

BS EN 16261-1:2012



BSI Standards Publication

# Pyrotechnic articles — Fireworks, category 4

Part 1: Terminology

**bsi.**

...making excellence a habit.™

**National foreword**

This British Standard is the UK implementation of EN 16261-1:2012.

The UK participation in its preparation was entrusted to Technical Committee CII/47, Pyrotechnic articles.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2012.  
Published by BSI Standards Limited 2012.

ISBN 978 0 580 74436 5

ICS 71.100.30

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2012.

**Amendments issued since publication**

Date	Text affected
------	---------------

---

EUROPEAN STANDARD

**EN 16261-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2012

ICS 71.100.30

English Version

## Pyrotechnic articles - Fireworks, category 4 - Part 1: Terminology

Articles pyrotechniques - Artifices de divertissement,  
Catégorie 4 - Partie 1: Terminologie

Pyrotechnische Gegenstände - Feuerwerkskörper,  
Kategorie 4 - Teil 1: Begriffe

This European Standard was approved by CEN on 20 July 2012.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>		Page
<b>Foreword</b> .....		<b>3</b>
<b>1</b>	<b>Scope</b> .....	<b>4</b>
<b>2</b>	<b>Normative references</b> .....	<b>4</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>4</b>
<b>3.1</b>	<b>General terms</b> .....	<b>4</b>
<b>3.2</b>	<b>Technical terms</b> .....	<b>5</b>
<b>4</b>	<b>List of generic types and descriptions</b> .....	<b>10</b>
<b>5</b>	<b>List of subtypes and descriptions</b> .....	<b>12</b>
<b>6</b>	<b>List of components and descriptions</b> .....	<b>16</b>
<b>Annex A</b> (informative) <b>Overview of essential safety requirements and</b> .....		<b>17</b>
<b>Annex ZA</b> (informative) <b>Relationship between this European Standard and the Essential Requirements of EU Directive 2007/23/EC on the placing on the market of pyrotechnic articles</b> .....		<b>18</b>
<b>Bibliography</b> .....		<b>19</b>

## Foreword

This document (EN 16261-1:2012) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, 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 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of Directive 2007/23/EC on the placing on the market of pyrotechnic articles.

For relationship with Directive 2007/23/EC, see informative Annex ZA, which is an integral part of this document.

EN 16261 is divided into the following parts:

- EN 16261-1, *Pyrotechnic articles — Fireworks, category 4 — Part 1: Terminology*;
- EN 16261-2, *Pyrotechnic articles — Fireworks, category 4 — Part 2: Requirements*;
- EN 16261-3, *Pyrotechnic articles — Fireworks, category 4 — Part 3: Test methods*;
- EN 16261-4, *Pyrotechnic articles — Fireworks, category 4 — Part 4: Minimum labelling requirements and instructions for use*.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard defines various terms relating to the design, construction, performance, labelling and testing of category 4 fireworks.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2859-1:1999, *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 following terms and definitions apply.

### 3.1 General terms

#### 3.1.1

##### **type**

sample representative of the production envisaged

#### 3.1.2

##### **generic type**

set of articles with a common, very general, design feature and/or with a common characteristic effect

#### 3.1.3

##### **subtype**

set of articles within a generic type with specific design features

#### 3.1.4

##### **individual item**

article within a generic type and/or a subtype, for which every possible feature and characteristic has been fixed

Note 1 to entry: Each feature and characteristic will be specified in the technical name or a technical data sheet, as appropriate.

#### 3.1.5

##### **technical name**

general description of an individual item

#### 3.1.6

##### **trade name**

description of an individual item from a particular supplier

#### 3.1.7

##### **compound firework**

device in which all the individual elements have been EC-type certified and which does not need any new specific EC-type certification

## 3.2 Technical terms

### 3.2.1

#### **Acceptance Quality Level**

##### **AQL**

quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance sampling

### 3.2.2

#### **batch test**

test performed on a sample of products taken at random from a production batch to check compliance with a given standard

Note 1 to entry: Batch testing needs all products in the production batch comply with the characteristics the standard requires to assure homogeneity of the whole batch. It aims at proving that all products which are placed on the market are in conformity with the type which is described in the EC type-examination certificate and have been successfully submitted to type tests as determined by the standard.

