

SLOVENSKI STANDARD

SIST EN 13808:2013

01-julij-2013

Nadomešča:

SIST EN 13808:2005

SIST EN 14733:2005+A1:2011

Bitumen in bitumenska veziva - Okvirna specifikacija za kationske bitumenske emulzije

Bitumen and bituminous binders - Framework for specifying cationic bituminous emulsions

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Bitumen und bitumenhaltige Bindemittel - Rahmenwerk für die Spezifizierung kationischer Bitumenemulsionen

[SIST EN 13808:2013](http://standard.itteh.ai/catalog/standards/sist/7c08e939-63e1-42c-b06-27e039920680/sist-en-13808-2013)

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

Ta slovenski standard je istoveten z: EN 13808:2013

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

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EUROPEAN STANDARD

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Bitumen and bituminous binders - Framework for specifying cationic bituminous emulsions

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

Bitumen und bitumenhaltige Bindemittel - Rahmenwerk für die Spezifizierung kationischer Bitumenemulsionen

This European Standard was approved by CEN on 14 March 2013.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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EN 13808:2013 (E)**Foreword**

This document (EN 13808:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by May 2014.

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 13808:2005, EN 14733:2005+A1:2010.

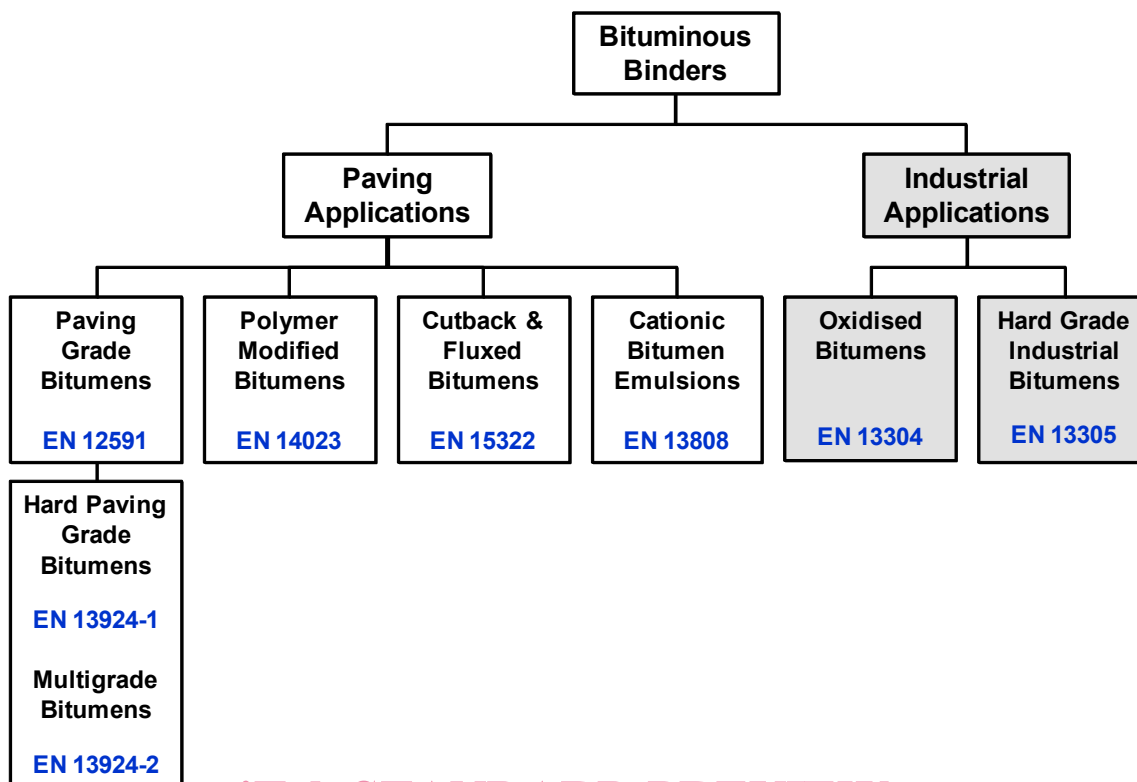
This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports basic work requirements of the EU Regulation.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The main technical changes brought to EN 13808 are as follows:

- introduction of additional characteristics and revision of performance classes for cationic bituminous emulsions (Table 2);
- consideration of the characteristics of the residual binder by distillation (Tables 3 and 4);
- possibility to assess durability on either a stabilised binder (stage 1 of durability) or on a stabilised and PAV aged binder (stage 2 of durability) or on both types of binders (Tables 3 and 4);
- rewriting of Clause 6 (Assessment and Verification of the Constancy of Performance - AVCP) and Annex ZA in accordance with the requirements of Regulation (EU) 305/2011 (Construction Products Regulation-CPR);
- incorporation of the clauses on AVCP previously covered by EN 14733:2005+A1:2010.

