

DIN EN 71-1:2014-07 (E)

Safety of toys - Part 1: Mechanical and physical properties (includes Amendment A3:2014)

| Contents | | Page |
|--------------------|---|-------------|
| Foreword | | 8 |
| Introduction | | 10 |
| 1 | Scope (see A.2) | 11 |
| 2 | Normative references | 13 |
| 3 | Terms and definitions | 14 |
| 4 | General requirements | 22 |
| 4.1 | Material cleanliness (see A.3) | 22 |
| 4.2 | Assembly (see A.4) | 23 |
| 4.3 | Flexible plastic sheeting (see A.5 and A.16) | 23 |
| 4.4 | Toy bags | 23 |
| 4.5 | Glass (see 5.7 and A.6) | 23 |
| 4.6 | Expanding materials (see A.7) | 23 |
| 4.7 | Edges (see A.8) | 24 |
| 4.8 | Points and metallic wires (see A.9) | 24 |
| 4.9 | Protruding parts (see A.10) | 25 |
| 4.10 | Parts moving against each other | 25 |
| 4.10.1 | Folding and sliding mechanisms (see A.11) | 25 |
| 4.10.2 | Driving mechanisms (see A.12) | 27 |
| 4.10.3 | Hinges (see A.13) | 27 |
| 4.10.4 | Springs (see A.14) | 27 |
| 4.11 | Mouth-actuated toys and other toys intended to be put in the mouth (see A.15) | 28 |
| 4.12 | Balloons (see 4.3 and A.16) | 28 |
| 4.13 | Cords of toy kites and other flying toys (see A.17) | 28 |
| 4.14 | Enclosures | 28 |
| 4.14.1 | Toys which a child can enter (see A.18) | 28 |
| 4.14.2 | Masks and helmets (see A.19) | 29 |
| 4.15 | Toys intended to bear the mass of a child (see A.20) | 30 |
| 4.15.1 | Toys propelled by a child or by other means | 30 |
| 4.15.2 | Toy bicycles (see A.20) | 34 |
| 4.15.3 | Rocking horses and similar toys (see A.21) | 35 |
| 4.15.4 | Toys not propelled by a child | 36 |
| 4.15.5 | Toy scooters (see A.49) | 36 |
| 4.16 | Heavy immobile toys | 38 |
| 4.17 | Projectiles (see A.22) | 38 |
| 4.17.1 | General | 38 |
| 4.17.2 | Projectile toys without stored energy | 39 |
| 4.17.3 | Projectile toys with stored energy | 39 |
| 4.17.4 | Bows and arrows | 39 |
| 4.18 | Aquatic toys and inflatable toys (see A.23) | 39 |
| 4.19 | Percussion caps specifically designed for use in toys and toys using percussion caps (see A.24) | 40 |
| 4.20 | Acoustics (see A.25) | 40 |
| 4.20.1 | Exposure categories for time-averaged sound pressure levels | 40 |
| 4.20.2 | Emission sound pressure level limits | 41 |
| 4.21 | Toys containing a non-electrical heat source | 45 |
| 4.22 | Small balls (see 5.10 and A.48) | 46 |

