

English Version

Pyrotechnic articles - Fireworks, Categories F1, F2 and F3 - Part 2: Categories and types of firework

Articles pyrotechniques - Artifices de divertissement,
Catégories F1, F2 et F3 - Partie 2 : Catégories et types
d'artifices de divertissement

Pyrotechnische Gegenstände - Feuerwerkskörper,
Kategorien F1, F2 und F3 - Teil 2: Kategorien und
Feuerwerkstypen

This European Standard was approved by CEN on 8 August 2022.

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

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Contents	Page
European foreword	3
1 Scope.....	5
2 Normative references.....	6
3 Terms and definitions	6
4 Categories	7
5 Category F1.....	7
5.1 List of types which can be categorized in category F1.....	7
5.2 List of types which shall not be categorized in category F1	8
5.3 Procedure to determine whether a new type can be categorized as category F1	8
6 Types of firework.....	9
Annex ZA (informative) Relationship between this European Standard and the essential safety requirements of Directive 2013/29/EU aimed to be covered.....	14

European foreword

This document (EN 15947-2:2022) 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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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

This document supersedes EN 15947-2:2015.

In comparison with the previous edition EN 15947-2:2015, the following technical modifications have been made:

- preliminary effect has been added to the descriptions of construction of banger and flash banger in Table 2;
- a new type, senko-hanabi has been added to the list of types of fireworks in Table 2;
- the descriptions of the constructions of shot tube and mine have been changed in Table 2;
- the description of the construction of Bengal flame in Table 2 has been changed in order to allow them to be held in the hand;
- the description of the construction of throwdown has been changed in Table 2;
- a new type, report rocket has been added to the list of types of fireworks in Table 2.

This document has been prepared under a Standardization Request (M/583) concerning pyrotechnic articles given to CEN by the European Commission and the European Free Trade Association, and supports Essential Safety requirements of Directive 2013/29/EU.

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

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*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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1 Scope

This document gives descriptions of the fireworks types and establishes a system for the categorization of fireworks into category F1. It is applicable to fireworks of the categories F1, F2 and F3 as defined by Article 6 Paragraph (1) clause (a) subclause (i) to (iii) of Directive 2013/29/EU. This document is applicable only for the categories given in brackets for each type hereinafter:

- aerial wheel (only category F3);
- banger (only categories F2 and F3);
- battery and battery requiring external support (only categories F2 and F3);
- Bengal flame (categories F1, F2 and F3);
- Bengal match (only category F1);
- Bengal stick (only categories F1 and F2);
- Christmas cracker (only category F1);
- combination and combination requiring external support (only categories F2 and F3);
- compound firework (only categories F2 and F3);
- crackling granule (only categories F1 and F2);
- double banger (only category F2);
- flash banger (only categories F2 and F3);
- flash pellet (only categories F1 and F2);
- fountain (categories F1, F2 and F3);
- ground mover (only category F2);
- ground spinner (only categories F1 and F2);
- hand-held sparkler (only categories F1 and F2);
- jumping cracker (only category F2);
- jumping ground spinner (only category F2);
- mine (only categories F2 and F3);
- mini rocket (only category F2);
- non hand-held sparkler (only categories F1 and F2);
- novelty match (only category F1);
- party popper (only category F1);

- report rocket (only category F3);
- rocket (only categories F2 and F3);
- Roman candle (only categories F2 and F3);
- senko-hanabi (only category F1);
- serpent (only category F1);
- shot tube (only category F2 and F3);
- snap (only category F1);
- spinner (only category F2);
- table bomb (only category F1);
- throwdown (only category F1);
- wheel (only category F2 and F3).

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 15947-1:2022, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 1: Terminology*

EN 15947-3:2022, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 3: Minimum labelling requirements*

EN 15947-4:2022, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 4: Test methods*

EN 15947-5:2022, *Pyrotechnic articles — Fireworks, Categories F1, F2 and F3 — Part 5: Requirements for construction and performance*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15947-1:2022 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/ui>

4 Categories

Fireworks are categorized into the following:

- **category F1:** Article 6 Paragraph (1) Clause (a) (i) of Directive 2013/29/EU;
- **category F2:** Article 6 Paragraph (1) Clause (a) (ii) of Directive 2013/29/EU;
- **category F3:** Article 6 Paragraph (1) Clause (a) (iii) of Directive 2013/29/EU.

