



SLOVENSKI STANDARD
SIST ENV 14312:2007
01-januar-2007

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_YfUa] b] [fUbi `

Advanced technical ceramics - Ceramic powders - Determination of flowability behaviour of ceramic granules

Hochleistungskeramik - Keramische Pulver - Bestimmung des Gleitverhaltens keramischer Granulate

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Céramiques techniques avancées - Poudres céramiques - Détermination du comportement à l'écoulement des céramiques granulaires

[SIST ENV 14312:2007](https://standards.iteh.ai/catalog/standards/sist/3a57ed19-e331-4df7-9235-69c969d47bc/sist-env-14312-2007)

Ta slovenski standard je istoveten z: [ENV 14312:2002](https://standards.iteh.ai/catalog/standards/sist/3a57ed19-e331-4df7-9235-69c969d47bc/sist-env-14312-2007)

ICS:

81.060.30 Sodobna keramika Advanced ceramics

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ICS 81.060.30

English version

Advanced technical ceramics - Ceramic powders - Determination of flowability behaviour of ceramic granules

Céramiques techniques avancées - Poudres céramiques -
Détermination du comportement à l'écoulement des
céramiques granulaires

Hochleistungskeramik - Keramische Pulver - Bestimmung
des Gleitverhaltens keramischer Granulate

This European Prestandard (ENV) was approved by CEN on 4 July 2002 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (ENV 14312:2002) has been prepared by Technical Committee CEN/TC 184 "Advanced technical ceramics", the secretariat of which is held by BSI.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Prestandard (ENV) specifies a method for the determination of the flowability behaviour of ceramic granules by means of a calibrated funnel.

2 Normative references

This European Prestandard incorporates by dated or undated reference provisions from other publications. These normative references are cited in the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

Not Applicable.

3 Principle

Measurement of the time for a determined mass of ceramic granules to flow through the opening of a standard funnel with calibrated opening. The result is expressed as a time per unit mass.

4 Apparatus

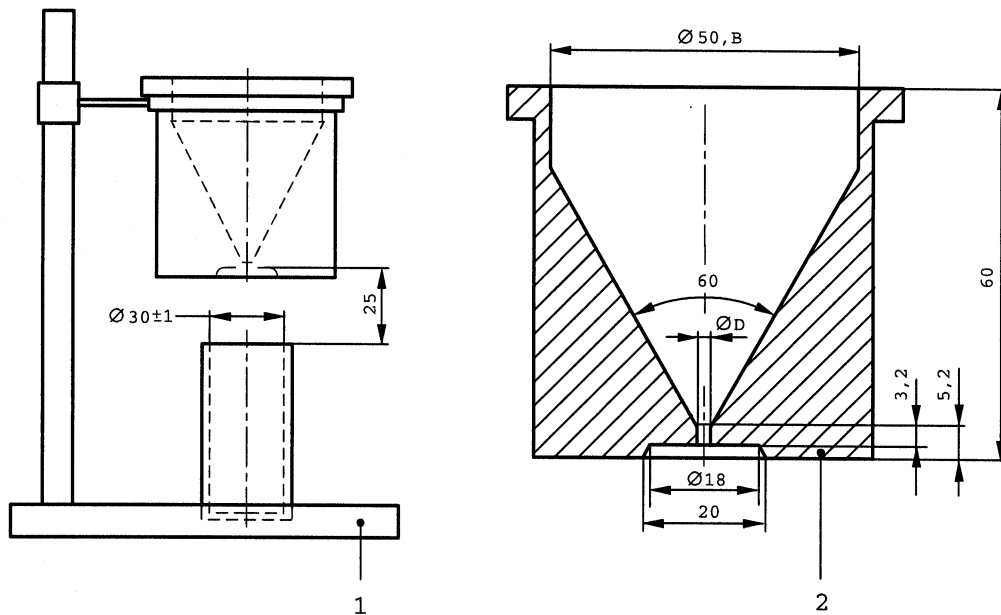
Powder Flowmeter Funnel: a standard Hall flowmeter funnel (Figure 1) having a calibrated orifice of 2,5 mm. The funnel material shall be a non-magnetic metal and shall be resistant to corrosion and wear.

Support: a support (Figure 1) to hold the powder flowmeter funnel, mounted on a level, vibration-free base.

Balance: having a sensitivity of 0,1 g.

Chronometer: a chronometer with an accuracy of at least 0,2 s. A digital chronometer is preferred.

Cup: a cup that is large enough to contain the weighed sample and to collect the sample after the test.



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Key

- 1 Funnel
- 2 Support

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Figure 1 — Hall flowmeter funnel detail (Ø = 2,5 mm or 5,0 mm)

5 Flow meter calibration

The calibration consists in measuring the flowing time of a standard sand. Use the procedure described under 6.2 to determine the flowing time. The time should be within 0,5 s identical to the reference value stated on the label of the standard sand. When the value is outside this range the cause shall be identified (geometry, vibration) and remedied.

6 Test procedure

6.1 Specimen conditioning

The test specimen shall be tested as sampled. If as received samples are conditioned prior to testing, the conditioning treatment shall be mentioned in the test report.

NOTE 1 Flow behaviour of granules is largely influenced by the moisture and organic binder content. To get consistent results between different laboratories it is advisable to condition the samples by equilibrating them under an atmosphere of known relative humidity.

NOTE 2 If samples are stored under conditions different from the test conditions precautions shall be taken to avoid drying or humidification of the sample during the test.

NOTE 3 Ceramic granules often contain organic binders. Drying by thermal treatment might affect the binder and thus the flow behaviour of the material.

6.2 Test procedure

- 1) All equipment shall be clean and dry. The funnel shall be wiped clean with a lint-free tissue between successive tests to avoid fines adhering to the funnel wall.
- 2) Place the flowmeter funnel on its support and make sure that the upper rim is horizontal.
- 3) Weigh 30 g of the sample to 0,1 g in a cup. If necessary the sample weight may be adapted to cope with the volume of the flowmeter funnel.
- 4) Close the funnel orifice.
- 5) Gently pour the sample into the funnel.
- 6) Place the cup under the funnel. The distance between the funnel orifice and the bottom of the cup should not exceed 75 mm.
- 7) Open the funnel orifice and start the chronometer simultaneously.
- 8) Stop the chronometer when the last granules exit the funnel. Record the flow time.
- 9) Repeat steps 1 to 8 two more times with the same sample.
- 10) Calculate the result as the mean of the three measurements.

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7 Expression of results

Results shall be reported as time per unit mass. The time shall be expressed in seconds. The sample weight shall always be reported.

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8 Repeatability and reproducibility

To avoid confusion with the results of flowability of metal powders obtained with the same equipment, where typically 50 g samples are used (EN ISO 4490), the measurement of the temperature and humidity should be recorded.

The following criteria should be used to judge acceptability of the results at a 95% confidence level:

- repeatability: identical individual measurements by the same operator should be considered suspect if they differ more than ± 1 s.
- reproducibility: the results submitted by each of two laboratories should not be considered suspect unless they differ more than ± 3 s.

9 Report

The test report shall contain the following information:

- a) name of testing establishment;
- b) date of test, report identification;
- c) reference to this European Prestandard;
- d) material type, manufacturing code, batch number;
- e) if relevant, conditioning circumstances of the sample;
- f) results of individual measurements: time (s), mass (g);
- g) average result and standard deviation;
- h) all further relevant comments to the test sample and test results.

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