BRITISH STANDARD

BS EN
14035-35:2004

# Fireworks —

## Part 35: Throwdowns — Specification and test methods

The European Standard EN 14035-35:2004 has the status of a British Standard

ICS 71.100.30



BSI
British Standards

# National foreword

This British Standard is the official English language version of EN 14035-35:2004. It partially supersedes BS 7114-2:1988 and BS 7114-3:1988 which have been declared obsolescent.

NOTE BS 7114-2:1988 and BS 7114-3:1988 are cited in The Fireworks (Safety) Regulations 1997.

The UK participation in its preparation was entrusted to Technical Committee CII/47, Fireworks, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

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# Fireworks - Part 35: Throwdowns - Specification and test methods

Artifices de divertissement - Pois fulminants - Partie 35: Spécifications et methodes d'essai

Feuerwerkskörper - Teil 35: Knallerbsen - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 10 September 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.

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COMITÉ EUROPÉEN DE NORMALISATION
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## Foreword

This document (EN 14035-35:2004) 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 May 2005, and conflicting national standards shall be withdrawn at the latest by May 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 14035-33, *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.*

In this European Standard the annexes A to B are normative and the annex C 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.

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 throwdowns and the corresponding test methods. It is applicable to fireworks which are classified as throwdowns in category 1 in EN 14035-2 which contain pyrotechnic report composition that is silver fulminate and which are contained in a primary pack.

It is not applicable to throwdowns 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, throwdowns are classified as follows:

— brief description: impact-sensitive pyrotechnic composition and grains of inert material wrapped in tissue paper or foil;

— principal effect: report, when thrown down onto the ground.

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

EN ISO 3696, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987).*

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 4793, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation.*

## 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 Packaging of throwdowns

The throwdown shall be contained in a primary pack conforming to clause 6 and embedded in saw dust.

Conformity to this requirement shall be verified by visual examination.

### 4.2 Materials of firework case

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

Conformity to this requirement shall be verified by visual examination.

### 4.3 Integrity of firework case

There shall be no holes or splits in the body of the firework case and it shall retain the contents.

Conformity to these requirements shall be verified by visual examination.

### 4.4 Net explosive content

When determined in accordance with 8.3, a throwdown shall have a net explosive content of not more than 2,5 mg.

### 4.5 Pyrotechnic composition

When determined in accordance with 8.3, the report composition shall only be silver fulminate.

## 5 Performance

### 5.1 Principal effect

When tested in accordance with 8.2, the principal effect of the throwdown, as given in EN 14035-2, shall be a single report.

### 5.2 Protection of throwdowns

When tested in accordance with 8.1, the throwdown shall not explode and when tested subsequently in accordance with 8.2 it shall produce a single report.

### 5.3 Number of reports

When tested in accordance with 8.2, the throwdown shall not produce more than one report.

## 6 Primary pack

The primary pack is required to protect the throwdowns (see 4.1) and shall not contain more than 50 throwdowns. The pack shall completely enclose the throwdown(s) and there shall be no holes or splits in the pack.

The throwdown(s) in the primary pack or sub-pack, if any, shall be embedded in saw dust.

Conformity to these requirements shall be verified by visual examination.

## 7 Minimum labelling requirements

### 7.1 General

The primary packs of throwdowns shall be marked with the information specified in 7.2 to 7.5 and 7.7.

The specified information shall be given in the language(s) of the country in which the throwdowns contained in 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 and 7.7 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 the primary packs of throwdowns 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 'THROWDOWNS'. If a trade name is used in addition to the type name, it shall not conflict with the principal effect of a throwdown or with the name of another type of firework.

The category shall be marked, in upper case, as 'CATEGORY 1' or 'CAT 1'.

## 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 may be given.

### 7.3.2 Throwdowns

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

— 'Use one at a time';

— 'Do not throw at or near people or animals';

— 'Throw onto hard ground';

— 'Do not carry throwdowns loose in the pocket'.

## 7.4 Name, 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:

— 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.

