



SLOVENSKI STANDARD

SIST EN 1097-4:2000

01-september-2000

DfYg_i gj'a Y Ubg_l]b'Zn]_Ub] "Ughbcgh]U[fY[Urcj !("XY.'8 c`c Yj Ub^j ch]b'j
gi \ c`nV]h]_Ua Yb]a c_]

Tests for mechanical and physical properties of aggregates - Part 4: Determination of the voids of dry compacted filler

Prüfverfahren für mechanische und physikalische Eigenschaften von Gesteinskörnungen - Teil 4: Bestimmung des Hohlraumgehaltes an trocken verdichtetem Füller

Essais pour déterminer les caractéristiques mécaniques et physiques des granulats - Partie 4: Détermination de la porosité du filler sec compacté

Ta slovenski standard je istoveten z: EN 1097-4:1999

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 1097-4:2000 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1097-4:2000](https://standards.iteh.ai/catalog/standards/sist/21bdb52e-f799-4baf-96ab-23b3bad79b5d/sist-en-1097-4-2000)

<https://standards.iteh.ai/catalog/standards/sist/21bdb52e-f799-4baf-96ab-23b3bad79b5d/sist-en-1097-4-2000>

ICS 91.100.15

English version

**Tests for mechanical and physical properties of aggregates -
Part 4: Determination of the voids of dry compacted filler**

Essais pour déterminer les caractéristiques mécaniques et
physiques des granulats - Partie 4: Détermination de la
porosité du filler sec compacté

Prüfverfahren für mechanische und physikalische
Eigenschaften von Gesteinskörnungen - Teil 4:
Bestimmung des Hohlraumgehaltes an trocken
verdichtetem Füller

This European Standard was approved by CEN on 19 August 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1097-4:2000

<https://standards.iteh.ai/catalog/standards/sist/21b0b52e-f799-4baf-96ab-23b3bad79b5d/sist-en-1097-4-2000>



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 Principle	5
5 Apparatus	5
6 Preparation of test portion	8
7 Procedure	8
8 Calculation and expression of results	9
9 Test report	9
Annex A (informative) Precision	10
Annex B (informative) Bibliography	11

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1097-4:2000

<https://standards.iteh.ai/catalog/standards/sist/21bdb52e-f799-4baf-96ab-23b3bad79b5d/sist-en-1097-4-2000>



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 March 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 European Standard forms part of a series of standards for tests for mechanical and physical properties of aggregates. Test methods for other properties of aggregates will be covered by Parts of the following European Standards:

EN 932	Tests for general properties of aggregates
EN 933	Tests for geometrical properties of aggregates
EN 1367	Tests for thermal and weathering properties of aggregates
EN 1744	Tests for chemical properties of aggregates
prEN 13179	Tests for filler aggregate used in bituminous mixtures

The other Parts of EN 1097 will be:

Part 1	Determination of the resistance to wear (micro-Deval)
Part 2	Methods for the determination of resistance to fragmentation
Part 3	Determination of loose bulk density and voids
Part 5	Determination of the water content by drying in a ventilated oven
Part 6	Determination of particle density and water absorption
Part 7	Determination of the particle density of filler - Pyknometer method
Part 8	Determination of the polished stone value
Part 9	Method for the determination of the resistance to wear by abrasion from studded tyres: Nordic test
Part 10	Water suction height

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

[SIST EN 1097-4:2000](https://standards.iteh.ai/catalog/standards/sist/21bdb52e-f799-4baf-96ab-23b3bad79b5d/sist-en-1097-4-2000)

<https://standards.iteh.ai/catalog/standards/sist/21bdb52e-f799-4baf-96ab-23b3bad79b5d/sist-en-1097-4-2000>

1 Scope

This European Standard specifies the procedure for determining the voids of dry compacted filler by means of a Rigden apparatus. The test is applicable to natural and artificial fillers. It is used for example to determine their bitumen carrying capacity.

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 932-2	Tests for general properties of aggregates - Part 2: Methods for reducing laboratory samples
prEN 932-5	Tests for general properties of aggregates - Part 5: Common equipment and calibration
EN 1097-7	Tests for mechanical and physical properties of aggregates - Part 7: Determination of the particle density of filler -Pyknometer method
EN 10025	Hot rolled products of non-alloy structural steels - Technical delivery conditions

3 Definitions

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

3.1 percentage air voids: Volume of air filled space in the filler, expressed as a percentage of the total volume of the filler after compaction by a standard method.

3.2 laboratory sample: Reduced sample derived from a bulk sample for laboratory testing.

3.3 test portion: Sample used as a whole in a single test.

3.4 test specimen: Sample used in a single determination when a test method requires more than one determination of a property.

3.5 constant mass: Successive weighings after drying at least 1 h apart not differing by more than 0,1 %.

