



SLOVENSKI STANDARD

SIST EN 13358:2010

01-oktober-2010

Nadomešča:
SIST EN 13358:2004

Bitumen in bitumenska veziva - Določevanje destilacijskih značilnosti rezanih in fluksiranih bitumenskih veziv

Bitumen and bituminous binders - Determination of the distillation characteristics of cut-back and fluxed bituminous binders made with mineral fluxes

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Destillationsverlaufes von mit Mineralölfluxmitteln verschnittenen oder gefluxten bitumenhaltigen Bindemitteln

Bitumes et liants bitumineux - Détermination des caractéristiques de distillation des bitumes fluidifiés et fluxés d'origine minérale

Ta slovenski standard je istoveten z: **EN 13358:2010**

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

EN 13358

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ICS 75.140; 91.100.50

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English Version

Bitumen and bituminous binders - Determination of the distillation characteristics of cut-back and fluxed bituminous binders made with mineral fluxes

Bitumes et liants bitumineux - Détermination des caractéristiques de distillation des liants bitumineux fluidifiés et fluxés avec des fluxants d'origine minérale

Bitumen und bitumenhaltige Bindemittel - Bestimmung des Destillationsverlaufes von mit Mineralölfluxmitteln verschnittenen oder gefluxten bitumenhaltigen Bindemitteln

This European Standard was approved by CEN on 20 May 2010.

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Foreword

This document (EN 13358:2010) has been prepared by Technical Committee CEN/TC 336 "Bituminous binders", the secretariat of which is held by AFNOR/BNPé.

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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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 13358:2004.

This European Standard is based on ASTM D402-97.

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EN 13358:2010 (E)

1 Scope

This European Standard specifies a method for the determination of the distillation characteristics of cut-back and fluxed bituminous binders made with mineral fluxes.

WARNING — The use of this European Standard can 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

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*

3 Terms and definitions

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

3.1 distillation

process of evaporation and condensation of a liquid

3.2 mineral flux

flux which may be of carbochemical or petrochemical origin or a mixture of both

4 Principle

Petroleum cut-back and fluxed bituminous binders are distilled at a controlled rate until the temperature of the liquid reaches 360 °C. The volumes of distillate and residue obtained over specified temperature ranges are measured. The residue from the distillation and also the distillate may be tested as required.

5 Apparatus

Usual laboratory apparatus and glassware, together with the following.

5.1 Distillation flask, 500 ml and with side-arm, of dimensions given in Figure 1.

5.2 Condenser, standard, glass-jacketed, of nominal jacket length from 200 mm to 300 mm and overall tube length of (450 ± 10) mm (see Figure 3).

5.3 Adaptor, made with glass of approximately 1 mm thickness, with reinforced top, having an angle of approximately 105°. The inside diameter shall be (18 ± 2) mm at the wide end and not less than 5 mm at the narrow end. The lower surface of the adaptor shall be on a smooth descending curve from the wider end to the narrower. The inside line of the outlet end shall be vertical, and the outlet shall be cut or ground (not fire-polished) at an angle of $(45 \pm 5)^\circ$.

NOTE In the equipment described in the above paragraphs and in Figure 1 and Figure 3, cork stoppers are used, however, equipment with ground glass joints may also be used.

5.4 Shield and shield support

5.4.1 Shield, of steel, lined with 3 mm of suitable thermal insulation material and fitted with transparent mica windows of the form and dimensions shown in Figure 2, which is used to protect the flask from air currents and to reduce radiation.

5.4.2 Shield cover (top), consisting of two parts of fire resistant millboard of 6 mm minimum thickness.

5.5 Support for shield and flask, two sheets 150 mm × 150 mm of a mesh of approximately 1 mm wire gauze on a tripod or ring.

5.6 Heat source, adjustable Tirrill¹⁾ gas burner or equivalent.

5.7 Chimney for protection of the gas burner flame, as given in Figure 3.

5.8 Receiver, standard 100 ml graduated cylinder of dimensions as given in Figure 4.

5.9 Thermometer, conforming to the requirements described in Annex A.

Other temperature measuring devices may be used instead of mercury stem thermometers. However, the mercury stem thermometer is the reference device. Therefore any alternative device employed shall be calibrated so as to provide the same readings as would be provided by the mercury stem thermometer, recognising and allowing for the fact of changed thermal response times compared with the mercury thermometer.

