
Ognjemet – 15. del: Fontane – Specifikacija in preskusne metode

Fireworks - Part 15: Fountains - Specification and test methods

Feuerwerkskörper - Teil 15: Fontänen - Anforderungen und Prüfverfahren

Artifices de divertissement - Partie 15 : Fontaines - Spécifications et méthodes d'essai

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English version

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Prüfverfahren

This European Standard was approved by CEN on 7 November 2002.

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 Management Centre or to any CEN member.

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Foreword

This document (EN 14035-15:2003) 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of an identical text or by endorsement, at the latest by November 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

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.*

prEN 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 or combinations - Specification and test methods.*

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

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

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

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

prEN 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.*

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

prEN 14035-14, *Fireworks - Part 14: Flying squibs - Specification and test methods.*

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

prEN 14035-16, *Fireworks - Part 16: Friction-ignited flash bangers - Specification and test methods.*

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

prEN 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.*

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

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

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

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

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

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

prEN 14035-26, *Fireworks - Part 26: Percussion caps - Specification and test methods.*

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

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

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

prEN 14035-31, *Fireworks - Part 31: Shells-in-mortars - Specification and test methods.*

prEN 14035-32, *Fireworks - Part 32: Snaps - Specification and test methods.*

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

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

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

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

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

In this European Standard the annexes A to D are normative and the annex E is informative and contains national deviations due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

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

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1 Scope

This European Standard specifies requirements for the construction, performance, primary packaging and labelling of fountains and the corresponding test methods. It is applicable to indoor fireworks which are classified as fountains in category 1 in EN 14035-2 and in which the pyrotechnic composition is based on nitrocellulose with a mass fraction of nitrogen of not more than 12,6 %.

It is applicable to outdoor fireworks which are classified as fountains in categories 1, 2 and 3 in EN 14035-2.

It is not applicable to fountains containing pyrotechnic composition which 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 in mass fraction of sulphuric acid, greater than 0,002 %;
- zirconium with a particle size of less than 40 µm.

NOTE In EN 14035-2, fountains are classified as follows:

- brief description: non-metallic case containing sparks- 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;
- principal effects: emission of sparks and flames with aural effect other than report or without any aural effect.

Schemes for type testing of fountains and batch testing of fountains are specified in annex A and annex B respectively.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

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

EN 20187, *Paper, board and pulps - Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples (ISO 187:1990)*.

EN ISO 536, *Paper and board — Determination of grammage (ISO 536:1995)*.

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 868:1985)*.

ISO 2439, *Flexible cellular polymeric materials — Determination of hardness (indentation technique) (including Technical Corrigendum 1:2001)*.

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 apply.

4 Construction

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4.1 Means of ignition

The means of ignition shall be identified by a protruding fuse, a sealing paper or an ignition head.

Conformity to this requirement shall be verified by visual examination.

4.2 Attachment of initial fuse (outdoor fountains only)

NOTE Category 1 indoor fountains do not usually have an initial fuse (producing the principal effects immediately after ignition).

For fountains with protruding fuse, the attachment of the protruding fuse to the fountain shall be secure when tested in accordance with 8.1.

For fountains with sealing paper or ignition head, the attachment of the sealing paper or ignition head to the fountain shall be secure when tested in accordance with 8.2.

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

The fountain shall be contained in a primary pack conforming to clause 6.

Conformity to this requirement shall be verified by visual examination.

4.3.4 Protruding fuse designed to resist side ignition

When tested in accordance with 8.7, the protruding fuse shall not ignite.

4.4 Materials of firework case

The body of the firework case shall be made of paper, cardboard or plastics. The base and/or means of fixing shall be made of non-metallic material.

Conformity to these requirements shall be verified by visual examination.

4.5 Integrity

4.5.1 Firework case

There shall be no holes, splits, dents or bulges in the body of the firework case. There shall be no holes or splits in the end closure. If the end closure is a separate component, it shall be securely in place.

If the base is a separate component, it shall be securely in place.

Conformity to these requirements shall be verified by visual examination.

4.5.2 Fountain

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When tested in accordance with A.5, the mass of loose pyrotechnic composition shall not exceed 100 mg.

4.6 Net explosive content

When determined in accordance with 8.6, a category 1 fountain shall have a net explosive content of not more than 7,5 g.

When determined in accordance with 8.6, a category 2 fountain shall have a net explosive content of not more than 250,0 g.

When determined in accordance with 8.6, a category 3 fountain shall have a net explosive content of not more than 750,0 g.

4.7 Vertical stability

For fountains designed to be placed on the ground, the fountain shall not fall over when tested in accordance with 8.3.

5 Performance

5.1 Indoor fountains

When tested in accordance with 8.4, a category 1 indoor fountain shall ignite within 5 s and the ignition shall be visible.

