SLOVENSKI STANDARD
oSIST prEN 13630-9:2021

01-april-2021

Eksplozivi za civilno uporabo - Detonacijske in počasi goreče vžigalne vrvice - 9. del: Ugotavljanje prenosa detonacije od detonacijske vrvice do detonacijske vrvice

Explosives for civil uses - Detonating cords and safety fuses - Part 9: Determination of transmission of detonation from detonating cord to detonating cord

Explosivstoffe für zivile Zwecke - Sprengschnüre und Sicherheitsanzündschnüre - Teil 9: Bestimmung der Detonationsübertragung von Sprengschnur zu Sprengschnur

Explosifs à usage civil - Cordeaux détonants et mèches de sûreté - Partie 9 : Détermination de la transmission de la détonation de cordeau détonant à cordeau détonant

Ta slovenski standard je istoveten z: **prEN 13630-9**

ICS:

71.100.30	Eksplozivi. Pirotehnika in ognjemeti	Explosives. Pyrotechnics and fireworks

oSIST prEN 13630-9:2021 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT prEN 13630-9

April 2021

ICS 71.100.30

Will supersede EN 13630-9:2004

English Version

Explosives for civil uses - Detonating cords and safety fuses - Part 9: Determination of transmission of detonation from detonating cord to detonating cord

Explosifs à usage civil - Cordeaux détonants et mèches de sûreté - Partie 9 : Détermination de la transmission de la détonation de cordeau détonant à cordeau détonant

Explosivstoffe für zivile Zwecke - Sprengschnüre und Sicherheitsanzündschnüre - Teil 9: Bestimmung der Detonationsübertragung von Sprengschnur zu Sprengschnur

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 321.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 13630-9:2021) has been prepared by Technical Committee CEN/TC 321 "Explosives for civil uses", the secretariat of which is held by UNE.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13630-9:2004.

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

a) the normative references have been updated;

b) Clause 4, *Principle*, has been added;

c) Annex A, *Range of applicability of the test method*, has been removed;

d) Annex ZA has been updated;

This document has been prepared under a Standardization Request (M/562) annexed to the Commission Implementing Decision C(2019)6634 final as regards Explosives for civil uses given to CEN by the European Commission and the European Free Trade Association, and supports Essential Safety requirements of Directive 2014/28/EU.

For relationship with Directive 2014/28/EU, see informative Annex ZA, which is an integral part of this document.

EN 13630, *Explosives for civil uses — Detonating cords and safety fuses*, is currently composed of the following parts:

— *Part 1: Requirements*

— *Part 2: Determination of thermal stability of detonating cords and safety fuses*

— *Part 3: Determination of sensitiveness to friction of the core of detonating cords*

— *Part 4: Determination of sensitiveness to impact of detonating cords*

— *Part 5: Determination of resistance to abrasion of detonating cords*

— *Part 6: Measurement of resistance to tension of detonating cords*

— *Part 7: Determination of reliability of initiation of detonating cords*

— *Part 8: Determination of resistance to water of detonating cords and safety fuses*

— *Part 9: Determination of transmission of detonation from detonating cord to detonating cord*

— *Part 10: Determination of initiating capability of detonating cords*

— *Part 11: Determination of velocity of detonation of detonating cords*

— *Part 12: Determination of burning duration of safety fuses*

1 Scope

This document specifies a method of verifying whether a detonating cord can be initiated by a detonating cord.

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.

prEN 13630-10:2021, *Explosives for civil uses — Detonating cords and safety fuses — Part 10: Determination of initiating capability of detonating cords*

prEN 13763-15:2021, *Explosives for civil uses — Detonators and relays — Part 15: Determination of equivalent initiating capability*

prEN 13857-1:2021, *Explosives for civil uses — Part 1: Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 13857-1:2021 and the following apply.

3.1
acceptor cord
detonating cord receiving a stimulus from another detonating cord

3.2
donor cord
detonating cord supplying a stimulus to another detonating cord

Note 1 to entry: The initiating capability of a donor cord is defined by the equivalent initiating capability as described in prEN 13630-10:2021.

4 Principle

The ability for a detonating cord to be initiated by another detonating cord is assessed by connecting detonating cords together and verifying the complete detonation of the assembly formed.

5 Apparatus

5.1 Means to verify complete detonation of the acceptor cord

For example, witness plates of aluminium or wood, ionization pins or detonation velocity measurement.

5.2 Detonator

A detonator of equivalent initiating capability as specified by the manufacturer of the donor cord in terms of prEN 13763-15:2021 shall be used to initiate the donor cord.

5.3 Donor cord

A detonating cord of initiating capability as specified by the manufacturer of the acceptor cord in terms of prEN 13630-10:2021 shall be used to initiate the acceptor cord.

6 Preparation of test samples

For each method of connection specified by the manufacturer of the acceptor cord select five pieces of acceptor cords to be tested each of a length enough to make the connection plus a minimum of 500 mm.

Seal both ends of all the test samples with the means of sealing compatible with the explosive under test (e.g. adhesive tape) to avoid leakage of explosive during testing.

NOTE 1 A length after the connection superior to 500 mm will not affect the test result.

NOTE 2 The number of test samples to be tested is based the current sampling practice which is in place for decades and for which there is no evidence supporting a change for more or less samples.

