BS EN 13589:2018
BS 2000-520:2018

BSI Standards Publication

Bitumen and bituminous binders - Determination of the tensile properties of modified bitumen by the force ductility method

bsi.

National foreword

This British Standard is the UK implementation of EN 13589:2018. It is dual numbered as BS 2000-520:2018. It supersedes BS EN 13589:2008 (dual numbered as BS 2000-520:2008), which is withdrawn. Together with BS EN 13587:2016, it supersedes BS EN 13703:2003 which is withdrawn.

BSI, as a member of CEN, is obliged to publish EN 13589:2018 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee voted against its approval as a European Standard.

The previous version of BS EN 13589 required that “conventional energy” be calculated according to EN 13703 at an extension of 0,200 - 0,400m,. This calculation has been incorporated into the main body of this revision, with the term “conventional energy” being replaced by “cohesion energy”.

The UK committee is concerned that BS EN 13589:2018 recommends cohesion energy still be reported in the case of a "premature break" (i.e. if the sample breaks before an extension of 0,400m is achieved). The UK committee is of the opinion that this will lead to the reporting of erroneously high cohesion values.

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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2018.

BS 2000 Series

Energy Institute, under the brand of IP, publishes and sells all Parts of BS 2000, and all BS EN and BS ISO petroleum test methods that would be part of BS 2000, both in its annual publication “IP Standard Test Methods for analysis and testing of petroleum and related products, and British Standard 2000 Parts” and individually.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 13589

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Supersedes EN 13589:2008, EN 13703:2003

English Version

Bitumen and bituminous binders - Determination of the tensile properties of modified bitumen by the force ductility method

Bitumes et liants bitumineux - Détermination des caractéristiques de traction des bitumes modifiés par la méthode de force ductilité

Bitumen und bitumenhaltige Bindemittel - Bestimmung der Streckeigenschaften von modifizierten Bitumen mit dem Kraft-Duktilitäts-Verfahren

This European Standard was approved by CEN on 22 July 2016.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 13589:2018) 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 not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13589:2008 and EN 13703:2003.

This document contains the following changes compared to EN 13589:2008:

— updated normative references;

— additional terms and definitions;

— deleting determination of deformation energy by EN 13703;

— introduction of calculation methods of deformation energy in the standard;

— updated bibliography;

— combining time frame EN 13589 with EN 13587;

— renaming “conventional energy” by “cohesion energy”;

— complying with CEN/CENELEC Internal Regulations – Part 3:2011, 6.6.8.3: "Each group of three digits reading to the left and to the right of the comma sign shall be separated by a small space from preceding digits or following digits respectively, except for four-digit numbers designating years";

— complying with CEN/CENELEC Internal Regulations – Part 3 – June 2015, 6.6.8.1: "The decimal point shall be a comma on the line in all language versions".

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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 European Standard specifies a method for determining the tensile properties of an unaged, aged, residual or recovered bituminous binder, in particular those of polymer-modified bitumens by means of a force ductility test.

The work done during the force ductility test is a criterion for assessing the quality of these materials.

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

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

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

3 Terms and definitions

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

3.1
tensile force
force undergone by a specimen subjected to extension, expressed in N

3.2
elongation
increase in length of a specimen, expressed in metres

Note 1 to entry: Elongation is also expressed in % from the initial length. It is calculated as [(new length – initial length)/initial length] × 100.

3.3
break
every rupture before 1 333 % of elongation performing the force ductility test

3.4
deformation energy
E_i
energy in joules (J) supplied by test pieces, until displacement, *i*, of the moving element