SLOVENSKI STANDARD

SIST EN 12697-35:2005

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Bitumenske zmesi ï Preskusne metode za vroļ e asfaltne zmesi ï 35. del: Laboratorijska zmes

Bituminous mixtures - Test methods for hot mix asphalt - Part 35: Laboratory mixing

Asphalt - Prüfverfahren für Heißasphalt - Teil 35: Labormischung

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné a chaud - Partie 35: Malaxage en laboratoire

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Bituminous mixtures - Test methods for hot mix asphalt - Part 35: Laboratory mixing

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 35: Mixe laboratoire

Asphalt - Prüfverfahren für Heißasphalt - Teil 35: Labormischung

This European Standard was approved by CEN on 29 July 2004.

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.

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Foreword

This document (EN 12697-35:2004) 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of an identical text or by endorsement, at the latest by April 2005, and conflicting national standards shall be withdrawn at the latest by August 2005.

This document is one of a series of standards as listed below:

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

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

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 12697-5, *Bituminous mixtures — Test methods for hot mix asphalt — 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 12697-7, *Bituminous mixtures — Test methods for hot mix asphalt — Part 7: Determination of bulk density of bituminous specimens by gamma rays*

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

EN 12697-9, *Bituminous mixtures — Test methods for hot mix asphalt — Part 9: Determination of the reference density*

EN 12697-10, *Bituminous mixtures — Test methods for hot mix asphalt — Part 10: Compactability*

EN 12697-11, *Bituminous mixtures — Test methods for hot mix asphalt — Part 11: Determination of the affinity between aggregate and bitumen*

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

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

EN 12697-14, *Bituminous mixtures — Test methods for hot mix asphalt — Part 14: Water content*

EN 12697-15, *Bituminous mixtures — Test methods for hot mix asphalt — Part 15: Determination of the segregation sensitivity*

EN 12697-16, *Bituminous mixtures — Test methods for hot mix asphalt — Part 16: Abrasion by studded tyres*

EN 12697-17, *Bituminous mixtures — Test methods for hot mix asphalt — Part 17: Particle loss of porous asphalt specimen*

EN 12697-18, *Bituminous mixtures — Test methods for hot mix asphalt — Part 18: Binder drainage*

EN 12697-19, *Bituminous mixtures — Test methods for hot mix asphalt — Part 19: Permeability of specimen*

EN 12697-20, *Bituminous mixtures — Test methods for hot mix asphalt — Part 20: Indentation using cube or Marshall specimens*

EN 12697-21, *Bituminous mixtures — Test methods for hot mix asphalt — Part 21: Indentation using plate specimens*

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

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

EN 12697-24, *Bituminous mixtures — Test methods for hot mix asphalt — Part 24: Resistance to fatigue*

EN 12697-25, *Bituminous mixtures — Test methods for hot mix asphalt — Part 25: Cyclic compression test*

EN 12697-26, *Bituminous mixtures — Test methods for hot mix asphalt — Part 26: Stiffness*

EN 12697-27, *Bituminous mixtures — Test methods for hot mix asphalt — 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 methods for hot mix asphalt — Part 29: Determination of the dimensions of bituminous specimen*

EN 12697-30, *Bituminous mixtures — Test methods for hot mix asphalt — Part 30: Specimen preparation by impact compactor*

EN 12697-31, *Bituminous mixtures — Test methods for hot mix asphalt — Part 31: Specimen preparation by gyratory compactor*

EN 12697-32, *Bituminous mixtures — Test methods for hot mix asphalt — Part 32: Laboratory compaction of bituminous mixtures by a vibratory compactor*

EN 12697-33, *Bituminous mixtures — Test methods for hot mix asphalt — Part 33: Specimen prepared by roller compactor*

EN 12697-34, *Bituminous mixtures — Test methods for hot mix asphalt — Part 34: Marshall test*

EN 12697-35, *Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing*

EN 12697-36, *Bituminous mixtures — Test methods for hot mix asphalt — Part 36: Determination of the thickness of a bituminous pavement*

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 12697-38, *Bituminous mixtures — Test methods for hot mix asphalt — Part 38: Common equipment and calibration*

EN 12697-39, *Bituminous mixtures — Test methods for hot mix asphalt — Part 39: Binder content by ignition*

prEN 12697-40, *Bituminous mixtures — Test methods for hot mix asphalt — Part 40: In-situ drainability*

prEN 12697-41, *Bituminous mixtures — Test methods for hot mix asphalt — Part 41: Resistance to de-icing fluids*

prEN 12697-42, *Bituminous mixtures — Test methods for hot mix asphalt — Part 42: Amount of foreign matters in reclaimed asphalt*

prEN 12697-43, *Bituminous mixtures — Test methods for hot mix asphalt — Part 43: Resistance to fuel*

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document describes the laboratory mixing of bituminous materials for the manufacture of specimens. The document specifies the reference temperatures for mixing based on the paving grade of the binder.

