SLOVENSKI STANDARD
oSIST prEN 16265:2021

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Pirotehnični izdelki - Drugi pirotehnični izdelki - Vžigalne naprave

Pyrotechnic articles - Other pyrotechnic articles - Ignition devices

Pyrotechnische Gegenstände - Sonstige pyrotechnische Gegenstände - Anzündmittel

Articles pyrotechniques - Autres articles pyrotechniques - Dispositifs de mise à feu

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Pyrotechnic articles - Other pyrotechnic articles - Ignition devices

Articles pyrotechniques - Autres articles pyrotechniques - Dispositifs de mise à feu

Pyrotechnische Gegenstände - Sonstige pyrotechnische Gegenstände - Anzündmittel

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European foreword

This document (prEN 16265:2021) 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.

In comparison with the previous edition, the following technical modifications have been made:

— References to EU Directives 2007/23/EC have been deleted, as well as Annex ZB.

— Addition of three subtypes: reactive tape (4.2.14), ignition rod (4.2.16) and ignition stick (4.2.17).

— The clause on the NEC of the component for pyrotechnic train has been revised (4.3.2).

— The clause on pyrotechnic cords and fuses has been revised (4.3.3).

— A clause on pyrotechnic trains has been added to clause 4.3 (4.3.6), clause 5.1 (5.1.6) and clause 5.3 (5.3.6).

— A clause on the use of detonative explosives has been added to clause 5.1 (5.1.7).

— The clause on sensitivity of pyrotechnic composition has been deleted from Clause 5. Table 1 has been revised accordingly.

— A clause on the "use by" date has been added to Clause 5 (5.13). Table 1 has been revised accordingly. The clause of the "use by" date in 7.2 has been revised (7.2.7).

— For 6.3.22, the number of items to be tested has been changed from 3 items to 3 or 5 items depending on the test method used and if the articles contain detonative explosives.

— The clause on the ESD generator has been deleted from 6.2, as well as the Annex on the adjustment of the ESD generator.

— Text height on the transparent sheet has been changed. Figure 1 has been revised accordingly. The clause on printing (7.2.8) has been revised accordingly.

— The clause on the slow release test has been deleted from 6.3.

— The clause on the electrostatic discharge has been revised (6.3.19.2 and 6.3.19.3). The table on the minimum ESD impulse has been deleted.

— The clauses on sensitivity testing, impact and friction have been removed from 6.3.

— The clause on the determination of the detonative / non- detonative characteristics (6.3.21) has been revised.

— The clause on the details on manufacturer or importer (7.2.6) has been revised.

— The clause on the marking of very small items (7.2.9) has been revised.

— A clause on product, batch or serial number has been added to 7.2 (7.2.11).

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 EU Directive 2013/29/EU on the harmonization of the laws of the Member States relating to the making available on the market of pyrotechnic articles.

For relationship with EU Directive 2013/29/EU, 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, 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, *Geometrical product specifications (GPS) - Dimensional measuring equipment - Part 1: Design and metrological characteristics of callipers (ISO 13385-1)*

EN 61672-1, *Electroacoustics - Sound level meters - Part 1: Specifications (IEC 61672-1)*

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

3 Terms and definitions

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

ISO and IEC maintain terminological 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

3.2.2
acceptor charge
acceptor component
charge of pyrotechnic composition or component receiving a stimulus from another charge (see “donor charge”)

Note 1 to entry: The term acceptor charge is also known as acceptor component.

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

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 the standard 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 EC type-examination certificate and have been successfully submitted to type tests determined by the standard.

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.

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

3.2.14
delay fuse duration
time delay of a delay fuse

3.2.15
detonation
reaction which propagates through an explosive at supersonic velocity in the reacting explosive

3.2.16
detonative explosive
substance or mixture of substances 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
chemical substance or mixture of chemical substances as defined in Article 1 paragraph 2 of Directive 2014/28/EU

3.2.20
firework
pyrotechnic article intended for entertainment purposes, as defined by Article 3 No. 2 of Directive 2013/29/E

3.2.21
firing current
constant electrical direct current required to reliably initiate functioning of an electric igniter or primer

3.2.22
friction head
ignition head designed to be ignited by friction

3.2.23
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)

3.2.24
gross mass
total mass of a pyrotechnic article (not including any ancillary equipment)

3.2.25
ignition head
initial fuse consisting of pyrotechnic composition only

3.2.26
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

3.2.27
incompatible substances
substances or materials that react together resulting in unsafe conditions

3.2.28
linear burning rate
length of pyrotechnic composition in millimetres or metres divided by the burning time in seconds

3.2.29
main charge
pyrotechnic composition which produces the principal effect

3.2.30
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.

3.2.31
major nonconforming unit
nonconforming unit with one or more major nonconformities, with or without minor nonconformities, but with no critical nonconformities

3.2.32
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.

3.2.33
minor nonconforming unit
nonconforming unit with one or more minor nonconformities, but with no critical or major nonconformities

3.2.34
misfire
incomplete functioning or non-functioning of a pyrotechnic article after application of initiation stimulus

3.2.35
Net Explosive Content
NEC
total mass of explosive material in a pyrotechnic article

3.2.36
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”)

3.2.37
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).

3.2.38
nonconforming unit
pyrotechnic article with one or more nonconformities

3.2.39
nonconformity
non-fulfilment of a requirement

3.2.40
other pyrotechnic article
pyrotechnic article other than fireworks, theatrical pyrotechnic articles and pyrotechnic articles for vehicles

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, as defined by the manufacturer

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: safety cord, fuse cord, mine or mining fuse. This article is subject to Directive 2014/28/EU and to the corresponding European Standard EN 13630.

3.2.54
slag
condensed reaction products resulting from the combustion of pyrotechnic composition(s)