SLOVENSKI STANDARD
SIST EN 12697-3:2013

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Nadomešča:
SIST EN 12697-3:2005

Bitumenske zmesi - Preskusne metode za vroče asfaltne zmesi - 3. del: Ugotavljanje deleža veziva: rotacijski uparjalnik

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

Asphalt - Prüfverfahren für Heißasphalt - Teil 3: Rückgewinnung des Bindemittels: Rotationsverdampfer

Mélanges Bitumineux - Méthodes d'ssai pour enrobés à chaud - Partie 3: Extraction des bitumes à l'évaporateur rotatif

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ICS:

93.080.20 Materiali za gradnjo cest Road construction materials

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EUROPEAN STANDARD

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Supersedes EN 12697-3:2005

English Version

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

Mélanges Bitumineux - Méthodes d'essai pour enrobés à chaud - Partie 3: Extraction des bitumes à l'évaporateur rotatif

Asphalt - Prüfverfahren für Heißasphalt - Teil 3: Rückgewinnung des Bindemittels: Rotationsverdampfer

This European Standard was approved by CEN on 28 March 2013.

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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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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

Foreword

This document (EN 12697-3:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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 supersedes EN 12697-3:2005.

The significant changes from that document include:

— The Scope is clarified.

— The definitions for precision and associated terms have been removed.

— Remaining solvent is redefined as solvent residue.

— The minimum evaporation capacity of solvent has been reduced from 1,0 l/h to 0,85 l/h.

— The container no longer has to be made of glass.

— The warning note about solvent is clarified.

— Silicon grease is permitted as a seal.

— Silica gel has been corrected.

— Pouring of bitumen solution has been edited.

— Ash content reference to EN 12697-1 has been corrected.

— Maximum time for bitumen recovery distillation is reduced.

— Check for air leaks has been removed.

— First phase temperature and second phase pressure with dichloromethane has been changed.

— The minimum final pressure has been made relevant to first phase pressure instead of fixed value for all solvents.

— The use of nitrogen to prevent the bitumen from ageing has been added.

— The note on expected time for distillation has been removed.

This part of EN 12697, *Bituminous mixtures — Test methods for hot mix asphalt*, is one of a series of standards as listed below:

— *Part 1: Soluble binder content*

- *Part 2: Determination of particle size distribution*
- *Part 3: Bitumen recovery: Rotary evaporator*
- *Part 4: Bitumen recovery: Fractionating column*
- *Part 5: Determination of the maximum density*
- *Part 6: Determination of bulk density of bituminous specimens*
- *Part 7: Determination of bulk density of bituminous specimens by gamma rays*
- *Part 8: Determination of void characteristics of bituminous specimens*
- *Part 9: Determination of the reference density*
- *Part 10: Compactibility*
- *Part 11: Determination of the affinity between aggregate and bitumen*
- *Part 12: Determination of the water sensitivity of bituminous specimens*
- *Part 13: Temperature measurement*
- *Part 14: Water content*
- *Part 15: Determination of the segregation sensitivity*
- *Part 16: Abrasion by studded* tyres
- *Part 17: Particle loss of porous asphalt specimen*
- *Part 18: Binder drainage*
- *Part 19: Permeability of specimen*
- *Part 20: Indentation using cube or cylindrical specimens (CY)*
- *Part 21: Indentation using plate specimens*
- *Part 22: Wheel tracking*
- *Part 23: Determination of the indirect tensile strength of bituminous specimens*
- *Part 24: Resistance to fatigue*
- *Part 25: Cyclic compression test*
- *Part 26: Stiffness*
- *Part 27: Sampling*
- *Part 28: Preparation of samples for determining binder content, water content and grading*
- *Part 29: Determination of the dimensions of a bituminous specimen*

— *Part 30: Specimen preparation by impact compactor*

— *Part 31: Specimen preparation by gyratory compactor*

— *Part 32: Laboratory compaction of bituminous mixtures by vibratory compactor*

— *Part 33: Specimen prepared by roller compactor*

— *Part 34: Marshall test*

— *Part 35: Laboratory mixing*

— *Part 36: Determination of the thickness of a bituminous pavement*

— *Part 37: Hot sand test for the adhesivity of binder on precoated chippings for HRA*

— *Part 38: Common equipment and calibration*

— *Part 39: Binder content by ignition*

— *Part 40: In situ drainability*

— *Part 41: Resistance to de-icing fluids*

— *Part 42: Amount of foreign matter in reclaimed asphalt*

— *Part 43: Resistance to fuel*

— *Part 44: Crack propagation by semi-circular bending test*

— *Part 45: Saturation Ageing Tensile Stiffness (SATS) conditioning test*

— *Part 46: Low temperature cracking and properties by uniaxial tension tests*

— *Part 47: Determination of the ash content of natural asphalts*

— *Part 48:Interlayer bonding (Torque bond test – TBT, Shear bond test – SBT, Tensile Adhesion Test - TAT)*[1)]

— *Part 49: Determination of friction after polishing*[1)]

— *Part 50: Resistance to scuffing*[1)]

WARNING — The method described in this European Standard may require the use of dichloromethane (methylene chloride), 1.1.1-trichlorethane, benzene, trichlorethylene, xylene, toluene, tetrachloroethylene or other solvent capable of dissolving bitumen. These solvents are hazardous to health and are subject to occupational exposure limits as detailed in relevant legislation and regulations.

Exposure levels are related to both handling procedures and ventilation provision and it is important that adequate training be given to staff employed in the usage of these substances.

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

1) In preparation.

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 Scope

This document describes a test method for the recovery of soluble bitumen from bituminous mixtures used in road, airfield or similar pavements in a form suitable for further testing. The test can be undertaken on either loose or compacted asphalt materials. The procedure is suitable for the recovery of paving grade bitumens, for which materials this European Standard is the reference method. The fractionating column procedure (see EN 12697-4) is the reference method for mixtures containing volatile matter such as cut-back bitumen.

For recovery of polymer modified bitumens, the rotary evaporator procedure is recommended.

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 12594, *Bitumen and bituminous binders — Preparation of test samples*

EN 12697-1:2012, *Bituminous mixtures — Test methods for hot mix asphalt — Part 1: Soluble binder content*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12697-1:2012 and the following apply.

3.1
soluble binder content

proportion of extractable binder in an anhydrous sample determined by extracting the binder from the sample

Note 1 to entry: Extraction can be followed by binder recovery.

Note 2 to entry: The soluble binder content is expressed in percent by mass.

3.2
insoluble binder content
proportion of binder that adheres to the aggregate after extraction

Note 1 to entry: The insoluble binder content is expressed in percent by mass.

4 Principle

The bitumen is separated from the sample by dissolving in dichloromethane (or other suitable solvent). After removal of undissolved solids from the bitumen solution, the bitumen is recovered from it by vacuum distillation using a rotary evaporator. The bitumen is in solution for less than 24 h.

5 Apparatus

5.1 Apparatus for the extraction of the soluble bitumen

A suitable container with stopper in which the sample and solvent can be agitated together, an asphalt analyser or other apparatus for the extraction of soluble bitumen defined in EN 12697-1.