International Standard

ISO 19403-7

Second edition
2024-10

Paints and varnishes — Wettability —

Part 7: Measurement of the dynamic contact angles and the roll-off angle on a tilt stage

Peintures et vernis — Mouillabilité —

Partie 7: Mesurage des angles de contact dynamiques et de l'angle de roulement sur un plan incliné

Reference number
ISO 19403-7:2024(en)

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Published in Switzerland

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Foreword

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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 19403-7:2017), which has been technically revised.

The main changes are as follows:

— the title of the document has been changed;

— the term 3.2 “advancing angle” has been replaced by “dynamic advancing contact angle” and the definition has been reworded;

— the term 3.3 “receding angle” has been replaced by “dynamic receding contact angle” and the definition has been reworded;

— the minimum size of the text samples has been changed to 4 cm × 4 cm;

— the use of ethylene glycol as test liquid has been deleted;

— the normative references have been updated.

A list of all parts in the ISO 19403 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.

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Introduction

Dynamic contact angles describe the processes on the interface liquid or solid during volume increase (dynamic advancing contact angle) or volume decrease (dynamic receding contact angle) of a drop in horizontal position. As an alternative to the static method (see ISO 19403-2) a surface area is always wetted for the dynamic advancing contact angle, which was previously unwetted. For the dynamic receding contact angle, the contact angle is observed during dewetting. By determining the difference between the dynamic advancing contact angle and the dynamic receding contact angle, information on chemical homogeneity and roughness can be concluded. The dynamic receding contact angle is not suitable for the determination of the surface energy.

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Paints and varnishes — Wettability —

Part 7: Measurement of the dynamic contact angles and the roll-off angle on a tilt stage

1 Scope

This document specifies a method for the dynamic measurement of the roll-off angle on a tilt stage of a liquid drop on a solid surface. This document also specifies how the dynamic advancing and receding contact angles of the drop rolling off can be determined. The roll-off angle determined through this method can be applied when evaluating easy-to-clean or anti-adherent surfaces.

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 4618, *Paints and varnishes — Vocabulary*

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

3 Terms and definitions

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

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
roll-off angle
α_s
tipping of the surface of the solid body, which arises from the rolling off of a liquid drop that is put down onto this surface

3.2
dynamic advancing contact angle
dynamic advancing angle
θ_a
contact angle measured at the three-phase line during advancing the liquid phase

Note 1 to entry: The values depend on the method.

[SOURCE: ISO 19403-6:2024, 3.2]

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