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BSI Standards Publication

Bituminous mixtures – Test methods

Part 1: Soluble binder content

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National foreword

This British Standard is the UK implementation of EN 12697-1:2020. It supersedes BS EN 12697-1:2012, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/510/1, Asphalt products.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Bituminous mixtures - Test methods - Part 1: Soluble binder content

Mélanges bitumineux - Méthodes d'essai - Partie 1 : Teneur en liant soluble

Asphalt - Prüfverfahren - Teil 1: Löslicher Bindemittelgehalt

This European Standard was approved by CEN on 18 November 2019.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN 12697-1:2020) 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.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.

This document supersedes EN 12697-1:2012.

The following is a list of significant technical changes since the previous edition:

— the title no longer makes the method exclusively for hot mix asphalt;

— [ge] editorial update according to current standard template;

— [ge] NOTES modified or adjusted to normal text where appropriate according to ISO/IEC Directives – Part 2:2016, 24.5;

— [ge] the wording "accuracy of" has been altered to "to the nearest" in relevant procedures;

— [ge] The unit mm^3 x $10^3 mm^3$ corrected to cm^3;

— [Clause 2 and 5.3.2.4] EN 933-1 replaced by EN 12697-2;

— [Clause 4] Title amended to read: Preparation of laboratory samples. Completed with description for mixtures with high mineral matter content;

— [5.2.2.1], [6.2.2] and [B.1.7.1.6] accuracy for balance of 0,05 % amended to ± 0,1 g;

— [5.2.3.1] clause deleted (superfluous). Following clauses renumbered accordingly;

— [5.5.2 to 5.5.5] Titles amended for clarification;

— [6.1] completed with observation about influence of water for the result of binder content;

— [8.2.2 and 8.2.3] dated reference deleted for EN 12697-28:2000;

— [8.6] new clause about precision of automatic devices:

— [Figure A.1] new figure introduced. Completed with Automatic extractor method. Minor editorial corrections;

— [B.1.5.1.5] table with dimensions related to Figure B.7 has been corrected in accordance with figure;

— [B.1.7] procedure for automatic extractor method included;

— [B.2.1.1.1] acceleration amended to 25 000 m/s^2 for consistency with EN 12697-3;

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— [C.2.1.1.1] accuracy of balance amended to read ± 1 mg;

— [C.2.1.5] capacity of ignitions dishes clarified: **Ignition dish**, of at least 125 cm^3 capacity;

— [C.3.1.1] accuracy of balance, amended to read ± 10 mg;

— [Bibliography] updated.

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

WARNING — The method described in this document may require the use of dichloromethane (methylene chloride), 1,1,1-trichloroethane, benzene, trichloroethylene, xylene, toluene, perchloroethylene (tetracloroethylene) or other solvents 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 emphasized that adequate training should 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, 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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Introduction

This document describes a unified approach to the examination of bituminous mixtures that allows some divergence in the detail of procedures followed by individual laboratories. In Clause 5 of this document, a description is given of the basic operations that together form the test method for the proper determination of the binder content of bituminous mixtures. Guidance on the test method is given in Annex A and Figure A.1, while the use of alternative items of equipment that are equally suitable for carrying out particular parts of the test method are described in Annex B. Although the apparatus specified for the separation of mineral filler from the binder solution obtained after extraction is of a suitably efficient level not to affect the precision of the test described in Clause 8, a method for determining the amount of residual mineral matter in the extract is given in Annex C for use in those particular cases where some doubt may exist.

Methods and equipment other than those described in Annex B and Annex C, including automated equipment, are permissible provided that they have been demonstrated to provide the same results as one of the methods in Annex B or Annex C within the limits of the precision given in this document. Guidance on determination of soluble binder content of mixtures with polymer-modified binders is given in Annex D.

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1 Scope

This document describes test methods for the determination of the soluble binder content of samples of bituminous mixtures.

The test methods described are suitable for quality control purposes during the production of plant mix and for checking compliance with a product specification.

For the analysis of mixtures containing modified binders, the guidance of Annex D should be followed.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12697-2, *Bituminous mixtures — Test methods — Part 2: Determination of particle size distribution*

EN 12697-3, *Bituminous mixtures — Test methods — Part 3: Bitumen recovery: Rotary evaporator*

EN 12697-4, *Bituminous mixtures — Test methods — Part 4: Bitumen recovery: Fractionating column*

EN 12697-14, *Bituminous mixtures — Test methods — Part 14: Water content*

EN 12697-28, *Bituminous mixtures — Test methods — Part 28: Preparation of samples for determining binder content, water content and grading*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310-2, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

3 Terms and definitions

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

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 https://www.iso.org/obp/ui

3.1
soluble binder content
percentage by mass of extractable binder in an anhydrous sample, determined by extracting the binder from the sample

3.2
insoluble binder content
percentage by mass of binder that adheres to the aggregate particles after extraction