5 Category F1

5.1 List of types which can be categorized in category F1

The following types of firework can be categorized in category F1, when meeting the requirements in EN 15947-3:2022 and EN 15947-5:2022 for category F1:

- Bengal flame;
- Bengal match;
- Bengal stick;
- Christmas cracker;
- crackling granule;
- flash pellet;
- fountain;
- ground spinner;
- hand-held sparkler;
- non-hand-held sparkler;
- novelty match;
- party popper;
- senko-hanabi;
- serpent;
- snap;
- table bomb;
- throwdown.

5.2 List of types which shall not be categorized in category F1

Types of firework that shall not be categorized in category F1 are:

- aerial wheel;
- banger;
- battery;
- battery requiring external support;
- combination;
- combination requiring external support;
- compound firework;
- double banger;
- flash banger;
- ground mover;
- jumping cracker;
- jumping ground spinner;
- mine;
- mini rocket;
- report rocket;
- rocket;
- Roman candle;
- shot tube;
- spinner;
- wheel.

5.3 Procedure to determine whether a new type can be categorized as category F1

A new type of firework can only be categorized as category F1 if the answers to all the questions in Table 1 are negative. The questions shall be answered in the order given in Table 1.

Table 1 — Questions for articles that are not in category F1

Question	Answer
1) Is the article in the list of excluded articles (see 5.2)?	Yes → not in category F1
2) Does the article resemble a toy or food?	Yes → not in category F1
3) Does the sound pressure level exceed 120 dB ($A_{I_{max}}$) at the safety distance of category F1 fireworks (see EN 15947-5:2022, 7.2.7)?	Yes → not in category F1
4) Is debris, burning, or incandescent matter projected laterally more than the safety distance of category F1 fireworks (see EN 15947-5:2022, 7.2.9, 7.2.11)?	Yes → not in category F1
5) Does the article, or parts of it, move outside the safety distance of category F1 fireworks from the testing point (see EN 15947-5:2022, 7.2.4)?	Yes → not in category F1
6) Does the article lift from the ground by more than 0,5 m (see EN 15947-5:2022, 7.2.4)?	Yes → not in category F1

6 Types of firework

Fireworks are further subdivided into various types, as described in Table 2.

Table 2 — Types of firework

Type name	Description of construction	Principal effect(s)
Aerial wheel Soucoupe volante Steigende Krone	tubes containing propellant charges and spark-, flame- and/or noise-producing pyrotechnic compositions, the tubes being fixed to a supporting structure	rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect in the air
Banger Pétard Knallkörper	non-metallic case containing black powder as report charge, with or without a preliminary effect (e.g. whistling, flames, sparks, crackling or combinations thereof except report)	report
Battery Batterie Batterie	assembly including several elements, each of the same type and corresponding to one of the types of firework listed in this table and in accordance with EN 15947-5:2022, 4.3, with one or two points of ignition, which does not require external support	as for the individual elements
Battery requiring external support Batterie nécessitant un support externe Batterie, die externe Stabilisierung erfordert	assembly including several elements, each of the same type and corresponding to one of the types of firework listed in this table and in accordance with EN 15947-5:2022, 4.3, with one or two points of ignition, which requires external support	as for the individual elements