7 Procedure

This test method is applied at ambient conditions, when it is known that within the given temperature range for use, the explosive in the detonating cord does not undergo any change of physical state. If a change of physical state occurs within the given temperature range for use, the test shall be in addition applied at the lowest and highest use temperatures.

The transmission of detonation from donor cord to acceptor cord is tested by connecting the detonating cords according to the method(s) of connection specified by the manufacturer of the acceptor cord.

Depending on the test arrangement (see Figure 1), the number of donor cords shall be five (when testing the acceptor cord piece one by one) or one (when using the optional configuration of the test arrangement).

For each method of connection cut the piece(s) of donor cord to such a length that the distance between the detonator and the first connection with an acceptor cord is at least 500 mm. When more than one acceptor cord is connected to the donor cord, the distance between each connection to the donor cord shall be at least 500 mm. The acceptor cord shall have a minimum distance of 500 mm between the connection to the donor cord and the mean to verify detonation (see Figure 1).

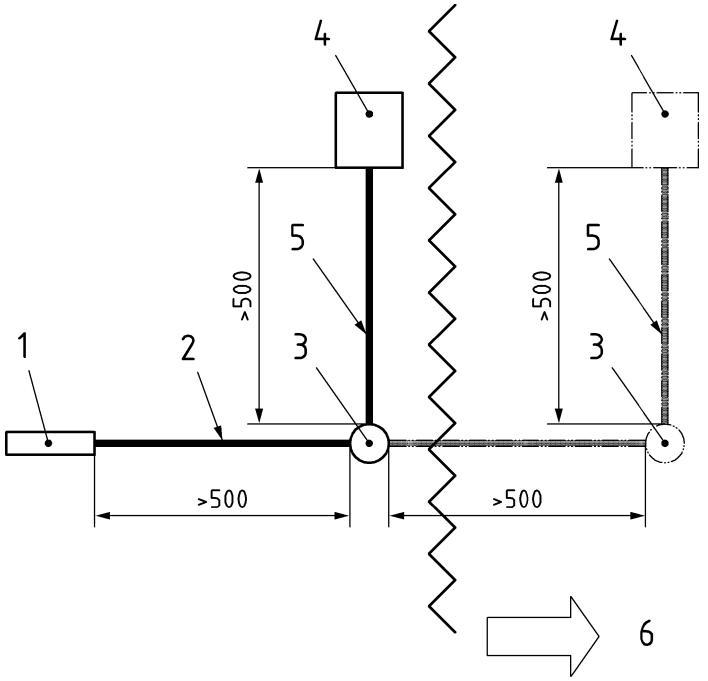
Connect the acceptor cord(s) to the donor cord(s) according to the method(s) of connection specified by the manufacturer of the acceptor cord.

Connect the means of verifying detonation to the acceptor cord(s) at a distance of at least 500 mm from the connection to the donor cord.

Connect the detonator to the donor cord at a distance of at least 500 mm from the (first) connection.

Fire the detonator. Check for evidence of complete detonation of the acceptor cord piece(s) on the mean to verify complete detonation (5.1) and record the result. Test five acceptor cord pieces. More than one acceptor cord may be connected to the donor cord and tested at the same time.

Dimensions in millimetres



Key

1 detonator
2 donor cord
3 connection between donor cord and acceptor cord
4 means to verify complete detonation
5 acceptor cord
6 optional

Figure 1 — Example of test arrangement

8 Test report

The test report should conform to EN ISO/IEC 17025:2017, 7.8.2 and 7.8.3. In addition, the following information shall be given:

a) reference to this document (i.e. EN 13630-9:202X);

b) the method(s) of connection;

c) the number of acceptor cords connected to each donor card;

d) method used to verify the detonation of the acceptor cord;

e) type of donor cord used;

f) whether each acceptor cord detonated completely;

g) type of detonator used.

Information c) to g) shall be given for each method of connection.

Annex ZA
(informative)

Relationship between this European Standard and the essential safety requirements of Directive 2014/28/EU relating to the making available on the market and supervision of explosives for civil uses aimed to be covered

This European Standard has been prepared under a standardization request M/562 annexed to Commission Implementing Decision C(2019)6634 final as regards explosives for civil uses to provide one voluntary means of conforming to essential safety requirements of Directive 2014/28/EU relating to the making available on the market and supervision of explosives for civil uses.

Once this standard is cited in the Official Journal of the European Union (OJEU), under Directive 2014/28/EU, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential safety requirements of that Directive 2014/28/EU, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2014/28/EU

Essential Safety Requirements[1] of Directive 2014/28/EU Annex II	Clause(s)/ sub-clause(s) of this EN	Remarks/Notes
I.2	Clause 5 to 8	The method of connection specified by the manufacturer has to ensure maximum safety and reliability.
II.1.(j)	Clause 5 to 8	The method of connection defines the correct loading and functioning.
II.3.2.(c)	Clause 5 to 8	Only the capability of being reliably initiated and being of sufficient initiation capability.

[1] The Essential Safety Requirements are fulfilled together with the requirements in prEN 13630-1:2021.

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

Bibliography

[1] prEN 13630-1:2021, *Explosives for civil uses — Detonating cords and safety fuses — Part 1: Requirements*

[2] EN ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories*