



**SLOVENSKI STANDARD**  
**oSIST prEN 13938-7:2021**  
**01-april-2021**

---

**Eksplzivni za civilno uporabo - Smodniki in raketna goriva - 7. del: Ugotavljanje lastnosti črnega smodnika**

Explosives for civil uses - Propellants and rocket propellants - Part 7: Determination of properties of black powder

Explosivstoffe für zivile Zwecke - Treibladungspulver und Raketentreibstoffe - Teil 7: Bestimmung der Eigenschaften von Schwarzpulver

Explosifs à usage civil - Poudre propulsive et propergol pour fusée - Partie 7: Détermination des propriétés de la poudre noire

<https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pr-en-13938-7-2021>

**Ta slovenski standard je istoveten z: prEN 13938-7**

---

**ICS:**

71.100.30	Eksplzivni. Pirotehnika in ognjemeti	Explosives. Pyrotechnics and fireworks
-----------	--------------------------------------	--

**oSIST prEN 13938-7:2021**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 13938-7:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 13938-7**

April 2021

ICS 71.100.30

Will supersede EN 13938-7:2004

English Version

## Explosives for civil uses - Propellants and rocket propellants - Part 7: Determination of safe and reliable ignition and complete deflagration of black powder

Explosifs à usage civil - Poudre propulsive et propergol pour fusées - Partie 7: Détermination d'un allumage sûr et fiable et d'une déflagration complète de la poudre noire

Explosivstoffe für zivile Zwecke - Treibladungspulver und Raketentreibstoffe - Teil 7: Bestimmung der sicheren und zuverlässigen Anzündung und vollständigen Deflagration von Schwarzpulver

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.

CEN members are the national standards bodies of 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, Turkey and United Kingdom.

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.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>3</b>
<b>1 Scope</b> .....	<b>4</b>
<b>2 Normative references</b> .....	<b>4</b>
<b>3 Terms and definitions</b> .....	<b>4</b>
<b>4 Principle</b> .....	<b>4</b>
<b>5 Apparatus</b> .....	<b>4</b>
<b>6 Preparation</b> .....	<b>4</b>
<b>6.1 Test samples</b> .....	<b>4</b>
<b>6.2 Means of ignition</b> .....	<b>4</b>
<b>6.3 Preparation of test samples</b> .....	<b>5</b>
<b>7 Procedure</b> .....	<b>5</b>
<b>8 Test report</b> .....	<b>6</b>
<b>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</b> .....	<b>7</b>
<b>Bibliography</b> .....	<b>8</b>

[oSIST prEN 13938-7:2021](https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021)

<https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021>

## European foreword

This document (prEN 13938-7:2021) 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 13938-7:2004.

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

- a) requirements regarding black powders have been reorganized and have been removed from the document since they are now addressed in prEN 13631-1:2021;
- b) the normative references have been updated;
- c) Clause 4, *Principle*, has been added;
- d) technical revision for clarification purposes;
- e) Annex A, *Range of applicability of test methods*, has been removed;
- f) 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 13938, *Explosives for civil uses — Propellants and rocket propellants*, is currently composed of the following parts:

- *Part 1: Requirements*
- *Part 2: Determination of resistance to electrostatic discharge*
- *Part 3: Determination of deflagration to detonation transition*
- *Part 4: Determination of burning rate under ambient conditions*
- *Part 5: Determination of voids and fissures*
- *Part 6: Solid rocket propellants — Guide for the determination of integrity of inhibitor coatings*
- *Part 7: Determination of safe and reliable ignition and complete deflagration of black powder*

**prEN 13631-7:2021 (E)****1 Scope**

This document specifies a test method for the verification of safe and reliable ignition and complete deflagration of black powder.

**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 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****bulk density**

mass of a free-flowing substance poured into a measuring cylinder divided by its corresponding volume

**3.2****free-flowing substance**

substance in such a form that it can be readily transferred from one cylinder to another by pouring to give one continuous, homogeneous mass

**4 Principle**

oSIST prEN 13938-7:2021

The transmission of deflagration of black powder is determined by igniting one of two compressed cylinders or cartridges having the same diameter and separated by an air gap.

For compressed black powder, the transmission is measured horizontally unconfined.

For granular black powder, the transmission is measured horizontally under confinement.

**5 Apparatus**

Two cylindrical steel pipes (P235S grade or equivalent) with an inner diameter of 25 mm, a wall thickness of 2 mm and an effective length of 50 mm (see Figure 1).

