



SLOVENSKI STANDARD
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Bitumenske zmesi - Specifikacije materialov - 31. del: Bitumenski beton z bitumensko emulzijo

Bituminous mixtures - Material specifications - Part 31: Asphalt Concrete with Bituminous Emulsion

Asphaltnischgut - Mischgutanforderungen - Teil 31: Emulsionsgebundene Asphaltbetone

Mélanges bitumineux - Spécifications sur le matériau - Partie 31: Enrobés bitumineux à l'émulsion de bitume

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Bituminous mixtures - Material specifications - Part 31: Asphalt Concrete with Bituminous Emulsion

Mélanges bitumineux - Spécifications sur le matériau -
Partie 31: Enrobés bitumineux à l'émulsion de bitume

Asphaltnischgut - Mischgutanforderungen - Teil 31:
Emulsionsgebundene Asphaltbetone

This European Standard was approved by CEN on 5 August 2019.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 13108-31:2019) 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of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.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.

A list of all parts of the EN 13108 series can be found on the CEN website.

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

The aim of this document is to enable specification of asphalt concrete mixtures with bituminous emulsion on a performance basis. In general, however, there are currently more empirical tests available to describe the mixtures.

This document covers a large variety of materials for different applications, traffic and climate conditions. The standard gives properties and listings of possible categories. It has to accommodate the road industry for all of Europe. For this reason, the menu approach for properties has been chosen. The tables represent categories that are required all over Europe. For this reason, numerical values in tables do not always obey statistical rules. Based on conditions of use, specific properties and categories may be defined, in documents related to the application of the product. The categories defined in those documents take into account the reproducibility of the test when this is given in the appropriate test method.

Care is to be taken to only select those tests which are applicable to the application of the asphalt and the use of the pavement and to avoid a combination of potentially conflicting requirements.

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1 Scope

This document specifies requirements for plant mixtures of the mix group Asphalt concrete with bituminous emulsion for use on roads, and other trafficked areas. Asphalt concrete with bituminous emulsion is used for surface courses, binder courses, regulating courses, and bases. It is a mixture in which mechanical properties evolve over time following installation. This is not just in terms of cooling, as other asphalts but also includes curing effects.

NOTE Asphalt concrete with bituminous emulsion is a mixture in which mechanical properties evolve over time following installation because of curing.

Mixtures utilizing bituminous emulsion based on *in situ* recycling are not covered by this document.

This document includes requirements for the selection of the constituent materials. It is designed to be read in conjunction with:

- Annex A Product Type Assessment (Normative);
- Annex B Factory Production Control (Normative);
- Annex C Performance characteristic assessment (Informative).

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 932-3, *Tests for general properties of aggregates — Part 3: Procedure and terminology for simplified petrographic description*

EN 933-1, *Tests for geometrical properties of aggregates — Part 1: Determination of particle size distribution — Sieving method*

EN 933-10, *Tests for geometrical properties of aggregates — Part 10: Assessment of fines — Grading of filler aggregates (air jet sieving)*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 1097-6:2013, *Tests for mechanical and physical properties of aggregates — Part 6: Determination of particle density and water absorption*

EN 1097-7, *Tests for mechanical and physical properties of aggregates — Part 7: Determination of the particle density of filler — Pyknometer method*

EN 1426, *Bitumen and bituminous binders — Determination of needle penetration*

EN 1427, *Bitumen and bituminous binders — Determination of the softening point — Ring and Ball method*

EN 1428, *Bitumen and bituminous binders — Determination of water content in bituminous emulsions — Azeotropic distillation method*

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EN 1431, *Bitumen and bituminous binders — Determination of residual binder and oil distillate from bitumen emulsions by distillation*

EN 12595, *Bitumen and bituminous binders — Determination of kinematic viscosity*

EN 12596, *Bitumen and bituminous binders — Determination of dynamic viscosity by vacuum capillary*

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

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 12697-5, *Bituminous mixtures — Test methods— 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 12697-8, *Bituminous mixtures — Test methods — Part 8: Determination of void characteristics of bituminous specimens*

EN 12697-12, *Bituminous mixtures — Test methods— Part 12: Determination of the water sensitivity of bituminous specimens*

EN 12697-22, *Bituminous mixtures — Test methods for hot mix asphalt — Part 22: Wheel tracking*

EN 12697-23, *Bituminous mixtures — Test methods— Part 23: Determination of the indirect tensile strength of bituminous specimens*

EN 12697-26, *Bituminous mixtures — Test methods— Part 26: Stiffness*

EN 12697-27, *Bituminous mixtures — Test methods — 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 12697-31, *Bituminous mixtures — Test methods — Part 31: Specimen preparation by gyratory compactor*

