

DIN EN 16265:2016-05 (E)

Pyrotechnic articles - Other pyrotechnic articles - Ignition devices

Contents		Page
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
DINEN16265:2016-05 EN 16265:2015 (E) 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
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 G and H 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
DINEN16265:2016-05 EN 16265:2015 (E) Annex G (normative) Determination of the duration of accelerated ageing test to demonstrate the correct functioning at the "use by " date		92
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		95
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		97
Bibliography		98