SLOVENSKI STANDARD
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Bituminous mixtures - Test methods for hot mix asphalt - Part 27: Sampling

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Asphalt - Prüfverfahren für Heißasphalt - Teil 27: Probenahme

Mélanges bitumineux - Essais pour enrobés a chaud - Echantillonnage

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EUROPEAN STANDARD

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Bituminous mixtures - Test methods for hot mix asphalt - Part 27: Sampling

This European Standard was approved by CEN on 24 November 2000.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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SIST EN 12697-27:2002

Contents

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fe8ee339-63c3-4238-84a4-7721cb5f8158/sist-en-12697-27-2002

SIST EN 12697-27:2002

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by June 2001, and conflicting national standards shall be withdrawn at the latest by August 2005.

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

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

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

prEN 12697-2:1998, *Bituminous mixtures - Test methods for hot mix asphalt - Part 2: Particle size distribution*

EN 12697-3, *Bituminous mixtures -Test methods for hot mix asphalt - Part 3: Binder recovery: Rotary evaporator*

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

prEN 12697-5:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 5: Determination of the maximum density*

SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fe8ee339-63c3-4238-84a4-7721cb5f8158/sist-en-12697-27-2002

prEN 12697-6:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 6: Determination of bulk density of bituminous specimen by hydro-static method*

prEN 12697-7:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 7: Determination of bulk density of bituminous specimens by gamma rays*

prEN 12697-8:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 8: Determination of the air voids content of bituminous materials*

prEN 12697-9:1997, *Bituminous mixtures - Test methods for hot mix asphalt - Part 9: Determination of the reference density, gyrator compactor*

prEN 12697-10:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 10: Compactibility*

prEN 12697-11:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 11: Determination of the affinity between aggregate and bitumen*

prEN 12697-12:1999, *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 12697-27:2002

prEN 12697-15:1997, *Bituminous mixtures - Test methods for hot mix asphalt - Part 15: Determination of the segregation sensitivity of bituminous mixtures*

prEN 12697-16:2000, *Bituminous mixtures - Test methods for hot mix asphalt – Part 16: Abrasion by studded tyres*

prEN 12697-17, *Bituminous mixtures - Test methods for hot mix asphalt – Part 17: Partical loss of specimen*

prEN 12697-18:1997, *Bituminous mixtures - Test methods for hot mix asphalt - Part 18: Binder drainage from porous asphalt*

prEN 12697-19:2000, *Bituminous mixtures - Test methods for hot mix asphalt – Part 19: Permeability of specimen*

prEN 12697-20:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 20: Indentation using cube or marshall specimens*

prEN 12697-21:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 21: Indentation using plate specimens*

prEN 12697-22:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 22: Wheel tracking*

prEN 12697-23:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 23: Determination of the indirect tensile strength of bituminous specimens*

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(standards.iteh.ai)

prEN 12697-24:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 24: Resistance to fatique*

SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fc8ec359-63c3-4258-84a4-7721cb5f8158/sist-en-12697-27-2002

prEN 12697-25, *Bituminous mixtures - Test methods for hot mix asphalt – Part 25: Dynamic creep test*

prEN 12697-26:1999, *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*

prEN 12697-29:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 29: Determination of the dimensions of bituminous specimen*

prEN 12697-30:2000, *Bituminous mixtures - Test methods for hot mix asphalt - Part 30: Specimen preparation, impact compactor*

prEN 12697-31:2000, *Bituminous mixtures - Test methods for hot mix asphalt - Part 31: Specimen preparation, gyratory compactor*

prEN 12697-32:1997, *Bituminous mixtures - Test methods for hot mix asphalt - Part 32: Laboratory compaction of bituminous mixtures by a vibratory compactor*

prEN 12697-33:1999, *Bituminous mixtures - Test methods for hot mix asphalt – Part 33: Specimen preparation, slab compactor*

prEN 12697-34:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 34: Marshall test*

prEN 12697-35, *Bituminous mixtures - Test methods for hot mix asphalt –*

SIST EN 12697-27:2002

Part 35: Laboratory mixing

prEN 12697-36:1996, *Bituminous mixtures - Test methods for hot mix asphalt - Part 36: Method for the determination of the thickness of a bituminous pavement*

prEN 12697-37:1999, *Bituminous mixtures - Test methods for hot mix asphalt - Part 37: Hot sand test for the adhesivity of binder on precoated chippings for HRA*

prEN 12697-38, *Common equipment and calibration*

The applicability of this European Standard is described in the product standards for bituminous mixtures.

