



**SLOVENSKI STANDARD**  
**oSIST prEN 16261-2:2021**  
**01-maj-2021**

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**Pirotehnični izdelki - Ognjemetni izdelki, kategorija F4 - 2. del: Zahteve**

Pyrotechnic articles – Fireworks, Category F4 – Part 2: Requirements

Pyrotechnische Gegenstände - Feuerwerkskörper, Kategorie F4 - Teil 2: Anforderungen

Articles pyrotechniques - Artifices de divertissement, Catégorie F4 - Partie 2: Exigences

**Ta slovenski standard je istoveten z: prEN 16261-2**

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EUROPÄISCHE NORM

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## Pyrotechnic articles - Fireworks, Category F4 - Part 2: Requirements

Articles pyrotechniques - Artifices de divertissement,  
Catégorie F4 - Partie 2: Exigences

Pyrotechnische Gegenstände - Feuerwerkskörper,  
Kategorie 4 - Teil 2: Anforderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 212.

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.

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

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

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**prEN 16261-2:2021 (E)****European foreword**

This document (prEN 16261-2:2021) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16261-2:2013.

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

- a clause has been added on the “Use of detonative explosives (type test)”;
- for fireworks that contain detonative explosives, the number of items to be tested has been added to Clause 9.2.

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 Directive 2013/29/EU on the harmonisation of the laws of the Member States relating to the making available on the market of pyrotechnic articles.

For relationship with Directive 2013/29/EU, see informative Annex ZA, which is an integral part of this document.

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## 1 Scope

This document specifies requirements for the construction, performance and protective packaging of Category F4 fireworks, as listed in EN 16261-1:—<sup>1</sup>.

This document does not apply for articles containing pyrotechnic compositions that include any of the following substances:

- arsenic or arsenic compounds;
- polychlorobenzenes;
- lead or lead compounds;
- mercury compounds;
- white phosphorus;
- picrates or picric acid.

In addition, any European regulation regarding forbidden substances is intended to be taken into account.

## 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.

EN 16261-1:—,<sup>1</sup> *Pyrotechnic articles — Fireworks, Category F4 — Part 1: Terminology*

EN 16261-3:—,<sup>2</sup> *Pyrotechnic articles — Fireworks, Category F4 — Part 3: Test methods*

EN 16261-4:—,<sup>3</sup> *Pyrotechnic articles — Fireworks, Category F4 — Part 4: Minimum labelling requirements and instructions for use*

ISO 2859-1:1999,<sup>4</sup> *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

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<sup>1</sup> Under preparation. Stage at the time of publication: prEN 16261-1:2021.

<sup>2</sup> Under preparation. Stage at the time of publication: prEN 16261-3:2021.

<sup>3</sup> Under preparation. Stage at the time of publication: prEN 16261-4:2021.

<sup>4</sup> As amended by ISO 2859-1:1999/AMD 1:2011.

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16261-1:—<sup>1</sup> apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 4 Pyrotechnic composition

No limits are given for the net explosive content (NEC)<sup>5</sup> of Category F4 articles in this document.

### 5 Construction (type test and batch test)

When tested in accordance with EN 16261-3:—<sup>2</sup>, 6.1 and 6.2 the article dimensions and gross mass shall be in accordance with the manufacturer's declaration (including tolerances).

The orientation of mortars shall be verified by inspection according to EN 16261-3:—<sup>2</sup>, 6.3 during type test.

When the orientation of mortars in combinations is not visible, the maximum firing angle shall be displayed on the label and verified by visual inspection according to EN 16261-3:—<sup>2</sup>, 6.7.

### 6 Means of ignition

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#### 6.1 Identification (type test and batch test)

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The means of ignition shall be clearly visible or shall be indicated by labelling or instructions where applicable.

Conformity to this requirement shall be verified by visual examination according to EN 16261-3:—<sup>2</sup>, 6.7.

#### 6.2 Protection (type test and batch test)

Where appropriate, the means of ignition shall be protected to avoid accidental ignition of the fireworks.

Conformity to this requirement shall be verified by visual examination according to EN 16261-3:—<sup>2</sup>, 6.7.

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<sup>5</sup> The NEC has an influence (directly or indirectly) on the safety distances. For Category F4 fireworks, it is agreed that no fixed minimum safety distances are defined, contrary to Category F1, F2 and F3 fireworks. The safe use of Category F4 fireworks is one of the major responsibilities of the person with specialist knowledge who should determine the minimum safety distance by using the information given in EN 16261-4:—, Clause 4.



## 7 Performance

### 7.1 Properties to be checked before functioning tests

#### 7.1.1 Loose pyrotechnic composition after mechanical conditioning (type test)

When tested in accordance with EN 16261-3:—<sup>2</sup>, 6.8 the loose pyrotechnic composition found outside the article after mechanical conditioning shall be weighed. The mass of the whole loose material shall comply with manufacturer's specifications (if any) and the mass of loose pyrotechnic composition shall not exceed 3 % of the NEC and not more than 1 g for each item tested. If the pyrotechnic composition cannot be separated from the loose material, the same limits shall apply to the whole loose material.

#### 7.1.2 Integrity (type test and batch test)

##### 7.1.2.1 General requirements

There shall be no holes, splits, dents or bulges either in the body of the firework case or in the end closures, except those technically necessary for the correct functioning of the firework. If the end closures are separate components, they shall be in place. There shall be no pyrotechnic leakage of the article to be tested when it is received for testing.

Conformity to these requirements shall be verified by visual examination according to EN 16261-3:—<sup>2</sup>, 6.7.

