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Bitumenske zmesi - Specifikacije materialov - 21. del: Kontrola proizvodnje v obratu

Bituminous mixtures - Material specifications - Part 21: Factory Production Control

Asphaltmischgut - Mischgutanforderungen - Teil 21: Werkseigene Produktionskontrolle

Mélanges bitumineux - Spécifications pour le matériau - Partie 21: Contrôle de la production en centrale

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English Version

Bituminous mixtures - Material specifications - Part 21: Factory Production Control

Mélanges bitumineux - Spécifications pour le matériau - Partie 21: Contrôle de la production en centrale

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This European Standard was approved by CEN on 27 February 2016.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 13108-21:2016) 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of an identical text or by endorsement, at the latest by December 2016, and conflicting national standards shall be withdrawn at the latest by March 2018.

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 document supersedes EN 13108-21:2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

Compared with EN 13108-21:2006, the following changes have been made:

a) update to align with other parts of EN 13108 series, test methods and CPR requirements;

b) new guidance on non-conforming product, as part of FPC, and system non-compliance on audit;

c) “constancy of performance” generally replaces “conformity of product”;

d) split Table A.1 into two Tables A.1 and A.2, for clarity – correct tolerances for HRA mixtures;

e) clarify “additional characteristic” sieves for DoP purposes and “optional” sieves for FPC;

f) incorporate multi-plant, single FPC system approach for audit;

g) previous (informative) Annex C deleted.

This European Standard is one of a series 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 (BBTM)*

— 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 13108-9, *Bituminous mixtures — Material specifications — Part 9: Asphalt for Ultra-Thin Layer (AUTL)*

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

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

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard has been written as part of the system for the Assessment and Verification of Constancy of Performance (AVCP) of bituminous mixtures. It is designed to be used in conjunction with the product standards EN 13108-1 to −7 and EN 13108−9 and is called up by these standards as part of AVCP.

The Factory Production Control procedure is designed to be applied to European Standards for bituminous mixture whether or not regulatory marking is to be applied.

AVCP comprises Determination of Product Type (DPT) and Factory Production Control (FPC). The existing terminology for Determination of Product Type – Type Testing – is the terminology adopted in this Standard, and as retained in the companion Standard, EN 13108-20. This European Standard has been written to provide the basis for quality and conformity control and as part of the system for the AVCP of bituminous mixture. When the appropriate clauses are applied it forms part of the system for AVCP as required by the Construction Products Regulation. It provides the minimum level of FPC for CE Marking.

For commercial and/or contractual reasons manufacturers can choose to carry out more testing and inspection.

The system in this European Standard builds mainly upon traditional sampling and testing of constituent materials and finished product. Processes as well as process control systems are continuously being developed which means that new systems for Factory Production Control will be introduced and implemented. If a manufacturer is able to demonstrate that his process control system is able to secure the fulfilment of the requirements on the finished products in a satisfactory way then alternative minimum frequencies of inspection and testing may be acceptable.

Alternative test methods to those referred to in EN 13108-20 may be used for Factory Production Control if a correlation can be identified with the tests used for type testing.

The basis of this European Standard is that of the control of constituents, composition and mixing by regular sampling and inspection. It does not involve the routine monitoring of the performance properties of the bituminous mixture. Periodic revalidation of these properties is dealt with separately in EN 13108-20.

Frequencies and tolerances for testing of product for assessment of Constancy of Performance are given in Annex A.

The tasks for evaluating the FPC as part of AVCP are defined in Annex B.

1 Scope

This European Standard specifies both quality and Factory Production Control requirements for use during the manufacture of bituminous mixtures intended for use on roads, airfields and other trafficked areas.

Additional testing carried out within contracts is beyond the scope of this European Standard.

The Factory Production Control will be applied to European Standards for bituminous mixtures if CE-marking under CPR is applied. It may also be part of quality control in situations where CE-marking does not apply. As such, manufacturers factories' notified to issue CE Marking for production of bituminous mixtures should not require duplicate or additional auditing for those situations where CE-marking does not apply.

This European Standard is applicable to the control of bituminous mixture where the constituents and target composition are known, and have been shown by means of Type Testing to comply with all appropriate specified compositional, performance related or performance based requirements in EN 13108-1 to −7 and EN 13108−9.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

3 Terms and definitions

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

3.1
Factory Production Control
FPC
documented, permanent and internal control of production in a factory, in accordance with the relevant harmonized technical specifications

3.2
technical specifications
harmonized European Standards and European Technical Approvals for bituminous mixtures

3.3
organoleptic check
evaluation made with the senses: sight, touch, smell, hearing, etc

Note 1 to entry: This is a broader concept than the more commonly used term of a visual inspection. For example, a check on a bitumen delivery might involve visual (colour, fuming and texture), smell (odour) and touch (how it feels when cold). This would detect whether the bitumen conformed to the expectations of the tester and would be the quickest way to detect a defective load. Similar principles apply to aggregates, particularly with stockpile inspections where handling soon reveals un-cleanliness.

