



SLOVENSKI STANDARD
SIST EN 13631-10:2004
01-januar-2004

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Explosives for civil uses - High explosives - Part 10: Method for the verification of the means of initiation

Explosivstoffe für zivile Zwecke - Sprengstoffe - Teil 10: Überprüfung der Zündweise

Explosifs a usage civil - Explosifs - Partie 10: Méthode de vérification du moyen d'amorçage

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Ta slovenski standard je istoveten z: EN 13631-10:2003
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ICS:

71.100.30

SIST EN 13631-10:2004

en

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English version

Explosives for civil uses - High explosives - Part 10: Method for the verification of the means of initiation

Explosifs à usage civil - Explosifs - Partie 10: Méthode de vérification du moyen d'amorçage

Explosivstoffe für zivile Zwecke - Sprengstoffe - Teil 10: Überprüfung der Zündweise

This European Standard was approved by CEN on 1 September 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 13631-10:2003) 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of an identical text or by endorsement, at the latest by May 2004, and conflicting national standards shall be withdrawn at the latest by May 2004.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 the relationship with EU Directive(s), see informative annex ZA, which is an integral part of this standard.

This European Standard is one of a series of standards on *Explosives for civil uses – High explosives*. The other parts of this series are:

- | | |
|---------------|--|
| prEN 13631-1 | Part 1: Requirements. |
| EN 13631-2 | Part 2: Determination of thermal stability of explosives. |
| prEN 13631-3 | Part 3: Determination of sensitiveness to friction of explosives. |
| EN 13631-4 | Part 4: Determination of sensitiveness to impact of explosives. |
| EN 13631-5 | Part 5: Determination of resistance to water. |
| EN 13631-6 | Part 6: Determination of resistance to hydrostatic pressure. |
| EN 13631-7 | Part 7: Determination of safety and reliability at extreme temperatures. |
| EN 13631-11 | Part 11: Determination of transmission of detonation. |
| prEN 13631-12 | Part 12: Specification of boosters with different initiating capability. |
| EN 13631-13 | Part 13: Determination of density. |
| EN 13631-14 | Part 14: Determination of velocity of detonation. |
| prEN 13631-15 | Part 15: Calculation of thermodynamic properties. |
| prEN 13631-16 | Part 16: Detection and measurement of toxic gases. |

Annex A is informative.

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 the verification of the initiation of a high explosive by a specified initiation system.

This method is applicable to high explosives in cartridge or bulk form, both unconfined and confined.

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).

prEN 13630-10; *Explosives for civil uses — Detonating cords and safety fuses — Part 10: Determination of the initiating capacity of detonating cords.*

prEN 13631-12; *Explosives for civil uses — High explosives — Part 12: Specification of boosters with different initiating capability.*

EN 13631-14; *Explosives for civil uses — High explosives — Part 14: Determination of velocity of detonation.*

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

EN 13857-1:2003; *Explosives for civil uses — Part 1: Terminology.*

EN ISO/IEC 17025; *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999).*

ISO 4200:1991; *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13857-1:2003 apply.

4 Principle

The explosive is initiated by the means specified by the manufacturer, i.e. detonator, booster or detonating cord.

The detonation is assessed by measuring the velocity of detonation and comparing it with the value claimed by the manufacturer.

5 Apparatus

5.1 Means of initiation, as specified by the explosives manufacturer in terms of initiating capability according to prEN 13631-12 (boosters), prEN 13630-10 (detonating cords) or prEN 13763-15 (detonators).

5.2 Steel tubes

The dimensions of the steel tubes shall be in accordance with ISO 4200:1991, Table 1, range of preferred thickness E, an extract from which is given in Table 1 of this standard.

