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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 des matériaux - Partie 21: Maîtrise de la production (standards.iteh.ai)

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

Mélanges bitumineux - Spécifications des matériaux -Partie 21: Contrôle de la production en usine Asphaltmischgut - Mischgutanforderungen - Teil 21: Werkseigene Produktionskontrolle

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

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

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Foreword

This European Standard (EN 13108-21:2006) 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of an identical text or by endorsement, at the latest by July 2006, and conflicting national standards shall be withdrawn at the latest by January 2008.

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.

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EN 13108-8, Bituminous mixtures Material specifications --- Part 8: Reclaimed asphalt.

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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

This European Standard has been written as part of the system for the evaluation of conformity of bituminous mixtures. It is designed to be used in conjunction with the product standards EN 13108-1 to -7 and is called up by these standards as part of Evaluation of Conformity.

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

Evaluation of conformity comprises Initial Type Testing (ITT) and Factory Production Control (FPC). This European Standard has been written to provide the basis for quality and conformity control and as part of the system for the evaluation of conformity of bituminous mixtures. When the appropriate 'conformity' clauses are applied it forms part of the system for attestation of conformity as required by the Construction Products Directive. 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 producer 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.

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

Frequencies and tolerances for the evaluation of conformity are given in Annex A.

The tasks for evaluating the FPC as part of attestation of conformity 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 is to be applied to European Standards for bituminous mixtures if regulatory marking of conformity is to be applied. It is also a necessary part of evaluation of conformity in situations where regulatory marking does not apply.

This European Standard is applicable to the control of bituminous mixtures 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.

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

EN 12697-27, Bituminous mixtures — Test methods for hot mix asphalt — Part 27: Sampling (standards.iteh.ai)

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 mixture's and surface treatments for roads, airfields and other trafficked areas 41e10a80791a/sist-en-13108-21-2006

EN ISO 9001, Quality management systems — Requirements (ISO 9001:2000)

3 Terms and definitions

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

3.1

Factory Production Control (FPC)

permanent internal control of production exercised by the manufacturer where all the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system documentation is designed to ensure a common understanding of quality assurance and enable the achievement of the required product characteristics and the effective operation of the production control system to be checked

3.2

technical specifications

Harmonised European Standards and European Technical Approvals for asphalt mixtures

3.3 organoleptic check

evaluation made with the senses: sight, touch, smell, hearing etc.

NOTE 1 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 In all cases organoleptic checks should extend only as far as health and safety regulations permit.

4 Requirements

4.1 Factory Production Control

The Factory Production Control is the permanent internal control of the production process. It includes the requirements for testing to assure compliance of the bituminous mixture with the declared performances of the Type Test.

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

The producer shall establish, document and maintain an FPC system to ensure that the products placed on the market conform to the stated characteristics. 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.

The Factory Production Control System shall control the conformity of products to mix formulations documented in accordance with EN 13108-20. As part of FPC the Type Testing Procedure described in EN 13108-20 shall be repeated at intervals not greater than 5 years to confirm continuing validity of the mix formulation.

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. However, an FPC system conforming to the requirements of EN ISO 9001, and made specific to the requirements of the bituminous mixture product, shall be considered to satisfy the requirements of this European Standard.

4.2 Quality plan

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

The quality plan shall particularly include a means for identifying and detailing the specific processes, which directly affect product quality and conformity. The quality plan shall particularly include:

- producer's organisational structure relating to conformity and quality;
- document control;
- control procedures for constituent materials and purchaser supplied product;
- process control;
- requirements for the handling and storage of the product;
- plant calibration and maintenance;

- requirements for inspection and testing of processes and products;
- procedures for handling non-conformity.

The quality plan shall also include frequencies of inspection and testing. The frequencies given under Clause 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 Organisation

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 producer 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 https://standards.iteh.ai/catalog/standards/sist/c0d74028-5616-4191-a426-41e10a80791a/sist-en-13108-21-2006

The producer shall carry out internal audits 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 producer's resources, a means of control shall be established and become part of the manufacturer's quality control procedures.

4.4 Document control

The producer 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 conformity of the product.

The specification and tolerances for incoming constituent materials necessary to ensure conformity with the asphalt specifications shall be established and communicated to suppliers by means of written orders.

The control procedures shall verify that suppliers of incoming materials are capable of providing the required quality of materials and to ensure conformity of the mixture with the Initial Type Test (ITT).

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

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

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- aggregates;
- procedures for the control of aggregates delivered to a depot;
- procedures for the control of aggregates transferred from quarry silos;
- requirements for labelling of storage bays and silos;
- binders;
- requirements for heating, temperature control and insulation of tanks; https://standards.itch.ai/catalog/standards/sist/c0d74028-5616-4191-a426-
- requirements for labelling of tanks,²⁰
- requirements for controlling delivery of binders into the correct tanks;
- control requirements for additives, admixtures, 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 producer.

5.3 Process control

The quality plan shall 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;
- b) statement of the procedures by which conformity with the specification is to be maintained. This shall include the procedure for control of batching instructions;
- c) schedule for monitoring the performance of the process, complying with the minimum inspection frequencies in Table 1, resulting in a record of plant performance against the stated tolerances.

NOTE Different process control elements will apply to different production processes so it is not possible to give a comprehensive list for all applications.

Column	1	2	3	4
Line	Control Area	Inspection/test	Purpose	Frequency
1	Cold feed bins	ed bins As set out in quality plan To ensure correct feeding of plan	To oncure correct feeding of plan	a) On installation
I			b) As set out in quality plan	
2	Binder	Tank temperature	To check storage temperature	a) Daily
2		penetration or softening point	To check for binder hardening ^a	b) In case of doubt
3	Mixed asphalt	Temperature	To ensure temperature conforms	Every batch or continuously

Table 1 — Process control minimum inspection schedule

^a Binder can harden during storage, particularly when circulated. The quality plan shall state the 'safe' storage period for binder in its tank configuration and require testing if that period is exceeded without fresh deliveries. In the absence of other information, a period of two weeks shall be adopted.

5.4 Handling, storage and delivery

The quality plan shall contain procedures to ensure that the bituminous mixture is handled, stored and, where appropriate (see note), delivered with the minimum of segregation or degradation and within the specified temperature range.

The bituminous mixture shall be identifiable and traceable with regard to its production data. The producer shall maintain records of relevant data of production, to include date and time of production, which can be referenced from information on the delivery ticket.

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This European Standard shall apply both to situations where the producer is responsible for delivery by vehicle to a contractor's site and to those where the contractor collects from the producer's plant in his own vehicle. The producer's quality plan shall make clear the point to which his responsibility for handling storage and delivery extends. https://standards.iteh.ai/catalog/standards/sist/c0d74028-5616-4191-a426-

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The producer's quality plan shall describe the characteristics of any hot storage system and define its mode of operation. The producer shall ensure through checks, inspections and records that such systems are used correctly and that bituminous mixtures maintain their suitability for use.

5.5 Plant calibration and maintenance

The quality plan shall identify those items of measuring equipment which require calibration. The frequency of such calibration shall comply with the requirements of Table 2.

Calibration procedures shall be provided, including the permitted tolerances for the equipment to remain in service. The quality plan shall state the required accuracy of all plant calibrations and shall identify any that require traceability to national reference standards (e.g. mass or weight).

The plant shall be maintained to ensure that it continues to be capable of producing bituminous mixture to the required specifications and tolerances.

6 Inspection and testing

6.1 General

All necessary facilities, equipment and personnel shall be available to carry out the required inspections and tests.

Inspection and testing shall be carried out at least as frequently as indicated in Tables 3 to 8.