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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Pyrotechnic articles - Other pyrotechnic articles - Ignition devices

Articles pyrotechniques - Autres articles
pyrotechniques - Dispositifs d'allumage

Pyrotechnische Gegenstände - Sonstige pyrotechnische
Gegenstände - Anzündmittel

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 212.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

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

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European foreword

This document (prEN 16265:2025) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16265:2015.

prEN 16265:2025 includes the following significant technical changes with respect to EN 16265:2015:

- references to EU Directives 2007/23/EC have been deleted;
- definition of explosive substance has been improved, definitions of firework have been deleted, definitions of output effect and secondary explosive have been added in 3.2;
- three subtypes have been added: reactive tape (4.2.15), ignition rod (4.2.17) and ignition stick (4.2.18);
- the subclause on the NEC of the components for pyrotechnic trains has been revised (4.3.2);
- the subclause on pyrotechnic cords and fuses has been revised (4.3.3);
- a subclause on categorization criteria has been added for hand-held igniters (4.3.6);
- pyrotechnic trains have been added to 4.3 (4.3.7), 5.1 (5.1.6) and 5.3 (5.3.6);
- a subclause on the use of detonative explosives substances has been added to subclause 5.1 (5.1.7);
- the subclause on sensitivity of pyrotechnic composition has been deleted from Clause 5 and Table 1 has been revised accordingly;
- a subclause on the “use by” date has been added to Clause 5 (5.13) and Table 1 has been revised accordingly; the subclause of the “use by” date in 7.2 has been revised (7.2.7);
- determination of all-fire/no-fire levels has been deleted for batch tests (5.15.2);
- acceptable numbers of critical and major non-conformities have been added in Table 2;
- non-conformities regarding tolerances provided in the definition file of the article have been added in 5.15.4;
- the number of items to be tested has been changed from 3 items to 3 or 5 items in 6.3.21, depending on the test method used and if the articles contain detonative explosives;
- the subclause on the ESD generator has been deleted from 6.2, as well as the Annex E on the adjustment of the ESD generator;
- text height on the transparent sheet has been changed. Figure 1 has been revised accordingly; the subclause on printing (7.2.8) has been revised accordingly;
- the subclause on the slow release test has been deleted from 6.3.13;

- the subclauses on the electrostatic discharge has been revised (6.3.19.2 and 6.3.19.3). The Table 5 on the minimum ESD impulse has been deleted;
- the subclause on the determination of the detonative/non- detonative characteristics (6.3.21) has been revised;
- the subclause on the details on manufacturer or importer (7.2.6) has been revised;
- the subclause on the marking of very small items (7.2.9) has been revised;
- Annex G has been added;
- Annex ZB has been deleted.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

1 Scope

This document defines the terms and specifies the requirements, means of categorization, test methods, minimum labelling requirements and instructions for use of the article, for ignition devices (except ignition devices for pyrotechnic articles for vehicles) of the following generic types:

- igniters;
- components for pyrotechnic trains;
- pyrotechnic cords and fuses;
- delay fuses;
- fuzes.

NOTE Safety fuses are subject to Directive 2014/28/EU and therefore not considered in this document.

This document does not apply for articles containing pyrotechnic compositions that include any of the following substances:

- arsenic or arsenic compounds;
- polychlorobenzenes;
- mercury compounds;
- white phosphorus;
- picrates or picric acid.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 ISO 13385-1:2019, *Geometrical product specifications (GPS) - Dimensional measuring equipment - Part 1: Design and metrological characteristics of callipers (ISO 13385-1:2019)*

EN 61672-1:2013, *Electroacoustics - Sound level meters - Part 1: Specifications*

FprEN 13763-1:2025, *Explosives for civil uses - Detonators and detonating cord relays - Part 1: Requirements*

EN 10088-2:2024, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resistant steels for general purposes*

ISO 2859-1:1999,¹ *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

¹ As impacted by ISO 2859-1:1999/A1:2011.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 General terms

3.1.1

type

sample representative of the production envisaged

3.1.2

generic type

set of articles with common, very general, design features and/or with common characteristic effects

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 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

3.2 Technical terms

3.2.1

acceptance quality limit

AQL

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

[SOURCE: ISO 2859-1:1999, 3.1.26]

3.2.2

acceptor charge

acceptor component

charge of pyrotechnic composition or component receiving a stimulus from another charge (see “donor charge”)

3.2.3**all-fire current**

minimum current (generally expressed in Amperes DC) needed to ensure that an electric igniter is fired within a given time frame (see “all-fire level”)

3.2.4**all-fire level**

minimum level of the initiation input (e.g. electric current in Amperes, mechanical force in Newtons, optical power in Watts, etc.) needed to ensure that an igniter or an ignition device is fired within a given time frame

Note 1 to entry: All-fire level is a characteristic given in the instructions for use of every igniter. It is generally associated with a probability level (e.g. 99,9 % at 95 % confidence level) within a specified time frame (e.g. 50 ms).

3.2.5**ancillary equipment**

any device which does not form part of a pyrotechnic article, but which is supplied with it and is required in order that the article functions safely and correctly when used in accordance with the instructions for use of the article

3.2.6**batch test**

test performed on one or more sample(s) of products taken at random from a production batch to check compliance with a given specification

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

3.2.7**black powder**

intimate mixture of charcoal and sodium nitrate or potassium nitrate with or without sulphur

3.2.8**booster**

pyrotechnic device used as a donor charge to amplify the energy supplied to the acceptor charge

3.2.9**bridgewire**

resistive element connecting the leading wires inside an electric igniter or primer

3.2.10**burning time**

time in seconds for a defined mass or length of pyrotechnic composition to burn from its ignition to its consumption

3.2.11**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 as a 'class A nonconformity' in ISO 2859-1:1999.

3.2.12

critical nonconforming unit

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

3.2.13

deflagration

reaction of fast combustion through a pyrotechnic composition at subsonic velocity in the reacting explosive substance

3.2.14

delay fuse duration

time delay of a delay fuse

3.2.15

detonation

reaction which propagates through an explosive substance at supersonic velocity in the reacting material

[SOURCE: EN 13687-1:2002, 2.19]

3.2.16

detonative explosive

explosive substance which can undergo a fast-internal decomposition reaction leading to a detonation in normal use

3.2.17

donor charge

charge of pyrotechnic composition supplying a stimulus to another charge (see “acceptor charge”)

3.2.18

electrostatic discharge

ESD

sudden and momentary electric current that flows between two objects at different electrical potentials

3.2.19

explosive substance

solid or liquid substance or a mixture of substances which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings

Note 1 to entry: Pyrotechnic substances are included even when they do not evolve gases.

