



SLOVENSKI STANDARD

SIST EN 12697-20:2012

01-junij-2012

Nadomešča:

SIST EN 12697-20:2004

Bitumenske zmesi - Preskusne metode za vroče asfaltne zmesi - 20. del: Preskus z vtiskanjem na kocko ali valjaste preskušance (CY)

Bituminous mixtures - Test methods for hot mix asphalt - Part 20: Indentation using cube or cylindrical specimens (CY)

Asphalt - Prüfverfahren für Heißasphalt - Teil 20: Eindringversuch an Würfeln oder zylindrischen Probekörpern

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 20: Essai de pénétration de cubes ou éprouvettes Marshall

Ta slovenski standard je istoveten z: EN 12697-20:2012

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

SIST EN 12697-20:2012

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 12697-20

April 2012

ICS 93.080.20

Supersedes EN 12697-20:2003

English Version

Bituminous mixtures - Test methods for hot mix asphalt - Part 20: Indentation using cube or cylindrical specimens (CY)

Mélanges bitumineux - Méthodes d'essai pour mélange
hydrocarboné à chaud - Partie 20: Essai d'indentation sur
cubes ou éprouvettes Marshall

Asphalt - Prüfverfahren für Heißasphalt - Teil 20:
Eindringversuch an Würfeln oder zylindrischen
Probekörpern

This European Standard was approved by CEN on 26 February 2012.

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.

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Foreword

This document (EN 12697-20:2012) has been prepared by Technical Committee CEN/TC 227 "Road materials", the secretariat of which is held by DIN.

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 October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12697-20:2003.

The following is a list of significant technical changes since the previous edition:

- Marshall specimens (MS) changed to cylindrical specimens (CY) in the title and elsewhere;
- the scope changed to covering mastic asphalt and other asphalt rather than mastic asphalt and rolled asphalt to avoid confusion with hot rolled asphalt;
- parting agent corrected to release agent;
- the description of the indentation test apparatus is broken down into separate components;
- accuracy requirement given for the water bath;
- the requirement that cylindrical specimens should not be removed from the compaction mould has been removed;
- requirement on the storage of samples prior to testing has been added;
- the requirements for the preparation of both cube and cylindrical samples have been redrafted;
- precision statement edited.

EN 12697-1, *Bituminous mixtures — Test methods for hot mix asphalt — Part 1: Soluble binder content*

EN 12697-2, *Bituminous mixtures — Test methods for hot mix asphalt — Part 2: Determination of particle size distribution*

EN 12697-3, *Bituminous mixtures — Test methods for hot mix asphalt — Part 3: Bitumen recovery: Rotary evaporator*

EN 12697-4, *Bituminous mixtures — Test methods for hot mix asphalt — Part 4: Bitumen recovery: Fractionating column*

EN 12697-5, *Bituminous mixtures — Test methods for hot mix asphalt — Part 5: Determination of the maximum density*

EN 12697-6, *Bituminous mixtures — Test methods for hot mix asphalt — Part 6: Determination of bulk density of bituminous specimens*

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EN 12697-7, *Bituminous mixtures — Test methods for hot mix asphalt — Part 7: Determination of bulk density of bituminous specimens by gamma rays*

EN 12697-8, *Bituminous mixtures — Test methods for hot mix asphalt — Part 8: Determination of void characteristics of bituminous specimens*

EN 12697-10, *Bituminous mixtures — Test methods for hot mix asphalt — Part 10: Compactibility*

EN 12697-11, *Bituminous mixtures — Test methods for hot mix asphalt — Part 11: Determination of the affinity between aggregate and bitumen*

EN 12697-12, *Bituminous mixtures — Test methods for hot mix asphalt — Part 12: Determination of the water sensitivity of bituminous specimens*

EN 12697-13, *Bituminous mixtures — Test methods for hot mix asphalt — Part 13: Temperature measurement*