Table 1 – Dimensions of steel tubes

Internal diameter (mm)	Wall thickness (mm)
17,3	2,0
22,9	2,0
29,1	2,3
37,2	2,6
43,1	2,6
54,5	2,9
70,3	2,9
82,5	3,2
107,1	3,6
131,7	4,0
159,3	4,5
206,5	6,3
260,4	6,3
309,7	7,1

Suitable holes shall be drilled in the tube to allow insertion of the sensors of the measuring equipment used for the determination of velocity of detonation.

5.3 Measuring equipment for velocity of detonation, as specified in EN 13631-14.

6 Preparation of test pieces

6.1 Cartridged explosive

The test sample shall comprise cartridges of the smallest diameter placed on the market.

6.2 Bulk explosive

The test shall be carried out in a cartridge or tube of diameter equal to the minimum borehole diameter specified by the explosives manufacturer for that product.

6.3 Test pieces

The test piece shall comprise a cartridge or column of cartridges of length L , which is at least the length necessary for the measurement of the velocity of detonation l , plus five times the cartridge diameter d , i.e.:

$$L \geq 5d + l$$

When the length of an individual cartridge is less than L , prepare each test piece by joining two cartridges together. In case of clipped cartridges, the end portion of two cartridges should be cut off to form a flat surface not less than the diameter of the charge and the cartridges joined by butting together and taping securely.

6.4 Assembly of the test piece and means of initiation

6.4.1 General

If the test piece comprises more than one cartridge, fit the sensors to the cartridge at one end and initiate the cartridge at the other end.

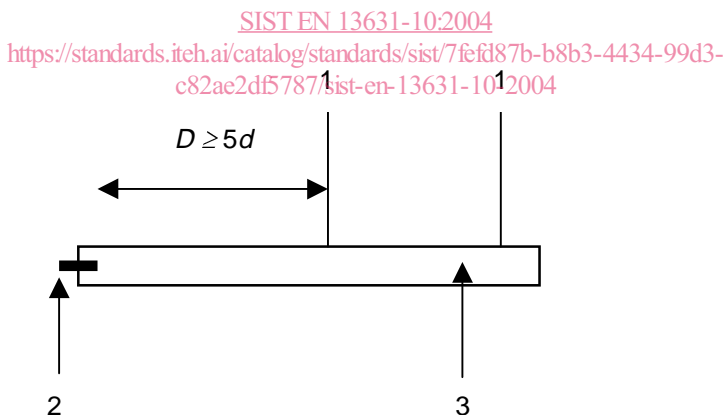
Confinement with steel tubes shall be used when the explosive does not support detonation in the unconfined test at the minimum diameter placed on the market.

The internal diameter of the steel tube should be such that the cartridge can be inserted into it without leaving an unnecessarily large annular space between the cartridge and the tube, in order to avoid channel effect.

6.4.2 Initiation by detonator

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Assemble the test piece with the detonator inserted at one end and the sensors at the other end, as shown in Figure 1.



Key

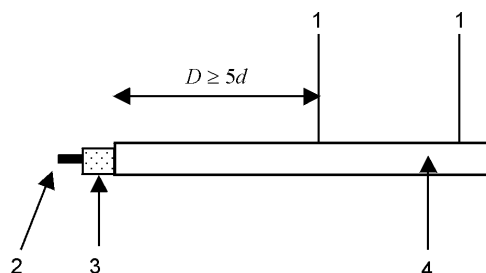
- D Distance between the end of the detonator and the first sensor
- d Diameter of the explosive under test
- 1 Sensors
- 2 Detonator
- 3 Explosive under test

Figure 1 – Test piece assembly for initiation by detonator

6.4.3 Initiation by booster

Assemble the test piece with the detonator and the booster attached at one end and the sensors at the other end, as shown in Figure 2.

In the case of clipped cartridges, the end portion of the cartridge shall be cut off to form a flat surface and the booster attached (for example by adhesive tape).



Key

- D Distance between the end of the booster and the first sensor
- d Diameter of the explosive under test
- 1 Sensors
- 2 Detonator
- 3 Booster
- 4 Explosive under test

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Figure 2 – Test piece assembly for initiation by booster

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