| | | |
|--------|---|----|
| 4.23 | Magnets (see A.51) | 46 |
| 4.23.1 | General | 46 |
| 4.23.2 | Toys other than magnetic/electrical experimental sets intended for children over 8 years | 46 |
| 4.23.3 | Magnetic/electrical experimental sets intended for children over 8 years | 47 |
| 4.24 | Yo-yo balls (see A.52) | 47 |
| 4.25 | Toys attached to food (see A.55) | 47 |
| 5 | Toys intended for children under 36 months | 48 |
| 5.1 | General requirements (see A.26) | 48 |
| 5.2 | Soft-filled toys and soft-filled parts of a toy (see A.27) | 49 |
| 5.3 | Plastic sheeting (see A.28) | 49 |
| 5.4 | Cords, chains and electrical cables in toys (see A.29) | 49 |
| 5.5 | Liquid-filled toys (see A.30) | 51 |
| 5.6 | Speed limitation of electrically-driven ride-on toys | 51 |
| 5.7 | Glass and porcelain (see 4.5 and A.6) | 51 |
| 5.8 | Shape and size of certain toys (see A.31) | 51 |
| 5.9 | Toys comprising monofilament fibres (see A.32) | 52 |
| 5.10 | Small balls (see also 4.22 and A.48) | 52 |
| 5.11 | Play figures | 52 |
| 5.12 | Hemispheric-shaped toys (see A.50) | 53 |
| 5.13 | Suction cups (see A.54) | 55 |
| 5.14 | Straps intended to be worn fully or partially around the neck (see A.53) | 55 |
| 6 | Packaging (see A.56) | 55 |
| 7 | Warnings, markings and instructions for use (see A.33) | 56 |
| 7.1 | General | 57 |
| 7.2 | Toys not intended for children under 36 months (see 4.22 and A.34) | 57 |
| 7.3 | Latex balloons (see 4.12 and A.16) | 59 |
| 7.4 | Aquatic toys (see 4.18 and A.23) | 59 |
| 7.5 | Functional toys (see A.35) | 59 |
| 7.6 | Hazardous sharp functional edges and points (see 4.7 and 4.8) | 59 |
| 7.7 | Projectiles (see 4.17.3 c) and 4.17.4 c)) | 59 |
| 7.7.1 | Toys with projectiles which are able to discharge an object other than that provided with the toy | 59 |
| 7.7.2 | Toys capable of discharging a projectile with a kinetic energy greater than 0,08 J | 60 |
| 7.8 | Imitation protective masks and helmets (see 4.14.2 and A.19) | 60 |
| 7.9 | Toy kites (see 4.13) | 60 |
| 7.10 | Roller skates, inline skates, skateboards and certain other ride-on toys (see 4.15.1.2 and A.20) | 60 |
| 7.10.1 | Roller skates, inline skates and skateboards | 60 |
| 7.10.2 | Ride-on toys without a braking device | 60 |
| 7.10.3 | Electrically-driven ride-on toys | 60 |
| 7.10.4 | Instructions for use | 61 |
| 7.11 | Toys intended to be attached to or strung across a cradle, cot, or perambulator (see 5.4 f)) | 61 |
| 7.12 | Liquid-filled teethers (see 5.5) | 61 |
| 7.13 | Percussion caps specifically designed for use in toys (see 4.19) | 61 |
| 7.14 | Acoustics (see 4.19 and 4.20) | 61 |
| 7.15 | Toy bicycles (see 4.15.2.2) | 62 |
| 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) | 62 |
| 7.17 | Toys comprising monofilament fibres (see 5.9) | 62 |
| 7.18 | Toy scooters (see 4.15.5.2) | 62 |
| 7.19 | Rocking horses and similar toys (see 4.15.3 and A.21) | 63 |
| 7.20 | Magnetic/electrical experimental sets (see 4.23.3 and A.51) | 63 |
| 7.21 | Toys with electrical cables exceeding 300 mm in length (see 5.4 i)) | 63 |
| 7.22 | Toys with cords or chains intended for children of 18 months and over but under 36 months (see 5.4 b), 5.4 c) and 5.4 g)) | 63 |
| 8 | Test methods | 63 |
| 8.1 | General requirements for testing | 63 |
| 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) | 64 |

