



SLOVENSKI STANDARD

SIST EN 13399:2018

01-februar-2018

Nadomešča:
SIST EN 13399:2010

Bitumen in bitumenska veziva - Določevanje stabilnosti modificiranih bitumnov pri skladiščenju

Bitumen and bituminous binders - Determination of storage stability of modified bitumen

Bitumen und bitumenhaltige Bindemittel - Bestimmung der Lagerbeständigkeit von modifiziertem Bitumen

Bitumes et liants bitumineux - Détermination de la stabilité au stockage des bitumes modifiés

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Ta slovenski standard je istoveten z: **EN 13399:2017**

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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en,fr,de

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EUROPEAN STANDARD

EN 13399

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2017

ICS 75.140; 91.100.50

Supersedes EN 13399:2010

English Version

Bitumen and bituminous binders - Determination of storage stability of modified bitumen

Bitumes et liants bitumineux - Détermination de la stabilité au stockage des bitumes modifiés

Bitumen und bitumenhaltige Bindemittel - Bestimmung der Lagerbeständigkeit von modifiziertem Bitumen

This European Standard was approved by CEN on 15 October 2017.

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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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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 13399:2017) has been prepared by Technical Committee CEN/TC 336 “Bituminous binders”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2018, and conflicting national standards shall be withdrawn at the latest by June 2018.

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 13399:2010.

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

Significant changes in this edition are:

- Closing the filled tube with forceps is described.
- Recovery of the sample by cutting off top and bottom section of the cooled aluminium tube with a knife is introduced.
- Melting temperature for the top and bottom parts after storage is given.
- More test methods to indicate separation are included.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 13399:2017 (E)**1 Scope**

This European Standard specifies a method for measuring the storage stability of modified bitumen at high temperatures.

NOTE Modified bitumen and, in particular, polymer-modified bitumen, which consist of mainly bitumen and at least one additional agent, are known to display phase separation under certain conditions.

WARNING — The use of this European Standard can 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 determine the applicability of regulatory limitations prior to use.

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

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

3 Principle

A homogeneous sample of modified bitumen is maintained in a vertical vessel at 180 °C, or at a temperature specified by the producer, for 3 days. After the sample has cooled down, it is cut into three equal parts. The two ends (top and bottom) are analysed further to evaluate possible differences in characteristics.

If the chosen temperature differs from 180 °C, it shall be mentioned in the test report.

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4 Apparatus

<https://standards.iteh.ai/catalog/standards/sist/7f6c74b9-869d-40d2-ada4-132b0ca02a6b/sist-en-13399-2018>

Usual laboratory apparatus and glassware, together with the following:

4.1 Tube, of thin unvarnished aluminium, of height 160 mm minimum and of diameter between 25 mm and 40 mm, closed at one end (bottom end) and typically “toothpaste tube”.

4.2 Oven, maintained at a temperature of (180 ± 5) °C or other chosen test temperature ± 5 °C for three consecutive days.

4.3 Tins, one to be marked “top” and one to be marked “bottom” (see 5.5), each of sufficient capacity to contain the combined upper and lower parts of different tubes.

4.4 Forceps or pliers, of steel, (e.g. forceps: straight and of length 200 mm - 250 mm), for closing the aluminium tube filled with sample.

4.5 Cutting tool, a broad-bladed knife or sharpened filling knife, for cutting the aluminium tube containing the sample at a low temperature.

4.6 Heating tool, gas flame, heating plate or similar for heating the cutting tool

5 Procedure

5.1 General

Ensure that the laboratory sample is representative of the modified bitumen to be analysed, in accordance with EN 58. Ensure that the laboratory sample is homogeneous and non-contaminated.

Sufficient test sample shall be prepared in accordance with EN 12594, placed in a suitable container.

If large quantities of sample are needed for characterization, multiple tubes shall be conditioned simultaneously.

NOTE Examples of characterization tests: softening point EN 1427 [1]; needle penetration, EN 1426 [2]; complex modulus, EN 14770 [3] and elastic recovery EN 13398 [4].

5.2 Filling of the tube

Draw a marking line on the tube for the maximum filling height (100 mm to 120 mm). Then mark the lines showing where to cut the top and bottom sections. The tube shall be cut into three equal parts from the maximum filling height.

Pour the homogeneous liquid sample into the tube to the filling mark, taking care to avoid incorporation of air bubbles.

NOTE Correct filling height of material can be checked by weighing the filled tube.

A possibility for thermal expansion of the test material is necessary, and is created by squeezing the tube jacket slightly flat after filling.

5.3 Closing of the tube

Ensure that the filled tube is tightly closed, to avoid any action of air during high-temperature storage.

After pouring the test material into the tube, press the open end of the tube at a short distance above the binder surface. Carefully close the tube and seal, using forceps. Ensure that no air remains by squeezing test material up along the interior part of the tube. Press the tube end flat and fold the tube end tightly at least two times using forceps.

5.4 Test conditions

Within 1 h after filling, place the tube in the preheated oven in a vertical position.

NOTE The separation tendency can be affected if the sample is allowed to cool down before the storage test.

Ensure that the tube is maintained in a vertical position at the chosen temperature with an accuracy of ± 5 °C for (72 ± 1) h.

5.5 Recovery of the sample

Remove the tube from the oven and let it cool down to room temperature, still in the same vertical position. One of the following techniques are used for the recovery of the sample:

1. Cutting

Place the cooled tube horizontally on a hard, flat and clean surface, and cut into three equal parts with a sharp, heated cutting tool.

2. Peeling

Remove the aluminium foil from the cooled tube with suitable pliers. Place the cylindrical sample horizontally on a hard, flat and clean surface, and cut it into three equal parts with a heated cutting tool.

NOTE To facilitate the cutting of the tube or the removal of aluminium foil, the tube can be given a second cooling step, e.g. for 30 min at -20 °C in a freezer.

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The middle part is of no use and is discarded. Place the top and bottom parts separately in the respective tins marked "top" and "bottom". Melting temperature is (180 ± 5) °C, or a temperature specified by the producer ± 5 °C. After no longer than 60 min in the oven, remove the aluminium pieces from the cutting procedure. Then homogenise the samples before moulding.

The parts are now ready for further testing.

If more than one tube is needed, combine and homogenize according to EN 12594, before moulding.

6 Test report

The test report shall contain at least the following information:

- a) type and identification of the sample under test;
- b) reference to this European Standard;
- c) measured values for the top and the bottom part including reference to the test method. Difference or ratio in their values whichever appropriate, according to the used European standards;
- d) storage temperature, if it differs from 180 °C;
- e) any deviation, by agreement or otherwise, from the procedure specified;
- f) date of the test.

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