### 3.2.3

#### **burst height**

altitude of the bursting point of the effect or the article

Note 1 to entry: For single break shells, this is the height at which the bursting charge of the shell functions. For complex shells, it is the highest bursting effect.

### 3.2.4

#### **calibre**

external diameter of a firework designed to be fired from a mortar tube (e.g. shell) or the internal diameter of a tube which contains pre-assembled items (e.g. a roman candle)

Note 1 to entry: It is important that the internal diameter of the mortar tube is close to the external diameter of the firework, enabling the existence of a peripheral gap which is a compromise between the necessity of a free motion of the firework in the tube and a lowest escape of lift gases passing by the firework during its motion in the tube.

### 3.2.5

#### **critical nonconforming unit**

nonconforming unit with one or more critical nonconformities, with or without major or minor nonconformities

### 3.2.6

#### **critical nonconformity**

nonconformity that judgement and experience indicate is likely to result in hazardous or unsafe conditions

Note 1 to entry: This type of nonconformity is referred to a 'class A nonconformity' in ISO 2859-1.

### 3.2.7

#### **debris**

any part of the firework which remains after the firework has ceased to function

Note 1 to entry: Chemical products resulting from the combustion of the pyrotechnic compositions are not considered as "debris".

### 3.2.8

#### **delay fuse**

fuse incorporated into the initial fuse of a firework to introduce a delay between firing and functioning or the internal fuse in a firework to enable sequential firing of elements of the firework (e.g. in a shell).

### 3.2.9

#### **drift**

movement of a firework away from the direction of firing, as a result of the action of the wind or other effects

Note 1 to entry: For instance, an aerial wheel might drift away from the vertical direction in which it was fired. Drift can be quantified in terms of angle or distance.

### 3.2.10

#### **effect broadness**

#### **broadness of effect**

horizontal dimension of the firework effect

### 3.2.11

#### **effect height**

maximum height achieved by the firework

Note 1 to entry: For a shell, this would equate to the burst height plus the burst radius of the shell. For waterfalls, this corresponds with the vertical length of the effect.

### 3.2.12

#### **effect range**

horizontal distance between the firing point and the point of explosion (or functioning) on to the water

### 3.2.13

#### **effect time**

total duration of effect from its visible and/or aural emergence until vanishing

### 3.2.14

#### **end closure**

part or crimp which is designed to seal one end of a firework case

### 3.2.15

#### **explosion**

sudden release of energy accompanied by a bang with or without a flash

### 3.2.16

#### **firework case**

container which is designed to retain pyrotechnic compositions

Note 1 to entry: According to its mechanical strength, this container may intentionally (by design) influence the firework's behaviour.

### 3.2.17

#### **firing angle**

angle (measured from the vertical) of an item as prepared for firing

### 3.2.18

#### **flash powder**

uncompacted pyrotechnic composition used to produce an aural effect, with or without emission of an intense and short flash light, or used as a bursting charge or lifting charge

### 3.2.19

#### **friction head**

ignition head designed to be ignited by friction

Note 1 to entry: See "Ignition head".



### 3.2.20

#### **fuse**

small tube or cord containing a pressed or compacted pyrotechnic composition which burns gradually to ignite a pyrotechnic composition or article

Note 1 to entry: By extension, this term also applies to other types of fire transmission devices like quickmatch or blackmatch or pressed fuse.

Note 2 to entry: See also "delay fuse".

### 3.2.21

#### **gross mass**

total mass of the firework (not including any ancillary equipment (e.g. frames))

### 3.2.22

#### **group**

set of individual items which will be considered together for the purposes of testing and certification

Note 1 to entry: Synonymous with "family".

### 3.2.23

#### **ignition head**

initial fuse consisting of pyrotechnic composition only

### 3.2.24

#### **initial fuse**

component of a firework which is ignited in order to start the firework functioning

### 3.2.25

#### **initial fuse time**

burning time of the initial fuse

### 3.2.26

#### **lifting charge**

non-consolidated pyrotechnic composition used to project the firework as a whole or a sub component of the firework into the air (e.g. in mine or shell)

### 3.2.27

#### **major nonconforming unit**

nonconforming unit with one or more major nonconformities, with or without minor nonconformities, but with no critical nonconformities

### 3.2.28

#### **major nonconformity**

nonconformity, other than a critical nonconformity, which is likely to result in failure, to reduce materially the usability of the firework, or to increase the potential hazard

Note 1 to entry: This type of nonconformity is referred to a 'class B nonconformity' in ISO 2859-1.

