

Testing concrete in structures

Part 1: Cored specimens — Taking, examining and testing in compression

Prüfung von Beton in Bauwerken — Teil 1: Bohrkernproben — Herstellung, Untersuchung und Prüfung der Druckfestigkeit

Essais pour béton dans les structures — Partie 1: Carottes — Prélèvement, examen et essais en compression

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responsible Committee 010
Concrete, reinforced concrete and prestressed concrete

National Foreword

V.1 General

This European Standard is to be published as a national standard (ÖNORM) based on legal provisions. Explanations and clarifications are permitted in the context of this national implementation.

National explanations and clarifications for the test methods for concrete may be necessary due to the requirements of national product regulations (see ÖNORM B 4710-1 and ÖNORM B 4710-2). National explanations and clarifications for testing standards for concrete can be found in ONR 23303: 2010.

NOTE: A follow-up document to ONR 23303:2010 is currently under preparation and will be published as ÖNORM B 4710-3.

V.2 National bibliography

- [N.1] ÖNORM B 4710-1, *Concrete – Specification, performance, production, use and conformity – Part 1: Rules for the implementation of ÖNORM EN 206 for normal and heavy concrete*
- [N.2] ÖNORM B 4710-2, *Concrete – Part 2: Lightweight concrete with closed structures and a minimum dry density of 800 kg/m³ – Specification, production, use and proof of conformity – Rules for the implementation of ÖNORM EN 206-1 for lightweight concrete*
- [N.3] ONR 23303, *Test methods for concrete – National application of testing standards for concrete and its source materials*

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English Version

Testing concrete in structures - Part 1: Cored specimens - Taking, examining and testing in compression

Essais pour béton dans les structures - Partie 1 :
Carottes - Prélèvement, examen et essais en
compression

Prüfung von Beton in Bauwerken - Teil 1:
Bohrkernproben - Herstellung, Untersuchung und
Prüfung der Druckfestigkeit

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

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, 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 United Kingdom.



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

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This is a preview of "ONORM EN 12504-1:201...". Click here to purchase the full version from the ANSI store.

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European foreword

This document (EN 12504-1:2019) 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 12504-1:2009.

It is recognized good practice to include measurement of density prior to the determination of compressive strength, as a check on compaction of the concrete.

In drafting the standard consideration has been given to the results of the research programme, part funded by the EC under the Measurement and Testing Programme, contract MAT1-CT94-0043.

The standard includes simple guidance on the process of taking cores, but does not consider a sampling plan. It also provides procedures for visual examination and compressive strength testing, but not the interpretation of the results.

This standard is one of a series on testing concrete.

EN 12504, *Testing concrete in structures*, consists of the following parts:

- *Part 1: Cored specimens – Taking, examining and testing in compression;*
- *Part 2: Non-destructive testing – Determination of rebound number;*
- *Part 3: Determination of pull-out force;*
- *Part 4: Determination of ultrasonic pulse velocity.*

This edition includes the following significant technical changes with respect to EN 12504-1:2009:

- a) editorial revisions;
- b) measurement of core dimensions;
- c) core samples to be tested in an *in situ* or wet conditions;
- d) procedures for preparation of specimens prior to testing.

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.

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1 Scope

This document specifies a method for taking cores from hardened concrete, their examination, preparation for testing and determination of compressive strength.

This document does not give guidance on the decision to drill cores or on the locations for drilling.

This document does not provide procedures for interpreting the core strength results.

For the assessment of in situ compressive strength in structures and precast concrete components, EN 13791 may be used.

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 12390-1, *Testing hardened concrete — Part 1: Shape, dimensions and other requirements for specimens and moulds*

EN 12390-3:2019, *Testing hardened concrete — Part 3: Compressive strength of test specimens*

EN 12390-4, *Testing hardened concrete — Part 4: Compressive strength — Specification for testing machines*

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 Principle

Cores extracted using a core drill are carefully examined, prepared by grinding or capping and tested in compression using standard procedures.

5 Apparatus

5.1 Core drill, equipment capable of extracting cores from the hardened concrete to the dimensions set out in 6.4 to the tolerances set out in 8.3.

5.2 Compression testing machine, conforming to EN 12390-4 and related to the size of specimens and their expected failure load.

NOTE Concrete compression testing machines conforming to EN 12390-4 may need to be adapted to test cores (see the Foreword of EN 12390-4).

5.3 Balance or scale, capable of determining the mass of the core, as tested, to a maximum permissible error of 0,1 % of the mass.

5.4 Callipers and/or rules, capable of measuring the dimensions of the core and the steel reinforcement to a maximum permissible error of 1 %.