



SLOVENSKI STANDARD

SIST EN 13587:2004

01-september-2004

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Bitumen and bituminous binders - Determination of the tensile properties of bituminous binders by the tensile test method

Bitumen und bitumenhaltige Bindemittel - Bestimmung der Streckeigenschaften von bitumenhaltigen Bindemitteln (mit dem Zugprüfverfahren)

Bitumes et liants bitumineux - Détermination des caractéristiques de traction des liants bitumineux par la méthode d'essai de traction

Ta slovenski standard je istoveten z: EN 13587:2003

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 13587:2004

en

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EUROPEAN STANDARD

EN 13587

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2003

ICS 91.100.50

English version

Bitumen and bituminous binders - Determination of the tensile properties of bituminous binders by the tensile test method

Bitumes et liants bitumineux - Détermination des caractéristiques de traction des liants bitumineux par la méthode d'essai de traction

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This European Standard was approved by CEN on 21 November 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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EN 13587:2003 (E)

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Foreword

This document EN 13587:2003 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 June 2004, and conflicting national standards shall be withdrawn at the latest by June 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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EN 13587:2003 (E)**1 Scope**

This European Standard specifies a method for determining the tensile properties of a bituminous binder, in particular those of a polymer modified bitumen, by means of a tensile test.

NOTE The tensile properties, more particularly the tensile stress, the elongation and energy, at the yield point and on fracture, are customarily used as a criterion for assessing the quality of these materials.

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

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

EN 13703, *Bitumen and bituminous binders — Determination of deformation energy.*

EN ISO 527, *Plastics — Determination of tensile properties.*

ISO 5893, *Rubber and plastics test equipment – Tensile, flexural and compression types (constant rate of traverse) – Specification.*

3 Terms and definitions

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

3.1**tensile force**

force undergone by a specimen subjected to extension

NOTE The unit is N.

3.2**tensile stress**

ratio of the tensile force per unit area of the original cross-section

NOTE The unit is N/m².

3.3**elongation**

increase in length of a specimen, expressed in metres.

NOTE Percent elongation is calculated as [(new length – initial length)/initial length] x 100.

1) In course of revision

3.4**brittle break**

rupture happening at the beginning of the test before the flowing threshold when the stress-strain curve is still linear

3.5**flowing threshold**

maximum of the stress-strain curve

4 Principle

A specimen, held by its ends between two jaws, is extended in a chamber, regulated at the test temperature, at constant speed until fracture or a given percent elongation is achieved. In general, stress and percent elongation are noted at the flowing threshold, at breaking and at a percent elongation of 400 %.

5 Apparatus**5.1 Test machine** (in accordance with ISO 5893)

5.1.1 The machine shall be capable of maintaining a constant speed of the moving element at the speed chosen for the test to an accuracy of within 2 % of the chosen speed.

5.1.2 The specimen attachment device (located on the stationary part and on the moving part) shall:

- ensure sufficient clamping of the specimen heads throughout the entire test, to prevent slipping;
- not exert, on any part of the ends of the specimen, localized stresses liable to cause tearing or fracture of the specimen.

5.1.3 Appropriate facilities shall permit the following measurements to be made:

- tensile force applied on the specimen over the range 1 N to 500 N to an accuracy of ± 1 %;
- elongation of the specimen, either by following the movement of the attachment points or by means of an optical extensometer over the range 0 mm to not less than 250 mm to an accuracy of ± 1 mm.

The facilities used shall be recorded in the test report.

5.2 Temperature controlled chamber, capable of maintaining the specimen and the attachment device at the specified temperature throughout the test to an accuracy of $\pm 0,5$ °C, provided with a means of checking the test temperature. The control thermometer shall be placed near the specimen.

5.3 Recording device, for force applied and elongation of the test specimen.

5.4 Measurement apparatus, capable of measuring the thickness of the test specimen to an accuracy of $\pm 0,1$ mm.

5.5 Moulds (made in silicone elastomer for example) allowing moulding of specimens (see Figure 1).

Table 1 — Dimensions of the mould H2 in millimetres

Type of specimen	A	B	E	F	C	G	R	R'
H2	$25 \pm 0,5$	$4,0 \pm 0,1$	$3,0 \pm 0,3$	75 ± 2	$12,5 \pm 1,0$	$12,5 \pm 1,0$	$8,0 \pm 0,3$	$12,5 \pm 0,3$

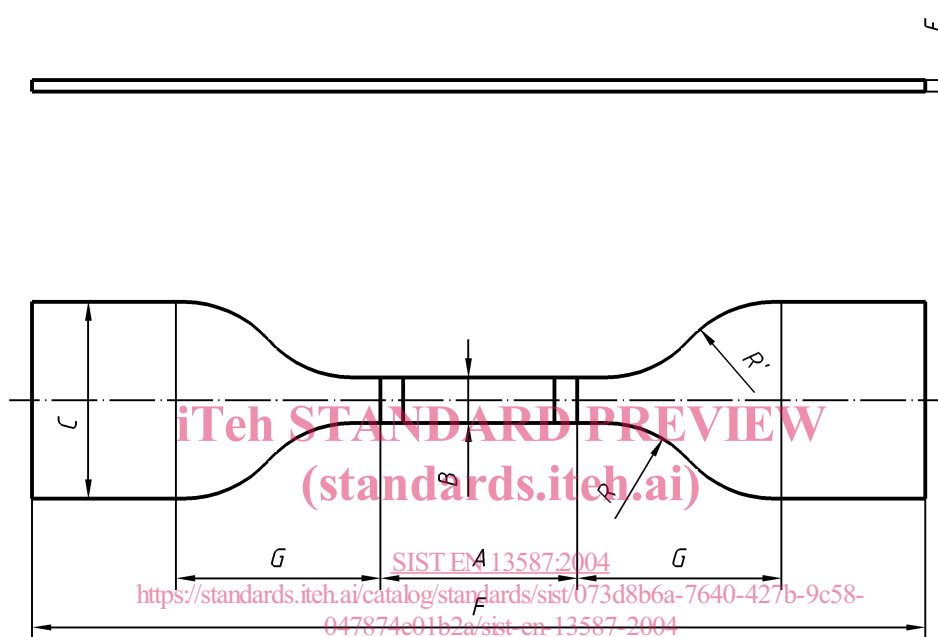


Figure 1 — Dumbbell-shaped binder specimen H2

NOTE The reference length or initial length of the H2 specimens is $K_0 = A + 2G$. Specimens of different geometry can be used (if the preparation of H2 specimens is too difficult, or impossible) but should be in accordance with the reference standards; this should be mentioned explicitly in the test report. The results obtained from such specimens can be used only for comparison with a binder tested under the same conditions.

6 Preparation and conservation of samples

Take the sample in accordance with EN 58. Prepare the sample in accordance with EN 12594. Pour surplus of material directly in the mould, let the specimens to cool for about one hour at a room temperature, and cut of the surplus with a heated spatula.

Reject specimens exhibiting defects. Keep specimens in their moulds and in a refrigerator at a maximum temperature of 10 °C for a maximum of four days before the test.

7 Procedure

Measure the thickness, E , of the specimen with an accuracy of 0,1 mm.

Set the apparatus to the test temperature.

Maintain the chamber containing the specimen at the test temperature for at least one hour.