Bituminous mixtures - Test methods - Part 3: Bitumen recovery: Rotary evaporator

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

See Eesti standard EVS-EN 12697-3:2013+A1:2018 sisaldab Euroopa standardi EN 12697-3:2013+A1:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 12697-3:2013+A1:2018 consists of the English text of the European standard EN 12697-3:2013+A1:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.12.2018.	Date of Availability of the European standard is 19.12.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Bituminous mixtures - Test methods - Part 3: Bitumen recovery: Rotary evaporator

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

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

This European Standard was approved by CEN on 28 March 2013 and includes Amendment 1 approved by CEN on 9 November 2018.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Ref. No. EN 12697-3:2013+A1:2018 E

Contents

Page

Foreword

This document (EN 12697-3:2013+A1:2018) 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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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.

This document includes Amendment 1 approved by CEN on 9 November 2018.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟦A1⟩ ⟨A1⟧.

This document supersedes ⟦A1⟩ EN 12697-3:2013 ⟨A1⟧.

⟦A1⟩ The significant changes made in EN 12697-3:2013+A1:2018 compared to EN 12697-3:2013 are:

— [Title] The series title no longer makes the method exclusively for hot mix asphalt;

— [Foreword] The list of standards in the Foreword was deleted and the list of significant changes was adapted;

— [5.1] NOTE: Paragraph deleted, stating that the hardening is usually approximately equivalent to the softening resulting from any solvent residue;

— [5.3.6] The temperature range 100 °C to 200 °C for thermometer is replaced by range of temperatures specified in Table 1 according to the solvent used;

— [7.1.2] Clarification that the 0,063 mm sieve is used for removal of any insoluble material;

— [7.3] The whole sub-clause has been replaced, with the following significant changes:

  — the order of the procedure in the previous version (7.3.8 to 7.3.25) has been altered for clarity and is now described in 7.3.8 to 7.3.18;

  — NOTES introduced in 7.3.9 and 7.3.11 with advise to not exceed 120 °C for T_2 for bitumen's, designated and specified by kinematic viscosity at 60 °C regardless of solvent used;

— [Clause 9] Reference to (7.1.15) amended to (7.3.13) followed by the changes in 7.3.

— editorial updates. ⟨A1⟧

⟦A1⟩ A list of all parts in the EN 12697 series can be found on the CEN website. ⟨A1⟧

WARNING — The method described in this European Standard may require the use of dichloromethane (methylene chloride), ⟦A1⟩ 1,1,1-Trichlorethane ⟨A1⟧, 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 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, Serbia, 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.