



# SLOVENSKI STANDARD SIST EN 12697-53:2019

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**Bitumenske zmesi - Preskusne metode - 53. del: Povečanje kohezije z metodo merjenja razširjanja**

Bituminous mixtures - Test methods - Part 53: Cohesion increase by spreadability-meter method

Asphalt - Prüfverfahren - Teil 53: Beurteilung der Kohäsionszunahme durch Messung der Konsistenz

Mélanges bitumineux - Méthodes d'essai - Partie 53: Montée en cohésion par la méthode du maniabilimètre

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**Ta slovenski standard je istoveten z: EN 12697-53:2019**

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**ICS:**

93.080.20      Materiali za gradnjo cest      Road construction materials

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EUROPEAN STANDARD

EN 12697-53

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EUROPÄISCHE NORM

September 2019

ICS 93.080.20

English Version

## Bituminous mixtures - Test methods - Part 53: Cohesion increase by spreadability-meter method

Mélanges bitumineux - Méthodes d'essai - Partie 53 :  
Montée en cohésion par la méthode du maniabilimètre

Asphalt - Prüfverfahren - Teil 53:  
Kohäsionszunahmemessung durch  
Ausbreitmaßmethode

This European Standard was approved by CEN on 1 July 2019.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This document (EN 12697-53:2019) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

A list of all parts in the EN 12697 series can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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**EN 12697-53:2019 (E)****1 Scope**

This document specifies a method to measure the spreadability characteristics of bituminous mixtures which are able to vary with time. It can be used for the determination of the delay between manufacturing and laying. It is intended to be assistance for bituminous mixtures design rather than a type test.

This document applies to bituminous mixtures both those made up in laboratory and those resulting from work site sampling, with an upper aggregate size not larger than 31,5 mm. It is not applicable to mastic asphalt.

**2 Normative references**

There are no normative references in this document.

**3 Terms and definitions**

No terms and definitions are listed in this document.

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 <http://www.iso.org/obp>

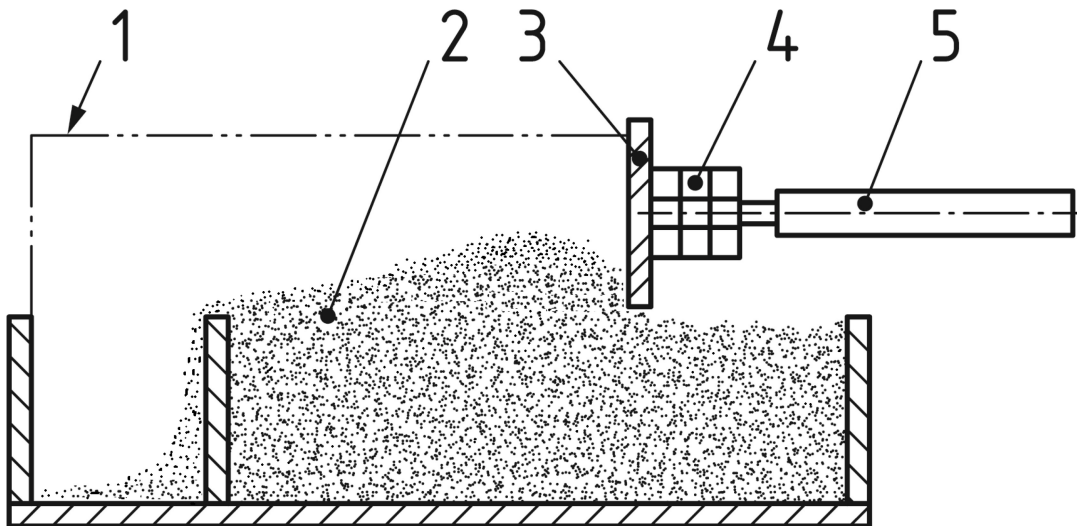
**4 Principle**

The aim of the test is to determine the cohesion increase of a bituminous mixture in fixed temperature and hygrometry conditions, using a spreadability-meter.

The cohesion increase test consists of measuring of the resistance against the shear due to the progress of a piston in a mould filled with the bituminous mixture to be tested (Figure 1). The cohesion of the bituminous mixture increases as the shear force increases.

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#### Key

- 1 mould
- 2 bituminous mixture
- 3 stainless steel plate
- 4 force sensor
- 5 piston

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**Figure 1 — Schema of spreadability-meter**  
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## 5 Apparatus

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### 5.1 Moulds

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#### 5.1.1 General

Depending on the application, the equipment may comprise large size and or small size moulds, as mentioned in Figure 3 using the following symbols:

- $L$  is the internal dimension of the mould according to the piston axle, in millimetre (mm);
- $W$  is the internal horizontal dimension of the mould perpendicular to the piston axle, millimetre (mm);
- $H$  is the internal height of the mould, millimetre (mm).

#### 5.1.2 Large size moulds

- $L = (220 \pm 2)$  mm,
- $W = (300 \pm 2)$  mm,
- $H = (100 \pm 2)$  mm.