##### 7.1.2.2 Specific requirements

For combinations: each individual element shall be securely attached to the other elements or to the framework. Attachment by the transmitting fuse(s) alone shall be allowed if it is sufficient to keep the elements joined together during normal handling.

Conformity to above requirements shall be checked by visual examination according to EN 16261-3:—<sup>2</sup>, 6.7.

### 7.2 Properties to be checked during functioning tests

#### 7.2.1 Principal effects (type test and batch test)

When tested in accordance with EN 16261-3:—<sup>2</sup>, 6.10 the principal effects of each firework shall conform to those specified by the manufacturer or importer as described in EN 16261-1:—<sup>1</sup>.

#### 7.2.2 Functioning (type test and batch test)

For type test only, functioning test in accordance with EN 16261-3:—<sup>2</sup>, 6.10 shall be performed in as received conditions and, after mechanical and thermal conditions in accordance with EN 16261-3:—<sup>2</sup>, 6.8 and 6.9.

For type test and batch test, when tested in accordance with EN 16261-3:—<sup>2</sup>, 6.10, the article shall function as intended and shall not function in an erratic and unforeseeable manner.

#### 7.2.3 Stability during functioning (type test and batch test)

When used according to the instructions for use, the article shall remain in its initial position and maintain its integrity whilst functioning, if applicable. Conformity to these requirements shall be checked by the method described in EN 16261-3:—<sup>2</sup>, 6.10.

**prEN 16261-2:2021 (E)****7.2.4 Performance parameters (type test and batch test)**

The mandatory parameters listed in Annex A shall be measured and recorded according to EN 16261-3:—<sup>2</sup>, 6.4, 6.5, 6.10.3 and 6.10.4 (if applicable).

During type tests, all test results shall be within a tolerance of  $\pm 20\%$  of the measured average, except as otherwise justified by the manufacturers. The measured average value shall be displayed on the label. This value may be rounded. Tolerances regarding performance parameters are only applicable to articles in as received condition. During batch tests, all test results shall be within a tolerance of  $\pm 30\%$  from the value which is displayed on the label.

The above tolerances do not include the measurement uncertainties.

These tolerances are not applicable for sound pressure.

**7.2.5 Sound pressure level (type test and batch test)**

For articles which have report, explosion, and/or whistling effects as part of their performance, the sound pressure level shall be measured and recorded at a predefined distance from the firing point according to EN 16261-3:—<sup>2</sup>, 6.5.

The maximum measured value or a higher value if specified by the manufacturer shall be displayed on label.

During batch test, the measured value shall not exceed the displayed value.

**7.2.6 Extinguishing of flames (type test)**

When tested in accordance with EN 16261-3:—<sup>2</sup>, 6.6, the existence of flames observed more than 2 min after the end of functioning of the article shall be displayed on the label or in the instructions for use.

Conformity to this requirement shall be tested by visual examination according to EN 16261-3:—<sup>2</sup>, 6.7.

**7.2.7 Projected debris (type test and batch test)**

If the type test has shown projection of debris, the design of the firework shall be examined in accordance with EN 16261-3:—<sup>2</sup>, 6.2 to establish whether the debris is a result of the design or malfunction of the article.

If the debris is the result of design, the instructions for use shall be checked according to EN 16261-3:—<sup>2</sup>, 6.7, to establish whether the projection of debris has been addressed (including expected distance according to EN 16261-3:—<sup>2</sup>, 6.10.2).

When tested in accordance with EN 16261-3:—<sup>2</sup>, 6.7, the maximum debris distance found during batch tests shall not exceed the distance displayed on the label.

**7.2.8 Burning or incandescent matter (type test and batch test)**

The fall of burning or incandescent matter to the ground shall be checked during the functioning test (see EN 16261-3:—<sup>2</sup>, 6.10).

**7.3 Requirements for components (type test and batch test)**

The following requirements shall apply to components:

- construction (see Clause 5);
- thermal conditioning (type test only: see EN 16261-3:—<sup>2</sup>, 6.9);
- loose composition after mechanical conditioning (type test only: see 7.1.1).

## 7.4 Use of detonative explosives (type test)

Fireworks of category F4 shall not contain detonative explosives (as defined in EN 16261-1:—<sup>1</sup>, 3.2.10) other than black powder and flash composition, except when they meet the following conditions:

- (a) the detonative explosive cannot be easily extracted from the pyrotechnic article;
- (b) the article is designed and intended not to function in a detonative manner, or, if designed to detonate, it cannot as designed and manufactured initiate secondary explosives.

Requirements (a) and (b) shall be verified by examination of the design from the manufacturer's documentation and visual inspection.

In addition, requirement (b) shall be verified by test in accordance EN 16261-3:—<sup>2</sup>, 6.12 except when the article exhibits a combustive behaviour.

## 8 Protective pack (type test and batch test)

Protective packs (if any) shall provide on their label the necessary information as required by EN 16261-4:—<sup>3</sup>, 4.11. This shall be verified according to EN 16261-3:—<sup>2</sup>, 6.7, by visual examination.

The means of ignition of pyrotechnic articles within protective pack shall be protected according to 6.2. This shall be verified by visual examination according to EN 16261-3:—<sup>2</sup>, 6.7.

## 9 Type testing

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### 9.1 General

Each firework to be type tested shall meet the following requirements:

- Clause 5: Construction;
- Clause 6: Means of ignition;
- Clause 7: Performance;
- Clause 8: Protective pack;
- Information regarding suitable instructions and, where necessary, markings in respect of safe handling, storage, use (including safety distances) and disposal, as well as specification of all devices and accessories needed and operating instructions for safe functioning of the pyrotechnic article.

### 9.2 Number of items to be tested

In accordance with Table 1, a total number of nine pyrotechnic articles shall be tested.