3.2.20

firing current

constant electrical direct current required to reliably initiate functioning of an electric igniter or primer

3.2.21

friction head

ignition head designed to be ignited by friction

3.2.22**fusehead**

part of an electric igniter consisting of one or more pairs of metal conductors, bridged by fine resistance wire(s), and coated with a pyrotechnic composition which initiates when the firing current is passed through the bridgewire(s)

3.2.23**gross mass**

total mass of a pyrotechnic article (not including any ancillary equipment)

3.2.24**ignition head**

initial fuse consisting of pyrotechnic composition only

3.2.25**ignition tube**

tube usually containing a thin pyrotechnic charge on the inner wall capable on activation of transmitting a deflagration effect from one end of the tube to the other at a subsonic velocity

3.2.26**incompatible substances**

materials that undergo chemical reaction together resulting in unsafe conditions

3.2.27**linear burning rate**

length of pyrotechnic composition in millimetres or metres divided by the burning time in seconds

3.2.28**main charge**

pyrotechnic composition which produces the principal effect

3.2.29**major nonconformity**

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

Note 1 to entry: This type of nonconformity is referred to as a “class B nonconformity” in ISO 2859-1:1999.

3.2.30**major nonconforming unit**

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

3.2.31**minor nonconformity**

nonconformity that is not likely to reduce materially the usability of the pyrotechnic article

Note 1 to entry: This type of nonconformity is referred to as a “class C nonconformity” in ISO 2859-1:1999.

3.2.32

minor nonconforming unit

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

3.2.33

misfire

incomplete functioning or non-functioning of a pyrotechnic article after application of initiation stimulus

3.2.34

net explosive content

NEC

total mass of explosive substance in a pyrotechnic article

3.2.35

no-fire current

maximum current (generally expressed in Amperes DC) that can be applied without causing an electric igniter to function within a specified time period (see “no-fire level”)

3.2.36

no-fire level

maximum level of the initiation input (e.g. electric current in Amperes, mechanical force in Newtons, optical power in Watts, etc.) that can be applied without causing an igniter to function within a specified time period

Note 1 to entry: No-fire level is a characteristic given in the instructions for use of every igniter. It is generally associated with a probability level (e.g. 99,9 % at 95 % confidence level) within a specified time frame (e.g. 50 ms).

3.2.37

nonconforming unit

pyrotechnic article with one or more nonconformities

3.2.38

nonconformity

non-fulfilment of a requirement

3.2.39

other pyrotechnic article

pyrotechnic article other than fireworks, theatrical pyrotechnic articles and pyrotechnic articles for vehicles

3.2.40

output effect

final effect used to initiate or transmit ignition to another pyrotechnic article

3.2.41

“pin-to-case” configuration

configuration in which the ESD occurs between the two short-circuited leading wire ends and the igniter casing or between the pins and the casing of the connector of the igniter

3.2.42

“pin-to-pin” configuration

configuration in which the ESD occurs through the bridgewire of the igniter

3.2.43**primary pack**

package of one or more pyrotechnic articles, offered for retail sale as a single unit

Note 1 to entry: A primary pack is neither necessarily the smallest piece of packaging nor a full enclosure: for instance, pyrotechnic cords and fuses are often delivered coiled around a reel as the smallest piece of retail sale.

3.2.44**principal effect**

main effect a pyrotechnic article is designed to produce

3.2.45**pyrotechnic component**

any component of a pyrotechnic article which contains one or more pyrotechnic compositions

3.2.46**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

3.2.47**pyrotechnic delay**

pyrotechnic device designed in such a manner that it generates a delay in the transmission of ignition in a pyrotechnic train

Note 1 to entry: Delay fuses are specific examples of such pyrotechnic delays (see “delay fuse”).

3.2.48**pyrotechnic device**

any device containing pyrotechnic composition(s) which determine its principal effect

3.2.49**pyrotechnic operation**

any operation which leads to the direct application of a mechanical, thermal and/or chemical stress on a pyrotechnic composition without intending to ignite or initiate the article at the time the stress is applied

3.2.50**relay**

charge of pyrotechnic composition that is used to transmit ignition

3.2.51**safe test current**

maximum electrical current (generally expressed in Amperes DC) that can be applied without causing an electric igniter to function regardless of the duration

3.2.52**safety friction tip**

friction head that can only be ignited when rubbed against a striker component containing a chemical substance with which it reacts, such as red phosphorus, or a combination of such a chemical substance and an abrasive surface

3.2.53

safety fuse

article consisting of a core of fine-grained black powder surrounded by a flexible woven fabric with one or more protective coverings

Note 1 to entry: Other names are safety cord, fuse cord, mine or mining fuse. This article is the subject of Directive 2014/28/EU and to the corresponding European Standard EN 13630.

3.2.54

secondary explosive

detonative explosive that is insensitive to heat or handling impact but will detonate under strong shock impulse

[SOURCE: ISO 26871:2020, 3.1.54, modified – the word “detonative” was added and the word “material” deleted]

3.2.55

slag

condensed reaction products resulting from the combustion of pyrotechnic composition(s)

3.2.56

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 Directive 2013/29/EU

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

3.2.57

use by date

latest date by which an article shall be used if it is to safely exhibit the performance characteristics described in the technical specifications of the article

4 Categories and types of ignition devices

4.1 Generic types

The generic types are defined as follows:

4.1.1 Igniter: Article containing pyrotechnic composition(s) used to initiate combustion or deflagration. They may be actuated by chemical, electrical, optical or mechanical means.

NOTE Complex igniters (e.g. some integral rocket igniters) are not considered as subtypes of “igniters”, but linked to “gas generators” or “heaters” (see EN 16263-1 [1], EN 16263-2 [2], EN 16263-3 [3], EN 16263-4 [4] and EN 16263-5 [5]).

