SLOVENSKI STANDARD

SIST EN 13108-2:2006

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Bitumenske zmesi - Specifikacije materialov - 2. del: Bitumenski beton za zelo tanke plasti

Bituminous mixtures - Material specifications - Part 2: Asphalt Concrete for very thin layers

Asphaltmischgut - Mischgutanforderungen - Teil 2: Asphaltbeton für sehr dünne Schichten

Mélanges bitumineux - Spécifications des matériaux - Partie 2: Bétons bitumineux tres minces

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English Version

Bituminous mixtures - Material specifications - Part 2: Asphalt Concrete for very thin layers

Mélanges bitumineux - Spécifications des matériaux - Partie 2: Bétons bitumineux très minces

Asphaltmischgut - Mischgutanforderungen - Teil 2: Asphaltbeton für sehr dünne Schichten

This European Standard was approved by CEN on 12 October 2005.

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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 Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard (EN 13108-2:2006) 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of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by January 2008.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this European Standard.

This European Standard is one of a series of standards as listed below:

EN 13108-1, *Bituminous mixtures — Material specifications — Part 1: Asphalt Concrete.*

EN 13108-2, *Bituminous mixtures — Material specifications — Part 2: Asphalt Concrete for very thin layers.*

EN 13108-3, *Bituminous mixtures — Material specifications — Part 3: Soft Asphalt.*

EN 13108-4, *Bituminous mixtures — Material specifications — Part 4: Hot Rolled Asphalt*.

EN 13108-5, *Bituminous mixtures — Material specifications — Part 5: Stone Mastic Asphalt.*

EN 13108-6, *Bituminous mixtures — Material specifications — Part 6: Mastic Asphalt.*

EN 13108-7, *Bituminous mixtures — Material specifications — Part 7: Porous Asphalt.*

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

EN 13108-20, *Bituminous mixtures — Material specifications — Part 20: Type Testing.*

EN 13108-21, *Bituminous mixtures — Material specifications — Part 21: Factory Production Control.*

No existing European Standard is superseded.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

The ultimate aim is to specify the required fundamental properties of the bituminous mixtures. However, as specifications for Asphalt Concrete for very thin layers have traditionally been based empirically on compositional recipes combined with specifications for the constituent materials with additional requirements based on performance related tests and as insufficient experience is available with fundamental testing of Asphalt Concrete for very thin layers, this European Standard, for the moment, specifies empirical requirements only.

Asphalt Concretes for very thin layers is to be used for surface courses with a thickness of 20 mm to 30 mm.

1 Scope

This European Standard specifies requirements for mixtures of the mix group Asphalt Concrete for very thin layers for use on roads, airfields and other trafficked areas.

NOTE A mixture specification derived from this European Standard can be used either to declare the conformity of a mixture with known requirements or to make known what those requirements are.

This European Standard includes requirements for the selection of the constituent materials. It is designed to be read in conjunction with EN 13108-20 and EN 13108-21.

Asphalt Concrete very thin layer mixtures with chemical modified binders not covered by EN 14023 are not covered by this European Standard.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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 12591, *Bitumen and bituminous binders — Specifications for paving grade bitumens*

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 12697-13, *Bituminous mixtures — Test methods for hot mix asphalt — Part 13: Temperature measurement*

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

EN 13108-4:2005, *Bituminous mixtures — Material specifications — Part 4: Hot Rolled Asphalt*

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

EN 13108-20:2005, *Bituminous mixtures — Material specifications — Part 20: Type Testing*

EN 13108-21:2005, *Bituminous mixtures — Material specifications — Part 21: Factory Production Control*

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

EN 14023, *Bitumen and bituminous binders — Specifications for polymer modified bitumens*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

For the purpose of this European Standard, the following terms and definitions apply.

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
structural element of a pavement constructed with a single material. A course may be laid in one or more layers

3.1.4
surface course
upper course of the pavement, which is in contact with the traffic

3.1.5
binder course
part 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. The base may be laid in one or more courses, described as “upper” base, “lower” base etc.

3.1.8
Asphalt Concrete for very thin layers
asphalt for surface courses with a thickness of 20 mm to 30 mm, in which the aggregate particles are generally gap-graded to form a stone to stone contact and to provide an open surface texture

3.1.9
mix formulation
composition of a single mixture expressed as a target composition

NOTE A target composition may be expressed in two ways (see 3.1.10 and 3.1.11).

3.1.10
input target composition
expression of a mix formulation in terms of the constituent materials, the grading curve and the percentage of bitumen added to the mixture

NOTE This will usually be the result of a laboratory mix design and validation.

3.1.11
output target composition
expression of a mix formulation in terms of the constituent materials and the mid point grading and soluble binder content to be found on analysis

NOTE This will usually be the result of a production validation.

3.1.12
additive
constituent material, which can be added in small quantities to the mixture, e.g. inorganic or organic fibres or polymers, to influence the mechanical properties, the workability or the colour of the mixture

3.2 Symbols and abbreviations

BBTM Asphalt Concrete for very thin layers

D the upper sieve size of the aggregate in the mixture, in millimetres (mm)

4 Requirements for constituent materials

4.1 General

Only constituent materials with established suitability shall be used.

The establishment of suitability shall result from one or more of the following:

— European Standard;

— European Technical Approval;

— specifications for materials based on a demonstrable history of satisfactory use in asphalt. Evidence shall be provided on their suitability. This evidence may be based on research combined with evidence from practice.

