SLOVENSKI STANDARD
oSIST prEN 13630-8:2021

01-april-2021

Eksplozivi za civilno uporabo – Detonacijske in počasi goreče vžigalne vrvice – 8. del: Ugotavljanje odpornosti detonacijskih in počasi gorečih vžigalnih vrvic proti vodi

Explosives for civil uses - Detonating cords and safety fuses - Part 8: Determination of resistance to water of detonating cords and safety fuses

Explosivstoffe für zivile Zwecke - Sprengschnüre und Sicherheitsanzündschnüre - Teil 8: Bestimmung der Wasserfestigkeit von Sprengschnüren und Sicherheitsanzündschnüren

Explosifs à usage civil - Cordeaux détonants et mèches de sûreté - Partie 8: Détermination de la résistance à l'eau des cordeaux détonants et mèches de sûreté

Ta slovenski standard je istoveten z: **prEN 13630-8**

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71.100.30	Eksplozivi. Pirotehnika in ognjemeti	Explosives. Pyrotechnics and fireworks

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EUROPEAN STANDARD

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English Version

Explosives for civil uses - Detonating cords and safety fuses - Part 8: Determination of resistance to water of detonating cords and safety fuses

Explosifs à usage civil - Cordeaux détonants et mèches de sûreté - Partie 8: Détermination de la résistance à l'eau des cordeaux détonants et mèches de sûreté

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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 13630-8:2021) 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 13630-8:2002.

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

a) the normative references have been updated;

b) the structure of the main body of the document has been reorganized;

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 for determining the resistance to water of flexible detonating cords and water-resistant safety fuses.

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 13630-7:2021, *Explosives for civil uses — Detonating cords and safety fuses — Part 7: Determination of reliability of initiation of detonating cords*

prEN 13630-12:2021, *Explosives for civil uses — Detonating cords and safety fuses — Part 12: Determination of burning duration of safety fuses*

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 apply.

4 Principle

4.1 Principle for detonating cords

The resistance to water for detonating cord is assessed by subjecting test samples to an immersion in water under tensile load for a given time and its ability to be initiated is then checked using a detonator and a witness plate.

4.2 Principle for safety fuses

The resistance to water for safety fuse is assessed by subjecting test samples to an immersion in water for a given time and its performance is then checked by measuring the burning duration.

5 Apparatus

5.1 Apparatus for immersion test on detonating cord

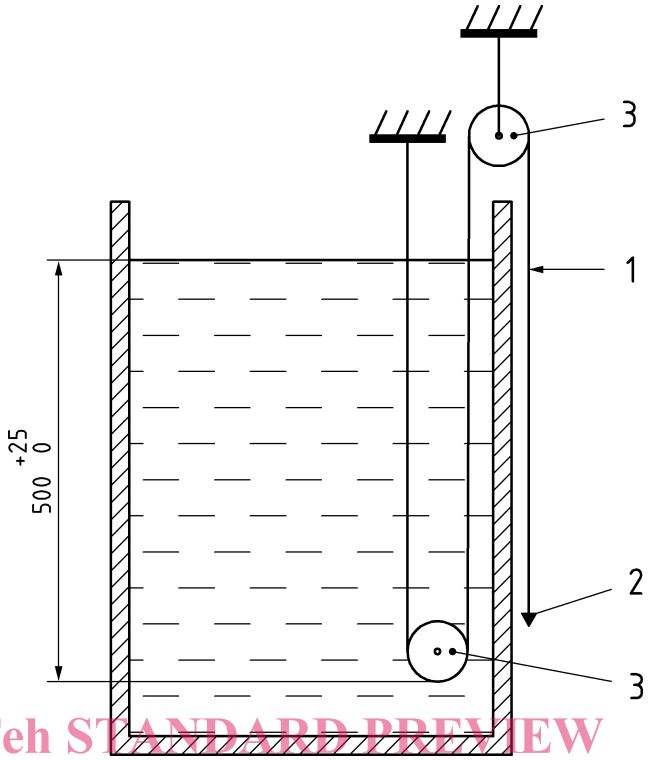
5.1.1 Tank of water

A tank full of water open at the top and of a sufficient size to accommodate the means of supporting the test piece (5.1.2), see Figure 1. The temperature of water shall be (20 ± 10) °C.

5.1.2 Means of supporting the test piece

A suitable means is shown in Figure 1. In this case, the diameter of the pulleys shall be sufficiently large that they do not cause damage to the cover of the test piece and shall be at least 100 mm. One pulley shall be maintained at the bottom of the tank.