4.1.2 Component for pyrotechnic trains: Article, excluding the other generic types containing pyrotechnic composition(s) designed to transmit a pyrotechnic reaction or effect within a pyrotechnic train. They can include bursting charges and lift charges.

4.1.3 Pyrotechnic cord and fuse: Article consisting of black powder or other pyrotechnic composition(s) either coated on a supporting medium and/or inside a tube with or without a protective covering.

4.1.4 Delay fuse: Article consisting of a casing with a core of compacted pyrotechnic composition. Designed to transmit ignition over a time period.

4.1.5 Fuze: Device which incorporates mechanical, electrical, electronic, chemical or hydrostatic components and one or more pyrotechnic composition(s) to initiate a pyrotechnic train.

4.1.6 Hand-held igniter: Article with pyrotechnic composition(s) used to initiate combustion and designed to be held in the hand.

4.1.7 Pyrotechnic train: Combination of articles of other generic types which are functionally linked and, after an initial input of energy, function in a designed sequence to transmit, enhance, distribute and/or delay ignition to one or more other pyrotechnic components.

4.2 Subtypes

The generic types can include the following subtypes:

4.2.1 Black match: *Pyrotechnic cord and fuse* consisting of textile yarns covered with black powder or another fast burning pyrotechnic composition. It burns progressively along its length with an external flame and is used to transmit ignition.

4.2.2 Cord igniter: *Pyrotechnic cord and fuse* consisting of a core of pyrotechnic composition surrounded by a flexible woven fabric, plastic or similar close-fitting sheath. It burns progressively along its length with an external flame and is used to transmit ignition.

4.2.3 Delay element: *Delay fuse* consisting of a core of fine-grained black powder surrounded by a flexible woven fabric with or without one or more protective outer coverings.

NOTE Frequently, when used as a component of fireworks, it is axially inserted into a solid rigid part.

4.2.4 Delay igniter: *Igniter* with a delay unit designed to transmit ignition over a time period.

The delay unit may be either pyrotechnic – a delay fuse – or non-pyrotechnic (e.g. electronic).

4.2.5 Electric igniter: Electrically actuated *igniter*. Electric current is used to heat a resistive element (e.g. bridge wire). The sensitive pyrotechnic composition in contact with the resistive element is ignited by heat transfer. The article initiates a pyrotechnic train or component by the deflagration that is generated.

4.2.6 Ignition cartridge: See “squib”.

4.2.7 Ignition tube: *Pyrotechnic cord and fuse* as defined in 3.2.25.

4.2.8 Magnetically-coupled igniters; *Igniter* that contains an electric circuit in the form of multi-turn coils that can be coupled with a similar electric circuit in the firing equipment and is then intended to be fired by electromagnetic induction.

4.2.9 Mechanical igniter: Mechanically actuated *igniter*. A mechanical signal (e.g. percussion, friction) is used to ignite a pyrotechnic composition sensitive to the mechanical signal. The article initiates a pyrotechnic train or component by the deflagration of the pyrotechnic composition.

4.2.10 Optical igniter: Optically actuated *igniter*. Optical condensed light, transmitted through an optical fibre, is used to ignite a pyrotechnic composition by radiative heat transfer. The article initiates a pyrotechnic train or component by the deflagration of the pyrotechnic composition.

4.2.11 Pressed fuse: *Delay fuse* where pyrotechnic composition is pressed in a rigid case. Pyrotechnic composition burns progressively along the device length with an internal flame.

4.2.12 Primer: *Igniter* consisting of a cap containing pyrotechnic composition(s) for ignition, with or without an auxiliary charge, designed to ignite the propelling charge in a cartridge case.

4.2.13 Quick match: *Pyrotechnic cord and fuse* consisting of textile yarns covered with black powder or another fast burning pyrotechnic composition wrapped loosely in a paper or plasticised paper pipe or sheath. It burns progressively along its length with an external flame and a linear burning rate of several metres per second.

4.2.14 Squib: *Igniter* with a boosting charge, designed to amplify the pyrotechnic output of the igniter.

4.2.15 Reactive tape: *Pyrotechnic cord or fuse* consisting of an adhesive tape with a line of black powder spread along its longitudinal axis, which is usually intended to be folded by the user around the line of black powder so that it behaves in the same manner as quick match.

4.2.16 Touch paper: Paper impregnated with an oxidizing agent such as potassium nitrate and having self-sustaining combustion properties.

4.2.17 Ignition rod: Hand-held igniter consisting of a tube containing pyrotechnic composition that burns slowly.

4.2.18 Ignition stick: Hand-held igniter consisting of rigid wire partially coated at one end with pyrotechnic composition.

4.3 Conditions determining whether an article is P1 or P2

4.3.1 Igniters

When placed on the market as a separate article, igniters shall be categorized as P2 articles if they do not comply with at least one of the following requirements:

- they shall not exhibit bare pyrotechnic compositions except for friction igniters and electric igniters containing less than 10 mg of pyrotechnic composition. The presence of bare composition shall be verified by visual examination in accordance with 6.3.22;
- the igniter shall be designed in such manner that its assembly with any other article does not require a pyrotechnic operation as defined in 3.2.49.

4.3.2 Components for pyrotechnic trains

When placed on the market as a separate article, components for pyrotechnic trains shall be categorized as P2 articles if they do not comply with at least one of the following requirements:

- they shall not exhibit bare pyrotechnic compositions or their design shall prevent any inadvertent or unintentional application of mechanical and/or thermal stimuli to bare pyrotechnic compositions. This characteristic shall be checked by visual examination in accordance with 6.3.22;
- the component shall be designed in such manner that its assembly with any other article does not require a pyrotechnic operation as defined in 3.2.49;
- the NEC of the component shall not exceed 20 g, with any booster not exceeding 0,5 g if they contain perchlorate-based flash composition or 1 g if they contain nitrate-based flash composition.

4.3.3 Pyrotechnic cords and fuses

When placed on the market as a separate article, pyrotechnic cords and fuses shall be categorized as P2 articles except cord igniters and ignition tubes which shall be categorized as P1 if they comply with at least one of the following requirements to be checked by visual examination in accordance with 6.3.22:

- they shall not exhibit bare pyrotechnic compositions, except at their ends; prior to use, the ends shall be protected by an appropriate removable cover or a primary pack;
- they shall be equipped at their ends with specific connecting parts which allow pure mechanical upstream and downstream connections with pyrotechnic articles.

