

Products and systems for the protection and repair of concrete structures — Test methods — Determination of workability —

Part 2: Test for flow of grout or mortar

The European Standard EN 13395-2:2002 has the status of a
British Standard

ICS 91.080.40; 91.100.10

National foreword

This British Standard is the official English language version of EN 13395-2:2002.

The UK participation in its preparation was entrusted by Technical Committee B/517, Concrete, to Subcommittee B/517/8, Protection and repair of concrete structures, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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This British Standard, having been prepared under the direction of the Building and Civil Engineering Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 16 July 2002

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 6, an inside back cover and a back cover.

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Amendments issued since publication

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ICS 91.080.40; 91.100.10

English version

**Products and systems for the protection and repair of concrete
structures - Test methods - Determination of workability - Part 2:
Test for flow of grout or mortar**

Produits et systèmes de protection et de réparation des
structures en béton - Méthodes d'essai - Détermination de
l'ouvrabilité - Partie 2: Essai d'écoulement des coulis ou
mortiers

Produkte und Systeme für den Schutz und die
Instandsetzung von Betontragwerken - Prüfverfahren -
Bestimmung der Verarbeitbarkeit - Teil 2: Prüfung des
Fließverhaltens von Vergussmörtel, Feinmörtel oder Mörtel

This European Standard was approved by CEN on 4 January 2002.

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Foreword

This document EN 13395-2:2002 has been prepared by Technical Committee CEN/TC 104 "Concrete and related products", the secretariat of which is held by DIN.

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 November 2002, and conflicting national standards shall be withdrawn at the latest by December 2002.

This European Standard is one of a series dealing with products and systems for the protection and repair of concrete structures. It describes a method for determining the flow characteristics of repair grouts and mortars.

It is one of a series of inter-related parts dealing with the workability of repair grouts, mortars and concretes. The other parts are:

prEN 13395-1, *Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 1: Test for flow of thixotropic mortars.*

EN 13395-3, *Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 3: Test for flow of repair concrete.*

EN 13395-4, *Products and systems for the protection and repair of concrete structures - Test methods - Determination of workability - Part 4: Application of repair mortar overhead.*

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 determining the workability (or consistence) of flowing-grade hydraulic cement mortars CC, polymer modified hydraulic cement mortars PCC and polymer bound mortars PC for the protection and repair of concrete, as defined in EN 1504-1.

The method is suitable for high flow grouts or mortars that have a maximum aggregate size of 4 mm.

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 196-1, *Methods of testing cement - Part 1: Determination of strength*.

EN 1504-1, *Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1: Definitions*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions contained in EN 1504-1 and the following apply.

3.1

flow value

distance that the grout or mortar has travelled along a trough after 30 s

4 Principle

The principle of this test is to provide a relevant method to evaluate the workability of flowing repair grouts or mortars in the laboratory, which reflects the actual workability requirements for site repair works. The test measures the flow of a fixed quantity of the grout or mortar along a defined trough after 30 s. The distance that the grout or mortar has travelled in that time is the flow value.

NOTE The method of test is sufficiently robust as to be suitable for use as a quality control technique in on-site laboratories.

5 Equipment

5.1 Mixer : Unless stated otherwise by the manufacturer, the equipment to be used for mixing the constituents for the grout shall be the standard type of mixer specified for producing cement mortars in EN 196-1.

5.2 Grout flow trough : A grout flow trough fabricated in accordance with Figure 1.

5.3 Measuring jug : Capable of taking the required one litre of grout used in the grout flow trough.

5.4 Standard laboratory climate of (21 ± 2) LC and (60 ± 10) % RH.

6 Preparation

All materials shall be conditioned in the standard laboratory climate (5.4) for a period of not less than 24 h prior to mixing.

The proportioning and mixing of the repair grout shall be carried out in accordance with the manufacturer's instructions.

The grout flow trough shall be brought into the climatic chamber for a period of 24 h prior to use. The grout flow trough shall be positioned in its final testing position by adjusting the screws until the base is level.

7 Test Procedure

The flow of the grout shall be determined at the standard laboratory temperature (5.4) 5 min, 15 min, 30 min and 60 min after mixing. The mixed mortar shall be agitated in the grout mixer for five seconds prior to testing.

NOTE In addition, the flow value for the mortar may be determined at other temperatures for special applications.

The surfaces of the grout flow trough shall be moistened with a damp cloth within one minute of carrying out the test. A one litre sample of grout shall be poured into the charging hopper of the grout flow trough, ensuring the surface of the grout is even; the surface should be gently rodded to level the surface if required.

The pull-rod shall be pulled upwards gently in a smooth operation after 30 s of charging the hopper, allowing the grout to flow evenly down the trough.

The flow of the grout shall be measured as the horizontal distance from the centre of the discharge outlet to the end of the grout after a period of 30 s (the "flow value"). If the grout is still moving along the grout flow trough, this fact should be noted.

