SLOVENSKI STANDARD
SIST EN 13614:2004

01-september-2004

Bitumen in bitumenska veziva - Določanje obstojnosti bitumenskega filma pod vodo – Metoda z agregatom

Bitumen and bituminous binders - Determination of adhesivity of bitumen emulsions by water immersion test - Aggregate method

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Haftverhaltens von Bitumenemulsionen bei Wasserlagerung - Verfahren mit Gesteinskörnung

Bitumes et liants bitumineux - Détermination de l'adhésivité des émulsions de bitume par l'essai d'immersion dans l'eau - Méthode utilisant des agrégats

Ta slovenski standard je istoveten z: **EN 13614:2004**

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 13614:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

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ICS 75.140; 91.100.50

English version

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This European Standard was approved by CEN on 9 January 2004.

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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 Central Secretariat 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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Contents

Foreword

This document (EN 13614:2004) 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of an identical text or by endorsement, at the latest by August 2004, and conflicting national standards shall be withdrawn at the latest by August 2004.

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

1 Scope

This European Standard specifies a method for determining the adhesion of a cationic bitumen emulsion coated onto aggregate when immersed in water.

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 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, *Bitumen and bituminous binders – Sampling bituminous binders*.

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

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987).*

3 Terms and definitions

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

3.1
adhesion
ability of a binder to wet the surface of an aggregate and to remain bonded over time

3.2
adhesivity
qualitative assessment of the measurement of the adhesion

NOTE The higher the grade, the greater the adhesivity and consequently the adhesion.

4 Principle

The bitumen emulsion is mixed thoroughly with a reference aggregate. After the emulsion has completely broken under specified conditions, the mixture is immersed in water in a glass container. After a given time and under specified conditions, the percentage of the aggregate surface covered with binder is assessed visually.

5 Reagents and materials

5.1 Reference aggregate, as light in colour as possible, or aggregate from a specific job site, which either passes through a sieve having a mesh size of 10 mm but is retained on a sieve having a mesh size of 6,3 mm, or passes through a sieve having a mesh size of 11 mm but is retained on a sieve having a mesh size of 8 mm.

NOTE Each country should define petrographically its own reference aggregates, for instance, in a national informative annex.

5.2 **Water**, distilled or deionised, conforming to EN ISO 3696.

5.3 **Cleaning agents**, conventionally used in a laboratory.

6 Apparatus

6.1 **Ventilated oven**, capable of maintaining a temperature of 60 °C ± 3 °C.

6.2 **Spatula**

6.3 **Two enamel dishes**, diameter 15 cm to 20 cm.

6.4 **Stopclock**

6.5 **Two beakers**, 400 ml capacity.

6.6 Set of five **watch glasses**, diameter 10 cm to 15 cm.

6.7 **Balance**, of sufficient capacity, accurate to ± 1 g.

6.8 **Graduated test-tube**, 250 ml to 500 ml capacity.

6.9 **Thermometer**, range 0 °C to 150 °C.

6.10 **Heating plate**

6.11 **Ventilated oven**, capable of maintaining a temperature of 110 °C ± 5 °C.

7 Sampling

Sample the test material in accordance with EN 58. Prepare the test samples in accordance with EN 12594.

Divide the prepared sample into two parts and test both parts (see clause 9).

8 Procedure

8.1 Emulsions of limited storage stability (breaking index lower than 120)

8.1.1 Carry out the procedure under normal laboratory conditions.

8.1.2 Wash the aggregate (5.1) with water (5.2) and dry it in the ventilated oven (6.11) for about 2 h at 110 °C ± 5 °C.

8.1.3 Weigh 100 g ± 2 g of aggregate (5.1) into a dish (6.3), and 150 g ± 2 g of emulsion into another dish (6.3).

8.1.4 Pour the aggregate into the emulsion and allow to contact for 60 s ± 5 s without stirring; the dish may be gently shaken to disperse any air bubbles which might prevent proper moistening of the aggregate.

8.1.5 Remove excess emulsion and wash the aggregate at room temperature, holding the dish tilted under a slow stream of water (5.2) until the water runs clear.

8.1.6 Introduce the coated aggregate into a beaker (6.5) and cover with approximately 300 ml of water (5.2) at room temperature.

8.1.7 Immediately assess the surface coated with the film of binder. Grade it according to the following scheme:

100 : all of the surface is coated;

90 : more than approximately 90 % of the surface is coated;

75 : approximately 75 % to 90 % of the surface is coated;

50 : approximately 50 % to 75 % of the surface is coated;

<50 : less than 50 % of the surface is coated;

0 : the binder is separate from the aggregates.

NOTE If necessary, to facilitate the assessment, it should be compared with an untreated and immersed aggregate.

8.1.8 If the grade given is more than or equal to 90, place the beaker, covered with a glass watch (6.6), in the oven (6.1), at 60 °C ± 3 °C, for 20 h ± 4 h and then re-assess the surface.

8.2 Emulsions which can be stored (breaking index higher than 120)

8.2.1 Carry out the procedure under normal laboratory conditions.

8.2.2 Weigh 200 g ± 2 g of aggregate (5.1) into a dish (6.3), and an amount of emulsion corresponding to 10 g ± 1 g of bitumen into another dish (6.3).

8.2.3 Pour the aggregate into the emulsion.

8.2.4 Thoroughly mix by means of a spatula (6.2).

8.2.5 Spread the mixture on a watch-glass (6.6) and place it in the ventilated oven (6.1), at 60 °C ± 3 °C, for 20 h ± 4 h.

8.2.6 Transfer the mixture in a beaker (6.5), pour approximately 300 ml of water (5.2), heated to 60 °C ± 3 °C onto the mixture and cover with a watch-glass.

8.2.7 Place the beaker in the ventilated oven (6.1), at 60 °C ± 3 °C, for 20 h ± 4 h.

8.2.8 Assess the surface coated with the film of binder according to the grading scheme given in 8.1.6.

8.2.9 If the grade given is more than or equal to 90, place the beaker, covered with a glass watch (6.6), in the ventilated oven (6.1), at 60 °C ± 3 °C, for 20 h ± 4 h and then re-assess the surface.

9 Expression of results

For emulsions showing more than 90 % of surface coated for the first test, provide the result for the second part of the test.

For emulsions which can be stored (8.2), report one grading.

10 Precision

The method is qualitative and it is not possible to quantify the precision. However, tests carried out by the same operator have shown that the same result is generally achieved for any given bitumen emulsion.

11 Test report

The test report shall contain at least the following information:

a) reference to this European Standard;

b) type and complete identification of the sample under test;

c) type and identification of the aggregate and fraction used (either 6/10 mm or 8/11 mm);

d) result of the test (see clause 9);

e) number of tests performed;

f) any deviation, by agreement or otherwise, from the procedure described;

g) date of the test.