SLOVENSKI STANDARD
SIST EN 14733:2005+A1:2011

01-april-2011

Bitumen in bitumenska veziva - Kontrola proizvodnje v obratih za proizvodnjo bitumenskih emulzij ter fluksiranih in rezanih bitumnov

Bitumen and bituminous binders - Bituminous emulsions, fluxed and cut-back bitumen factory production control

Bitumen und bitumenhaltige Bindemittel - Werkseigene Produktionskontrolle von Bitumenemulsionen, gefluxtem und verschnittenem Bitumen

Bitumes et liants bitumineux - Maîtrise de la production en usine des émulsions de bitume, des bitumes fluxés et fluidifiés

Ta slovenski standard je istoveten z: **EN 14733:2005+A1:2010**

ICS:

75.140	Voski, bitumni in drugi naftni proizvodi	Waxes, bituminous materials and other petroleum products
91.100.50	Veziva. Tesnilni materiali	Binders. Sealing materials

SIST EN 14733:2005+A1:2011 **en,fr,de**

EUROPEAN STANDARD

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Foreword

This document (EN 14733:2005+A1:2010) has been prepared by Technical Committee CEN/TC 336 “Bituminous binders”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.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 document includes Amendment 1, approved by CEN on 2010-08-16.

This document supersedes EN 14733:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1〉 〈A1▐.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Construction Products Directive 89/106/CE.

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 United Kingdom.

Introduction

This European Standard for Factory Production Control (FPC) is suitable for use in more general quality systems in the binder industry. The document is based on certain requirements of EN ISO 9001 but stands alone and does not require reference to EN ISO 9001 for its application.

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 frequencies of inspection and testing to those indicated in this document may be appropriate.

The Factory Production Control (FPC) has the aim of providing adequate assurance that the binder conforms with the relevant technical specifications.

The basis of this European Standard is that of the control of constituents, composition and manufacturing. It does not involve the routine monitoring of the performance properties of the binder. Concerning 〈A1〉 cationic emulsions 〈A1〉, this is dealt with separately in EN 13808 whereas for cut-back and bituminous binders, is dealt with by another standard, which is currently in progress.

1 Scope

This European Standard specifies Factory Production Control (FPC) requirements for use by the manufacturers of bituminous emulsions, cut-back and fluxed binders.

This European Standard is applicable to the control of bituminous binders where the constituents and composition are known, having been derived from a prescriptive specification or from the Initial Type Test (ITT) procedure for demonstration of performance related properties described in the appropriate product standard or from a European Technical Approval.

NOTE 1 Factory Production Control is a requirement of all harmonised elements of harmonised European Standards and European Technical Approvals for bituminous binders if the CE mark of conformity is to be affixed. The system can also be applied to non-harmonised elements and to situations where CE marking is not mandatory.

NOTE 2 Regulated properties of the products are involved in this document.

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 1425, *Bitumen and bituminous binders — Characterization of perceptible properties*

EN 1426, *Bitumen and bituminous binders — Determination of needle penetration*

EN 1427, *Bitumen and bituminous binders — Determination of the softening point — Ring and Ball method*

EN 1428, *Bitumen and bituminous binders — Determination of water content in bitumen emulsions — Azeotropic distillation method*

EN 1429, *Bitumen and bituminous binders — Determination of residue on sieving of bituminous emulsions and determination of storage stability by sieving*

EN 1431, A1⟩ *Bitumen and bituminous binders — Determination of residual binder and oil distillate from bitumen emulsions by distillation* ⟨A1

A1⟩ EN 12592, *Bitumen and bituminous binders — Determination of solubility* ⟨A1

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

EN 12596, *Bitumen and bituminous binders — Determination of dynamic viscosity by vacuum capillary*

A1⟩ prEN 12846-1, *Bitumen and bituminous binders — Determination of efflux time by the efflux viscometer — Part 1 : Bituminous emulsions* ⟨A1

A1⟩ prEN 12846-2, *Bitumen and bituminous binders — Determination of efflux time by the efflux viscometer — Part 2 : Cut-back and fluxed bituminous binders* ⟨A1

A1⟩ EN 12847, *Bitumen and bituminous binders — Determination of settling tendency of bituminous emulsions* ⟨A1

EN 12848, *Bitumen and bituminous binders — Determination of mixing stability with cement of bituminous emulsions*

EN 12850, *Bitumen and bituminous binders — Determination of the pH value of bituminous emulsions*

A1⟩ prEN 13074-1:2008, *Bitumen and bituminous binders — Recovery of binder from bituminous emulsion or from cut-back or fluxed bitumen by evaporation* ⟨A1

[A1] prEN 13074-2, *Bitumen and bituminous binders — Stabilisation of binder from bituminous emulsion or from cut-back or fluxed bitumen after recovery* [A1]

EN 13075-1, *Bitumen and bituminous binders — Determination of breaking behaviour — Part 1: Determination of breaking value of cationic bituminous emulsions, mineral filler method*

EN 13075-2, *Bitumen and bituminous binders — Determination of breaking behaviour — Part 2: Determination of fines mixing time of cationic bituminous emulsions*

[A1] EN 13302, *Bitumen and bituminous binders — Determination of dynamic viscosity of bituminous binder using a rotating spindle apparatus* [A1]

[A1] *deleted text* [A1]

EN 13358, *Bitumen and bituminous binders — Determination of the distillation characteristics of petroleum cut-back bitumen products*

