SLOVENSKI STANDARD
SIST EN 13074-1:2019

01-april-2019

Nadomešča:
SIST EN 13074-1:2011

Bitumen in bitumenska veziva - Ponovna pridobitev veziva iz bitumenskih emulzij ali rezanih ali fluksiranih bitumenskih veziv - 1. del: Ponovna pridobitev z izhlapevanjem

Bitumen and bituminous binders - Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders - Part 1: Recovery by evaporation

Bitumen und bitumenhaltige Bindemittel - Rückgewinnung des Bindemittels aus Bitumenemulsion oder verschnittenem oder gefluxtem Bindemittel - Teil 1: Rückgewinnung durch Verdunstung

Bitumes et liants bitumineux - Récupération du liant d'une émulsion bitumineuse ou d'un bitume fluidifié ou fluxé - Partie 1 : Récupération par évaporation

Ta slovenski standard je istoveten z: **EN 13074-1:2019**

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 13074-1:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13074-1

February 2019

ICS 91.100.50

Supersedes EN 13074-1:2011

English Version

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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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 13074-1:2019) 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of an identical text or by endorsement, at the latest by August 2019, and conflicting national standards shall be withdrawn at the latest by August 2019.

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 13074-1:2011.

The main technical changes are:

— more precise requirements for the ventilated oven (5.1) and the metallic plates (5.2), as well as for the placing of the plates within the oven (7.2.2 and 7.3.2);

— description of additional equipment (beaker, oven) to be used for the reheating of the recovered binder samples (5.5 and 5.6);

— possibility is given of using EN 16849 for the determination of the water content of a bituminous emulsion (7.2.1.1);

— shorter storage period of the recovered binder samples before further testing (7.2.3 and 7.3.3);

— more precise instructions (reheating temperatures and maximum reheating time) for the preparation of the recovered binder sample prior to further testing (7.2.4 and 7.3.4).

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.

1 Scope

This document specifies a method for the recovery of binder from a bituminous emulsion or from a cut-back or fluxed bitumen after conditioning at ambient temperature for 24 h followed by 24 h at 50 °C, in such a way that will enable further testing with minimum changes of the binder characteristics.

It applies to all types of bituminous emulsions, modified with polymers or non-modified, as well as to all types of cut-back and fluxed bitumen, both modified with polymers and non-modified.

For cut-back and fluxed bituminous binders, this test method is only **an intermediate step** and should be followed by the stabilization procedure specified by EN 13074-2. Direct testing of the recovered binder is however used to evaluate the setting ability of fluxed bituminous binders made with vegetal fluxes.

NOTE The recovered binder is not necessarily identical to the initial binder.

WARNING — The use of this document may involve hazardous materials, operations and equipment. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and to 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 1427, *Bitumen and bituminous binders - Determination of the softening point - Ring and Ball method*

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

EN 1431, *Bitumen and bituminous binders - Determination of residual binder and oil distillate from bitumen emulsions by distillation*

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

EN 13074-2, *Bitumen and bituminous binders - Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders - Part 2: Stabilisation after recovery by evaporation*

EN 16849, *Bitumen and bituminous binders - Determination of water content in bituminous emulsions - Method using a drying balance*

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
recovered binder
material remaining after the treatment of a bituminous emulsion or a cut-back or fluxed bitumen under the conditions specified according to this method

3.2
mineral flux
flux which may be of carbochemical, petrochemical or petroleum origin or a mixture of those components

3.3
vegetal flux
type of bio-flux derived exclusively from plant based (vegetal) product

Note 1 to entry: The previous two definitions correspond to the definitions mentioned in EN 15322 [2].

4 Principle

A thin layer of a bituminous emulsion, cut-back or fluxed bituminous product is spread onto a suitable sheet of material. It is conditioned for 24 h in the laboratory at ambient temperature and then transferred into a ventilated oven for 24 h at 50 °C.

5 Apparatus

Usual laboratory apparatus and glassware, together with the following:

5.1 Ventilated oven

— capable of maintaining a temperature of (50 ± 2) °C around the sample;

— with a minimum distance between shelves and the bottom or top of the oven of 7 cm;

— in which the level of the shelves has been checked;

— with a forced air circulation and exhaust.

To ensure sufficient air circulation, ovens with a too small internal volume (e.g. less than 50 l) should be avoided. A possible way to check the capability of an oven is to verify that it is able to evaporate a representative amount of water under the time-temperature prescriptions of this standard.

5.2 Flat metallic plates, of known surface area, equipped with an edge of maximum internal height 20 mm and a minimum surface area of 0,04 m^2. The plates shall have a minimum thickness of 2 mm to ensure rigidity.