| | | |
|--------|---|----|
| 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) | 64 |
| 8.4 | Tension test (see A.37) | 65 |
| 8.4.1 | Apparatus | 65 |
| 8.4.2 | Procedure | 65 |
| 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) | 67 |
| 8.6 | Tip over test (see 4.10.2, 4.22, 4.23.2, 5.1, 5.10, 5.12 and 5.13) | 67 |
| 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) | 68 |
| 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) | 68 |
| 8.9 | Soaking test (see 4.11, 4.23.2, 5.1, 5.10 and 5.12) | 68 |
| 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) | 69 |
| 8.10.1 | Principle | 69 |
| 8.10.2 | Apparatus | 69 |
| 8.10.3 | Procedure | 69 |
| 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) | 70 |
| 8.11.1 | Principle | 70 |
| 8.11.2 | Apparatus | 71 |
| 8.11.3 | Procedure | 72 |
| 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) | 72 |
| 8.12.1 | Principle | 72 |
| 8.12.2 | Apparatus | 72 |
| 8.12.3 | Procedure | 73 |
| 8.13 | Flexibility of metallic wires (see 4.8 and A.41) | 74 |
| 8.13.1 | General | 74 |
| 8.13.2 | Metallic wires and other metallic components intended to be bent | 74 |
| 8.13.3 | Metallic wires likely to be bent | 74 |
| 8.14 | Expanding materials (see 4.6) | 75 |
| 8.15 | Leakage of liquid-filled toys (see 5.5 and A.42) | 75 |
| 8.16 | Geometric shape of certain toys (see 5.8, 5.11 and A.43) | 75 |
| 8.17 | Durability of mouth-actuated toys (see 4.11 and A.44) | 76 |
| 8.17.1 | Mouth-actuated projectile toys | 76 |
| 8.17.2 | Other mouth-actuated toys | 76 |
| 8.18 | Folding or sliding mechanisms (see 4.10.1 and A.45) | 77 |
| 8.18.1 | Loads | 77 |
| 8.18.2 | Toy pushchairs and perambulators | 77 |
| 8.18.3 | Other collapsible toys (see 4.10.1 c)) | 78 |
| 8.19 | Electric resistivity of cords (see 4.13) | 78 |
| 8.20 | Cords cross-sectional dimension (see 5.4 a)) | 78 |
| 8.21 | Static strength (see 4.15.1.3, 4.15.1.5, 4.15.3, 4.15.4 and A.46) | 79 |
| 8.22 | Dynamic strength (see 4.15.1.3) | 80 |
| 8.22.1 | Principle | 80 |
| 8.22.2 | Loads | 80 |
| 8.22.3 | Procedure | 81 |
| 8.23 | Stability | 83 |
| 8.23.1 | Toys intended to bear the mass of a child (see 4.15.1.4, 4.15.3 and 4.15.4) | 83 |
| 8.23.2 | Heavy immobile toys (see 4.16) | 83 |
| 8.24 | Determination of kinetic energy (see A.47) | 83 |
| 8.24.1 | Kinetic energy of projectiles (see 4.17.3) | 83 |
| 8.24.2 | Kinetic energy of bows and arrows (see 4.17.4) | 84 |
| 8.25 | Plastic sheeting | 84 |
| 8.25.1 | Thickness (see 4.3, 5.3 and Clause 6) | 84 |
| 8.25.2 | Adhesion (see 5.3) | 84 |
| 8.26 | Brake performance | 84 |
| 8.26.1 | Brake performance for certain ride-on toys (see 4.15.1.5) | 84 |
| 8.26.2 | Brake performance for toy bicycles (see 4.15.2.3) | 85 |
| 8.26.3 | Brake performance for toy scooters (see 4.15.5.5) | 85 |
| 8.27 | Strength of toy scooter steering tubes (see 4.15.5.3) | 86 |
| 8.27.1 | Resistance to downward forces | 86 |
| 8.27.2 | Resistance to upward forces | 87 |
| 8.28 | Determination of emission sound pressure levels (see 4.20) | 87 |
| 8.28.1 | General | 87 |

