



# SLOVENSKI STANDARD

## SIST EN 1429:2009

01-julij-2009

BUXca Yý U  
SIST EN 1429:2000

6 ]li a Yb`]b`V]li a Ybg\_Uj Yn]j U!`8 c`c Yj Ub`Y`cg]Ub\_UV]li a Ybg\_]l `Ya i `n]`bUg]li  
]b`i [ c]Uj `Ub`Y`g]U]bcg]h`df]`g`UX]y Yb`i `g`gY`Ub`Ya

Bitumen and bituminous binders - Determination of residue on sieving of bitumen emulsions, and determination of storage stability by sieving

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Siebrückstandes von Bitumenemulsionen und Bestimmung der Lagerbeständigkeit durch Sieben

Bitumes et liants bitumineux - Détermination du résidu sur tamis des émulsions de bitume et détermination de la stabilité au stockage par tamisage

Ta slovenski standard je istoveten z: EN 1429:2009

### 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 1429:2009

en,fr,de

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 1429:2009

<https://standards.iteh.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009>

EUROPEAN STANDARD

EN 1429

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2009

ICS 75.140; 91.100.50

Supersedes EN 1429:1999

English Version

## Bitumen and bituminous binders - Determination of residue on sieving of bituminous emulsions, and determination of storage stability by sieving

Bitumes et liants bitumineux - Détermination du résidu sur tamis des émulsions de bitume et détermination de la stabilité au stockage par tamisage

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Siebrückstandes von Bitumenemulsionen und Bestimmung der Lagerbeständigkeit durch Sieben

This European Standard was approved by CEN on 17 January 2009.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/7d110cc3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009>



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Contents

Page

Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Definition .....	4
4 Principle.....	4
5 Reagents and materials .....	5
6 Apparatus .....	5
7 Sampling.....	6
8 Procedure .....	6
9 Determination of the storage stability by sieving after <i>n</i> days storage period.....	8
10 Calculation.....	9
11 Expression of results .....	10
12 Precision.....	10
13 Test report .....	10

[SIST EN 1429:2009](https://standards.itech.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009)  
<https://standards.itech.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009>

## Foreword

This document (EN 1429:2009) 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 September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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 1429:1999.

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, 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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 1429:2009

<https://standards.iteh.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009>

## EN 1429:2009 (E)

### 1 Scope

This European Standard specifies methods utilizing sieving for the determination of the quantity of coarse particles of binder present in bitumen emulsions, and for the determination of storage stability.

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

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

ISO 565, *Test sieves – Metal wire cloth, perforated metal plate and electroformed sheet – Nominal size of openings*

ISO 5280, *Xylene for industrial use - Specification*

ITEH STANDARD PREVIEW  
(standards.iteh.ai)

[SIST EN 1429:2009](https://standards.iteh.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009)

<https://standards.iteh.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009>

### 3 Definition

For the purposes of this standard, the following definitions apply:

- 3.1**  
**residue on sieving**  
percentage by mass of particles retained on a sieve of a mesh size specified in this standard
- 3.2**  
**storage stability**  
ability of a bituminous emulsion not to form more coarse particles within a period specified under an appropriate emulsion specification

NOTE The limits fixed by the emulsion specification have to ensure that there cannot be any disturbance of the workability of the bitumen emulsion under practical conditions.

### 4 Principle

A known mass of bituminous emulsion is filtered through either a prepared sieve with a mesh size of 0,500 mm or through two prepared sieves with mesh sizes of 0,500 mm and of 0,160 mm. The amount of binder retained on the sieves is weighed after washing and drying.

Storage stability is determined as the amount of binder retained on the sieve with a mesh size of 0,500 mm after a defined storage period ( $n$  days).

## 5 Reagents and materials

Use only reagents of recognised analytical grade and water conforming to grade 3 of EN ISO 3696.

NOTE The aqueous solutions (5.1) and (5.2) may be replaced by aqueous phases of the same ionic structure as the emulsion under test.

### 5.1 Solution S<sub>a</sub>

Aqueous phase solution of nominal 0,01 mol/l of sodium hydroxide (NaOH) containing a nominal 1 % mass fraction sodium oleate. This solution may be used for the preparation of anionic emulsion samples, alternatively use the actual soap-solution.

### 5.2 Solution S<sub>c</sub>

Aqueous phase solution of nominal 0,01 mol/l of hydrochloric acid (HCl) containing a nominal 1 % mass fraction cetyltrimethylammonium bromide. This solution may be used for the preparation of cationic emulsion samples, alternatively use the actual aqueous phase.

NOTE The solution of 1% of cetyltrimethylammonium bromide should be prepared slightly above 25°C (but not higher than 30 °C). Then it should be stored at a temperature of (25±1) °C before test.

### 5.3 Efficient rinsing agent

Efficient rinsing agents or xylene, conforming to ISO 5280 can be used.

