SLOVENSKI STANDARD
oSIST prEN 12697-37:2021

01-februar-2021

Bitumenske zmesi - Preskusne metode - 37. del: Preskus sprijemanja veziva s posipom iz drobirja za asfaltiranje z vročim peskom (HRA)

Bituminous mixtures - Test methods - Part 37: Hot sand test for the adhesivity of binder on pre-coated chippings for Hot-Rolled-Asphalt (HRA)

Asphalt - Prüfverfahren - Teil 37: Prüfung des Haftvermögens eines Bindemittels auf vorumhülltem Splitt für Hot-Rolled-Asphalt (HRA) mittels heißem Sand

Mélanges bitumineux - Méthodes d'essai - Partie 37 : Essai au sable chaud pour l'adhérence du liant sur des gravillons pré-enrobés pour Hot-Rolled Asphalt (HRA)

Ta slovenski standard je istoveten z: **prEN 12697-37**

ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

oSIST prEN 12697-37:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT prEN 12697-37

December 2020

ICS 93.080.20

Will supersede EN 12697-37:2003

English Version

Bituminous mixtures - Test methods - Part 37: Hot sand test for the adhesivity of binder on pre-coated chippings for Hot-Rolled-Asphalt (HRA)

Mélanges bitumineux - Méthodes d'essai - Partie 37 : Essai au sable chaud pour l'adhérence du liant sur des gravillons pré-enrobés pour Hot-Rolled Asphalt (HRA)

Asphalt - Prüfverfahren - Teil 37: Prüfung des Haftvermögens eines Bindemittels auf vorumhülltem Splitt für Hot-Rolled-Asphalt (HRA) mittels heißem Sand

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

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Ref. No. prEN 12697-37:2020 E

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European foreword

This document (prEN 12697-37:2020) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12697-37:2003.

The main changes compared to the previous edition are listed below:

— the title no longer refers to hot mix asphalt;

— the title completed with “Hot-Rolled Asphalt”. The abbreviation “HRA” placed within brackets;

— general editorial update according to current standard template;

— European Foreword: “The applicability of this European Standard is described in prEN 13108-4.” deleted;

— Clause 3: definitions for set 1, set 2 and basic set deleted (and 6.5 adjusted accordingly);

— Clause 3: terms in 3.3 to 3.9 deleted;

— Clause 6: NOTE with reference to prEN 12697-38 deleted;

— 6.5: sieve 350 mm replaced with 300 mm;

— 7.2: reference to EN 12697-28:2000, 4.5 deleted;

— 8.1: equations adjusted and completed with keys and numbered;

— 9.1: test report completed with reference to this document according to CEN/CENELEC Internal Regulations, Part 3:2019;

— the Bibliograhy, including references to prEN 13108-4 and prEN 12697-28, deleted.

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

1 Scope

This document describes a hot sand test method for determining the condition of the binder on coated chippings for use with hot rolled asphalt (HRA) surface course.

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 933-2, *Tests for geometrical properties of aggregates - Part 2: Determination of particle size distribution - Test sieves, nominal size of apertures*

EN 933-6, *Tests for geometrical properties of aggregates - Part 6: Assessment of surface characteristics - Flow coefficient of aggregates*

EN 13043, *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas*

EN 12697-27, *Bituminous mixtures - Test methods - Part 27: Sampling*

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

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

3.1
representative sample
portion or a combination of portions of a quantity of material, such as a stockpile, for which the extent that the sample accurately represents all the material in the stockpile is important and is, therefore, specified. For a normal sample, the extent of representation is not necessarily important

4 Principle

This test is used to ensure that coated chippings to be applied to the surface of surface course rolled asphalt have not been overheated to such an extent that their adhesion to the asphalt will be prevented. The dried coated chippings are immersed in hot sand under specified conditions and the degree of coating by the sand assessed both by weighing and by visual inspection.

The test should be carried out sufficiently in advance of constructing the asphalt surface course to enable fresh supplies of chippings to be obtained if necessary.

5 Materials

5.1 Clean dry silica sand

In accordance with the grading given in Table 1 and having a flow coefficient (FCF), which shall be measured in accordance with EN 933-6, of not less than 27 s.

NOTE The sands used in the hot sand test should be changed after testing approximately 20 samples or earlier if obviously contaminated.

5.2 Clean dry silica grit

In accordance with the grading given in Table 1 and having a flow coefficient (FCF), which shall be measured in accordance with EN 933-6, of not less than 27 s.

Table 1 — Grading of sand and grid

Test sieve mm	Proportion by mass passing	
	silica sand %	silica grit %
2	–	100
1	–	70 to 80
0,500	100	0 to 15
0,250	65 to 75	–
0,125	0 to 10	0

6 Apparatus

6.1 Oven, thermostatically controlled to maintain the temperature 125 °C to 130 °C.

6.2 Balance, capable of weighing a sample to an accuracy of ± 1 g.

6.3 Two metal trays, minimum size 400 mm × 350 mm × 60 mm deep. A greater number of smaller trays may be used to provide a total area of 0,3 m^2 but their depth shall not be less than 60 mm.