Dimensions in millimetres



Key

1	detonating cord	
2	tensile load	
3	pulley	

Figure 1 — Example of arrangement for the immersion of detonating cords

5.1.3 Weight, or other means

Able to subject the test piece to a tensile load enough to keep the test piece vertical under the water level.

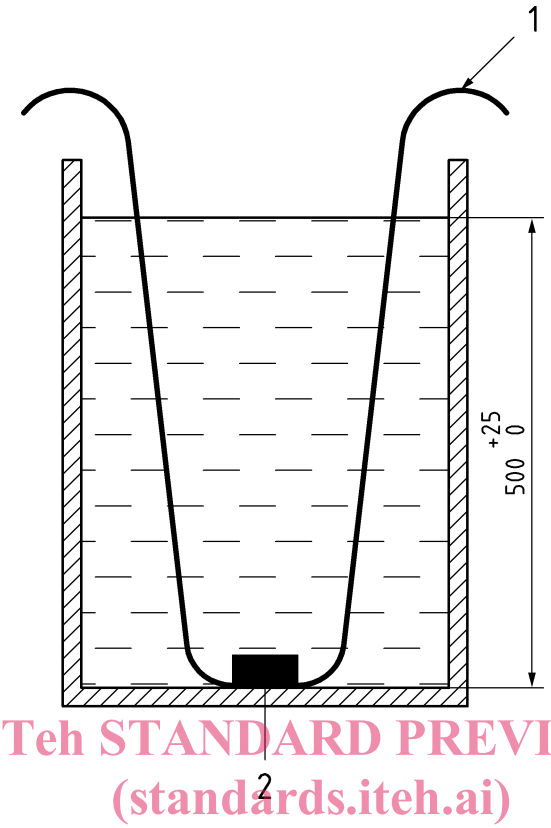
In case the detonating cord has been designed for use in a specific application, the weight, or other means, shall be that specified by the manufacturer.

5.2 Apparatus for immersion test on safety fuse

5.2.1 Tank of water

A tank full of water, open at the top, of a sufficient size to immerse the sample under at least 500 mm of water, see Figure 2. The temperature of water shall be (20 ± 10) °C.

Dimensions in millimetres



Key

1	test piece
2	weight

Figure 2 — Example of arrangement for the immersion of safety fuses

5.2.2 Weight

The weight shall have a mass of (500 ± 50) g.

5.2.3 Apparatus for the measurement of burning duration

As described in prEN 13630-12:2021 for the unconfined test.

6 Preparation of test samples

6.1 For detonating cords

Select five pieces of detonating cord to be tested, each with a length of at least (2 000 ± 50) 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 The number of test samples to be tested is based on 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.

6.2 For safety fuses

Select five pieces of safety fuses to be tested, each with a length of at least (1 500 ± 50) 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 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

7.1 General

This test method is applied at ambient laboratory conditions, when it is known that within the given temperature range for use, the coating of the detonating cord or safety fuse 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.

7.2 For immersion test on detonating cord

Immerse the test piece in the tank in such a way that at least 1 000 mm remain below the water level with the bottom part at 500 mm depth. Keep the two ends of the test piece out of the water and subject the test piece to the tensile load (5.1.3), as shown in Figure 1.

Keep the test piece immersed for $24^{+0,5}_{0}$ h.

Remove the test piece from the tank and exclude the length not immersed.

Test each of the five test pieces for reliability of initiation, as described in prEN 13630-7:2021, 7.3, using the length of detonating cord which was immersed in water.

7.3 For immersion test on safety fuse

Fill the tank with water to a height of 500^{+25}_{0} mm.

Immerse the test piece in the water in such a way that at least 1 000 mm remain below the water level and position the weight (5.2.2), so that the midpoint of the test piece is kept in contact with the bottom of the tank, as shown in Figure 2.

Keep the test piece in the water for 24 h.

Remove the test piece from the tank and exclude the length not immersed, the length shall be of 1 m minimum. Determine the length accurately to ±5 mm. Measure the burning duration of the immersed length using the unconfined test described in prEN 13631-12:2021. Calculate the burning duration for 1 m.

8 Test report

The test report should conform 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 13630-8:202X);

b) the number of trials out of five tests in which an indentation on the witness plate was obtained for the immersion test of detonating cords;

c) the tensile load applied in the immersion test of detonating cords;

d) the burning duration of the five tests for the immersion test of safety fuses;

e) the burning duration claimed by the manufacturer.