

DIN EN 71-1:2018-12 (E)

Safety of toys - Part 1: Mechanical and physical properties (includes Amendment A1:2018)

Contents		Page
European foreword.....		10
Introduction		13
1	Scope (see A.2).....	14
2	Normative references	16
3	Terms and definitions.....	17
4	General requirements ¹⁾	29
4.1	Material cleanliness (see A.3)	29
4.2	Assembly (see A.4)	29
4.3	Flexible plastic sheeting (see A.5 and A.16).....	30
4.4	Toy bags	30
4.5	Glass (see 5.7 and A.6)	30
4.6	Expanding materials (see A.7)	30
4.7	Edges (see A.8).....	31
4.8	Points and metallic wires (see A.9).....	31
4.9	Protruding parts (see A.10)	32
4.10	Parts moving against each other	32
4.10.1	Folding and sliding mechanisms (see A.11).....	32
4.10.2	Driving mechanisms (see A.12).....	34
4.10.3	Hinges (see A.13)	34
4.10.4	Springs (see A.14).....	34
4.11	Mouth-actuated toys and other toys intended to be put in the mouth (see A.15)	35
4.12	Balloons (see 4.3 and A.16).....	35
4.13	Cords of toy kites and other flying toys (see A.17)	35
4.14	Enclosures	36
4.14.1	Toys which a child can enter (see A.18)	36
4.14.2	Masks and helmets (see A.19).....	36
4.15	Toys intended to bear the mass of a child (see A.20)	37
4.15.1	Toys propelled by a child or by other means	37
4.15.2	Toy bicycles (see A.20)	42
4.15.3	Rocking horses and similar toys (see A.21)	42
4.15.4	Toys not propelled by a child	43
4.15.5	Toy scooters (see A.49)	44

4.16	Heavy immobile toys.....	45
4.17	[A1] Projectile toys (see A.22) [A1]	45
4.17.1	[A1] General [A1]	45
4.17.2	[A1] All projectiles [A1]	45
4.17.3	[A1] Projectile toys with stored energy [A1]	47
4.17.4	[A1] Certain projectile toys without stored energy [A1]	50
4.18	Aquatic toys and inflatable toys (see A.23)	52
4.19	Percussion caps specifically designed for use in toys and toys using percussion caps (see A.24)	52
4.20	Acoustics (see A.25)	53
4.20.1	Exposure categories for time-averaged sound pressure levels	53
4.20.2	Emission sound pressure level limits	54
4.21	Toys containing a non-electrical heat source	57
4.22	Small balls (see 5.10 and A.48)	58
4.23	Magnets (see A.51).....	58
4.23.1	General.....	58
4.23.2	Toys other than magnetic/electrical experimental sets intended for children over 8 years.....	58
4.23.3	Magnetic/electrical experimental sets intended for children over 8 years.....	59
4.24	Yo-yo balls (see A.52)	59
4.25	Toys attached to food (see A.55)	59
4.26	[A1] Toy Disguise Costumes [A1]	59
4.27	[A1] Flying toys (see A.58) [A1]	60
4.27.1	[A1] General [A1]	60
4.27.2	[A1] Rotors and propellers on flying toys [A1]	60
4.27.3	[A1] Rotors and propellers on remote controlled flying toys [A1]	60
5	Toys intended for children under 36 months.....	61
5.1	General requirements (see A.26).....	61
5.2	Soft-filled toys and soft-filled parts of a toy (see A.27).....	62
5.3	Plastic sheeting (see A.28)	63
5.4	[A1] Cords, chains and electrical cables in toys (see A.29) [A1]	63
5.4.1	[A1] General [A1]	63
5.4.2	[A1] Cords and chains in toys intended for children under 18 months [A1]	63
5.4.3	[A1] Cords and chains in toys intended for children of 18 months or over but under 36 months [A1]	65
5.4.4	[A1] Fixed loops, tangled loops and nooses [A1]	66
5.4.5	[A1] Cords and chains on pull along toys [A1]	67

