

TSIVIILKÄIBES OLEVAD LÕHKEAINED. DETONAATORID
JA DETONEERNÖÖRIDE RELEED. OSA 21:
ELEKTRIDETONAATORITE ÜLELÖÖGIPINGE
MÄÄRAMINE

Explosives for civil uses - Detonators and detonating
cord relays - Part 21: Verification of flash-over voltage
of electric detonators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13763-21:2025 sisaldab Euroopa standardi EN 13763-21:2025 ingliskeelset teksti. Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.10.2025. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	This Estonian standard EVS-EN 13763-21:2025 consists of the English text of the European standard EN 13763-21:2025. This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 01.10.2025. The standard is available from the Estonian Centre for Standardisation and Accreditation.
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English Version

**Explosives for civil uses - Detonators and detonating cord
relays - Part 21: Verification of flash-over voltage of
electric detonators**

Explosifs à usage civil - Détonateurs et relais pour
cordeau détonant - Partie 21 : Vérification de la tension
de claquage des détonateurs électriques

Explosivstoffe für zivile Zwecke - Zünder und
Sprengschnurverzögerer - Teil 21: Überprüfung der
Überschlagsspannung 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 13763-21:2025) 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 13763-21:2003.

EN 13763-21:2025 includes the following significant technical changes with respect to EN 13763-21:2003:

- a) the document title has been changed from “Detonators and relays — Part 21: Determination of flash-over voltage of electric detonators” to “Detonators and detonating cord relays — Part 21: Verification of flash-over voltage of electric 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 Clause 4 “Principle” has been added;
- f) the Clause “Apparatus” has been updated;
- g) the Clause “Test pieces” is now called “Preparation of test sample” and the conditioning step has been moved there from the Clause “Procedure”;
- h) the Clause “Procedure” has been revised for clarification purposes;
- i) the 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) the former Annex A “Range of applicability of the test method” has been removed;
- l) the Annex ZA has been updated;
- m) 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 flash-over voltage of electric detonators.

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

This document does not apply to surface connectors, detonating cord relays, leading wires, shock tubes, 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*

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

For blasting operations with electric detonators, the detonators are usually connected in series. Voltages of several hundred volts, often exceeding 1 kV, need to be applied to the firing circuit to ensure reliable initiation. The firing circuit can also be subjected to electrostatic discharge with high voltages. High voltages cause a flash-over between the leading wires and the shell of the detonator resulting in misfires or premature initiation.

For the verification of the flash-over voltage of an electric detonator, a test piece is subjected to a DC voltage of increasing levels. It is observed whether and at what voltage level a flash-over occurs indicated by a sudden increase of the measured current.

5 Apparatus

5.1 Voltage source, capable of applying a DC voltage between 0 V and 10 kV with a maximum permissible uncertainty of ± 50 V and not more than 3,0 % ripple. The current output shall be limited to a value between 0,5 mA and 5 mA.

NOTE The current output is limited to a maximum of 5 mA to prevent the build-up of an electric arc.

5.2 Amperemeter, capable of being read to the nearest 0,01 mA.

5.3 Conditioning chamber, capable of maintaining a temperature (20 ± 2) °C for 1 h.