The number of plates and their dimensions are to be defined bearing in mind following constraints to ensure reproducible air circulation conditions:

— the oven (5.1) has always to be loaded in such a way that the number of plates and their position ensures optimal air circulation conditions;

NOTE To ensure reproducible air circulation conditions, it is further recommended to always load the oven with the same number of plates.

— the minimum distance between two plates on the same shelf and between a plate and the walls of the oven has to be 3 cm.

The plates may be covered with silicone paper or silicone fabric under the following conditions:

— its maximum thickness has to be ≤ 1 mm;

— its temperature resistance has to be ≥ 80 °C (if it is also used for EN 13074-2, then it has to be ≥ 100 °C);

— any creasing of the paper or fabric has to be avoided.

5.3 Balance, of sufficient capacity, accurate to ± 1 g.

5.4 Spatula, palette knife, or other suitable device for spreading the sample of emulsion or cut-back or fluxed bitumen and removing the recovered binder.

5.5 Beaker, 500 ml, low form, for heating according to 7.2.3 and 7.3.3.

5.6 Oven for the preparation of samples of recovered binder for further testing, capable of maintaining the temperatures requested in 7.2.4 and 7.3.4 around the sample. The oven can be the same as in 5.1, if it can fulfil both requirements.

6 Sampling

Samples to be tested shall be taken in accordance with EN 58 and shall be prepared in accordance with EN 12594.

7 Procedure

7.1 Preparation of the test holder

Arrange the plate on a table (work surface) and check the level with a spirit level.

7.2 Bituminous emulsion

7.2.1 Determination of emulsion mass required

7.2.1.1 General

Calculate the surface area of the plate, A, in m^2.

Where the binder content of the emulsion is not known, it will be necessary to determine an accurate figure using the appropriate test (determined either by use of EN 1428 or EN 1431 or EN 16849).

Calculate to the nearest gram, the mass, M, of the emulsion sample required, and using the following calculations:

7.2.1.2 For emulsions with binder content higher or equal to 58 %

Residual emulsion binder required = (1,00 ± 0,05) kg/m².

The mass of emulsion required is calculated using the formula:

$$M = 1{,}0 \times \frac{A}{B / 100}$$

where

M is the mass of emulsion, expressed in kg;

A is the area of the plate, expressed in m²;

B is the binder content expressed in %.

When a proper evaporation of the emulsion cannot be achieved, the required quantity of residual emulsion binder may be reduced to a minimum of 0,5 kg/m². In this case, note that it is necessary to cover the whole surface of the mould with a thin film of emulsion to reach a good reproducibility on the test. This deviation has to be mentioned in the test report (Clause 8 e)).

7.2.1.3 For emulsions with binder content lower than 58 %

Emulsion Application = (1,00 ± 0,05) kg/m².

The mass of emulsion required is calculated using the formula:

$$M = 1{,}0 \times A$$

where

M is the mass of emulsion, expressed in kg;

A is the area of the plate, expressed in m².

When a proper evaporation of the emulsion cannot be achieved the required quantity of emulsion may be reduced to a minimum of 0,5 kg/m². In this case, note that it is necessary to cover the whole surface of the mould with a thin film of emulsion to reach a good reproducibility on the test. This deviation has to be mentioned in the test report (Clause 8 e)).

7.2.2 Recovery procedure

Place each plate on the balance (5.3) and weigh the mass of required emulsion calculated in 7.2.1.

Using a spatula (5.4) evenly spread the amount of emulsion.

Place the plate(s) containing the emulsion layer on a flat, even surface. Check the levelness of the plate(s) using a spirit level and condition the plate(s) for (24 ± 1) h at (23 ± 5) °C, under normal laboratory conditions.

Care should be taken not to store plates in a dusty environment in order to avoid entrainment of dust into the sample(s) during this process.

Transfer the plate(s) to the pre-heated oven (5.1) and leave for (24 ± 1) h at (50 ± 2) °C. The oven has to be loaded in accordance with the requirements of 5.2. Plates with binders of which the volatile parts might be of different natures shall not be placed together in a same oven.

At the end of the specified period, remove the plate(s) from the oven. If, however, the recovered sample is required for stabilization, proceed as specified in EN 13074-2.

7.2.3 Removal and storage of the recovered binder

Collect without any delay the recovered binder from the plate(s) using an appropriate tool (5.4) but without applying any extra heat to the sample. To facilitate the removal of the binder it may be necessary to cool the plates in a refrigerator or freezer.