SLOVENSKI STANDARD
SIST EN 12697-49:2014

01-april-2014

Bitumenske zmesi - Preskusne metode za vroče asfaltne zmesi - 49. del: Ugotavljanje tornih sposobnosti po poliranju

Bituminous mixtures - Test methods for hot mix asphalt - Part 49: Determination of friction after polishing

Asphalt - Prüfverfahren für Heißasphalt - Teil 49: Messung der Griffigkeit nach Polierung

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 49: Détermination du coefficient de frottement après polissage

Ta slovenski standard je istoveten z: **EN 12697-49:2014**

ICS:

93.080.20	Materiali za gradnjo cest	Road construction materials

SIST EN 12697-49:2014 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12697-49

January 2014

ICS 93.080.20

English Version

Bituminous mixtures - Test methods for hot mix asphalt - Part 49: Determination of friction after polishing

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 49: Détermination du coefficient de frottement après polissage

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Ref. No. EN 12697-49:2014 E

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Foreword

This document (EN 12697-49:2014) 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of an identical text or by endorsement, at the latest by July 2014, and conflicting national standards shall be withdrawn at the latest by July 2014.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This European Standard 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 12697-10, *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*

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 cylindrical specimens (CY)*

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*

EN 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 method 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*

EN 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*

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

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

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

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

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

EN 12697-44, *Bituminous mixtures — Test methods for hot mix asphalt — Part 44: Crack propagation by semi-circular bending test*

EN 12697-45, *Bituminous mixtures — Test methods for hot mix asphalt — Part 45: Saturation Ageing Tensile Stiffness (SATS) conditioning test*

EN 12697-46, *Bituminous mixtures — Test methods for hot mix asphalt — Part 46: Low temperature cracking and properties by uniaxial tension tests*

EN 12697-47, *Bituminous mixtures — Test methods for hot mix asphalt — Part 47: Determination of the ash content of natural asphalts*

prEN 12697-48, *Bituminous mixtures — Test methods for hot mix asphalt — Part 48: Interlayer Bonding (Torque bond test — TBT, Shear bond test - SBT, Tensile Adhesion Test (TAT)*[1)]

EN 12697-49, *Bituminous mixtures — Test methods for hot mix asphalt — Part 49: Determination of friction after polishing*

prCEN/TS 12697-50, Bituminous mixtures — Test methods for hot mix asphalt — Part 50: Scuffing resistance of surface course[1)]

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

1) In preparation.

1 Scope

This European Standard describes a test method to determine the friction at 60 km/h after polishing during a fixed number of passes on surfaces of bituminous mixtures samples.

The samples used are either produced in a laboratory or are cores taken from the site.

NOTE This procedure was previously known as Wehner and Schulze method (see [1]).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

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

ISO 4662, *Rubber, vulcanized or thermoplastic — Determination of rebound resilience*

ISO 7619-1, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 1: Durometer method (Shore hardness)*

3 Terms, definitions and symbols

3.1 Terms and definitions

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

3.1.1
pass
application of a single roller of the polishing head, a complete revolution of which is equivalent to three passes of the roller

3.2 Symbols

μ_{FAP}	single result of friction
μ_m	friction coefficient at 60 km/h
μ_{km}	mean value of the control plate before and after the friction measurement
μ_{ref}	known value of the Laboratory Skid Resistance of the control plate
FAP	Friction After Polishing: average of two or more single results μ_{FAP}
∅	diameter in mm

4 Principle

The sample is polished and the friction force is determined. The device comprises a polishing station and a unit for measuring the friction. The polishing station, which is continuously supplied with a mixture of water and quartz powder, contains three polishing rollers that can be lowered and that move across the test surface at a predefined loading force.

In the friction measuring unit, a rotating measuring head is lowered onto the test surface while water is being added. The measuring head is fitted with three sliding blocks and can be declutched electronically. The moment generated by the contact between the rubber sliders and the surface is continuously measured and recorded until the measuring head comes to a standstill. The friction is subsequently calculated from the moment measured at 60 km/h.

5 Equipment

5.1 Test device

5.1.1 General

The test device consists of a unit to polish the sample, a specimen clamping system and a unit for measuring its friction.

