

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

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

---

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

4.16	Heavy immobile toys.....	45
4.17	<b>[A1]</b> Projectile toys (see A.22) <b>[A1]</b> .....	45
4.17.1	<b>[A1]</b> General <b>[A1]</b> .....	45
4.17.2	<b>[A1]</b> All projectiles <b>[A1]</b> .....	45
4.17.3	<b>[A1]</b> Projectile toys with stored energy <b>[A1]</b> .....	47
4.17.4	<b>[A1]</b> Certain projectile toys without stored energy <b>[A1]</b> .....	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	<b>[A1]</b> Toy Disguise Costumes <b>[A1]</b> .....	59
4.27	<b>[A1]</b> Flying toys (see A.58) <b>[A1]</b> .....	60
4.27.1	<b>[A1]</b> General <b>[A1]</b> .....	60
4.27.2	<b>[A1]</b> Rotors and propellers on flying toys <b>[A1]</b> .....	60
4.27.3	<b>[A1]</b> Rotors and propellers on remote controlled flying toys <b>[A1]</b> .....	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	<b>[A1]</b> Cords, chains and electrical cables in toys (see A.29) <b>[A1]</b> .....	63
5.4.1	<b>[A1]</b> General <b>[A1]</b> .....	63
5.4.2	<b>[A1]</b> Cords and chains in toys intended for children under 18 months <b>[A1]</b> .....	63
5.4.3	<b>[A1]</b> Cords and chains in toys intended for children of 18 months or over but under 36 months <b>[A1]</b> .....	65
5.4.4	<b>[A1]</b> Fixed loops, tangled loops and nooses <b>[A1]</b> .....	66
5.4.5	<b>[A1]</b> Cords and chains on pull along toys <b>[A1]</b> .....	67

5.4.6	<b>Ⓐ</b> Electrical cables <b>Ⓐ</b> .....	67
5.4.7	<b>Ⓐ</b> Cross-sectional dimension of certain cords .....	67
5.4.8	<b>Ⓐ</b> Self-retracting cords .....	67
5.4.9	<b>Ⓐ</b> 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	<b>Ⓐ</b> Sledges with cords for pulling <b>Ⓐ</b> .....	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	<b>Ⓐ</b> Projectile toys (see 4.17.3.1) <b>Ⓐ</b> .....	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	<b>Ⓐ</b> Toys otherwise intended to be strung across a cradle, cot, or perambulator (see	
5.4.9.1)	<b>Ⓐ</b> .....	78
7.12	Liquid-filled teethers (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	<b>A1</b> Toys with electrical cables exceeding 300 mm in length (see 5.4.6) <b>A1</b> .....	80
7.22	<b>A1</b> Toys with cords or chains intended for children of 18 months and over but under 36 months (see 5.4.3) <b>A1</b> .....	80
7.23	<b>A1</b> Toys intended to be attached to a cradle, cot or perambulator (see 5.4.9.2) <b>A1</b> .....	80
7.24	<b>A1</b> Sledges with cords for pulling <b>A1</b> .....	80
7.25	<b>A1</b> Flying toys (see 4.27) <b>A1</b> .....	80
7.25.1	<b>A1</b> Flying toys <b>A1</b> .....	80
7.25.2	<b>A1</b> Remote controlled flying toys <b>A1</b> .....	80
7.26	<b>A1</b> Improvised projectiles (see 4.17.4) <b>A1</b> .....	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	<b>A1</b> Cords cross-sectional dimension (see 5.4.7) <b>A1</b> .....	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	<b>A1</b> Kinetic energy of projectiles (see 4.17.3.1, 4.17.4.2) <b>A1</b> .....	105
8.24.1	<b>A1</b> Principle <b>A1</b> .....	105
8.24.2	<b>A1</b> Apparatus <b>A1</b> .....	105
8.24.3	<b>A1</b> Procedure <b>A1</b> .....	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	<b>A1</b> Perimeter of cords and chains (see 5.4.4) <b>A1</b>	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	<b>A1</b> Breakaway feature separation test (see 5.4.2, 5.4.3 and 5.14) <b>A1</b>	137

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

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
<b>Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives .....</b>		<b>181</b>
<b>Bibliography .....</b>		<b>183</b>