## 7.5 Reference to this document

A primary pack shall be marked with the words 'Contents conform to EN 14035-35’.

## 7.6 Printing

### 7.6.1 Labelling

Labelling shall be clearly visible, easily legible, indelible and on a single-colour background.

NOTE Printing errors which are not misleading should not be classified as faults.

### 7.6.2 Type size

When measured in accordance with 8.4, the type sizes shall be such that the height of the character ‘X’ (in upper case) is at least 2,8 mm for the information specified in 7.2, 7.3 and 7.7 and at least 2,1 mm for the other information.

### 7.7 Additional information on the primary pack

The primary pack shall be marked with the statement:

'Must be sold as packaged'.

This statement shall appear adjacent to the type name or category. For the printing 7.6 applies.

## 8 Test methods

NOTE Verification of conformity to the requirements in 4.1, 4.2, 4.3, clause 6, 7.1 to 7.5, 7.6.1 and 7.7 is by visual examination.

### 8.1 Protection of throwdowns (type test and batch test)

NOTE For type test, this test shall be performed together with A.5.

#### 8.1.1 Apparatus

**8.1.1.1 Mechanical shock apparatus,** conforming to A.5.1.1.

**8.1.1.2 Cellular rubber sheet, 100 mm thick.** The material used shall have an apparent density, when determind in accordance with EN ISO 845, Of 35 kg/m$^3$ and an indentation hardness check, when determined in accordance with EN ISO 2439, of 215N.

#### 8.1.2 Procedure

Place a sheet of paper on the platform of the mechanical shock apparatus (8.1.1.1) and place the appropriate number of throwdowns in complete, unopened primary packs on top of the sheet of paper. Cover the packs with the cellular rubber sheet (8.1.1.2) and secure it to the platform around its edges. Start the machine so that the platform is raised and dropped onto the elastomeric spring, having adjusted the drop height (to about 25mm) so that the maximum deceleration of each shock is 490 m/s$^2$ and the duration of each shock impulse is about 60 ms. Continue running the machine for 1h.

At the end of the 1h period stop the machine and remove the packs. Carefully open the primary packs, empty the throwdowns and the saw dust on to the sheet of paper. Record whether the throwdown exploded and whether the throwdown produced a single report when tested in accordance with 8.2.

### 8.2 Performance (type test and batch test)

#### 8.2.1 Test environment

**Test area**. The test area shall be clean and indoors with a levelled, smooth, horizontal concrete surface.

#### 8.2.2 Apparatus

**Measuring device,** capable of measuring a height of 1,5 m to the nearest 10 mm.

#### 8.2.3 Procedure

Drop the throwdown in the centre of the test area (8.2.1), from a height of 1,5 m, determined by the measuring device (8.2.2), onto the concrete surface. Record whether the throwdown produced a single report. If the throwdown fails to produce a single report record the fact and do not proceed with further testing of that throwdown.

## 8.3 Determination of net explosive content and pyrotechnic composition (type test)

NOTE The method for the determination of silver fulminate is only an example. Any equivalent analytical method with the same sensitivity and the same accuracy or better may be used.

### 8.3.1 Reagents

The reagents used shall be of recognized analytical grade and the water shall conform to grade 3 of EN ISO 3696.

**8.3.1.1 Concentrated ammonia solution**.

**8.3.1.2 Nitric acid solution, 10 g/100 ml**.

**8.3.1.3 Hydrochloric acid solution, 5 g/100 ml.**

### 8.3.2 Apparatus

**8.3.2.1 Laboratory balance, capable of weighing to the nearest 0,01 mg**.

**8.3.2.2 Beaker, 100 ml**.

**8.3.2.3 Beaker, 200 ml.**

**8.3.2.4 Filter funnel**.

**8.3.2.5 Filter paper**.

**8.3.2.6 Glass filter crucible, with a porous glass filter grade P 16 conforming to ISO 4793**.

### 8.3.3 Procedure

Carefully dismantle 50 throwdowns. Put the inert material and the silver fulminate in the 100 ml beaker (**8.3.2.2**) and wet it with 30 ml of water (**8.3.1.)** and 20 ml of the ammonia solution (**8.3.1.1**). Warm the solution, while stirring continuously, and transfer the hot solution quantitatively to the filter funnel (**8.3.2.4**) containing the filter paper (**8.3.2.5**). Filter the solution into the 200 ml beaker (**8.3.2.3**) and wash the residue with water.

