SLOVENSKI STANDARD
SIST EN 13808:2005

01-november-2005

Bitumen in bitumenska veziva – Okvirna specifikacija za kationske bitumenske emulzije

Bitumen and bituminous binders - Framework for specifying cationic bituminous emulsions

Bitumen und bitumenhaltige Bindemittel - Rahmenwerk für die Spezifizierung kationischer Bitumenemulsionen

Bitumes et liants bitumineux - Cadre de spécifications pour les émulsions cationiques de liants bitumeux

Ta slovenski standard je istoveten z: **EN 13808:2005**

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 13808:2005 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13808

May 2005

ICS 91.100.50; 93.080.20

English version

Bitumen and bituminous binders - Framework for specifying cationic bituminous emulsions

Bitumes et liants bitumineux - Cadre de spécifications pour les émulsions cationiques de bitume

Bitumen und bitumenhaltige Bindemittel - Rahmenwerk für die Spezifizierung kationischer Bitumenemulsionen

This European Standard was approved by CEN on 1 March 2005.

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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 Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European standard (EN 13808:2005) 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of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by February 2007.

This European standard 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/EEC).

For relationship with EU Construction Products Directive, see informative Annex ZA, which is an integral part of this European standard.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European standard specifies the requirements for performance characteristics of cationic bituminous emulsion classes which are suitable for use in the construction and maintenance of roads, airfields and other paved areas.

This European standard applies to emulsions of pure bitumen, or of fluxed bitumen, or of cut back bitumen and to emulsions of polymer modified bitumen, or of polymer modified fluxed bitumen, or of polymer modified cut-back bitumen, which also includes latex modified bituminous emulsions.

NOTE 1 Within Europe several types of cationic bituminous emulsions are used. Depending on traditional practices, different binder contents may be used for the same purpose.

The framework for specifying cationic bituminous emulsions in this European standard provides a basis for quality agreements between suppliers and clients. Care should be taken to make class selections which are compatible and realistic.

NOTE 2 For the purposes of this European standard, the term "% (*m/m*)" is used to represent the mass fraction.

2 Normative references

The following referenced European standards 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*

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 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 bitumen emulsions, and determination of storage stability by sieving*

EN 1430, *Bitumen and bituminous binders – Determination of particle polarity of bitumen emulsions*

EN 1431, *Bitumen and bituminous binders – Determination of recovered binder and oil distillate from bitumen emulsions by distillation*

EN 12591, *Bitumen and bituminous binders – Specifications for paving grade bitumens*

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

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

EN 12597:2000, *Bitumen and bituminous binders – Terminology*

EN 12846, *Bitumen and bituminous binders – Determination of efflux time of bitumen emulsions by the efflux viscometer*

EN 12847, *Bitumen and bituminous binders – Determination of settling tendency of bitumen emulsions*

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

EN 12849, *Bitumen and bituminous binders – Determination of penetration power of bitumen emulsions*

EN 13074, *Bitumen and bituminous binders – Recovery of binder from bitumen emulsions by evaporation*

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

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

EN 13357, *Bitumen and bituminous binders – Determination of the efflux time of petroleum cut-back and fluxed bitumens*

EN 13398, *Bitumen and bituminous binders – Determination of the elastic recovery of modified bitumen*

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*

EN 13614, *Bitumen and bituminous binders – Determination of adhesivity of bitumen emulsions by water immersion test*

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

EN 14023, *Bitumen and bituminous binders – Framework specification for polymer modified bitumens*

prEN 14733:2003, *Bitumen and bituminous binders – Bituminous emulsions, fluxed and cut-back bitumen factory production control*

prEN 14769:2003, *Bitumen and bituminous binders – Accelerated long-term ageing conditioning by a Pressure Ageing Vessel (PAV)*

prEN 14895, *Bitumen and bituminous binders – Stabilisation of binder from bituminous emulsion or from cut-back and fluxed bitumen*

prEN 14896, *Bitumen and bituminous binders – Determination of dynamic viscosity of bitumenous emulsions – Rotating spindle viscometer method*

EN ISO 3838, *Crude petroleum and liquid or solid petroleum products – Determination of density or relative density – Capillary-stoppered pyknometer and graduated bicapillary pyknometer methods (ISO 3838:2004)*

3 Term and definitions

For the purposes of this European standard, the terms and definitions given in EN 12597:2000 apply.

