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Testing fresh concrete - Part 7: Air content - Pressure methods

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12350-7:2019 sisaldab Euroopa standardi EN 12350-7:2019 ja selle paranduse AC:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 12350-7:2019 consists of the English text of the European standard EN 12350-7:2019 and its corrigendum AC:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.06.2019.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 19.06.2019.
Parandusega AC lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega ▌AC⟩ ⟨AC▐. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by corrigendum AC is indicated in the text by tags ▌AC⟩ ⟨AC▐. 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.

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This European Standard was approved by CEN on 29 April 2019.

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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.

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Contents

Page

European foreword 4
1 Scope 6
2 Normative references 6
3 Terms and definitions 6
4 Principles 6
4.1 General 6
4.2 Water column method 6
4.3 Pressure gauge method 6
5 Water column method 7
5.1 Common apparatus for fresh concrete testing 7
5.2 Procedure 9
5.2.1 Sampling 9
5.2.2 Filling the air test container and compacting the concrete 9
5.2.3 Mechanical vibration 9
5.2.4 Compacting by hand with compacting rod or bar 10
5.2.5 Measuring air content 10
6 Pressure gauge method 10
6.1 Common apparatus for fresh concrete testing 10
6.2 Procedure 12
6.2.1 Sampling 12
6.2.2 Filling the air test container and compacting the concrete 12
6.2.3 Mechanical vibration 13
6.2.4 Compacting by hand with compacting rod or bar 13
6.2.5 Measuring air content 13
7 Calculation and expression of results 13
8 Test report 14
9 Precision 14
9.1 Water column method 14
9.2 Pressure gauge method 15
Annex A (normative) Aggregate correction factor – water column method 16
A.1 General 16
A.2 Aggregate sample size 16
A.3 Filling the air test container 16
A.4 Determination of aggregate correction factor 17
Annex B (normative) Aggregate correction factor – pressure gauge method 18
B.1 General 18
B.2 Aggregate sample size 18
B.3 Filling the air test container 18
B.4 Determination of aggregate correction factor 19

Annex C (normative) Calibration of apparatus – water column method **20**
C.1 General **20**
C.2 Apparatus **20**
C.3 Capacity of the calibration cylinder **20**
C.4 Capacity of the air test container **20**
C.5 Pressure expansion constant, e **21**
C.6 Calibration constant, *K* **21**
C.7 Required operating pressure **21**
C.8 Alternative operating pressure **22**
Annex D (normative) Calibration of apparatus – pressure gauge method **23**
D.1 General **23**
D.2 Apparatus **23**
D.3 Checking the capacity of the air test container **23**
D.4 Checking air content graduations on the pressure gauge **23**
Bibliography **25**

European foreword

This document (EN 12350-7:2019) has been prepared by Technical Committee CEN/TC 104 “Concrete and related products”, the secretariat of which is held by SN.

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 December 2019, and conflicting national standards shall be withdrawn at the latest by December 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 12350-7:2009.

The results of a laboratory inter-comparison, in part funded by the EC under Measurement and Testing Programme, Contract MAT1-CT-94-0043 which investigated these two methods of measuring air content, did not find significant difference between them. However, it was found in this programme that the use of an internal vibrator to compact specimens of air entrained fresh concrete should only be done with caution, if loss of entrained air is to be avoided.

The determination of the aggregate correction value for the two methods has been included in normative Annexes A and B.

The method of calibrating the two types of apparatus has been included in normative Annexes C and D.

This standard is one of a series on testing concrete.

EN 12350, *Testing fresh concrete*, consists of the following parts:

— *Part 1: Sampling and common apparatus*

— *Part 2: Slump test*

— *Part 3: Vebe test*

— *Part 4: Degree of compactability*

— *Part 5: Flow table test*

— *Part 6: Density*

— *Part 7: Air content – Pressure methods*

— *Part 8: Self-compacting concrete – Slump-flow test*

— *Part 9: Self-compacting concrete – V-funnel test*

— *Part 10: Self-compacting concrete – L-box test*

— *Part 11: Self-compacting concrete – Sieve segregation test*

— *Part 12: Self-compacting concrete – J-ring test*

The following amendments have been made to the 2009 edition of this standard:

a) editorial revisions;

b) reference to common apparatus and specification given in EN 12350-1.

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, Turkey and the United Kingdom.

1 Scope

This document describes two methods for determination of air content of compacted fresh concrete, made with normal weight or relatively dense aggregate and having a declared value of D of the coarsest fraction of aggregates actually used in the concrete (D_{max}) not greater than 63 mm.

The test is not suitable for concretes with slumps less than 10 mm according to EN 12350-2.

Neither method is applicable to concretes made with lightweight aggregates, air cooled blast-furnace slag, or aggregates with high porosity, because of the magnitude of the aggregate correction factor, compared with the entrained air content of the concrete.

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 12350-1, *Testing fresh concrete — Part 1: Sampling and common apparatus*

EN 12350-2, *Testing fresh concrete — Part 2: Slump test*

EN 12350-6, *Testing fresh concrete — Part 6: Density*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

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

4 Principles

4.1 General

There are two test methods, both of which use apparatus which employ the principle of Boyle-Mariotte's law. For the purpose of reference, the two methods are referred to as the water column method and the pressure gauge method and the apparatus as a water column meter and a pressure gauge meter.

If the concrete is sampled and tested at different locations, the procedure for filling and compacting the concrete in the air test container shall be the same irrespective of the method used.

4.2 Water column method

Water is introduced to a predetermined height above a sample of compacted concrete of known volume in a sealed air test container and a predetermined air pressure is applied over the water. The reduction in volume of the air in the concrete sample is measured by observing the amount by which the water level is lowered, the water column being calibrated in terms of percentage of air in the concrete sample.

4.3 Pressure gauge method

A known volume of air at a known pressure is merged in a sealed air test container with the unknown volume of air in the concrete sample. The dial on the pressure gauge is calibrated in terms of percentage of air for the resulting pressure.