

**Tsiviilkäibes olevad lõhkeained.
Detonaatorid ja releed. Osa 19:
Elektridetonaatorite süttimisenergia
määramine**

Explosives for civil uses - Detonators and relays -
Part 19: Determination of firing pulse on electric
detonators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 13763-19:2004 sisaldab Euroopa standardi EN 13763-19:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.05.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 13763-19:2004 consists of the English text of the European standard EN 13763-19:2003.</p> <p>This document is endorsed on 18.05.2004 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 specifies a method for determining the all-fire-impulse and the no-fire-impulse of electric detonators.</p>	<p>Scope: This European Standard specifies a method for determining the all-fire-impulse and the no-fire-impulse of electric detonators.</p>
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ICS 71.100.30

Võtmesõnad: electronic equipment, fidelity, firing techniques, igniters, ignition pulse, impact strength, magazines, materials testing, measurement, mining, precision, pulse circuits, pulse durations, resistance, retardants, shock resistance, testing, testing devices

ICS 71.100.30

English version

Explosives for civil uses - Detonators and relays - Part 19:
Determination of firing impulse of electric detonators

Explosifs à usage civil - Détonateurs et relais - Partie 19:
Détermination de l'impulsion d'allumage des détonateurs
électriques

Explosivstoffe für zivile Zwecke - Zünder und
Verzögerungselemente - Teil 19: Bestimmung des
Zündimpulses elektrischer Zünder

This European Standard was approved by CEN on 10 November 2003.

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 Management Centre 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 13763-19:2003) 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 June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

Annex A is informative.

This European Standard 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:

prEN 13763-1	Part 1: Requirements
EN 13763-2	Part 2: Determination of thermal stability
EN 13763-3	Part 3: Determination of sensitiveness to impact
EN 13763-4	Part 4: Determination of resistance to abrasion of leading wires and shock tubes
EN 13763-5	Part 5: Determination of resistance to cutting damage of leading wires and shock tubes
EN 13763-6	Part 6: Determination of resistance to cracking in low temperatures of leading wires
EN 13763-7	Part 7: Determination of the mechanical strength of leading wires, shock tubes, connections, crimps and closures
EN 13763-8	Part 8: Determination of the resistance to vibration of plain detonators
EN 13763-9	Part 9: Determination of resistance to bending of detonators
EN 13763-11	Part 11: Determination of resistance to damage by dropping of detonators and relays
EN 13763-12	Part 12: Determination of resistance to hydrostatic pressure
prEN 13763-13	Part 13: Determination of resistance of electric detonators against electrostatic discharge
prEN 13763-15	Part 15: Determination of equivalent initiating capability
EN 13763-16	Part 16: Determination of delay accuracy
EN 13763-17	Part 17: Determination of no-fire current of electric detonators
EN 13763-18	Part 18: Determination of series firing current of electric detonators
EN 13763-20	Part 20: Determination of total electrical resistance of electric detonators
EN 13763-21	Part 21: Determination of flash-over voltage of electric detonators

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EN 13763-22	Part 22: Determination of capacitance, insulation resistance and insulation breakdown of leading wires
EN 13763-23	Part 23: Determination of the shock-wave velocity of shock tube
EN 13763-24	Part 24: Determination of the electrical non-conductivity of shock tube
prEN 13763-25	Part 25: Determination of transfer capability of surface connectors, relays and coupling accessories
prEN 13763-26	Part 26: Definitions, methods and requirements for devices and accessories for reliable and safe function of detonators and relays
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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies a method for determining the all-fire-impulse and the no-fire-impulse of electric detonators.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

prEN 13763-1:2001, *Explosives for civil uses - Detonators and relays - Part 1: Requirements*.

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 European Standard, the terms and definitions given in EN 13857-1 and the following apply.

3.1

thermal time constant (C_T) of the detonator is given by the following formula:

$$C_T \approx \frac{W_{NF}}{(I_{NF})^2} \quad (1)$$

where

C_T is the thermal time constant in seconds (s)

W_{NF} is the no-fire-impulse specified by the manufacturer, in A²/s

I_{NF} is the no-fire-current specified by the manufacturer, in A

3.2

all-fire-impulse

minimum electrical energy needed to fire all of the detonators connected in series, divided by the total resistance of the complete round

3.3

no-fire-impulse

maximum electrical energy divided by the total resistance of the complete round, which, when delivered in a short time, causes none of the detonators to fire

3.4

PBBS test

statistical method used to characterise the sensitivity, to a physical stimulus, of "one shot" pyrotechnical components