

TSIVIILKÄIBES OLEVAD LÕHKEAINED. DETONAATORID
JA DETONEERNÖÖRIDE RELEED. OSA 19:
ELEKTRIDETONAATORITE MIINIMUM- JA MAKSIMUM
VOOLUIMPULSI MÄÄRAMINE

Explosives for civil uses - Detonators and detonating
cord relays - Part 19: Verification of all-fire impulse
and no-fire impulse of electric detonators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 13763-19:2025 sisaldab Euroopa standardi EN 13763-19:2025 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 13763-19:2025 consists of the English text of the European standard EN 13763-19:2025.</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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EUROPEAN STANDARD

EN 13763-19

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Explosives for civil uses - Detonators and detonating cord relays - Part 19: Verification of all-fire impulse and no-fire impulse of electric detonators

Explosifs à usage civil - Détonateurs et relais pour cordeau détonant - Partie 19: Vérification de l'impulsion de tout feu et de l'impulsion de non feu des détonateurs électriques

Explosivstoffe für zivile Zwecke - Zünder und Sprengschnurverzögerer - Teil 19: Überprüfung des Gesamtzündimpulses und des Nichtzündimpulses elektrischer Zünder

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
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 13763-19:2025) 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 13763-19:2003.

In comparison with the previous edition, the following technical modifications have been made:

- a) the document title has been changed from “Detonators and relays — Part 19: Determination of firing impulse of electric detonators” to “Detonators and detonating cord relays — Part 19: Verification of all-fire impulse and no-fire impulse of electric detonators”;
- b) the Scope has been revised to clarify the covered and not covered explosives;
- c) the normative references have been updated;
- d) the terminology entries 3.1, 3.2, 3.3 and 3.4 have been removed;
- e) Clause 4 “Principle” has been added;
- f) in the clause “Apparatus”, the alternative apparatus, former subclause 5.2, has been removed;
- g) the clause “Test pieces” is now called “Preparation of test sample”, has been revised to clarify the number and kind of test pieces and the conditioning step has been moved there from the Clause “Procedure”;
- h) the clause “Procedure” has been restructured, revised and further detailed to adjust and clarify the statistical procedure and electrical parameters and the former Clause 7 “Calculation of test results” has been integrated;
- i) Clause 8 “Expression of results” has been added;
- j) the clause “Test report” does no longer require conformity with EN ISO/IEC 17025 and the information to be provided has been revised;
- k) former Annex A “Range of applicability of the test method” has been removed;
- l) a new Annex A “Determination of the pulse duration for 50 %-firing using the Bruceton method” and a new Annex B “Determination of the pulse duration for 50 %-firing using the Langlie method” have been added;
- m) Annex ZA has been updated;
- n) the Bibliography has been added and lists, e.g. 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 all-fire impulse and the no-fire impulse of electric detonators.

This document does not apply to non-electric detonators, electronic detonators, plain detonators or semi-finished detonators.

This document does also not apply to shock tubes, leading wires, surface connectors, detonating cord relays, coupling accessories 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 13857-1:2025, *Explosives for civil uses — Part 1: Vocabulary*

EN 13763-1:2025, *Explosives for civil uses — Detonators and detonating cord relays — Part 1: Requirements*

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

To ensure reliable initiation and to avoid inadvertent initiation of electric detonators, the specified all-fire impulse and no-fire impulse are important.

For the verification of the all-fire impulse and no-fire impulse, test pieces are subjected to different current pulse durations, and it is observed whether they explode. In a first step, the firing impulse is determined at which the probability of an initiation of a given test piece is 50 %. This pulse duration level then serves as a starting value for a series of initiating tests at different pulse duration levels. The results of these initiation tests are statistically evaluated using the PROBIT test¹⁾ with the no-fire impulse and the all-fire impulse as results that are then compared with the specified values for the tested detonator.

5 Apparatus

5.1 Square pulse current supply, with the following characteristics:

- a) a stabilized current with a tolerance on the output of $\pm 1\%$ of the current value chosen in 7.2;
- b) a square pulse with a permissible uncertainty of $\pm 1\%$ of the pulse durations applied in 7.3 and Annexes A and B;

1) The PROBIT test is a statistical method used to characterise the sensitivity to a physical stimulus. A detailed description of the test is given in EN 13763-1:2025, Annex C.