

Explosives for civil uses — Detonating cords and safety fuses —

Part 4: Determination of sensitiveness to impact of detonating cords

The European Standard EN 13630-4:2002 has the status of a
British Standard

ICS 71.100.30

National foreword

This British Standard is the official English language version of EN 13630-4:2002.

The UK participation in its preparation was entrusted to Technical Committee CII/61, Explosives for civil uses, 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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Explosifs à usage civil - Cordeaux détonants et mèches de
sûreté - Partie 4: Détermination de la sensibilité au choc
des cordeaux détonants

Explosivstoffe für zivile Zwecke - Sprengschnüre und
Sicherheitsanzündschnüre - Teil 4: Bestimmung der
Schlagempfindlichkeit von Sprengschnüren

This European Standard was approved by CEN on 11 July 2002.

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Foreword

This document (EN 13630-4:2002) has been prepared by Technical Committee CEN/TC 321 "Explosives for civil uses", the secretariat of which is held by AENOR.

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of an identical text or by endorsement, at the latest by March 2003, and conflicting national standards shall be withdrawn at the latest by March 2003.

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 Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

This European Standard is one of a series of standards on *Explosives for civil uses – Detonating cords and safety fuses*. The other parts of this series are:

prEN 13630-1 *Part 1: Requirements.*

EN 13630-2 *Part 2: Determination of thermal stability of detonating cords and safety fuses.*

EN 13630-3 *Part 3: Determination of sensitiveness to friction of the core of detonating cords.*

prEN 13630-5 *Part 5: Determination of resistance to abrasion of detonating cords.*

EN 13630-6 *Part 6: Determination of resistance to tension of detonating cords.*

EN 13630-7 *Part 7: Determination of reliability of initiation of detonating cords.*

EN 13630-8 *Part 8: Determination of resistance to water of detonating cords and safety fuses.*

prEN 13630-9 *Part 9: Determination of transmission of detonation from detonating cord to detonating cord.*

WI 00321088 *Part 10: Determination of initiating capability of detonating cords.*

EN 13630-11 *Part 11: Determination of velocity of detonation of detonating cords.*

EN 13630-12 *Part 12: Determination of burning duration of safety fuses.*

Annexes A and B of this document are informative. Annex C is normative.

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 sensitiveness to impact of flexible, plastics-coated detonating cords and flexible fibrous-overbraided detonating cords for civil uses, when subjected to an impact energy of 10 J..

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).

prEN 13857-1:2001, *Explosives for civil uses — Part 1: Terminology*.

EN ISO 4957, *Tool steels (ISO 4957:1999)*.

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999)*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in prEN 13857-1:2001 and the following apply:

3.1

drop height

distance between the lowest part of the striking head of the drop weight and the uppermost part of the test piece

4 Apparatus

4.1 General

The apparatus is a drop hammer (e.g. BAM fall-hammer), comprising a cast steel block with base, a main anvil and an intermediate anvil, a locating plate, a column, guides, and a drop weight with a release mechanism and a striking head.

4.2 Drop hammer

A steel anvil is screwed onto the steel block and cast base. The steel used for the intermediate anvil and the main anvil is of the same type as for the striking head of the drop weight (see 4.3). The support onto which the column is fixed (made from a seamless drawn steel tube) is bolted to the back of the steel block.

NOTE Figure C.1 shows the arrangement of BAM fall-hammer (the anvil, the steel block and the column)

Figure C.2 shows the arrangement of the lower part of the BAM fall-hammer.

The two guides which are fixed to the column by means of three cross-pieces are fitted with a toothed rack, to limit the rebound of the drop weight, and a moveable graduated scale for adjusting the drop height. The guides shall be vertical.

The drop height shall be (500 ± 5) mm. The drop weight release mechanism is adjustable between the guides and is clamped to them by the operation of a lever mechanism.

The apparatus shall be firmly secured to a concrete block, with minimum dimensions of 0,6 m 0,6 m 0,6 m, by means of four anchoring bolts.

4.3 Drop weight

The drop weight has a mass of (2000 ± 2) g and is provided with two locating grooves to hold it between the guides as it drops. A suspension spigot, a removable cylindrical striking head and a rebound catch are screwed onto the drop weight.

NOTE Figure C.3 shows the design of the drop weight of the BAM fall-hammer.

The removable striking head is made from hardened steel conforming to type 90 MnCrV8 in EN ISO 4957 with a polished surface and a diameter of 25 mm.

The release mechanism shall be controlled remotely.

5 Test pieces

Select eight pieces of detonating cord of sufficient length to carry out the test. Seal the ends by a suitable means, e.g. with tape, cap or glue. The length of each test piece shall be such that there is a length of at least 30 mm at the centre of the test piece, not affected by the means of the sealing, which is to be struck by the striking head of the drop weight.

