TSIVIILKÄIBES OLEVAD LÕHKEAINED. DETONAATORID JA DETONEERNÖÖRIDE RELEED. OSA 15: ELEKTRILISTE, MITTEELEKTRILISTE JA ELEKTROONILISTE DETONAATORITE INITSIEERIMISEKVIVALENDI MÄÄRAMINE

Explosives for civil uses - Detonators and detonating cord relays - Part 15: Verification of equivalent initiating capability of electric, non-electric and electronic detonators

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13763-15:2025 sisaldab Euroopa standardi EN 13763-15:2025 ingliskeelset teksti.	This Estonian standard EVS-EN 13763-15:2025 consists of the English text of the European standard EN 13763-15:2025.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.10.2025.	Date of Availability of the European standard is 01.10.2025.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Explosives for civil uses - Detonators and detonating cord relays - Part 15: Verification of equivalent initiating capability of electric, non-electric and electronic detonators

Explosifs à usage civil - Détonateurs et relais pour cordeau détonant - Partie 15: Vérification de la capacité d'amorçage équivalente des détonateurs électriques, non électriques et électroniques

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

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

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European foreword

This document (EN 13763-15:2025) 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 13763-15:2004.

EN 13763-15:2025 includes the following significant technical changes with respect to EN 13763-15:2004:

a) the document title has been changed from “Detonators and relays — Part 15: Determination of equivalent initiating capability” to “Detonators and detonating cord relays — Part 15: Verification of equivalent initiating capability of electric, non-electric and electronic detonators”;

b) the Introduction has been removed;

c) the Scope has been revised to clarify the covered and not covered explosives as well as the applicability of the test method with regard to the temperature range of use and resistance to water;

d) the normative references have been updated;

e) Clause 4 “Principle” has been added;

f) the clause “Apparatus” together with its figures has been revised;

g) the clause “Test pieces” is now called “Preparation of test sample”;

h) the clause “Procedure” has been revised and further detailed, the former “underwater initiating capability test” is now called “underwater test” and the former “functioning test at high and low temperatures” is now called “plate dent test”;

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) the former Annex A “Specifications for reference detonators” has been removed and can now be found in FprEN 13763-1:2025;

l) the former Annex B “Range of applicability of the test method” has been removed;

m) the former Annex C is now Annex A “Typical pressure curve of an underwater test” and has been editorially revised;

n) Annex ZA has been updated;

o) 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 equivalent initiating capability of electric, non-electric and electronic detonators.

This document is not applicable to detonators that are not designed to function under water.

This document is not applicable to plain detonators, semi-finished detonators, surface connectors, leading wires, shock tubes, 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 573-3:2019, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition and form of products*

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

The initiating capability of a detonator is an important characteristic with regard to safe and reliable functioning.

For the verification of the initiating capability of a detonator, test pieces are subjected to an underwater test and to a plate dent test.

By means of the underwater test it is verified that the detonator to be tested, shows an equal or stronger initiating capability than the specified corresponding reference detonator. Test pieces and reference detonators are initiated under water. From the measured pressure over time, the values of the so-called equivalent shock energy and equivalent bubble energy are calculated and used as indicators for the comparison of the initiating capability.

NOTE The detonation of an explosive charge under water generates a spherical shock wave and a volume of gas in a bubble, which expands and then collapses. The shock wave and the volume of gas bear a specific relationship indicating the energy released through the detonation. The parameters equivalent shock energy and equivalent bubble energy represent this energy but aren't energy values themselves; they can be derived from the measured shock wave pressure and the time between the maximum pressure peak and the first collapse of the gas bubble.

By means of the plate dent test it is verified that the tested detonator shows an initiating capability over the specified temperature range of use that does not deviate too much from the performance at (20 ± 5) °C. Test pieces are either conditioned at (20 ± 5) °C, at the minimum temperature of use or at the