



SLOVENSKI STANDARD
SIST EN 14035-27:2003
01-december-2003

Ognjemet – 27. del: Rakete – Specifikacija in preskusne metode

Fireworks - Part 27: Rockets - Specification and test methods

Feuerwerkskörper - Teil 27: Raketen - Anforderungen und Prüfverfahren

Artifices de divertissement - Partie 27 : Fusées - Spécifications et méthodes d'essai

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Ta slovenski standard je istoveten z: EN 14035-27:2003

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ICS:

71.100.30

SIST EN 14035-27:2003

en

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ICS 71.100.30

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.

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 Management Centre has the same status as the official versions.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 14035-27:2003) 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of an identical text or by endorsement, at the latest by November 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.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.*

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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 C are normative and the annex D 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 rockets and the corresponding test methods. It is applicable to fireworks which are classified as rockets in categories 2 and 3 in EN 14035-2.

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

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Schemes for type testing of rockets and batch testing of rockets 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 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 together with the following apply.

3.1

rocket

consists of pressed gas-producing pyrotechnic composition (the propellant charge) in a tube, equipped with stick(s) or other means for stabilization of flight, and designed to be propelled linearly into the air. The rocket can also contain other pyrotechnic compositions, such as bursting charge or report charges, and/or pyrotechnic units

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

- brief description: tube containing pyrotechnic composition and/or pyrotechnic units, equipped with stick(s) or other means for stabilization of flight, and designed to be propelled into the air;
- principal effects: ascent, with or without additional visual and/or aural effects, and production of visual and/or aural effects in the air.

4 Construction

4.1 Means of ignition

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

Conformity to this requirement shall be verified by visual examination.

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4.2 Attachment of initial fuse

The attachment of the protruding fuse to the rocket shall be secure when tested in accordance with 8.1.

4.3 Protection of initial fuse

4.3.1 General

The initial fuse of a category 2 rocket shall be protected in one of the ways specified in 4.3.2, 4.3.3 or 4.3.4.

The initial fuse of a category 3 rocket shall be protected in the way specified in 4.3.2.

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 rocket 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 8.5, the protruding fuse shall not ignite.

4.4 Materials of firework case

The body of the firework case, except the tube containing the propellant charge, shall be made of paper, cardboard or plastics. The tube containing the propellant charge shall be made of cardboard, plastics or sheathed aluminium.

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.

Conformity to this requirement shall be verified by visual examination.

4.5.2 Rocket

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 8.4, a category 2 rocket shall have a net explosive content of not more than 75,0 g.

When determined in accordance with 8.4, a category 3 rocket shall have a net explosive content of not more than 300,0 g.

4.7 Mass of report and/or bursting charge

When determined in accordance with 8.4, a category 2 rocket shall have a report and/or bursting charge, if any, of not more than 10,0 g of black powder or 4,0 g of nitrate/metal-based composition or 2,0 g of perchlorate/metal-based composition.

When determined in accordance with 8.4, a category 3 rocket shall have a report and/or bursting charge, if any, of not more than 50,0 g of black powder or 30,0 g of nitrate/metal-based composition or 15,0 g of perchlorate/metal-based composition.

4.8 Means for stabilization of flight

The rocket shall either:

- a) be fitted with a stick or sticks; or
- b) be fitted with other means for stabilization of flight: for example fins, basket or ring.

The means for stabilization of flight shall be made of non-metallic materials, other than staples used to fix (a) stick(s) to the rocket.

Conformity to these requirements shall be verified by visual examination.

4.9 Vertical Stability

When tested in accordance with 8.2, a category 2 rocket shall not fall over.

When tested in accordance with 8.2, a category 3 rocket intended to be launched from the ground, or supplied with a launcher shall not fall over.

5 Performance

5.1 Initial fuse

When tested in accordance with 8.3, the initial fuse shall ignite within 10 s and the ignition shall be visible.

For category 2 rockets, the duration of the initial fuse burning shall be 3,0 s to 8,0 s when tested in accordance with 8.3.

For category 3 rockets, the duration of the initial fuse burning shall be 5,0 s to 13,0 s when tested in accordance with 8.3.

5.2 Principal effect

When tested in accordance with 8.3, the principal effect of the rockets, as given in EN 14035-2, shall be ascent, followed by report or bursting with or without aural and with or without visual effect.

5.3 Height of explosions and bursting

When tested in accordance with 8.3, no explosion shall occur, and the rockets shall not burst, below a height of 20 m.

5.4 Functioning

When tested in accordance with 8.3, all pyrotechnic units of the rocket shall function consistently.

5.5 Stabilization of flight

When tested in accordance with 8.3, the means for stabilization of flight shall not become detached until the rocket has burst.

5.6 Burning matter

When tested in accordance with 8.3, any burning or incandescent matter from a rocket, other than matter resulting from effects concomitant with ascent, shall be extinguished at least 10 m above the ground.

5.7 Debris

When tested in accordance with 8.3, any particle of debris from a category 2 rocket shall not exceed a mass of 100,0 g.

When tested in accordance with 8.3, any particle of debris from a category 3 rocket shall not exceed a mass of 150,0 g.

5.8 Angle of flight

When tested in accordance with 8.3, the angle of flight of the rockets shall not exceed 15° to the vertical up to a height of 20 m above ground.

5.9 Rocket motor

If the propellant charge of the rocket is contained in a sheathed aluminium tube, the aluminium tube shall not splinter when tested in accordance with 8.3.

6 Primary pack

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

Rockets 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 rockets 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 rockets 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 'ROCKET'.

If a trade name is used in addition to the type name, it shall not conflict with the principal effect of a rocket 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, bold type, or similar. If necessary, instructions in addition to those specified in 7.3.2 to 7.3.4 may be given.

7.3.2 Category 2 rockets

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

- 'For outdoor use only';
- 'Avoid overhead obstructions';

Specific assembly/placing instructions for different types of rockets, inserted as appropriate (see 7.3.4);

- 'Remove orange fuse cover' ¹⁾);
- 'Standing sideways, light fuse at its outermost end and retire immediately at least 8 m'.

7.3.3 Category 3 rockets

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

- 'For outdoor use only';
- 'Avoid overhead obstructions';

Specific assembly/placing instructions for different types of rockets, inserted as appropriate (see 7.3.4);

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

7.3.4 Assembly/placing instructions

For rockets with a single stick, supplied with a launching tube:

- 'Insert launching tube in soft ground';
- 'Insert rocket stick in launching tube'.

For rockets with a single stick, not supplied with a launching tube:

- 'Insert rocket stick into a stable launching device'.

For rockets with two sticks:

- 'Insert one of the rocket sticks into a stable launching device'.

For rockets with fins or other such means for stabilization of flight and which are intended to be launched from the ground:

- 'Place rocket vertically on flat ground'.

For rockets supplied with a flat-based launcher the manufacturer shall provide appropriate mounting instructions, to be preceded by:

- 'Place launcher on flat ground'.

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

Labelling shall include:

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

¹⁾ If applicable.