



SLOVENSKI STANDARD

SIST EN 12697-28:2020

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Nadomešča:
SIST EN 12697-28:2002

Bitumenske zmesi - Preskusne metode - 28. del: Priprava vzorcev za ugotavljanje deleža veziva, deleža vode in zrnivosti

Bituminous mixtures - Test methods - Part 28: Preparation of samples for determining binder content, water content and grading

Asphalt - Prüfverfahren - Teil 28: Vorbereitung von Proben zur Bestimmung des Bindemittelgehaltes, des Wassergehaltes und zur Korngrößenbestimmung

Mélanges bitumineux - Méthodes d'essai - Partie 28: Préparation des échantillons pour la détermination de la teneur en liant, de la teneur en eau et de la granularité

Ta slovenski standard je istoveten z: EN 12697-28:2020

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

SIST EN 12697-28:2020 en,fr,de

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EUROPEAN STANDARD

EN 12697-28

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English Version

Bituminous mixtures - Test methods - Part 28: Preparation of samples for determining binder content, water content and grading

Mélanges bitumineux - Méthodes d'essai - Partie 28 :
Préparation des échantillons pour la détermination de
la teneur en liant, de la teneur en eau et de la
granularité

Asphalt - Prüfverfahren - Teil 28: Vorbereitung von
Proben zur Bestimmung des Bindemittelgehaltes, des
Wassergehaltes und zur Korngrößenbestimmung

This European Standard was approved by CEN on 18 November 2019.

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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12697-28:2020) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by BSI.

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 August 2020, and conflicting national standards shall be withdrawn at the latest by August 2020.

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 12697-28:2000.

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;
- [ge] NOTES modified or adjusted to normal text where appropriate according to ISO/IEC Directives – Part 2:2016, 24.5;
- [Clause 2] corrected reference to EN 12697-36. Reference to EN 58 deleted;
- [Clause 3] reference to EN 58 deleted; [EN 12697-28:2020](https://standards.iteh.ai/catalog/standards/sist/57374b58-ca30-4b0f-8e88-12697-28-2020)
- [5.3.1] dated reference to EN 12697-36 deleted; <https://standards.iteh.ai/catalog/standards/sist/57374b58-ca30-4b0f-8e88-12697-28-2020>
- [5.5] Figures 2 and 3 quality improved;
- [5.5.1] Table 2 clarified. Minimum test portion amended.

A list of all parts in the EN 12697 series 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.

EN 12697-28:2020 (E)**1 Scope**

This document describes test methods for preparing test portions for the determination of the binder, water content and grading of samples of bituminous mixtures, when the sample submitted to the laboratory has a mass greater than or equal to four times the test portion.

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 932-1, *Tests for general properties of aggregates — Part 1: Methods for sampling*

EN 12697-36, *Bituminous mixtures — Test methods for hot mix asphalt — Part 36: Determination of the thickness of a bituminous pavement*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/ui>

3.1**representative sample**

bulk sample consisting of a specified number of increments purposely taken to represent a specific quantity or area of material

Note 1 to entry: A representative sample is assumed to have the same composition as the material sampled, within the limits of precision associated with the method of sampling.

3.2**laboratory sample**

sample despatched to the laboratory

Note 1 to entry: It can be the whole or part of the bulk or representative sample and sufficient quantity for all tests required.

3.3**test portion**

part of the laboratory sample to be used for a specific test procedure to produce a single test result

3.4**test specimen**

part of the test portion on which a single test is carried out

Note 1 to entry: A number of tests might be necessary to produce a test result.

3.5

test result

result obtained by applying the test procedure to a test portion

Note 1 to entry: When the test procedure is required to be carried out on more than one test specimen, the test result will be calculated as the mean result of a number of determinations.

4 Apparatus

4.1 **Balance.**

4.2 **Ruler.**

4.3 **Circular saw**, capable of cutting stone.

4.4 **Oven**, conventional or microwave.

4.5 **Stopwatch.**

4.6 **Metal tray** (optional).

4.7 **Sample splitter** in accordance with EN 932-1 (such as that shown in Figure 1), optional.

4.8 **Shovel.**

4.9 **Container.**

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5 Preparation of laboratory samples of bituminous mixtures

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5.1 Preliminary inspection and storage

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5.1.1 On receipt of the laboratory sample inspect it and record its condition.

5.1.2 If a slab or a core cut from compacted material is to be stored prior to examination or separation of courses, take care so as to minimize deformation or deterioration of the material. Store slabs on a clean, hard, flat surface, preferably out of direct sunlight, with the final rolled surface at the bottom.

NOTE Cores of well compacted materials made with high viscosity binders will normally keep well standing vertically upside down on a clean bench in a cool room, but cores cut from less stable materials might require refrigeration especially for porous asphalt cores.

5.2 Pre-treatment of laboratory samples taken before and during laying

5.2.1 Binder drainage

If any binder drainage has occurred, collect and weigh as much of the drained material as possible and record the details. When the laboratory sample has been reduced to a suitable size for testing, add a proportionate representative weighed fraction of the drained material to the test portion. Record if the drained material cannot be collected.