### 3.2.29

#### **minor nonconforming unit**

nonconforming unit with one or more minor nonconformities, but with no critical or major nonconformities

**3.2.30**

**minor nonconformity**

nonconformity that is not likely to reduce materially the usability of the firework

Note 1 to entry: This type of nonconformity is referred to a 'class C nonconformity' in ISO 2859-1.

**3.2.31**

**mortar**

tube which is closed at the lower end and from which a firework is projected

**3.2.32**

**Net Explosive Content**

**NEC**

mass of pyrotechnic composition in the firework, excluding the pyrotechnic composition of the initial fuses and any transmitting fuses

Note 1 to entry: Net explosive quantity (NEQ), net explosive mass (NEM) or net explosive weight (NEW) are often used to convey the same meaning.

**3.2.33**

**nonconforming unit**

firework or assembly of fireworks fused together at the manufacturing level with one or more nonconformities

**3.2.34**

**nonconformity**

non-fulfilment of a requirement

[SOURCE: ISO 2859-1:1999]

**3.2.35**

**overall duration**

time from the start of the first effect until the end of the last effect and, for an aerial wheel, the flight time from the take off until the landing

**3.2.36**

**packaging**

wrapping or encasing in which an item is presented for transport, storage and/or sale

**3.2.37**

**principal effect**

main visual and/or aural effect the firework has been designed to display

**3.2.38**

**projected article**

article whose movement is produced by a non consolidated pyrotechnic composition in a single event and a short duration

**3.2.39**

**projected debris**

fragments projected laterally from the firework while functioning

**3.2.40**

**propelled article**

article moved by an attached or integral motor, producing thrust over an extended period of time

**3.2.41**

**protective pack**

package of one or more fireworks which may act as protection of the means of ignition and/or for labelling purposes

### **3.2.42**

#### **pyrotechnic composition**

explosive substance or mixture of explosive substances which is designed, on ignition or initiation, to produce heat, light, sound, gas or smoke or a combination of such effects through self-sustained exothermic chemical reactions

### **3.2.43**

#### **pyrotechnic leakage**

pyrotechnic composition released from damaged pyrotechnic articles

### **3.2.44**

#### **pyrotechnic unit**

discrete unit that is part of a firework which, upon functioning, will burn or explode to produce a visual and/or aural effect

Note 1 to entry: The effect produced by a pyrotechnic unit is normally part of a combination of effects produced by the firework.

### **3.2.45**

#### **transmitting fuse**

component of a firework which is intended to transmit ignition from one part of a firework to another, with or without a delay

### **3.2.46**

#### **type test**

test performed on a sample of products, representative of the production envisaged, in order to demonstrate their compliance with the Essential Safety Requirements of Annex I and the relevant provisions of the Directive 2007/23/EC

Note 1 to entry: The successful submission to type tests leads to the attribution of a type-examination certificate.