NOTE: In many cases constant mass can be achieved after a test portion has been dried for a pre-determined period in a specified oven at $(110 \pm 5)^\circ\text{C}$. Test laboratories can determine the time required to achieve constant mass for specific types and sizes of sample dependent upon the drying capacity of the oven used.

3.6 filler aggregate: Aggregate, most of which passes a 0,063 mm sieve, which can be added to construction materials to provide certain properties.

4 Principle

The filler is compacted in a standard way by using a compaction apparatus.

The volume of the compacted filler is determined using the height of the compacted filler bed. Using the known particle density of the compacted filler, the air void content of the compacted filler is calculated.

5 Apparatus

5.1 All apparatus, unless otherwise stated, shall conform to the general requirements of prEN 932-5.

5.2 Ventilated drying oven, thermostatically controlled to maintain a temperature of $(110 \pm 5)^\circ\text{C}$.

5.3 Desiccator, filled with an appropriate amount of desiccant.

5.4 Spatula.

5.5 Compaction apparatus, made of hardened steel, conforming to EN 10025, consisting of the following elements.

NOTE: Examples of typical apparatus are shown in figures 1 and 2.

5.5.1 Dropping block, comprising a hollow cylinder with a flat, closed bottom, with an inner diameter of $(25,0 \pm 1,0)$ mm and inner height of (65 ± 5) mm. The cylinder shall be fitted with a collar or pilot blocks to guide it along the pilot bars during the test.

5.5.2 Plunger, with a bore hole along its longitudinal axis of diameter $(1,6 \pm 0,1)$ mm over a length of 10 mm from the bottom and equal or wider above.

The difference in diameter between the plunger and the cylinder shall be $(0,20 \pm 0,05)$ mm.

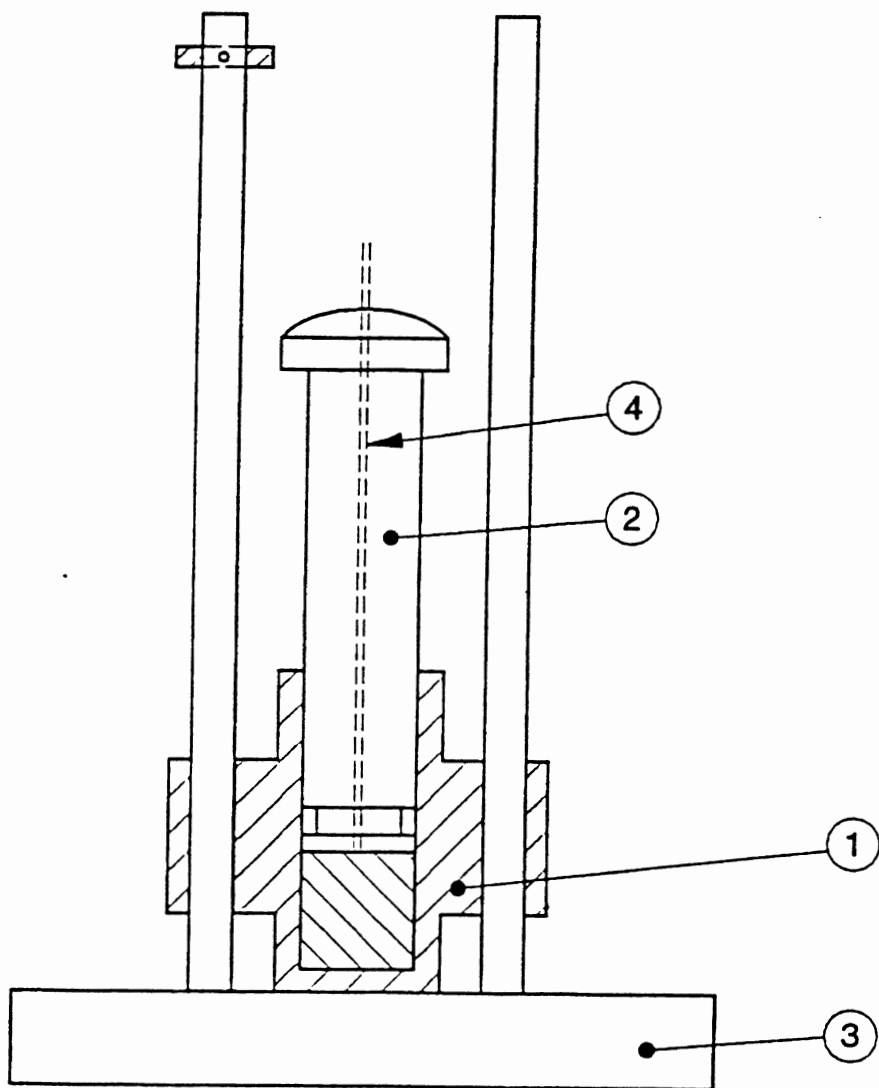
The plunger shall be provided with a circumferential groove about 5 mm from its lower end to accommodate filler that works up the side of the cylinder while in use. This groove shall be 2 mm to 3 mm wide and 1 mm to 2 mm deep.

