
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

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

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

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

This draft European Standard is submitted to CEN members for 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 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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (prEN 15322:2005) 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 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.

In this European standard, Annexes A and B are informative.

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1 Scope

This document specifies the requirements for performance characteristics of cutback and fluxed bituminous binders which are suitable for 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 1 Within Europe several types of cutback and fluxed bituminous binders are used. Depending on traditional practices, different binder types may be used for the same purpose.

The framework for specifying cutback and fluxed bituminous binders in this document provides a basis for quality agreements between suppliers and clients. Care should be taken to make class selections which are compatible and realistic.

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

EN 12597, *Bitumen and bituminous binders – Terminology.*

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

EN 13302, *Bitumen and bituminous binders – Determination of viscosity of bitumens using a rotating spindle apparatus.*

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

prEN 14769:2003, *Bitumen and bituminous binders – Ageing of bituminous binders by the Pressure Ageing Vessel (PAV).*

prEN14895, *Bitumen and bituminous binders – Stabilisation of binder from bituminous emulsions or from cut-back and fluxed bitumen.*

prEN14896, *Bitumen and bituminous binders – Dynamic Viscosity for bituminous emulsions – Rotating spindle viscometer 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 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 time and shall be in accordance with Table 1.

Table 1 — Denomination of the abbreviation terms

Position	Letter/Number	Denomination	Supporting document
1 & 2	Fm ^a Fv ^a	Mineral Oil Fluxed Bitumen Vegetable Oil Fluxed Bitumen	EN 12597
3	from 2 to 9	Viscosity class of product	EN 13357 (Efflux time)
4 and 5	B P	Indication of type of binder Paving grade bitumen Addition of polymer ^b	EN 12591 (Specification for paving grade bitumen)
6	from 2 to 6	Curing behaviour Fm types % of Total distillate distilling at 225°C	EN 13358
	from 2 to 7	Fv types R&B Softening Point on Recovered Binder	EN 1427
^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 ^b Could be prepared using polymer modified bitumen (EN 14023) or by addition of polymer to the cut-back or fluxed bituminous material.			

5 Requirements and test methods oSIST prEN 15322:2007

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All characteristics of cutback and fluxed bituminous binders shall be classified in accordance with appropriate parts of Tables 3,4 and 5.

The selection of classes 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.

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

NOTE 2 Tables 2 to 5 apply to cutback and fluxed bituminous binders being specified in all countries. Each country will then have a specific menu of 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 and each country should publish the table of their specifications in a national guide for the application of the specification.

NOTE 3 The test method given for dynamic viscosity in Table 2 and the test procedures for stabilisation and ageing of binders given in Tables 4 and 5 have not been used previously in Europe. Until a sufficient body of data has been accumulated which will allow values in classes to be confirmed, Class 1, the ‘To Be Reported’ class should be used when dynamic viscosity is specified in Table 2 and for all requirements specified in Tables 4 and 5.

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 pr EN 14896 or Kinematic viscosity EN 12596
Water effect on binder adhesion		Adhesivity EN 13614
Volatility	Fm types from Table 3	Distillation EN 13358 + % of Total Distillate fraction EN13358
Curing behaviour	Fv types from Table 3	Softening Point EN 1427 or Recovered Binder EN 13074
Consistency at intermediate service temperature	Residual binder (after stabilisation) from Table 4	Penetration EN 1426
Consistency at elevated service temperature		Softening point EN 1427 or Dynamic viscosity EN12596
Cohesion	Residual binders from Table 4 (for Polymer Modified materials only)	Pendulum test EN 13588 or Tensile test EN 13587 or Force ductility EN 13589
Durability of consistency at intermediate service temperature	Aged binder from Table 5	Penetration EN 1426
Durability of consistency at elevated service temperature		Softening Point EN 1427 or Dynamic viscosity EN 12595
Durability of cohesion	Aged binder from Table 5 (for Polymer Modified materials only)	Pendulum test EN 13588 or Tensile test EN 13587 or Force ductility EN 13589

6 Preparation of test samples

6.1 General

The compliance of cutback 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).

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 the characteristics given in the 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, document and maintain a Quality Plan or FPC system according to EN 14733.

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Table 3 — Framework specification for technical requirements and performance classes of cutback and fluxed bituminous binders

Technical requirements	Standard	Units	Class 0	Class1 ^a	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9
Tests on cut-back and fluxed bituminous binders												
Efflux Time	EN 13357											
STV 4 mm 25 °C		s	NPD	TBR	< 25	50-100						
STV 10 mm 25 °C		s	NPD	TBR			150-300					
STV 10 mm 40 °C		s	NPD	TBR				50-100	100-200	200-400		
STV 10 mm 50 °C		s	NPD	TBR							100-200	
STV 10 mm 60 °C		s	NPD	TBR								100-200
Solubility	EN 12592	%	NPD	TBR	> 99,0							
Flash Point	EN ISO 2719	°C	NPD	TBR	> 35	> 55	> 65	> 200				
Cohesion	EN 13588	J/cm ²	NPD	TBR	> 0,5	> 0,7	> 1,0	> 1,2	> 1,4			
Adhesivity	EN 13614	% coating	NPD	TBR	> 75	> 90						
Distillation Test (Fm Grades)	EN 13358											
Total distillate at 360°C		%	NPD	TBR	< 5	< 10	< 15	< 20	< 32	< 55		
% of total distillate fraction distilling at 190°C		%	NPD	TBR	< 5	5-15	15-25	> 25				
% of total distillate fraction distilling at 225°C		%	NPD	TBR	< 15	15-25	25-40	40-60	> 60			
% of total distillate fraction distilling at 260°C		%	NPD	TBR	< 20	20-40	40-60	> 60				
% of total distillate fraction distilling at 315°C		%	NPD	TBR	< 40	40-70	70-90	> 90				
Softening Point (Fv grades) following Recovery	EN 1427 EN 13074	°C	NPD	TBR	> 55	> 50	> 43	> 39	> 35	≤ 35		

^a Class 1, TBR, may not be used for regulatory declaration and marking purposes.