

TSIVIILKÄIBES OLEVAD LÕHKEAINED. DETONAATORID
JA DETONEERNÖÖRIDE RELEED. OSA 9:
DETONAATORITE PAINDETUGEVUSE MÄÄRAMINE

Explosives for civil uses - Detonators and detonating
cord relays - Part 9: Verification of resistance to
bending of detonators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 13763-9:2025 sisaldab Euroopa standardi EN 13763-9:2025 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.10.2025.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 13763-9:2025 consists of the English text of the European standard EN 13763-9:2025.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 01.10.2025.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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ICS 71.100.30

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EUROPEAN STANDARD

EN 13763-9

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2025

ICS 71.100.30

Supersedes EN 13763-9:2003

English Version

Explosives for civil uses - Detonators and detonating cord relays - Part 9: Verification of resistance to bending of detonators

Explosifs à usage civil - Détonateurs et relais pour cordeau détonant - Partie 9 : Vérification de la résistance à la flexion des détonateurs

Explosivstoffe für zivile Zwecke - Zünder und Sprengschnurverzögerer - Teil 9: Überprüfung des Widerstandes von Zündern gegen Biegespannung

This European Standard was approved by CEN on 29 September 2025.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 13763-9:2025) has been prepared by Technical Committee CEN/TC 321 “Explosives for civil uses”, the secretariat of which is held by UNE.

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 April 2026, and conflicting national standards shall be withdrawn at the latest by April 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13763-9:2003.

EN 13763-9:2025 includes the following significant technical changes with respect to EN 13763-9:2003:

- a) the document title has been changed from “Detonators and relays — Part 9: Determination of resistance to bending of detonators” to “Detonators and detonating cord relays — Part 9: Verification of resistance to bending of detonators”;
- b) the Introduction has been removed;
- c) the Scope has been revised to clarify the covered and not covered explosives;
- d) the normative references have been updated;
- e) the terminology entry 3.1 has been removed;
- f) the Clause 4 “Principle” has been added;
- g) the Clause “Apparatus” has been revised;
- h) the Clause “Test pieces” is now called “Preparation of test sample” and has been enlarged to include electronic and semi-finished detonators and to provide revised specifications for the marking of the test pieces for the bending test that was formerly part of the “Procedure” clause;
- i) the Clause “Procedure” has been revised and now contains the specifications for the two types of the bending test and a functional test (7.3) has been added;
- j) the Clause 8 “Expression of results” has been added;
- k) the Clause “Test report” does no longer require conformity with EN ISO/IEC 17025 and the information to be provided has been revised and enlarged;
- l) the former Annex A “Range of applicability of the test method” has been removed;
- m) the Annex ZA has been updated;
- n) the Bibliography has been added and lists EN ISO/IEC 17025:2017.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

A list of all parts in the EN 13763 series, published under the general title *Explosives for civil uses — Detonators and detonating cord relays*, can be found on the CEN website.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

1 Scope

This document specifies a test method for the verification of the resistance to bending of detonators.

This document applies to electric detonators, non-electric detonators, plain detonators, semi-finished detonators and electronic detonators.

This document does not apply to detonating cord relays, surface connectors, leading wires, shock tubes, coupling accessory and electronic initiation systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13763-1:2025, *Explosives for civil uses — Detonators and detonating cord relays — Part 1: Requirements*

EN 13857-1:2025, *Explosives for civil uses — Part 1: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13857-1:2025 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Principle

During use, detonators can be subjected to bending during the loading of boreholes. Bending of a detonator could cause inadvertent initiation or misfire.

For the verification of the resistance to bending, a test piece is subjected to a bending force by clamping one end of it and attaching a weight at the other end. Two types of tests are performed, one where the test piece is clamped at the base and another one where the test piece is clamped at the top. It is observed whether the test piece explodes during the test and if cracking or breakage of the shell occurs. After being subjected to the bending force, the test piece is initiated to verify whether it detonates.

5 Apparatus

5.1 Steel block, as shown in Figure 1, with a hole of at least 30 mm in length. The diameter of the hole shall not exceed the diameter of the detonator by more than 0,1 mm. The radius for the edge of the hole shall be $(2 \pm 0,1)$ mm.