EN 12697-14, *Bituminous mixtures — Test methods for hot mix asphalt — Part 14: Water content*

EN 12697-15, *Bituminous mixtures — Test methods for hot mix asphalt — Part 15: Determination of the segregation sensitivity*

EN 12697-16, *Bituminous mixtures — Test methods for hot mix asphalt — Part 16: Abrasion by studded tyres*

EN 12697-17, *Bituminous mixtures — Test methods for hot mix asphalt — Part 17: Partial loss of porous asphalt specimen*

EN 12697-18, *Bituminous mixtures — Test methods for hot mix asphalt — Part 18: Binder drainage*

EN 12697-19, *Bituminous mixtures — Test methods for hot mix asphalt — Part 19: Permeability of specimen*

EN 12697-20, *Bituminous mixtures — Test methods for hot mix asphalt — Part 20: Indentation using cube or cylindrical specimens*

EN 12697-21, *Bituminous mixtures — Test methods for hot mix asphalt — Part 21: Indentation using plate specimens*

EN 12697-22, *Bituminous mixtures — Test methods for hot mix asphalt — Part 22: Wheel tracking*

EN 12697-23, *Bituminous mixtures — Test methods for hot mix asphalt — Part 23: Determination of the indirect tensile strength of bituminous specimens*

EN 12697-24, *Bituminous mixtures — Test methods for hot mix asphalt — Part 24: Resistance to fatigue*

EN 12697-25, *Bituminous mixtures — Test methods for hot mix asphalt — Part 25: Cyclic compression test*

EN 12697-26, *Bituminous mixtures — Test methods for hot mix asphalt — Part 26: Stiffness*

EN 12697-27, *Bituminous mixtures — Test methods for hot mix asphalt — Part 27: Sampling*

EN 12697-28, *Bituminous mixtures — Test methods for hot mix asphalt — Part 28: Preparation of samples for determining binder content, water content and grading*

EN 12697-29, *Bituminous mixtures — Test methods for hot mix asphalt — Part 29: Determination of the dimensions of a bituminous specimen*

EN 12697-30, *Bituminous mixtures — Test methods for hot mix asphalt — Part 30: Specimen preparation by impact compactor*

- EN 12697-31, *Bituminous mixtures — Test methods for hot mix asphalt — Part 31: Specimen preparation by gyratory compactor*
- EN 12697-32, *Bituminous mixtures — Test methods for hot mix asphalt — Part 32: Laboratory compaction of bituminous mixtures by vibratory compactor*
- EN 12697-33, *Bituminous mixtures — Test methods for hot mix asphalt — Part 33: Specimen prepared by roller compactor*
- EN 12697-34, *Bituminous mixtures — Test methods for hot mix asphalt — Part 34: Marshall test*
- EN 12697-35, *Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing*
- EN 12697-36, *Bituminous mixtures — Test methods for hot mix asphalt — Part 36: Determination of the thickness of a bituminous pavement*
- EN 12697-37, *Bituminous mixtures — Test methods for hot mix asphalt — Part 37: Hot sand test for the adhesivity of binder on precoated chippings for HRA*
- EN 12697-38, *Bituminous mixtures — Test methods for hot mix asphalt — Part 38: Common equipment and calibration*
- EN 12697-39, *Bituminous mixtures — Test methods for hot mix asphalt — Part 39: Binder content by ignition*
- EN 12697-40, *Bituminous mixtures — Test methods for hot mix asphalt — Part 40: In situ drainability*
- EN 12697-41, *Bituminous mixtures — Test methods for hot mix asphalt — Part 41: Resistance to de-icing fluids*
- EN 12697-42, *Bituminous mixtures — Test methods for hot mix asphalt — Part 42: Amount of coarse foreign matters in reclaimed asphalt*
- EN 12697-43, *Bituminous mixtures — Test methods for hot mix asphalt — Part 43: Resistance to fuel*
- EN 12697-44, *Bituminous mixtures — Test methods for hot mix asphalt — Part 44: Crack propagation by semi-circular bending test*
- prEN 12697-45, *Bituminous mixtures — Test methods for hot mix asphalt — Part 45: Saturation ageing tensile stiffness (SATS) conditioning test*
- prEN 12697-46, *Bituminous mixtures — Test methods for hot mix asphalt — Part 46: Low temperature cracking and properties by uniaxial tension tests.*
- EN 12697-47, *Bituminous mixtures — Test methods for hot mix asphalt — Part 47: Determination of the ash content of natural asphalt*
- prEN 12697-48, *Bituminous mixtures — Test methods for hot mix asphalt — Part 48: Inter-layer bond strength¹⁾*
- prEN 12697-49, *Bituminous mixtures — Test methods for hot mix asphalt — Part 49: Determination of friction after polishing.¹⁾*
- prEN 12697-50, *Bituminous mixtures — Test methods for hot mix asphalt — Part 50: Scuffing resistance of surface course¹⁾*