Provided that the articles comply with all the other applicable requirements for P1 articles, and except unfolded reactive tape which shall be categorized as P1 if it complies with all the following requirements:

- its linear weight of black powder shall be smaller than 3 g per metre;
- the linear burning rate of the unfolded reactive tape in accordance with 6.3.8.2 shall be smaller than 0,3 m per second;
- its single length shall not exceed 15 m.

Touch paper is submitted to the same requirements as *Pyrotechnic cord and fuse* and is categorized as a P1 article.

4.3.4 Delay fuses

When placed on the market as a separate article, delay fuses shall be categorized as P2 articles if they do not comply with at least one of the following requirements:

- they shall not exhibit bare pyrotechnic compositions or their design shall prevent any inadvertent or unintentional application of mechanical and/or thermal stimuli to bare pyrotechnic compositions. This characteristic shall be checked by visual examination in accordance with 6.3.22;
- the article shall be designed in such manner that its assembly with any other article does not require a pyrotechnic operation as defined in 3.2.49;
- when they provide a final flash effect that burns in less than 1 s, the NEC of that flash effect shall not exceed 10,0 g of black powder or 1,0 g nitrate/metal-based composition or 0,5 g of any other composition that produces a flash effect.

4.3.5 Fuzes

When placed on the market as a separate article, fuzes shall be categorized as P2 articles if they do not comply with at least one of the following requirements:

- they shall not exhibit bare pyrotechnic compositions or their design shall prevent any inadvertent or unintentional application of mechanical and/or thermal stimuli to bare pyrotechnic compositions;
- the article shall be designed in such manner that its assembly with any other article does not require a pyrotechnic operation as defined in 3.2.49;
- the NEC of the article shall not exceed 20 g, with any booster not exceeding 0,5 g if they contain perchlorate-based flash composition or 1 g if they contain nitrate-based flash composition;
- they shall be equipped with an easily detectable and understandable safe/arm element or safety pin which shall not be easily removable unintentionally during foreseeable conditions of handling and transportation.

All the above characteristics shall be checked by visual examination in accordance with 6.3.22.

4.3.6 Hand-held igniter

When placed on the market as a separate article, hand-held igniters shall be categorized as P2 articles if they do not comply with at least one of the following requirements:

- for hand-held igniters that exhibit bare composition:
 - the self-ignition temperature of the considered composition shall be less than or equal to 150 °C
 - sensitiveness to friction of the considered composition when tested in accordance with 6.3.23.4 shall be less than or equal to 80 N;
 - sensitiveness to impact of the considered composition when tested in accordance with 6.3.23.3 shall be less than or equal to 8 J;
 - sensitiveness to electrostatic discharge of the considered composition when tested in accordance with 6.3.23.2 shall be less than or equal to 150 mJ.
- the hand-held igniter shall be designed in such manner that its assembly with any other article does not require a pyrotechnic operation as defined in 3.2.49.

4.3.7 Pyrotechnic trains

When placed on the market as a separate article, pyrotechnic trains shall be categorized as P2 articles if they do not comply with at least one of the following requirements:

- they shall not exhibit bare pyrotechnic compositions or their design shall prevent any inadvertent or unintentional application of mechanical and/or thermal stimuli to bare pyrotechnic compositions;
- the component shall be designed in such manner that its assembly with any other article does not require a pyrotechnic operation as defined in 3.2.49;
- all their components and articles of other generic types they are made of (except blackmatch and quickmatch) shall comply with the corresponding requirements for category P1.

All the above characteristics shall be checked by visual examination in accordance with 6.3.22.

5 Requirements

5.1 Verification of construction and design

5.1.1 General

When tested in accordance with 6.3.1 and 6.3.2 the ignition device shall be in accordance with the in the definition file regarding construction, dimensions, permanent or removable protections, presence of safe/arm components or safety pins (where appropriate), protections against electrostatic discharges and electromagnetic fields (where appropriate).

The definition file shall show any relevant component, e.g. pyrotechnic unit, with its dimensions, with the mass and details of each pyrotechnic composition used in the article.

5.1.2 Incompatible substances

Pyrotechnic articles shall not contain incompatible substances as defined in 3.2.26 unless effective measures have been taken to permanently segregate incompatible substances one from the other and effective measures have been taken to stabilize mixtures of incompatible substances.

This requirement shall be verified by examination of the design and/or construction from the definition file.

5.1.3 Igniters

The following requirements apply to igniters.

- When a varnish is the only protective barrier for the pyrotechnic composition(s), it shall protect against electric and mechanical stresses. This shall be verified in accordance with 6.3.11, 6.3.14 and 6.3.19;
- Friction igniters (e.g. friction heads, safety friction tips...) shall be protected against mechanical crushing, shock and friction by removable protections until use. The presence of such protections shall be checked by visual examination in accordance with 6.3.22 and verification of design in accordance with to 6.3.2;
- The net explosive content (NEC) of the pyrotechnic composition which is directly ignited by the stimulus shall not exceed 100 mg; this shall be verified from the definition file in accordance with to 6.3.2.2;
- In all cases, the NEC of the igniter shall not exceed 2,0 g; this shall be verified from the definition file of the article in accordance with 6.3.2.2.

When tested in accordance with to 6.3.21, igniters shall not have the capacity to initiate the detonation of the charge as defined in 6.3.21.2.

5.1.4 Delay fuses

When delay fuses are sensitive to mechanical crushing, shock and friction, they shall bear removable protections. It shall be checked by visual examination in accordance with 6.3.22 and verification of construction and design in accordance with 6.3.2.2.

5.1.5 Fuzes and components for pyrotechnic trains

The following requirements apply to fuzes and components for pyrotechnic trains.

- When they are sensitive to mechanical crushing, shock and friction, they shall bear removable protections until they are assembled to another article;
- where the main charge burns in less than 1 s, their NEC shall not exceed 10,0 g of black powder or equivalent; 4,0 g nitrate/metal-based flash composition or equivalent; 2,0 g of any other flash composition.

