



**SLOVENSKI STANDARD**  
**SIST EN 14035-36:2004**  
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**Ognjemet – 36. del: Kolesa – Specifikacija in preskusne metode**

Fireworks - Part 36: Wheels - Specification and test methods

Feuerwerkskörper - Teil 36: Räder - Anforderungen und Prüfverfahren

Artifices de divertissement - Partie 36: Soleils - Spécifications et méthodes d'essai

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**Ta slovenski standard je istoveten z: EN 14035-36:2004**

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English version

## Fireworks - Part 36: Wheels - Specification and test methods

Artifices de divertissement - Partie 36: Soleils -  
Spécifications et méthodes d'essai

Feuerwerkskörper - Räder -Teil 36: Anforderungen und  
Prüfverfahren

This European Standard was approved by CEN on 18 June 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

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## Foreword

This document (EN 14035-36:2004) 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of an identical text or by endorsement, at the latest by February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.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.

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## 1 Scope

This document specifies requirements for the construction, performance, primary packaging and labelling of wheels and the corresponding test methods. It is applicable to fireworks which are classified as wheels in categories 2 and 3 in EN 14035-2.

It is not applicable to wheels containing report composition. It is not applicable to wheels 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; <https://standards.iteh.ai/catalog/standards/sist/c0b33b7a-75eb-4345-a539-c5bfea88aee7/sist-en-14035-36-2004>
- 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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NOTE In EN 14035-2, wheels are classified as follows:

- brief description: non-metallic tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so it can rotate;
- principal effects: rotation around a fixed point or axis and emission of sparks and flames, with or without aural effect(s).

Schemes for type testing of wheels and batch testing of wheels 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)*.

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

## 4 Construction **iTeh STANDARD PREVIEW** (standards.iteh.ai)

### 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 wheel 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 wheel shall be contained in a primary pack or selection pack conforming to 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 8.4, the protruding fuse shall not ignite.

**4.4 Height of initial fuse**

When measured in accordance with 8.2.3.3, the initial fuse of the mounted wheel shall be not more than 1,75 m above the ground.

**4.5 Materials of firework case**

The body of the firework case shall be made of paper, cardboard or plastics. The other components in the assembly, excluding staples and means of attaching to the support, shall be made of paper, cardboard, wood or plastics. The end closures, if any, shall be of non-metallic material.

Conformity to these requirements shall be verified by visual examination.

**4.6 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 wheel. 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.

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**4.7 Net explosive content**

When determined in accordance with 8.3, a category 2 wheel shall have a net explosive content of not more than 100,0 g.

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Each whistle unit, if any, shall have a net explosive content of not more than 5,0 g.

When determined in accordance with 8.3, a category 3 wheel shall have a net explosive content of not more than 900,0 g.

Each single unit shall have a net explosive content of not more than 150,0 g.

Each whistle unit, if any, shall have a net explosive content of not more than 20,0 g.

## 5 Performance

### 5.1 Initial fuse

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

For category 2 wheels, the duration of the initial fuse burning shall be 3,0 s to 8,0 s, when tested in accordance with 8.2.

For category 3 wheels, the duration of the initial fuse burning shall be 5,0 s to 13,0 s, when tested in accordance with 8.2.

### 5.2 Principal effects

When tested in accordance with 8.2, the principal effects of the wheel, as given in EN 14035-2, shall be rotation around a fixed point or axis and the emission of sparks and flames, with or without aural effect(s).

### 5.3 Functioning

When tested in accordance with 8.2, the wheel shall function completely.

### 5.4 Explosions

When tested in accordance with 8.2, the wheel shall not produce an explosion.

### 5.5 Sound pressure level

When tested in accordance with 8.2, a category 2 wheel with aural effect shall produce a maximum A-weighted impulse sound pressure level ( $L_{AImax}$ ) of not higher than 120 dB(A) at a horizontal distance of 8,0 m from the testing point and a height of 1,0 m above the ground.

When tested in accordance with 8.2, a category 3 wheel with aural effect shall produce a maximum A-weighted impulse sound pressure level ( $L_{AImax}$ ) of not higher than 120 dB(A) at a horizontal distance of 15,0 m from the testing point and a height of 1,0 m above the ground.

### 5.6 Burning matter

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

When tested in accordance with 8.2, no burning or incandescent matter from a category 3 wheel shall fall to the ground more than 15,0 m from the testing point.

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

When tested in accordance with 8.2, the support pole shall not catch fire.