Type name	Description of construction	Principal effect(s)
Bengal flame Feu de Bengale Bengalfeuer	tube containing slow-burning pyrotechnic composition designed to be placed on the ground, or to be fixed in the ground, or to be fixed to a support, or to be held in the hand	emission of coloured flame
Bengal match Allumette Bengale Bengalholz	short wooden stick partially coated (along one end) with slow-burning pyrotechnic composition, with a dot of friction-sensitive pyrotechnic composition at the tip and designed to be held in the hand	emission of coloured flame and sparks
Bengal stick Baguette Bengale Bengalfackel	wooden stick partially coated (along one end) with slow-burning pyrotechnic composition and designed to be held in the hand	emission of coloured flame and sparks
Christmas cracker Pétard papillote Knallbonbon	paper or foil tube, crimped at each end, enclosing novelties and with one or more snaps running along the length of the tube	report when pulled apart and release of the novelties
Combination Combinaison Kombination	assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in this table and in accordance with EN 15947-5:2022, 4.3, with one or two points of ignition, which does not require external support	as for the individual elements
Combination requiring external support Combinaison nécessitant un support externe Kombination, die externe Stabilisierung erfordert	assembly including several elements, not all of the same type, each corresponding to one of the types of firework listed in this table and in accordance with EN 15947-5:2022, 4.3, with one or two points of ignition, which requires external support	as for the individual elements
Compound firework Composition d'artifices Verbundfeuerwerk	assembly including several fireworks which have been EU-type certified as complying with EN 15947-1:2022, EN 15947-2:2022, EN 15947-4:2022 and EN 15947-5:2022, which are securely fixed on the same base, and connected together by linking the protruding and reserve fuses of each firework, or with separately CE marked P1 pyrotechnic cords according to EN 16265:2015, 4.3.3, or a mixture of both, with one or more points of ignition, which does not require external support	as for the individual articles
Crackling granules Crépitant Knatterartikel	bag or other container, enclosing small granules of pyrotechnic composition	crackling

Type name	Description of construction	Principal effect(s)
Double banger Pétard aérien à double effet de bang sonore Doppelschlag	tube containing two portions of black powder connected by a delay fuse	report, then ascent followed by second report
Flash banger Pétard à composition flash Blitzknallkörper	non-metallic case containing perchlorate/metal-based or nitrate/metal-based report charge, with or without a preliminary effect (e.g. whistling, flames, sparks, crackling or combinations thereof except report)	report and flash of light
Flash pellet Clignoteur pyrotechnique Blitztablette	pellet of intermittently-burning pyrotechnic composition	multiple flashes of light
Fountain Fontaine Fontäne	non-metallic case containing spark- and flame-producing pyrotechnic composition and designed to be placed on the ground, or to be fixed in the ground, or to be fixed to a support, or to be held in the hand	emission of sparks and flames with aural effect other than report or without any aural effect
Ground mover Mobile pyrotechnique Pyrodrufter	novelty item containing non-metallic tube or tubes with gas- or spark- or flame producing pyrotechnic composition that is designed to move on the ground	movement on the ground with emission of sparks or flames, with or without aural effects (other than report)
Ground spinner Tourbillon Bodenfeuerwirbel	non-metallic tube or tubes containing gas-, spark- and/or flame-producing pyrotechnic composition, with or without noise-producing pyrotechnic composition	rotation on the ground and emission of sparks and/or flames with or without aural effect (other than report)
Hand-held sparkler Cierge magique Wunderkerze, in der Hand zu halten	rigid wire partially coated along one end with slow-burning pyrotechnic composition, with or without an ignition head and designed to be held in the hand	emission of sparks, with or without aural effect (other than report)
Jumping cracker Pétard sauteur Knallfrosch	paper tube containing black powder, folded back on itself several times and bound together	reports in succession, with jumping motions
Jumping ground spinner Tourbillon sauteur Sprungrad	non-metallic tube containing gas-, spark- and/or flame-producing pyrotechnic composition, with or without whistling pyrotechnic composition	rotation on the ground frequently interrupted by a jumping motion, and emission of sparks and/or flames, with or without an aural effect (other than report)

