



SLOVENSKI STANDARD

SIST EN 932-5:2000

01-september-2000

Preskusi splošnih lastnosti agregatov - 5. del: Splošne zahteve za opremo in kalibracijo

Tests for general properties of aggregates - Part 5: Common equipment and calibration

Prüfverfahren für allgemeine Eigenschaften von Gesteinskörnungen - Teil 5: Allgemeine Prüfeinrichtungen und Kalibrierung

Essais pour déterminer les propriétés générales des granulats - Partie 5: Equipements communs et étalonnage

iTeh STANDARD PREVIEW

(standards.iteh.ai)

[SIST EN 932-5:2000](https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9cc435087eeb/sist-en-932-5-2000)

Ta slovenski standard je istoveten z: **EN 932-5:1999**

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9cc435087eeb/sist-en-932-5-2000>

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 932-5:2000

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 932-5:2000

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9ec435087eeb/sist-en-932-5-2000>

ICS 91.100.20

English version

Tests for general properties of aggregates - Part 5: Common equipment and calibration

Essais pour déterminer les propriétés générales des granulats - Partie 5: Equipements communs et étalonnage

Prüfverfahren für allgemeine Eigenschaften von Gesteinskörnungen - Teil 5: Allgemeine Prüfeinrichtungen und Kalibrierung

This European Standard was approved by CEN on 16 April 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

[SIST EN 932-5:2000](https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9ec435087ceb/sist-en-932-5-2000)

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9ec435087ceb/sist-en-932-5-2000>



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword	3
1 Scope	4
2 Normative references	4
3 Definitions	4
4 Common equipment	5
5 Calibration	7
6 Reagents	14
Annex A (informative) Bibliography	15

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 932-5:2000

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9ec435087eeb/sist-en-932-5-2000>

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 154 "Aggregates", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2000, and conflicting national standards shall be withdrawn at the latest by December 2003.

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

This standard forms part of a series of tests for general properties of aggregates. Test methods for other properties of aggregates will be covered by parts of the following European Standards:

EN 933	Tests for geometrical properties of aggregates
EN 1097	Tests for mechanical and physical properties of aggregates
EN 1367	Tests for thermal and weathering properties of aggregates
EN 1744	Tests for chemical properties of aggregates
EN 13179	Tests for filler aggregate used in bituminous mixtures

The other parts of EN 932 will be:

- [SIST EN 932-5:2000](http://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d-9c4331874eb/sist-en-932-5-2000)
- Part 1: Methods for sampling
 - Part 2: Methods for reducing laboratory samples
 - Part 3: Procedure and terminology for simplified petrographic description
 - Part 6: Definitions of repeatability and reproducibility

In annex A (informative) reference is made to the International Organization for Legal Metrology (OIML) classification which this standard has adopted for the purposes of establishing a frequency of calibration for balance weights.

1 Scope

This European Standard specifies general requirements for common equipment, calibration procedures and reagents for the testing of the properties of aggregates.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at 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 Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 933-1, *Tests for geometrical properties of aggregates — Part 1 : Determination of particle size distribution- Sieving method*

EN 933-2, *Tests for geometrical properties of aggregates — Part 2: Determination of particle size distribution - Test sieves, nominal size of apertures*

ISO 386, *Liquid-in-glass laboratory thermometers — Principles of design, construction and use*

ISO 3310-1, *Test sieves - Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310-2, *Test sieves - Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d->

prEN ISO 3650, *Geometrical product specifications (GPS) — Length standards — Gauge blocks (ISO/FDIS 3650:1998)*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders*

ISO 6353-2, *Reagents for chemical analysis — Part 2: Specifications — First series*

ISO 6353-3, *Reagents for chemical analysis — Part 3: Specifications — Second series*

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 calibration

set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards.

NOTE See ISO 10012-2.

4 Common equipment

4.1 Tolerances

4.1.1 Manufacturing tolerances

4.1.1.1 Linear dimensions

Where a dimension is specified with manufacturing tolerances or limits, it shall be an essential dimension.

NOTE Dimensions stated without tolerances are given for guidance.

4.1.1.2 Mass

Where mass is specified, the manufacturing tolerance shall be $\pm 1\%$ of the specified mass unless otherwise stated.

4.1.2 Working tolerances

Working tolerances apply to apparatus after being subjected to wear in use, and shall be not more than twice the manufacturing tolerance unless otherwise specified.

4.2 Measuring instruments

4.2.1 Balances and weights

SIST EN 932-5:2000

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d->

Balances and weights shall be calibrated. Calibration and checking of balances and weights shall comply with 5.5.1 and 5.5.2 respectively.

NOTE 1 Balances can incorporate an analogue or a digital display.

