

# DIN EN 15947-4:2022-12 (E)

## Pyrotechnic articles - Fireworks, Categories F1, F2 and F3 - Part 4: Test methods

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
<b>1</b>	<b>Scope .....</b>	<b>6</b>
<b>2</b>	<b>Normative references .....</b>	<b>6</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>6</b>
<b>4</b>	<b>Test environment .....</b>	<b>6</b>
4.1	General .....	6
4.2	Indoor .....	6
4.3	Outdoor .....	7
4.3.1	General .....	7
4.3.2	Category F1 .....	7
4.3.3	Category F2 .....	7
4.3.4	Category F3 .....	7
4.4	Monitoring height .....	7
<b>5</b>	<b>Apparatus .....</b>	<b>7</b>
<b>6</b>	<b>Methods of tests .....</b>	<b>12</b>
6.1	Construction and stability .....	12
6.1.1	Length of handle .....	12
6.1.2	Attachment of separate handle or separate base .....	13
6.1.3	Length of item .....	13
6.1.4	Length of pull-string or pull-strip .....	14
6.1.5	Determination of diameter .....	14
6.1.6	Attachment of initial fuse .....	14
6.1.7	Resistance to ignition by an abrasive surface .....	14
6.1.8	Breakability of end closures .....	15
6.2	Design - Verification .....	15
6.2.1	General .....	15
6.2.2	Conformity to drawings and part lists .....	15
6.2.3	Determination of net explosive content .....	16
6.3	Paper tests .....	17
6.3.1	Test for burning or incandescent matter .....	17
6.3.2	Test for horizontally projected debris .....	18
6.3.3	Test for vertically projected debris .....	20
6.4	Angle of ascent and height of explosion .....	21
6.4.1	Apparatus .....	21
6.4.2	Procedure for double banger .....	22
6.4.3	Procedure for items other than double banger .....	22
6.5	Measurement of sound pressure level .....	22
6.5.1	General measurement for outdoors .....	22
6.5.2	Party popper .....	23
6.5.3	Christmas cracker and snap for indoors .....	24
6.6	Time measurement .....	25
6.6.1	Apparatus .....	25
6.6.2	Procedure .....	25
6.7	Measuring of labelling .....	25
6.7.1	Apparatus .....	25
6.7.2	Procedure .....	25

6.8	Extinguishing of flames .....	26
6.8.1	Apparatus .....	26
6.8.2	Procedure .....	26
6.9	Burning rate of composition .....	26
6.9.1	Apparatus .....	26
6.9.2	Procedure .....	26
6.10	Droop test .....	26
6.10.1	Apparatus .....	26
6.10.2	Procedure .....	26
6.11	Projected debris (outdoor) .....	26
6.11.1	Apparatus .....	26
6.11.2	Procedure .....	26
6.12	Incandescent matter .....	27
6.13	Visual and audible examinations .....	27
6.14	Mechanical conditioning .....	27
6.14.1	Apparatus .....	27
6.14.2	Procedure .....	27
6.15	Thermal conditioning .....	28
6.15.1	Apparatus .....	28
6.15.2	Procedure .....	28
6.16	Striking surface test .....	28
6.16.1	Apparatus .....	28
6.16.2	Procedure .....	28
6.17	Function test .....	28
6.17.1	Apparatus .....	28
6.17.2	Procedure .....	28
6.18	Determination of tube angle .....	29
6.18.1	Apparatus .....	29
6.18.2	Procedure .....	29
Annex A (informative) Mechanical conditioning (shock apparatus) .....		30
Annex B (normative) Determination of silver fulminate .....		33
B.1	Reagents .....	33
B.2	Apparatus .....	33
B.3	Procedure .....	33
Annex ZA (informative) Relationship between this European Standard and the essential safety requirements of Directive 2013/29/EU aimed to be covered .....		35
Bibliography .....		36