Dilute the filtrate with 100 ml of water. Acidify the diluted filtrate by carefully adding the nitric acid solution (**8.3.1.2**) and heat it until boiling. While stirring continuously, add the hydrochloric acid solution (**8.3.1.3**) drop by drop until no further precipitate is formed.

Store the solution with the precipitate in the dark for 3 h. Weigh the glass filter crucible (**8.3.2.6**) to the nearest 0,1 mg, using the balance (**8.3.2.1**) and record the mass ($m_0$). Filter the precipitate through the glass filter crucible and wash it with water until the washings are neutral. Dry the filter crucible for 1 h at 130 °C. Allow the filter crucible with the residue to cool down to room temperature, weigh it to the nearest 0,1 mg, using the balance, and record the mass ($m_1$).

### 8.3.4 Calculation of net explosive content

Calculate the mean mass $\overline{m}$ , in milligrams, of silver fulminate per throwdown from the following equation:

$$\overline{m} = \frac{1{,}0458(m_1 - m_0)}{50}$$

## 8.4 Labelling (type test and batch test)

Check conformity to 7.6.2 and 7.7, for example by comparing the type sizes on the actual label with a transparent copy made from Figure 1 (for the empty frame, use the inside). Record whether the type sizes are correct.

2,8 mm: ABC abc XYZ xyz 123

2,1 mm: ABC abc XYZ xyz 123

**Figure 1 — Type sizes of print**

# Annex A
(normative)

# Type testing

## A.1 General

For the purposes of type testing each of the throwdowns tested, except those used for the determination of net explosive content, shall conform to 4.1, 4.2, 4.3, clauses 5, 6 and 8.

The throwdowns used for the determination of net explosive content shall each conform to 4.4 and 4.5.

The pyrotechnic composition shall conform to 4.5.

The throwdowns subjected to mechanical conditioning in accordance with A.5 shall, additionally, conform to A.3.

Each of the primary packs examined shall conform to clauses 6, 7 and 8.4.

## A.2 Number of throwdowns to be tested

A total of 2 primary packs with throwdowns and 170 throwdowns from other packs shall be tested, in accordance with Table A.1. The throwdowns shall be selected at random from at least 5 packs.

**Table A.1 - Number of packs and throwdowns to be tested**

| **Number of throwdowns and packs to be tested** | **Condition** | **Tests** |
|---|---|---|
| 10 throwdowns | 'As received' | - Visual examination<br>- 8.2 |
| 150 throwdowns | | - 8.3 |
| 10 throwdowns | After thermal conditioning in accordance with A.4 | - Visual examination<br>- 8.2 |
| 2 packs and from these packs: | After mechanical conditioning in accordance with A.5 | - Visual examination<br>- 8.1<br>- 8.2 |
| 10 throwdowns | | - Visual examination<br>- 8.2 |

## A.3 Collection of loose pyrotechnic composition

After mechanical conditioning in accordance with A.5 none of the throwdowns shall be damaged and there shall be no loose materials from the throwdowns in the primary pack.

## A.4 Thermal conditioning

Store the throwdowns in complete unopened primary packs for four weeks at a temperature of (50,0 ± 2,5) °C and then for at least two days at room temperature before testing.

