



SLOVENSKI STANDARD
oSIST prEN 12697-20:2019
01-februar-2019

Bitumenske zmesi - Preskusne metode - 20. del: Preskus z vtiskanjem na kocko ali preskušavec po Marshallu

Bituminous mixtures - Test methods - Part 20: Indentation using cube or Marshall specimens

Asphalt - Prüfverfahren - Teil 20: Eindringversuch an Würfeln oder Marshall-Probekörpern

Mélanges bitumineux - Méthodes d'essai - Partie 20: Essai de pénétration de cubes ou éprouvettes Marshall

Ta slovenski standard je istoveten z: prEN 12697-20

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

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ICS

Will supersede EN 12697-20:2012

English Version

Bituminous mixtures - Test methods - Part 20: Indentation using cube or Marshall specimens

Mélanges bitumineux - Méthodes d'essai - Partie 20:
Essai de pénétration de cubes ou éprouvettes Marshall

Asphalt - Prüfverfahren - Teil 20: Eindringversuch an
Würfeln oder Marshall-Probekörpern

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 227.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 12697-20:2018) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by DIN.

This document is currently submitted to the enquiry.

This document will supersede EN 12697-20:2012.

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

- The title no longer makes the method exclusively for hot mix asphalt;
- [ge] Editorial update according to current standard template;
- [2] References deleted to EN 13108: -1, -2, -3, -4, -5 and -7;
- [3.1.9] Figure 1: Correction of tolerances of metal mould to ($\pm 0,5$) in accordance with 3.1.1;
- [5.3.2.3] The maximum temperature amended to 230 °C in text and NOTE in accordance with EN 12697-35;
- [5.3.3] The maximum temperature amended to 230 °C in accordance with EN 12697-35.

A list of all parts in the EN 12697 series can be found on the CEN website.

[SIST EN 12697-20:2020](https://standards.iteh.ai/catalog/standards/sist/dab2d8a1-9787-4c66-8399-8760c1c95fc2/sist-en-12697-20-2020)

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prEN 12697-20:2018 (E)**1 Scope**

This document 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 document applies to aggregates of maximum nominal size less or equal to 16 mm.

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 12697-27, *Bituminous mixtures - Test methods - 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 - Part 35: Laboratory mixing*

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

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

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

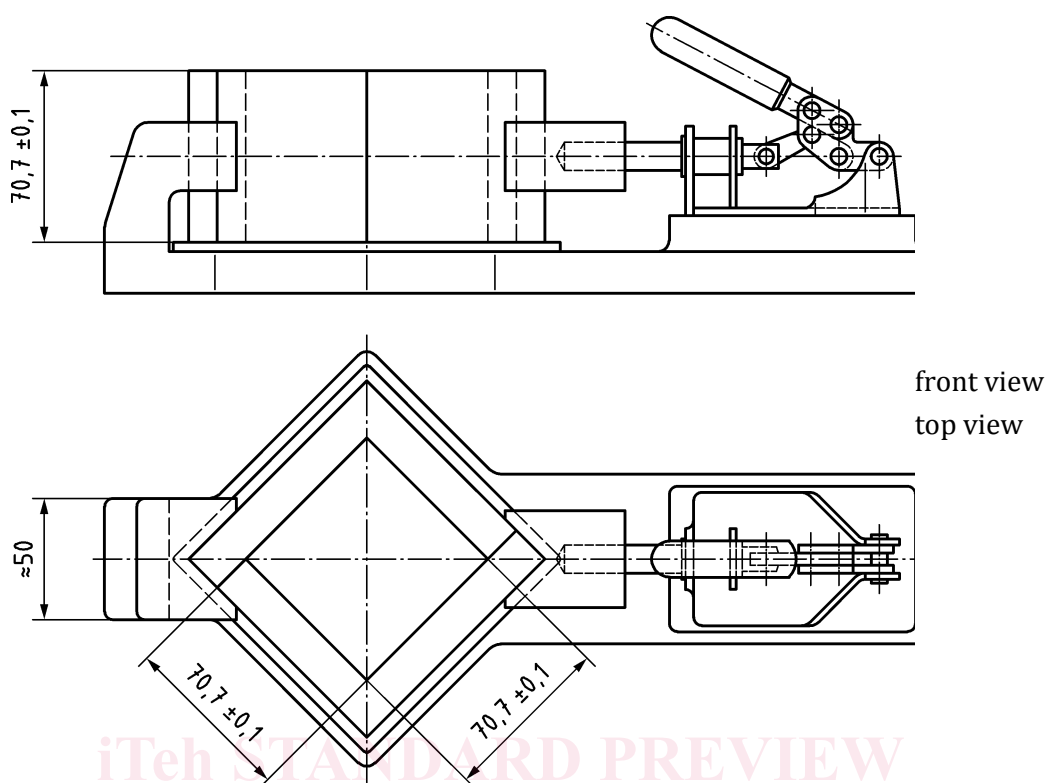


Figure 1 — Example of a mould for the preparation of test cubes

3.2 Indentation test apparatus SIST EN 12697-20:2020

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.

prEN 12697-20:2018 (E)**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 ± 0,1) mm or (25,2 ± 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 ± 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.

