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Fireworks - Part 21: Jumping ground spinners - Specification and test methods

Feuerwerkskörper - Teil 21: Sprungräder - Anforderungen und Prüfverfahren

Artifices de divertissement - Partie 21: Tourbillons sauteurs - Spécifications et méthodes d'essai

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Fireworks - Part 21: Jumping ground spinners - Specification and test methods

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This European Standard was approved by CEN on 12 September 2005.

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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 Central Secretariat has the same status as the official versions.

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Foreword

This European Standard (EN 14035-21:2005) has been prepared by Technical Committee CEN/TC 212 “Fireworks”, 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of an identical text or by endorsement, at the latest by May 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.

This European Standard is one of a series of standards as listed below.

EN 14035-1, *Fireworks - Part 1: Terminology.*

EN 14035-2, *Fireworks - Part 2: Categorisation.*

EN 14035-3, *Fireworks - Part 3: Aerial wheels - Specification and test methods.*

EN 14035-4, *Fireworks - Part 4: Bangers and banger batteries - Specification and test methods.*

prEN 14035-5, *Fireworks - Part 5: Batteries and combinations - Specification and test methods.*

EN 14035-6, *Fireworks - Part 6: Bengal flames - Specification and test methods.*

EN 14035-7, *Fireworks - Part 7: Bengal matches - Specification and test methods.*

EN 14035-8, *Fireworks - Part 8: Bengal sticks - Specification and test methods.*

EN 14035-9, *Fireworks - Part 9: Crackling granules - Specification and test methods.*

EN 14035-10, *Fireworks - Part 10: Double bangers - Specification and test methods.*

EN 14035-12, *Fireworks - Part 12: Flash bangers and flash banger batteries - Specification and test methods.*

EN 14035-13, *Fireworks - Part 13: Flash pellets - Specification and test methods.*

EN 14035-15, *Fireworks - Part 15: Fountains - Specification and test methods.*

EN 14035-17, *Fireworks - Part 17: Ground spinners - Specification and test methods.*

EN 14035-18, *Fireworks - Part 18: Hand-held fountains - Specification and test methods.*

EN 14035-19, *Fireworks - Part 19: Hand-held sparklers - Specification and test methods.*

EN 14035-20, *Fireworks - Part 20: Jumping crackers - Specification and test methods.*

EN 14035-21, *Fireworks - Part 21: Jumping ground spinners - Specification and test methods.*

EN 14035-22, *Fireworks - Part 22: Mines - Specification and test methods.*

EN 14035-23, *Fireworks - Part 23: Non-hand-held sparklers - Specification and test methods.*

EN 14035-24, *Fireworks - Part 24: Novelty matches - Specification and test methods.*

EN 14035-25, *Fireworks - Part 25: Party poppers - Specification and test methods.*

EN 14035-27, *Fireworks - Part 27: Rockets - Specification and test methods.*

EN 14035-28, *Fireworks - Part 28: Roman candles - Specification and test methods.*

EN 14035-29, *Fireworks - Part 29: Serpents - Specification and test methods.*

EN 14035-31, *Fireworks - Part 31: Shell–in-mortars - Specification and test methods.*

EN 14035-33, *Fireworks - Part 33: Spinners - Specification and test methods.*

EN 14035-34, *Fireworks - Part 34: Table bombs - Specification and test methods.*

EN 14035-35, *Fireworks - Part 35: Throwdowns - Specification and test methods.*

EN 14035-36, *Fireworks - Part 36: Wheels - Specification and test methods.*

prEN 14035-37, *Fireworks - Part 37: Whistlers - Specification and test methods.*

prEN 14035-38, *Fireworks - Part 38: Shot tubes - Specification and test methods.*

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

1 Scope

This European Standard specifies requirements for the construction, performance, primary packaging and labelling of jumping ground spinners and the corresponding test methods. It is applicable to fireworks which are classified as jumping ground spinners of category 2 in EN 14035-2.

It is not applicable to jumping ground spinners containing any report charge.

It is not applicable to jumping ground spinners containing pyrotechnic composition that includes any of the following substances:

— arsenic or arsenic compounds;

— mixtures containing a mass fraction of chlorates greater than 80 %;

— mixtures of chlorates with metals;

— mixtures of chlorates with red phosphorus;

— mixtures of chlorates with potassium hexacyanoferrate(II);

— mixtures of chlorates with sulfur;

— 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 as mass fraction of sulfuric acid, greater than 0,002 %;

— zirconium with a particle size of less than 40 µm.

NOTE In EN 14035-2, jumping ground spinners are classified as follows:

— brief description: non-metallic tubes containing gas- and sparks-producing pyrotechnic composition, with or without an aural pyrotechnic composition;

— principal effects: rotation on the ground frequently interrupted by a jumping motion and emission of sparks and flames with or without whistling effect.

Schemes for type testing of jumping ground spinners and batch testing of jumping ground spinners are specified in Annex A and Annex B respectively.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14035-1:2003, *Fireworks — Part 1: Terminology.*

EN 14035-2, *Fireworks — Part 2: Categorisation.*

EN ISO 845, *Cellular plastics and rubbers — Determination of apparent (bulk) density (ISO 845:1988).*

EN ISO 868, *Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003).*

EN ISO 2439, *Flexible cellular polymeric materials - Determination of hardness (indentation technique) (ISO 2439:1997, including Technical Corrigendum 1:1998).*

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 European Standard, the terms and definitions given in EN 14035-1:2003 apply.

4 Construction

4.1 Means of ignition

The means of ignition shall be identified by a protruding fuse.

Conformity to this requirement shall be verified by visual examination.

4.2 Attachment of initial fuse

The attachment of the initial fuse to the jumping ground spinner shall be secure when tested in accordance with 8.1.

