SLOVENSKI STANDARD
SIST EN 13074-1:2011

01-junij-2011

Nadomešča:
SIST EN 13074:2003

Bitumen in bitumenska veziva - Določevanje deleža veziva v bitumenskih emulzijah ali rezanih ali fluksiranih bitumnih z izhlapevanjem

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

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

Bitumes et liants bitumineux - Récupération du liant d'une émulsion de bitume ou d'un bitume fluidifié ou fluxé par évaporation

Ta slovenski standard je istoveten z: **EN 13074-1:2011**

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 13074-1:2011 **en,fr,de**

EUROPEAN STANDARD

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EN 13074-1

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ICS 91.100.50

Supersedes EN 13074:2002

English Version

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

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

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

This European Standard was approved by CEN on 8 January 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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 13074-1:2011) 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 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

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 13074:2002.

This European Standard EN 13074 consists of the following parts:

EN 13074-1, Bitumen and bituminous binders – Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders – Part 1: Recovery by evaporation

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 13074-1 has been created as the result of the merging of EN 13074:2002 and EN 14895:2006 under a single EN 13074 reference (two different parts), since both standards describe similar procedures which are generally performed consecutively. The two different parts have been made as consistent as possible and the procedures for removing, storing and preparing the binder sample for further testing have been clarified and specified more accurately.

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 and the United Kingdom.

1 Scope

This European Standard 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 bitumens, 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 stabilisation 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. The hazards associated with the use of this method have been assessed using cut-back bitumen containing 10 % kerosene and 90 % 160/220 penetration grade bitumen and were found low enough to be acceptable. However it is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2 Normative references

The following referenced documents are indispensable for the application 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 1428, *Bitumen and bituminous binders – Determination of water content in bitumen emulsions – Azeotropic distillation method*

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

EN 12594:2007, *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 13808, *Bitumen and bituminous binders – Framework for specifying cationic bituminous emulsions*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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 The previous two definitions correspond to the definitions mentioned in EN 15322 [1]

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 Flat plates, of known surface area, equipped with an edge of maximum internal height 35 mm and a minimum surface area of 0.04 m². The internal base of the plate shall have no deformation greater in depth than 1 mm. The number of plates to be used shall be appropriate to give a sufficient amount of binder for further testing.

The plates may be manufactured from a suitable non-stick material, such as a silicone material, or may be coated with a non-stick coating such as silicone coating; or the plates may be lined with a suitable non stick paper or fabric. When using non-stick paper or fabric, any crinkle of the paper or fabric shall be avoided, in particular by giving the paper the exact dimensions of the bottom of the plates.

5.2 Spatula, palette knife, or other suitable device for spreading the sample of emulsion or cut-back or fluxed bitumen.

5.3 Ventilated oven, at least 80 l internal volume, capable of maintaining a temperature of (50 ± 2) °C around the sample and in which the level of the shelves has been checked.

5.4 Balance, of sufficient capacity, accurate to ± 0.001 kg.

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)

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/m^2

Mass of emulsion required (M), expressed in kg = 1,0 x $\frac{A}{B/100}$

where

A = Area of the plate, expressed in m^2;

B = Binder content expressed in %.

When a proper evaporation of the emulsion cannot be achieved the quantity of residual emulsion binder required may be reduced up to 50 % of the value mentioned above (1,0 kg/m^2). 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 d).

7.2.1.3 For emulsions with binder content lower than 58%

Emulsion Application = (1,00 ± 0,05) kg/m^2

Mass of emulsion required (M), expressed in kg = 1,0 x A

where

A = Area of the plate, expressed in m^2;

When a proper evaporation of the emulsion cannot be achieved the quantity of emulsion required may be reduced up to 50 % of the value mentioned above (1,0 kg/m^2). 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 d)).

7.2.2 Recovery procedure

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

Using a spatula (5.2) 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.

NOTE 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 (5.3) and leave for (24 ± 1) h at (50 ± 2) °C. In case more than one plate is used, arrange the plates in such a way that air circulation is not hindered. Air circulation has to be effective on each side of each plate.

At the end of the specified period, remove the plate(s) from the oven. If, however, the recovered sample is required for stabilisation, 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 but without applying any extra heat to the sample. To facilitate the removal of binders from the non-stick material, it may be necessary to cool the plates in a refrigerator or freezer.

The recovered binder from all the plates of the same sample shall be placed in a same sample container.

If the recovered binder is required for further testing at a later date, it shall be stored for as short a time as possible, but no longer than 28 days, in a sealed container and stored at a temperature lower than 28°C.

NOTE When storing the recovered binder, a period as short as possible should be favoured (if possible less than one week). Specific storage conditions (use of inert gas, e.g. nitrogen) are recommended, especially in cases where storage time exceeds 1 week.

7.2.4 Homogenising of the recovered binder and preparation of the sample for further testing

7.2.4.1 General

Before performing further testing on the recovered binder, the binder from each plate shall be homogenized by mixing. If the sample of recovered binder comes from more than one plate, the combined binder from all the plates shall be blended. In order to protect the recovered binder from excessive damage (due to volatile loss or thermal effects), heating of the recovered binder shall be strictly controlled in accordance with EN 12594 and this method. In all cases heating times should be kept to a minimum. Where possible, the preparations for further testing shall be carried out immediately after homogenising the recovered binder to avoid re-heating.

7.2.4.2 Emulsion containing a flux free binder

For emulsions not categorised as a fluxed emulsion i.e. of which the designation according to EN 13808 does not contain the letter “F”, heating shall be in accordance with EN 12594 (samples obtained from a specific procedure). More specifically, the sample shall be heated to a temperature between expected softening point + 80 °C and expected softening point + 100 °C.

7.2.4.3 Emulsion containing a mineral fluxed binder

For emulsions categorised as a fluxed emulsion i.e. of which the designation according to EN 13808 does contain the letter “F” and the flux is a mineral oil, heating shall be in accordance with EN 12594 (soft bitumen, fluxed and cut-back binders). More specifically, the sample shall be heated to a temperature between expected softening point + 60 °C and expected softening point + 80 °C.

7.2.4.4 Emulsion containing a vegetal fluxed binder

For emulsions categorised as a fluxed emulsion i.e. does contain the “F” designation according to EN 13808 and the flux is a vegetable oil, heating shall be in accordance with EN 12594 (samples obtained from a specific procedure). More specifically, the sample shall be heated to a temperature between expected softening point + 80 °C and expected softening point + 100 °C.

7.3 Cut-back or fluxed bitumen

7.3.1 Determination of cut-back or fluxed bitumen mass required

Calculate the surface area of the plate (A) in m^2. Calculate to the nearest gram the mass, *M*, of the cut-back or fluxed bitumen sample required, using the following calculation:

Required application = (1,00 ± 0.05) kg/m^2