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Interested committees:

Title: Draft BS ISO 19613 Fine ceramics (advanced ceramics, advanced technical ceramics) — Measurement of viscosity of ceramic slurry by use of a rotational viscometer.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

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- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 19613

Fine ceramics (advanced ceramics, advanced technical ceramics) — Measurement of viscosity of ceramic slurry by use of a rotational viscometer

*Céramiques techniques — Mesure de la viscosité des céramiques
en suspension au moyen d'un viscosimètre rotatif*

ICS: 81.060.30

ISO/TC 206

Secretariat: JISC

Voting begins on:
2025-11-26

Voting terminates on:
2026-02-18

This document is circulated as received from the committee secretariat.

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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 206, *Fine ceramics*.

This second edition cancels and replaces the first edition (ISO 19613:2018), which has been technically revised.

The main changes are as follows:

- clarification added to the scope
- paragraph addition in the Apparatus section on the use of different geometries
- paragraph addition in the Measurement condition on the choice of the shear rate range
- reorganisation of the Pretreatment of the sample section
- rewriting the Measurement procedure section to include the identification of the fluid behavior

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.

Fine ceramics (advanced ceramics, advanced technical ceramics) — Measurement of viscosity of ceramic slurry by use of a rotational viscometer

1 Scope

This document specifies a method for measurement of the viscosity of a ceramic slurry using a rotational viscometer.

The method only involves rotations with a monotonic angle variation. Measurements using an oscillating rotation are excluded from the scope of this document.

Ceramic slurry is used in ceramic processes such as dip coating, spray coating, screen printing, slip casting, tape casting, spray drying and polishing. Dispersion of fillers in molten thermoplastic polymers are excluded from the scope of this document.

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/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO 20507, *Fine ceramics (advanced ceramics, advanced technical ceramics) — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20507 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

shear stress

stress acting on planes parallel to the direction of flow when the fluid is subject to laminar flow

Note 1 to entry: The SI units are Pascals (Pa).

3.2

shear rate

gradient of laminar flow rate perpendicular to the fluid flow

Note 1 to entry: The SI units are s^{-1} .

3.3

viscosity

ratio of shear stress to shear rate

Note 1 to entry: This ratio is representative of the internal resistance of the fluid to flow.

Note 2 to entry: The SI unit of viscosity is $\text{Pa} \times \text{s}$.

Note 3 to entry: $\text{mPa} \times \text{s} = 1 \text{ cP}$ in terms of c.g.s. units [where $1 \text{ P} = 1 \text{ g}/(\text{cm} \times \text{s})$].

Note 4 to entry: Viscosity is sometimes called 'dynamic viscosity' or 'shear viscosity' for clarification. The measured viscosity is conventionally called 'apparent viscosity' since the gradient of shear rate is not identical for all parts of the spindle.

3.4

Newtonian fluid

fluid in which shear stress is proportional to shear rate

Note 1 to entry: The ratio of shear stress to shear rate is viscosity.

3.5

non-Newtonian fluid

fluid in which shear stress is not proportional to shear rate

Note 1 to entry: The non-Newtonian behaviour can be determined by measuring shear stress using varying shear rate (or angular velocity). Viscosity of the non-Newtonian fluid changes with the shear rate, in contrast with Newtonian fluid, which has constant viscosity with the shear rate.

3.6

thixotropy

flow behaviour of fluid that shows time dependence, such that the apparent viscosity decreases with time for a constant shear rate, and recovers slowly with withdrawal of the shear force

3.7

shear thickening

<dilatant> increase of shear viscosity of fluid when the shear rate (or stress) is increased

3.8

shear thinning

<pseudoplasticity> decrease of shear viscosity of fluid when the shear rate (or stress) is increased

3.9

Bingham plastic

linear shear stress/shear rate relationship starting from a finite yield stress value below which the fluid does not flow

Note 1 to entry: The linear relationship is usually valid on a limited range of shear rate.

3.10

flow curve

curve showing the relationship between shear rate and shear stress

Note 1 to entry: See [Figure 1 a](#)).

3.11

viscosity curve

curve showing the relationship between shear rate (or shear stress) and viscosity

Note 1 to entry: See [Figure 1 b](#)).

3.12

ceramic slurry

suspension of grinding frit, clay or ceramic powders mixed or dispersed in water or other liquid. It includes colloidal suspension, slip and paste

Note 1 to entry: The category may include low-viscosity colloids with small particles with sizes in the nanometre or micrometre range, and high-viscosity pastes with inhomogeneous mixtures.