No existing European Standard is superseded.

1 Scope

This European Standard describes test methods for sampling bituminous mixtures for roads and other paved areas to determine their physical properties and composition.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/ee339-63c3-4238-84a4-7721cb5f8158/sist-en-12697-27-2002

EN 58, *Sampling bituminous binders.*

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

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions in EN 58 and the following apply :

3.1
increment
single quantity of material taken from a larger body of the material under examination

3.2
bulk sample
sample obtained when increments from the material being sampled are combined to provide sufficient material for all required purposes

3.3
representative sample
sample consisting of a specified number of increments purposely taken to represent a specific quantity or area of material

NOTE A representative sample is assumed to have the same composition as the material

SIST EN 12697-27:2002

sampled, within the limits of precision associated with the method of sampling.

3.4
spot sample
sample of material taken in a single operation at a single place and time of the material being sampled

NOTE If it can be assumed that the material is homogeneous, a spot sample can be regarded as an average sample. If the material is not homogeneous, a spot sample only can be regarded as representative of a limited region around the sampling point.

3.5
laboratory sample
sample despatched to the laboratory

NOTE It may be the whole or part of the bulk or representative sample and should be of sufficient quantity for all tests required.

4 Methods of obtaining bulk samples from all materials except coated chippings

4.1 Sampling from a lorry load of material

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4.1.1 Apparatus

Sampling shovel (such as that shown in Figure 1) or sampling scoop (such as that shown in Figure 2) for materials whose nominal size is 16 mm and smaller.

SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fe8ee339-63c3-4238-84a4-7721cb5f8158/sist-en-12697-27-2002

4.1.2 Procedure

4.1.2.1
Using a sampling shovel or scoop, take a minimum of four increments of approximately 3 kg each for material containing aggregate of nominal size smaller than 16 mm.

4.1.2.2
Using a sampling shovel, take a minimum of four increments of approximately 7 kg each for material containing aggregate of nominal size larger than 16 mm.

4.1.2.3
Take the increments from about 100 mm below the surface of the material from different positions as widely spaced as practicable but not closer than 300 mm from the side of the lorry. Remove all the surface material including any coarse material that may fall into the hole during sampling.

4.1.2.4
Combine the increments obtained to form the bulk sample.

NOTE 1 The number of increments specified is a minimum and more may be necessary in some circumstances.

NOTE 2 With some less cohesive materials the use of a metal plate, pushed into the material to facilitate digging 100 mm down is recommended to stop surface material falling into the hole.

SIST EN 12697-27:2002

NOTE 3 The advantages of this method are as follows:

- there is only a small risk to sampler's personal safety;
- sampling is easy to perform;
- no special equipment is needed.

The disadvantages of this method are as follows:

- there is a risk of an unrepresentative sample due to segregation during loading and haulage;
- there is uncertainty about the precise location of material when laid in the pavement;
- the sample is taken from a limited quantity of material.

4.2 Sampling mastic asphalt during discharge from a mixer transporter

4.2.1 Apparatus

4.2.1.1
Sampling shovel (such as that detailed in Figure 1).

NOTE A bucket shall not be used because of the risk of settlement of the largest aggregates during the collection operation dependant on mixture consistency.

4.2.1.2
Suitable moulds.

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4.2.2 Procedure

SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fe55e339-65c4-4238-84a4-772fcb5f8158/sist-en-12697-27-2002

Take two increments at the outlet shute of the mastic asphalt vessel after discharging one third of the mastic asphalt and immediately use these with a mould to form a slab of a size sufficient to meet the minimum required by prEN 13108-6:2000.