4 Abbreviation terms, providing an expression in letters and numbers

Abbreviation terms, providing an expression in letters and numbers, are used to describe important characteristics of cationic bituminous emulsions, i.e. emulsion polarity, binder content, binder type and breaking value shall be in accordance with Table 1.

Table 1 — Denomination of the abbreviation terms

Position	Letters	Denomination	Supporting European standard
1	C	Cationic bituminous emulsion	EN 1430 (particle polarity)
2 and 3	2-digit number :	Nominal binder content in % (*m/m*)	EN 1428 (water content) or EN 1431 (recovered binder + oil distillate)
4, or 4 and 5, or 4 and 5 and 6	 B P F	Indication of type of binder Paving grade bitumen Addition of polymers Addition of more than 2 % (*m/m*) of flux based on emulsion	EN 12591 (specification for paving grade bitumen) EN 14023 or polymer can be added before, during or after emulsion
5 or 6 or 7 (as relevant)	1 to 7	Class of breaking behaviour	EN 13075-1 (breaking value)
NOTE Examples for abbreviation terms of bituminous emulsions are given in Annex A.			

The following abbreviation terms are used in the specification tables of this European standard (see Tables 3, 4 and 5):

NPD for "No Performance Determined": this class has been included to accommodate countries where the characteristic, for a given intended use, is not subject to regulatory requirements (see ZA.1).

TBR for "To Be Reported": this class shall mean that the manufacturer is invited, but not required, to provide information with the product.

NOTE These values may be used for future development of specifications.

DV for "Declared Value": this class shall mean that the manufacturer is required to provide a value as part of a regulatory declaration and subsequent regulatory marking.

5 Requirements and test methods

All characteristics of cationic bituminous emulsions shall be classified in accordance with the appropriate parts of Tables 3, 4 and 5.

In specifying an emulsion, the appropriate class for each technical requirement shall be selected in turn.

In the selection of the test method for the requirement binder content as well as viscosity, only one choice of requirement from each group shall be chosen. The selection of classes for all requirements shall be made to avoid unworkable combinations.

NOTE 1 Tables 3, 4 and 5 include a "No Performance Determined" class (NPD) and a "To Be Reported" or a "Declared Value" class (TBR or DV). The remaining classes list values or ranges for each requirement.

NOTE 2 Tables 3 to 5 apply to emulsions being specified in all countries. Each country will then have a particular selection of specifications, which, if regulated, are covered in Tables 3, 4 and 5 (see Table 2). It is useful for each country to publish in a national guidance document for each application, their requirements from the tables. The appropriate class for each technical requirement of application is selected in turn and the selection of classes should be made on a regional basis, in order to avoid unworkable combinations. An example of a typical specification for a C65BP3 emulsion is presented in Annex B.

NOTE 3 The test method given for dynamic viscosity in Table 3 and the test procedures for stabilisation and ageing of binders given in Table 5 have not been used previously in Europe. Until a sufficient body of data has been accumulated which will allow performance classes to be established, the 'Declared Value' or the 'To Be Reported' class should be used when dynamic viscosity is specified in Table 3 and for all requirements specified in Table 5.

Table 2 — Requirements and test methods

REQUIREMENTS	CONCERNED PRODUCTS	CHARACTERISTICS AND TEST METHODS
Viscosity	Cationic bitumen emulsions **from Table 3**	Efflux time EN 12846 or Dynamic viscosity prEN 14896
Water effect on binder adhesion		Adhesivity EN 13614
Breaking behaviour		Breaking value EN 13075-1 or Mixing stability with cement EN 12848 (for over stabilised emulsions only)
Consistency at intermediate service temperature	Residual binders **from Table 4**	Penetration EN 1426 or Efflux time EN 13357
Consistency at elevated service temperature		Softening point EN 1427 or Dynamic viscosity EN 12596
Cohesion	Residual binders **from Table 4** (for modified bituminous emulsions only)	Pendulum test EN 13588 or Tensile test EN 13587 or Force ductility EN 13589
Durability of consistency at intermediate service temperature	Residual binders **from Table 5**	Penetration EN 1426
Durability of consistency at elevated service temperature		Softening point EN 1427 or Dynamic viscosity EN 12596
Durability of cohesion	Residual binders **from Table 5** (for modified bituminous emulsions only)	Pendulum test EN 13588 or Tensile test EN 13587 or Force ductility EN 13589

6 Evaluation of conformity

6.1 General

The compliance of cationic bituminous emulsions with the requirements of this European standard and with the stated values (including classes) shall be demonstrated by:

— initial type testing;

— factory production control.