### **3.2.47**

#### **wind speed**

measured speed of the wind at a defined height

#### 4 List of generic types and descriptions

	Generic type	Description	Comments (informative)	Principal effects
4.1	Aerial wheel	Tubes containing propellant charges and sparks-, flame- and/or noise-producing pyrotechnic composition(s), the tubes being fixed to a supporting structure, designed to rotate and ascend into the air.	Some of the tubes (if not all) are fixed in such a way that the device ascends, in an unsupported manner, into the air.	Rotation and ascent, with emission of sparks and flames, producing a visual and/or aural effect.
4.2	Aquatic firework	A firework designed to be floated on or near the surface of water by means of a buoyancy device or by itself and to function on or below water.		Same as Bengal flames, fountains, mines, shells for example.
4.3	Combination	Assembly including several elements, of one or more types, each corresponding to one of the types of firework listed in this table, with one or more points of ignition. Compound fireworks shall not be considered as combinations.	The elements may be fused together in series or parallel, with or without delay fuses, to give their effects in a sequence or at the same time.	As for the individual elements.
4.4	Component	Article usually included in other fireworks, in most cases without lifting charge and which requires further preparation.		See "List of Components".
4.5	Fountain	Case containing sparks- and/or flame- and/or aural effect-producing pyrotechnic composition.		Emission of sparks and flames with aural effect other than report or without any aural effect.
4.6	Guided Firework	An article containing pyrotechnic composition designed to function along a rope or other guide and to produce a visual and/or aural effect.	For example, line rockets may also be used to transmit ignition to other fireworks, generally fixed on a frame located at a distance from the firing place, e.g. at the top of a steeple or a tower.	Emission of a visual and/or aural effect.
4.7	Mine	Article which may include integral mortar, containing propellant charge and more than one pyrotechnic unit, having as main effect the discharge of all the pyrotechnic units in a single ejection.	Pyrotechnic units may be stars, bangers, butterflies, crackers, hummers, spinners/tourbillions, whistles, for example.	Ejection of all the pyrotechnic units in a single burst producing a widely dispersed visual and/or aural effect in the air.

*"to be continued"*

	Generic type	Description	Comments (informative)	Principal effects
4.8	Report	Article containing pyrotechnic composition designed to produce a bang.		Bang - may also include a coloured (or other effect) delay element.
4.9	Rocket	Article containing pyrotechnic composition and/or pyrotechnic units, equipped with a launching motor and stick(s) or other means for stabilization of flight, and designed to be propelled into the air.		Ascend with visual and/or aural effect.
4.10	Roman candle	Tube containing a single charge or alternating propellant charges and pyrotechnic units as well as transmitting fuses.	The pyrotechnic units may be bombettes, comets, hummers, maroons, mini mines, stars, whistles, for example.	Ejection of the pyrotechnic units in succession, producing a series of visual and/or aural effects in the air.
4.11	Shell	A device with or without lifting charge, with one or more delays before bursting, containing pyrotechnic unit(s) or loose pyrotechnic composition and usually designed to be projected and burst at a distance from a mortar.	Pyrotechnic units may be stars, butterflies, crackers, hummers, spinners/tourbillions, whistles, etc. as well as report shells or other shells to produce multiple bursts simultaneously or sequentially.	As for the individual pyrotechnic units.
4.12	Smoke/aerosol generator	Article containing smoke producing pyrotechnic composition or heat/gas generating composition to evaporate a substance or disperse hygroscopic particles and designed to function on the ground or fixed to a support.	Casing of the article may be made of different materials.	Emission of white or coloured smoke/aerosol without any aural effect.

## 5 List of subtypes and descriptions

	Subtype	Description	Link to Generic Type/Comments	Principal effects
5.1	Aquatic shell	A spherical, cylindrical or other shell designed to be floated on water by means of a buoyancy device or by itself and which is fired from a mortar.	See " <b>Aquatic firework</b> ".	Same effects as shells.
5.2	Bag mine	Container with propellant charge and pyrotechnic units, designed to be placed in a mortar and to function as a mine.	See " <b>Mine</b> ". Container is typically a cloth or paper or plastic bag or cloth or paper cylinder.	Same effects as mines.
5.3	Battery	Assembly including several elements, each of the same type or sub type and corresponding to one of the types of firework listed in this standard, with one or more points of ignition.	See " <b>Combination</b> ". The elements may be fused together in series or parallel, with or without delay fuses, to give their effects in a sequence or at the same time.	As for the individual elements.
5.4	Bengal flame	Tube containing slow-burning pyrotechnic composition.	See " <b>Fountain</b> ". The pyrotechnic composition may be pressed or not. The tube has no choke and optionally burns away during functioning.	Emission of white or coloured flame.
5.5	Complex shell	<p>A shell composed of several discrete elements designed to be projected from a mortar with a single lifting charge and to function sequentially or simultaneously.</p> <p>This subtype include the following articles:</p> <p>— Multibreak Shell: A shell with several discrete elements and with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic composition and designed to be projected from a mortar and to function sequentially or simultaneously by the lighting of multiple internal delay fuses.</p> <p>— Peanut Shell: A shell with two or more spherical shells in a common wrapper propelled by the same propellant charge with independant internal delay fuses.</p>	See " <b>Shell</b> ".	As for the individual elements.