For this test method, in which increasing temperatures are read during the test procedure, documented corrections shall be determined in advance and applied to the observed readings.

5.10 Residue container, of approximately 250 ml capacity. A seamless metal container, with a slip-on cover of (75 ± 5) mm diameter and (55 ± 5) mm height, or similar, is suitable.

5.11 Balance with a reading accuracy of at least 0,1 g.

6 Procedure

6.1 General

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

6.2 Preparation of test samples

6.2.1 Samples shall be prepared in accordance with the provisions detailed in EN 12594, especially those regarding cut-back and fluxed bituminous binders. In particular, stir the sample thoroughly, warming if necessary, to ensure homogeneity before removal of a representative portion for analysis.

6.2.2 If sufficient water is present to cause foaming or bumping, dehydrate a sample of not less than 250 ml by heating in a distillation flask sufficiently large to prevent foaming over into the side-arm. When foaming has ceased, stop the heating. If any light oil has distilled over, separate and pour back into the flask when the contents have cooled down sufficiently to prevent loss of volatile oil. Mix the contents of the flask thoroughly before removal for analysis.

6.3 Preparation of apparatus

6.3.1 Calculate the mass of 200 ml of the sample from the density of the material at 15 °C. Weigh this amount with an accuracy of ± 0,5 g into the 500 ml distillation flask (5.1).

¹⁾ Tirrill is an example of a suitable product available commercially. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of this product.

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6.3.2 Place the flask in the shield (5.4) supported by two sheets of gauze (5.5) on a tripod or ring. Connect the condenser tube (5.2) to the side-arm of the flask with a cork stopper or equivalent, keeping the centre of its neck vertical. Adjust the adapter (5.3) over the end of the condenser tube so that the distance from the neck of the distillation flask to the adapter outlet is (650 ± 50) mm.

6.3.3 Insert the thermometer through a tight-fitting cork in the neck of the distillation flask so that the thermometer bulb rests on the bottom of the flask. Raise the thermometer $(6,5 \pm 1,0)$ mm from the bottom of the flask using the scale divisions on the thermometer to estimate 6,5 mm above the top of the cork.

6.3.4 Protect the burner by a suitable shield or chimney. Place the receiver (5.8) so that the adapter extends into it by at least 25 mm but not to below the 100 ml mark. Cover the neck of the receiver with a piece of suitably weighted blotting paper, or similar material, cut to fit the adapter snugly.

6.3.5 Ensure that the flask, condenser, adapter and receiver are clean and dry. Place the residue container and its cover in an area free from drafts.

6.3.6 Pass cold water through the condenser jacket by reflux. Use warm water if necessary to prevent the formation of solid condensate in the condenser tube.

6.4 Procedure

6.4.1 If the barometric pressure, in Pascals²⁾, at the time of the test is known, correct the temperature according to Table 1. Do not correct for the emergent stem of the thermometer. If the barometric pressure is not known, and the elevation of the laboratory is more than 150 m above sea level, correct the temperature according to Table 2.

NOTE 1 Only one correction is used each time.

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2) Standard pressure is 1 013 hPa.

Table 1 — Factors for calculating temperature corrections

Nominal temperature (°C)	Correction ^a per 13,33 hPa difference in pressure (°C)
160	0,514
175	0,531
190	0,549
225	0,591
250	0,620
260	0,632
275	0,650
300	0,680
316	0,698
325	0,709
360	0,751

^a To be subtracted when the barometric pressure is below 1 013 hPa; to be added when the barometric pressure is above 1 013 hPa.

NOTE 2 For the temperature correction, it is convenient to take into account that experimental temperatures can only be read at the nearest 1 °C.

Table 2 — Corrected fractionation temperature for various altitudes

Elevation above sea level (m)	Fractionation temperature for various altitudes (°C)				
	192	227	263	318	362
-305	192	227	263	318	362
-152	191	226	261	317	361
0	190	225	260	316	360
152	189	224	259	315	359
305	189	224	258	314	358
457	188	223	258	313	357
610	187	222	257	312	356
762	186	221	256	312	355
914	186	220	255	311	354
1067	185	220	254	310	353
1219	184	219	254	309	352
1372	184	218	253	308	351
1524	183	218	252	307	350
1676	182	217	251	306	349
1829	182	216	250	305	349
1981	181	215	250	305	348
2134	180	214	249	304	347
2286	180	214	248	303	346
2438	179	213	248	302	345