This standard is part of a family of European Standards for bitumens as follows:



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Figure 1 — European Standards for bitumens
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According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

EN 13808:2013 (E)**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 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.

Within Europe several types of cationic bituminous emulsions are used. Depending on traditional practices, different binder contents may be used for the same purpose. When designing a specification for a particular application, care should be taken to make class selections which are compatible and realistic.

NOTE For the purposes of this European Standard, the term “% (m/m)” is used to represent the mass fraction.

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 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 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 1430, *Bitumen and bituminous binders — Determination of particle polarity of bituminous emulsions*

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

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

EN 12593, *Bitumen and bituminous binders — Determination of the Fraass breaking point*

EN 12594, *Bitumen and bituminous binders — Preparation of test samples*

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, *Bitumen and bituminous binders — Terminology*

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

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

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

- EN 12848, *Bitumen and bituminous binders — Determination of mixing stability with cement of bituminous emulsions*
- EN 12849, *Bitumen and bituminous binders — Determination of penetration power of bituminous emulsions*
- EN 12850, *Bitumen and bituminous binders — Determination of the pH value of bituminous emulsions*
- EN 13074-1, *Bitumen and bituminous binders — Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders – Part 1: Recovery by evaporation*
- EN 13074-2, *Bitumen and bituminous binders — Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders – Part 2: Stabilisation after recovery by evaporation*
- 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*
- EN 13302, *Bitumen and bituminous binders — Determination of dynamic viscosity of bituminous binder using a rotating spindle apparatus*
- 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 bituminous emulsions by water immersion test*
- EN 13703, *Bitumen and bituminous binders — Determination of deformation energy*
- EN 13924, *Bitumen and bituminous binders — Specifications for hard paving grade bitumens*
- EN 14023, *Bitumen and bituminous binders — Specification framework for polymer modified bitumens*
- EN 14769, *Bitumen and bituminous binders — Accelerated long-term ageing conditioning by a Pressure Ageing Vessel (PAV)*
- EN 16345, *Bitumen and bituminous binders — Determination of efflux time of bituminous emulsions using the Redwood No. II Viscometer*
- EN ISO 3405, *Petroleum products — Determination of distillation characteristics at atmospheric pressure (ISO 3405)*
- EN ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method (ISO 3675)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12597 apply.

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4 Abbreviated terms

Abbreviated 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, binder designation, type of flux, amount of flux and breaking value and shall be in accordance with Table 1. National guidance documents may define additional abbreviated terms to indicate the intended use(s) for the emulsion.

Table 1 — Denomination of the abbreviated terms

Position	Characters	Denomination	Supporting European Standard
Compulsory abbreviated terms			
1	C	Cationic bituminous emulsion	EN 1430 ^a (particle polarity)
2 and 3	2-digit number	Nominal binder content in % (<i>m/m</i>)	EN 1428 or EN 1431 (by water content or by residual binder + oil distillate)
		or Residual binder content in % (<i>m/m</i>)	or EN 1431 (residual binder after distillation of water and oil)
4 or 4 and 5 5 or 6	B P F	Indication of binder type Paving grade bitumen Addition of polymers Addition of more than 3 % (<i>m/m</i>) of flux, based on emulsion	EN 12591 (specification for paving grade bitumen) EN 14023 or polymer can be added before, during or after emulsifying The type of flux may be indicated (optional) by replacing the letter F by either Fm (mineral flux) or Fv (vegetal flux)
5 or 6 or 7	2 to 10	Class of breaking behaviour	EN 13808 (Table 2)
Voluntary abbreviated terms			
6 or 7 or 8		Abbreviated designation of the bituminous base binder	EN 12591 or EN 14023 or EN 13924 (designation according to the prescriptions of the relevant product standard)
^a A distinct acidic pH value according to EN 12850 can be seen as an indicator for the cationic nature of bituminous emulsions. In case of doubt, EN 1430 shall be used.			
NOTE Examples for abbreviated terms of bituminous emulsions are given in Annex A.			

The following abbreviations are used in the specification tables of this European Standard (see Table 2, Table 3 and Table 4):

- NR for "No Requirement": this class has been included to accommodate countries where the characteristic, for a given intended use, is not subject to regulatory requirements; i.e. when there are no regulations for the property/characteristic in the territory of intended use.
- DV for "Declared Value": this class shall mean that the manufacturer is required to provide a value or value range with the product.

5 Requirements and test methods

5.1 General

This European Standard is a framework of specifications and classes for properties of cationic bituminous emulsions which are chosen from Table 2, Table 3 and Table 4.

NOTE 1 The list of properties has been set up considering the existing regulations.

The properties in Table 2 characterise the emulsion. Table 3 and Table 4 define the properties and performance classes applicable to the residual binders obtained after distillation, recovery, stabilisation and ageing procedures.

In specifying an emulsion, the appropriate class for each technical requirement shall be selected in turn from the classes given in Table 2, Table 3 and Table 4. When tested by the methods given in a table, the various grades shall conform to the limits specified in that table.