The balance (and weights if required) selected for a weighing shall enable the mass to be determined to the accuracy required by the test method. If calibration determines that the balance is not suitable for use across its full working range, it shall be labelled to show the upper and lower limits of usable capacity.

NOTE 2 Examples of balances are given in Table 1.

Table 1 — Examples of categories of balances

Capacity g	Scale interval or digit g	Maximum permitted departure from indicated value g
200	0,001	0,005
1 200	0,01	0,05
2 000	0,1	0,3
5 000	0,5	1
10 000	1	3
25 000	5	10
50 000	10	30

4.2.2 Thermometers

Thermometers shall be selected as appropriate to the test method. Graduation intervals or digits shall not be greater than half of the required accuracy of reading.

For liquid-in-glass thermometers the form of graduations shall be as specified in ISO 386. The calibration of thermometers shall comply with **5.5.3**.

4.2.3 Dimensional measurement instruments

4.2.3.1 Steel rules

Steel rules shall have scale divisions at least every 1 mm and shall be checked in accordance with **5.5.4**.

4.2.3.2 Callipers

Digital, dial and vernier callipers for internal and external measurements shall be readable to 0,1 mm or better and shall be calibrated in accordance with **5.5.4**.

4.2.3.3 Micrometers

Micrometer measuring devices shall be readable respectively to 0,01 mm or better, or 0,002 mm or better, depending upon the resolution specified in the test method. Calibration shall be in accordance with **5.5.4**.

4.2.3.4 Dial gauges

Dial gauges shall be readable respectively to 0,01 mm or better, or 0,002 mm or better, depending upon the resolution and range of travel required by the test method. Dial gauges shall be calibrated in accordance with **5.5.4**.

4.2.4 Timers

Timers shall be calibrated in accordance with **5.5.5**.

NOTE 1 Stopwatches or stopclocks readable to 1 s are suitable.

NOTE 2A suitably placed wallclock with seconds hand, and large enough to read from the work station is an acceptable alternative.

4.2.5 Volumetric glassware

Volumetric glassware complying with class A or B of ISO 4788 shall be used. Class B volumetric glassware shall be checked before initial use in accordance with **5.5.6**.

Where certified volumetric glassware complying with class A of ISO 4788 is used, in-house calibration (see **5.5.6**) is not required.

4.2.6 Ovens

Ovens used for drying aggregates shall incorporate a thermostatic temperature control which can be set to maintain the specified working temperature to within ± 5 °C.

Each oven shall have a temperature indicating device of the required range and accuracy.

Ovens shall be checked in accordance with **5.6.1**.

4.2.7 Test sieves

Test sieves shall comply with EN 933-2. Perforated plate square hole test sieves conforming to ISO 3310-2 shall have an aperture size of at least 4 mm. Woven wire test sieves conforming to ISO 3310-1 shall have an aperture size of less than 4 mm.

Each sieve shall be separately identified. Checks on sieves shall be carried out in accordance with **5.6.3**.

4.2.8 Sieve shakers

Mechanical sieve shakers shall hold securely a nest of sieves with their lid and receiver. Their design shall ensure that the test material on any given sieve progresses over the surface of the sieve when it is agitated.

4.2.9 Desiccators and desiccator cabinets

Desiccators shall be provided with a lid which forms an airtight seal. Desiccator cabinets shall be fitted with a door which forms an airtight seal. Where shelves are fitted they shall permit free vertical circulation of air when the desiccator is in use.

NOTE 1 The most frequently used desiccant is self-indicating silica gel crystals.

NOTE 2 Glass vacuum desiccators should be covered by a safety cage during evacuation, while under vacuum and during vacuum release.

4.2.10 Bottle shakers and rollers (standards.iteh.ai)

A motorised unit for shaking and/or rotating containers shall be capable of rotating or agitating the containers continuously at the specified speed.

<https://standards.iteh.ai/catalog/standards/sist/1a2d6dbf-45f2-475e-b96d->

Motorised bottle shakers and rollers shall be calibrated in accordance with **5.6.5**.

4.2.11 Heaters

An electric hotplate shall be fitted with an adjustable control to provide boiling and/or simmering at specified temperatures.

NOTE A Bunsen burner, with tripod and gauze, can be used as an alternative controllable source of heat.

5 Calibration

5.1 Laboratory reference standards

5.1.1 Reference standards for in-house calibration

Where calibration of test measuring instruments is carried out in-house the laboratory shall hold appropriate reference standards or instruments that are used solely for calibration purposes.

Reference standards or instruments shall be retained securely in a suitable environment separate from working standards or instruments when not in use. They shall be used only for calibration purposes and by personnel who are trained in their use.