5.4.6	Ⓐ Electrical cables Ⓐ	67
5.4.7	Ⓐ Cross-sectional dimension of certain cords	67
5.4.8	Ⓐ Self-retracting cords	67
5.4.9	Ⓐ Toys attached to or intended to be strung across a cradle, cot or perambulator.....	67
5.5	Liquid-filled toys (see A.30).....	67
5.6	Speed limitation of electrically-driven ride-on toys.....	67
5.7	Glass and porcelain (see 4.5 and A.6).....	68
5.8	Shape and size of certain toys (see A.31)	68
5.9	Toys comprising monofilament fibres (see A.32).....	68
5.10	Small balls (see also 4.22 and A.48).....	68
5.11	Play figures	69
5.12	Hemispheric-shaped toys (see A.50).....	69
5.13	Suction cups (see A.54).....	72
5.14	Straps intended to be worn fully or partially around the neck (see A.53)	72
5.15	Ⓐ Sledges with cords for pulling Ⓐ	72
6	Packaging (see A.56)	73
7	Warnings, markings and instructions for use (see A.33).....	73
7.1	General	73
7.2	Toys not intended for children under 36 months (see 4.22 and A.34)	74
7.3	Latex balloons (see 4.12 and A.16)	75
7.4	Aquatic toys (see 4.18 and A.23).....	76
7.5	Functional toys (see A.35)	76
7.6	Hazardous sharp functional edges and points (see 4.7 and 4.8).....	76
7.7	Ⓐ Projectile toys (see 4.17.3.1) Ⓐ	76
7.8	Imitation protective masks and helmets (see 4.14.2 and A.19)	76
7.9	Toy kites (see 4.13).....	76
7.10	Roller skates, inline skates, skateboards and certain other ride-on toys (see	
4.15.1.2	and A.20).....	77
7.10.1	Roller skates, inline skates and skateboards.....	77
7.10.2	Ride-on toys without a braking device	77
7.10.3	Electrically-driven ride-on toys	77
7.10.4	Instructions for use.....	77
7.11	Ⓐ Toys otherwise intended to be strung across a cradle, cot, or perambulator (see	
5.4.9.1)	Ⓐ	78
7.12	Liquid-filled teethingers (see 5.5)	78
7.13	Percussion caps specifically designed for use in toys (see 4.19)	78
7.14	Acoustics (see 4.19 and 4.20).....	78

7.15	Toy bicycles (see 4.15.2.2).....	78
7.16	Toys intended to bear the mass of a child (see 4.15.1.2, 4.15.2.2, 4.15.3 and 4.15.4).....	78
7.17	Toys comprising monofilament fibres (see 5.9).....	79
7.18	Toy scooters (see 4.15.5.2).....	79
7.19	Rocking horses and similar toys (see 4.15.3 and A.21).....	79
7.20	Magnetic/electrical experimental sets (see 4.23.3 and A.51).....	79
7.21	A1 Toys with electrical cables exceeding 300 mm in length (see 5.4.6) A1	80
7.22	A1 Toys with cords or chains intended for children of 18 months and over but under 36 months (see 5.4.3) A1	80
7.23	A1 Toys intended to be attached to a cradle, cot or perambulator (see 5.4.9.2) A1	80
7.24	A1 Sledges with cords for pulling A1	80
7.25	A1 Flying toys (see 4.27) A1	80
7.25.1	A1 Flying toys A1	80
7.25.2	A1 Remote controlled flying toys A1	80
7.26	A1 Improvised projectiles (see 4.17.4) A1	81
8	Test methods.....	81
8.1	General requirements for testing.....	81
8.2	Small parts cylinder (see 4.6, 4.11, 4.18, 4.23.2, 4.23.3, 4.25, 5.1, 5.2 and A.36).....	81
8.3	Torque test (see 4.6, 4.11, 4.14.2, 4.17, 4.18, 4.22, 4.23.2, 4.25, 5.1, 5.10, 5.12, 5.13 and Clause 6).....	82
8.4	Tension test (see A.37).....	82
8.4.1	Apparatus.....	82
8.4.2	Procedure.....	83
8.5	Drop test (see 4.5, 4.6, 4.10.2, 4.14.2, 4.22, 4.23.2, 4.25, 5.1, 5.10, 5.12 and 5.13).....	87
8.6	Tip over test (see 4.10.2, 4.22, 4.23.2, 5.1, 5.10, 5.12 and 5.13).....	88
8.7	Impact test (see 4.5, 4.6, 4.10.2, 4.14.2, 4.22, 4.23.2, 4.25, 5.1, 5.10, 5.12, 5.13 and A.38).....	88
8.8	Compression test (see 4.6, 4.14.2, 4.22, 4.23.2, 4.25, 5.1, 5.10, 5.12, 5.13 and A.39).....	88
8.9	Soaking test (see 4.11, 4.23.2, 5.1, 5.10 and 5.12).....	89
8.10	Accessibility of a part or component (see 4.5, 4.7, 4.8, 4.10.2, 4.10.4, 4.15.1.3, 4.21, 5.2 and 5.7).....	89
8.10.1	Principle.....	89
8.10.2	Apparatus.....	89
8.10.3	Procedure.....	89
8.11	Sharpness of edges (see 4.5, 4.7, 4.9, 4.10.2, 4.14.2, 4.15.1.3 and 5.1).....	91
8.11.1	Principle.....	91
8.11.2	Apparatus.....	91
8.11.3	Procedure.....	92