The selection of classes for all requirements shall be made to avoid unworkable combinations.

NOTE 2 Tables 2 to 4 apply to emulsions specified in all countries. Each country will then have a particular selection of specifications, which are covered in Tables 2, 3 and 4. 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 will be made on a regional basis, in order to avoid unworkable combinations. An example of a typical specification for a C 69 BP 2 emulsion is presented in Annex B.

5.2 Properties of the emulsion (Table 2)

5.2.1 Binder content

Binder content shall be determined by water content according to the procedure specified in EN 1428 or as the sum of the residual bituminous binder and oil distillate obtained according to the procedure specified in EN 1431.

Alternative methods can be used if a correlation to these methods can be proven. In case of dispute, EN 1428 or EN 1431 shall be used.

5.2.2 Breaking behaviour

There are three possible methods for determining the breaking behaviour. It is compulsory to declare a performance class according to one of these methods.

NOTE EN 13075-1 could be used for fast and medium curing emulsions. EN 13075-2 or EN 12848 could be used for slow setting and over-stabilised emulsions.

5.2.3 Residue on sieving – 0,5 mm sieve

The procedure specified in EN 1429 shall be used.

5.2.4 Viscosity

Efflux time according to the procedure specified in EN 12846-1 or dynamic viscosity according to the procedure specified in EN 13302 shall be used to characterise the behaviour of the emulsion after spraying (surface dressing or tack coat applications) or during mixing with aggregates (coating applications).

5.2.5 Water effect on binder adhesion

Adhesivity shall be checked with one or several reference aggregates according to the procedure specified in EN 13614. When declaring performance, the nature of the reference aggregate which has been used shall be indicated.

5.2.6 Penetration power

Penetration power characterises the ability of an emulsion to penetrate a substrate. The procedure specified in EN 12849 shall be used.

5.2.7 Oil distillate content

The oil distillate content shall be determined according to the procedure specified in EN 1431.

5.2.8 Residue on sieving – 0,16 mm sieve

The procedure specified in EN 1429 shall be used.

EN 13808:2013 (E)**5.2.9 Efflux time at 85 °C**

Efflux time at 85 °C according to the procedure specified in EN 16345 shall be used to characterise viscosity at a temperature close to possible spraying conditions. It applies only to spraying applications.

NOTE The method specified in EN 16345 is only suitable for viscous, high bitumen (> 65 %) content emulsions.

5.2.10 Storage stability by sieving

The procedure specified in EN 1429 shall be used. It characterises the ability of a bituminous emulsion not to form coarse particles (> 0,5 mm) within 7 d of storage.

5.2.11 Settling tendency

The procedure specified in EN 12847 shall be used. It characterises the difference in water content of the top layer and the bottom layer of a prescribed volume of sample after 7 days of storage.

NOTE Storage stability is a different concept than settling tendency. Although both phenomena are often linked, an emulsion may settle without modification of particle size distribution (no coalescence of emulsion droplets).

5.3 Residual, recovered, stabilised and aged binders from cationic bituminous emulsions (Table 3)**5.3.1 Residual binder by distillation**

Residual binder by distillation refers to the binder obtained as a result of the distillation procedure specified in EN 1431 (residual binder after extraction of water and oil distillate).

5.3.2 Recovered binder

Recovered binder refers to the binder obtained according to the procedure specified in EN 13074-1. The recovered binder is deemed to represent the binder obtained immediately after the breaking of the emulsion (coalescence of the binder and elimination of the water). The recovered binder can be replaced by the bituminous phase of the emulsion, i.e. the bituminous binder and added flux, which has been used to manufacture the emulsion. In the event of dispute, the recovered binder shall be used. When declaring performance for the recovered binder, the type of binder which has been used shall be indicated.

5.3.3 Binders to be considered for the assessment of durability**5.3.3.1 Stabilised binder**

Stabilised binder refers to the binder obtained according to the procedure specified in EN 13074-1 followed by EN 13074-2.

5.3.3.2 Aged binder

Aged binder refers to the binder obtained according to the procedure specified in EN 13074-1 followed by EN 13074-2 and EN 14769 (65 h at 85 °C). The binder to be used for the ageing procedure according to EN 14769 can be replaced by the residual binder by distillation obtained according to the procedure specified in EN 1431. In the event of dispute, the tests on the binder obtained according to the procedure specified in EN 13074-1 followed by EN 13074-2 and EN 14769 shall be used. When declaring performance for the aged binder, the type of binder used for the EN 14769 ageing procedure shall be indicated.

5.4 Properties of residual, recovered, stabilised and aged binders from cationic bituminous emulsions (Table 4)**5.4.1 Consistency at intermediate service temperature**

Consistency at intermediate service temperature shall be assessed according to the procedure specified in EN 1426 (needle penetration). The temperature for the test is dependent on the consistency of the binder. The