5.1.2 Polishing unit

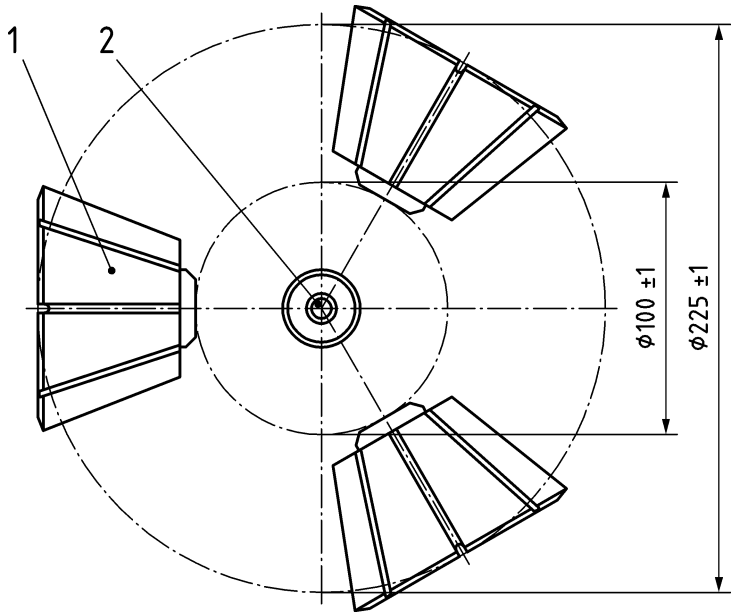
5.1.2.1 General

The polishing unit includes a polishing head with polishing rollers and a water-quartz powder mixture projection system.

5.1.2.2 Polishing head

A polishing head equipped with three polishing rollers as indicated on Figure 1, able to be lowered onto the test surface with loading force calibrated in static of (392 ± 3) N. The polishing head shall move on the surface of the specimen during the polishing procedure and rotate at a rotation speed of (500 ± 5) r/min.

Dimensions in millimetres



Key

1 polishing roller

2 water quartz powder projection device

Figure 1 — Polishing head (view from below)

5.1.2.3 Polishing rollers

The rollers, as shown in Figure 2, consist of a circular, cone-shaped metal carrier housing covered with an (8,5 ± 0,5) mm thick layer of rubber at the start of the test. Eight profile grooves with a depth of (4,5 ± 0,5) mm and a width of (3,5 ± 0,5) mm are cut into this rubber layer.

The polishing rollers shall have the following characteristics:

— diameter D_1: (36 ± 1) mm and D_2: (80 ± 1) mm;

— height H (56,3 ± 0,1) mm;

— shore hardness (65 ± 3) Shore A at a temperature of (23 ± 2)°C, according to ISO 7619-1.

Dimensions in millimetres

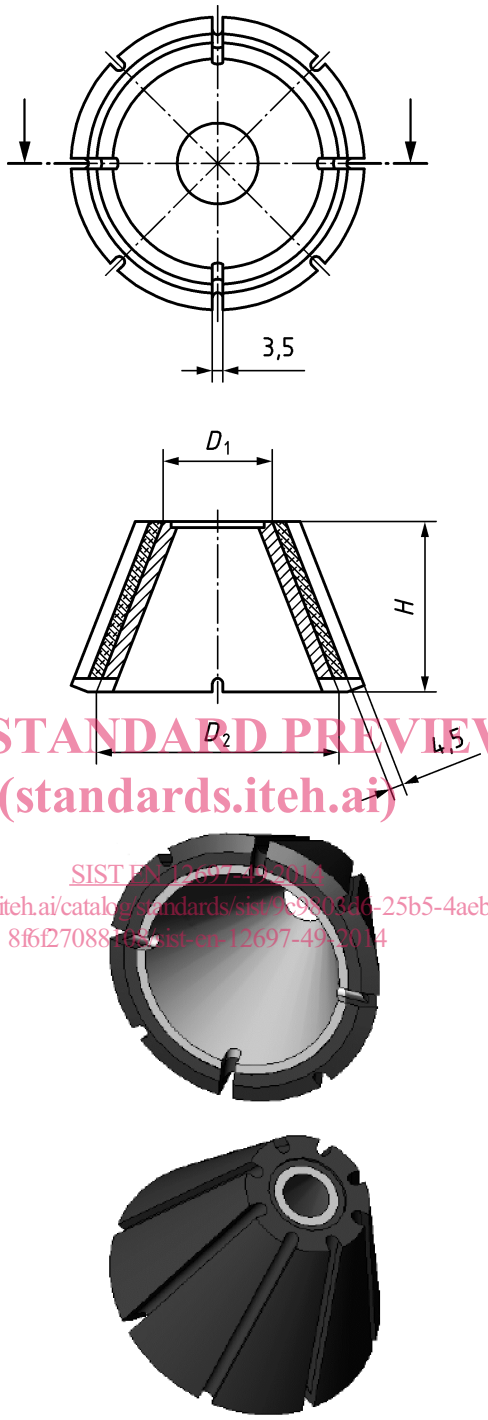


Figure 2 — Polishing rollers — 3D view, cross and longitudinal section

The friction in the bearings of the polishing rollers should be checked periodically according the following procedure:

The torque moment measured on a sample made with a fine aggregate 0,2/0,4 mm during 90 000 passes shall be constant to ± 10 % between 10 000 passes and 85 000 passes.