

ILNAS

Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 12504-2:2021

Testing concrete in structures - Part 2: Non-destructive testing - Determination of rebound number

Essais pour béton dans les structures -
Partie 2 : Essais non destructifs -
Détermination de l'indice de
rebondissement

Prüfung von Beton in Bauwerken - Teil 2:
Zerstörungsfreie Prüfung - Bestimmung
der Rückprallzahl

07/2021



National Foreword

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Testing concrete in structures - Part 2: Non-destructive testing - Determination of rebound number

Essais pour béton dans les structures - Partie 2 : Essais non destructifs - Détermination de l'indice de rebondissement

Prüfung von Beton in Bauwerken - Teil 2: Zerstörungsfreie Prüfung - Bestimmung der Rückprallzahl

This European Standard was approved by CEN on 14 June 2021.

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European foreword

This document (EN 12504-2:2021) 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of an identical text or by endorsement, at the latest by January 2022, and conflicting national standards shall be withdrawn at the latest by January 2022.

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 12504-2:2012.

The following amendments have been made in comparison to the former edition:

- a recommendation that two different reference anvils are used for calibrating the equipment.
- the allowable range of results has been tightened.

This document is based on the International Standard ISO 1920-7, *Testing of concrete – Part 7: Non-destructive tests on hardened concrete*, and reference has been made to ASTM C805, *Standard Test Method for Rebound number of hardened concrete*.

This document has been framed around the use of a Type N, spring driven steel hammer, originally designed by Schmidt.

This document 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.*

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, Turkey and the United Kingdom.

1 Scope

This document specifies a method for determining the rebound number of an area of hardened concrete using a spring-driven hammer.

NOTE 1 The rebound number determined by this method can be used to assess the uniformity of concrete *in situ*, to delineate zones or areas of poor quality or deteriorated concrete in structures.

NOTE 2 The test method is not intended as an alternative for the compressive strength determination of concrete (EN 12390-3), but with suitable correlation, it can provide an estimate of *in situ* compressive strength. For the assessment of *in situ* compressive strength, see EN 13791.

NOTE 3 The hammer can be used for comparative testing, referenced against a concrete with known strength or against a concrete which has been shown that it has come from a defined volume of concrete with a population verified as conforming to a particular strength class.

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 ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (ISO 6508-1)*

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 <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Principle

A mass propelled by a spring strikes a plunger in contact with the surface of the structure or specimen to be tested. The test result is expressed as a number in terms of the rebound distance of the mass. A number may also be obtained in terms of the energy or velocity differential before and after impact of the mass.

5 Apparatus

5.1 Rebound hammer

Consisting of a spring-loaded hammer mass which, when released, strikes a plunger in contact with the surface to be tested. The rebound distance of the hammer mass from the plunger or other rebound values shall be measured.

NOTE Several types and sizes of rebound hammers are commercially available for testing various strength classes and types of concrete. Each type and size of hammer can only be used with the strength classes and types of concrete for which it is intended.