1) In preparation

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According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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1 Scope

This European Standard specifies a test method for determining the depth of indentation of mastic asphalt and other asphalt, when force is applied to them via a cylindrical indenter pin with a circular flat-ended base. This European Standard applies to aggregates of maximum nominal size less or equal to 16 mm.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12697-27, *Bituminous mixtures — Test methods for hot mix asphalt — Part 27: Sampling*

EN 12697-30, *Bituminous mixtures — Test methods for hot mix asphalt — Part 30: Specimen preparation by impact compactor*

EN 12697-35, *Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing*

EN 12970, *Mastic asphalt for waterproofing — Definitions, requirements and test methods*

EN 13108-1, *Bituminous mixtures — Material specifications — Part 1: Asphalt Concrete*

EN 13108-2, *Bituminous mixtures — Material specifications — Part 2: Asphalt Concrete for very thin layers*

EN 13108-3, *Bituminous mixtures — Material specifications — Part 3: Soft Asphalt*

EN 13108-4, *Bituminous mixtures — Material specifications — Part 4: Hot Rolled Asphalt*

EN 13108-5, *Bituminous mixtures — Material specifications — Part 5: Stone Mastic Asphalt*

EN 13108-6, *Bituminous mixtures — Material specifications — Part 6: Mastic asphalt*

EN 13108-7, *Bituminous mixtures — Material specifications — Part 7: Porous Asphalt*

ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

3 Apparatus

3.1 Moulding of test cubes of mastic asphalt

3.1.1 Cubic mould: composite metal mould with inside edges $(70,7 \pm 0,5)$ mm to mould the test cube (see Figure 1).

3.1.2 Oven capable of maintaining temperature of (250 ± 10) °C.

3.1.3 Hardwood tamper with a quadratic cross section, edge length about 30 mm.

3.1.4 Spatula about 30 mm wide.

3.1.5 Mixing bowl with spoon.

3.1.6 Thermometer capable to measure 300 °C accurate to 2 °C.

3.1.7 Thermometer capable to measure 40 °C accurate to 1 °C.

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3.1.8 Release agent (e.g. glycerine or waxed paper).