*"to be continued"*

	Subtype	Description	Link to Generic Type/Comments	Principal effects
		<p>— Repeater Shell: A shell with several discrete elements and with or without propellant charge, with delay fuse and bursting charge, pyrotechnic unit(s) or loose pyrotechnic composition and designed to be projected from a mortar and to function sequentially by the lighting of the internal delay fuses by the functioning (burst) of the previous device.</p> <p>— Shell of shells (spherical): A shell with or without propellant charge, with delay fuse and bursting charge, containing report or other shells as subcomponents and designed to be projected from a mortar.</p>		
5.6	Daylight shell	A spherical, cylindrical or other shell designed to be fired from a mortar and which contains discrete elements which are visible in the daylight and/or components which produce an aural effect.	See " <b>Shell</b> ".	Emission of coloured light and/or smoke, and/or aural effect.
5.7	Flash banger	Non-metallic case containing metal-based pyrotechnic composition.	See " <b>Report</b> ". May be used as pyrotechnic units in fireworks (shells, Roman candles, for example).	Report and a flash of light.
5.8	Ground maroon	A maroon without propellant charge and with or without delay fuse, designed to produce its report on the ground.	See " <b>Report</b> ".	Production of a loud bang.
5.9	Lance	A small diameter tube containing a compacted pyrotechnic composition, burning in a cigarette way, intended to deliver a thermal output to manually ignite other fireworks or a small white or coloured flame to be used in lanceworks.	See " <b>Fountain</b> ". The pyrotechnic composition may be pressed or simply consolidated. The tube has no choke and generally burns away during functioning.	Thermal output and/or visual effect.
5.10	Maroon	A firework containing pyrotechnic unit(s) or loose pyrotechnic composition and designed to produce a loud bang report as main effect.	See " <b>Report</b> ". Not to be confused with bangers, as their design is similar to shells or bombettes, which is not the case of bangers.	Production of a loud bang.

*"to be continued"*

	Subtype	Description	Link to Generic Type/Comments	Principal effects
5.11	Maroon shell	A maroon with or without propellant charge and with delay fuse, designed to be projected from a mortar and to produce its report in the air.	See <b>"Shell"</b> and <b>"Report"</b> . This article is strictly shell-type designed.	Production of a loud bang.
5.12	Parachute rocket	Article containing pyrotechnic composition and/or pyrotechnic units, which contains subcomponents some or all of which will descend on parachutes and equipped with a launching motor and stick(s) or other means for stabilization of flight, and designed to be self-propelled into the air.	See <b>"Rocket"</b> .	As for the individual subcomponents.
5.13	Parachute shell	A spherical, cylindrical or other shell designed to be fired from a mortar and which contains sub-components some or all of which will descend on parachutes.	See <b>"Shell"</b> .	As for the individual pyrotechnic units contained in the shell.
5.14	Preloaded mortar, shell in mortar	Assembly comprising a shell inside a mortar from which the shell is designed to be projected.	See <b>"Shell"</b> .	As for the individual shell.
5.15	Saxon	Tube intended to be attached to a support in its middle so that it can rotate and containing pyrotechnic compacted charge(s) which burn opposite and eject their combustion products sideways so that rotation is obtained.	See <b>"Fountain"</b> . The two pyrotechnic charges may be merged in a single charge . In that case, this charge burns at its two free ends.	Rotation, with emission of sparks and/or flames, with or without aural effect.
5.16	Set piece	Assembly including one or multiple elements which is designed not to rotate.	See <b>"Combination"</b> . Generally these elements belong to the sub type of lances, fountains and cascades, but can also include bangers, ground maroons and/or whistles.	As for the individual elements.
5.17	Shot tube	Tube containing a single propellant charge and a pyrotechnic unit, with or without a bursting charge, with or without a transmitting fuse.	See <b>"Roman candle"</b> . The pyrotechnic unit may be a bombette, a comet, a hummer, a shell (including maroon shells), a whistle, for example.	Single shot effect, as for Roman candles.

