

TSEMENDI KATSETAMINE. OSA 6: PEENUSE
MÄÄRAMINE

Methods of testing cement - Part 6: Determination of
fineness

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 196-6:2018 sisaldab Euroopa standardi EN 196-6:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 196-6:2018 consists of the English text of the European standard EN 196-6:2018.
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.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.12.2018.	Date of Availability of the European standard is 19.12.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

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

ICS 91.100.10

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Methods of testing cement - Part 6: Determination of fineness

Méthodes d'essai des ciments - Détermination de la finesse

Prüfverfahren für Zement - Teil 6: Bestimmung der Mahlfeinheit

This European Standard was approved by CEN on 1 July 2018.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

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

Contents

Page

European foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Sieving method.....	4
3.1 Principle.....	4
3.2 Apparatus.....	4
3.3 Material for checking the sieve.....	5
3.4 Procedure.....	5
3.4.1 Determination of the cement residue.....	5
3.4.2 Checking the sieve.....	5
3.5 Expression of results.....	6
4 Air permeability method (Blaine method).....	6
4.1 Principle.....	6
4.2 Apparatus.....	6
4.3 Materials.....	8
4.4 Test conditions.....	8
4.5 Compacted cement bed.....	9
4.5.1 Basis.....	9
4.5.2 Preparation of the sample.....	9
4.5.3 Determination of density.....	9
4.5.4 Formation of the bed.....	9
4.6 Air permeability test.....	10
4.6.1 Basis.....	10
4.6.2 Procedure.....	10
4.7 Calibration of apparatus.....	11
4.7.1 Determination of the bed volume by measurement.....	11
4.7.2 Determination of the apparatus constant.....	11
4.7.3 Recalibration.....	12
4.8 Special cements.....	12
4.9 Simplification of the calculations.....	13
4.9.1 Basic formula.....	13
4.9.2 Effect of specified porosity.....	13
4.9.3 Effect of controlled temperature.....	13
4.9.4 Effect of density of cement.....	14
4.10 Expression of results.....	14
5 Air-jet sieving method.....	15
5.1 Principle.....	15
5.2 Apparatus.....	15
5.3 Procedure.....	16
5.4 Checking the sieve.....	17
5.5 Expression of results.....	17
5.6 Repeatability and reproducibility.....	17

European foreword

This document (EN 196-6:2018) has been prepared by Technical Committee CEN/TC 51 “Cement and building limes”, the secretariat of which is held by NBN.

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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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 196-6:2010.

In comparison with the previous edition, the following technical modifications have been made:

- elimination of the determination of bed volume by mercury volume;
- in subclause 4.10, new data for standard deviation of the repeatability and reproducibility have been introduced.

A list of all parts in the EN 196 series 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document describes three methods of determining the fineness of cement.

The sieving method serves only to demonstrate the presence of coarse cement particles. This method is primarily suited to checking and controlling the production process.

The air-jet sieving method measures the retention on sieving and is suitable for particles which substantially pass a 2,0 mm test sieve. It can be used to determine the particle size distribution of agglomerates of very fine particles. This method can be used with test sieves in a range of aperture sizes, e.g. 63 μm and 90 μm .

The air permeability method (Blaine) measures the specific surface area (surface area related to mass) by comparison with a reference material sample. The determination of the specific surface area serves primarily to check the consistency of the grinding process of one and the same plant. This method only enables a limited assessment to be made of the properties of the cement in use.

NOTE The air permeability method may not give significant results for cements containing ultrafine materials.

The methods are applicable to all the cements defined in EN 197-1.

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 197-1, *Cement - Part 1: Composition, specifications and conformity criteria for common cements*

ISO 383, *Laboratory glassware — Interchangeable conical ground joints*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

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

ISO 4803, *Laboratory glassware — Borosilicate glass tubing*

3 Sieving method

3.1 Principle

The fineness of cement is measured by sieving it on standard sieves. The mass proportion of cement of which the grain sizes are larger than the specified mesh size is thus determined.

A reference sample having a known mass proportion of material coarser than the specified mesh size is used for checking the specified sieve.

3.2 Apparatus

3.2.1 Test sieve, comprising a firm, durable, non-corrodible, cylindrical frame of 150 mm to 200 mm nominal diameter and 40 mm to 100 mm depth, fitted with, e.g. 90 μm , mesh sieve cloth of woven stainless steel, or other abrasion-resisting and non-corrodible metal wire.