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ILNAS-EN 15947-5:2015

Pyrotechnic articles - Fireworks, Categories F1, F2, and F3 - Part 5: Requirements for construction and performance

Articles pyrotechniques - Artifices de
divertissement, Catégories F1, F2, et F3 -
Partie 5 : Exigences de construction et de
performances

Pyrotechnische Gegenstände -
Feuerwerkskörper, Kategorien F1, F2 und
F3 - Teil 5: Anforderungen an
Konstruktion und Funktion

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National Foreword

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**Pyrotechnic articles - Fireworks, Categories F1, F2, and F3
- Part 5: Requirements for construction and performance**

Articles pyrotechniques - Artifices de divertissement,
Catégories F1, F2, et F3 - Partie 5 : Exigences de
construction et de performances

Pyrotechnische Gegenstände - Feuerwerkskörper,
Kategorien F1, F2 und F3 - Teil 5: Anforderungen an
Konstruktion und Funktion

This European Standard was approved by CEN on 26 September 2015.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 15947-5:2015) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by June 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15947-5:2010.

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 relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Directive 2007/23/EC on the placing on the market of pyrotechnic articles is repealed with effect from 1 July 2015 and replaced by Directive 2013/29/EU on the harmonization of the laws of the Member States relating to the making available on the market of pyrotechnic articles. However, by way of derogation from this, point 4 of Annex I to Directive 2007/23/EC was repealed by Directive 2013/29/EU with effect from 4 July 2013 and the new ESR 4 (a), 4 (b) and 4 (c) of Directive 2013/29/EU are already in force and applicable since 4th July 2013.

This European Standard is one of the series of standards as listed below:

- EN 15947-1, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 1: Terminology*;
- EN 15947-2, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 2: Categories and types of firework*;
- EN 15947-3, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 3: Minimum labelling requirements*;
- EN 15947-4, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 4: Test methods*;
- EN 15947-5, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 5: Requirements for construction and performance*.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements for construction, performance and primary or selection packaging of fireworks. It is applicable to fireworks in categories F1, F2 and F3 according to EN 15947-2:2015.

This European Standard does not apply for articles containing detonative explosives except for black powder or flash composition.

This European Standard does not apply for articles containing pyrotechnic composition that includes any of the following substances:

- arsenic or arsenic compounds;
- hexachlorobenzene;
- mixtures containing a mass fraction of chlorates greater than 80 %;
- mixtures of chlorates with metals;
- mixtures of chlorates with red phosphorus (except when used in Christmas crackers, party poppers or snaps);
- mixtures of chlorates with potassium hexacyanoferrate(II);
- mixtures of chlorates with sulfur (these mixtures are allowed for friction heads only);
- mixtures of chlorates with sulfides;
- lead or lead compounds;
- mercury compounds;
- white phosphorus;
- picrates or picric acid;
- potassium chlorate with a mass fraction of bromates greater than 0,15 %;
- sulfur with an acidity, expressed in mass fraction of sulphuric acid, greater than 0,002 %;
- zirconium with a particle size of less than 40 µm.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15947-1:2015, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 1: Terminology*

EN 15947-2:2015, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 2: Categories and types of firework*

EN 15947-3:2015, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 3: Minimum labelling requirements*

EN 15947-4:2015, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 4: Test Methods*

EN 16265:2015, *Pyrotechnic articles — Other pyrotechnic articles — Ignition devices*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15947-1:2015 apply.

4 Construction

4.1 Construction materials (type test and batch test)

4.1.1 General requirements

- The body of the firework case shall be made of paper, cardboard or plastics. The base (end closures) or means of fixing shall be made of non-metallic material. Where technically necessary, wood, staples, nails, aluminium coated foil or binding wires may be used. Conformity to this requirement shall be verified by visual examination.
- For articles fitted with a friction head: the primary pack shall be fitted with a striking surface for safety matches. Conformity to this requirement shall be verified by visual examination.
- The striking surface shall be resistant enough to allow ignition of all the articles included within the primary pack when tested in accordance with EN 15947-4:2015, 6.16. The striking surface on the pack shall be covered or the pack shall be sealed, verified by visual examination.

4.1.2 Specific requirements

- For bangers and flash bangers: cardboard wrapped in cord is permitted as construction material.
- For batteries and batteries requiring external support the tubes of mines, Roman candles or shot tubes shall have a maximum angle of 30° to the vertical, when tested in accordance with EN 15947-4:2015, 6.18. For combinations and combinations requiring external support this requirement applies to the tubes of mines, Roman candles and shot tubes.
- For Bengal matches and Bengal sticks: the stick shall be made of wood.
- For Christmas crackers and snaps: the overlapping strips shall be made of cardboard, paper or string.
- For jumping crackers: the firework case shall be made of paper only.
- For mini rockets: the tube containing the propellant charge shall be made of cardboard or, when no report charge is present, plastics.
- For novelty matches: the stick shall be made of cardboard or wood.