

Explosives for civil uses - Detonators and relays - Part 26: Definitions, methods and requirements for devices and accessories for reliable and safe function of detonators and relays

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13763-26:2004 sisaldab Euroopa standardi EN 13763-26:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13763-26:2004 consists of the English text of the European standard EN 13763-26:2004.</p> <p>This document is endorsed on 23.11.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European Standard describes the constructional and functional requirements and a method for testing the devices and accessories needed for the reliable and safe functioning of detonators and relays, under normal working conditions.</p>	<p>Scope: This European Standard describes the constructional and functional requirements and a method for testing the devices and accessories needed for the reliable and safe functioning of detonators and relays, under normal working conditions.</p>
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ICS 71.100.30

Võtmesõnad: fidelity, magazines, materials testing, mining, non-electrical, precision, priming generator, relays, reliability, resistance, retardants, safety, shock resistance, specification (approval), specifications, test equipment, testing, testing devices

ICS 71.100.30

English version

**Explosives for civil uses - Detonators and relays - Part 26:
Definitions, methods, and requirements for devices and
accessories for reliable and safe function of detonators and
relays**

Explosifs à usage civil - Détonateurs et relais - Partie 26:
Définitions, méthodes et exigences relatives aux dispositifs
et accessoires pour la fiabilité et la sécurité de
fonctionnement des détonateurs et relais

Explosivstoffe für zivile Zwecke - Zünder und
Verzögerungselemente - Teil 26: Definitionen, Verfahren
und Anforderungen für Geräte und Zubehör für die
zuverlässige und sichere Funktion von Zündern und
Verzögerern

This European Standard was approved by CEN on 21 June 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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Foreword

This document (EN 13763-26:2004) 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 February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

This document 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:

EN 13763-1	Part 1: <i>Requirements</i>
EN 13763-2	Part 2: <i>Determination of thermal stability</i>
EN 13763-3	Part 3: <i>Determination of sensitiveness to impact</i>
EN 13763-4	Part 4: <i>Determination of resistance to abrasion of leading wires and shock tubes</i>
EN 13763-5	Part 5: <i>Determination of resistance to cutting damage of leading wires and shock tubes</i>
EN 13763-6	Part 6: <i>Determination of resistance to cracking in low temperatures of leading wires</i>
EN 13763-7	Part 7: <i>Determination of the mechanical strength of leading wires, shock tubes, connections, crimps and closures</i>
EN 13763-8	Part 8: <i>Determination of resistance to vibration of plain detonators</i>
EN 13763-11	Part 11: <i>Determination of resistance to damage by dropping of detonators and relays</i>
EN 13763-12	Part 12: <i>Determination of resistance to hydrostatic pressure</i>
EN 13763-13	Part 13: <i>Determination of resistance of electric detonators against electrostatic discharge</i>
prEN 13763-15	Part 15: <i>Determination of equivalent initiating capability</i>
EN 13763-16	Part 16: <i>Determination of delay accuracy</i>
EN 13763-17	Part 17: <i>Determination of no-fire current of electric detonators</i>
EN 13763-18	Part 18: <i>Determination of series firing current of electric detonators</i>
EN 13763-19	Part 19: <i>Determination of firing impulse of electric detonators</i>
EN 13763-20	Part 20: <i>Determination of total electrical resistance of electric detonators</i>
EN 13763-21	Part 21: <i>Determination of flash-over voltage of electric detonators</i>
EN 13763-22	Part 22: <i>Determination of capacitance, insulation resistance and insulation breakdown of leading wires</i>
EN 13763-23	Part 23: <i>Determination of the shock-wave velocity of shock tube</i>

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

EN 13763-25 Part 25: *Determination of transfer capability of surface connectors, relays and coupling accessories*

CEN/TS 13763-27 Part 27: *Definitions, methods and requirements for electronic initiation systems*

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

1 Scope

1.1 This document specifies the constructional and functional requirements and methods for testing of devices and accessories needed for the reliable and safe initiation of detonators and relays, under normal working conditions. It covers the following six types of equipment:

- blasting machines for initiating electric detonators;
- blasting machine checkers;
- initiating circuit field testers;
- shot firing cables for use with electric blasting machines;
- detonator connecting wires;
- shock tube initiators for non-electric systems.