6 Procedure

Fix the test piece onto the intermediate anvil, so that it is centred on the anvil, by suitable means which does not interfere with the area of the test piece to be struck by the striking head. Fix the intermediate anvil by means of the locating plate, as shown in Figure C.2.

Suspend the drop weight from the release mechanism at drop height of (500 ± 5) mm. Align the test piece so that the centre of the striking head will hit the centre of the test piece. Release the drop weight and record whether an explosion or a deflagration occurs.

Repeat the procedure a further seven times, using a new test piece each time, unless an explosion or a deflagration occurs. Clean the intermediate anvil after each test.

If an explosion occurs and either the striking head or the intermediate anvil are damaged, they shall be replaced before testing the next test piece.

7 Test report

The test report shall conform EN ISO/IEC 17025. In addition, the following information shall be given:

- the results of all tests in form of the number of tests and whether an explosion or deflagration has occurred.

Annex A
(informative)

Range of applicability of the test method

Range of applicability of the test method: - 30 °C to + 80 °C.

NOTE Testing at temperature outside ambient can require special arrangements to condition test sample and/or equipment.

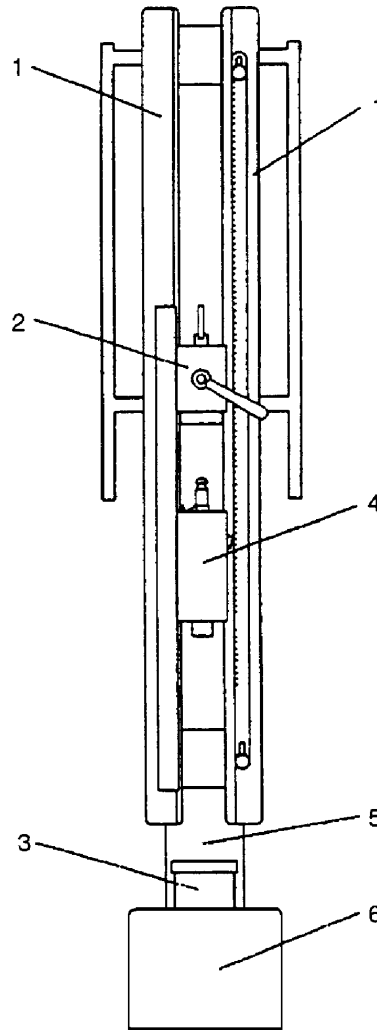
Annex B (informative)

Information on special types of use for detonating cords

If a detonating cord is to be used in special circumstances, higher values of impact energy than 10 joules might be requested, in particular if unprotected detonating cords could be affected by rock fall.

Annex C (normative)

