

**Paints and varnishes - Determination of electrical conductivity and resistance (ISO 15091:2012)**

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ICS 87.040

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ICS 87.040

English Version

Paints and varnishes - Determination of electrical conductivity  
and resistance (ISO 15091:2012)

Peintures et vernis - Détermination de la conductivité et de  
la résistance électriques (ISO 15091:2012)

Beschichtungsstoffe - Bestimmung der elektrischen  
Leitfähigkeit und des elektrischen Widerstandes (ISO  
15091:2012)

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## Foreword

This document (EN ISO 15091:2012) has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" in collaboration with Technical Committee CEN/TC 139 "Paints and varnishes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

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### Endorsement notice

The text of ISO 15091:2012 has been approved by CEN as a EN ISO 15091:2012 without any modification.

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# Paints and varnishes — Determination of electrical conductivity and resistance

## 1 Scope

This International Standard specifies a method for determining the electrical conductivity and the electrical resistance of coating materials. The conductivity is usually measured for water-borne paints and varnishes, including electrodeposition coating materials, and the resistance is usually measured for solvent-borne paints and varnishes. If required, the resistivity of the coating material is calculated from either of these measurements. The method is applicable to products having a conductivity less than 5  $\mu\text{S}/\text{cm}$ , corresponding to a resistivity greater than 200  $\text{k}\Omega\cdot\text{cm}$ .

The conductivity of coating materials influences their processability in the presence of an electric field. This is particularly important for electrodeposition paints and coating materials which are processed electrostatically.

## 2 Normative references

The following referenced documents are indispensable for the application 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 1513, *Paints and varnishes — Examination and preparation of test samples*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### electrical resistance

$R$

ratio of the potential difference along a conductor and the current through the conductor

NOTE Resistance is given by Ohm's law:

$$R = \frac{U}{I} \quad (1)$$

where

$U$  is the potential difference;

$I$  is the current.

The unit of electrical resistance is the ohm ( $\Omega$ ), 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.