
Paints and varnishes — Wettability —
Part 3:
Determination of the surface tension of
liquids using the pendant drop method

Peintures et vernis — Mouillabilité —

Partie 3: Détermination de la tension superficielle des liquides par la
méthode de la goutte pendante

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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 19403 series can be found on the ISO website.

Paints and varnishes — Wettability —

Part 3:

Determination of the surface tension of liquids using the pendant drop method

1 Scope

This document specifies a test method to measure the surface tension of liquids with an optical method using the pendant drop. The method can be applied for the characterization of liquid coating materials. The applicability can be restricted for liquids with non-Newtonian rheology¹⁾.

NOTE For other methods to determine the surface tension, see e.g. EN 14370 and ISO 1409.

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 2811 (all parts), *Paints and varnishes — Determination of density*

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

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

ISO 19403-1, *Paints and varnishes — Wettability — Part 1: Terminology and general principles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and ISO 19403-1 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Principle

One drop of the respective liquids to be tested is captured hanging from a needle, where the drop shall deviate significantly from the spherical shape due to its own mass. The surface tension is calculated from the shape of the pendant drop in accordance with the Young-Laplace equation.

The polar and disperse fractions of the surface tension can be determined with at least two methods, which are specified in ISO 19403-4 and ISO 19403-5.

5 Apparatus and materials

Ordinary laboratory apparatus, together with the following.

1) This term is defined in DIN 1342-1.