6.4 Thermometer, able to measure the temperature to ± 1 °C over the range 100 °C to 130 °C.

6.5 Sieves, which shall comply with EN 933-2, with a diameter of 200 mm or 300 mm and apertures of:

— 4 mm for 8 mm chippings;

— 4 mm and 5,6 mm for 11 mm chippings;

— 4 mm and 6,3 mm for 14 mm chippings; or

— 4 mm and 10 mm for 20 mm chippings.

Wherever the term “test sieve” is used in this document, it should be taken to mean “test sieve complying with EN 933-2”.

6.6 Cylindrical tins, of (5,0 ± 0,5) l capacity, each with a tight fitting lid.

7 Procedure

7.1 Take 10 evenly sized portions from different positions of the stockpile of coated chippings at not less than 100 mm beneath the surface to produce a 25 kg representative sample of material (see EN 12697-27). Take care to remove all of the surface material, including any material falling back into the hole.

Samples should not be taken from surplus chippings swept up from the road after application nor from residues of abandoned stockpiles.

7.2 Produce a test sample in accordance with the procedure for sample reduction given in EN 12697-28. Reduce the representative sample to a required quantity of not more than 3 kg.

The appropriate size of one portion should generally be more than 2 000 g but less than 3 000 g.

7.3 Fill the trays to a level depth of about 25 mm with the 250 µm to 125 µm clean sand and place in the oven at 125 °C to 130 °C with the thermometer immersed in the sand.

7.4 Sieve the chippings using the 10 mm, 6,3 mm, 5,6 mm or 4 mm sieve for 20 mm, 14 mm, 11 mm or 8 mm chippings, respectively. Reject those chippings passing through the sieve.

7.5 Ensure that the sieved chippings are dry and, if necessary, dry by heating in the oven at about 60 °C. Weigh the sieved specimen to the nearest gram, W_1.

7.6 Remove one tray from the oven when the sand temperature has reached 125 °C to 130 °C and spread chippings from the sample onto the hot sand until a uniform overall cover is achieved without contact between adjacent chippings. Complete this operation within 3 min to prevent excessive heat losses.

7.7 Cover the chippings by pouring hot sand from the second tray. Level the sand quickly without disturbing the chippings and replace the tray with chippings in the oven both for a minimum of 10 min and until the sand reaches a temperature of not less than 100 °C.

7.8 Remove the tray with chippings from the oven ensuring that the sand temperature is not less than 100 °C. Pour sand and chippings onto the 4 mm sieve allowing the sand to fall freely through the sieve apertures. Allow the chippings on the sieve to cool for approximately 10 min.

7.9 Place the cool chippings in the 5 l tin half filled with 1 mm to 500 µm silica grit. Shake the tin longitudinally along a horizontal axis for a total of 100 cycles in about 60 s with a displacement amplitude of about 100 mm.

7.10 Re-sieve the chippings using the 4 mm test sieve and wash with a strong jet of cold water, drain the chippings, tip onto paper and allow to dry thoroughly.

Drying by means of a hot air blower is permitted.

7.11 Weigh the sample of chippings and adhering sand, W_2, in grams.

7.12 Visually examine the chippings individually in a good light and reject those having less than half sand-cover and weigh the rejected chippings, W_3, in grams.

NOTE Those chippings with less than half coverage are examined to establish whether the lack of retained sand is due to limited retention on all chippings or due to effectively zero retention on some chippings.

7.13 If the result from Clause 8 is not clear-cut, produce a new test sample from the remaining quantity of the representative sample and repeat steps 7.2 to 7.12.

NOTE 1 If a marginal result is obtained in the hot sand test after two separate samples have been tested, confirmation can be obtained by taking additional samples and calculating the mean sand mass retained and the mean proportion failing the visual assessment.

NOTE 2 In cases of dispute, a minimum of four samples is suggested.

8 Test result

8.1 Calculate for each test: the mass of sand, as a proportion of the mass of chippings, that is retained on the chippings to the nearest 0,1 % according to Formula (1):

$$P_{rs} = 100 \cdot \frac{W_2 - W_1}{W_1} \quad (1)$$

Where

P_{rs} is proportion of retained sand in %

W_1 is the weight of sieved specimen to the nearest gram

W_2 is the weight of chippings and adhering sand to the nearest gram

8.2 Calculate for each test: the proportion of chippings, by mass, failing the visual assessment to the nearest 0,1 % according to Formula (2):

$$P_{fc} = 100 \cdot \frac{W_3}{W_1} \quad (2)$$

Where

P_{fc} is proportion of failed chippings in %

W_1 is the weight of sieved specimen to the nearest gram

W_3 is the weight of rejected chippings to the nearest gram

9 Test report

9.1 Obligatory Information

The test report shall include the following information:

a) reference to this document;

b) date, time and place of sampling;

c) identification of sample;

d) date and time of testing;

e) the mass of sand retained as a proportion of the mass of chippings to the nearest 0,1 % for each sample and the mean value;

f) the proportion by mass of chippings rejected to the nearest 0,1 % for each sample tested and the mean value;

g) name of person performing the test.

9.2 Optional Information

The test report may also include additional optional information such as the following:

a) name of the project;

b) name of supplier and source of material.

10 Precision

Data are not available for developing precision statements for this test method.