The mass of the plunger shall be (350 ± 1) g and the mass of the dropping block with plunger shall be (875 ± 25) g.

NOTE: For newly manufactured apparatus, the following dimensions should be used.

- | | | | |
|---|---|-------------------|----------------------|
| iTeh STANDARD PREVIEW
(standards.iteh.ai) | | | |
| a) Dropping block | - | inner diameter of | $(25,4 \pm 0,1)$ mm; |
| | - | inner height of | $(63,0 \pm 0,1)$ mm; |
| b) Mass of dropping block with plunger | | | (875 ± 10) g. |

<https://standards.iteh.ai/catalog/standards/sist/21bdb52e-f799-4ba1-96ab-23b3bad79b5d/sist-en-1097-4-2000>



iTeh STANDARD PREVIEW

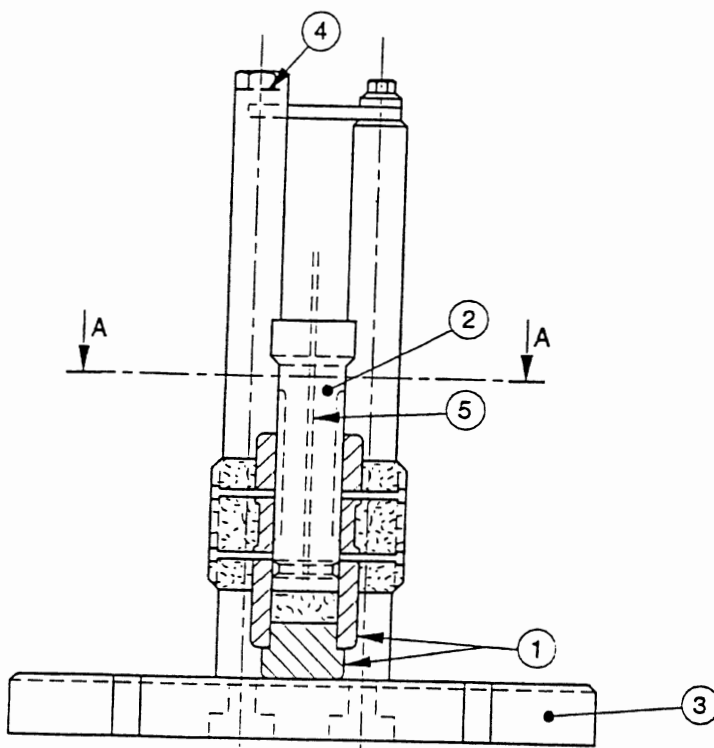
- 1. Dropping block
- 2. Plunger
- 3. Base plate
- 4. Tare boring

(standards.iteh.ai)

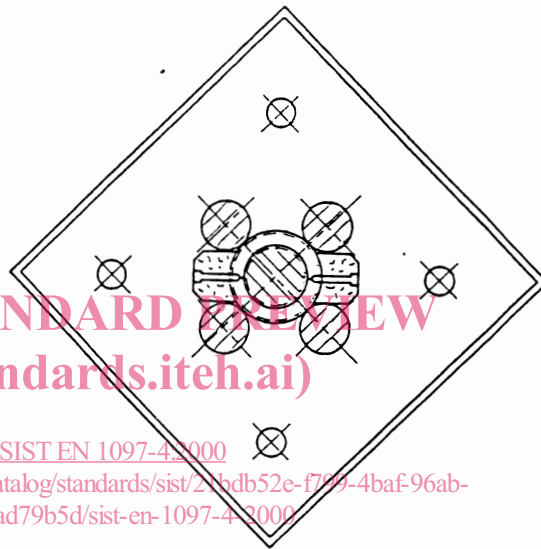
SIST EN 1097-4:2000

<https://standards.iteh.ai/catalog/standards/sist/21bd52e-f799-4baf-96ab-25b3bad7965d/sist-en-1097-4-2000>

Figure 1: Typical compaction apparatus



- 1. Dropping block
- 2. Plunger
- 3. Base plate
- 4. Grooves for depth calliper
- 5. Tare boring



iTeh STANDARD REVIEW
(standards.iteh.ai)

SIST EN 1097-4:2000

Cross-section A - A

<https://standards.iteh.ai/catalog/standards/sist/23b3bad79b5d/sist-en-1097-4:2000>

Figure 2: Typical four bar compaction apparatus