
Bitumen in bitumenska veziva - Okvir za specificiranje rezanih in fluksiranih bitumenskih veziv

Bitumen and bituminous binders - Framework for specifying cut-back and fluxed bituminous binders

Bitumen und bitumenhaltige Bindemittel - Rahmenwerk für die Spezifizierung von verschnittenen und gefluxten bitumenhaltigen Bindemitteln

Bitumes et liants bitumineux - Cadre de spécifications pour les liants bitumineux fluidifiés et fluxés

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ICS

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This draft European Standard is submitted to CEN members for second enquiry. It has been drawn up by the Technical Committee CEN/TC 336.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN 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 Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Foreword

This document (prEN 15322:2007) has been prepared by Technical Committee CEN/TC 336 “Bituminous binders”, the secretariat of which is held by AFNOR.

This document is currently submitted to the second CEN Enquiry.

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/EEC).

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

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1 Scope

This document provides a framework for specifying cut-back and fluxed bituminous binders which are suitable for the use in the construction and maintenance of roads, airfields and other paved areas.

This document applies to un-modified and polymer modified bituminous cut-back and fluxed materials.

NOTE Depending on traditional practices, different binder types may be used for the same purpose. The framework for specifying cut-back and fluxed bituminous binders in this document provides a basis for quality agreements between producers (suppliers) and purchasers (clients).

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 58, *Bitumen and bituminous binders – Sampling of bituminous binders*

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

EN 12592, *Bitumen and bituminous binders – Determination of solubility*

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

EN 12597, *Bitumen and bituminous binders – Terminology*

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

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

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

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

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

EN 14769, *Bitumen and bituminous binders – Ageing of bituminous binders by the Pressure Ageing Vessel (PAV)*

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

EN 14896, *Bitumen and bituminous binders – Determination of dynamic viscosity for bituminous emulsions, cut-back and fluxed bituminous binders – Rotating spindle viscometer method*

prEN 15626, *Bitumen and bituminous binders – Determination of adhesivity of paving bitumen, hard paving bitumen, polymer modified bitumen, cut-back and fluxed bituminous binders and specialty paving binders by water immersion test – Aggregate method*

EN ISO 2719, *Determination of flash point – Pensky-Martens closed cup method*

3 Terms and definitions

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

4 Abbreviation terms

Abbreviation terms, providing an expression in letters and numbers are used to describe important characteristics of cut-back and fluxed bituminous binders i.e. viscosity, type of binder and setting ability and shall be in accordance with Table 1.

Denomination of cut-back and fluxed bituminous binders is set as follows:

- 2 letters, describing the type of flux, i.e. Fm for mineral flux and Fv for vegetal flux;
- 1 digit, corresponding to the viscosity class from Table 3 determined either by efflux time for low and medium viscosity products or by dynamic viscosity for high viscosity products;
- 1 or 2 letters, describing the type of base binder, i.e. B standing for unmodified binder and BP standing for polymer modified binder (see Note b in Table 1);
- 2 digits, corresponding to the classes of setting ability from Table 3. Setting ability for Fm type is based on distillation (EN 13358), as strength development is dependant upon volatilisation of light oils. For Fv type materials, strength development involves a chemical change and not loss of volatiles, so the measure is based on softening point of recovered binder according to EN 14895 (sub-clause 7.2.1). Thus the 2 digits are stated as follows:
 - Fm types: the 1st digit is the class defined by the percentage of total distillate fraction distilling at 225 °C (EN 13358) and the 2nd digit is 0 (Class 0, i.e. NPD);
 - Fv types: the 1st digit is 0 (Class 0, i. e. NPD) for the percentage of total distillate fraction distilling at 225 °C and the 2nd digit is the class of softening point (EN 1427) of recovered binder (EN 14895, sub-clause 7.2.1).