1.2 Equipment indented only for use indoors is excluded from the environmental testing in Annex B.

1.3 Blasting machines for use with electronic detonators and magnetically coupled detonators are outside the scope of this document.

NOTE This document does not meet all of the requirements of all relevant European Directives, such as the ATEX Directive 94/9/EC and the low voltage Directive 73/23/EEC. For example, EN 61010 (Safety requirements for electrical equipment for measurement, control and laboratory use) might also be relevant for some devices and accessories described in this document.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13857-1:2003, *Explosives for civil uses – Part 1: Terminology*.

EN 13763-4:2003, *Explosives for civil uses – Detonators and relays – Part 4: Determination of resistance to abrasion of leading wires and shock tubes*.

EN 13763-5, *Explosives for civil uses – Detonators and relays – Part 5: Determination of resistance to cutting damage of leading wires and shock tubes*.

EN 13763-6, *Explosives for civil uses – Detonators and relays – Part 6: Determination of resistance to cracking in low temperatures of leading wires*.

EN 13763-22:2003, *Explosives for civil uses – Detonators and relays – Part 22: Determination of capacitance, insulation resistance and insulation breakdown of leading wires*.

EN 55011:1998, *Industrial, scientific and medical (ISM) radio-frequency equipment – Radio disturbance characteristics – Limits and methods of measurement (CISPR 11:1997, modified)*.

EN 60068-2-1:1993, *Environmental testing – Part 2: Tests – Tests A: Cold (IEC 60068-2-1:1990)*.

EN 60068-2-2:1993, *Basic environmental testing procedures – Part 2: Tests – Tests B: Dry heat* (IEC 600-2-2:1976).

EN 60068-2-14:1999, *Environmental testing – Part 2: Tests – Test N: Change of temperature* (IEC 60068-2-14:1984 + A1:1986).

EN 60068-2-29:1993, *Basic environmental testing procedures – Part 2: Tests – Test Eb and guidance: Bump* (IEC 60068-2-29:1987).

EN 60068-2-30:2004, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)* (IEC 60068-2-30:1980 + A1: 1985).

EN 60068-2-32, *Basic environmental testing procedures – Part 2: Tests – Test Ed: Free fall* (IEC 60068-2-32:1975 + A1: 1982 + A2: 1990).

EN 60068-2-64:1994, *Environmental testing – Part 2: Test methods – Test Fh: Vibration, broad band random (digital control) and guidance* (IEC 60068-2-64:1993 + Corrigendum:1993).

EN 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state* (IEC 60068-2-78:2001).

EN 60529, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529:1989).

EN 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test – Basic EMC publication* (IEC 61000-4-2:1995).

EN 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques; Radiated, radio-frequency, electromagnetic field immunity test* (IEC 61000-4-3:2002).

EN 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 4: Electrical fast transient/burst immunity test – Basic EMV publication* (IEC 61000-4-4:1995).

EN 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 5: Surge immunity test* (IEC 61000-4-5:1995).

EN 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 6: Immunity to conducted disturbances, induced by radio-frequency fields* (IEC 61000-4-6:1996).

EN 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 11: Voltage dips, short interruptions and voltage variations immunity test* (IEC 61000-4-11:1994).

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 document, the terms and definitions given in EN 13857-1:2003 and the following apply.

3.1

blasting machine

equipment intended to supply electrical energy to a circuit of electric detonators to initiate them

3.2

sequential blasting machine

blasting machine incorporating a means to control the sequence of firing of the electric detonators connected to it