5.2 Initial fuses (outdoor fountains only)

When tested in accordance with 8.5, the initial fuse of an outdoor fountain shall ignite within 10 s and the ignition shall be visible.

For category 1 outdoor fountains and category 2 fountains the duration of the initial fuse burning shall be 3,0 s to 8,0 s, when tested in accordance with 8.5.

For category 3 fountains, the duration of the initial fuse burning shall be 5,0 s to 13,0 s, when tested in accordance with 8.5.

5.3 Principal effects

When tested in accordance with 8.4 or 8.5, the principal effects of the fountain, as given in EN 14035-2, shall be the emission of sparks and flames, with aural effect, other than report, or without any aural effect.

5.4 Functioning

When tested in accordance with 8.4 or 8.5, the fountain shall function completely.

5.5 Explosions and other failures

When tested in accordance with 8.4 or 8.5, the fountain shall not produce an explosion or rupture during functioning.

5.6 Height of effects and burning matter (indoor fountains only)

When tested in accordance with 8.4, the functioning of a category 1 indoor fountain shall not cause either sheet of test paper to catch fire or any holes to be burnt in the test paper.

5.7 Burning matter (outdoor fountains only)

When tested in accordance with 8.5, no burning or incandescent matter from a category 1 outdoor fountain shall fall to the ground more than 1,0 m from the testing point.

When tested in accordance with 8.5, no burning or incandescent matter from a category 2 fountain shall fall to the ground more than 6,0 m from the testing point.

When tested in accordance with 8.5, no burning or incandescent matter from a category 3 fountain shall fall to the ground more than 15,0 m from the testing point.

When tested in accordance with 8.5, any flames caused by the functioning of a category 1 indoor fountain shall be extinguished within 5,0 s of the fountain ceasing to function.

5.8 Stability

When tested in accordance with 8.4 or 8.5, the fountain shall remain upright whilst functioning.

6 Primary pack

If a primary pack is required to protect the initial fuse(s) of the fountain(s) (see 4.3.3), the primary pack shall completely enclose the fountain(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

Fountains 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 fountains 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 fountains in this standard, are given in EN 14035-4.

7.2 Type name and category

The type name shall be marked, in upper case, as 'FOUNTAIN'. If a trade name is used in addition to the type name, it shall not conflict with the principal effect of a fountain or with the name of another type of firework.

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

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 7.3.6 may be given.

7.3.2 Category 1 indoor fountains

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

- 'Remove orange fuse cover' ¹⁾;

Specific placing instructions for different types of fountains, inserted as appropriate (see 7.3.6);

- 'Standing sideways, light fuse at its outermost end and retire immediately at least 1 m' ²⁾; or
- 'Standing sideways, light ignition head and retire immediately at least 1 m' ²⁾; or
- 'Standing sideways, light sealing paper and retire immediately at least 1 m' ²⁾.

7.3.3 Category 1 outdoor fountains

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

- 'For outdoor use only';
- 'Remove orange fuse cover' ¹⁾;

Specific placing instructions for different types of fountains, inserted as appropriate (see 7.3.6);

¹⁾ If applicable.

²⁾ Whichever is appropriate.

- 'Standing sideways, light fuse at its outermost end and retire immediately at least 1 m²⁾'; or
- 'Standing sideways, light ignition head and retire immediately at least 1 m²⁾'; or
- 'Standing sideways, light sealing paper and retire immediately at least 1 m²⁾'.

7.3.4 Category 2 fountains

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

- 'For outdoor use only';
- 'Remove orange fuse cover' ¹⁾;

Specific placing instructions for different types of fountains, inserted as appropriate (see 7.3.6);

- 'Standing sideways, light fuse at its outermost end and retire immediately at least 8 m²⁾'; or
- 'Standing sideways, light ignition head and retire immediately at least 8 m²⁾'; or
- 'Standing sideways, light sealing paper and retire immediately at least 8 m²⁾'.

7.3.5 Category 3 fountains

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

- 'For outdoor use only';
- 'Remove orange fuse cover' ¹⁾;

Specific placing instructions for different types of fountains, inserted as appropriate (see 7.3.6):

- 'Standing sideways, light fuse at its outermost end and retire immediately';
- 'Spectators must be at least 25 m away';
- 'Operator must retire at least 15 m'.

7.3.6 Placing instructions

For fountains to be placed on the ground:

- 'Place fountain upright on the ground'.

For fountains to be inserted into soft ground or other material:

- 'Insert fountain upright in soft ground or other non-flammable material, e.g. sand'.

For fountains supplied with a special holding device, or for which particular instructions are necessary, the manufacturer shall provide appropriate instructions.

²⁾ Whichever is appropriate.