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**Bitumen in bitumenska veziva - Določanje težnje bitumenskih emulzij k posedanju**

Bitumen and bituminous binders - Determination of settling tendency of bituminous emulsions

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Absetzverhaltens von Bitumenemulsionen

Bitumes et liants bitumineux - Détermination de la tendance à la décantation des émulsions bitumineuses

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**Ta slovenski standard je istoveten z: prEN 12847**

**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

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EUROPEAN STANDARD  
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**DRAFT**  
**prEN 12847**

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## Bitumen and bituminous binders - Determination of settling tendency of bituminous emulsions

Bitumes et liants bitumineux - Détermination de la tendance à la décantation des émulsions bitumineuses

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Absetzverhaltens von Bitumenemulsionen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 336.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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## European foreword

This document (prEN 12847:2021) has been prepared by Technical Committee CEN/TC 336 “Bituminous binders”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12847:2009.

The main technical change is the possibility of using drying balance (EN 16849) for determination of water content in bituminous emulsions under certain conditions (for emulsions containing less than 1,5 % of a volatile flux) and with precautions to be taken (test temperature). The test method used for the determination of water content (EN 1428 or EN 1431 or EN 16849) is mentioned in the test report.

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**prEN 12847:2021 (E)****1 Scope**

This document specifies a method for the determination of the settling tendency of bituminous emulsions.

WARNING — The use of this document can 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 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 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 <https://www.iso.org/obp>

**3.1 settling tendency**

difference in water content of the top layer and the bottom layer of a prescribed volume of sample after standing for a specified time at ambient temperature

**4 Principle**

The sample is allowed to stand for the specified time at ambient temperature in a stoppered graduated cylinder, after which the water contents of the top and bottom layers are determined either using EN 1428 or EN 1431 or EN 16849. The settling tendency is calculated as the difference between the two water contents.

## 5 Reagents and materials

### 5.1 General

Only reagents of recognized analytical grade and water conforming to grade 3 of EN ISO 3696:1995 [2] should be used.

### 5.2 Cleaning agents

As used conventionally in the laboratory.

## 6 Apparatus

### 6.1 General

Usual laboratory apparatus and glassware, together with the following.

**6.2 Stoppered glass graduated cylinder**, 600 ml capacity, with one division mark at 500 ml. This vessel is modified with two closable side tubes. The dimensions are shown in Figure 1.

The two side tubes may be closed either by a rubber or glass stopper, or by a rubber tube with a pinch-clamp cock.

**6.3 Distillation apparatus**, as described in EN 1428 or EN 1431, depending on the method chosen for the determination of water content.

**6.4 Beakers** of appropriate capacity.

## 7 Sampling

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

## 8 Procedure

### 8.1 General

Carry out the procedure under normal laboratory conditions.

NOTE "Normal laboratory conditions" means that the range of temperature is 18 °C to 28 °C.

### 8.2 Test

The number of test cylinders to be used shall be defined depending upon the test method used to determine water content (EN 1428 or EN 1431 or EN 16849).

In general, one cylinder should be sufficient when EN 1428 or EN 16849 is used, whereas four cylinders will be needed when using EN 1431.

Close the two side tubes of the graduated cylinder (6.2).

Pour the emulsion test sample into the cylinder until the surface of the liquid reaches the 500 ml level.

Stopper the cylinder tightly and allow to stand undisturbed for the specified time ( $t \pm 4$ ) hours.

If necessary, remove any skin before drawing a test portion.

At the end of the standing period, without disturbing the contents of the cylinder, remove the stopper and draw a test portion of approximately 55 ml, from the top of the cylinder, through the upper side tube

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of the cylinder into a beaker (6.4). Allow 5 min for bitumen emulsion adhering to the wall of the cylinder to flow into the beaker. When several cylinders are needed, repeat the operation by drawing successively the test portion from the top of each cylinder into the receiving beaker (6.4).

Gently stir the resulting test portion ( $p_1$ ) until uniform using a glass rod once the drawn off has ended.

Drain the emulsion from the middle part of the cylinder by opening the lower side tube and allowing the emulsion to flow into a container until the flow ceases. Discard this portion of emulsion.

Close the lower side tube.

Stir the remaining emulsion (approximately 55 ml), so that any sediment adhering to the wall or bottom of the cylinder is loosened.

If the homogenization of the remaining emulsion in the bottom part of the cylinder cannot be performed correctly, due to for instance broken emulsion, the test shall be aborted. This information shall then be mentioned in the report.

Drain the remaining contents of the cylinder into a second beaker (6.4) to obtain a second test portion. When several cylinders are needed, drain successively the remaining contents of each cylinder into the second beaker (6.4).

Gently stir the resulting test portion ( $p_2$ ) until uniform using a glass rod once the drawn off has ended.

Determine the water content of each test portion according to EN 1428 or EN 1431 or EN 16849, depending on the method chosen for the determination of water content.

When using EN 16849, it is necessary to comply with the restrictions and recommendations mentioned under the scope of EN 16849.