Type name	Description of construction	Principal effect(s)
Mine Pot à feu en mortier Feuertopf	tube containing propellant charge and pyrotechnic units of diameters less than half the inner diameter of the tube and/or non-pyrotechnic objects and designed to be placed on the ground or to be fixed in the ground	ejection of the content in a single burst producing a widely dispersed visual and/or aural effect in the air
Mini rocket Mini fusée Mini-Rakete	tube containing pyrotechnic composition equipped with stick(s) and designed to be propelled in the air	ascent, with visual and/or aural effects, with or without production of aural effects in the air
Non-hand-held sparkler Cierge magique non tenu à la main Wunderkerze, nicht in der Hand zu halten	rigid wire partially coated along one end with slow-burning pyrotechnic composition, with or without an ignition head	emission of sparks, with or without aural effect (other than report)
Novelty match Allumette détonante Scherzzündholz	match with a dot of pyrotechnic composition, designed to be held in the hand	report and/or visual effect
Party popper Party popper Party-Knaller	article operated by a pull-string with an abrasive surface in sliding contact with a friction-sensitive pyrotechnic composition and designed to be held in the hand	report, with ejection of streamers and/or confetti
Rocket Fusée Rakete	tube containing pyrotechnic units and/or pyrotechnic composition with or without a bursting charge, equipped with a rocket motor and stick(s) or other means for stabilization of flight	ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air
Report rocket Fusée à effet de bang sonore Knall-Rakete	tube containing a burst/report charge with or without additional report units with delay fuses, equipped with a rocket motor and stick(s)	ascent followed by one or more reports in the air
Roman candle Chandelle Romaine Römisches Licht	tube containing alternate propellant charges, pyrotechnic units and transmitting fuses with or without preliminary effect	ejection of the pyrotechnic units in succession, producing a series of visual and/or aural effects in the air
Senko-hanabi Senko-hanabi Senko-hanabi	pyrotechnic composition partially coated (along one end) on straw designed to be held in the hand or pyrotechnic composition wrapped with paper designed to be held in the hand	Emission of sparks from brilliant melted products after burning composition
Serpent Serpent Schlange	preformed shape of pyrotechnic composition with or without a support	generation of expanded residue

Type name	Description of construction	Principal effect(s)
Shot tube Chandelle monocoup Feuerwerksrohr	tube containing propellant charge and (a) pyrotechnic unit(s), with or without a bursting charge, of which at least one unit has a diameter of at least half of the inner diameter of the tube	ejection of the pyrotechnic unit(s) in a single burst producing a visual and/or aural effect in the air
Sparkler: see 'hand-held sparkler' and 'non-hand-held sparkler'		
Snap Pétard à tirette Knallziehband	two overlapping strips of cardboard or paper, or two strings, with a friction-sensitive pyrotechnic composition in sliding contact with an abrasive surface and designed to be held in the hand ^a	report, when device is pulled apart
Spinner Tourbillon volant Wirbel	tube or tubes containing pyrotechnic composition, and with or without aerofoils attached	rotation and ascent, with emission of sparks and/or flames, with or without aural effect (other than report)
Table bomb Bombe de table Tischfeuerwerk	paper, cardboard or plastic tube with fixed base and closed top, containing a propellant charge and non-pyrotechnic objects	report with ejection of streamers, confetti and/or novelties
Throwdown Pois fulminant Knallerbse	impact-sensitive pyrotechnic composition and grains of inert material wrapped in soft material made of tissue paper or foil	report, when thrown onto the ground
Wheel Soleil Sonne	assembly including a non-metallic tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so that it can rotate, or is already attached to a support	rotation around a fixed point or axis and emission of sparks and flames, with or without aural effect(s) (other than report)

^a A snap can be a pyrotechnic unit in a Christmas cracker.

Annex ZA (informative)

Relationship between this European Standard and the essential safety requirements of Directive 2013/29/EU aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/583 "Standardization mandate assigned to CEN concerning pyrotechnic articles" to provide one voluntary means of conforming to essential safety requirements of Directive 2013/29/EU of the European Parliament and of the Council of 12 June 2013 on the harmonization of the laws of the Member States relating to the making available on the market of pyrotechnic articles (recast).

Once this standard is cited in the Official Journal of the European Union under that Directive 2013/29/EU, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential safety requirements of that Directive 2013/29/EU, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2013/29/EU

Essential safety Requirements of Directive 2013/29/EU	Clause(s)/subclause(s) of this EN	Remarks/Notes
(2)	Clause 6, Table 2	Exclusion of dangerous construction materials, see also EN 15947-5:2022, Clause 4 and 5
(5 A.1.a-i)	5.3, Table 1 Line 4 and 5	Safety distance
(5 A.1.a-ii)	5.3, Table 1 Line 3	Sound level limits
(5 A.1.a-iii)	5.1 and 5.2	Forbidden articles in category F1
5.A.1 1 st sentence	Clause 4	
5 A.2	Clause 6, Table 2	Exclusion of dangerous construction materials, see also EN 15947-5:2022, Clause 4 and 5

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.