Note 2 to entry: In all cases organoleptic checks should extend only as far as health and safety regulations permit.

3.4
non-conforming product
as part of Factory Production Control, bituminous mixture where:

— the use of non-conforming constituent materials has been detected or

— during in-process inspection according to Table 8, lines 1 and/or 2 (i.e. temperature) deviations have been confirmed or

— during in-process inspection according to 5.3 deviations have been detected influencing the quality of the product as stated in the quality plan or

— from analysis of finished product under Annex A the composition (grading, binder content) was found outside the tolerances of Table A.1 or A.2, as appropriate

4 Requirements

4.1 Factory Production Control

The manufacturer shall operate a Factory Production Control system complying with the requirements of this European Standard.

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared levels of performance, in relation to measured properties and compositional requirements, relevant to the performance characteristics for the products.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

This European Standard is based on certain requirements of EN ISO 9001 but stands alone and does not require reference to EN ISO 9001 for its application.

4.2 Quality plan

The manufacturer shall establish and maintain his policy and procedures for Factory Production Control in a quality plan.

The quality plan shall identify and detail the specific processes which directly affect product quality and conformity. The quality plan shall include:

— manufacturer's organizational structure relating to conformity and quality (see 4.3);

— document control (see 4.4);

— control procedures for constituent materials and purchaser supplied product (see 5.1, 5.2 and 6.2);

— process control (see 5.3);

— requirements for the handling and storage of the product (see 5.4);

— plant calibration and maintenance (see 5.5);

— requirements for inspection and testing of processes and products (see 5.3 and 6.2);

— procedures for handling non-conformity of process and/or product (see Clause 7).

The quality plan shall also include frequencies of inspection and testing. The frequencies given under Clauses 5 and 6 and Annex A are the minimum frequencies to be used initially. These may be changed where an acceptable alternative statistical system is developed.

NOTE The detail of the quality plan and of the Factory Production Control procedures will be plant and process dependent.

4.3 Organization

4.3.1 Responsibility and authority

The responsibility, authority and inter-relation of all personnel who manage, perform and verify work affecting conformity and quality shall be defined in the quality plan, particularly for personnel who have authority to:

— initiate action to prevent the occurrence of product non-conformity;

— identify and record any product quality problems.

4.3.2 Management representative

The manufacturer shall identify a person with appropriate authority, knowledge and experience to supervise Factory Production Control and to ensure that the requirements of the quality plan are implemented and maintained.

An individual may exercise such supervision over a group of plants.

4.3.3 Internal audits

The manufacturer shall carry out internal audits at the necessary frequency to verify which activities comply with the planned arrangements and to determine the effectiveness of the Factory Production Control system. Audits shall be scheduled on the basis of the status and importance of the activity. The audits and follow up action shall be carried out in accordance with documented procedures. The results of the audits shall be documented and brought to the attention of the personnel having responsibility in the area audited. The management personnel responsible for the area shall take timely corrective action on the non-conformities found by the audit and shall keep a record of the action taken.

4.3.4 Management review

The Factory Production Control system shall be reviewed at least once per year by management to ensure its continuing suitability and effectiveness. Records of such reviews shall be maintained.

4.3.5 Sub-contract services

Where any sub-contracted services are supplied from outside the manufacturer’s resources, a means of control shall be established and become part of the manufacturer's quality control procedures.

4.4 Document control

The manufacturer shall establish and maintain documented procedures to control all documents and data that relate to the requirements of this European Standard.

5 Control procedures

5.1 Constituent materials

Adequate supplies of constituent materials shall be available to ensure that the planned rates of production and delivery can be maintained without detriment to the constancy of performance of the product.

The specification and tolerances for incoming constituent materials necessary to ensure constancy of performance of the bituminous mixture with declared performances shall be established, recorded and communicated to suppliers.

The control procedures shall verify that suppliers of incoming materials are capable of providing the required quality of materials and to ensure constancy of performance of the mixture in line with the Type Test and/or Declaration of Performance.

Different material types or grades shall be transported and stored in such a manner as to avoid intermingling, cross-contamination or deterioration which may affect the constancy of performance of the product.

The general requirements of this clause shall be translated into more detailed plant specific requirements which can include the following:

a) aggregates;

   1) procedures for the control of aggregates delivered / transferred to an asphalt plant;

   2) requirements for labelling of storage bays and silos;

b) binders;

   1) requirements for heating, temperature control and insulation of tanks;

   2) requirements for labelling of tanks;

   3) requirements for controlling delivery of binders into the correct tanks;

c) control requirements for additives, fillers and reclaimed asphalt.

5.2 Purchaser supplied product

Any constituent material supplied by the purchaser for inclusion in the mixture shall be handled, stored and maintained free of contamination by the manufacturer.

5.3 Process control

The quality plan shall identify and detail the specific processes which directly affect product quality and constancy of performance and include the following items:

a) description of the flow of materials and the processes carried out on them from input to the plant to delivery to the customer. This shall incorporate a flow diagram;