



**NSAI**  
Standards

Irish Standard  
I.S. EN 16265:2015

# Pyrotechnic articles - Other pyrotechnic articles - Ignition devices

## I.S. EN 16265:2015

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 16265:2015

*Published:*

2015-12-23

*This document was published  
under the authority of the NSAI  
and comes into effect on:*

2016-01-11

ICS number:

71.100.30

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

I.S. EN 16265:2015 is the adopted Irish version of the European Document EN 16265:2015, Pyrotechnic articles - Other pyrotechnic articles - Ignition devices

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

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

**EUROPEAN STANDARD**

**EN 16265**

**NORME EUROPÉENNE**

**EUROPÄISCHE NORM**

December 2015

ICS 71.100.30

English Version

## **Pyrotechnic articles - Other pyrotechnic articles - Ignition devices**

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

Pyrotechnische Gegenstände - Sonstige pyrotechnische  
Gegenstände - Anzündmittel

This European Standard was approved by CEN on 10 October 2015.

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

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

<b>Contents</b>	<b>Page</b>
European foreword.....	6
1 Scope .....	7
2 Normative references .....	7
3 Terms and definitions .....	8
3.1 General terms .....	8
3.2 Technical terms .....	8
4 Categories and types of ignition devices.....	14
4.1 Generic types .....	14
4.2 Subtypes .....	14
4.3 Conditions determining whether an article is P1 or P2 .....	16
4.3.1 Igniters.....	16
4.3.2 Components for pyrotechnic trains.....	16
4.3.3 Pyrotechnic cords and fuses.....	16
4.3.4 Delay fuses .....	16
4.3.5 Fuzes .....	17
5 Requirements .....	17
5.1 Verification of construction and design .....	17
5.1.1 General.....	17
5.1.2 Incompatible substances.....	17
5.1.3 Igniters.....	17
5.1.4 Delay fuses.....	18
5.1.5 Fuzes and components for pyrotechnic trains .....	18
5.2 Verification of labelling and instructions for use.....	18
5.3 Verification of specified functioning characteristics .....	18
5.3.1 General.....	18
5.3.2 Igniters.....	18
5.3.3 Components of pyrotechnic trains.....	19
5.3.4 Delay fuses, pyrotechnic cords and fuses.....	19
5.3.5 Fuzes .....	20
5.4 Thermal stability .....	20
5.5 Safety features.....	20
5.6 Sensitivity to normal, foreseeable handling and transportation .....	20
5.7 Resistance to moisture.....	21
5.8 Resistance to mechanical damage .....	21
5.8.1 Leading wires of electric igniters and electrically triggered fuzes.....	21
5.8.2 Leading optical fibre of optical igniters and optically triggered fuzes .....	21
5.8.3 Crush test .....	22
5.8.4 Pyrotechnic cords and fuses.....	22
5.9 All-Fire / No-Fire levels of igniters .....	22
5.10 Series firings of electric igniters.....	23
5.11 Electrical characteristics .....	23
5.12 Electrostatic discharge.....	23
5.13 Sensitivity of pyrotechnic composition.....	23
5.14 Type testing.....	23
5.14.1 General.....	23

5.14.2	Number of items to be tested .....	23
5.14.3	Test report .....	25
5.15	Batch testing.....	25
5.15.1	General .....	25
5.15.2	Sampling plans.....	25
5.15.3	Sample size for small batches (destructive tests).....	26
5.15.4	Nonconformities .....	27
5.15.5	Labelling and instructions for use.....	28
5.15.6	Test report .....	28
5.15.7	Acceptance or rejection of a batch .....	28
6	Test methods.....	29
6.1	General .....	29
6.2	Apparatus .....	29
6.2.1	Calliper .....	29
6.2.2	Ruler .....	29
6.2.3	Balance .....	29
6.2.4	Climatic chamber.....	29
6.2.5	Sound level meter.....	29
6.2.6	Electric firing sources .....	29
6.2.7	Time-measuring equipment.....	30
6.2.8	Optical sensors .....	30
6.2.9	Pressure sensors.....	30
6.2.10	Video camera.....	30
6.2.11	Stills photographic camera .....	30
6.2.12	Microphone.....	30
6.2.13	Shock apparatus.....	30
6.2.14	Drop-test apparatus.....	30
6.2.15	Ohmmeters .....	30
6.2.16	ESD generator .....	31
6.2.17	Magnifying equipment.....	31
6.2.18	Transparent type size sheet .....	31
6.3	Test methods.....	31
6.3.1	Construction .....	31
6.3.2	Verification of design .....	31
6.3.3	Verification of labelling and instructions for use .....	32
6.3.4	Initiation (or reaction) time .....	32
6.3.5	Closed vessel test.....	33
6.3.6	Aspect of flame or flow of reacting species .....	35
6.3.7	Fire transmission.....	37
6.3.8	Linear burning rate or delay time .....	38
6.3.9	Thermal conditioning .....	41
6.3.10	Mechanical conditioning.....	41
6.3.11	Mechanical impact (drop test).....	42
6.3.12	Resistance of leading wires to abrasion .....	43
6.3.13	Resistance of leading wires or fibres to traction .....	50
6.3.14	Crush test.....	52
6.3.15	Resistance of cords and fuses to tension.....	54
6.3.16	Series firing of electric igniters .....	55
6.3.17	Electrical resistance of electric igniters .....	56
6.3.18	Insulation resistance of electric igniters.....	56
6.3.19	Electrostatic discharge .....	57
6.3.20	Sensitivity testing .....	59