## A.5 Mechanical conditioning

### A.5.1 Apparatus

**A.5.1.1 Mechanical shock apparatus,** as illustrated in Figures A.1 to A.3, comprising the following components:

a) **a flat horizontal platform made of steel**, 800 mm × 600 mm, 2 mm to 3 mm thick, with a 3 mm thick rim having a height of 15 mm; the platform is reinforced with eight steel ribs, 5 mm thick with a height of 30 mm, which are welded to the underside and run from the centre to each of the four corners and to the middle of each edge;

b) **a 20 mm thick plate of fibreboard**, firmly attached to the platform by screws;

c) **a cylindrical steel boss**, diameter 125 mm and height 35 mm, located under the centre of the platform;

d) **a 284 mm long shaft**, with diameter of 20 mm, fixed to the centre of the boss;

e) **a restraining peg**, to prevent the platform from rotating; the mass of the platform assembly (items a) to e)) shall be (23 ± 1) kg;

f) **an annular, elastomeric pressure spring**, with a Shore A hardness, when determined in accordance with EN ISO 868, of 68, outside diameter 125 mm, inside diameter 27 mm and height 32 mm, on which the cylindrical boss will rest;

g) **a shallow steel cylinder**, inside diameter 126 mm, wall thickness 5 mm, outside height 30 mm, with a base 8 mm thick which has a 25 mm diameter hole drilled through the centre, to contain the elastomeric spring;

h) **a supporting steel cylinder**, outside diameter 80 mm, inside diameter 60,1 mm and height 92,4 mm, to which the shallow cylinder is screwed;

i) **a PVC liner**, outside diameter 60 mm, inside diameter 20,2 mm and height 92,4 mm, located inside the supporting cylinder and attached by a screw;

j) **a steel mounting plate**, thickness 12 mm, with a 25 mm hole drilled through the centre, to which the supporting steel cylinder is screwed;

k) **a steel base plate**, thickness 12 mm;

l) **four supporting pillars**, height 260 mm and diameter 32 mm, screwed to the mounting plate and to the base plate;

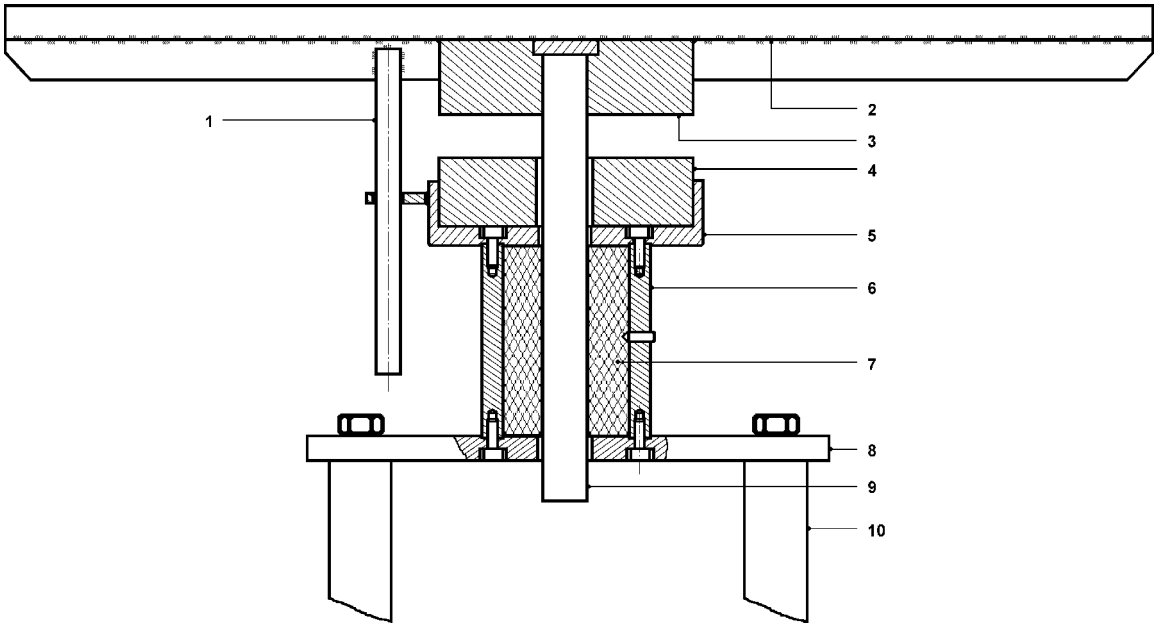
m) **a framework** to support the base plate so that the complete assembly is at a convenient working height;