Illustrations of the BAM fall-hammer

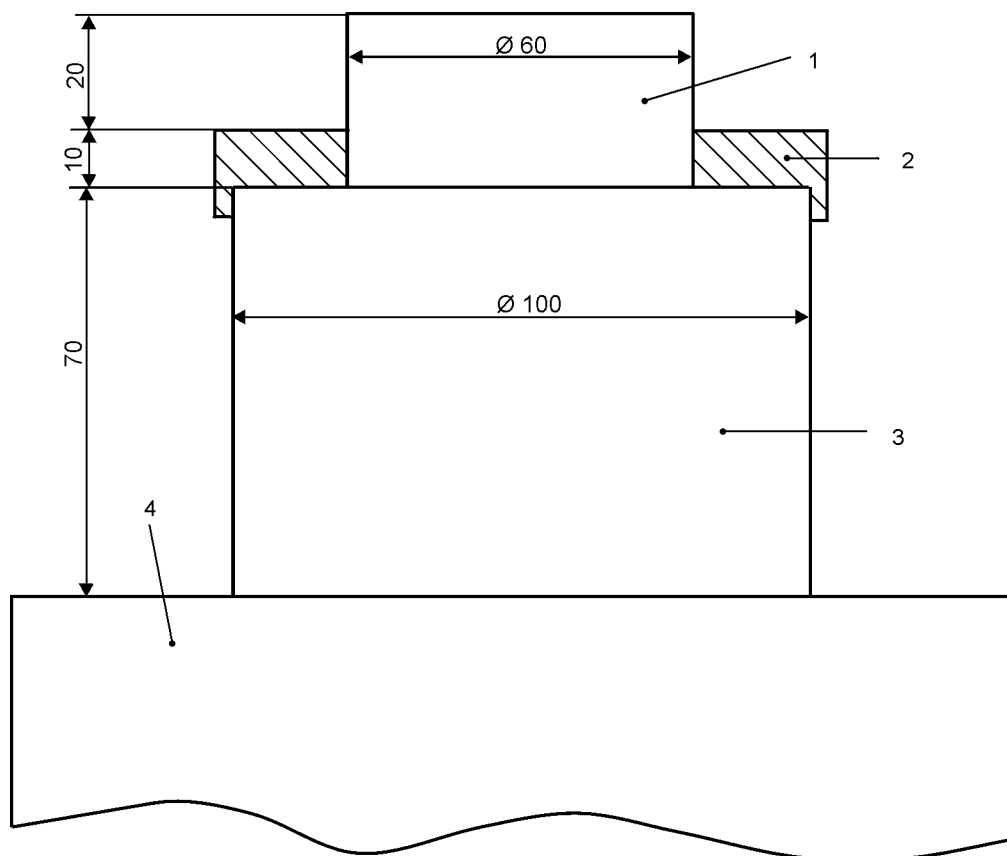


Key

- 1 Guides
- 2 Release mechanism
- 3 Anvil
- 4 Drop weight
- 5 Column
- 6 Steel block

Figure C.1 – General arrangement of the BAM fall-hammer

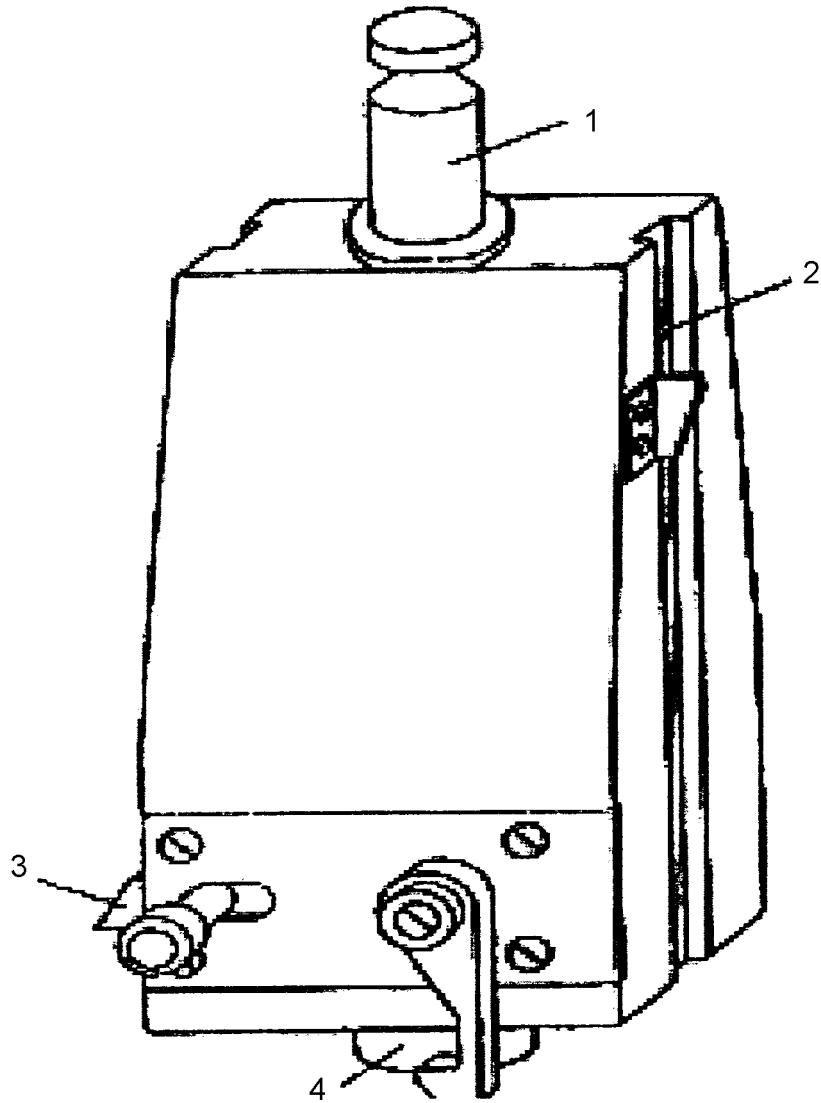
Dimensions in millimetres

**Key**

- 1 Intermediate anvil
- 2 Locating plate
- 3 Main anvil
- 4 Steel block

NOTE The steel block 4 is divided in two parallelepipedal blocks welded together, on the top a block of dimensions height 200 mm, length 260 mm, width 240 mm, welded on a block of dimensions height 60 mm, length and width 450 mm.

Figure C. 2 – Lower part of the BAM fall-hammer



Key

- 1 Suspension spigot
- 2 Locating groove
- 3 Rebound catch
- 4 Striking head

Figure C.3 – Drop weight of the BAM fall-hammer

Annex ZA (informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association and supports essential safety requirements of EU Directive 93/15/EEC.

WARNING: Other requirements and other EU Directives may be applicable to products falling within the scope of this standard.

The clauses of this standard are likely to support requirements I.1, II.1 (c) and II.2.B (a) of the Directive 93/15/EEC.

Compliance with this standard provides one means of conforming to the specific essential safety requirements of the Directive concerned and associated EFTA Regulations.

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