EN 12697-32, *Bituminous mixtures — Test methods — Part 32: Specimen preparation by vibratory compactor*

EN 12697-33, *Bituminous mixtures — Test method — Part 33: Specimen prepared by roller compactor*

EN 12697-35, *Bituminous mixtures — Test methods — Part 35: Laboratory mixing*

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

EN 12697-53, *Bituminous mixtures — Test methods — Part 53: Cohesion increase by spreadability-meter method*

EN 12697-54, *Bituminous mixtures — Test methods — Part 54: Curing of specimen for test of mixtures with bitumen emulsion*

EN 12697-55, *Bituminous mixtures — Test methods — Part 55: Organoleptic assessment of mixtures with bitumen emulsion*

EN 12697-56, *Bituminous mixtures — Test methods — Part 56: Specimen preparation by static compaction*

EN 13043, *Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas*

EN 13075-1, *Bitumen and bituminous binders — Determination of breaking behaviour — Part 1: Determination of breaking value of cationic bituminous emulsions, mineral filler method*

EN 13075-2, *Bitumen and bituminous binders — Determination of breaking behaviour — Part 2: Determination of fines mixing time of cationic bituminous emulsions*

EN 13108-8, *Bituminous mixtures — Material specifications — Part 8: Reclaimed asphalt*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13808, *Bitumen and bituminous binders — Framework for specifying cationic bituminous emulsions*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

3 Terms, definitions, symbols and abbreviations

3.1 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 <http://www.iso.org/obp>

3.1.1

pavement

structure, composed of one or more courses, to assist the passage of traffic over terrain

3.1.2

layer

element of a pavement laid in a single operation

3.1.3

course

element of a pavement constructed with a single asphalt mixture which may be laid in one or more layers

EN 13108-31:2019 (E)**3.1.4****surface course**

upper course of the pavement, which is in contact with the traffic

3.1.5**binder course**

structural course of the pavement between the surface course and the base

3.1.6**regulating course**

course of variable thickness applied to an existing course or surface to provide the necessary profile for a further course of consistent thickness

3.1.7**base**

main structural element of a pavement, which may be laid in one or more courses, described as “upper” base “lower” base

3.1.8**asphalt**

homogenous mixture typically of coarse and fine aggregates, filler aggregate and bituminous binder which is used in the construction of a pavement

Note 1 to entry: The asphalt may include one or more additives to enhance the laying characteristics, performance or appearance of the mixture.

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3.1.9**asphalt concrete with bituminous emulsion**

asphalt in which the aggregate particles are continuously graded or gap-graded to form an interlocking structure in which all or part of the binder is added in the form of a bituminous emulsion

3.1.10**curing**

process whereby mechanical properties of the bituminous mixture with emulsion evolve over time

Note 1 to entry: Depending on the emulsion, the aggregate, the type of mixture, the temperature of application, the thickness, the local condition, climate, rain, frost, drainage of water etc., the curing takes place over few days and few years.

3.1.11**mix formulation**

composition of a single mixture expressed as a target composition

Note 1 to entry: A target composition is expressed in two ways (see 3.1.12 and 3.1.13).

3.1.12**input target composition**

expression of the mix formulation in terms of the constituent materials, the grading curve and the percentage of bitumen emulsion added to the mixture

Note 1 to entry: This will usually be the result of a laboratory mix design and validation.

3.1.13**output target composition**

expression of the mix formulation in terms of the constituent materials and the mid point grading and soluble binder content to be found on analysis

Note 1 to entry: This will usually be the result of a production validation.

3.1.14**additive**

constituent material that can be added in small quantities to influence specific properties of the mixture

Note 1 to entry: For example, additives are used to influence the affinity of binder to aggregate, and the mechanical properties when using inorganic and organic fibres and polymers. They are also used to influence the colour of the mixture.

3.1.15**conflicting requirements**

combination of requirements or properties which are impracticable to fulfil in their entirety

Note 1 to entry: This can occur by combining specific requirements for the composition and constituent materials together with more performance related tests. These are also relevant when two or more performance or test parameters are selected which measure similar properties using conflicting test methods resulting in a lack of clarity and consistency in the characteristics of the mixture.

3.1.16**category**

defined level of a property of an asphalt mixture; the designation of a category of which may be a symbol and a numerical value representing the level

Note 1 to entry: The tables in this document list the defined categories for each property.

3.1.17**class**

range of levels delimited by a minimum and a maximum value

3.1.18**added water**

amount of water eventually added to the mixture

3.1.19**total water content**

amount of water added in the mixture, water brought by the emulsion in the mixture and water brought by the aggregates expressed in percentage by mass of the dry aggregate and the conventional residual anhydrous binder