

Methods of test for petroleum and its products

**BS 2000-494: Bitumen and bituminous
binders — Determination of breaking
behaviour —**

**Part 1: Determination of breaking value
of cationic bitumen emulsions, mineral
filler method**

(Identical with IP 494-2003)

The European Standard EN 13075-1:2002 has the status of a
British Standard

ICS 75.140; 91.100.50

National foreword

This British Standard is the official English language version of EN 13075-1:2002.

The UK participation in its preparation was entrusted to Technical Committee PTI/13, Petroleum testing and terminology, which has the responsibility to:

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The Institute of Petroleum publishes and sells all parts of BS 2000, and all BS EN petroleum test methods that would be part of BS 2000, both in its annual publication “Standard methods for analysis and testing of petroleum and related products and British Standard 2000 parts” and individually.

Further information is available from:

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This British Standard, having been prepared under the direction of the Materials and Chemicals Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 12 August 2002

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 15 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

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12 August 2002

ISBN 0 580 40246 0

English version

Bitumen and bituminous binders - Determination of breaking
behaviour - Part 1: Determination of breaking value of cationic
bitumen emulsions, mineral filler method

Bitumes et liants bitumineux - Détermination du
comportement à la rupture - Partie 1: Détermination de
l'indice de rupture des émulsions cationiques de bitume,
méthode des fines minérales

Bitumen und bitumenhaltige Bindemittel - Bestimmung des
Brechverhaltens - Teil 1: Bestimmung des Brechwertes
kationischer Bitumenemulsionen, Verfahren mit
Feinmineralstoff

This European Standard was approved by CEN on 14 March 2002.

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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 Management Centre has the same status as the official versions.

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Foreword

This document EN 13075-1:2002 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 January 2003, and conflicting national standards shall be withdrawn at the latest by January 2003.

This European Standard is part of a package including 14 standards: EN 1428, EN 1429, EN 1430, EN 1431, EN 12846, EN 12847, EN 12848, EN 12849, EN 12850, EN 13074, EN 13075-1, EN 13075-2, EN 13614 and EN 13808.

Annex A is normative and annex B is informative.

This European Standard EN 13075 consists of the following parts under the general title *Bitumen and bituminous binders – Determination of breaking behaviour*:

Part 1 – Determination of breaking value of cationic bitumen emulsions, mineral filler method;

Part 2 – Determination of fines mixing time of cationic bitumen emulsions.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a method for the determination of the breaking value of cationic bitumen emulsions.

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

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 58¹⁾, *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 European Standard, the following term and definition apply.

3.1

breaking value

dimensionless number corresponding to the amount of reference filler, in grams, needed to coagulate 100 g of bitumen emulsion

4 Principle

A reference filler is added at a uniform rate to a specified quantity of stirred cationic bitumen emulsion. When the emulsion has broken completely, the amount of added filler is determined by weighing. The mass of filler (in grams) multiplied by 100 and divided by the amount of emulsion (in grams) is the breaking value.

NOTE The cationic or anionic nature of an emulsion can be determined with EN 1430 [1].

5 Reagents and materials

5.1 Filler, Forshammer SE filler²⁾, reference is given in annex A.

The filler shall be dried before use.

NOTE For information, the round robin test showed good correlation with Sikaisol filler (described in annex B).

1) In course of revision.

2) This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of the product name. Equivalent products may be used if they can be shown to lead to the same results, or if a correlation between the products has been established.

In case of dispute, the Forshammer SE filler shall be used.

5.2 Cleaning agents, as used conventionally in laboratories.

6 Apparatus

Usual laboratory apparatus and glassware, together with the following:

6.1 Equipment for semi-automatic procedure, as shown in Figure 1, consisting of the following:

6.1.1 Stirrer motor, with an output power of at least 25 W, and a speed of 260 r/min – 60 r/min.

6.1.2 Stirrer, having the dimensions given in Figures 3, 4 and 5. In Figure 3, the dimensions are given as an example.

6.1.3 Adjustable filler feeder, capable of feeding the filler at a rate of 0,3 g/s - 0,4 g/s. This equipment shall be calibrated. The calibration shall be achieved by weighing the amount of the filler poured during a period of time between 100 s and 200 s measured with an accuracy of 0,2 s.

NOTE For the manual procedure, the feeding rate, q , in grams per second, should be calculated, using the following equation:

$$q = \frac{m_f}{t}$$

where

m_f is the mass of filler in grams;

t is the analysis time in seconds.

6.1.4 Metal cans, cylindrical, of approximate capacity 500 ml, height 95 mm and diameter 90 mm.

6.2 Equipment for manual procedure

6.2.1 Conical-shaped pan, capable of feeding the filler at a rate of 0,3 g/s - 0,4 g/s.

6.2.2 Enamel dish, having approximately 20 cm inside diameter and 10 cm high.

6.2.3 Nickel spatula, 20 cm long.

6.3 Equipment for both

6.3.1 Timer or stop watch, with an accuracy of 0,2 s or better over a time interval of 100 s.

6.3.2 Suitable bottles, of approximate capacity 500 ml made of a material that will not react with the emulsion, having tight fitting lids.

6.3.3 Constant temperature bath, capable of maintaining the sample in the can at 25 °C – 1 °C.

NOTE The bath should be equipped with a frame or device to prevent the plastic bottles from moving in the water bath.

6.3.4 Balance, having a suitable range, capable of weighing the samples in clause 8 to the nearest 0,1 g.

6.3.5 Thermometer, having a suitable range, capable of measuring the temperature to the nearest 0,1 °C.