ICS 91.100.30 SLOVENSKÁ TECHNICKÁ NORMA Január 2022

STN	**Skúšanie zatvrdnutého betónu Časť 13: Stanovenie sečnicového modulu pružnosti v tlaku**	**STN EN 12390-13 73 1302**

Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/21

Rozpracovaná prekladom.

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English Version

Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression

Essais pour béton durci - Partie 13 : Détermination du module sécant d'élasticité en compression

Prüfung von Festbeton - Teil 13: Bestimmung des Elastizitätsmoduls unter Druckbelastung (Sekantenmodul)

This European Standard was approved by CEN on 7 June 2021.

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

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European foreword

This document (EN 12390-13:2021) 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of an identical text or by endorsement, at the latest by January 2022, and conflicting national standards shall be withdrawn at the latest by January 2022.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 12390-13:2013.

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

— upper limit of lower stress increased to prevent sample unloading when testing low strength concrete;

— change to the loading profile in Method B.

This document is based on an extensive investigation and comparison of existing National Standards: ASTM, BS, DIN, ISO, NORD TEST and UNI followed by the analysis of a test programme involving five laboratories carried out by UNI.

This document is one of a series on testing concrete.

EN 12390, *Testing hardened concrete*, consists of the following parts:

— *Part 1: Shape, dimensions and other requirements for specimens and moulds*

— *Part 2: Making and curing specimens for strength tests*

— *Part 3: Compressive strength of test specimens*

— *Part 4: Compressive strength – Specification for testing machines*

— *Part 5: Flexural strength of test specimens*

— *Part 6: Tensile splitting strength of test specimens*

— *Part 7: Density of hardened concrete*

— *Part 8: Depth of penetration of water under pressure*

— *Part 10: Determination of the carbonation resistance of concrete at atmospheric levels of carbon dioxide*

— *Part 11: Determination of the chloride resistance of concrete, unidirectional diffusion*

— *Part 12: Determination of the potential carbonation resistance of concrete: Accelerated carbonation method*

— *Part 13: Determination of secant modulus of elasticity in compression*

— *Part 14: Semi-adiabatic method for the determination of heat released by concrete during its hardening process*

— *Part 15: Adiabatic method for the determination of heat released by concrete during its hardening process*

— *Part 16: Determination of shrinkage of concrete*

— *Part 17: Determination of creep of concrete in compression*

— *Part 18: Determination of chloride migration coefficient (in preparation)*

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 the method for the determination of the secant modulus of elasticity in compression of hardened concrete on test specimens which can be cast or taken from a structure.

The test method allows the determination of two secant moduli of elasticity: the initial modulus, $E_{C,0}$ measured at first loading and the stabilized modulus, $E_{C,S}$ measured after three loading cycles.

Two different test methods are given. The first (Method A) is for determination of both initial and stabilized moduli, the second (Method B) is for determination of stabilized modulus only.

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 12390-2, *Testing hardened concrete - Part 2: Making and curing specimens for strength tests*

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

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

EN 12504-1, *Testing concrete in structures - Part 1: Cored specimens - Taking, examining and testing in compression*

EN 12620, *Agregates for concrete*

EN ISO 9513, *Metallic materials - Calibration of extensometer systems used in uniaxial testing (ISO 9513)*