NOTE 1 To facilitate easy removal from the mould either:

- line the mould with silicon paper, aluminium, teflon or similar; or
- lightly paint the mould with a slurry of limestone filler mixed with water, soda oleate or similar.

NOTE 2 Avoid sampling the first and last material discharged unless the purpose of sampling is to examine this particular part of the discharge.

NOTE 3 The advantages of this method are as follows:

- an individual batch can be sampled;
- material is immediately available for testing for control of production;
- observation of material can detect gross errors.

The disadvantages of this method are as follows:

- special equipment is required;
- there is uncertainty of the precise location of the material when laid in the pavement.

SIST EN 12697-27:2002

4.3 Sampling from the material around the augers of the paver

4.3.1 Apparatus

Sampling shovel (such as that shown in Figure 1).

4.3.2 Procedure

4.3.2.1
Using a sampling shovel take two increments of approximately 7 kg from each side of the paver, a total of four increments. Take increments only when augers are charged throughout their length. Take the increment by pushing the shovel into the charge of material in front of the auger and removing it when full.

4.3.2.2
Combine the increments obtained to form the bulk sample.

NOTE 1 Where easy access is obstructed by structural members of the paver, a sampling shovel blade fitted with a suitable handle approximately 2 m long may be used.

NOTE 2 The advantages of this method are as follows:

- there is certainty of the location of the material in the pavement;
- there is no interruption to paving operations;
- sampling is easy to perform;
- no special equipment is needed.

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The disadvantages of this method are as follows:

SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fe8ee339-63c3-4238-84a4-472fcb5f6158/sist-en-12697-27-2002

- there is risk of segregation at the ends of the paver augers;
- there is risk of segregation if the auger box is not correctly filled;
- there is risk to the sampler's personal safety;
- the method is only applicable when the material is accessible from both sides of the paver.

4.4 Sampling of workable material in heaps

4.4.1 Apparatus

Sampling shovel (such as that shown in Figure 1) or scoop (such as that shown in Figure 2).

4.4.2 Procedure

4.4.2.1
Using a sampling shovel or scoop, take a minimum of four increments of approximately 3 kg for material containing aggregate of a nominal size smaller than 16 mm.

4.4.2.2
Using a sampling shovel, take a minimum of four increments of approximately 7 kg each for material containing aggregate of a nominal size larger than 16 mm.

SIST EN 12697-27:2002

4.4.2.3
Take the increments from different positions, at least 100 mm from the outer surface of the heap. Remove all the surface material including any coarse material that may fall into the hole.

4.4.2.4
Combine the increments obtained to form the bulk sample.

NOTE 1 The number of increments specified above is a minimum and more may be necessary in some circumstances.

NOTE 2 With some less cohesive materials the use of a metal plate, pushed into the material to facilitate digging 100 mm down is recommended to stop surface material falling into the hole.

NOTE 3 The advantages of this method are as follows:

- sampling is easy to perform;
- no special equipment is needed;
- there is little risk to the sampler's personal safety.

The disadvantages of this method are as follows:

- there is risk of segregation;
- there is uncertainty of the precise location of the material in the pavement;
- there is some possibility of contamination.

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SIST EN 12697-27:2002
https://standards.iteh.ai/catalog/standards/sist/fe8ee339-63c3-4238-84a4-7721cb5f8158/sist-en-12697-27-2002

4.5 Sampling from the laid but not rolled material using sampling trays

4.5.1 General

This method shall not be used in the following circumstances:

a) for wearing course material;

b) for mixtures in which the difference between the thickness being laid and the nominal size of aggregate is less than 20 mm.

4.5.2 Apparatus

Sampling trays of steel, nominally (375 ± 25) mm square, (3,25 ± 0,25) mm thick and not more than 10 mm deep. A steel multi-strand wire at least 3 m long is attached to one corner of each tray. The wire attachment is designed to withstand effectively the forces exerted during the passage of the paver over the tray.

NOTE A wire of 9 mm circumference and 4,5 kN breaking load has been found satisfactory. Welded wire attachments have been found unsatisfactory.