SLOVENSKI STANDARD
SIST EN 12697-47:2010

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Bituminizirane zmesi - Preskusne metode za vroče zmesi - 47. del: Določevanje deleža pepela v naravnem asfaltu

Bituminous mixtures - Test methods for hot mix asphalt - Part 47: Determination of the ash content of natural asphalts

Asphalt - Prüfverfahren für Heißasphalt - Teil 47: Bestimmung der Asche von Lake Asphalt

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Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 47: Détermination de la teneur en cendres des bitumes naturels

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SIST EN 12697-47:2010

EUROPEAN STANDARD

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Bituminous mixtures - Test methods for hot mix asphalt - Part 47: Determination of the ash content of natural asphalts

Mélanges bitumineux - Méthodes d'essai pour mélange hydrocarboné à chaud - Partie 47: Détermination de la teneur en cendres des bitumes naturels

Asphalt - Prüfverfahren für Heißasphalt - Teil 47: Bestimmung des Aschegehaltes von Naturasphalt

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Ref. No. EN 12697-47:2010: E

SIST EN 12697-47:2010

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12697-47:2010
https://standards.iteh.ai/catalog/standards/sist/90ff1daa-6c90-442b-b8d9-5e85cfd3fed5/sist-en-12697-47-2010

SIST EN 12697-47:2010

Foreword

This document (EN 12697-47:2010) 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of an identical text or by endorsement, at the latest by January 2011, and conflicting national standards shall be withdrawn at the latest by January 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard 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*

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

SIST EN 12697-47:2010
https://standards.iteh.ai/catalog/standards/sist/90ff1daa-6c90-442b-b8d9-5e85cfd3fed5/sist-en-12697-47-2010

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*

SIST EN 12697-47:2010

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*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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*

SIST EN 12697-47:2010
https://standards.iteh.ai/catalog/standards/sist/90ff1daa-6c90-442b-b8d9-5e85cfd3fcd5/sist-en-12697-47-2010

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 a 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 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 precoated chippings for HRA*

SIST EN 12697-47:2010

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*

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

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

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

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

prEN 12697-44, *Bituminous mixtures — Test methods for hot mix asphalt — Part 44: Crack propagation by semi-circular bending test*

prEN 12697-45, *Bituminous mixtures — Test methods for hot mix asphalt — Part 45: Saturation Ageing Tensile Stiffness (SATS) Conditioning Test*

prEN 12697-46, *Bituminous mixtures — Test methods for hot mix asphalt — Part 46: Low Temperature Cracking and Properties by Uniaxial Tension Tests*

EN 12697-47, *Bituminous mixtures — Test methods for hot mix asphalt — Part 47: Determination of the ash content of natural asphalts* [this standard]

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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, Bulgaria, Croatia, 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 the United Kingdom.

SIST EN 12697-47:2010
https://standards.iteh.ai/catalog/standards/sist/90ff0daa-6c9f-442b-b8d9-5e85efda1ed5/sist-en-12697-47-2010

SIST EN 12697-47:2010

1 Scope

This European Standard describes a test method to determine the ash content in natural asphalts (including lake asphalts), binders containing natural asphalts or bitumens. For the method to apply, it is essential that any mineral matter in the binder be finely divided and cannot exceed 45 % by mass.

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*

3 Terms and definitions

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

3.1
ash
inorganic residue remaining after ignition at 650 °C expressed as a proportional mass of the original sample

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3.2
natural asphalt
highly viscous liquid or semi-solid materials found in nature and containing varying amounts of bitumen, as defined by solubility in carbon disulphide, that can be used in asphalt

SIST EN 12697-47:2010
https://standards.iteh.ai/catalog/standards/sist/90ff1daa-6c90-442b-b8d9-5e85cfd3fed5/sist-en-12697-47-2010

4 Principle

A sample of the natural asphalt is weighed into a crucible which is then gently heated until fuming ceases. The sample is then ignited at (650 ± 50) °C until free from carbon.

5 Apparatus

5.1 Silica, porcelain or platinum crucible, with a capacity of (120 ± 20) ml.

5.2 Furnace, capable of heating the crucible to (650 ± 50) °C in a natural draft of air.

NOTE An electrical muffle furnace is suitable for this purpose.

5.3 Desiccator (or other suitable container).

5.4 Gas burner, pipe-clay triangle and tripod.

NOTE An electric pre-incinerator may be used instead of a gas burner.

5.5 Oven, capable of heating the material to 90 °C above its softening point (optional).

5.6 Balance, of suitable capacity.

5.7 Spatula (optional).

SIST EN 12697-47:2010

5.8 **4 mm sieve** (optional).

6 Sample preparation

6.1 Obtain a representative sample, basing sampling on the specifications given in EN 58.

6.2 For materials that can be crushed at ambient temperature (e.g. refined lake asphalt), break up at least 500 g of the material so that it can pass through the 4 mm sieve.

6.3 For materials that cannot be crushed at ambient temperature but can be softened by heating in an oven, heat the material in the oven to approximately 80 °C to 90 °C above its expected softening point, and then carefully stir with the spatula until it is probable that any mineral matter present is uniformly dispersed.

NOTE 1 The method of obtaining the test sample from the sample sent to the laboratory will depend upon the type of bituminous material under examination.

NOTE 2 After either method of sample preparation, the material is then in a suitable condition for weighing into the crucible.

7 Procedure

7.1 Heat the crucible in the furnace at (650 ± 50) °C for at least 10 min. Place the crucible in the desiccator (or other suitable container) and allow to cool to room temperature. Weigh the crucible to the nearest 0,005 g as m_1.

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7.2 Place in the crucible sufficient sample, prepared in accordance to Clause 6, to yield a mass of ash of not less than 0,10 g and not more than 0,35 g. Weigh the crucible and sample to the nearest 0,005 g as m_2.

SIST EN 12697-47:2010

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7.3 Heat the crucible gently using a low flame of the bunsen burner until fumes cease to be evolved. Then heat the crucible and contents in the furnace to (650 ± 50) °C until no more carbon is visible in the sample and the weight of the sample is constant. Place the crucible and contents in the desiccator (or other suitable container) and allow to cool to room temperature. Weigh the crucible and contents to the nearest 0,005 g.

7.4 Reheat the crucible and contents in the furnace to (650 ± 50) °C for (25 ± 5) min. Place the crucible and contents in the desiccator (or other suitable container) and allow it to cool to room temperature. Weigh the crucible and contents to the nearest 0,005 g.

7.5 Repeat 7.4 until constant mass is achieved as demonstrated by consecutive weightings differing by not more than 0,005 g. Define this reading as m_3.

8 Calculation

Calculate the mass of ash as a proportion by mass of the original sample as follows:

$$Ash = \frac{A}{B} \times 100 = \frac{m_3 - m_1}{m_2 - m_1} \times 100 \quad (1)$$

where

Ash is the proportion of ash by mass in percent;

A is the mass of ash in grams;

B is the mass of original sample in grams;