SLOVENSKI STANDARD
SIST EN 13075-1:2012

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Nadomešča:
SIST EN 13075-1:2009

Bitumen in bitumenska veziva - Ugotavljanje stopnje stabilnosti - 1. del: Ugotavljanje hitrosti razpada kationskih bitumenskih emulzij, metoda z mineralnim polnilom

Bitumen and bituminous binders - Determination of breaking behaviour - Part 1: Determination of breaking value of cationic bituminous emulsions, mineral filler method

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Brechverhaltens - Teil 1: Bestimmung des Brechwertes kationischer Bitumenemulsionen, Verfahren mit Feinmineralstoff

Bitumes et liants bitumineux - Détermination du comportement à la rupture - Partie 1: Détermination de l'indice de rupture des émulsions cationiques de bitume, méthode des fines minérales

Ta slovenski standard je istoveten z: **EN 13075-1:2012**

ICS:

75.140	Voski, bitumni in drugi naftni proizvodi	Waxes, bituminous materials and other petroleum products
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

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EUROPEAN STANDARD

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English Version

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Bitumen und bitumenhaltige Bindemittel - Bestimmung des Brechverhaltens - Teil 1: Bestimmung des Brechwertes kationischer Bitumenemulsionen, Verfahren mit Feinmineralstoff

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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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Foreword

This document (EN 13075-1:2012) has been prepared by Technical Committee CEN/TC 336 “Bituminous binders”, the secretariat of which is held by AFNOR/BNPé.

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of an identical text or by endorsement, at the latest by November 2012, and conflicting national standards shall be withdrawn at the latest by May 2014.

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 13075-1:2009.

The techical change brought to EN 13075-1:2009 concerns the expression of the test result which is no longer converted into a “Forshammer value” but directly given as the value measured with the Sikaisol reference filler.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This European Standard, EN 13075, consists of the following parts under the general title *Bitumen and bituminous binders – Determination of breaking behaviour:*

— *Part 1: Determination of breaking value of cationic bituminous emulsions, mineral filler method;*

— *Part 2: Determination of fines mixing time of cationic bituminous emulsions.*

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.

1 Scope

This European Standard specifies a method for the determination of the breaking value of cationic bituminous emulsions.

WARNING — The use of this European Standard may involve hazardous materials, operations and equipment. This European Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this European Standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

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 58, *Bitumen and bituminous binders — Sampling bituminous binders*

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

3 Terms and definitions

For the purposes of this document, the following term and definition applies.

3.1
breaking value
dimensionless number corresponding to the amount of reference filler, in grams, needed to coagulate 100 g of bitumen emulsion

4 Principle

A reference filler is added at a uniform rate to a specified quantity of stirred cationic bitumen emulsion. When the emulsion has broken completely, the amount of added filler is determined by weighing. The mass of filler (in grams) multiplied by 100 and divided by the amount of emulsion (in grams) is the breaking value.

NOTE The cationic or anionic nature of an emulsion can be determined by EN 1430 [1].

5 Reagents and materials

5.1 Reference filler

The Sikaisol filler [1)] shall be used as the reference filler (the characteristics of which are given in Annex A).

Other fillers such as the Forshammer filler may be used as an alternative to the Sikaisol filler. In the event of dispute, the Sikaisol filler shall be used.

5.2 Cleaning agents, as used conventionally in laboratories.

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1) This information is given for the convenience of the users of this European Standard and does not constitute an endorsement by CEN of the product name. Equivalent products may be used if they can be shown to lead to the same results, or if a correlation between the products has been established.

6 Apparatus

6.1 General

Usual laboratory apparatus and glassware, together with the specific equipment described below, depending on the procedure used (semi-automatic or manual). An explanatory sketch of the equipment set-up is shown in Figure 1 for the semi-automatic procedure.

6.2 Equipment for semi-automatic procedure

6.2.1 Stirrer motor, as shown in Figure 1, with an output power of at least 25 W, and a speed of (260 ± 60) r/min.

6.2.2 Stirrer, as shown in Figure 2, having the dimensions given in Figure 3, Figure 4 and Figure 5. In Figure 3, the dimensions are given as an example.

6.2.3 Metal cans, cylindrical, of approximate capacity of 500 ml, height of 95 mm and diameter of 90 mm.

6.3 Equipment for manual procedure

6.3.1 Enamelled or stainless steel dish, with approximately 20 cm inside diameter and height of 10 cm .

6.3.2 Spatula, nickel or stainless steel, approximately 20 cm long.

6.4 Equipment for both procedures

6.4.1 Oven, capable of being maintained at (110 ± 5) °C.

6.4.2 Conical-shaped funnel, capable of supplying a continuous sufficient flow of filler to the filler feeder.

6.4.3 Adjustable filler feeder, to be placed at the outlet of the filler holding funnel and capable of feeding the filler at a rate ranging from 0,25 g/s to 0,45 g/s. This equipment shall be calibrated. The calibration shall be achieved by weighing the amount of the filler poured during a period of time between 100 s and 200 s, measured with an accuracy of 0,2 s.

