SLOVENSKI STANDARD
SIST EN 13301:2003

01-december-2003

Bitumen in bitumenska veziva ï Ugotavljanje izloļanja oljne komponente

Bitumen and bituminous binders - Determination of staining tendency of bitumen

Bitumen und bitumenhaltige Bindemittel - Bestimmung der Ausölneigung von Bitumen

Bitumes et liants bitumineux - Détermination de la tendance a l'exsudation des bitumes

Ta slovenski standard je istoveten z: **EN 13301:2003**

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

SIST EN 13301:2003 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13301

April 2003

ICS 75.140; 91.100.50

English version

Bitumen and bituminous binders - Determination of staining tendency of bitumen

Bitumes et liants bitumineux - Détermination de la tendance à l'exsudation des bitumes

Bitumen und bitumenhaltige Bindemittel - Bestimmung der Ausölneigung von Bitumen

This European Standard was approved by CEN on 17 January 2003.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 13301:2003 E

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Foreword

This document (EN 13301:2003) 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of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard is based on ASTM D 2746-91.

1 Scope

This European Standard specifies a method for the determination of the staining tendency of bitumen.

NOTE 1 Staining properties are related to the colloidal stability of the bitumen with higher values indicating lower stability.

The method is applicable to bitumen having a ring-and-ball softening point greater than or equal to 80 °C.

NOTE 2 For softer bitumen the test conditions may be modified by agreement between the involved parties.

The procedure described in this standard may be used to compare results against a material for which the staining tendency is known.

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

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 58, *Sampling bituminous binders*.

EN 1427, *Bitumen and bituminous binders - Determination of softening point - Ring and ball method*.

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

3 Term and definition

For the purposes of this European Standard, the following term and definition apply.

3.1
staining tendency
tendency of oil components to separate spontaneously from bitumens

NOTE The separation of oil components can cause staining in bitumen roofing products and others bituminous products, with eventual damage of adjacent materials in storage and use.

4 Principle

A retaining ring, filled with molten bitumen on a sheet of filter paper and supported on a flat horizontal plate is heated in an oven at a specified temperature for a specified time. The width of the resulting stained circle around the bitumen is calculated to determine the staining tendency of the bitumen. The staining tendency is measured in units of 0,1 mm.

5 Apparatus

5.1 Rings, square-shouldered as specified in EN 1427 (see Figure 1).

The precision of the method depends upon accurate measurement of the diameter and precise alignment of the face and rim of the ring on a flat surface and it is essential that deformed rings shall not be used.

Dimensions in millimetres

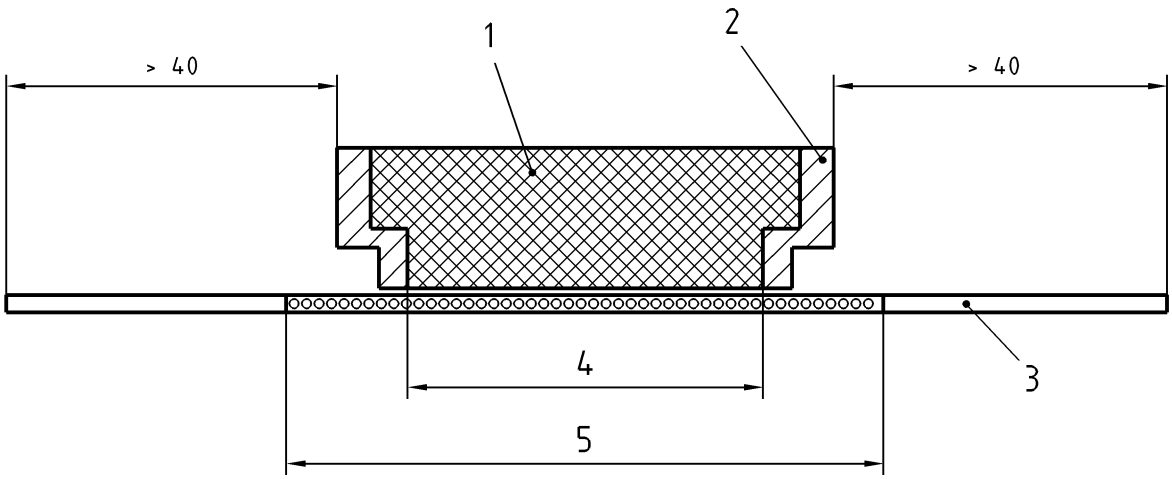

Figure 1 — Ring

Key

1. Bitumen
2 Test-ring EN 1427
3. Filter-paper
4. Inner diameter of ring
5. Diameter of stained circle

5.2 Filter paper, standard analytical grade. The filter paper shall be of sufficient area to accommodate the number of samples under test.

A filter paper having a porosity of 8 µm has been found to be suitable.

5.3 Support plate, a flat, clean, smooth metal plate approximately 1,5 mm thick and with an area at least sufficient to support the size of filter paper used.

5.4 Oven, constant temperature, capable of maintaining a sample temperature of 80 °C ± 1 °C.

5.5 Thermometer, with a reading accuracy of ± 0,1 °C in the required temperature range.

5.6 Measuring rule or device, with a reading accuracy of 0,1 mm or better.

6 Sampling

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

7 Procedure

The bulk binder sample shall be placed in an oven maintained at a temperature of about 80 °C above the expected ring and ball softening point temperature or at a maximum of 200 °C which ever is the lower.

The container shall be filled to at least 50 % of its volume and shall be covered with a loose lid to protect it against oxidation.

The total heating time should be within 1h 15 min to 1h 45 min for samples of 100 ml to 499 ml and 1h 45 min to 2h 15 min for samples of 500 ml to 999 ml.

Place rings (5.1) no closer than 40 mm from the edge of the filter paper (5.2) or from another ring, ensuring that the lower face and rim of the ring diameter is clean and that the bitumen disc will completely fill the ring and is flush with the lower face. Ensure that there are no traces of any release agent on the support plate or ring.

Pour the bitumen sample into a preheated ring (preheated to a maximum of 90 °C above softening point) using 2 rings per sample, placed on the filter paper on the support plate.

Allow to cool to ambient temperature, and trim off the excess bitumen from the top of the ring as described in EN 1427.

Identify each bitumen sample by appropriately marking the filter paper in pencil near its ring.

Place the entire assembly in the oven, preheated and stabilised at 80 °C ± 1 °C and allow to remain at this temperature for 120 h ± 1 h. The assembly should be placed on a shelf inside the oven; it must not be placed on the bottom of the oven.

Remove the assembly on the support plate from the oven and allow to cool to room temperature.

For each ring, make measurements on the underside of the filter paper of the diameter of the stained circle to the nearest 0,1 mm. Make four measurements approximately 45° apart.

8 Calculation

Calculate the arithmetic mean of the four measurements for each stained circle and subtract the inner diameter of the ring. Divide the result by 2 to obtain the width of the stained ring in units of 0,1 mm.

9 Expression of results

Report the mean stained ring width of the two test rings for the sample, rounded to the nearest 0,1 mm.

10 Precision

10.1 Repeatability

The difference between two successive 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 operations of the test method, differ by more than $5 \times 0{,}1$ mm in only one case in twenty.

10.2 Reproducibility

The difference between two single and independent results obtained by different operators working in different laboratories on identical test material would, in the long run, in the normal and correct operation of the test method, differ by more than $10 \times 0{,}1$ mm in only one case in twenty.