro-deposition coatings — Part 8: Electric charge density*

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/

1) Under preparation. Stage at the time of publication: ISO/FDIS 22553-8:2020.

## 4 Principle

An electro-deposition coating material is aged at a specified temperature over a defined period of time. The properties of the electro-deposition coating material before and after ageing are compared.

## 5 Apparatus and materials

Typical laboratory apparatus, together with the following:

**5.1 5-l container**.

**5.2 Stirrer**.

**5.3 Thermostat system**.

**5.4 Timer**, with a reading accuracy of 1 s.

## 6 Number of determinations

Carry out one single determination.

## 7 Procedure



### 7.1 Preparation of the electro-deposition coating material

Prepare at least 6 l of electro-deposition coating material consisting of binder, pigment paste and demineralized water as specified in ISO 23321 (for water-based coating materials) as per the manufacturer's specifications. Homogenize at a temperature of (28 ± 3) °C, for example, by means of a stirring machine with paddle stirrer (diameter min. 50 mm) at 500 $min^{-1}$.

### 7.2 Blank test

Determine the following parameters for the prepared electro-deposition coating material (see 7.1):

— pH value in accordance with ISO 19396-1;

— conductivity in accordance with ISO 15091;

— solvent fraction in accordance with ISO 22518;

— non-volatile-matter content in accordance with ISO 3251;

— pigment content in accordance with ISO 14680-1 (centrifuge method) or in accordance with ISO 14680-2 (ashing method);

— sieve residue of the total volume (5 l) in accordance with ISO 22553-5;

— volume charge density in accordance with ISO 22553-8.

NOTE The pigment-binder ratio can also be determined instead of the ash content.

### 7.3 Ageing of the sample

Measure 5 l from the prepared electro-deposition coating material (see 7.1) and stir it without it being covered for approx. 90 days at (30 ± 2) °C.

During this ageing, check the volume loss regularly (e.g. daily) and top up with demineralized water if necessary. Note the amount of water added and state it in the test report. The volume shall be topped up to 5 l again after 90 days.

### 7.4 Determination of the properties of the sample after ageing

Determine the following parameters after approximately 30, 60 and 90 days of ageing of the sample:

— pH value in accordance with ISO 19396-1;

— conductivity in accordance with ISO 15091;

— solvent fraction in accordance with ISO 22518;

— non-volatile-matter content in accordance with ISO 3251;

— pigment content in accordance with ISO 14680-1 (centrifuge method) or in accordance with ISO 14680-2 (ashing method);

— sieve residue of the total volume (5 l) in accordance with ISO 22553-5;

— volume charge density in accordance with ISO 22553-8.

## 8 Evaluation

State the measurement results of the blank sample and of the aged sample.



## 9 Precision

No precision data is currently available.



## 10 Test report

The test report shall contain at least the following information:

a) all details necessary for the identification of the tested coating material;

b) a reference to this document (i.e. ISO 22553-11:2020);

c) the tank temperature (see 7.3);

d) the amount of water added as a function of time (see 7.3);

e) the result of the test in accordance with Clause 8;

f) every agreed or other deviation from the specified test method;

g) every unusual observation (anomaly) during the test;

h) the date of the test.

**ICS 87.040**

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