All the above characteristics shall be checked by visual examination in accordance with 6.3.22 and verification of construction and design in accordance with 6.3.2.

5.1.6 Pyrotechnic trains

When pyrotechnic trains are sensitive to mechanical crushing, shock and friction, they shall bear removable protections. It shall be checked by visual examination in accordance with 6.3.22 and verification of construction and design in accordance with 6.3.2.2.

5.1.7 Detonative explosives

Pyrotechnic articles of categories P1 and P2 shall not contain detonative explosives other than black powder and flash composition, except when they meet the following conditions:

- (a) the extraction of the detonative explosive from the pyrotechnic article is only possible with the need of specific tools, knowledge and/or methods;

- (b) for category P1, the pyrotechnic article, as designed and manufactured and when functioned in accordance with its intended use, cannot function in a detonative manner and cannot initiate secondary explosives;
- (c) for category P2, the pyrotechnic article is designed and intended not to function in a detonative manner, or, if designed to detonate, it cannot as designed and manufactured initiate secondary explosives.

Requirements (a), (b) and (c) shall be verified by examination of the design from the definition file and visual inspection in accordance with 5.1 and 6.3.22.

Requirements (b) and (c) shall be verified by test in accordance with 6.3.21 when the article exhibits an output effect the duration of which is smaller than 15 ms.

5.2 Verification of labelling and instructions for use

When tested in accordance with 6.3.3 the labelling and instructions for use of the ignition device shall be in accordance with Clause 7.

5.3 Verification of specified functioning characteristics

5.3.1 General

Performance of the ignition device shall be checked by functioning tests as specified in the following 5.3.2 to 5.3.6 and shall be in accordance with the technical specifications of the article which shall include performance characteristics.

Functioning tests shall be performed at $(20 \pm 5,0) ^\circ\text{C}$ and, after thermal conditioning in accordance with 6.3.9, at the minimum and maximum specified operating temperatures.

In every case, possible projections of any fragments, burning material and hot slag shall be checked and a decision whether they are acceptable shall be taken by comparison to the technical specifications for the given ignition device (see safety distances, information on direction of effects in the instructions for use of the article).

5.3.2 Igniters

When measured in accordance with 6.3.4, the initiation time of the igniter for the recommended electrical, mechanical or optical input shall comply with the technical specifications of the article which shall include performance characteristics.

When the peak pressure or the time pressure curve in a closed vessel is specified in the technical specifications of the article, tests shall be performed in accordance with 6.3.5 and records shall comply with these specifications which shall include performance characteristics, especially the functioning time.

In other cases, the visual aspect of the flame or flow of reacting species generated by the igniter shall be recorded in accordance with 6.3.6 and shall comply with the technical specifications of the article.

When an igniter is designed to initiate a specific component or a specific family of components, fire transmission tests shall be carried out in accordance with 6.3.7. Fire transmission times shall comply with the technical specifications of the article which shall include performance characteristics.

All recorded values shall be in accordance with the technical specifications of the article including tolerances.

5.3.3 Components of pyrotechnic trains

The following tests shall be performed, if the following parameters are described in the technical specifications of the article:

- the initiation time shall be measured in accordance with 6.3.4;
- the functioning time shall be measured in accordance with 6.3.5;
- the time pressure curve in a closed vessel for components containing compressed or compacted pellets and grains, tests shall be performed in accordance with 6.3.5;
- the peak pressure in a closed vessel for relays or boosters containing loose composition or granules shall be recorded in accordance with 6.3.5;
- the aspect of flame for relays or boosters containing loose composition or granules shall be recorded in accordance with 6.3.6.

All results shall comply with the technical specifications of the article.

Where the component is designed to initiate a specific component or a specific family of components, fire transmission tests shall be carried out in accordance with 6.3.7. Fire transmission times shall comply with the technical specifications of the article.

5.3.4 Delay fuses, pyrotechnic cords and fuses

When tested in accordance with 6.3.8, pyrotechnic cords and fuses and delay fuses shall initiate and exhibit continuous and stable burning. The linear burning rate or delay time shall comply with the value and tolerances specified by the technical specifications of the article.

Ignition time shall comply with the technical specifications of the article when measured in accordance with 6.3.4.

The casing of delay fuses shall prevent all lateral emission of gases, flames or hot particles during functioning. It shall be checked after functioning by visual examination in accordance with 6.3.22.

When designed to protect the surroundings against projection of burning particles and/or hot slag, the protective covering of pyrotechnic cords and fuses shall be intact and without holes after testing in accordance with 6.3.8. This shall be verified by visual examination in accordance with 6.3.22.

When delay fuses include a boosting or fire-enhancing charge, they shall be additionally tested in accordance with 5.3.3, including fire transmission tests in accordance with 6.3.7 where appropriate.

5.3.5 Fuzes

Fuzes shall be tested in the “arm” position in accordance with the technical specifications of the article (including the means of application of the initiation stimulus). The functioning of their main charge shall comply with the technical specifications of the article when tested in accordance with 6.3.5, 6.3.6 and/or 6.3.7 depending on the intended use of the article.

The “safe” mode shall be checked by verification of construction and design in accordance with 6.3.2.2. Its effectiveness shall be verified in accordance with 6.3.10 (mechanical conditioning) and 6.3.11 (mechanical impact test). No initiation shall take place during these tests and the safety features shall remain in their “safe” position. This requirement shall be verified by function test on the samples submitted to 6.3.10 and 6.3.11 in accordance with 6.3.5, 6.3.6 and/or 6.3.7 depending on the intended use of the article.

5.3.6 Pyrotechnic trains

The following tests shall be performed, if the following parameters are described in the technical specifications of the article:

- the functioning time shall be measured in accordance with 6.3.8;

- the time pressure curve(s) in a closed vessel for pyrotechnic trains equipped at their end(s) with component(s) containing compressed or compacted pellets and grains, tests shall be performed in accordance with 6.3.5;
- the peak pressure(s) in a closed vessel for pyrotechnic trains equipped at its end(s) with relays or boosters containing loose composition or granules shall be recorded in accordance with 6.3.5;
- the aspect of flame for pyrotechnic trains equipped at its end(s) with relays or boosters containing loose composition or granules shall be recorded in accordance with 6.3.6.

