ILNAS

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

# ILNAS-EN 12390-6:2023

## Testing hardened concrete - Part 6: Tensile splitting strength of test specimens

Essai pour béton durci - Partie 6 : Détermination de la résistance en traction par fendage d'éprouvettes

Prüfung von Festbeton - Teil 6: Spaltzugfestigkeit von Probekörpern

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**National Foreword**

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# EUROPEAN STANDARD
# NORME EUROPÉENNE
# EUROPÄISCHE NORM

**EN 12390-6**

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# Testing hardened concrete - Part 6: Tensile splitting strength of test specimens

Essai pour béton durci - Partie 6 : Détermination de la résistance en traction par fendage d'éprouvettes

Prüfung von Festbeton - Teil 6: Spaltzugfestigkeit von Probekörpern



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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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## European foreword

This document (EN 12390-6:2023) 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of an identical text or by endorsement, at the latest by month May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

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 12390-6:2009.

The main change from the previous edition EN 12390-6:2009 of this document has been to include the testing of cored specimens. The reference specimen for the test is a moulded cylindrical specimen.

This document is one of a series concerned with 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*

— *Part 19: Determination of resistivity (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, Türkiye and the United Kingdom.

# Introduction

This test method was one of a number of test methods examined in a laboratory inter-comparison programme. The work was partly funded by the EC under the Measurement and Testing programme, contract MAT1-CT94-0043. The programme and other references showed the following:

a) Tensile splitting strengths measured between the normal plane platens of testing machines gave the same results as those using the special curved platens, originally described in ISO 4108:1980 [1]. Although these curved platens have been optionally retained in this document, they are not necessary for the measurement.

b) The material used for the packing strips affects the apparent tensile strength measured. This has led to the decision to standardize on hardboard strips, since they provided the lowest standard deviations.

c) The apparent tensile strength measured depends upon the shape and size of the test specimen used:

   1) cubes gave higher measured tensile strengths than moulded cylinders, by approximately 10 %;

   2) 150 mm cubes gave lower measured tensile strengths than 100 mm cubes;

   3) the effect of moulded cylinder size on measured tensile strength was not found to be significant, possibly due to the variability of the data.

As a result of these conclusions from the laboratory programme, this document restricts the measurement of tensile splitting strength to cylindrical specimens used with hardboard packing strips, which is the reference method. However, as some countries still test cubical or prismatic specimens, their use has been retained in Annex A. In cases of dispute, the reference method is the use of moulded cylinders of 150 mm diameter and 300 mm length.

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