**9 Calculation**

Calculate the settling tendency,  $ST$ , of the test sample, expressed in mass percentage, by means of the Formula (1):

$$ST = (a - b) \quad (1)$$

where

$a$  is the water content of the top layer, i.e. the first test portion,  $p_1$ , in mass percentage;

$b$  is the water content of the bottom layer, i.e. the second test portion,  $p_2$ , in mass percentage.

NOTE Negative values, obtained for the settling tendency, indicate that the bituminous phase rises to the surface.

**10 Expression of results**

Report the specified time of standing,  $t$  (8.2), the water content,  $a$ , of the top layer and the water content,  $b$ , of the bottom layer (Clause 9).

Express the result, obtained in accordance with Clause 9, as a mass percentage, rounded to the nearest 0,1 % (mass fraction).



## 11 Precision

### 11.1 General

The precision of the method was evaluated in accordance with EN ISO 4259 [1].

### 11.2 Repeatability

The difference between two successive test 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 operation of the test method, exceed the values mentioned in Table 1 in only one case in twenty.

**Table 1 — Repeatability**

Settling tendency % (mass fraction)	Repeatability <b>r</b>
0 % to 8 % mass fraction	0,4 % mass fraction
> 8 % mass fraction	5 % of the result (expressed as a mass %)

### 11.3 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, exceed the values mentioned in Table 2 in only one case in twenty.

**Table 2 — Reproducibility**

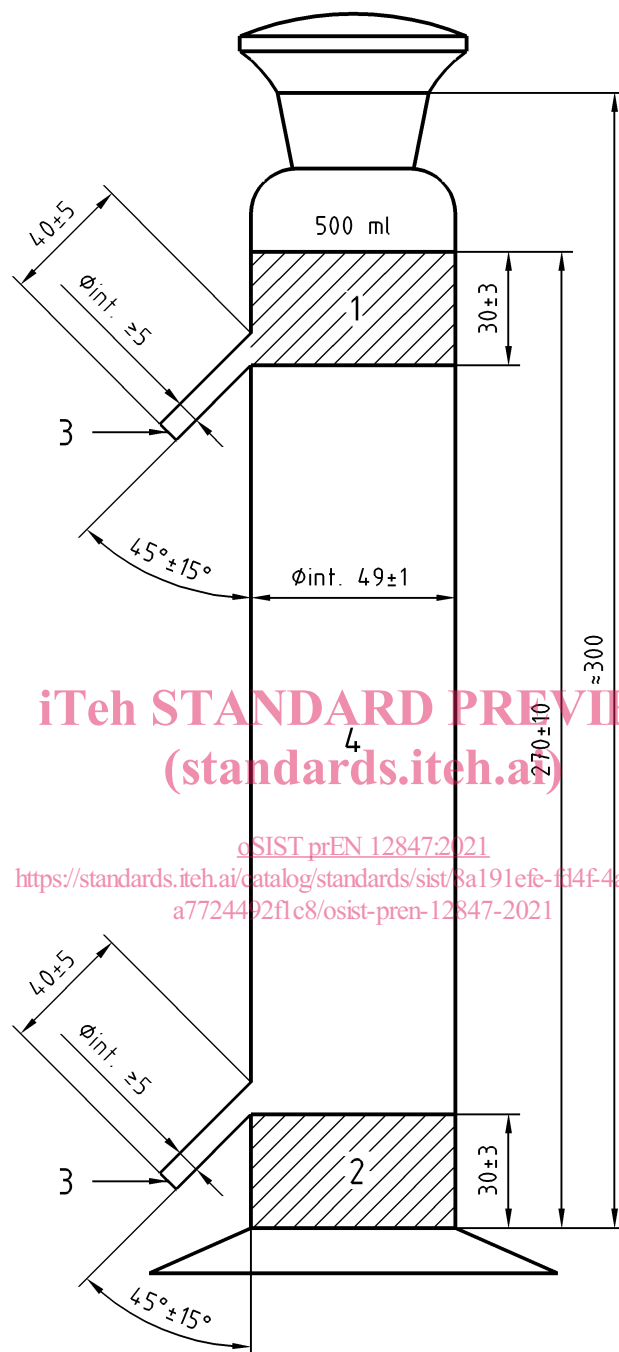
Settling tendency % (mass fraction)	Reproducibility <b>R</b>
0 % to 8 % mass fraction	0,8 % mass fraction
> 8 % mass fraction	10 % of the result (expressed as a mass %)

## 12 Test report

The test report shall contain at least the following information:

- type and complete identification of the sample under test;
- reference to this document;
- result of the test, the settling tendency, *ST*, and the specified time of standing/settling, *t*, the water content, *a*, of the top layer and the water content, *b*, of the bottom layer (Clause 10);
- test method (EN 1428 or EN 1431 or EN 16849) used to determine the water contents *a* and *b*;
- any deviation, by agreement or otherwise, from the procedure specified (for example any case of emulsion adhering to the wall or bottom);
- date of sampling, date of sample preparation and date of the test.

Dimensions in millimetres

**Key**

- 1 top layer
- 2 bottom layer
- 3 closure
- 4 middle part

**Figure 1 — Dimensions of graduated cylinder**