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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33328-2016

**Paints and varnishes -- Determination of electrical conductivity
and resistance**

色漆和清漆 电导率和电阻的测定

(English Translation)

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the re-drafting method to modify ISO 15091.:2012 "Determination of conductivity and resistance of paints and varnishes".

There are technical differences between this standard and ISO 15091.:2012, and the terms involved in these differences have been passed through the margin (|), and a list of the corresponding technical differences and their causes is given in Appendix A.

This standard has also made the following editorial changes.

- modified the representation of the example in Chapter 8, listed in tabular form;

--- Added Appendix A (informative) "Technical differences between this standard and ISO 15091.:2012 and its causes".

This standard is proposed by the China Petroleum and Chemical Industry Association.

This standard is under the jurisdiction of the National Committee for Standardization of Coatings and Pigments (SAC/TC5).

The drafting unit of this standard. China Shipbuilding Industry Corporation No. 725 Research Institute, CNOOC Changzhou Paint Chemical Research Institute Co., Ltd., China Aviation Bermuda New Materials Technology Engineering Co., Ltd., Shenzhen Yi Lijia Ecological Building Materials Co., Ltd., Zhejiang Yu Tong New Material Co., Ltd., Beijing Bihaihai Corrosion Protection Industry Co., Ltd., Shanghai Yipin Pigment Co., Ltd., COSCO Kansai Paint Chemical Co., Ltd., Guangdong Tu Shi Building Materials Co., Ltd., Pompeii Paint Oil Trading (Shanghai) Co., Ltd., Guangzhou standard Geda Laboratory Equipment Co., Ltd.

1 Scope

This standard specifies a method for determining the conductivity and resistance of coatings.

This standard applies to the electrophoretic coating, including water-based paint, varnish conductivity determination and solvent-based paint, varnish resistance determination. Such as There is a requirement that the resistivity of the coating can be calculated from these measured conductivity or resistance.

When there is an electric field, the conductivity will affect the construction of the paint, which is particularly important for electrophoretic coating and electrostatic coating.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 3186 Sampling of raw materials for paints, varnishes and varnishes and varnishes (GB/T 3186-2006, ISO 15528.:2000, IDT) GB/T 6682 Analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD) GB/T 20777 Inspection and preparation of paints and varnishes (GB/T 20777-2006, ISO 1513.:1992, IDT)

3 Terms and definitions

The following terms and definitions apply to this document.

Resistance electricalists the ratio of the voltage difference across the conductor to the current through the conductor.

Note: According to Ohm's law according to formula (1) to calculate the resistance.

Where.

R --- resistance, in ohms (ohm);

U - voltage difference in volts (V);

I - current in amperes (A).

The resistance depends on the material of the conductor, the geometry (length and cross-sectional area), and the temperature.

Resistivity the unit resistance per unit length of the cross-sectional area of the material.

Note: Calculate the resistivity according to formula (2) $\rho = R \times (2)$ where.

ρ --- resistivity in ohm (ohm · m);

R --- resistance, in ohms (ohm);

A - conductor cross - sectional area in square meters (m²);

l --- conductor length, in meters (m).