Compliance with the three last requirements shall not be verified if the concerned component(s) of the pyrotechnic train have already been EU-type certified.

All results shall comply with the technical specifications of the article.

Where the pyrotechnic train is designed to initiate a specific component or a specific family of components, fire transmission tests shall be carried out in accordance with 6.3.7 except when the component of the pyrotechnic train that provides such initiation has already been EU-type certified. Fire transmission times shall comply with the technical specifications of the article.

5.4 Thermal stability

When tested in accordance with 6.3.9, ignition devices shall neither ignite during the test nor exhibit degradation (emission of gases, cracks or expansion of compacted compositions, migration of chemicals). This shall be checked by visual examination in accordance with 6.3.22. After the thermal stability test the article shall still function properly at maximum or minimum use temperature in accordance with 5.3.

The leading wires of electric igniters shall not show any cracking or degradation of their insulation after thermal conditioning.

5.5 Safety features

Ignition devices shall include or be equipped with:

- safety protections, e.g. primary pack or protective cover or any other mechanical element specified to protect pyrotechnic compositions and/or the weakest parts of the article and/or the sensitive parts intended to be triggered to initiate normal functioning of the article;
- safety components, e.g. safe/arm switches, removable safety pins or plugs (where appropriate);
- protection against electromagnetic fields for electric igniters;
- protection against ESD.

The presence of the safety features shall be checked by visual examination in accordance with 6.3.22 and their effectiveness shall be verified in accordance with 5.6, 5.7, 5.8, 5.11 and/or 5.12.

Integral safety features shall be checked by verification of construction and design in accordance with 5.1 and their effectiveness shall be verified in accordance with 5.6, 5.7, 5.8, 5.11 and/or 5.12.

For electrical igniters, when specified, verification of the presence of a shunting device or application of a shunting method to the leading wires shall be made by visual examination in accordance with 6.3.22.

5.6 Sensitivity to normal, foreseeable handling and transportation

When tested in accordance with 6.3.10 in their primary pack (if any) and fitted with their safety features (if any), ignition devices shall not ignite during the test and shall still function after this test in accordance with the technical specifications of the article. This shall be verified in accordance with requirements of 5.3. Safety protections and safety components shall remain in place or in their normal “safe” position.

P1 articles shall not exhibit any loss of pyrotechnic composition from the article. It shall be checked by visual examination in accordance with 6.3.22.

For P2 articles, when tested in accordance with 6.3.10, the loose pyrotechnic composition found outside the article after mechanical conditioning shall be weighed. The mass of loose pyrotechnic composition shall not exceed 2 % of the NEC or 0,5 g whichever is the smaller. If the pyrotechnic composition cannot be separated from the loose material, the same limits shall apply to the whole loose material.

For black match and quick match, this criterion is passed if during mechanical conditioning no functioning occurs and providing that, following mechanical conditioning (6.3.10), the black match and quick match function correctly (6.3.8.2).

A drop test in accordance with 6.3.11 shall be performed on the following unpacked articles:

- articles which are designed to function at impact or shock or designed to arm on acceleration;
- ignition devices (except pyrotechnic cords and fuses) which exhibit bare composition or a protection of their pyrotechnic composition only by varnish or by a deformable or thin casing.

Articles shall not ignite or arm during the test. P1 articles shall still function properly after this drop test in accordance with the requirements of 5.3.

5.7 Resistance to moisture

When the article is intended to be used in humid or wet conditions, thermal conditioning in accordance with 5.4 shall be performed at the specified highest moisture level. After conditioning the ignition device shall function properly in accordance with the requirements of 5.3.

Up to the point of use, articles that exhibit bare pyrotechnic composition shall be protected against moisture by a cover or primary pack. When submitted to thermal tests in accordance with 6.3.9, the relative humidity level shall be within the range from 40 % to 60 % and the articles shall be tested without their cover (if removable) or outside their primary pack.

When the article is intended to be used in or under water, the ignition device shall be tested in accordance with 6.3.20 and shall function properly afterwards in accordance with the requirements of 5.3.

5.8 Resistance to mechanical damage

5.8.1 Leading wires of electric igniters and electrically triggered fuzes

The following requirements apply to electric igniters and electrically triggered fuzes where the leading wires are not removable.

When the intended use indicates the likely occurrence of abrasion, the electric igniters and electrically triggered fuzes shall be tested in accordance with 6.3.12.2. The instructions for use of the article shall mention such likely occurrence and it shall be checked in accordance with 6.3.3.

When tested in accordance with 6.3.12.2, no penetration of the insulation which lets the conductor appear shall occur.

When tested in accordance with 6.3.13, the leading wires shall not break, elongate or be pulled out of the igniter or fuze. Electrical resistance of the igniter shall be recorded after test in accordance with 6.3.17 and shall remain within the tolerances specified in the definition file. After testing in accordance with this paragraph, the electric igniters and electrically triggered fuzes shall still function in accordance with the technical specifications of the article. This shall be verified by testing in accordance with 6.3.4.

5.8.2 Leading optical fibre of optical igniters and optically triggered fuzes

This requirement shall only apply to optical igniters or optically triggered fuzes where the leading optical fibre is not removable.

When tested in accordance with 6.3.13, the leading optical fibre shall not break, elongate or be pulled out of the igniter or fuze.

After testing in accordance with 6.3.13, the optical igniters and optically triggered fuzes shall still function in accordance with the technical specifications of the article. This shall be verified by testing in accordance with 6.3.4.

5.8.3 Crush test

When submitted to crush test in accordance with 6.3.14, igniters and pyrotechnic cords and fuses shall not ignite or be damaged during the test and shall still function properly after test. This shall be verified by testing in accordance with 6.3.4 or 6.3.8.

This test is not applicable to black match.

5.8.4 Pyrotechnic cords and fuses

When tested in accordance with 6.3.15, pyrotechnic cords and fuses shall not break within 30 min under tension. They shall function properly after test. This shall be verified by testing in accordance with 6.3.8.

This test is not applicable to black match.

5.9 All-fire / no-fire levels of igniters

All-fire/no-fire levels shall be determined for igniters by using either “Bruceton Method” as given in Annex A or “Dichotomic/Langlie method” as given in Annex B.