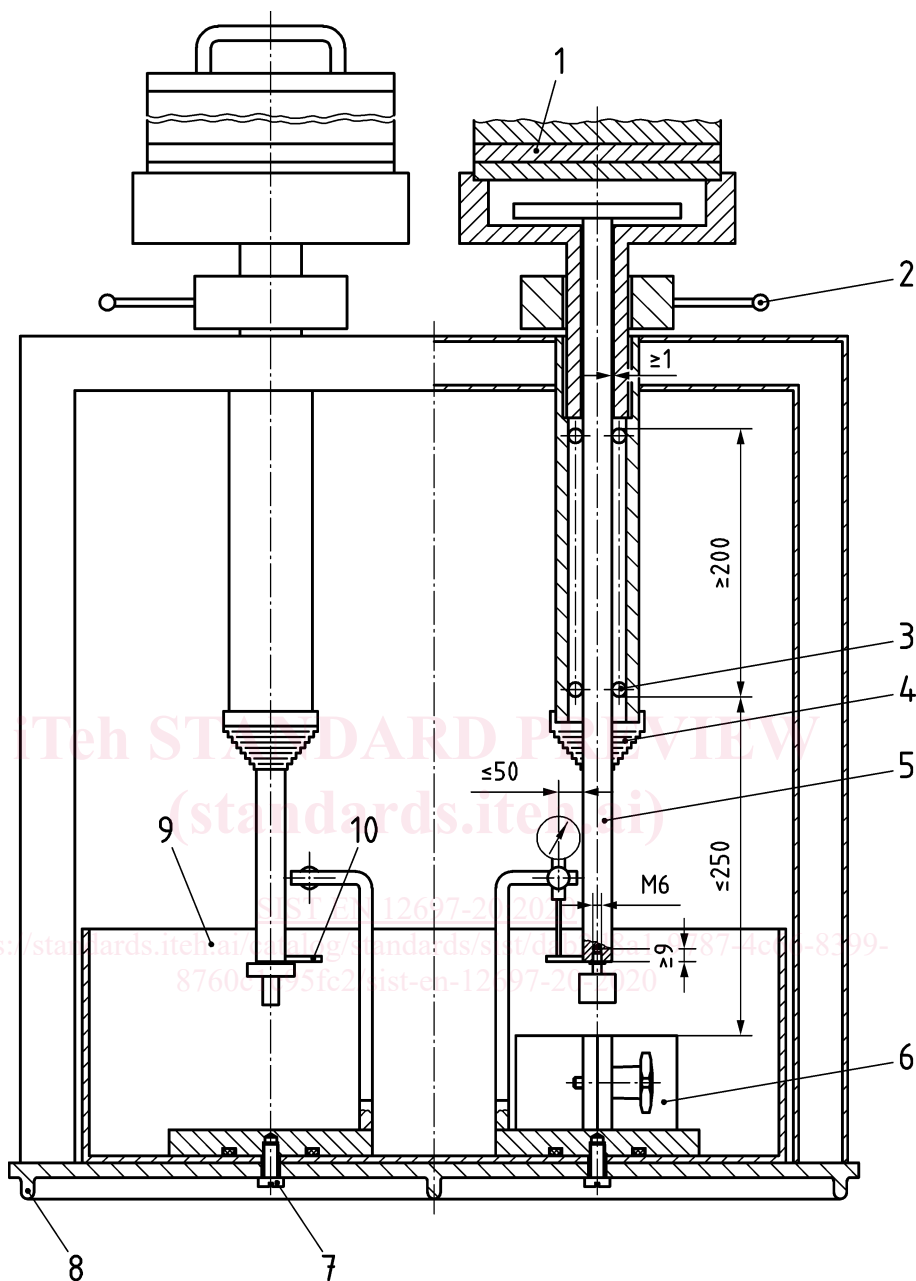
For indentation test apparatus fitted with two measuring points, this requirement applies analogously to the application and removal of both forces.

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Dimensions in millimetres

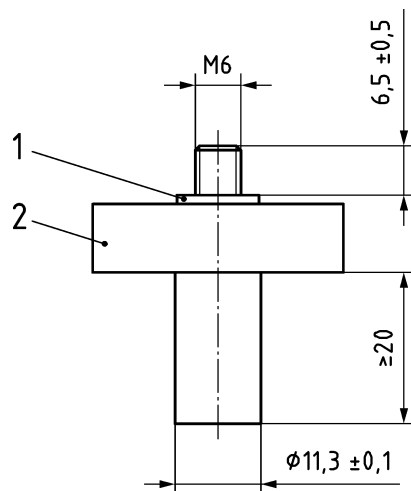


Key

- | | |
|--|--|
| 1 weight | 6 adjustable mould |
| 2 lifting device (hydraulic or mechanical) | 7 screw for the bed plate |
| 3 ball bearing | 8 stiffening rib |
| 4 concertina bellows | 9 water bath |
| 5 guide rod | 10 sensing plate for the displacement transducer (removable) |

Figure 2 — Example of an indentation test apparatus with two measuring points (sketch of the principle)

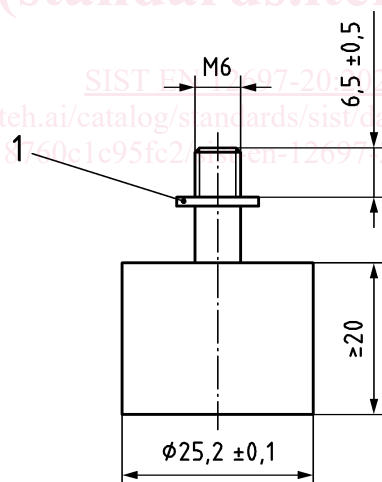
Dimensions in millimetres

**Key**

- 1 stop ring
- 2 counterweight

Figure 3 — Indenter pin with a base area of 100 mm²

Dimensions in millimetres

**Key**

- 1 stop ring

Figure 4 — Indenter pin with a base area of 500 mm²

3.2.2 Water bath having a capacity of at least 7,5 l per measuring point, and fitted with controls for the regulation of heating and temperature with an accuracy of ± 1 °C.