NOTE The information from evaluation of conformity will be available for audit as detailed in the factory production control system as 6.3.

6.2 Type testing

6.2.1 Initial type testing (ITT)

Initial type tests shall be performed to show conformity with this European standard. Tests previously performed in accordance with the provisions of this European standard (same product, same characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account.

All the characteristics given in the Factory Production Control (FPC) document shall be subject to initial type testing.

6.2.2 Further type testing

Whenever a change occurs in the raw materials or the production process which would change significantly one or more of the characteristics, the type test shall be repeated for the appropriate characteristic(s).

6.2.3 Sampling, testing and compliance criteria

Sampling shall be carried out in accordance with EN 58.

The results of all type tests (initial and further type tests) shall be recorded, held by the manufacturer at least five years and be available for inspection.

6.3 Factory production control (FPC)

The manufacturer shall establish documents and maintain a Quality Plan including a FPC system according to prEN 14733. The test frequency is defined in prEN 14733.

An FPC system conforming to the requirements of EN ISO 9001 and made product specific to the requirement of the European standard is considered to satisfy the above requirements.

Table 3 — Specification framework for technical requirements and performance classes of cationic bituminous emulsions

		Performance Classes for the technical requirements of cationic bituminous emulsions										
Technical requirements	**Document**	**Unit**	**Class 0**	**Class 1[a]**	**Class 2**	**Class 3**	**Class 4**	**Class 5**	**Class 6**	**Class 7**	**Class 8**	**Class 9**
Perceptible properties	EN 1425	None	NPD	TBR	-	-	-	-	-	-	-	-
Particle polarity	EN 1430	None	-	-	Positive	-	-	-	-	-	-	-
Breaking value	EN 13075-1	None	NPD	TBR	≤ 80	50 to 100	70 to 130	120 to 180	170 to 230	≥ 220	-	-
Mixing stability with cement	EN 12848	g	NPD	TBR	≤ 2	> 2	-	-	-	-	-	-
Fines mixing time	EN 13075-2	s	NPD	TBR	≥ 180	≥ 300	-	-	-	-	-	-
Penetration power	EN 12849	min	NPD	TBR	-	-	-	-	-	-	-	-
Binder content[b] (by water content)	EN 1428	Per cent by mass	NPD	TBR	38 to 42	48 to 52	53 to 57	58 to 62	63 to 67	65 to 69	67 to 71	≥ 70
Recovered binder content[c] (by distillation)	EN 1431	Per cent by mass	NPD	TBR	≥ 38	≥ 48	≥ 53	≥ 58	≥ 63	≥ 65	≥ 67	≥ 70
Oil distillate content[d]	EN 1431	Per cent by mass	NPD	TBR	≤ 2,0	≤ 3,0	≤ 5,0	≤ 8,0	≤ 10,0	5-15	> 15	-
Efflux time 2 mm at 40 °C	EN 12846	s	NPD	TBR	≤ 20	15 to 45	35 to 80	70 to 130	-	-	-	-
Efflux time 4 mm at 40 °C	EN 12846	s	NPD	TBR	-	-	-	-	10 to 45	30 to 70	50 to 100	-
Efflux time 4 mm at 50 °C	EN 12846	s	NPD	TBR	-	-	-	-	-	-	-	25 to 50
Dynamic viscosity at 40 °C	prEN 14896	m Pa.s	NPD	TBR	DV	-	-	-	-	-	-	-
Residue on sieving	EN 1429											
0,5 mm sieve		Per cent by mass	NPD	TBR	≤ 0,1	≤ 0,2	≤ 0,5	-	-	-	-	
0,16 mm sieve		Per cent by mass	NPD	TBR	≤ 0,25	≤ 0,5	-	-	-	-	-	
Residue on sieving (7 days storage)	EN 1429											
0,5 mm sieve		Per cent by mass	NPD	TBR	≤ 0,1	≤ 0,2	≤ 0,5	-	-	-	-	
Settling tendency (7 days storage)	EN 12847	Per cent by mass	NPD	TBR	≤ 5	≤ 10	-	-	-	-	-	
Adhesivity	EN 13614	Per cent coating	NPD	TBR	≥ 75	≥ 90	-	-	-	-	-	