8.12	Sharpness of points (see 4.5, 4.8, 4.9, 4.10.2, 4.14.2, 4.15.1.3, 5.1 and A.40).....	93
8.12.1	Principle.....	93
8.12.2	Apparatus.....	93
8.12.3	Procedure.....	95
8.13	Flexibility of metallic wires (see 4.8 and A.41).....	95
8.13.1	General.....	95
8.13.2	Metallic wires and other metallic components intended to be bent.....	95
8.13.3	Metallic wires likely to be bent.....	96
8.14	Expanding materials (see 4.6).....	96
8.15	Leakage of liquid-filled toys (see 5.5 and A.42).....	96
8.16	Geometric shape of certain toys (see 5.8, 5.11 and A.43).....	96
8.17	Durability of mouth-actuated toys (see 4.11 and A.44).....	97
8.17.1	Mouth-actuated projectile toys.....	97
8.17.2	Other mouth-actuated toys.....	97
8.18	Folding or sliding mechanisms (see 4.10.1 and A.45).....	98
8.18.1	Loads.....	98
8.18.2	Toy pushchairs and perambulators.....	99
8.18.3	Other collapsible toys (see 4.10.1 c)).....	99
8.19	Electric resistivity of cords (see 4.13).....	99
8.20	A1 Cords cross-sectional dimension (see 5.4.7) A1	99
8.21	Static strength (see 4.15.1.3, 4.15.1.5, 4.15.3, 4.15.4 and A.46).....	100
8.22	Dynamic strength (see 4.15.1.3).....	101
8.22.1	Principle.....	101
8.22.2	Loads.....	101
8.22.3	Procedure.....	102
8.23	Stability.....	104
8.23.1	Toys intended to bear the mass of a child (see 4.15.1.4, 4.15.3 and 4.15.4).....	104
8.23.2	Heavy immobile toys (see 4.16).....	104
8.24	A1 Kinetic energy of projectiles (see 4.17.3.1, 4.17.4.2) A1	105
8.24.1	A1 Principle A1	105
8.24.2	A1 Apparatus A1	105
8.24.3	A1 Procedure A1	105
8.25	Plastic sheeting.....	108
8.25.1	Thickness (see 4.3, 5.3 and Clause 6).....	108
8.25.2	Adhesion (see 5.3).....	108
8.26	Brake performance.....	108

8.26.1	Brake performance for certain ride-on toys (see 4.15.1.5)	108
8.26.2	Brake performance for toy bicycles (see 4.15.2.3)	109
8.26.3	Brake performance for toy scooters (see 4.15.5.5)	109
8.27	Strength of toy scooter steering tubes (see 4.15.5.3)	110
8.27.1	Resistance to downward forces	110
8.27.2	Resistance to upward forces	111
8.28	Determination of emission sound pressure levels (see 4.20)	112
8.28.1	General.....	112
8.28.2	Test procedures.....	115
8.29	Determination of maximum design speed of electrically-driven ride-on toys (see 4.15.1.2, 4.15.1.5, 4.15.1.8 and 5.6)	125
8.30	Measurement of temperature rises (see 4.21)	126
8.31	Toy chest lids (see 4.14.1 c)).....	126
8.31.1	General.....	126
8.31.2	Lid support	126
8.31.3	Durability test for vertically opening hinged lids	126
8.32	Small balls and suction cups test (see 4.17, 4.22, 4.25, 5.10 and 5.13)	126
8.32.1	Small balls and suction cups (see Clause 6).....	126
8.32.2	Small balls attached to a toy by a cord	127
8.33	Test for play figures (see 5.11).....	128
8.34	Tension test for magnets (see 4.23.2 and A.51)	128
8.34.1	General.....	128
8.34.2	Toys that contain more than one magnet or magnetic component.....	129
8.34.3	Toys that contain one magnet only.....	129
8.35	Magnetic flux index (see 4.23.2 and 4.23.3)	129
8.35.1	General.....	129
8.35.2	Apparatus.....	129
8.35.3	Procedure	130
8.35.4	Calculation of magnetic flux index.....	130
8.36	Ⓐ Perimeter of cords and chains (see 5.4.4) Ⓐ.....	131
8.36.1	Test equipment.....	131
8.36.2	Test procedures.....	132
8.37	Yo-yo balls measurements (see 4.24).....	134
8.37.1	Measurement of initial length l_0	134
8.37.2	Measurement of elastic constant k.....	135
8.38	Ⓐ Breakaway feature separation test (see 5.4.2, 5.4.3 and 5.14) Ⓐ.....	137

