



**SLOVENSKI STANDARD**  
**SIST EN 12697-18:2005**  
**01-januar-2005**

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6 ]li a Ybg\_Y'na Ygj'È'DfYg\_i gbY'a YrcXY'nUj fc Y'UgZJ'fbY'na Ygj'È'%, "XY`JYnj c`nU  
cXj cXb'Uj Ub'Y

Bituminous mixtures - Test methods for hot mix asphalt - Part 18: Binder drainage

Asphalt - Prüfverfahren für Heiasphalt - Teil 18: Bestimmung des Ablaufens

Mlanges bitumineux - Mthodes d'essai pour mlange hydrocarbon a chaud - Partie  
18: Essai d'gouttage du liant (standards.iteh.ai)

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**ICS:**

93.080.20      Materiali za gradnjo cest      Road construction materials

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 12697-18**

July 2004

ICS 93.080.20

English version

## Bituminous mixtures - Test methods for hot mix asphalt - Part 18: Binder drainage

Mélanges bitumineux - Méthodes d'essai pour mélange  
hydrocarboné à chaud - Partie 18: Essai d'égouttage du  
liant

Asphalt - Prüfverfahren für Heiasphalt - Teil 18:  
Bestimmung des Ablaufens

This European Standard was approved by CEN on 1 April 2004.

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 Central Secretariat 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 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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This document (EN 12697-18:2004) has been prepared by Technical Committee CEN/TC 227 "Road materials", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

This document is one of a series of standards as listed below:

EN 12697-1, *Bituminous mixtures — Test methods for hot mix asphalt — Part 1: Soluble binder content*

EN 12697-2, *Bituminous mixtures — Test methods for hot mix asphalt — Part 2: Determination of particle size distribution*

EN 12697-3, *Bituminous mixtures - Test methods for hot mix asphalt - Part 3: Bitumen recovery: Rotary evaporator*

EN 12697-4, *Bituminous mixtures - Test methods for hot mix asphalt - Part 4: Bitumen recovery: Fractionating column*

EN 12697-5, *Bituminous mixtures — Test methods for hot mix asphalt — Part 5: Determination of the maximum density*

EN 12697-6, *Bituminous mixtures - Test methods for hot mix asphalt - Part 6: Determination of bulk density of bituminous specimens*

EN 12697-7, *Bituminous mixtures — Test methods for hot mix asphalt — Part 7: Determination of bulk density of bituminous specimens by gamma rays*

EN 12697-8, *Bituminous mixtures - Test methods for hot mix asphalt - Part 8: Determination of void characteristics of bituminous specimens*

EN 12697-9, *Bituminous mixtures - Test methods for hot mix asphalt - Part 9: Determination of the reference density*

EN 12697-10, *Bituminous mixtures — Test methods for hot mix asphalt — Part 10: Compactability*

EN 12697-11, *Bituminous mixtures - Test methods for hot mix asphalt - Part 11: Determination of the affinity between aggregate and bitumen*

EN 12697-12, *Bituminous mixtures - Test methods for hot mix asphalt - Part 12: Determination of the water sensitivity of bituminous specimens*

EN 12697-13, *Bituminous mixtures — Test methods for hot mix asphalt — Part 13: Temperature measurement*

EN 12697-14, *Bituminous mixtures — Test methods for hot mix asphalt — Part 14: Water content*

EN 12697-15, *Bituminous mixtures — Test methods for hot mix asphalt — Part 15: Determination of the segregation sensitivity*

EN 12697-16, *Bituminous mixtures — Test methods for hot mix asphalt — Part 16: Abrasion by studded tyres*

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EN 12697-17, *Bituminous mixtures — Test methods for hot mix asphalt — Part 17: Particle loss of porous asphalt specimen*

EN 12697-18, *Bituminous mixtures — Test methods for hot mix asphalt — Part 18: Binder drainage*

EN 12697-19, *Bituminous mixtures — Test methods for hot mix asphalt — Part 19: Permeability of specimen*

EN 12697-20, *Bituminous mixtures - Test methods for hot mix asphalt - Part 20: Indentation using cube or Marshall specimens*

EN 12697-21, *Bituminous mixtures - Test methods for hot mix asphalt - Part 21: Indentation using plate specimens*

EN 12697-22, *Bituminous mixtures — Test methods for hot mix asphalt — Part 22: Wheel tracking*

EN 12697-23, *Bituminous mixtures - Test methods for hot mix asphalt - Part 23: Determination of the indirect tensile strength of bituminous specimens*

EN 12697-24, *Bituminous mixtures — Test methods for hot mix asphalt — Part 24: Resistance to fatigue*

prEN 12697-25, *Bituminous mixtures - Test methods for hot mix asphalt - Part 25: Cyclic compression test*

EN 12697-26, *Bituminous mixtures — Test methods for hot mix asphalt — Part 26: Stiffness*

EN 12697-27, *Bituminous mixtures — Test methods for hot mix asphalt — Part 27: Sampling*

EN 12697-28, *Bituminous mixtures — Test methods for hot mix asphalt — Part 28: Preparation of samples for determining binder content, water content and grading.*

