TÄITEMATERJALIDE MEHAANILISTE JA FÜÜSIKALISTE OMADUSTE KATSEMEETODID. OSA 7: FILLERI OSAKESTE TIHEDUSE MÄÄRAMINE. PÜKNOMEETRIMEETOD

Tests for mechanical and physical properties of aggregates - Part 7: Determination of the particle density of filler - Pyknometer method

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1097-7:2022 sisaldab Euroopa standardi EN 1097-7:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 1097-7:2022 consists of the English text of the European standard EN 1097-7:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 26.10.2022.	Date of Availability of the European standard is 26.10.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 91.100.15

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1097-7

October 2022

ICS 91.100.15

Supersedes EN 1097-7:2008

English Version

Tests for mechanical and physical properties of aggregates - Part 7: Determination of the particle density of filler - Pyknometer method

Essais pour déterminer les caractéristiques mécaniques et physiques des granulats - Partie 7 : Détermination de la masse volumique réelle du filler - Méthode au pycnomètre

Prüfverfahren für mechanische und physikalische Eigenschaften von Gesteinskörnungen - Teil 7: Bestimmung der Rohdichte von Füllern - Pyknometer-Verfahren

This European Standard was approved by CEN on 26 September 2022.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 1097-7:2022 E

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European foreword

This document (EN 1097-7:2022) 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 April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1097-7:2008.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

In comparison with the previous edition EN 1097-7:2008, the following technical modifications have been made:

a) in the Scope, a reference to methods for determination of particle density of aggregates has been added;

b) Clause 3 “Terms and definitions” has been clarified to correspond with definitions in EN 1097-6. The definition of size fraction d_i/D_i has been added;

c) in Clause 5 “Materials”, low viscosity white mineral oils have been added among the examples of suitable liquids given in the note;

d) in 6.3, the required accuracy of the water bath temperature has been reduced from (25,0 ± 0,1) °C to either (25,0 ± 3,0) °C or (25,0 ± 0,5) °C depending on the liquid used. Texts in Clause 8, A.2.5 and B.2.4 have been revised accordingly;

e) the required accuracy of the balance for the pyknometer volume determination has been reduced from 0,000 1 g to 0,001 g, since water is always used for this purpose. The texts in 6.4, 6.5 and A.2.2 have been revised accordingly;

f) in Clauses 7 and 8, the required masses of the test portion and the test specimens have been revised. The possibility to vary the filler amount, and thus the ratio of filler and liquid, has been added in order to reduce the influence of the temperature on the density of the pyknometer liquid;

g) the required number of test specimens has been reduced from three to two, provided that the two test results differ less than 0,025 Mg/m^3. The texts in Clauses 7, 8 and 9 have been revised accordingly;

h) in Clause 8 “Procedure”, the note about adding liquid carefully has been transformed into main text;

i) in Clause 10 “Test report”, the density of the liquid used for the determination is moved from Required data to Optional data;

j) the title of Annex A has been revised to “Determination of the pyknometer volume” since *calibration* was not the correct term. All texts referring to *calibration* have been corrected accordingly. A new paragraph (A.2.4) has been added to describe the evacuation of the pyknometer by means of vacuum;

k) the title of Annex B has been shortened and B.1 has been clarified regarding the use of Annex B;

l) Annex C has been removed since the precision data given cannot be tracked down any longer. Consequently, the note about precision statement in Clause 9 has been revised;

m) in the Bibliography, EN 1097-6 and EN 1936 have been added and the national standards have been deleted.

In addition, the whole document has been updated and the “Principle”, “Preparation of test portion”, “Procedure” and Annex A have been clarified.

This document forms part of a series of tests for mechanical and physical properties of aggregates. Test methods for other properties of aggregates are covered by the following European standards:

— EN 932 (all parts), *Tests for general properties of aggregates*

— EN 933 (all parts), *Tests for geometrical properties of aggregates*

— EN 1367 (all parts), *Tests for thermal and weathering properties of aggregates*

— EN 1744 (all parts), *Tests for chemical properties of aggregates*

— EN 13179 (all parts), *Tests for filler aggregate used in bituminous mixtures*

The other parts of the EN 1097 series include:

— 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 4: *Determination of the voids of dry compacted filler*

— Part 5: *Determination of the water content by drying in a ventilated oven*

— Part 6: *Determination of particle density and water absorption*

— Part 8: *Determination of the polished stone value*

— Part 9: *Determination of the resistance to wear by abrasion from studded tyres - Nordic test*

— Part 10: *Determination of water suction height*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

1 Scope

This document specifies the reference method used for type testing and in cases of dispute for the determination of the particle density of filler by means of a pyknometer. For other purposes, in particular factory production control, other methods can be used provided that an appropriate working relationship with the reference method has been established.

NOTE Methods for determination of particle density of aggregates are specified in EN 1097-6.

Annex A specifies the procedure for determination of the pyknometer volume. Annex B specifies the procedure for determination of the density of the liquid used to determine the particle density of the filler. Annexes A and B are normative.

WARNING — The use of this part of EN 1097 can involve hazardous materials, operations and equipment (such as liquids, dust, noise and heavy lifts). It does not purport to address all of the safety or environmental problems associated with its use. It is the responsibility of users of this document to take appropriate measures to ensure the safety and health of personnel and the environment prior to application of the standard, and fulfil statutory and regulatory requirements for this purpose.

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.

EN 932-2:1999, *Tests for general properties of aggregates - Part 2: Methods for reducing laboratory samples*

EN 932-5, *Tests for general properties of aggregates - Part 5: Common equipment and calibration*

ISO 3507, *Laboratory glassware — Pyknometers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/ui

— IEC Electropedia: available at https://www.electropedia.org/

3.1
laboratory sample
sample intended for laboratory testing

3.2
test portion
sample used as a whole in a single test

3.3
test specimen
sample used in a single determination when a test method requires more than one determination of a property