n) **an attachment to the shaft**, allowing adjustment to the overall length, fitted with a cam wheel, outside diameter 30,0 mm, with a contact surface 8,0 mm wide;

o) **a cylindrical cam**, outside diameter 120 mm, inside diameter 100 mm, wall thickness 10 mm, with a 'vertical drop' of 50,0 mm between the high point and the low point;

p) **a collar**, outside diameter 50 mm, height 4,0 mm;

q) **an electric motor and suitable gearing**, to rotate the cam at a rotational frequency of 1 Hz.




**Key**

1 Restraining peg

2 Platform

3 Boss

4 Pressure spring

5 Cup

6 Supporting cylinder

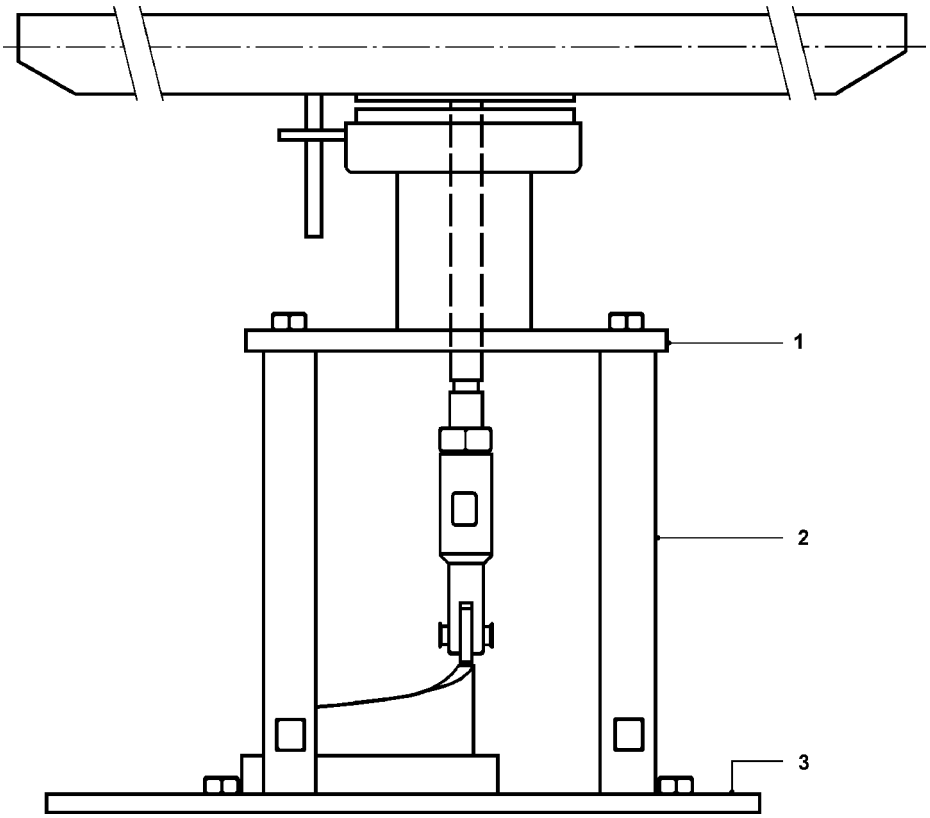
7 PVC liner

8 Mounting plate

9 Shaft

10 Supporting pillar

**Figure A.1 — Detail of top section of mechanical shock apparatus**



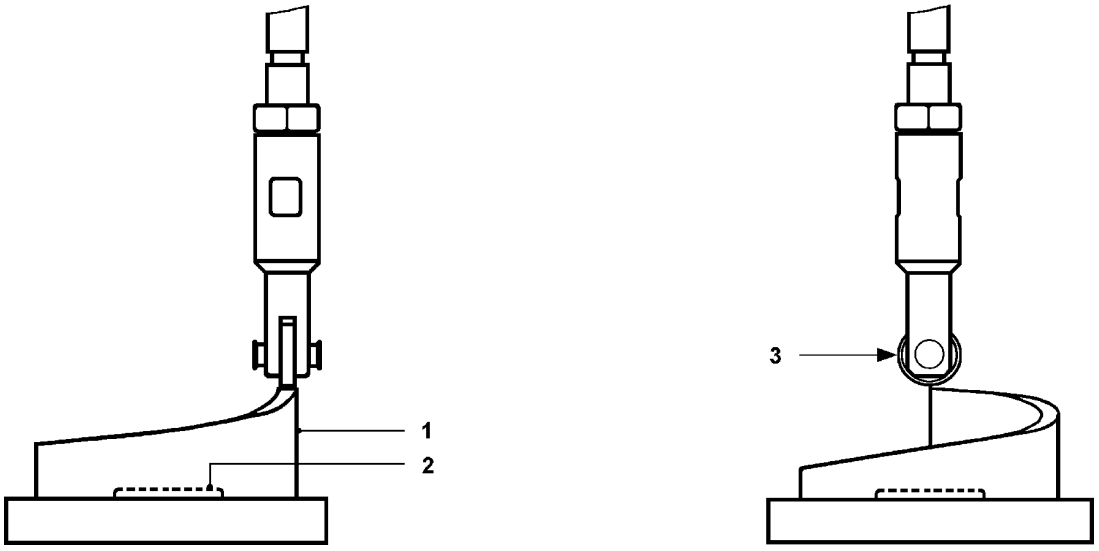

**Key**

1 Mounting plate

2 Supporting pillar

3 Base plate

**Figure A.2 — General assembly of mechanical shock apparatus**




**Key**

1 Cam

2 Collar

3 Cam wheel

**Figure A.3 — Detail of shaft attachment and cam assembly of mechanical shock apparatus**

#### A.5.1.2 Cellular rubber sheet, 100 mm thick

The material used shall have an apparent density, when determined in accordance with EN ISO 845, of 35 kg/m$^3$ and an indentation hardness check, when determined in accordance with EN ISO 2439, of 215 N.

### A.5.2 Procedure

#### A.5.2.1 Conditioning

Place a sheet of paper on the platform of the mechanical shock apparatus (A.5.1.1) and place the appropriate number of complete, unopened primary packs on top of the sheet of paper. Cover the packs with the cellular rubber sheet (A.5.1.2) and secure it to the platform around its edges. Start the machine so that the platform is raised and dropped onto the elastomeric spring, having adjusted the drop height (to about 25 mm) so that the maximum deceleration of each shock is 490 m/s$^2$ and the duration of each shock impulse is about 60 ms. Continue running the machine for 1 h.

#### A.5.2.2 Collection of loose pyrotechnic composition

At the end of the 1 h period stop the machine and remove the packs. Carefully open the primary packs, empty the throwdowns and the saw dust on to the sheet of paper. Record whether any of the throwdowns have exploded. Observe visually and record whether there is any damage to the wrapping and whether the wrapping has opened and whether any particle of the material has fallen out.

## A.6 Number of primary packs to be examined

Examine at least five primary packs to assess conformity to clauses 6, 7 and 8.4. The primary packs to be examined shall include all those whose contents are used for the tests described in clause 8.

