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Paints and varnishes — Wettability —

Part 1: Vocabulary and general principles

Peintures et vernis — Mouillabilité —

Partie 1: Vocabulaire et principes généraux

Reference number
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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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139, *Paints and varnishes,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19403-1:2017), which has been technically revised.

The main changes are as follows:

— in the title, "Terminology" has been changed to "Vocabulary";

— text from the Scope has been moved to the Introduction;

— 3.1.5, 3.1.7, 3.1.8 and 3.1.9 have been slightly modified;

— the following terms and definitions have been added: hydrophobic, superhydrophobic, hydrophilic, superhydrophilic and superhydrophobic coating;

— Clause 4 has been moved to Annex A;

— Figure 1 and Figure A.1 have been updated;

— the designation of the X-axis in Figure A.2 has been corrected;

— the derivation of Formula (A.4) has been improved;

— Formula (A.6) has been corrected;

— bibliographic entries [1] and [12] have been added and cross-references updated.

A list of all parts in the ISO 19403 series can be found on the ISO website.

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Introduction

The ISO 19403 series specifies optical test methods:

— for the measurement of the contact angle;

— for the determination of the surface free energy of a solid surface, including the polar and dispersive fractions;

— for the determination of the surface tension of liquids, including the polar and dispersive fractions;

— for the checking of the measurement arrangement with reference materials.

The ISO 19403 series can be applied for the characterization of substrates, coatings and coating materials.

The applicability can be restricted for liquids with non-Newtonian flow behaviour (see DIN 1342-1[4]).

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Paints and varnishes — Wettability —

Part 1: Vocabulary and general principles

1 Scope

This document specifies general terms and definitions for wettability. Some general principles are described in Annex A. This document is intended to be used in conjunction with ISO 4618.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms relating to determination of the surface free energy

3.1.1
chemical homogeneity
chemically homogeneous composition of a surface to be examined

Note 1 to entry: The definition regards a purely qualitative assessment of the surface. Regarding the measurement of the contact angle, a surface is considered chemically and topologically sufficiently homogeneous if no significant differences of the contact angles can be determined when measuring on several locations on the surface. The significance limits can be specified by the user in accordance with standard laboratory methods.

3.1.2
topological homogeneity
uniformity of the macroscopic surface, including evenness and smoothness

Note 1 to entry: The definition regards a purely qualitative assessment of the surface. Regarding the measurement of the contact angle, a surface is considered chemically and topologically sufficiently homogeneous if no significant differences of the contact angles can be determined when measuring on several locations on the surface. The significance limits can be specified by the user in accordance with standard laboratory methods.

3.1.3
interfacial free energy
interfacial tension
σ
energy or tension resulting from intermolecular forces on interfaces

Note 1 to entry: The term interfacial energy pertains to the interaction with solid surfaces and is indicated as free energy in relation to the surface unit (mJ/m^2). The term interfacial tension pertains to the interaction with liquids and is indicated as force per length unit (mN/m). The respective indices “l” for “liquid” and “s” for “solid” indicate the phases involved.

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