SLOVENSKI STANDARD

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Ognjemet – 17. del: Talne vrtavke – Specifikacija in preskusne metode

Fireworks - Part 17: Ground spinners - Specification and test methods

Feuerwerkskörper - Teil 17: Bodenfeuerwirbel - Anforderungen und Prüfverfahren

Artifices de divertissement - Tourbillons - Partie 17: Spécifications et méthodes d'essai

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Fireworks - Part 17: Ground spinners - Specification and test methods

Artifices de divertissement - Partie 17: Tourbillon - Spécifications et méthodes d'essai

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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 document (EN 14035-17:2004) 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of an identical text or by endorsement, at the latest by February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

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.*

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.*

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.*

prEN 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.*

prEN 14035-31, *Fireworks - Part 31: Shell-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.*

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 document specifies requirements for the construction, performance, primary packaging and labelling of ground spinners and the corresponding test methods. It is applicable to fireworks which are classified as ground spinners in categories 1 and 2 in EN 14035-2. Category 1 ground spinners, category 2 ground spinners with friction head and category 2 ground spinners with a protruding fuse not designed to resist side ignition should be contained in a primary pack or selection pack.

It is not applicable to ground spinners containing report composition.

It is not applicable to ground spinners containing pyrotechnic composition 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.

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

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

— principal effects: rotation on the ground and emission of sparks and/or flames with or without aural effect.

Schemes for type testing of ground spinners and batch testing of 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 document. 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 61672-1, *Electroacoustics - Sound level meters - Part 1: Specifications (IEC 61672-1:2002).*

EN 61672-2, *Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests (IEC 61672-2:2003).*

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.*

ISO 6344-3, *Coated abrasives - Grain size analysis - Part 3: Determination of grain size distribution of microgrits P 240 to P 2500.*

ISO 21948, *Coated abrasives – Plain sheets.*

3 Terms and definitions

For the purposes of this document, 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 or a friction head.

Conformity to this requirement shall be verified by visual examination.

4.2 Attachment of initial fuse

For ground spinners with protruding fuse, the attachment of the protruding fuse to the ground spinner shall be secure when tested in accordance with 8.1.

For ground spinners with friction head, the attachment of the friction head to the ground spinner shall be secure when tested in accordance with 8.2.

4.3 Resistance to ignition by an abrasive surface

When tested in accordance with 8.3, the friction head shall not ignite.

4.4 Protection of ground spinners (category 1 ground spinners only)

The ground spinner shall be contained in a primary pack conforming to 6.

Conformity to this requirement shall be verified by visual examination.

4.5 Protection of initial fuse (category 2 ground spinners only)

4.5.1 General

The initial fuse of category 2 ground spinners shall be protected in on of the ways specified in 4.5.2 or 4.5.3.

4.5.2 Friction head

The ground spinner shall be contained in a primary pack conforming to 6.

Conformity to this requirement shall be verified by visual examination.

4.5.3 Protruding fuse

4.5.3.1 Protruding fuse is not designed to resist side ignition

The ground spinner shall be contained in a primary pack or selection pack conforming to 6.

Conformity to this requirement shall be verified by visual examination.

4.5.3.2 Protruding fuse designed to resist side ignition

When tested in accordance with 8.6, the protruding fuse shall not ignite.

4.6 Materials of firework case

The body of the firework case shall be made of paper or cardboard. If the rotation pin, if any, is a separate component, it shall be made of non-metallic material.

Conformity to these requirements shall be verified by visual examination.

4.7 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 ground spinner. There shall be no holes or splits in the end closure(s). If the end closure (or the end closures), is a (are) separate component(s), it (they) shall be securely in place.

Conformity to these requirements shall be verified by visual examination.

4.8 Net explosive content

When determined in accordance with 8.5, a category 1 ground spinner shall have a net explosive content of not more than, 5,0 g excluding the friction head.

When determined in accordance with 8.5, a category 2 ground spinner shall have a net explosive content of not more than 25,0 g and each pyrotechnic unit shall have a net explosive content of not more than 8,0 g.

4.9 Striking surface

The primary pack of ground spinners with friction head shall be fitted with a striking surface for safety matches.

Conformity to this requirement shall be verified by visual examination.

5 Performance

5.1 Initial fuse

When tested in accordance with 8.4, the protruding fuse shall ignite within 10 s and the ignition shall be visible.

When tested in accordance with 8.4, the friction-ignited head shall ignite and the ignition shall be visible.

When tested in accordance with 8.4, the duration of the initial fuse burning shall be 3,0 to 8,0 s.

5.2 Principal effects

When tested in accordance with 8.4, the principal effects of the ground spinner, as given in EN 14035-2, shall be rotation on the ground and emission of sparks and/or flames with or without aural effect, without report.

5.3 Functioning

When tested in accordance with 8.4, the ground spinner shall function completely.

5.4 Explosions

When tested in accordance with 8.4, the ground spinner shall not produce an explosion.

5.5 Sound pressure level

When tested in accordance with 8.4, a category 2 ground spinner with aural effect shall produce a maximum A-weighted impulse sound pressure level (L_{AImax}) of not higher than 120 dB (AI) at a horizontal distance of 8,0 m from the testing point and a height of 1,0 m above the ground.

5.6 Motion of the ground spinners

When tested in accordance with 8.4, a category 1 ground spinner shall not move more than 1,0 m away from the testing point.

When tested in accordance with 8.4, a category 2 ground spinner shall not move more than 6,0 m away from the testing point.

When tested in accordance with 8.4, a ground spinner shall not ascent to a height greater than 0,2 m.

5.7 Burning matter

When tested in accordance with 8.4, no burning or incandescent matter from a category 1 ground spinner shall fall to the ground more than 1,0 m from the testing point.

When tested in accordance with 8.4, no burning or incandescent matter from a category 2 ground spinner shall fall to the ground more than 6,0 m from the testing point.

When tested in accordance with 8.4, any flames caused by the functioning of the ground spinner shall be extinguished within 60,0 s of the ground spinner ceasing to function.

5.8 Projected debris

When tested in accordance with 8.4, no debris from a category 2 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, the pack shall completely enclose the 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.

If the primary pack is fitted with a striking surface, the striking surface on the pack shall be covered or the pack shall be sealed.

Conformity to these requirements shall be verified by visual examination.

7 Minimum labelling requirements

7.1 General

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 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 ground spinners 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 'GROUND SPINNER'. If a trade name is used in addition to the type name, it shall not conflict with the principal effects of a 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', 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 7.3.5 may be given.