8.39	☐ ^{A1} Self-retracting cords (see 5.4.8) ☐ ^{A1}	137
8.40	☐ ^{A1} Length of cords, chains and electrical cables (see 5.4.2, 5.4.3, 5.4.5 and 5.4.6) ☐ ^{A1}	137
8.41	☐ ^{A1} Assessment of the tangle potential of two cords or chains ☐ ^{A1}	138
8.42	☐ ^{A1} Determination of projectile range ☐ ^{A1}	139
8.43	☐ ^{A1} Assessment of leading parts of projectiles and flying toys ☐ ^{A1}	140
8.44	☐ ^{A1} Length of suction cup projectiles ☐ ^{A1}	141
Annex A (informative) Background and rationale for this European Standard.....		142
A.1	General	142
A.2	Scope (see Clause 1).....	142
A.3	Material cleanliness (see 4.1)	142
A.4	Assembly (see 4.2)	143
A.5	Flexible plastic sheeting (see 4.3)	143
A.6	Glass (see 4.5 and 5.7).....	143
A.7	Expanding materials (see 4.6)	143
A.8	Edges (see 4.7)	143
A.9	Points and metallic wires (see 4.8)	144
A.10	Protruding parts (see 4.9)	144
A.11	Folding and sliding mechanisms (see 4.10.1)	145
A.12	Driving mechanisms (see 4.10.2)	145
A.13	Hinges (see 4.10.3).....	145
A.14	Springs (see 4.10.4)	146
A.15	Mouth-actuated toys and other toys intended to be put in the mouth (see 4.11).....	146
A.16	Balloons (see 4.3, 4.12 and 7.3).....	147
A.17	Cords of toy kites (see 4.13)	147
A.18	Toys which a child can enter (see 4.14.1).....	147
A.19	Masks and helmets (see 4.14.2 and 7.8).....	147
A.20	Toys intended to bear the mass of a child (see 4.15 and 7.10)	148
A.21	Rocking horses and similar toys (see 4.15.3).....	149
A.22	☐ ^{A1} Projectile toys (see 4.17) ☐ ^{A1}	149
A.23	Aquatic toys and inflatable toys (see 4.18 and 7.4).....	153
A.24	Percussion caps specifically designed for use in toys and toys using percussion caps (see 4.19).....	154
A.25	Acoustics (see 4.20)	154
A.26	General requirements for toys intended for children under 36 months (see 5.1).....	157
A.27	Soft-filled toys and soft-filled parts of a toy (see 5.2).....	158
A.28	Adhesion of plastic sheeting (see 5.3).....	159
A.29	Cords and chains in toys (see 5.4)	159

A.30	Liquid-filled toys (see 5.5 and A.42).....	163
A.31	Shape and size of certain toys (see 5.8 and A.43).....	164
A.32	Toys comprising monofilament fibres (see 5.9).....	164
A.33	Warnings, markings and instructions for use (see 7.1).....	164
A.34	Warning for toys not intended for children under 36 months (see 7.2).....	166
A.35	Warnings in connection with functional toys (see 7.5).....	166
A.36	Small parts cylinder (see 8.2).....	166
A.37	Tension test (see 8.4).....	167
A.38	Impact test (see 8.7).....	167
A.39	Compression test (see 8.8).....	167
A.40	Sharpness of points (see 8.12).....	167
A.41	Flexibility of metallic wires (see 8.13).....	167
A.42	Leakage of liquid-filled teething toys (see 8.15 and A.30).....	167
A.43	Geometric shape of certain toys (see 8.16 and A.31).....	167
A.44	Durability of mouth-actuated toys (see 8.17).....	168
A.45	Folding or sliding mechanisms (see 8.18).....	168
A.46	Static strength (see 8.21).....	168
A.47	Kinetic energy of projectiles, bows and arrows (see 8.24).....	168
A.48	Small balls (see 4.22 and 5.10).....	168
A.49	Toy scooters (see 4.15.5).....	170
A.50	Hemispheric-shaped toys (see 5.12).....	170
A.51	Magnets (see 4.23).....	171
A.52	Yo-yo balls (see 4.24).....	173
A.53	Straps intended to be worn fully or partially around the neck (see 5.14).....	176
A.54	Suction cups (see 5.13).....	176
A.55	Toys attached to food (see 4.25).....	176
A.56	Packaging (see Clause 6).....	177
A.57	ⓘ Cords and drawstrings (see 4.26) ⓘ.....	178
A.58	ⓘ Flying toys, rotors and propellers (see 4.27) ⓘ.....	178
Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives		181
Bibliography		183