NOTE In the European asphalt industry it is common practice to use additives like inorganic or organic fibres, pigments, waxes etc., which are not covered by a European Standard or ETA. This European Standard allows the use of those materials.

4.2 Binder

4.2.1 General

The binder shall be a paving grade bitumen or a modified bitumen. The paving grade bitumen shall conform to EN 12591, the modified bitumen to EN 14023.

Natural asphalt conforming to EN 13108-4:2005, Annex B, may be added.

4.2.2 Selection of binder

The grade of the bitumen, the type and grade of the modified bitumen, and the amount and category of natural asphalt shall be as specified.

In case of a paving grade bitumen the grade shall be selected from the grades between 35/50 and 160/220 inclusively.

NOTE 1 Given the wide variety of climates, traffic loads, used materials etc. it can be necessary to select on a regional level specific binders.

When modified bitumen is used to improve properties that are not covered by the empirical specification additional proof shall be provided. This proof shall be delivered through investigation using standards in the EN 12697 series, that the modified bitumen is suitable for improving the desired functional characteristics. The proof may be based on earlier research.

NOTE 2 EN 14023 is a grading system and is only meant to characterise the modified bitumen. The modified bitumen specifications are not functionally based, and it is not possible to combine these specifications with empirical asphalt specifications to demonstrate functional behaviour. The proof required would normally be a Type Testing on a similar mixture incorporating the modified binder showing fulfilment of the relevant property. The grade of the bitumen, the type and grade of the modified bitumen, the grade of the hard grade bitumen and the amount and category of natural asphalt may be selected.

4.2.3 Binder in mixtures with reclaimed asphalt

When using more than 10 % by mass of the total mixture of reclaimed asphalt from mixtures in which mainly paving grade bitumen has been used and when the binder added to the mixture is a paving grade bitumen and the grade of the bitumen is specified, the binder shall conform to the following requirements:

— Penetration or the softening point of the binder in the resulting mixture, calculated from the penetrations or the softening points of the added binder and the recovered binder from the reclaimed asphalt, shall meet the penetration or softening point requirements of the specified grade. The calculation shall be executed according to the methods described in Annex A. Either the penetration or the softening point requirement shall be specified.

4.3 Aggregate

4.3.1 Coarse aggregate

Coarse aggregate shall conform to EN 13043 as appropriate for the intended use.

4.3.2 Fine aggregate

Fine aggregate shall conform to EN 13043 as appropriate for the intended use.

4.3.3 All-in aggregates

All-in aggregate shall conform to EN 13043 as appropriate for the intended use.

4.3.4 Added filler

Filler aggregate shall conform to EN 13043 as appropriate for the intended use. The amount of added filler shall be as specified.

NOTE 1 Filler includes materials as cement and hydrated lime.

NOTE 2 The expression “as appropriate for the intended use” in 4.3.1 to 4.3.4 means that the selection of the requirements and the particular category depends on a number of conditions. These conditions will include traffic density, climatic conditions, the construction of the course in which the mixture will be used, and economic considerations.

4.4 Reclaimed asphalt

The use and the amount of reclaimed asphalt and the mix group from which the reclaimed asphalt has been or will be derived shall be as specified.

The properties of reclaimed asphalt declared in accordance with EN 13108-8 shall conform to specified requirements appropriate to the intended use.

NOTE 1 The expression “appropriate to the intended use” means that the selection of the requirements and the particular category depends on a number of conditions. These conditions will include traffic density, climatic conditions, the construction of the course in which the mixture will be used, and economic considerations.

The upper sieve size D of the aggregate in the reclaimed asphalt shall not exceed the upper sieve size D of the mixture. The aggregate properties of the reclaimed asphalt shall fulfil the requirements specified for the aggregate for the mixture.

NOTE 2 In general the use of reclaimed asphalt will not be allowed due to the compulsory gap graded grading of the mixture, which is difficult to control with reclaimed asphalt.

4.5 Additives

The nature and properties of all additives shall be declared and they shall conform to the specifications required in 4.1.

5 Requirements for the mixture

5.1 General

The target composition of the mixture in terms of its constituent materials, the percentages passing the specified sieves, the binder content and where relevant the binder content from reclaimed asphalt and/or natural asphalt and the percentage(s) of additive(s) shall be declared and documented.

At the target composition the mixture shall conform to the specified requirements.

When using reclaimed asphalt from mixtures in which a modified bitumen and/or a modifier additive has been used, and/or the mixture itself contains a modified bitumen or a modifier, the amount of reclaimed asphalt shall not exceed 10 % by mass of the total mixture.

5.2 Composition, grading, binder content and additives

5.2.1 Composition

At the target composition the grading shall conform to 5.2.2.

At the target composition the binder content shall conform to 5.2.3.

At the target composition the additive content shall conform to 5.2.4.

The grading shall be expressed in percentages by mass of total aggregate, using the sieves belonging either to the basic set plus set 1 or the basic set plus set 2 of EN 13043. The binder and additive content shall be expressed in percentages by mass of total mixture. The percentages passing the sieves, with exception of the sieve 0,063 mm shall be expressed to 1 %, the binder content, the percentage passing sieve 0,063 and any additive content shall be expressed to 0,1 %.