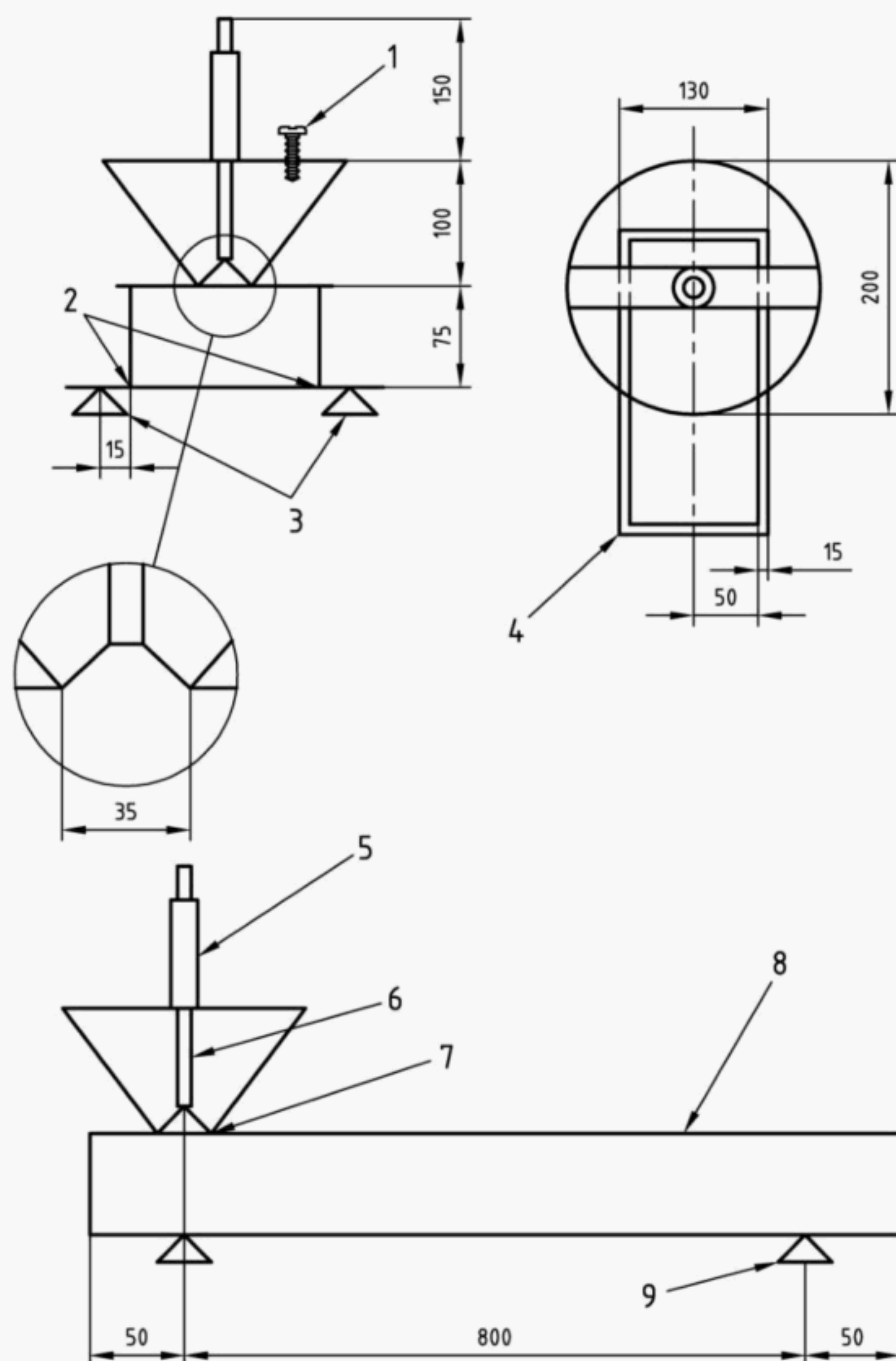
8 Test report

The test report shall include the following information:

- a) a reference to the test method standard;
- b) name and address of the test laboratory;
- c) identification number and date of the test;
- d) name and address of the manufacturer or supplier of the product;
- e) name and identification marks or batch number of the product, including the maximum aggregate size;
- f) date of supply of the product;
- g) date of preparation of the test specimens and any deviation from the prescribed method of preparation;
- h) conditions of storage of prepared specimens prior to test, including the period of delay between completion of mixing and testing and evidence of segregation and bleeding;
- i) date of test and details of the test equipment used, including the make, type and capacity and the calibration details or the identification number of the apparatus;
- j) the test results, including the distance of flow of the grout after 30 s (the "flow value") and whether the grout is still moving;
- k) precision data;

l) date of test report and signature.

Dimensions in millimetres
Tolerances to M 0,5 mm



Key

- | | | | |
|---|------------------|---|---------------|
| 1 | Adjustable screw | 6 | Pull-rod |
| 2 | 5 mm | 7 | Weld |
| 3 | Adjustable feet | 8 | 2 mm tinplate |
| 4 | Flange | 9 | Fixed foot |
| 5 | Tube | | |

Figure 1 — Grout flow trough apparatus

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