



BSI Standards Publication

Bitumen and bituminous binders - Determination of dynamic viscosity of bituminous binder using a rotating spindle apparatus

National foreword

This British Standard is the UK implementation of EN 13302:2018. It is dual numbered as BS 2000-505:2018 in the UK. It supersedes BS EN 13302:2010 (dual numbered as BS 2000-505:2010), which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/13, Petroleum Testing and Terminology.

A list of organizations represented on this committee can be obtained on request to its secretary.

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BS 2000 Series

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2018.

Amendments/corrigenda issued since publication

Date	Text affected
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English Version

Bitumen and bituminous binders - Determination of dynamic viscosity of bituminous binder using a rotating spindle apparatus

Bitumes et liants bitumineux - Détermination de la viscosité dynamique des liants bitumineux à l'aide d'un viscosimètre tournant

Bitumen und bitumenhaltige Bindemittel - Bestimmung der dynamischen Viskosität von bitumenhaltigem Bindemittel mit einem Viskosimeter mit rotierender Spindel

This European Standard was approved by CEN on 15 February 2018.

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European foreword

This document (EN 13302:2018) 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of an identical text or by endorsement, at the latest by December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13302:2010.

The main technical changes in comparison to the previous edition are:

- clarification of the test sample preparation procedure in the case of cut-back and fluxed bituminous binders (subclauses 7.4.1 and 7.4.3);
- subclauses 7.3.8 and 7.4.9 (of EN 13302:2010) on how to determine viscosity in relation to shear rate for non-Newtonian bituminous emulsions and cut-back and fluxed bituminous binders are converted into a more general Note;
- more consistent description and use of radius R1 and R2 in-between Figure 1, subclause 5.1 and Clause 10;
- subclause 5.2: the possibility to use a DSR apparatus has been introduced.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies a method for the determination of the dynamic viscosity of a variety of bituminous binders: modified and unmodified bituminous binders, bituminous emulsions, cut-back and fluxed bituminous binders, by means of a rotating spindle apparatus (a coaxial viscometer).

Standard application temperatures are quoted, although the dynamic viscosity can be measured at other temperatures if required. Similarly, measurements at standard values of shear rate can be replaced or complemented by measurements at additional shear rates if required.

WARNING — The use of this document may involve hazardous materials, operations and equipment. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12594, *Bitumen and bituminous binders — Preparation of test samples*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

shear stress

force acting tangentially to a surface divided by the area of the surface

Note 1 to entry: Shear stress is expressed in Newton per square metre ($\text{N} \cdot \text{m}^{-2}$), kilogram per metre per square second ($\text{kg} \cdot \text{m}^{-1} \cdot \text{s}^{-2}$) or Pascal (Pa).

3.2

shear rate

velocity gradient in a flowing fluid perpendicular to the stress

Note 1 to entry: Shear rate is expressed in units per second (s^{-1}).

Note 2 to entry: The shear rate calculation depends upon the viscometer geometry. This should be mentioned by the viscometer manufacturer.