
**Fireworks — Categories 1, 2 and 3 —
Part 5:
Requirements for construction and
performance**

Artifices de divertissement — Catégories 1, 2 et 3 —

Partie 5: Exigences de construction et de performances

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Contents

Page

Foreword	v
1 Scope	1
2 Normative references	3
3 Terms and definitions	3
4 Construction	3
4.1 Construction materials (type test and batch test)	3
4.1.1 General requirements	3
4.1.2 Specific requirements	3
4.2 Length of handle (type test and batch test)	4
4.3 Permitted elements in batteries, batteries requiring external support, combinations and combinations requiring external support (type and batch test)	5
4.4 Dimensions for mini rockets (type test and batch test)	5
4.5 Specific requirements for compound firework (type and batch test)	5
5 Pyrotechnic composition (type test)	6
6 Means of ignition	8
6.1 Permitted means of ignition (type test and batch test)	8
6.2 Protection of initial fuse (type test and batch test)	10
6.3 Attachment of means of ignition (type test and batch test)	11
6.4 Fuse requirements (type test and batch test)	11
6.4.1 General requirements	11
6.4.2 Specific requirements	11
7 Performance	11
7.1 Properties to be checked before functioning tests	11
7.1.1 Loose pyrotechnic composition after mechanical conditioning (type test)	11
7.1.2 Integrity (type test and batch test)	12
7.1.3 Stabilisation of flight (type test and batch test)	12
7.1.4 Other requirements (type test)	12
7.2 Properties to be checked during functioning tests (type test and batch test)	13
7.2.1 Principal effects	13
7.2.2 Functioning	13
7.2.3 Angle of ascent or flight	13
7.2.4 Motion	13
7.2.5 Stability during functioning	13
7.2.6 Height of explosion	14
7.2.7 Sound pressure level	14
7.2.8 Explosions and other failures	14
7.2.9 Burning or incandescent matter	15
7.2.10 Extinguishing of flames	15
7.2.11 Projected debris	16
7.2.12 Burning rate of pyrotechnic composition	17
7.2.13 Pull-string or -strip	17
7.3 Properties to be checked after functioning tests (type test and batch test)	17
7.3.1 Droop	17
7.3.2 Plastics body	17
7.3.3 Rocket motor	17
7.3.4 Integrity after functioning	17
8 Primary pack or selection pack (type test and batch test)	18
9 Type testing	18
9.1 General	18
9.2 Number of items to be tested	19
9.3 Number of primary packs to be examined	19

9.4	Test report.....	20
10	Batch testing.....	20
10.1	General.....	20
10.2	Sampling plans.....	20
10.2.1	General sampling plans.....	20
10.2.2	Sample size for small batches.....	20
10.3	Unit of product.....	20
10.4	Nonconformities.....	21
10.5	Test report.....	22
10.6	Acceptance or rejection of a batch.....	22
10.6.1	Nonconforming units.....	22
10.6.2	Critical nonconforming units.....	22
10.6.3	Major nonconforming units.....	22
10.6.4	Minor nonconforming units.....	22
10.6.5	Fireworks supplied in primary packs or selection packs.....	23

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 264, *Fireworks*.

A list of all parts in the ISO 25947 series can be found on the ISO website.

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Fireworks — Categories 1, 2 and 3 —

Part 5: Requirements for construction and performance

1 Scope

This document specifies requirements for the construction, performance and primary packaging of fireworks of category 1, 2 and 3 of the following types:

- aerial wheels;
- bangers;
- batteries;
- batteries requiring external support;
- Bengal flames;
- Bengal matches;
- Bengal sticks;
- Christmas crackers;
- combinations;
- combinations requiring external support;
- compound fireworks;
- crackling granules;
- double bangers;
- double flash bangers;
- flash bangers;
- flash pellets;
- fountains;
- ground movers;
- ground spinners;
- hand-held sparklers;
- jumping crackers;
- jumping ground spinners;
- mines;
- mini rockets;
- nezumi-hanabi;

- non-hand-held sparklers;
- novelty matches;
- party poppers;
- rockets;
- Roman candles;
- senko-hanabi;
- serpents;
- shot tubes;
- snaps;
- spinners;
- table bombs;
- throwdowns;
- wheels.

This document does not apply to 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, snaps and throwdowns);
- 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.

This document does not apply for theatrical pyrotechnic articles which are designed for indoor or outdoor stage use, including film and television productions or similar use.

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.

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

ISO 25947-1, *Fireworks, Categories 1, 2 and 3 — Part 1: Terminology*

ISO 25947-2, *Fireworks, Categories 1, 2 and 3 — Part 2: Categories and types of firework*

ISO 25947-3, *Fireworks, Categories 1, 2 and 3 — Part 3: Minimum labelling requirements*

ISO 25947-4:2017, *Fireworks, Categories 1, 2 and 3 — Part 4: Test Methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 25947-1 apply.

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

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

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, plastics or other non-metallic materials which do not produce hard or brittle fragments. 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 ISO 25947-4:2017, 6.17. 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.
- Double flash bangers shall have a base plate.
- For double flash bangers, the inside diameter of the tube shall not exceed 30 mm. Conformity to this requirement shall be verified by the method described in ISO 25947-4:2017, 6.2.5.
- 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 ISO 25947-4:2017, 6.19. For combinations and combinations requiring external support, this requirement applies to the tubes of mines, Roman candles and shot tubes.