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## 5.1.3 Small size moulds

- $L = (220 \pm 2)$  mm,
- $W = (150 \pm 2)$  mm,
- $H = (100 \pm 2)$  mm.

## 5.2 Spreadability-meter

An example of a spreadability-meter is shown in Figure 2. It comprises following elements:

- Metallic chassis, equipped with a piston which moves with a speed of  $(10,0 \pm 0,5)$  mm/s on a minimal length of 130 mm and able to transmit a horizontal movement to the stainless steel plate.
- Force sensor, fixed on the piston and linked to a steel plate, able to measure the force to  $\pm 1$  N up to 100 N and to  $\pm 1$  % above 100 N.
- Stainless steel plate, linked to the force measurement: length  $(230 \pm 2)$  mm for large size moulds, length  $(115 \pm 2)$  mm for small size moulds, width  $(80 \pm 1)$  mm, and thickness  $(4,0 \pm 0,5)$  mm. As the initial position, it is set on the wall with a vertical gap of  $(3,0 \pm 0,5)$  mm and it is vertically aligned with the inside edge of the mould.



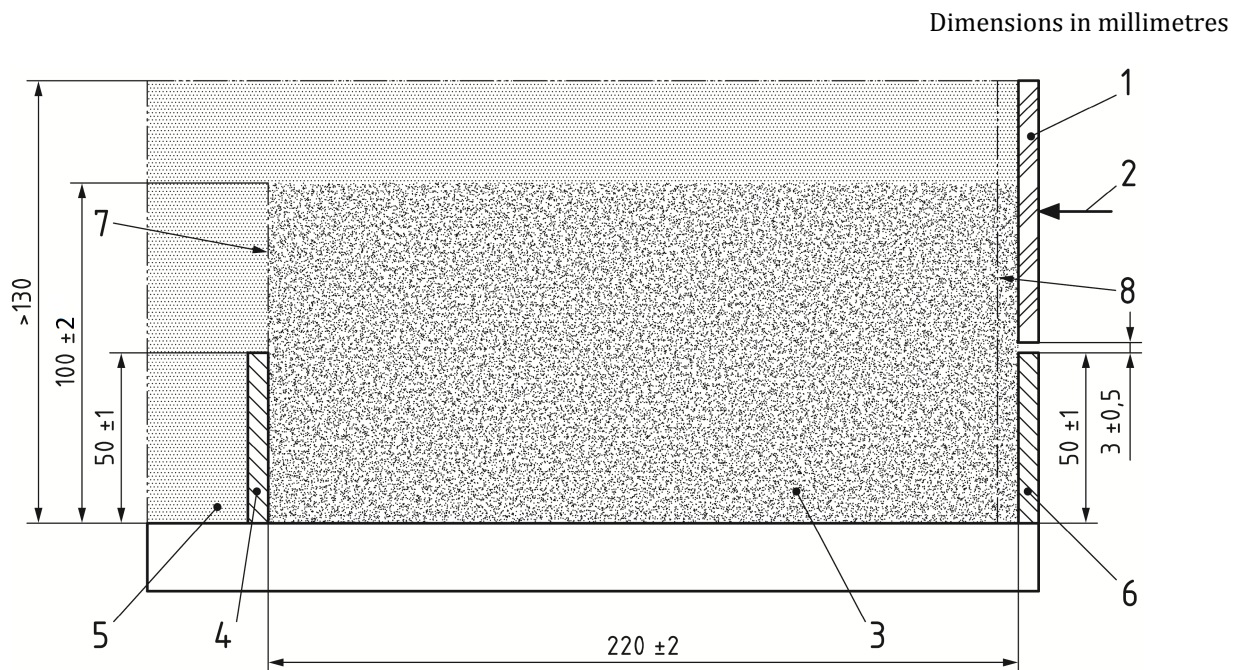
## Key

- 1 stainless steel plate in initial position
- 2 chassis

Figure 2 — Example of spreadability-meter



The spreadability-meter equipped with a mould is shown in Figure 3.



#### Key

- 1 stainless steel plate in initial position
- 2 piston
- 3 bituminous mixture to be tested after striking
- 4 partition wall
- 5 bituminous mixture pouring out
- 6 pressure wall
- 7 detachable rear wall
- 8 detachable front wall

**Figure 3 — Schema of spreadability-meter equipped with a mould**

The bottom of the mould may comprise 15 holes with a diameter of  $(3,0 \pm 0,5)$  mm, uniformly distributed to allow the drainage, if the drainage should be taken into account during the curing of the bituminous mixture.

The mould comprises detachable rear and front walls to allow filling with the bituminous mixture. They are placed respectively on the pressure wall and on the partition wall. They shall be removed after filling the mould and after the striking of the bituminous mixture and before the start of the test.

### 5.3 Filling shoot

Parallelepiped filling shoot (Figure 4), of which dimensions are suitable for filling the mould equipped with a discharge box comprising a retractable trap door. The height of discharge between the door and the bottom of the mould shall be  $(1\ 000 \pm 50)$  mm. The discharge box shall be able to hold at least 11 kg of bituminous mixture and the trap door shall be able to dump all the material when open.