



SLOVENSKI STANDARD
SIST EN 13108-4:2006
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Bituminous mixtures - Material specifications - Part 4: Hot Rolled Asphalt

Asphaltnischgut - Mischgutanforderungen - Teil 4: Hot Rolled Asphalt

Mélanges bitumineux - Spécifications des matériaux - Partie 4: Hot rolled asphalt

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Ta slovenski standard je istoveten z: EN 13108-4:2006

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English Version

Bituminous mixtures - Material specifications - Part 4: Hot Rolled Asphalt

Mélanges bitumineux - Spécifications des matériaux -
Partie 4: Hot Rolled Asphalt

Asphaltmischgut - Mischgutanforderungen - Teil 4: Hot
Rolled Asphalt

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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.

CEN members are the national standards bodies of 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.

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

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Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms, definitions, symbols and abbreviations	7
3.1 Terms and definitions	7
3.2 Symbols and abbreviations	8
4 Requirements for constituent materials.....	9
4.1 General.....	9
4.2 Binder.....	9
4.2.1 General.....	9
4.2.2 Selection of binder.....	9
4.3 Aggregates	10
4.3.1 Coarse aggregate.....	10
4.3.2 Fine aggregate	10
4.3.3 All-in aggregates.....	10
4.3.4 Added filler	10
4.4 Reclaimed asphalt	10
4.5 Additives.....	11
4.6 Coated chippings.....	11
5 Requirements for the mixture.....	11
5.1 Declaration of the target composition.....	11
5.2 Composition, grading and binder content.....	11
5.2.1 Composition.....	11
5.2.2 Grading	12
5.2.3 Binder content.....	14
5.2.4 Binder volume.....	17
5.2.5 Additives.....	17
5.3 Coating and homogeneity.....	17
5.4 Void content.....	17
5.5 Water sensitivity	18
5.6 Reaction to fire.....	18
5.7 Resistance to permanent deformation	19
5.8 Stiffness.....	20
5.9 Resistance to fuel for application on airfields.....	21
5.10 Resistance to de-icing fluid for application on airfields.....	21
5.11 Temperature of the mixture	22
5.12 Over-specification.....	22
5.13 Durability	22
6 Evaluation of conformity.....	22
7 Identification.....	22
Annex A (normative) Calculations of the penetration or the softening point of the binder of a mixture when reclaimed asphalt is used.....	24
A.1 General.....	24
A.2 Calculation of the penetration of the binder of a mixture.....	24
A.3 Calculation of the softening point of the binder of a mixture	24
Annex B (normative) Natural asphalt.....	26
B.1 Scope	26

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(standards.itech.ai)

B.2	Terms and definitions	26
B.3	Requirements.....	26
B.4	Methods of use	27
B.5	Determination ash content	27
Annex C	(normative) Coated chippings for application to surface course.....	28
C.1	Scope	28
C.2	Chippings	28
C.3	Binder content	28
C.4	Evaluation of conformity	28
C.5	Identification	28
Annex ZA	(informative) Clauses of this European Standard addressing the provisions of the EU Construction Product directive.....	29
ZA.1	Scope and relevant characteristics	29
ZA.2	Procedure(s) for attestation of conformity of Hot Rolled Asphalt	31
ZA.3	CE marking and labelling.....	34
Bibliography	37

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SIST EN 13108-4:2006

<https://standards.iteh.ai/catalog/standards/sist/965b7ee8-2a64-4318-bbd3-d746104875b8/sist-en-13108-4-2006>

Foreword

This European Standard (EN 13108-4:2006) 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 Hot Rolled Asphalt in terms of fundamental, performance based properties. However, specifications for Hot Rolled Asphalt have traditionally been based empirically on compositional recipes combined with specifications for the constituent materials with additional requirements based on performance related tests. Insufficient experience is available with fundamental testing of Hot Rolled Asphalt except for the determination of stiffness. Therefore this European Standard, for the moment, specifies empirical requirements combined with a stiffness requirement.

