



SLOVENSKI STANDARD
kSIST FprEN 12697-41:2013
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**Bitumenske zmesi - Preskusne metode za vroče asfaltne zmesi - 41. del:
Odpornost proti tekočinam za odtajevanje**

Bituminous mixtures - Test methods for hot mix asphalt - Part 41: Resistance to de-icing fluids

Asphalt - Prüfverfahren für Heißasphalt - Teil 41: Widerstand gegen chemische Auftaumittel

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 41: Résistance aux fluides de déverglçage

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English Version

Bituminous mixtures - Test methods for hot mix asphalt - Part 41: Resistance to de-icing fluids

Mélanges bitumineux - Méthodes d'essai pour mélange
hydrocarboné à chaud - Partie 41: Résistance aux fluides
de déverglçage

Asphalt - Prüfverfahren für Heiasphalt - Teil 41:
Widerstand gegen chemische Auftaumittel

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 227.

If this draft becomes a European Standard, 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.

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Contents		Page
Foreword.....		3
1	Scope.....	6
2	Normative references.....	6
3	Term and definition.....	6
4	Principle.....	6
5	Apparatus.....	7
6	Solvent and other materials.....	8
7	Preparation of test specimens.....	8
8	Procedure.....	9
9	Calculation and expression of results.....	9
10	Report.....	10
11	Precision.....	11

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Foreword

This document (FprEN 12697-41:2013) has been prepared by Technical Committee CEN/TC 227 “Road materials”, the secretariat of which is held by DIN.

This document is currently submitted to the UAP.

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

This document will supersede EN 12697-41:2005.

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

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*

FprEN 12697-41:2013 (E)

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 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*

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 pre-coated 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)*
- prEN 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: Resistance to scuffing*

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FprEN 12697-41:2013 (E)**1 Scope**

This European Standard specifies a test method to determine the resistance of bituminous materials to de-icing fluids such as solutions of acetate and formate. The procedure determines the surface tensile strength of a specimen of asphalt after storage in de-icing fluid.

This European Standard is primarily used as a test on asphalt to be laid on airfields, but it can be used for asphalt to be laid on roads or other paved areas.

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

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

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

3 Term and definition

For the purposes of this document, the following term and definition applies.

3.1**surface tensile strength**

tensile stress at maximum force when testing the surface tensile strength according to this test method

4 Principle

Testing is performed on a sawn cylindrical specimen of asphalt on which a well-defined test surface has been drilled out in the bituminous mixture to a depth of about 5 mm. Four specimens are stored and four are not stored in a de-icing fluid. A steel plate is bonded to the test surface of each specimen in turn. During testing, the plate is pulled off with a tensile force increasing at a rate of 200 N/s, the force being applied perpendicular to the test specimen surface. The tensile force at failure load and the mode of failure are recorded. The results are compared with those for specimens which have not been stored in de-icing fluid.

5 Apparatus

5.1 Vessel with a tight-fitting lid for storing specimens in the de-icing fluid.

5.2 Vacuum desiccator.

5.3 Vacuum pump for evacuation of the desiccator.

The pump shall be capable of achieving a pressure of 6,7 kPa within 10 min and maintaining this pressure within $\pm 0,3$ kPa throughout the vacuum treatment.

5.4 Coring rig (optional).

5.5 Steel plates with a diameter of 50 mm and a tolerance of 0,5 mm.

The steel plate shall be attached by suitable means (e.g. screwed) to the tensile test machine. Minimum thickness of steel plate shall be 10 mm from bottom of steel plate to bottom of screw hole.