EN 12697-29, *Bituminous mixtures - Test methods for hot mix asphalt - Part 29: Determination of the dimensions of a bituminous specimen*

EN 12697-30, *Bituminous mixtures — Test methods for hot mix asphalt — Part 30: Specimen preparation by impact compactor*

EN 12697-31, *Bituminous mixtures — Test methods for hot mix asphalt — Part 31: Specimen preparation by gyratory compactor*

EN 12697-32, *Bituminous mixtures — Test methods for hot mix asphalt — Part 32: Laboratory compaction of bituminous mixtures by vibratory compactor*

EN 12697-33, *Bituminous mixtures - Test methods for hot mix asphalt - Part 33: Specimen prepared by roller compactor*

EN 12697-34, *Bituminous mixtures — Test methods for hot mix asphalt — Part 34: Marshall test*

prEN 12697-35, *Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing*

EN 12697-36, *Bituminous mixtures — Test methods for hot mix asphalt — Part 36: Determination of the thickness of a bituminous pavement*

EN 12697-37, *Bituminous mixtures — Test methods for hot mix asphalt — Part 37: Hot sand test for the adhesivity of binder on precoated chippings for HRA*

EN 12697-38, *Bituminous mixtures — Test methods for hot mix asphalt — Part 38: Common equipment and calibration*

prEN 12697-39, *Bituminous mixtures — Test methods for hot mix asphalt — Part 39: Binder content by ignition*

prEN 12697-40, *Bituminous mixtures — Test methods for hot mix asphalt — Part 40: In-situ drainability*

prEN 12697-41, *Bituminous mixtures — Test methods for hot mix asphalt — Part 41: Resistance to de-icing fluids*

prEN 12697-42, *Bituminous mixtures — Test methods for hot mix asphalt — Part 42: Amount of foreign matters in reclaimed asphalt*

prEN 12697-43, *Bituminous mixtures — Test methods for hot mix asphalt — Part 43: Resistance to fuel*

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.

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**EN 12697-18:2004 (E)****1 Scope**

This document describes two test methods:

- **basket method** (see clause 4),
- **Schellenberg method** (see clause 5).

The **basket method** (see clause 4) describes a method for determining binder drainage of bituminous mixtures. This method directly measures binder drainage, but when carried out on bituminous mixtures with fibres or mixtures whose mortar content is higher than in porous asphalt some clogging of the holes in the drainage baskets can occur, limiting the drainage of the binder. Basket method can be used either for determining the binder drainage for different binder content, or with a single binder content, eliminating the successive repetitions. It also enables the effects of varying fine aggregate types or including any anti-draining additive to be quantified.

The **Schellenberg method** (see clause 5) describes a method for determining binder drainage of bituminous mixtures. It is applicable to asphalt materials that are not porous asphalt or for those porous asphalt incorporating fibres. It can be used either for determining the binder drainage for different binder content, or with a single binder content, eliminating the successive repetitions. It also enables the effects of varying fine aggregate types or including any anti-draining additive to be quantified.

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**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 12697-27, Bituminous mixtures — Test methods for hot mix asphalt — Part 27: Sampling

prEN 12697-35, *Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310-2, *Test sieves - Technical requirements and testing - Part 2: Test sieves of perforated metal plate*

**3 Terms and definitions**

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

**3.1 binder drainage**  
binder, fine particles and additives, if any, separated from the mixture after the mixing process or during transport of the mixture to the site



## 4 Basket method

### 4.1 Principle

The quantity of material lost by drainage, after 3 h at the test temperature (see 4.4.1) is measured in mixtures placed on baskets made out of perforated metal plates.

### 4.2 Materials

Sufficient aggregates and binder to manufacture at least 4 kg of asphalt material. If more than one binder content is going to be tested, aggregates and binder to manufacture 2,5 kg of asphalt material per each additional binder content shall be provided. The aggregates shall be dried to constant mass and graded in the fractions appropriate to the specified grading.

The test can be carried out with samples taken during the factory production control. In that case, sampling shall be in accordance with EN 12697-27.

### 4.3 Apparatus

**4.3.1 Oven with closed ventilation system**, vibration free, fitted with thermostatic control to maintain the temperature in the vicinity of the samples to  $\pm 2$  °C in the range of 80 °C to 200 °C.

**4.3.2 Drainage baskets**, constructed from 3,15 mm perforated plate sieves, in accordance with ISO 3310-2, on sides and base to form  $(100 \pm 2)$  mm cubes, with feet, at each corner of the base, of  $(3.0 \pm 0.5)$  mm diameter and  $(5 \pm 1)$  mm height (see Figure 1).

**4.3.3 Balances**, of suitable capacity and accuracy able to weigh to 0,1 g.

**4.3.4 Thermometer**, able to measure the temperature to 0,1 °C.

**4.3.5 Metal trays**, approximately 150 mm square and 10 mm deep.

**4.3.6 Metal boxes**, approximately 150 mm by 150 mm by 150 mm.

**4.3.7 Aluminium foil**.