*"To be continued"*



	Subtype	Description	Link to Generic Type/Comments	Principal effects
5.18	Signal rocket	Tube containing pyrotechnic composition and/or pyrotechnic unit(s), equipped with a stick or other means for stabilization of flight, and designed to be propelled into the air to produce predominantly an aural effect.	See " <b>Rocket</b> ".	Constant or variable pitch sound or report.
5.19	Spinner	Tube or tubes containing pyrotechnic composition with aerofoils attached.	See " <b>Aerial wheel</b> ".	Rotation and ascent, with emission of sparks and/or flames, with or without aural effect.
5.20	Strobe	Tube containing an intermittently-burning pyrotechnic composition to produce long and rapid series of flashes at a constant frequency. The tube has no choke and optionally burns away during functioning.	See " <b>Fountain</b> ". The pyrotechnic composition may be pressed or not.	Production of series of flashes.
5.21	Sub aquatic fireworks	Firework designed to function under the water near the surface.	See " <b>Aquatic firework</b> ". These articles have the capacity to float at a few centimetres under the surface of water.	Essentially similar to Bengal flames: emission of coloured flame.
5.22	Volcano	Conical device containing consolidated or pressed composition in which the effect (height or intensity) increases as the device burns.	See " <b>Fountain</b> ".	Production of an increasing visual effect.
5.23	Waterfall	Case containing pressed or consolidated pyrotechnic composition producing sparks and flames and generally to consume the tube whilst burning.	See " <b>Fountain</b> ". Combustion products are ejected from the flame zone at low speed, then drop downwards as water in a waterfall.	Production of a bright white or coloured "waterfall" visual effect.
5.24	Wheel	Assembly including a tube or tubes containing pyrotechnic composition and provided with a means of attaching it to a support so that it can rotate.	See " <b>Fountain</b> " and " <b>Combination</b> ". This article is designed to rotate about a fixed point in either a vertical or horizontal plane.	Rotation around a fixed point or axis and emission of sparks and flames, with or without aural effect(s).

## 6 List of components and descriptions

The list of components is not exhaustive. These components are not only intended for use by fireworks manufacturers, but also by persons with specialized knowledge who will be trained accordingly.

	Component	Description	Comments	Principal effects
6.1	Bombette	Pyrotechnic component of a firework (e.g. roman candle or a shot tube), similar to a shell, which may optionally leave a trail as it ascends, and which bursts at or near the apex of its flight.		Ejection of pyrotechnic units (e.g. stars, crackers, whistles, for example.), producing a visual and/or aural effect in the air.
6.2	Butterfly	A firework component that comprises a tube, which spreads stars or other effects from one or both ends during its bursting.		Ejection of stars producing a visual effect in the air.
6.3	Cracker	A firework component that burns with a crackling sound and may optionally produce a glittering or sparkling effect.		Production of crackling sound, glitter and sparkles.
6.4	Tubular charge	Tube containing compacted pyrotechnic composition, with or without nozzle, with or without report-producing pyrotechnic composition.	<p>This component includes the following objects (non exhaustive list):</p> <p><u>Hummer:</u> Tube containing pyrotechnic composition designed to burn in such a way that the tube rotates in the air producing a constant or variable pitch sound with or without a final report.</p> <p><u>Serpent:</u> Tube containing pyrotechnic composition, producing coloured flames and/or sparks, with or without a final report.</p> <p><u>Tourbillion:</u> Tube or tubes containing pyrotechnic composition, which burns in a way that gives a rotary motion to the tube.</p> <p><u>Whistle:</u> Tube containing pressed, whistling pyrotechnic composition(s), with or without sparks, with or without report.</p>	<p>Rotation and emission of a constant or variable pitch sound.</p> <p>Emission of a colour flame or point with or without sparks and with or without report as ending effect.</p> <p>Rotation, with production of sparks and/or flames, with or without aural effect.</p> <p>Whistling, with or without sparks and with or without a report.</p>

## Annex A (informative)

### Overview of essential safety requirements and corresponding clauses of all parts of EN 16261

The correspondence between the parts of EN 16261 and Directive 2007/23/EC on the placing on the market of pyrotechnic articles can be found in Annex ZA of each part of EN 16261.

