



SLOVENSKI STANDARD

SIST EN 12697-30:2012

01-junij-2012

Nadomešča:

SIST EN 12697-30:2004+A1:2007

Bitumenske zmesi - Preskusne metode za vroče asfaltne zmesi - 30. del: Priprava preskušancev z udarnim zgoščevalnikom

Bituminous mixtures - Test methods for hot mix asphalt - Part 30: Specimen preparation by impact compactor

Asphalt - Prüfverfahren für Heißasphalt - Teil 30: Probenvorbereitung mit dem Marshall-Verdichtungsgerät

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 30: Confection d'éprouvettes par compacteur à impact

Ta slovenski standard je istoveten z: EN 12697-30:2012

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

SIST EN 12697-30:2012

en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12697-30

April 2012

ICS 93.080.20

Supersedes EN 12697-30:2004+A1:2007

English Version

Bituminous mixtures - Test methods for hot mix asphalt - Part 30: Specimen preparation by impact compactor

Mélanges bitumineux - Méthodes d'essai pour mélange
hydrocarboné à chaud - Partie 30: Confection d'éprouvettes
par compacteur à impact

Asphalt - Prüfverfahren für Heißasphalt - Teil 30:
Probenvorbereitung, Marshall-Verdichtungsgerät

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

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Foreword

This document (EN 12697-30:2012) 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of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.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 12697-30:2004+A1:2007.

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

- allowance made for some oversize aggregate in the scope;
- informative annex for a checking procedure for impact compaction devices added;
- the tolerance on the angle of the sliding mass is reduced;
- the requirement for inspections to establish that the safety requirements have been complied with has been deleted;
- densities defined in Mg/m³ rather than kg/m³;
- the requirement on the moisture content of wooden block pedestal is moved to a note;
- the notes on the verification of the wooden block pedestal and the foot assembly have been clarified;
- definition of the steel compaction hammer tightened up;
- separate figure provided of typical compactor with wooden block;
- steel block made optional;
- the time that samples can be stored at elevated temperature reduced;
- the uniform upper limit on the temperature of 130 °C removed, leaving just the reference temperature in EN 12697-35;
- the limitations of heating of automatic compaction hammers is clarified in notes;
- the timing of preparing multiple samples is specified;
- requirements for filling the mould and reversing the specimen during compaction have been edited.

This European Standard is one of a series of standards as listed below:

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

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

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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*

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: Particle 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 method 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*

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prEN 12697-48¹⁾, *Bituminous mixtures — Test methods for hot mix asphalt — Part 48: Inter-layer bond strength*

prEN 12697-49¹⁾, *Bituminous mixtures — Test methods for hot mix asphalt — Part 49: Determination of friction after polishing.*

prEN 12697-50¹⁾, *Bituminous mixtures — Test methods for hot mix asphalt — Part 50: Scuffing resistance of surface course asphalt*

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) In preparation

1 Scope

This European Standard specifies methods of moulding specimens from bituminous mixtures by impact compaction. Such specimens are primarily used to determine bulk density and other technological characteristics e.g. Marshall stability and flow according to EN 12697-34.

This European Standard applies to bituminous mixtures (both those made up in a laboratory and those resulting from work site sampling), with not more than 15 % by mass retained on the 22,4 mm sieve and none on the 31,5 mm sieve.

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 12591, *Bitumen and bituminous binders — Specifications for paving grade bitumens*

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

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

EN 12697-35:2004+A1, *Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing*

EN 13924, *Bitumen and bituminous binders — Specifications for hard paving grade bitumens*

EN 14023, *Bitumen and bituminous binders — Specification framework for polymer modified bitumens*

3 Terms and definitions

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For the purposes of this document, the following terms and definitions apply.

3.1

set number

number of blows per side that is set for the test method for which the sample is intended to be used

Note 1 to entry: The number of blows is commonly 50 but can be 35 or 75.

4 Principle

To prepare the specimens, tempered asphalt mix, either freshly mixed according to EN 12697-35:2004+A1 or sampled on site or plant according to EN 12697-27 has to be transferred into a specified steel compaction mould. The mixture is then compacted into one of the specified impact compactors by the sliding mass falling from a specified height with a specified number of blows within a specified time onto the foot of the hammer, located on top of the asphalt specimen. The specimen is then allowed to cool down to room temperature.