### 5.4 Ethanol, 96 % minimum or methylated spirit 99 %.

## 6 Apparatus <https://standards.iteh.ai/catalog/standards/sist/7d1f0ce3-6a06-456b-8a4b-28963f34ad5d/sist-en-1429-2009>

Usual laboratory apparatus and glassware, together with the following:

**6.1 Sieve**, (see ISO 565), stainless steel or brass, with a frame diameter within the range of 75 mm to 100 mm and a mesh size of 0,500 mm;

**6.2 Sieve**, (see ISO 565), stainless steel or brass, with a frame diameter within the range of 75 mm to 100 mm and a mesh size of 0,160 mm (optional according to specification requirements);

**6.3 Sieve pans**, of corresponding diameter;

**6.4 Balance**, of sufficient capacity, enabling weighing to ± 1 g;

**6.5 Balance**, of sufficient capacity, enabling weighing to ± 0,001 g;

**6.6 Conical flask**, 200 ml capacity, with a ground stopper;

**EN 1429:2009 (E)**

- 6.7 Conical flask**, two, 250 ml capacity with a ground stopper;
- 6.8 Bottle**, 1 l, with a screw-in stopper;
- 6.9 Container**, 1 l capacity;
- 6.10 Ventilated oven**, enabling to maintain a temperature of  $(105 \pm 5)$  °C around the sample;
- 6.11 Desiccator**;
- 6.12 Funnel**.

**7 Sampling**

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

There shall be no prior sieving of the material under test or of the prepared sample.

The sample shall be divided into two portions; for referee purposes, both portions shall be tested (see Note in Clause 11).

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

**8 Procedure**

Carry out the procedure under normal laboratory conditions between 18 °C and 28 °C.

SIST EN 1429:2009

For very viscous emulsions which are slow to pass through the aperture, it is permitted to pre-heat and test the laboratory sample at  $(60 \pm 5)$  °C and/or to dilute the emulsion with either  $S_a$  solution (5.1) or  $S_c$  solution (5.2) as appropriate, in order to determine residue on sieving.

If heating is required, all precautions should be taken to minimize water loss and/or skin formation during this operation.

In case dilution is performed, adequate adaptations of the procedure and of calculations shall be performed and documented in the test report.

**8.1 Residue on the 0,500 mm sieve**

- 8.1.1** Wash the 0,500 mm sieve (6.1) with rinsing agent (5.3) and then with ethanol or methylated spirit (5.4).
- 8.1.2** Place the sieve on the sieve pan (6.3) and dry in the oven (6.10) for not less than 1 h.
- 8.1.3** After drying, allow the sieve to cool and the sieve pan within the desiccator (6.11).
- 8.1.4** Weigh the sieve and the sieve pan together. Record the mass,  $m_1$ , to the nearest 0,001 g.
- 8.1.5** Wet the sieve cloth with solution  $S_a$  (5.1) or  $S_c$  (5.2) as appropriate.



**8.1.6** Drain the sieve thoroughly and place it on a funnel (6.12) which is mounted over the bottle (6.8).

**8.1.7** Weigh the container (6.9) and record the mass,  $m_C$ , to the nearest 1 g.

**8.1.8** Weigh  $(1\ 000 \pm 5)$  g of emulsion into the container and record the mass of emulsion,  $m_{E, 0,500}$ , to the nearest 1 g.

**8.1.9** Pour the emulsion through the wetted sieve and allow draining completely.

Discard the first 30 ml or 40 ml of the filtered emulsion, in order to avoid any possible modification in the properties of the emulsion resulting from the action of the  $S_a$  or  $S_C$  solution.

Clear as much as possible the container of the emulsion and reweigh the container. Record the mass,  $m_{C, R}$ , to the nearest 1 g.

**8.1.10** Remove the bottle containing the filtered emulsion, and stopper it.

NOTE The emulsion filtered in this way will be used to carry out the second part of the test (see 8.2, when required) and to carry out all other tests on the emulsion.

**8.1.11** Place the sieve on a funnel which is mounted over a 250 ml conical flask (6.7). Wash the residue on the sieve with solution  $S_a$  or  $S_C$  until the washings run clear. Finally wash with water (5).

**8.1.12** Drain the sieve thoroughly and place it on the sieve pan. Dry in the oven (6.10) for at least 2 h and then cool in the desiccator (6.11) for about 30 min.

**8.1.13** Weigh the sieve with its sieve pan and residue and record the mass,  $m_2$ , to the nearest 0,001 g.

## **8.2 Particles between 0,500 mm and 0,160 mm**

**8.2.1** Wash the 0,160 mm sieve (6.2) with rinsing agent (5.3) and then with ethanol or methylated spirit (5.4).

**8.2.2** Place the sieve on the sieve pan (6.3) and dry in the oven (6.10) for not less than 1 h.

**8.2.3** After drying, allow to cool in the desiccator (6.11).

**8.2.4** Weigh the sieve and the sieve pan together. Record the mass,  $m_3$ , to the nearest 0,001 g.

**8.2.5** Wet the sieve cloth with solution  $S_a$  (5.1) or  $S_C$  (5.2) as appropriate.

**8.2.6** Drain it thoroughly and place it on a funnel which is mounted over a 250 ml conical flask (6.7).

**8.2.7** Gently stir the emulsion that was filtered through the 0,500 mm sieve (see 8.1.10).

**8.2.8** Place the 200 ml conical flask (6.6) on the balance and pour approximately  $50\text{ cm}^3$  of the  $S_a$  or  $S_C$  solution into the 200 ml conical flask (6.6) and weigh into it 50 g,  $m_{E, 0,160}$  of filtered emulsion to the nearest 1 g.

**8.2.9** Gently stir the diluted emulsion.