



SLOVENSKI STANDARD

SIST EN 1097-6:2002/A1:2005

01-december-2005

Preskusi mehanskih in fizikalnih lastnosti agregatov – 6. del: Ugotavljanje prostorninske mase zrn in vpijanja vode

Tests for mechanical and physical properties of aggregates - Part 6: Determination of particle density and water absorption

Prüfverfahren für mechanische und physikalische Eigenschaften von Gesteinskörnungen - Teil 6: Bestimmung der Rohdichte und der Wasseraufnahme

Essais pour déterminer les caractéristiques mécaniques et physiques des granulats - Partie 6: Détermination de la masse volumique réelle et du coefficient d'absorption d'eau

Ta slovenski standard je istoveten z: EN 1097-6:2000/A1:2005

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 1097-6:2002/A1:2005 en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1097-6:2000/A1

October 2005

ICS 91.100.15

English Version

Tests for mechanical and physical properties of aggregates - Part 6: Determination of particle density and water absorption

Essais pour déterminer les caractéristiques mécaniques et
physiques des granulats - Partie 6: Détermination de la
masse volumique réelle et du coefficient d'absorption d'eau

Prüfverfahren für mechanische und physikalische
Eigenschaften von Gesteinskörnungen - Teil 6:
Bestimmung der Rohdichte und der Wasseraufnahme

This amendment A1 modifies the European Standard EN 1097-6:2000; it was approved by CEN on 11 August 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 amendment 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN 1097-6:2000/A1:2005 (E)**Foreword**

This European Standard (EN 1097-6:2000/A1:2005) has been prepared by Technical Committee CEN/TC 154 "Aggregates", the secretariat of which is held by BSI.

This Amendment to the European Standard EN 1097-6:2000 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

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

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1 Modification to Clause 3 Terms and definitions

3.5 pre-dried particle density

Amend the definition to read:

“ratio of the pre-dried mass of a sample of aggregate to the volume it occupies in water including any internal sealed voids but excluding water accessible voids”

2 Modification to Clause 7 Wire-basket method for aggregate particles between 31,5 mm and 63 mm

7.2 Preparation of test portion

In the first column of Table 1 replace “45” with “≤ 45” so that a 7 kg minimum test portion mass is required for aggregates of maximum size less than or equal to 45 mm.

7.4 Calculation and expression of results

Amend the formula in NOTE 1 to read:

$$\rho_{\text{ssd}} = \rho_{\text{rd}} + \rho_{\text{w}} (1 - \rho_{\text{rd}} / \rho_{\text{a}})$$

3 Modification to Clause 8 Pyknometer method for aggregate particles between 4 mm and 31,5 mm

8.4 Calculation and expression of results

Include the density of water ρ_{w} in all calculations of density, as it is shown below with the calculation of ρ_{a} :

$$\rho_{\text{a}} = \rho_{\text{w}} \frac{M_4}{M_4 - (M_2 - M_3)}$$

Define the density of water as:

ρ_{w} is the density of water at the test temperature in megagrams per cubic metre (see annex D);

Add the words “and water” in the definition of M_2 to read:

M_2 is the mass of the pyknometer containing the sample of saturated aggregate and water, in grams;

4 Modification to Clause 9 Pyknometer method for aggregate particles between 0,063 mm and 4 mm

9.4 Calculation and expression of results

Include the density of water ρ_{w} in all calculations of density, as it is shown below with the calculation of ρ_{a} :

$$\rho_{\text{a}} = \rho_{\text{w}} \frac{M_4}{M_4 - (M_2 - M_3)}$$

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Define the density of water as:

ρ_w is the density of water at the test temperature in megagrams per cubic metre (see annex D);

Add the words "and water" in the definition of M_2 to read:

M_2 is the mass of the pycnometer containing the sample of saturated aggregate and water, in grams;

5 Modification to Annex A (normative)**Determination of pre-dried particle density of aggregates****A.3 Wire basket method for aggregate particles between 31,5 mm and 63 mm****A.3.3 Calculation and expression of results**

Delete the NOTE at the end of the clause

A.4 Pycnometer method for aggregate particles between 0,063 mm and 31,5 mm**A.4.4 Calculation and expression of results**

Replace existing equation with the following, for the calculation of the pre-dried particle density:

$$\rho_p = \frac{(M_2 - M_1)}{V - (M_3 - M_2) / \rho_w}$$

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6 Modification to Annex B (normative)

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Determination of particle density and water absorption of coarse aggregates saturated to constant mass

Substitute "particle(s)" for "piece(s)" throughout clauses B.1, B.2.2 and B.2.3

B.2 Preparation of test portion**B.2.2 Single pieces of aggregate**

Replace the NOTE with the following two NOTES:

"NOTE 1 The immersion in the container to reach constant mass as described in the test procedure (see B.3) can be carried out at the same time for several test portions, provided that each of them is clearly and indelibly marked."

"NOTE 2 Results of tests on single particle of aggregate may not be representative. For homogeneous aggregates at least 10 particles should be tested. For non-homogeneous aggregates at least 5 particles of each constituent petrographic type should be tested."

7 Modification to Annex C (normative)

Determination of particle density and water absorption of lightweight aggregates

C.5 Calculation and expression of results

Add the word "funnel" in the definition of M_p to read:

M_p is the mass of the pycnometer, funnel and grid (if used) at calibration, in grams;

8 Modification to Annex E (informative)

Precision

E.2 Data from cross testing experiments

At the end of the first paragraph, add the following sentence:-“ The repeatability r_1 and reproducibility R_1 values have been determined for the three tested aggregates on the basis of duplicate tests carried out on different samples.”

Substitute the following Table for Table E.6 – Repeatability and reproducibility values for determinations of particle density (Mg/m^3) and water absorption (%) of coarse aggregates:-

Size fractions (mm)			Level 1	Level 2	Level 3
			10/14	10/14	5/10
Pre-dried particle density determined in accordance with annex A (pycnometer method)	Number of laboratories included	N	18	19	18
	Average	X	2,70	3,06	2,60
	Repeatability standard deviation	S_{r1}	0,0028	0,0056	0,0030
	Reproducibility standard deviation	S_{R1}	0,0067	0,0094	0,0134
	Critical range	W_c	0,010	0,021	0,012
	Repeatability limit	r_1	0,008	0,016	0,009
	Reproducibility limit	R_1	0,019	0,026	0,037
Saturated and surface-dried particle density determined in accordance with clause 8 (pycnometer method)	Number of laboratories included	N	19	19	19
	Average	X	2,67	3,05	2,51
	Repeatability standard deviation	S_{r1}	0,0027	0,0058	0,0059
	Reproducibility standard deviation	S_{R1}	0,0041	0,0089	0,0092
	Repeatability limit	r_1	0,008	0,016	0,017
	Reproducibility limit	R_1	0,012	0,025	0,026
Water absorption determined in accordance with clause 8 (pycnometer method)	Number of laboratories included	N	19	19	16
	Average	X	1,0	0,5	3,1
	Repeatability standard deviation	S_{r1}	0,061	0,047	0,084
	Reproducibility standard deviation	S_{R1}	0,101	0,0112	0,222
	Repeatability limit	r_1	0,17	0,13	0,24
	Reproducibility limit	R_1	0,28	0,31	0,62

NOTE Except for the number of laboratories included, data related to particle density are expressed in Mg/m^3 and data related to water absorption are expressed in %.