5.6 Base and holder for fixing the specimen prior to testing (see Figure 1).

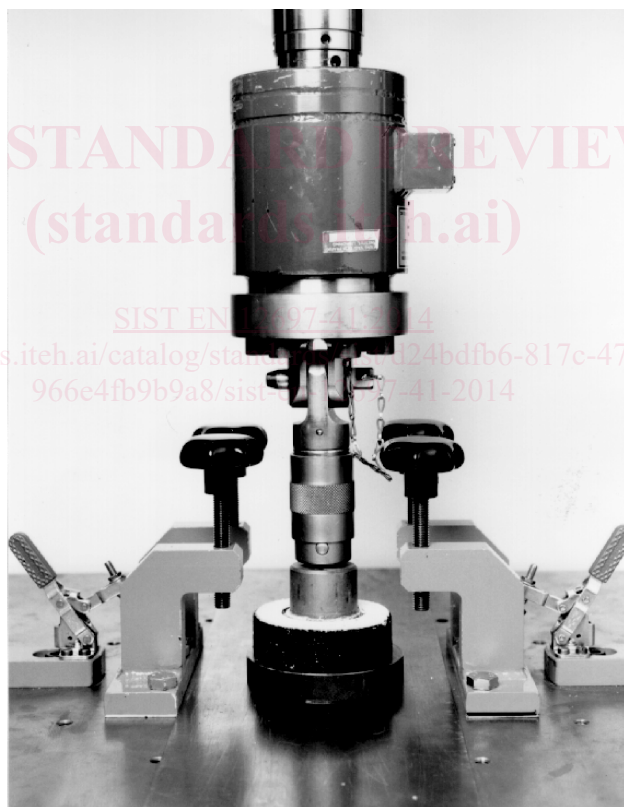


Figure 1 — Example of base, test specimen and tensile test machine

5.7 Tensile test machine, with force increasing rate control and automatic load recording fitted with suitable clamps and base to ensure that the tensile force can be applied without momentum perpendicular to the test specimen.

5.8 Circular saw capable of cutting asphalt with finish that has no imperfections discernible by touch.

5.9 Equipment for drilling out a test surface.

5.10 Conditioning device capable of maintaining a constant temperature of (23 ± 1) °C.

FprEN 12697-41:2013 (E)

5.11 Heating cabinet capable of maintaining a constant temperature of (40 ± 2) °C.

6 Solvent and other materials

6.1 Epoxy adhesive.

6.2 Desiccator grease.

6.3 De-icing fluid, the concentration of which shall correspond to the highest concentration intended for use on site.

7 Preparation of test specimens

7.1 Prepare a laboratory sample of asphalt mixture in accordance with EN 12697-35 or at an asphalt mixing plant.

7.2 Compact a sample of a height of (60 ± 10) mm by roller compactor in accordance with EN 12697-33 and core out not less than four cylinders from the slab with a diameter of (100 ± 5) mm in accordance with EN 12697-27. Alternatively, one of the following methods of compaction can be used:

- compact not less than four cylinders with a diameter of (100 ± 5) mm and a height of (60 ± 10) mm by impact compactor in accordance with EN 12697-30, by gyratory compactor in accordance with EN 12697-31 or by vibratory compactor in accordance with EN 12697-32; or
- core not less than four cylinders with a diameter of (100 ± 5) mm from a compacted pavement of a thickness of at least 60 mm and trim the top and/or bottom to produce a height of (60 ± 10) mm in accordance with EN 12697-27.

The compaction procedure shall be reported.

7.3 Allow the cylinders to reach room temperature. Mark them with a unique identification number. Store the cylinders with an end face on a flat surface at an ambient temperature of (23 ± 2) °C for (16 ± 4) h. Determine the bulk density for each cylinder according to EN 12697-6. Divide the cylinders into two groups (a wet and a dry group) in which the mean bulk densities of the two groups shall not differ by more than $0,030 \text{ Mg/m}^3$.

7.4 Saw the cylinders in half in a plane perpendicular to its axis. Carefully drill in the centre of each specimen a test surface with a diameter of (50 ± 2) mm and a depth of $(5 \pm 1,5)$ mm .

7.5 Allow the specimens to dry with an end face on a flat surface at an ambient temperature of (23 ± 2) °C between 3 days and 42 days from the time of their manufacture.

NOTE The storage time influences the mechanical properties of the specimen.

For test purposes other than for CE marking, different storage times may be applied.

7.6 Glue a test plate to the test surface of the specimen by carefully applying a thin layer of epoxy adhesive. Allow the specimen to cure at a temperature of (23 ± 2) °C for (20 ± 1) h. Prepare the test surfaces of all specimens from both groups.