3.1.9 Adjustable mould for the test cube (see Figure 6).

Dimensions in millimetres

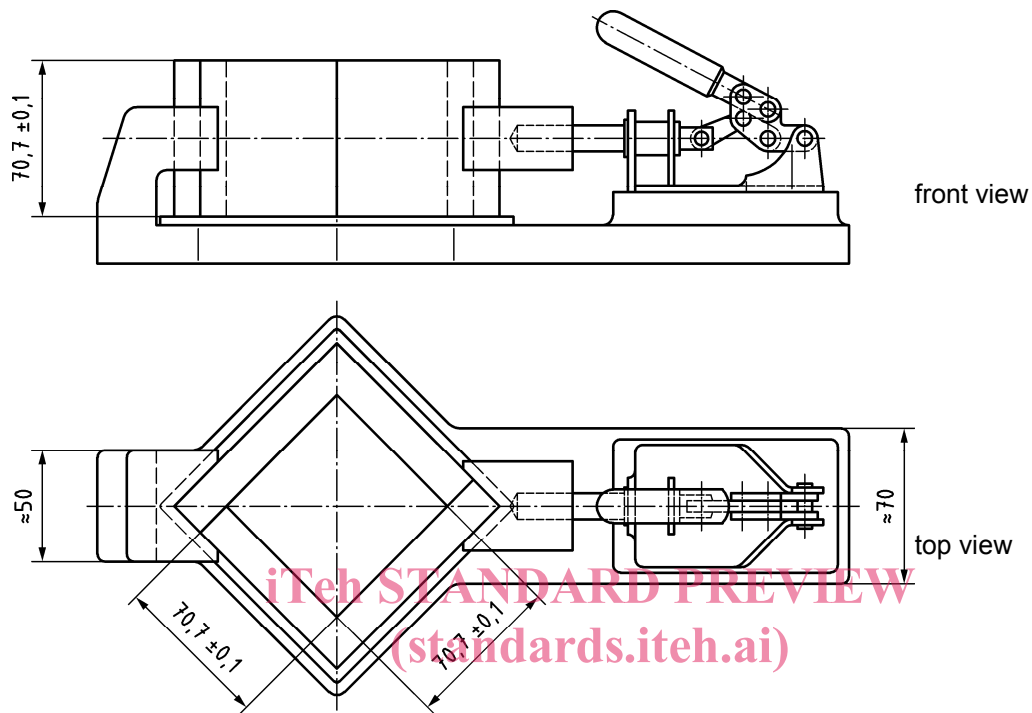


Figure 1 — Example of a mould for the preparation of test cubes

3.2 Indentation test apparatus

3.2.1 Loading apparatus

3.2.1.1 Description

Indentation test apparatus (see Figure 2) fitted with an indenter pin and a displacement transducer, suitable for one or two measuring points. Instead of the transducer, a dial gauge may also be used. The water bath, as specified in 3.2.2, shall be connected to the indentation test apparatus by means of a secure and watertight connection running from the bed plate, as specified in 3.2.3, through the bath to the base plate of the apparatus. The measuring pin of the displacement transducer shall not be located more than 50 mm from the axis of the guide rod.

3.2.1.2 Loading weights

The indentation test apparatus shall be set up in such a way that first the preliminary force of (25 ± 1) N then the main force of a further 500 N may be applied vertically and without impact to the surface of the specimen. The apparatus shall be capable of maintaining the total test force of (525 ± 1) N constant through out the test. Two ball bearings shall be used to ensure a minimum of friction in the guidance of the indenter pin. With the exception of the ball bearings, all components shall have a clearance of at least 1 mm from the guide rod.

3.2.1.3 Steel indenter pin

The bottom part of the steel indenter pin shall be in the shape of a regular flat ended cylinder with a base area of either 100 mm² or 500 mm² (corresponding to a diameter of $(11,3 \pm 0,1)$ mm or $(25,2 \pm 0,1)$ mm) and a length of at least 20 mm (see Figures 3 and 4). The sides and base of the cylinder shall be smoothed to a fine finish. The length and mass of the two indenter pins shall be identical, irrespective of the diameter of the base. The indenter pins shall screw coaxially into the loading cylinder. The thread cut in the bottom of the guide rod shall be at least so long, that the stop rings of the indenter pins with their thread, at least $(6,5 \pm 0,5)$ mm long, fit snugly against the end face of the guide rod.

3.2.1.4 Deformation measurement gauge

If a mechanical dial gauge is used the measuring pin shall be lockable.

The deformation of the apparatus when force is applied or removed shall be less than 0,01 mm.

For indentation test apparatus fitted with two measuring points, this requirement applies analogously to the application and removal of both forces.

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