## A.7 Test report

The test report shall include at least the following information, with items k) to p) being given for each throwdown tested:

| | | |
|---|---|---|
| a) | * | a reference to this standard, i.e. EN 14035-35; |
| b) | * | the complete identification of the sample under test; |
| c) | * | the date of completion of the testing; |
| d) | * | whether the throwdown is contained in a primary pack and whether the throwdown is embedded in saw dust; |
| e) | * | for each primary pack examined, whether the pack completely enclosed the throwdown(s) and whether there were any holes or splits in the pack; |
| f) | | the net explosive contents of the throwdown tested for that purpose, in milligrams<br><br>and<br><br>whether the net explosive content of each throwdown tested for that purpose exceeds 2,5 mg; |
| g) | * | for each primary pack examined, whether the type name, category, safety information, name and address and telephone number of the manufacturer[1)] or distributor[1)] or importer[1)] and the reference to this standard were correctly stated on the pack; |
| h) | * | for each primary pack examined, whether the statement 'Must be sold as packaged' was correctly stated on the pack; |
| i) | * | for each primary pack examined, whether the specified information on the pack was clearly visible, easily legible, indelible, on a single-colour background and whether the type sizes were correct; |
| j) | | whether any of the throwdowns have exploded and whether the wrapping of any throwdown was damaged or has opened and there was any loose material from the throwdowns collected after mechanical conditioning; |
| k) | * | whether the throwdown tested for protection produced a single report; |
| l) | * | the materials of the firework case and<br><br>whether the materials of the body of the firework case are tissue paper or foil; |
| m) | * | whether there were any holes, splits in the body of the firework case; |
| n) | * | whether the throwdown was ignited; |
| o) | * | whether the throwdown produced its principal effect; |
| p) | * | Whether |

NOTE The asterisks in the above list are referred to in B.6.

[1)] Whichever applies.

# Annex B
(normative)

# Batch testing

## B.1 General

For the purposes of batch testing, acceptance sampling in accordance with B.2 to B.7 shall be applied.

## B.2 Sampling plans

Sampling shall be in accordance with ISO 2859-1 using double sampling plans and applying the switching procedures for normal, tightened and reduced inspection. Inspection level S-4 shall apply.

## B.3 Unit of product

The unit of product for the purpose of sampling to assess compliance with the requirements for the throwdowns shall be an individual throwdown and the sample shall comprise the contents of the appropriate number of primary packs. The primary pack shall be the unit of product for the purpose of sampling to assess compliance with the requirements for the actual packs themselves and the appropriate number of primary packs shall be sampled separately and examined for faults.

## B.4 Loose materials

After mechanical conditioning in accordance with A.5 none of the throwdowns shall be damaged and there shall be no loose materials from the throwdowns in the primary pack.

## B.5 Nonconformities

Nonconformities shall be classed in accordance with Table B.1.

**Table B.1 − Summary of requirements and types of nonconformity for batch testing**

| Ref. | Property | Requirement | Test method | Type of noncon-formity [a] |
|---|---|---|---|---|
| 4.1 | Packaging of throwdowns | Shall be embedded in sawdust | Visual | Critical |
| 4.2 | Materials of firework case | Tissue paper or foil | Visual | Critical |
| 4.3 | Integrity of firework case | No holes or splits<br><br>Retain its contents | Visual<br><br>Visual | Major<br><br>Critical |
| 5.1 | Principal effect | Report, when thrown onto the ground | 8.2 | Minor |
| 5.2 | Protection of throwdowns | No explosions<br><br>Shall function | 8.1<br><br>8.2 | Critical<br><br>Major |
| 5.3 | Number of reports | Not more than one | 8.2 | Major |
| 6 | Integrity of primary pack | Pack shall completely enclose the throwdown and shall have no holes or splits | Visual | Major |
| 7 | Labelling of primary pack | Shall be correctly stated and legible and on a single colour background | Visual | Minor |
| 7 | Type sizes | See 7.6.2 and 7.7 | 8.4 | Minor |
| [a] See 3.32, 3.33 and 3.34 in EN 14035-1:2003. | | | | |

## B.6 Test report

The test report shall include at least the items marked with an asterisks in A.7 (with items k) to p) being given for each throwdown tested).

## B.7 Acceptance or rejection of a batch

### B.7.1 General

The acceptance criteria in B.7.2 to B.7.5 shall be applied separately to the actual throwdown and to the primary packs (see B.3).

### B.7.2 Nonconforming units

Acceptance or rejection of the batch shall be determined by the number of nonconforming units of each type, in accordance with B.7.3 to B.7.5.