Hot Rolled Asphalt is used for surface courses, binder courses, regulating courses and bases.

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1 Scope

This European Standard specifies requirements for mixtures of the mix group Hot Rolled Asphalt 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.

Hot Rolled Asphalt 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 softening point — Ring and ball method*

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

<https://standards.iteh.ai/catalog/standards/sist/965b7ee8-2a64-4318-bbd3-4871>

EN 12592:2000, *Bitumen and bituminous binders — Determination of solubility*

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 12697-8, *Bituminous mixtures - Test methods for hot mix asphalt - Part 8: Determination of void characteristics of bituminous specimens*

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

EN 12697-37, *Bituminous mixtures — Test methods for hot mix asphalt — Part 37: Hot sand test for the adhesivity of binder on pre-coated chippings for HRA*

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

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 13924, *Bitumen and bituminous binders — Specifications for hard paving grade bitumen.*

EN 14023, *Bitumen and bituminous binders - Framework specification for polymer modified bitumens*

EN ISO 3838, *Crude petroleum and liquid or solid petroleum products — Determination of the density or relative density — Capillary-stoppered pycnometer and graduated bicapillary pycnometer methods (ISO 3838:2004)*

IP 223, *Test method for the determination of the fly ash content of Lake Asphalt*

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

Hot Rolled Asphalt

dense, gap graded bituminous mixture in which the mortar of fine aggregate, filler and high viscosity binder are major contributors to the performance of the laid material

3.1.9

coated chippings

nominally single size aggregate particles with a high resistance to polishing, which are lightly coated with high viscosity binder. The chippings are always rolled into and form part of a Hot Rolled Asphalt surface course

3.1.10

mix formulation

composition of a single mixture expressed as a target composition

NOTE A target composition may be expressed in two ways (see 3.1.11 and 3.1.12).

3.1.11

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.

3.1.12

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.

3.1.13

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

3.1.14

performance-based requirement

requirement for a fundamental engineering property (e.g. stiffness, fatigue properties) that predicts performance and appears in primary performance prediction relationships

3.1.15

performance-related requirement

requirement for a characteristic (e.g. wheel tracking properties, Marshall properties) that has been found to correlate with a fundamental engineering property that predicts performance

3.1.16

empirical specification

combination of requirements for composition and constituent materials together with performance-related requirements

3.1.17

fundamental specification

combination of performance-based requirements together with limited requirements for composition and constituent materials, with more degrees of freedom than for an empirical specification

NOTE In practice some characteristics will be performance-related.

3.2 Symbols and abbreviations

- HRA Hot Rolled Asphalt
- *D* 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 paving grade bitumen, modified bitumen or hard grade bitumen. The paving grade bitumen shall conform to EN 12591, the modified bitumen to EN 14023 and the hard grade bitumen to EN 13924.

Natural asphalt conforming to Annex B may be added.

4.2.2 Selection of binder

The grade of the bitumen, the type and grade of 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 30/45 and 100/150 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 European 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 and the amount and category of natural asphalt may be selected.

4.2.2.1 Surface courses with reclaimed asphalt

When using more than 10 % by mass of the total mixture of reclaimed asphalt from mixtures in which only 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 selected, the binder shall conform to the following requirement:

- 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 selected grade. The calculation shall be executed according to Annex A. Either the penetration or the softening point requirement shall be selected.

4.2.2.2 Regulating courses and binder courses with reclaimed asphalt

When using more than 20 % by mass of the total mixture of reclaimed asphalt from mixtures in which only 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 selected, the binder shall conform to the following requirement:

- 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 selected grade. The calculation shall be executed according to Annex A. Either the penetration or the softening point requirement shall be selected.

4.3 Aggregates

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.

For fundamentally specified mixtures the angularity shall not be selected.

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 the specified requirements appropriate to the intended use.

NOTE 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.