4.3 Protection of initial fuse

4.3.1 General

The initial fuse shall be protected in one of the ways specified in 4.3.2, 4.3.3 or 4.3.4.

4.3.2 Initial fuse protected by fuse cover

An orange fuse cover shall be in place over the initial fuse.

Conformity to this requirement shall be verified by visual examination.

4.3.3 Initial fuse protected by primary pack or selection pack

The jumping ground spinner shall be contained in a primary pack or selection pack complying with Clause 6.

Conformity to this requirement shall be verified by visual examination.

4.3.4 Initial fuse designed to resist side ignition

When tested in accordance with 8.4, the initial fuse shall not ignite.

4.4 Materials of firework case

The body of the firework case shall be made of paper or cardboard.

If the end closures are separate components, they shall be made of clay, cardboard, glue, compressed sawdust or similar material.

Conformity to these requirements shall be verified by visual examination.

4.5 Integrity

There shall be no holes, splits, dents or bulges in the body of the firework case, except those technically necessary for the correct functioning of the jumping ground spinner. There shall be no holes or splits in the end closures. If the end closures are separate components, they shall be securely in place.

Conformity to these requirements shall be verified by visual examination.

4.6 Net explosive content

When determined in accordance with 8.3, a category 2 jumping ground spinner shall have a net explosive content of not more than 25,0 g, excluding the initial fuse, and each pyrotechnic unit shall have a net explosive content of not more than 8,0 g.

4.7 Visibility of fuse

The point of ignition shall be visible from the top of the jumping ground spinner.

Conformity to this requirement shall be verified by visual examination.

5 Performance

5.1 Initial fuse

When tested in accordance with 8.2, the initial fuse shall ignite within 10 s and the ignition shall be visible.

When tested in accordance with 8.2, the duration of the initial fuse burning shall be 3,0 s to 8,0 s.

5.2 Principal effects

When tested in accordance with 8.2, the principal effects of the jumping ground spinner, as given in EN 14035-2, shall be rotation on the ground frequently interrupted by a jumping motion and emission of sparks and flames with or without an aural effect.

5.3 Functioning

When tested in accordance with 8.2, the jumping ground spinner shall function completely.

5.4 Explosions

When tested in accordance with 8.2, the jumping ground spinner shall not produce an explosion.

5.5 Motion of the jumping ground spinner

When tested in accordance with 8.2, a category 2 jumping ground spinner shall not move more than 6,0 m away from the testing point.

When tested in accordance with 8.2, the height of ascent of the jumping ground spinner shall be not greater than 2,5 m.

5.6 Burning matter

When tested in accordance with 8.2, no burning or incandescent matter from a category 2 jumping ground spinner shall fall to the ground more than 6,0 m from the testing point.

When tested in accordance with 8.2, any flames caused by the functioning of the jumping ground spinner shall be extinguished within 60,0 s of the jumping ground spinner ceasing to function.

5.7 Projected debris

When tested in accordance with 8.2, no debris from a category 2 jumping ground spinner shall be projected laterally more than 8,0 m from the testing point and any particle of debris which is projected laterally more than 6,0 m from the testing point shall not exceed a mass of 1,0 g.

6 Primary pack or selection pack

If a primary pack or selection pack is required to protect the initial fuse(s) of the jumping ground spinner(s) (see 4.3.3), the pack shall completely enclose the jumping ground spinner(s). There shall be no holes or splits in the pack, except those which are intended to enable the packaging to be opened and those which are otherwise technically necessary.

Conformity to these requirements shall be verified by visual examination.

7 Minimum labelling requirements

7.1 General

Jumping ground spinners and their primary packs, if any, shall be marked with the information specified in 7.2 to 7.5 and, if relevant, 7.7 and/or 7.8.

The specified information shall be given in the language(s) of the country in which the jumping ground spinners or primary packs are offered for retail sale. For each language, it shall be presented as a whole and shall not be interrupted by other text. Additional text given in another language shall not conflict with the specified information.

Conformity to the requirements specified in 7.1 to 7.5, 7.6.1, 7.7.2 and 7.8 shall be verified by visual examination.

NOTE Examples of typical labels for bangers, for which many of the marking requirements are similar to those specified for jumping ground spinners in this European Standard, are given in EN 14035-4.

7.2 Type name and category

The type name shall be marked, in upper case, as 'JUMPING GROUND SPINNER'. If a trade name is used in addition to the type name, it shall not conflict with the principal effects of a jumping ground spinner or with the name of another type of firework.

The appropriate category shall be marked, in upper case, as 'CATEGORY 2' or 'CAT 2'.

7.3 Safety information

7.3.1 General

Safety information shall be emphasized by use of a heading, or bold type, or similar. If necessary, instructions in addition to those specified in 7.3.2 to 7.3.3 may be given.

7.3.2 Jumping ground spinners

Labelling shall include at least the following safety information in the order as given:

— 'For outdoor use only';

— 'Remove orange fuse cover'[1)];

— 'Place singly on flat ground and light fuse at its outermost end';

— 'Retire immediately at least 8 m';

— 'Warning! Spinner jumps'.

7.3.3 Identification of top side

The top side of the jumping ground spinners shall be marked with

— 'This side up'.

7.4 Name, address and telephone number of manufacturer or distributor or importer

Labelling shall include:

— name or trade mark, the address and the telephone number of the manufacturer; or

— abbreviation or a code allowing the identification of the manufacturer, and the name or trade mark, the address and the telephone number:

  — of his authorized distributor; or

  — if the manufacturer is not established in a CEN member country, of the importer in a CEN member country.

The address shall comprise at least the town and the country. On the jumping ground spinner at least the abbreviations allowing the identification of

— manufacturer; or

[1)] If applicable.