NOTE Acceptance or rejection of the batch is determined by the number of nonconforming units of each type and not necessarily by the number of nonconformities found.

### B.7.3 Critical nonconforming units

For critical nonconforming units an Acceptance Quality Limit (AQL) of 0,65 % shall apply. If the batch fails to meet this criterion, it shall be rejected. Any critical nonconforming units shall not also be counted as major nonconforming units or minor nonconforming units.

### B.7.4 Major nonconforming units

For major nonconforming units an AQL of 2,5 % shall apply. If the batch fails to meet this criterion, it shall be rejected. Any major nonconforming units shall not also be counted as minor nonconforming units.

### B.7.5 Minor nonconforming units

For minor nonconforming units an AQL of 10 % shall apply. If the batch fails to meet this criterion, it shall be rejected.

# Annex C
(informative)

# A-Deviations

**A-Deviation:** National deviations due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC members.

This European Standard does not fall under any Directive of the EC.

In the relevant CEN/CENELEC countries these A-deviations are valid instead of the provisions of the European Standard until they have been removed.

**Ireland**

The basis for applying to the Technical Committee (CEN/TC 212) for an A-Deviation is due to the current policy of the Irish Government on the sale of consumer fireworks. On safety and security grounds, the sale of consumer fireworks (of any category) to the general public, is not permitted under current Government policy. Importation licences can be issued, but only for fireworks used for organised displays, conducted by professional competent operators. This policy is referenced in the "Guidance Document on Organised Fireworks Displays July 2003" issued by the Irish Government Department of Justice, Equality and Law Reform.

**Netherlands**

| **Subclause** | **Deviation** |
|---|---|
| 4.4 | According to 'Regeling nader eisen aan vuurwerk', appendix I,8 the maximum nec for throwdowns shall not be more than 1,6 mg silver fulminate. |

**Norway**

Throwdowns are not allowed to be distributed or used in Norway according to the regulation on embargo and use on dangerous blaring pyrotechnics products as firecrackers, throwdowns, percussion caps and the like of. 30 th April 1975.

**Spain**

| **Subclause** | **Deviation** |
|---|---|
| General | R.D. 230/1998 (16/02/1998) *Reglamento de Explosivos* – Explosives Regulation ITC # 8 *Catalogación de artificios pirotécnicos* – Fireworks cataloguing.<br>Compulsory for every item being catalogued mechanical conditioning (2 hours). |

**Sweden**

| **Subclause** | **Deviation** |
|---|---|
| Scope | Fireworks that have report as the dominant effect are not allowed in Sweden (SFS 1988:1145).<br><br>Fireworks that contains silver fulminate are not allowed in Sweden (SÄIFS 1992:2) |

**Switzerland**

In der Schweiz ist das "Zulassungsverfahren" und die technischen Anforderungen für pyrotechnische Gegenstände (Feuerwerk) zum Bundesgesetz vom 25. März 1977 über explosionsgefährliche Stoffe (Sprengstoffgesetz) und dessen Verordnung vom 27. November 2000 über explosionsgefährliche Stoffe (Sprengstoffverordnung, SprstV) für den Inhalt dieser Norm bindend.

| **Subclause** | **Deviation** |
|---|---|
| | *Schalldruckpegel*<br><br>Knallerbsen dürfen in einer Entfernung von 1,0 m vom Abbrandort einen Schalldruckpegel von 115 dB (A SEL) nicht überschreiten. |
| 7.1 to 7.4 | *Beschriftung*<br><br>Zusätzlich sind anzugeben:·das Jahr der Herstellung<br><br>Bei Ursprungs- und Sortimentsverpackungen die gleichzeitig dem Schutz gegen unbeabsichtigtes Anzünden dienen:<br><br>"Diese Verpackung dient dem Schutz gegen unbeabsichtigtes Anzünden",<br><br>Hinweise (wenn erforderlich):·"Gebrauchsanweisung auf der Verpackung / dem beigelegten Packzettel beachten…" |

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