SLOVENSKI STANDARD
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Bitumenske zmesi - Preskusne metode - 55. del: Organoleptična ocena zmesi z bitumensko emulzijo

Bituminous mixtures - Test methods - Part 55: Organoleptic assessment of mixtures with bitumen emulsion

Asphalt - Prüfverfahren für Asphalt - Teil 55: Organoleptische Ansprache für emulsionsgebundenes Mischgut

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné - Partie 55 : Evaluation organoleptique des mélanges à l'émulsion de bitume

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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European foreword

This document (EN 12697-55:2019) 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of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.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.

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1 Scope

This document defines three procedures to evaluate the compatibility of the constituent materials of a bituminous mixture with bitumen emulsion. These organoleptic methods can be used together to evaluate the compatibility of the constituent materials after a hand mixing procedure for given emulsion and water content:

— Method A describes a test method to determine visually the degree of coating;

— Method B describes a test method to determine the consistency;

— Method C describes a test method to determine the hydric aspect.

This document applies to mixtures prepared in the laboratory or taken from the plant.

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 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 1097-5, *Tests for mechanical and physical properties of aggregates — Part 5: Determination of the water content by drying in a ventilated oven*

EN 1097-6, *Tests for mechanical and physical properties of aggregates — Part 6: Determination of particle density and water absorption*

EN 1428, *Bitumen and bituminous binders — Determination of water content in bituminous emulsions — Azeotropic distillation method*

EN 12594, *Bitumen and bituminous binders — Preparation of test samples*

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

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 http://www.iso.org/obp

3.1
degree of coating
visual assessment of the percentage of mineral aggregate coated by emulsion

3.2
consistency
visual and tactile assessment of cohesion increase using comparisons of different mixtures resistance under manual pressure

3.3
hydric aspect
visual assessment of the mixture aspect regarding the water content (dry to soup)

4 Principle

Method A: All the constituents are hand mixed. The degree of coating of the mixture is evaluated at different water contents, different residual binder contents and different times after fabrication.

Method B: All the constituents are hand mixed. The consistency of the mixture is evaluated at different water contents, different residual binder contents and different times after fabrication.

Method C: All the constituents are hand mixed. The hydric aspect of the mixture is evaluated at different water contents, different residual binder contents and different times after fabrication.

5 Equipment

5.1 Bowls, non-reactive material with emulsion, of sufficient capacity (e.g. 2 l).

5.2 Spatulas, flat, of sufficient stiffness.

5.3 Balance of suitable capacity, able to weight the constituents to 0,1 %.

5.4 Sheet of paper, non-absorbent and blank, aluminium foil is also suitable.

5.5 Containers, (disposable or non-disposable) with suitable dimensions, for example 230 mm x 140 mm x 40 mm.

6 Test methods

6.1 General

In the case of a sample taken at the factory, quickly form a pile of 1 000 g to 2 000 g of material taken and evaluate it directly according to the methods A, B or C.

In the case of laboratory preparation, procedures of 6.2 and 6.3 shall be applied.

6.2 Preparation of the constituents

Aggregates shall be used at their natural moisture content.

The moisture content of the aggregates shall be determined according to EN 1097-5.

The aggregate density and, if necessary, the water absorption shall be determined according to EN 1097-6.

The water content of the emulsion shall be determined according to EN 1428.

The emulsion shall be stored at ambient temperature (18 °C to 28 °C) and shall be homogenized according to EN 12594.

Depending on the fabrication process, the emulsion may be conditioned at a temperature between 15 °C and 45 °C before the mixing.

The added water shall be according to EN 1008.

6.3 Test procedure

6.3.1 General

Introduce in the container a mass of aggregate particles at temperature between 15 °C and 25 °C according to skeleton of the mixture to be tested according EN 12697-35. The mass shall be between 500 g and 1 200 g depending on the upper sieve size *D* of the aggregate. If *D* > 16 mm, the mass should be close to the upper limit (1 000 g to 1 200 g).

Homogenize the mixture using the spatula between 15 s and 30 s.

Add water at the required rate. The mass of the added water shall be determined in g to the nearest 0,1 g.

Homogenize the mixture again using the spatula between 15 s and 30 s.

Add the emulsion at a temperature between 15 °C and 45 °C. The mass of the emulsion shall be determined in g to the nearest 0,1 g.

Mix all the constituents using the spatula during 15 s to 60 s.

During the mixing operation, notice the coating evolution, consistency of the mixture and details of hydric aspect like foam, drip, water drainage.

From the end of mixing, pour the mixture using the spatula on the non-absorbent blank paper.

Form quickly a pile and press with the hand to evaluate consistency. Low consistency mixture spreads easily.

The test procedure comes from reference [1].

6.3.2 Method A: Coating assessment

Perform the notation at the time t_0 for the coating according to Table 1.

Perform the notation with the same procedure time t_{0+2} after (120 ± 10) min at a temperature between 15 °C and 30 °C,

If necessary, perform the notation with the same procedure time t_{0+24} after (24 ± 2) h at a temperature between 15 °C and 30 °C

This procedure may be carried out for mixture design for different water content and/or residual binder content.

Table 1 — Coating assessment

Class of coating	Percentage of binder coverage %
C_3	> 97
C_2	90 to 97
C_1	75 to 90
C_0	< 75

6.3.3 Method B: Consistency assessment

Perform the notation at the time t_0 for the consistency according to Table 2.

Perform the notation with the same procedure time t_{0+2} after (120 ± 10) min at a temperature between 15 °C and 30 °C.

If necessary, perform the notation with the same procedure time t_{0+24} after (24 ± 2) h at a temperature between 15 °C and 30 °C.

This procedure may be carried out for mixture design for different water content and/or residual binder content.

Table 2 — Consistency assessment

Class of consistency	Assessment
CS_0	Lack of consistency or low consistency
CS_1	Normal
CS_2	High consistency

6.3.4 Method C: Hydric aspect assessment

Perform the notation at the time t_0 for the hydric aspect according to Table 3.

Perform the notation with the same procedure time t_{0+2} after (120 ± 10) min at a temperature between 15 °C and 30 °C.

If necessary, perform the notation with the same procedure time t_{0+24} after (24 ± 2) h at a temperature between 15 °C and 30 °C.

This procedure may be carried out for mixture design for different water content and/or residual binder content.

Table 3 — Hydric aspect assessment

Class of hydric aspect	Assessment
HA_0	Dry
HA_1	Normal
HA_2	Soup effect

7 Expression of the results

The mixture is characterized for the time t_0, t_{0+2}, and if necessary t_{0+24}, by the 3 parameters: C_i, CS_i, HA_i. This allows optimizing the formula of the mixture.

8 Precision

This method is qualitative. No value of repeatability is known.