A minimum of 25 igniters shall be submitted to these sequential tests and the all-fire and no-fire levels shall be calculated from test results at a confidence level of 95 % as for the values claimed in the technical specifications of the article. The calculated all-fire and no-fire levels shall be within the interval of values claimed in the technical specifications of the article. In the case where the accuracy is not sufficient to prove this, the sequence of tests may be prolonged.

Functioning tests shall be performed in accordance with 6.3.4.

The type of stimulus which will be applied to the igniters shall be determined in accordance with the intended use of the article:

- electric current in Amperes DC for electric igniters;
- optical power in Watts for optical igniters;
- percussion energy in Joules for mechanical igniters which are triggered by percussion.

The test equipment which will deliver the appropriate stimulus shall be the one which is specified for functioning tests (see 5.3). It shall be capable of varying the stimulus in the range which is necessary to perform the sequential test.

The duration of the electric and optical stimuli shall be the duration which is recommended in the technical specifications or in the instructions of use of the article in normal use.

No-Fire level shall be less than 0,1 % reliability point of the single sided lower 95 % confidence level.

All-fire level shall be more than 99,9 % reliability point of the single sided upper 95 % confidence level.

The calculated all-fire level from these tests shall not be greater than the value stated in the technical specifications or in the instructions of use of the article. The calculated no-fire level from these tests shall not be lower than the value stated in the technical specifications or in the instructions of use of the article.

Where the igniter is designed to be fired by means of specific ancillary equipment and this equipment has not been used for the tests, compliance of the calculated values from these tests with the characteristics of the stimulus delivered by the ancillary equipment shall be verified.

Igniters which are triggered by friction will not be submitted to such determination of all-fire/no-fire levels.

5.10 Series firings of electric igniters

Igniters which are designed or intended to be fired in series shall be tested in accordance with 6.3.16. The quantity of igniters in the series to be tested shall be the maximum number that is recommended in the instructions for use of the article.

There shall be no misfire of any igniter in the series firing test.

5.11 Electrical characteristics

The electrical resistance of electric igniters shall be tested in accordance with 6.3.17. All test results shall be within the range stated in the technical specifications of the article or, when no range is claimed, a tolerance of $\pm 10\%$ of the nominal value stated in the technical specifications of the article shall be applied.

For electric igniters with a metal casing, the insulation “pin-to-case” resistance of electric igniters shall be tested in accordance with 6.3.18. All test results shall be higher than the minimum value stated in the technical specifications of the article.

For double-bridgewire igniters, the insulation “pin-to-pin” resistance between the two bridgewires and the insulation “pin-to-case” resistance between each bridgewire and the casing of the igniter shall be tested. All test results shall be higher than the minimum value stated in the technical specifications of the article.

In every case, the measured values of insulation resistances shall not be lower than 100 M Ω for igniters.

5.12 Electrostatic discharge

Electric igniters shall be tested in accordance with 6.3.19. No igniter shall function either in the “pin-to-pin” or the “pin-to-case” (where the igniter is fitted with an electrically conductive case) configurations.

5.13 “Use by” date

Where a “use by” date is provided, the ignition device shall function correctly until this “use by” date in accordance with the technical specifications of the article. When this “use by” date is later than 2 years after the manufacturing date of the article, this shall be verified during the type test from information supplied in the technical specifications of the article on the basis of functioning tests in accordance with 5.3:

- either at the ‘use by’ date or at a later date;
- or after accelerated ageing in accordance with 6.3.9.2.5 by thermally conditioning samples of the article at a temperature T and during a time period t that can be calculated by application of accelerated ageing method such as described in Annex F on the basis of the specified ‘use by’ date.

Such test shall be performed on four specimens.

NOTE Such specimens can be the ignition device itself or, when the ignition device is an integral part of it, an article that shares common design features with the ignition device and pyrotechnic compositions based on the same chemical substances as in the ignition device.

When the use by date is earlier than two years, it is already verified by thermal conditioning in accordance with 6.3.9.

5.14 Type tests

5.14.1 General

Type tests (3.2.56) shall be carried out for each new article during EU-type examination.

Each ignition device to be type tested shall meet all requirements as stated in 5.1 to 5.13 (whenever appropriate).

5.14.2 Number of items to be tested

The number of ignition devices to be submitted to type test shall depend on the generic type, in accordance with Table 1.

Table 1 — Number of items to be tested

Requirements	Test methods	Number of items to be tested				
		Igniters	Components for pyrotechnic trains	Pyrotechnic cords and fuses	Delay fuses	Fuzes ^k
5.1 Verification of construction and design ^a	6.3.1 and 6.3.2 6.3.22	12 3 or 5	12 3 or 5	12 3 or 5	12 3 or 5	12 3 or 5
5.2 Verification of labelling and instruction for use ^a	6.3.3	12	12	12	12	12
5.3 Verification of specified functioning characteristics ^b	6.3.4 6.3.5 and/or 6.3.6 and/or 6.3.7 ^c	12	12	—	—	12
	6.3.8	—	—	12	12	—
5.4 Thermal stability ^d	6.3.9	4 (+4)	4 (+4)	4 (+4)	4 (+4)	4 (+4)
5.5 Safety features ^a	6.3.22	12	12	12	12	12
5.6 Sensitivity to normal, foreseeable handling and transportation ^e	6.3.10 6.3.11 or 6.3.19	6 (+6)	6 (+6)	6 (+6)	6 (+6)	6 (+6)
5.7 Resistance to moisture ^f	6.3.9 or 6.3.20	(4)	(4)	(4)	(4)	(4)
5.8 Resistance to mechanical damage	—	—	—	—	—	—
5.8.1 Leading wires (electric igniters)	6.3.12 6.3.13	20	—	—	—	—
5.8.2 Leading fibre (optical igniters)	6.3.13	20	—	—	—	—
5.8.3 Crush test	6.3.14	10	—	—	—	—
5.8.4 Pyrotechnic cords and fuses ^g	6.3.14 6.3.15	—	—	10 + 5	—	—
5.9 All-fire / no-fire levels	6.3.4 and A.1 or A.2 or equivalent	≥ 25	—	—	—	—
5.10 Series firings of electric igniters ^h	6.3.16	30 + 5xN	—	—	—	—
5.11 Electrical characteristics ⁱ	6.3.17 6.3.18	(25)	—	—	—	—