5.2.2 Uncoated aggregate

Record the presence of any uncoated or fractured aggregate but do not remove such aggregate.

EN 12697-28:2020 (E)**5.3 Pre-treatment of laboratory samples taken after laying****5.3.1 General**

If possible, record the average thickness (or thickness if there is more than one course) in accordance with EN 12697-36 and the presence of any extraneous material. Remove all extraneous material in accordance with the appropriate clause of this European Standard. If complete removal is not possible, this shall be recorded.

NOTE In most cases, total removal can only be effected by sawing.

5.3.2 Coated chippings

If possible, remove chippings by hand before starting the tests. If removal is not possible (e.g. due to deep embedment), record this and proceed with the tests.

NOTE Coated chippings can normally be removed with a suitable tool after warming the sample. For this purpose a temperature approximately 40 °C below the appropriate maximum temperature given in Table 1 is suitable.

It may be possible to identify and remove the chippings after extraction of the binder and if this is done an allowance for the mass of the chippings should be made in the test and the fact recorded on the test report.

5.3.3 Surface dressings

Remove any surface dressing, if possible. Record the presence of any visible penetration of the surface dressing binder into the sample.

NOTE Total removal will require sawing.

5.3.4 Tack coat or blinding grit

Record the presence of any tack coat or blinding grit.

5.3.5 Fractured aggregate

Record the presence of any fractured aggregate but do not remove such aggregate.

NOTE To reduce the effect of fractured aggregate on the test result, slabs are preferred to cores.

5.3.6 Multi-course slab or core

If necessary, use a circular, stone cutting saw to separate courses, particularly with core samples. In situations where this approach and other physical methods of cold separation are impractical, lay the slab or core upside down on a clean sheet metal tray and warm it in a conventional oven just sufficiently to soften the material so that the courses may be separated.

NOTE In some cases, insertion at the interface of the courses of a paint-stripping knife with a wide blade, or similar tool, will assist in the separation.

Only when other representative samples are not available should the separation of the courses of a sample that has broken be attempted. In such cases if separation by hand picking is attempted, test results will be unreliable and this shall be clearly stated in the test report.

5.3.7 Free water

If the water content is not being determined and free water is visible on the material, or if the laboratory sample feels wet to the touch or if there is any reason to suppose that the material may contain water that is unevenly dispersed, break the material into pieces, after warming if necessary, of such a size that the water can readily evaporate. Leave the broken material

exposed as a thin layer on a clean, hard surface, in a laboratory for at least 24 h at (21 ± 3) °C. Then treat the sample as described in 5.4 or 5.5 as appropriate.

5.4 Heat treatment before reducing the laboratory sample

5.4.1 Determine an accurate water content of the sample before sample reduction using no more heat than is required to facilitate the breaking up of the sample.

5.4.2 Treat laboratory samples that cannot be remixed at room temperature as follows. Heat the entire sample or separated course in a suitable oven at a temperature not exceeding the appropriate value given in Table 1 until it is just sufficiently soft to be readily mixed and divided. Do not leave the material in the oven for more than 4 h.

NOTE 1 The temperature and time constraints minimize loss of the volatile constituents of the binder.

NOTE 2 Conventional ovens are considered suitable for most instances. However, for the preparation of soft asphalt samples that can include light components, the use of a microwave oven can reduce the risk of binder hardening.

Table 1 — Temperatures of the oven for reheating laboratory samples prior to sample reduction

Nominal grade of binder in sample	Maximum temperature of oven °C
> 330 penetration at 25 °C	105
Above 60 up to 330 penetration at 25 °C	120
25 to 60 penetration at 25 °C	135
Less than 25 penetration at 25 °C	150

5.5 Sample reduction for the determination of binder content, water content and grading

5.5.1 Weigh the entire laboratory sample, or each portion representing the separate courses, and place on a clean hard surface, e.g. a sheet metal tray. Mix the material thoroughly and reduce it to the quantity required for test, as given in Table 2, either by using a sample splitter, which may be heated or slightly oiled or by quartering as described in 5.5.2 to 5.5.8.

When using a sample splitter, the width of the chutes should be at least 1,5 times the diameter of the largest aggregate. Oil used for lubricating the sample splitter shall be kept to a minimum and be light oil, not diesel (gas oil).

NOTE 1 The use of a sample splitter for nominal sizes of 20 mm and larger is likely to be quicker and will provide a sample of accuracy equal to or greater than that obtained by quartering.

NOTE 2 By assuming equal subdivision of the laboratory sample after each quartering process it is possible, by weighing the original sample, to estimate whether the mass remaining after quartering will be within the appropriate range given in Table 2.

If the estimated mass is above the upper limit of the appropriate range given in Table 2, the mass of the original sample may be reduced by one quarter. This shall be done by quartering twice, rejecting two opposite quarters from the second quartering process, combining the remainder from the second quartering process with the material put aside from the first quartering process and then carrying out the procedure as described in 5.5.2 to 5.5.8 (see Figures 2 and 3).