5 Apparatus

5.1 Impact compactor with steel anvil

5.1.1 General

5.1.1.1 The impact compactor with steel anvil (see Figure 1), a machine-driven apparatus shall comprise the components listed in 5.1.1.2 to 5.1.1.9.

NOTE In Annex B, a guideline for possible checking based on self-composed equipment is described.

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5.1.1.2 Steel base plate, 15 mm thick and about 600 mm × 610 mm, set horizontally on a firm base.

5.1.1.3 Three feet of equal rigidity in the direction of both compression and shear, fitted with rubber buffers corresponding to the mass of the compaction pedestal.

5.1.1.4 Compaction pedestal (see Figure 2) made of cast iron having a mass of at least 100 kg.

5.1.1.5 Clamping device to hold the compaction mould.

NOTE Equipment with eccentric cam (see Figure 1) has been used successfully.

5.1.1.6 Compaction hammer, consisting of a cylindrical guide rod, a sliding mass (see Figure 3), weighing $(4\,550 \pm 20)$ g, and a foot (see Figure 4), weighing $(3\,960 \pm 20)$ g.

5.1.1.7 Chain-driven lifting gear, for the sliding mass, designed so that the length of the free fall is (460 ± 3) mm.

5.1.1.8 Device for counting and recording the number of blows.

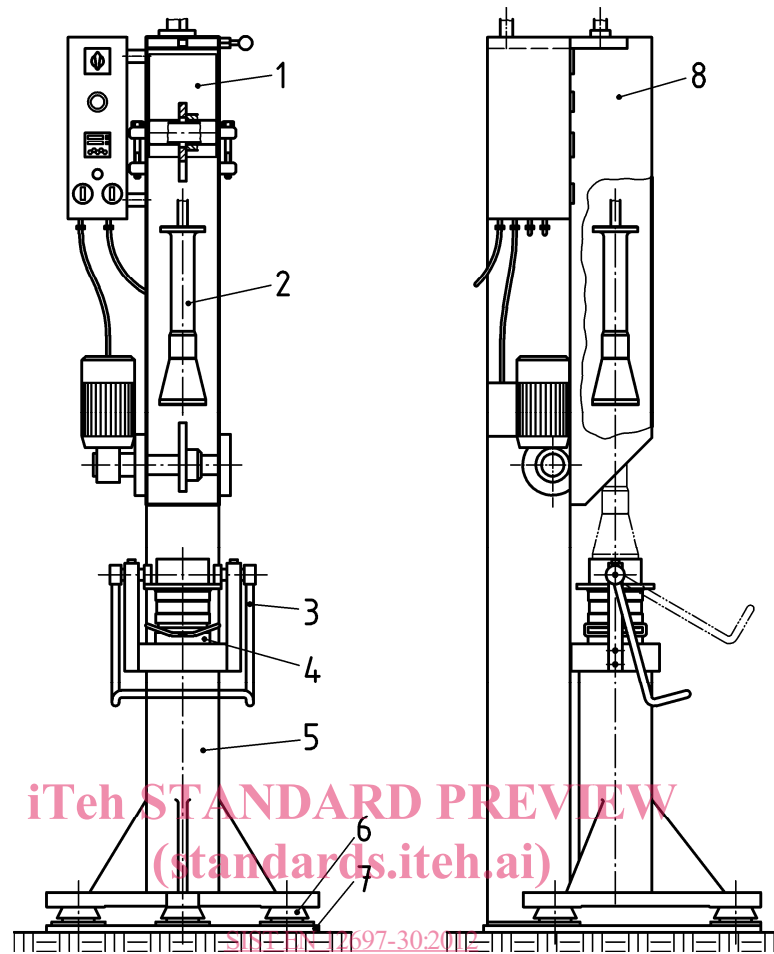
NOTE The number of blows should be counted and added.

5.1.1.9 Linear variable differential transformer (optional), as described in Annex A, for measuring the specimen thickness during compaction for measuring compactibility in accordance with EN 12697-10.

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Key

- 1 basic apparatus with power-driven lifting gear for the sliding mass and impact counter (shown without shielding)
- 2 compaction hammer with guide rod for the sliding mass
- 3 eccentric cam for clamping device
- 4 mould base with compaction mould attached
- 5 compaction pedestal
- 6 feet
- 7 steel base plate
- 8 shielding

Figure 1 — Diagrammatic sketch of the impact compactor

NOTE See Annex A for optional linear variable differential transformer to measure the specimen thickness during compaction.