[A1] EN 13398, *Bitumen and bituminous binders — Determination of the elastic recovery of modified bitumen* [A1]

EN 13587, *Bitumen and bituminous binders — Determination of the tensile properties of bituminous binders by the tensile test method*

EN 13588, *Bitumen and bituminous binders — Determination of cohesion of bituminous binders with pendulum test*

EN 13589, *Bitumen and bituminous binders — Determination of the tensile properties of modified bitumen by the force ductility method*

[A1] EN 13614, *Bitumen and bituminous binders — Determination of adhesivity of bitumen emulsions by water immersion test — Aggregate method* [A1]

EN 13703, *Bitumen and bituminous binders — Determination of deformation energy*

[A1] EN 13808, *Bitumen and bituminous binders — Framework for specifying cationic bituminous emulsions* [A1]

[A1] EN 14769, *Bitumen and bituminous binders — Accelerated long-term ageing conditioning by a Pressure Ageing Vessel (PAV)* [A1]

[A1] *deleted text* [A1]

[A1] EN 15322, *Bitumen and bituminous binders — Framework for specifying cut-back and fluxed bituminous binders*

EN 15626, *Bitumen and bituminous binders — Determination of adhesivity of cut-back and fluxed bituminous binders by water immersion test — Aggregate method*

EN ISO 2592, *Determination of flash and fire points — Cleveland open cup method (ISO 2592:2000)* [A1]

EN ISO 2719, *Determination of flash point — Pensky-Martens closed cup method (ISO 2719:2002)*

EN ISO 3405, *Petroleum products — Determination of distillation characteristics at atmospheric pressure (ISO 3405:2000)*

EN ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method (ISO 3675:1998)*

EN ISO 9001, [A1] *Quality management systems — Requirements (ISO 9001:2008)* [A1]

[A1] EN ISO 13736, *Determination of flash point — Abel closed cup method (ISO 13736:2008)* [A1]

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. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. This production control system documentation ensures a common understanding of quality assurance and enables the achievement of the required product characteristics and the effective operation of the production control system to be checked

NOTE 1 Factory Production Control (FPC) includes the inspections and tests used to monitor the equipment, constituent materials, manufacturing process and the finished product.

NOTE 2 The task of Factory Production Control (FPC) is to give assurance that production conforms with the relevant Initial Type Test.

3.2
technical specifications
harmonised European Standards and European Technical Approvals for bituminous emulsion, cut-back and fluxed binders

3.3
perceptible properties
evaluation made with the senses: sight, touch, smell, hearing, etc. It is a broader concept than the more commonly used term of a visual inspection.

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 with the expectations of the tester and would be the quickest way to detect a defective load.

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

3.4
Initial Type Test (ITT)
complete set of tests or other procedures described in the technical specification, determining the performance of samples of products representative of the product type

4 Requirements

A1⟩

4.1 Factory Production Control (FPC): general

The producer shall operate a documented Factory Production Control (FPC) system complying with the requirements of this document. The manufacturer 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 the quality of the finished product.

An FPC system conforming to the requirements of EN ISO 9001 and made specific to the requirements of this standard shall be deemed to satisfy the above requirements. ⟨A1

4.2 Quality Plan

The producer shall establish and maintain his policy and procedures for Factory Production Control in a written Quality Plan.

The Quality Plan shall particularly include 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;
- document control;
- control procedures for constituent materials and purchaser supplied product;
- control procedures for the competence of production operators in the use and maintenance of production and test equipment;
- identification of characteristics subject to FPC;
- process control;
- requirements for the handling and storage of the product;
- factory calibration and maintenance of manufacturing and test equipment;
- requirements for inspection and testing processes and products;
- procedures for handling non-conformity;
- sampling frequency and retention (if appropriate).

The Quality Plan shall also include frequencies of inspection and testing. The frequencies given under Tables 1 to 4 are the minimum frequencies to be used initially. These may be changed where an alternative statistical system is developed and is accepted which provides equal or better confidence in the conformity of the product.

NOTE The detail of the Quality Plan and of the Factory Production Control procedures will be factory and process dependent.

4.3 Organisation

4.3.1 Responsibilities and authority

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

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

b) identify and record any product quality problems;

c) initiate and manage corrective action.

4.3.2 Management representative

The management shall appoint 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.

NOTE An individual may exercise such supervision over a group of production units.

4.3.3 Internal audits

The producer shall carry out internal quality and conformity audits to verify which process activities comply with the FPC and to determine the effectiveness of the FPC system. Audits shall be scheduled on the basis of the nature of the process used status and importance of the activity and record of conformity. 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 deficiencies found by the audit and shall keep a record of the action taken.

4.3.4 Management review

The Factory Production Control (FPC) 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, an agreed and documented means of control of the sub-contract service shall be established between the producer and the sub-contractor.

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 document.

5 Control procedures

5.1 Constituent materials

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

The control procedures shall verify that suppliers of incoming materials provide the required quality and conformity of materials that will permit the product to comply with the Initial Type Test (ITT).

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

NOTE The general requirements of 5.1 will need to be translated into more detailed factory specific requirements which may include the following:

- bitumen;
- requirements for heating, temperature control and insulation of tanks;
- requirements for labelling of tanks;
- requirements for controlling delivery of bitumen into the appropriate tanks;
- control requirements for water, additives, admixtures.

5.2 Purchaser supplied product

Any incoming material supplied by the purchaser for inclusion in the binder shall be handled, stored and maintained free of contamination by materials from other sources.