Requirements	Test methods	Number of items to be tested				
		Igniters	Components for pyrotechnic trains	Pyrotechnic cords and fuses	Delay fuses	Fuzes ^k
5.12 Electrostatic discharge ^j	6.3.19	2 × 12	—	—	—	—
5.13 Use by date (where appropriate)	6.3.9.2.3 and 5.3	4	4	4	4	4
^a The 12 items are the same as those submitted to 5.3. For 6.3.22, 3 or 5 items depending on the test method used and if the articles contain detonative explosives. ^b 4 at (20 ± 5) °C, 4 at the minimum and 4 at the specified maximum temperatures. ^c depending on the intended use of the article. ^d 4 at high temperature (+4 at low temperature where appropriate). ^e 6 for mechanical conditioning (+6 for drop tests where appropriate); mechanical conditioning tests being carried out in packaging, the number of items shall depend on the quantity which is usually present in the packaging, with a minimum of 6. ^f The same 4 articles as for thermal conditioning (high temperature). ^g 10 for crush test and 5 for resistance to tension. ^h 30 for determination of current break time and 5 times N where N is the maximum number of igniters to be connected in series which is authorized in the instructions for use of the article. ⁱ The same 25 igniters as for determination of all-fire and no-fire levels. ^j 12 only in the case of primers with a sole central pin. ^k In the case of complex fuzes associated to small series, the number of articles to be submitted to type tests may be reduced by taking into consideration the results of development tests which were carried out previously.						

5.14.3 Test report

The test report shall include at least the following information:

- a reference to this document (i.e. prEN 16265:2025);
- the complete identification of the sample under test;
- the method(s) used;
- the result(s), including a reference to the clause which explains how the results were calculated;
- any deviations from the procedure if any justified for a better proof of compliance to Clause 5;
- any unusual features observed;
- the date of completion of testing;
- the relevant observations concerning the applicable type test requirements for the ignition devices under tests given in Table 1;

The test report shall include information about:

- labelling;
- the chosen protections of the sensitive parts (where appropriate);
- whether the primary pack is used for labelling.

5.15 Batch tests

5.15.1 General

Batch tests (3.2.6) shall be carried out on articles taken from a new batch in serial production to demonstrate the conformity to the type.

For the purposes of batch testing, acceptance sampling in accordance with 5.15.2 and 5.15.3 shall be applied.

5.15.2 Sampling plans

Sampling shall be in accordance with ISO 2859-1:1999 using double sampling plans and applying the switching procedures for normal, tightened and reduced inspection. Inspection level S-4 shall apply.

The following tests shall be performed in batch testing:

- verification of design (5.1) and visual examination (6.3.22): 100 % of the sample;
- verification of labelling and instruction for use (5.2): 100 % of the sample;
- verification of proper functioning at $(20 \pm 5,0) ^\circ\text{C}$ (5.3):
 - igniters: 50 % of the sample with a maximum of 25 at the recommended electrical, mechanical or optical input in the technical specifications or in the instructions for use of the article, 50 % of the sample with a maximum of 25 at the No-Fire level claimed in the technical specifications or in the instructions for use of the article;
 - components of pyrotechnic trains: 100 % of the sample;
 - pyrotechnic cords and fuses, Delay fuses: 100 % of the sample;
 - fuzes: 50 % of the sample in “arm” position, 50 % of the sample in “safe” position;
- safety features (5.5): 100 % of the sample;
- electrical characteristics (5.11): 100 % of the sample;
- Ignition input (7.2.10): 100 % of the sample;

5.15.3 Sample size for small batches (destructive tests)

For small batches ($\leq 35\,000$), the sampling plan (5.15.2) is not applicable for the Acceptance Quality Levels specified in 5.15.7. The following Table 2 lists the altered sample sizes which are required and the number of acceptable minor nonconformities:

Table 2 — Distribution of test for small batch sizes

Batch size	Minimum sample for functioning tests	Acceptable critical non-conformities	Acceptable major non-conformities	Acceptable minor nonconformities
2 to 15	1	0	0	0
16 to 25	2	0	0	0
26 to 90	3	0	0	0
91 to 150	5	0	0	1
151 to 500	8	0	0	2

Batch size	Minimum sample for functioning tests	Acceptable critical non-conformities	Acceptable major non-conformities	Acceptable minor nonconformities
501 to 1 200	13	0	0	3
1 201 to 10 000	32	0	2	7
10 001 to 35 000	80	1	5	14

The batch size and the minimum sample for pyrotechnic cords and fuses shall be understood in meter.

For the other ignition devices, the batch size and the minimum sample shall be understood in units.

5.15.4 Nonconformities

Nonconformities shall be classed in accordance with Table 3.

Should tolerances be provided by the definition file or the technical specifications of the article for a parameter, any result (after correcting for measurement uncertainty) outside of those tolerances shall be considered a critical nonconformity.

Should tolerances be not provided by the definition file or the technical specifications of the article but only a nominal value, the tolerances in Table 3 shall apply by default.

The following Table 3 gives examples and is not exhaustive. Where there are conflicts, then the definitions of critical, major and minor nonconformities given in 3.2.11, 3.2.29 and 3.2.31 shall take precedence and be taken into account on a case by case basis.

Table 3 — Nonconformities

Requirement	Generic type	Type of nonconformity
Verification of construction and design (5.1) and visual examination (6.3.22)	All	Outer dimensions: Critical (defects of mechanical and electrical interfaces), Major (other defects) Calibre: Critical Gross mass: Minor (<2 %), Major (2 % to 5 %), Critical (>5 %) Visual defects: Critical (integrity and abnormal shape or aspects such as cracks, bulges, deformations, pollution by pyrotechnic compositions, local changes of colours...), Minor (other defects)
Verification of specified functioning characteristics at (20 ± 5,0) °C (5.3)	All	Performances: Critical (>10 %) Major (5 % to 10 %) Minor (<5 %) Quick match: critical if incorrect functioning
	Igniters	Critical (ignition at no-fire level)
	Fuzes	Critical (functioning in “safe” position)