Table 1 — Denomination of the abbreviation terms

Position	Letter/Number	Denomination	Supporting document
1 and 2	Fm ^a	Mineral oil fluxed bitumen or cut-back bitumen	EN 12597
	Fv ^a	Vegetable oil fluxed bitumen	
3	from Class 2 to Class 4	Viscosity class of product	EN 13357 (Efflux time)
	from Class 5 to Class 7		EN 14896 (Dynamic viscosity)
4 and 5 (if appropriate)	B	Indication of type of binder Paving grade bitumen	EN 12591
	P	Addition of polymer ^b	EN 14023 ^b
5 and 6 or 6 and 7		Setting ability of Fm types	
	from Class 2 to Class 6 and Class 0	% of total distillate distilling at 225 °C R&B softening point on recovered binder	EN 13358 /
		Setting ability of Fv types	
	Class 0 and from Class 2 to Class 7	% of total distillate distilling at 225 °C R&B softening point on recovered binder	/
			EN 1427 EN 14895 (sub-clause 7.2.1 only)
<p>^a F has been used for both cut-back and fluxed bitumens to avoid confusion as C has been used already to designate cationic bitumen emulsions</p> <p>^b Could be prepared using polymer modified bitumen (EN 14023) or by addition of polymer to the cut-back or fluxed bituminous material.</p>			

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 The reported values (TBR) 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 cut-back and fluxed bituminous binders shall be classified in accordance with appropriate classes from Table 3, Table 4 Part A or Table 4 Part B and Table 5.

In specifying a cut-back or a fluxed bituminous binder, the appropriate class for each technical requirement shall be selected. Care should be taken to make class selections which are compatible and realistic.

Tables 2 to Table 5 apply to cut-back and fluxed bituminous binders being specified in all countries. Each country may then have a particular selection of recommended specifications, which more than likely, will be different in each country. However, the system will be transparent since all countries may select requirements from the same tables. Each country should publish the table of their selection of appropriate specifications in a national guide for the intended use.

NOTE The test procedure for stabilisation and ageing of binders given in Table 4 Part A, Table 4 Part B and Table 5 have not been used previously in Europe. With regard to Table 4 Part A and Table 4 Part B, in order to accumulate a sufficient body of data which will allow values in classes to be confirmed, it is highly recommended to use Class 1 in addition to the use of the appropriate classes (Class 2 to Class 10). With regard to Table 5, it is highly recommended to use Class 1; however, in case of existing regulations, Class 2 should be used as part of regulatory declarations.

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Table 2 — Requirements and test methods

Requirements	Concerned products	Characteristics and test methods
Viscosity	Fm and Fv types from Table 3	Efflux time EN 13357 or Dynamic viscosity EN 14896
Water effect on binder adhesion		Adhesivity prEN 15626
Setting ability	Fm types from Table 3	Distillation EN 13358 % of total distillate fraction distilling at 225°C EN 13358
	Fv types from Table 3	Softening point EN 1427 of recovered binder EN 14895 (sub-clause 7.2.1 only)
Consistency at intermediate service temperature	Residual binder (after stabilisation according to EN 14895) from Table 4	Penetration EN 1426
Consistency at elevated service temperature		As appropriate: Softening point EN 1427 or Kinematic viscosity EN 12595
Cohesion (for polymer modified materials only)		Pendulum test EN 13588 or Tensile test EN 13587 and EN 13703 or Force ductility EN 13589 and EN 13703
Durability of consistency at intermediate service temperature	Aged binder (after stabilisation according to EN 14895, followed by ageing according to EN 14769) from Table 5	Penetration EN 1426
Durability of consistency at elevated service temperature		As appropriate: Softening point EN 1427 or Kinematic viscosity EN 12595
Durability of cohesion (for polymer modified materials only)		As appropriate: Pendulum test EN 13588 or Tensile test EN 13587 and EN 13703 or Force ductility EN 13589 and EN 13703

6 Evaluation of conformity

6.1 General

The compliance of cut-back and fluxed bituminous binders with the requirements of this standard and with the stated values (including classes) shall be demonstrated by:

- Initial Type Testing (ITT), and
- Factory Production Control (FPC), according to EN 14733.

NOTE The information from evaluation of conformity will be available for audit as detailed in the Quality Plan.

6.2 Type testing

6.2.1 Initial type testing (ITT)

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

All declared characteristics 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, document and maintain a Quality Plan or FPC system according to EN 14733.

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