Table A.1 gives an overview about all essential safety requirements and the corresponding clauses and subclauses of all parts of EN 16261

**Table A.1 — Overview of essential safety requirements and  
corresponding clauses of all parts of EN 16261**

Essential Requirements (ESR) of Directive 2007/23/EC	Clause(s)/sub-clause(s) of			Qualifying remarks/Notes
	EN 16261-2:2012	EN 16261-3:2012	EN 16261-4:2012	
(1)	7			
(2)	1		5	
(3) 1 <sup>st</sup> paragraph	7.2, 9, 10	6.10		
(3) 2 <sup>nd</sup> paragraph		4		
3 (a)	5	6.1, 6.2, 6.3, 6.10		
3 (b)	1, 7.1, 7.2.2, 9.2	6.8, 6.9		
3 (c)	7.1, 7.2.2, 9.2	6.8		
3 (d)	7.2.2, 9.2	6.9		
3 (e)	9.2	4.1, 6.10		Specially for aquatic fireworks
3 (f)	7.2.2, 9.2	6.9		
3 (g)	6.2, 8, 9.3			
3 (h)			4.6, 5, Annex A	
3 (i)	7.1, 7.2.2, 8, 9.2, 9.3	6.8, 6.9		
3 (j)		5.12	5, Annex A	
3 (last paragraph)	7.1	6.8		
4 (a)	1			
4 (b)	1			
5 A (1)			4.3	
5 A.(2)	1, 5, 7.2.7	6.2, 6.10.2	Annex A	
5 A.(3)	6.1		4.12, 5	
5 A.(4)	7.2.2, 7.2.3	6.10		
5 A.(5)	6.2, 8, 9.3			

## **Annex ZA** (informative)

### **Relationship between this European Standard and the Essential Requirements of EU Directive 2007/23/EC on the placing on the market of pyrotechnic articles**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2007/23/EC on the placing on the market of pyrotechnic articles. The Parts 1, 3 and 4 of the Standard will support Part 2 to fulfil the Essential Requirements of the Directive 2007/23/EC Annex 1.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the Requirements of that Directive and associated EFTA regulations.

**WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.**

## Bibliography

- [1] Directive 2007/23/EC of the European Parliament and of the Council of 23 May 2007 on the placing on the market of pyrotechnic articles
- [2] EN 16261-2:2012, *Pyrotechnic articles — Fireworks, Category 4 — Part 2: Requirements*
- [3] EN 16261-3:2012, *Pyrotechnic articles — Fireworks, Category 4 — Part 3: Test methods*
- [4] EN 16261-4:2012, *Pyrotechnic articles — Fireworks, Category 4 — Part 4: Minimum labelling requirements and instructions for use*





# British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

## About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

## Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at [bsigroup.com/standards](http://bsigroup.com/standards) or contacting our Customer Services team or Knowledge Centre.

## Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at [bsigroup.com/shop](http://bsigroup.com/shop), where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

## Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to [bsigroup.com/subscriptions](http://bsigroup.com/subscriptions).

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

**PLUS** is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit [bsigroup.com/shop](http://bsigroup.com/shop).

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email [bsmusales@bsigroup.com](mailto:bsmusales@bsigroup.com).

## Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

## Copyright

All the data, software and documentation set out in all British Standards and other BSI publications are the property of and copyrighted by BSI, or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI. Details and advice can be obtained from the Copyright & Licensing Department.

## Useful Contacts:

### Customer Services

**Tel:** +44 845 086 9001

**Email (orders):** [orders@bsigroup.com](mailto:orders@bsigroup.com)

**Email (enquiries):** [cservices@bsigroup.com](mailto:cservices@bsigroup.com)

### Subscriptions

**Tel:** +44 845 086 9001

**Email:** [subscriptions@bsigroup.com](mailto:subscriptions@bsigroup.com)

### Knowledge Centre

**Tel:** +44 20 8996 7004

**Email:** [knowledgecentre@bsigroup.com](mailto:knowledgecentre@bsigroup.com)

### Copyright & Licensing

**Tel:** +44 20 8996 7070

**Email:** [copyright@bsigroup.com](mailto:copyright@bsigroup.com)

## BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK



...making excellence a habit.™