NOTE The feeding rate, q, in g/s, should be calculated, using Formula (1):

$$q = \frac{m_f}{t} \quad (1)$$

where

m_f is the mass of filler in grams;

t is the analysis time in seconds.

6.4.4 Timer or stop watch, with an accuracy of 0,2 s or better over a time interval equal to or higher than 200 s.

6.4.5 Bottles, of approximate capacity of 500 ml, made of a material that will not react with the emulsion and having tight fitting lids.

6.4.6 Constant temperature bath and/or climatic chamber, capable of maintaining the sample in the bottle (6.4.5) at (25 ± 1) °C.

NOTE If the bath is used to condition the emulsion sample bottles, it should be equipped with a frame or device to prevent the plastic bottles from moving in the water bath.

6.4.7 **Balance,** having a suitable range, capable of weighing the samples in Clause 8 to the nearest 0,1 g.

6.4.8 **Thermometer**, having a suitable range, capable of measuring the temperature to the nearest 0,2 °C.

7 Sampling

The test material shall be sampled in accordance with EN 58 and shall be prepared in accordance with EN 12594.

8 Procedure

8.1 General

Carry out the procedure under normal laboratory conditions (18 °C to 28 °C). Before performing either of the two procedures however, ensure the following (preparatory) steps are taken:

— dry the quantities of filler, required for the test, in the oven (6.4.1) at a temperature of (110 ± 5) °C until constant mass and cool to ambient temperature in a desiccator;

— pour a portion of emulsion (250 ± 10) g into a bottle (6.4.5) and secure the lid;

— pour the required quantities of filler in a container and close the container;

— place the bottle with the emulsion and the container with the filler in the constant temperature bath or climatic chamber (6.4.6) for a minimum of 1,5 h;

— transfer the required quantity of filler from the container into the hopper of the adjustable filler feeder.

8.2 Semi-automatic procedure

Weigh the metal can (6.2.3) containing the stirrer (6.2.2) to the nearest 0,1 g (m_1).

Transfer approximately (100 ± 1) g, weighed to the nearest 0,1 g (m_e) of the emulsion sample from the bottle (6.4.5) to the weighed metal can.

Place the metal can under the stirrer motor (6.2.1) and connect the stirrer (6.2.2) to the stirrer motor.

Start the stirrer motor, the filler addition and the timer simultaneously, ensuring that the stirrer blades rotate at (260 ± 60) r/min and are below the surface of the emulsion during the test.

Rotate the metal can slowly (approximately 5 r/min) by hand in the opposite direction to the stirrer in order to ensure homogeneity of mixing.

The mixture becomes thicker as the filler is added. The emulsion is considered broken when the mix comes off completely (or substantially) from the metal can. Turn off the filler feeder, the timer and the stirrer at this point.

Weigh the metal can containing the broken emulsion and the stirrer to the nearest 0,1 g (m_2).

Repeat the test with a second portion of emulsion taken from the same bottle using a second metal can and stirrer.

NOTE In case of dispute, only the semi-automated apparatus is allowed.

8.3 Manual procedure

Weigh the dish (6.3.1) containing the spatula (6.3.2) to the nearest 0,1 g (m_1).

Transfer approximately (100 ± 1) g, weighed to the nearest 0,1 g (m_e) of the emulsion sample from the bottle (6.4.5) to the weighed dish containing the spatula.

Start the filler addition and the timer simultaneously. Thoroughly mix the emulsion and the filler by stirring at a steady rate of 1 r/s, using the spatula.

The mixture becomes thicker as the filler is added. The emulsion is considered broken when the mix comes off completely (or substantially) from the dish. Stop the filler addition, the timer and the mixing at this point.

Weigh the dish containing the broken emulsion and the spatula to the nearest 0,1 g (m_2).

Repeat the test with a second portion of emulsion taken from the same bottle using a second dish and spatula.

9 Calculation

Calculate the breaking value, $B_{V\,\text{Sikaisol}}$, for 100 g of emulsion, using Formula (2):

$$B_{V\,\text{Sikaisol}} = \frac{100 \times m_f}{m_e} \quad (2)$$

where

m_f = $m_2 - m_e - m_1$ and is the added amount of filler in grams;

m_e is the amount of emulsion in grams.

10 Expression of results

Express the individual breaking values to the nearest integer.

Express the result as the arithmetic mean of the two individual results of the breaking value, to the nearest integer.

11 Precision

NOTE The precision of the method was evaluated in accordance with EN ISO 4259 [2].

11.1 Repeatability, *r*

The difference between two successive test results, obtained by the same operator with the same apparatus under constant operating conditions on identical test material would, in the long run, in the normal and correct operation of the test method, exceed 10 % of the mean value in only one case in twenty.

NOTE The former French standard NF T66-017 (manual procedure) mentioned a repeatability value determined with the Sikaisol filler equal to 3,0 %, under the conditions specified in this standard [3].

11.2 Reproducibility, *R*

The reproducibility for this European Standard is currently not available.