



**SLOVENSKI STANDARD**  
**SIST EN 15326:2007/kprA1:2009**

**01-marec-2009**

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Bitumen and bituminous binders - Measurement of density and specific gravity - Capillary  
-stoppered pycnometer method

Bitumen und bitumenhaltige Bindemittel - Messung der Dichte und der relativen Dichte -  
Pyknometerverfahren mit Kapillarstopfen

Bitumes et liants bitumineux - Mesure de la masse volumique et de la densité - Méthode  
du pycnomètre à bouchon capillaire

**Ta slovenski standard je istoveten z: EN 15326:2007/prA1**

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**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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**FINAL DRAFT**  
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ICS 75.140; 91.100.50

English Version

## Bitumen and bituminous binders - Measurement of density and specific gravity - Capillary-stoppered pycnometer method

Bitumes et liants bitumineux - Mesure de la masse volumique et de la densité - Méthode du pycnomètre à bouchon capillaire

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This draft amendment is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 336.

This draft amendment A1, if approved, will modify the European Standard EN 15326:2007. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

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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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**EN 15326:2007/prA1:2008 (E)**

## **Foreword**

This document (EN 15326:2007/prA1:2008) 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 Unique Acceptance Procedure.

## 1 Modification to 7.3

Replace the existing text of 7.3 with the following:

### **7.3 Calibration of the pycnometer**

#### **7.3.1 General**

The calibration shall be carried out at least once a year in accordance with the procedure detailed below. Such a calibration is valid only for the temperature at which it is carried out.

In this standard, except if mentioned explicitly, the reference to the pycnometer specifies the pycnometer body and its stopper.

During the year or in case of doubt about any result, a new determination of the mass of the empty pycnometer and the mass of the pycnometer filled with the test liquid shall be carried out.

The calibrated pycnometers shall be preserved from dust and from stains.

When first using a new pycnometer, register the pycnometer body and its stopper with a permanent readable marking that may not change the mass of the pycnometer through time (typically engraved glass). Mention clearly that the pycnometer body and its stopper are not dissociable.

#### **7.3.2 Calibrations of the mass of the empty pycnometer and the mass of the pycnometer filled with the test liquid**

##### **7.3.2.1 Determination of the mass of the empty pycnometer and the mass of the pycnometer with the test liquids by 2 operators**

When evaluating the mass of the empty pycnometer (A) and the mass of the pycnometer filled with the test liquid (B), the measurements shall be carried out by at least 2 operators, if possible on the same day.

If only one operator carries out the 2 determinations, each of those two determinations shall be carried out twice within at least 24 h in between but no more than 72 h.

##### **7.3.2.2 Calibration of the mass of the empty pycnometer (A)**

Thoroughly clean the pycnometer with solvent and remove the solvent completely by storing the pycnometer in an oven at approximately 10 °C above the boiling point of the solvent used. Allow the pycnometer to cool to ambient temperature (18 °C to 28 °C) and clean it with care to prevent electrostatic charge.

Weigh the pycnometer to the nearest mg without handling it with fingers but with grippers. Designate this mass as A.

##### **7.3.2.3 Referencing the pycnometer and its empty mass (A)**

Report in the appropriate document, the pycnometer identification mark (see 7.3.1) and its empty mass (A), as the average of the independent results determined by one or two operators. This mass evaluated at least once a year, will be considered for the determination of the specific gravity or the density as detailed in this standard under Clause 8.

##### **7.3.2.4 Calibration of the mass of the pycnometer filled with the test liquid (B)**

Fill the pycnometer with the test-liquid at close to 25 °C, place the stopper on loosely. Place the pycnometer in the low-form beaker (7.2.2) and press the stopper firmly in place. If the test liquid is water, the water surface shall overflow the capillary stopper of the pycnometer; if the test liquid is isopropanol the water surface shall be in the middle of the stopper.

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Allow the pycnometer to remain in the beaker for not less than 30 min. Remove the pycnometer from the bath, immediately dry the top of the stopper with one stroke of a dry towel and then quickly dry the remaining outside area of the pycnometer. Clean the surface carefully. The top of the stopper shall not be re-dried even if a small droplet of water forms when removing the pycnometer from the beaker, the proper mass of the contents at the test temperature is thus recorded. If moisture condenses on the pycnometer during weighing, quickly redry the outside of the pycnometer (excluding the top) before recording the mass.

Weigh to the nearest mg. Designate the mass of the pycnometer plus test liquid as *B*.

Empty the pycnometer and dry it in the oven at  $(110 \pm 5)$  °C.

**7.3.2.5 Referencing the pycnometer and its mass determined with the test liquid (B)**

Report in an appropriate document, the pycnometer identification mark and its mass determined with the test liquid (B), as the average of the independent results determined by one or two operators. This mass evaluated at least once a year, will be considered for the determination of the specific gravity or the density as detailed in this standard under Clause 8."

**2 Modification to 7.4**

*Replace the existing text of 7.4 with the following:*

**"7.4 Performing the routine test****7.4.1 Determination of the empty mass of the pycnometer**

Before any determination of the specific gravity or the density of a bituminous binder, the empty pycnometer shall be weighed and its mass shall be compared to the mass (A) determined when calibrating (see 7.3.2.2 and 7.3.2.3). In case those 2 masses are in no way different from more than 5 mg, the masses (A) and (B) evaluated when calibrating the pycnometer shall be used for the calculations detailed under Clause 8. On the contrary, a new calibration shall be performed as detailed under sub-clause 7.3.

**7.4.2 Weighing of the pycnometer filled with bituminous binder sample**

Pour enough sample into the clean, dry, warmed pycnometer (within the range 50 °C to 80 °C) to fill three quarters of its capacity. Take precautions to keep the material from touching the sides of the pycnometer above the final level and to prevent the inclusion of air bubbles. Except when testing fluxed or cut-back bitumen, place the filled pycnometer (without stopper) in an oven with a temperature of 80 °C to 90 °C above the softening point, determined by Ring and Ball method (EN 1427) to allow air bubbles to disappear.

**NOTE** For bituminous binders free of any solvent, if any air bubbles are inadvertently occluded, those may be removed by brushing the surface of the sample (bituminous binder) in the pycnometer with a high "soft" flame of a Bunsen burner. To avoid overheating, do not allow the flame to remain in contact with the bituminous binder more than a few seconds at any one time.

Allow the pycnometer and its content to cool to ambient temperature for a period of not less than 40 min, protecting it from dust. Weigh the pycnometer with the stopper to the nearest 1 mg. Designate the mass of the pycnometer plus sample as *C*."