## EN 16265:2015 (E)

6.3.21	Water immersion test.....	63
6.3.22	Determination of the detonative / non- detonative characteristics.....	63
6.3.23	Visual examination.....	64
7	Minimum labelling requirements and instructions for use .....	64
7.1	General.....	64
7.2	Labelling requirements .....	64
7.2.1	Name and type.....	64
7.2.2	CE marking and identification number.....	64
7.2.3	Category and registration number .....	64
7.2.4	Age limit and specialist knowledge labelling.....	65
7.2.5	Net Explosive Content.....	65
7.2.6	Details on manufacturer or importer .....	65
7.2.7	“Use by” date .....	65
7.2.8	Printing.....	65
7.2.9	Marking of very small items.....	66
7.2.10	Ignition input.....	66
7.3	Instructions for use .....	66
	Annex A (informative) Bruceton method .....	68
A.1	General.....	68
A.2	Procedure.....	68
A.3	Calculation of results .....	68
A.4	Values at 95 % confidence level.....	69
A.5	Example .....	70
A.6	Curves of <i>G</i> and <i>H</i> functions.....	72
A.7	Table of Student-t distribution.....	72
	Annex B (informative) Dichotomic (or Langlie) method .....	74
B.1	General.....	74
B.2	Procedure.....	74
B.3	Calculation of results .....	75
B.4	Values at 95 % confidence level.....	78
B.5	Example .....	79
	Annex C (informative) Mechanical Conditioning (Shock Apparatus) .....	83
	Annex D (informative) Mechanical Impact Test (Drop Test) .....	86
	Annex E (informative) Adjustment of the ESD generator.....	87
E.1	Apparatus.....	87
E.2	Procedure.....	88
	Annex F (informative) Specification of grinding steel for wire abrasion test.....	89
F.1	Type.....	89
F.2	Material.....	89
F.3	Dimensions.....	89
F.4	Availability of abrasive strips (informative).....	91



<b>Annex G (normative) Determination of the duration of accelerated ageing test to demonstrate the correct functioning at the “use by ” date .....</b>	<b>92</b>
<b>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 .....</b>	<b>95</b>
<b>Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2013/29/EU on the placing on the market of pyrotechnic articles .....</b>	<b>97</b>
<b>Bibliography .....</b>	<b>98</b>

## **EN 16265:2015 (E)**

### **European foreword**

This document (EN 16265:2015) 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 June 2016, and conflicting national standards shall be withdrawn at the latest by June 2016.

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 European standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential safety requirements of EU Directive 2007/23/EC and 2013/29/EU on the placing on the market of pyrotechnic articles.

For relationship with EU Directives 2007/23/EC and 2013/29/EU on the placing on the market of pyrotechnic articles, see informative Annexes ZA and ZB, which are an integral part of this document.

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 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 93/15/EEC and therefore not considered in this European Standard.

This European Standard 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.

This European Standard does not apply to pyrotechnic articles that contain detonative explosives other than black powder and/or flash composition, except igniters if these detonative explosives:

- can be easily extracted from the pyrotechnic article, or
- can initiate secondary explosives, or
- can function in a detonative manner, although the article is not designed to detonate and the article belongs to the category P2.

## 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.

EN ISO 13385-1, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Part 1: Callipers; Design and metrological characteristics (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*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-