One of the tubes shall be closed at one end with a suitable metal plate or plug, perforated to allow the wires of an electric igniter to be passed through.

Paper of approximately 30 g/m<sup>2</sup> is required to close the pipes.

**6 Preparation****6.1 Test samples**

For compressed pellets of black powder, the pellets shall be tested as placed on the market but without any wrapping. For granular black powder, the black powder shall be tested in steel pipes.

**6.2 Means of ignition**

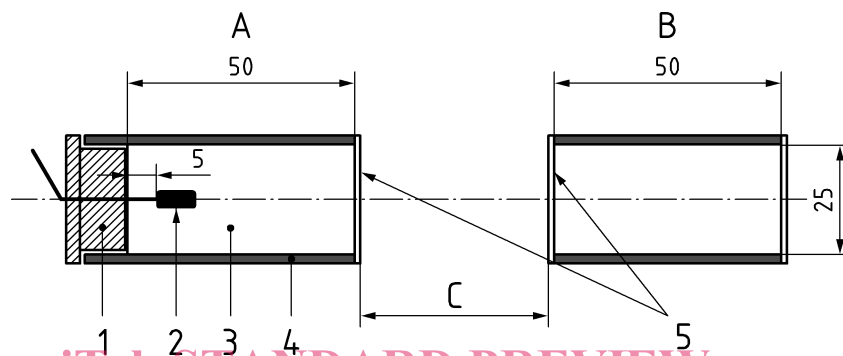
The donor is ignited by an igniter as specified by the manufacturer of the black powder.

### 6.3 Preparation of test samples

For granular black powder, cartridges are prepared as follows. For the donor, one end of a steel pipe is closed with a metal plate or plug fixed to the pipe in a suitable manner. The plate has a hole through which can be passed the wires of an electric igniter. The igniter is introduced in the open end of the tube, its wires passed through the hole in the plug and the igniter fixed 5 mm from the closure. One end of the acceptor pipe is closed with paper (approximately 30 g/m<sup>2</sup>) fixed with adhesive tape.

The pipes are filled in an upright position with an excess of black powder and the surface levelled by drawing a blade across the top. Finally, both pipes are closed with paper as described above (see Figure 1).

Dimensions in millimetres



#### Key

- A donor
- B acceptor
- C gap (variable)
- 1 metal plate or plug with hole for wires
- 2 electrical fuse head
- 3 black powder
- 4 steel pipe
- 5 paper covering fixed with adhesive tape

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

oSIST prEN 13938-7:2021

<https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021>

**Figure 1 — General set-up for the determination of safe and reliable ignition and complete deflagration of black powder for blasting**

## 7 Procedure

The donor is ignited. Commence the test with a distance (gap) between donor and acceptor of 50 cm, if the acceptor is ignited, repeat the test with stepwise longer distances until no ignition of the acceptor will be observed. Otherwise, if no ignition of the acceptor is observed, repeat the test by stepwise reducing the gap.

The longest distance (go-gap) at which the acceptor will be ignited three times, and the shortest distance (no-go-gap) at which the acceptor will be not ignited three times shall be recorded.

**prEN 13631-7:2021 (E)**

## **8 Test report**

The test report should conform to EN ISO/IEC 17025:2017, 5.10.2 and 5.10.3. In addition, the following information shall be given:

- a) reference to this document;
- b) complete identification of the sample, including grain size distribution if necessary;
- c) mass of black powder under test in cylinders or cartridges;
- d) loading density under test;
- e) ambient conditions during test;
- f) test result.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 13938-7:2021](https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021)

<https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021>



## 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 <sup>1)</sup> of Directive 2014/28/EU Annex II	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
I.2.	<a href="https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pr-en-13938-7-2021">oSIST prEN 13938-7:2021</a>	
II.1.(j)	7	
II.3.1.(a)	7	
II.3.4.(a)	7	
<sup>1)</sup> The Essential Safety Requirements are fulfilled together with the requirements in prEN 13631-1:2021.		

**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 13631-1:2021, *Explosives for civil uses — Explosives — Part 1: Requirements*
- [2] EN ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 13938-7:2021](https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021)

<https://standards.iteh.ai/catalog/standards/sist/bde01b39-77da-46f5-9f03-219aa0c853fd/osist-pren-13938-7-2021>