2 Normative references

The following referenced documents are indispensable for the application 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 58, *Bitumen and bituminous binders — Sampling bituminous binders*.

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

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

EN 12697-30, *Bituminous mixtures — Test methods for hot mix asphalt — Part 30: Specimen preparation by impact compactor*.

EN 12697-31, *Bituminous mixtures — Test methods for hot mix asphalt — Part 31: Specimen preparation by gyratory compactor*.

EN 12697-32, *Bituminous mixtures — Test methods for hot mix asphalt — Part 32: Laboratory compaction of bituminous mixtures by a vibratory compactor*.

EN 12697-33, *Bituminous mixtures — Test methods for hot mix asphalt — Part 33: Specimen prepared by roller compactor.*

EN 12697-38, *Bituminous mixtures — Test methods for hot mix asphalt — Part 38: Common equipment and calibration.*

prEN 12697-42, *Bituminous mixtures — Test methods for hot mix asphalt — Part 42: Amount of foreign matters in reclaimed asphalt*.

prEN 13108-1:2001, *Bituminous mixtures — Material specifications — Part 1: Asphalt concrete*.

prEN 13108-2:2002, *Bituminous mixtures — Material specifications — Part 2: Asphalt concrete for very thin layers*.

prEN 13108-3:2000, *Bituminous mixtures — Material specifications — Part 3: Soft asphalt*.

prEN 13108-4:2003, *Bituminous mixtures — Material specifications — Part 4: Hot rolled asphalt*.

prEN 13108-5:2000, *Bituminous mixtures — Material specifications — Part 5: Stone mastic asphalt*.

prEN 13108-6:2000, *Bituminous mixtures — Material specifications — Part 6: Mastic asphalt*.

prEN 13108-7:2000, *Bituminous mixtures — Material specifications — Part 7: Porous asphalt (PA)*.

3 Terms and definitions

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

3.1
reference compaction temperature
target value at which compaction of an asphalt mixture starts

3.2
target mixing temperature
value at which component materials are mixed to form an asphalt mixture

3.3
maximum mixing temperature
value that an asphalt mixture shall not exceed during the mixing process

4 Principle

The bituminous mixture is prepared at a target temperature within a time that is limited in order to reduce mechanical degradation of the aggregates. The target temperature depends on the grade of bitumen.

NOTE The target temperature for mixing is related to the reference temperatures used for its subsequent compaction.

5 Apparatus

5.1 Laboratory mixer, capable of entirely coating all mineral substances in not more than 5 min and, preferably equipped with thermostatically controlled heating and mechanical speed control. The mixer shall be of the whisk or other type that is not so rigid that it can damage either the aggregate particles or the bowl.

5.2 Ventilated oven, for heating aggregates and bitumen up to the relevant target temperature from Table 1 to the accuracy given in EN 12697-38.

5.3 Balance, capable of measuring the mass of the intended mixture to the accuracy given in EN 12697-38.

5.4 Thermometer, capable of measuring the relevant target temperature from Table 1 to the accuracy given in EN 12697-38.

5.5 Hot plate. Adjustable hot plate, capable of maintaining the required target temperature during the manual mixing to the accuracy given in EN 12697-38.

6 Procedure

6.1 Mixing temperature

6.1.1 Unless given in the European Standard for the compaction device to be used (EN 12697-30, EN 12697-31, EN 12697-32 or EN 12697-33), the reference temperature for mixtures with paving grade bitumen to EN 12591 shall be taken from Table 1. For mixtures with modified binders or other additives, the reference temperature shall be selected so that the binder has a viscosity to EN 12595 that is similar to those provided in Table 1. For mixtures with reclaimed asphalt, the reference temperature shall be calculated using the overall penetration calculated from the penetrations and proportions of both the added binder and the binder recovered from the reclaimed asphalt in accordance with Annex A of prEN 13108-1:2001, prEN 13108-2:2002, prEN 13108-3:2000, prEN 13108-4:2003, prEN 13108-5:2000, prEN 13108-6:2000 or prEN 13108-7:2000 as appropriate.