BRITISH STANDARD

BS EN
13763-2:2002

Explosives for civil uses — Detonators and relays —

Part 2: Determination of thermal stability

The European Standard EN 13763-2:2002 has the status of a British Standard

ICS 71.100.30

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 13763-2:2002.

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;

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Explosives for civil uses - Detonators and relays - Part 2: Determination of thermal stability

Explosifs à usage civil - Détonateurs et relais - Partie 2: Détermination de la stabilité thermique

Explosivstoffe für zivile Zwecke - Zünder und Verzögerungselemente - Teil 2: Bestimmung der thermischen Stabilität

This European Standard was approved by CEN on 1 August 2002.

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Contents

Foreword

This document (EN 13763-2:2002) 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of an identical text or by endorsement, at the latest by March 2003, and conflicting national standards shall be withdrawn at the latest by March 2003.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 European Standard 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 the relationship with EU Directive(s), see informative annex ZA, which is an integral part of this standard.

This European Standard is one of a series of standards with the generic title *Explosives for civil uses – Detonators and relays.* The other parts of this series are listed below:

prEN 13763-1 *Part 1: Requirements*.

EN 13763-3 *Part 3: Determination of sensitiveness to impact*.

prEN 13763-4 *Part 4: Determination of resistance to abrasion of leading wires and shock tubes*.

prEN 13763-5 *Part 5: Determination of resistance to cutting damage of leading wires and shock tubes*.

prEN 13763-6 *Part 6: Determination of resistance to cracking in low temperatures of leading wires*.

prEN 13763-7 *Part 7: Determination of the mechanical strength of leading wires, shock tubes, connections, crimps and closures*.

prEN 13763-8 *Part 8: Determination of resistance to vibration of plain detonators*.

prEN 13763-9 *Part 9: Determination of resistance to bending of detonators*.

prEN 13763-10 *Part 10: Determination of resistance to torsion of sealing plugs*.

prEN 13763-11 *Part 11:Determination of drop resistance of detonators and relays*.

prEN 13763-12 *Part 12: Determination of resistance to hydrostatic pressure*.

prEN 13763-13 *Part 13: Determination of resistance of electric detonator to electrostatic discharge.*

prEN 13763-14 *Part 14: Determination of resistance of electric detonator to the influence of radio frequency radiation*.

prEN 13763-15 *Part 15: Determination of equivalent initiating capability.*

prEN 13763-16 *Part 16: Determination of delay accuracy.*

prEN 13763-17 *Part 17: Determination of no-fire current of electric detonators.*

prEN 13763-18 *Part 18: Determination of series firing current of electric detonators.*

prEN 13763-19 *Part 19: Determination of firing pulse of electric detonators.*

prEN 13763-20 *Part 20: Determination of total resistance of electric detonators*.

prEN 13763-21 *Part 21: Determination of flash-over voltage of electric detonators.*

prEN 13763-22 *Part 22: Determination of capacitance, insulation resistance and insulation breakdown of leading wires.*

EN 13763-23 *Part 23: Determination of the shock-wave velocity of shock tube.*

EN 13763-24 *Part 24: Determination of the non-conductivity of shock tube.*

prEN 13763-25 *Part 25: Determination of transfer capacity of relay and coupling accessories.*

prEN 13763-26 *Part 26: Definitions, methods and requirements for devices and accessories for reliable and safe function of detonators and relays*.

prCEN/TS 13763-27 *Part 27: Definitions, methods and requirements for electronic initiation system.*

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 thermal stability of electric detonators, non-electric detonators, surface connectors, detonating cord relays and shock tubes for use with non–electric detonators.

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, *Explosives for civil uses. Part 1 Terminology.*

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 apply.

4 Apparatus

Oven/heating cabinet, which can maintain a prescribed temperature ± 2 °C.

NOTE The design of the apparatus should be such as to ensure the prevention of sympathetic detonation.

5 Test pieces

5.1 Detonators

5.1.1 Electric detonators

For each specific type, having the same design and composition of fusehead, whose primary charge has the same chemical composition and whose secondary charge has the same chemical composition, select 25 detonators. If the detonators form part of a series with different delay times, select 25 detonators with delay times as evenly distributed throughout the series as possible.

5.1.2 Non-electric detonators

For each specific type, having the same design and composition according to the manufacturer's specification, whose primary charge has the same chemical composition and whose secondary charge has the same chemical composition, select 25 detonators. If the detonators form part of a series with different delay times, select 25 detonators with delay times as evenly distributed throughout the series as possible.

5.2 Detonating cord relays and surface conectors

For each specific type, having the same dimensions, materials of construction, whose primary charge has the same chemical composition and whose secondary charge has the same chemical composition, select 25 relays or surface connectors. If the relays form part of a series with different delay times, select 25 relays or surface connectors with delay times as evenly distributed throughout the series as possible.

5.3 Shock tubes

For each specific type having the same dimensions, materials of construction and chemical composition, select 25 pieces of shock tube, each with a length of (1,00 ± 0,05) m.

6 Procedure

Store the test pieces in the heating cabinet for a period of $(48\ ^{+1}_{0})\ \mathrm{h}$ at a temperature of (25 ± 2) °C higher than the highest safe operating temperature stated by the manufacturer but at least (75 ± 2) °C. In the case of detonators and surface connectors, 12 of the test pieces shall be placed in a rack with the base upwards and the other 13 in a rack with the base downwards. Record any incident of detonation or, for shock tubes, evidence of reaction inside the tube (visible or audible) during the test.

7 Test report

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

a) for detonators, surface connectors and detonating cord relays the result of the test stated as detonation or no detonation;

b) for shock tubes the result regarding evidence of reaction;

c) the relevant test parameters (the temperature and time).

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.(b), II.1.(d) and II.1.(g) of Directive 93/15/EEC.

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

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