| | | |
|--|--|------------|
| 8.28.2 | Test procedures | 91 |
| 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) | 100 |
| 8.30 | Measurement of temperature rises (see 4.21) | 101 |
| 8.31 | Toy chest lids (see 4.14.1 c)) | 101 |
| 8.31.1 | General | 101 |
| 8.31.2 | Lid support | 101 |
| 8.31.3 | Durability test for vertically opening hinged lids | 101 |
| 8.32 | Small balls and suction cups test (see 4.17, 4.22, 4.25, 5.10 and 5.13) | 101 |
| 8.32.1 | Small balls and suction cups (see Clause 6) | 101 |
| 8.32.2 | Small balls attached to a toy by a cord | 102 |
| 8.33 | Test for play figures (see 5.11) | 103 |
| 8.34 | Tension test for magnets (see 4.23.2 and A.51) | 103 |
| 8.34.1 | General | 103 |
| 8.34.2 | Toys that contain more than one magnet or magnetic component | 103 |
| 8.34.3 | Toys that contain one magnet only | 104 |
| 8.35 | Magnetic flux index (see 4.23.2 and 4.23.3) | 104 |
| 8.35.1 | General | 104 |
| 8.35.2 | Apparatus | 104 |
| 8.35.3 | Procedure | 105 |
| 8.35.4 | Calculation of magnetic flux index | 105 |
| 8.36 | Perimeter of cords and chains (see 5.4 c) and 5.4 d)) | 106 |
| 8.36.1 | Test equipment | 106 |
| 8.36.2 | Test procedures | 107 |
| 8.37 | Yo-yo balls measurements (see 4.24) | 110 |
| 8.37.1 | Measurement of initial length l_0 | 110 |
| 8.37.2 | Measurement of elastic constant k | 111 |
| 8.38 | Breakaway feature separation test (see 5.4 b), 5.4 c) and 5.14) | 112 |
| 8.39 | Self-retracting cords (see 5.4 e)) | 113 |
| 8.40 | Length of cords, chains and electrical cables (see 5.4 b), 5.4 c), 5.4 g), 5.4 h) and 5.4 i)) . | 113 |
| Annex A (informative) Background and rationale for this European Standard | | 114 |
| A.1 | General | 114 |
| A.2 | Scope (see Clause 1) | 114 |
| A.3 | Material cleanliness (see 4.1) | 114 |
| A.4 | Assembly (see 4.2) | 115 |
| A.5 | Flexible plastic sheeting (see 4.3) | 115 |
| A.6 | Glass (see 4.5 and 5.7) | 115 |
| A.7 | Expanding materials (see 4.6) | 115 |
| A.8 | Edges (see 4.7) | 115 |
| A.9 | Points and metallic wires (see 4.8) | 116 |
| A.10 | Protruding parts (see 4.9) | 116 |
| A.11 | Folding and sliding mechanisms (see 4.10.1) | 117 |
| A.12 | Driving mechanisms (see 4.10.2) | 117 |
| A.13 | Hinges (see 4.10.3) | 117 |
| A.14 | Springs (see 4.10.4) | 118 |
| A.15 | Mouth-actuated toys and other toys intended to be put in the mouth (see 4.11) | 118 |
| A.16 | Balloons (see 4.3, 4.12 and 7.3) | 118 |
| A.17 | Cords of toy kites (see 4.13) | 119 |
| A.18 | Toys which a child can enter (see 4.14.1) | 119 |
| A.19 | Masks and helmets (see 4.14.2 and 7.8) | 119 |
| A.20 | Toys intended to bear the mass of a child (see 4.15 and 7.10) | 119 |
| A.21 | Rocking horses and similar toys (see 4.15.3) | 120 |
| A.22 | Projectiles (see 4.17) | 121 |
| A.23 | Aquatic toys and inflatable toys (see 4.18 and 7.4) | 121 |
| A.24 | Percussion caps specifically designed for use in toys and toys using percussion caps (see 4.19) | 121 |
| A.25 | Acoustics (see 4.20) | 122 |
| A.26 | General requirements for toys intended for children under 36 months (see 5.1) | 125 |
| A.27 | Soft-filled toys and soft-filled parts of a toy (see 5.2) | 126 |
| A.28 | Adhesion of plastic sheeting (see 5.3) | 126 |

| | | |
|--|--|------------|
| A.29 | Cords and chains in toys (see 5.4) | 126 |
| A.30 | Liquid-filled toys (see 5.5 and A.42) | 129 |
| A.31 | Shape and size of certain toys (see 5.8 and A.43) | 129 |
| A.32 | Toys comprising monofilament fibres (see 5.9) | 129 |
| A.33 | Warnings, markings and instructions for use (see 7.1) | 129 |
| A.34 | Warning for toys not intended for children under 36 months (see 7.2) | 131 |
| A.35 | Warnings in connection with functional toys (see 7.5) | 131 |
| A.36 | Small parts cylinder (see 8.2) | 131 |
| A.37 | Tension test (see 8.4) | 131 |
| A.38 | Impact test (see 8.7) | 131 |
| A.39 | Compression test (see 8.8) | 131 |
| A.40 | Sharpness of points (see 8.12) | 131 |
| A.41 | Flexibility of metallic wires (see 8.13) | 132 |
| A.42 | Leakage of liquid-filled teething toys (see 8.15 and A.30) | 132 |
| A.43 | Geometric shape of certain toys (see 8.16 and A.31) | 132 |
| A.44 | Durability of mouth-actuated toys (see 8.17) | 132 |
| A.45 | Folding or sliding mechanisms (see 8.18) | 132 |
| A.46 | Static strength (see 8.21) | 132 |
| A.47 | Kinetic energy of projectiles, bows and arrows (see 8.24) | 132 |
| A.48 | Small balls (see 4.22 and 5.10) | 133 |
| A.49 | Toy scooters (see 4.15.5) | 134 |
| A.50 | Hemispheric-shaped toys (see 5.12) | 134 |
| A.51 | Magnets (see 4.23) | 135 |
| A.52 | Yo-yo balls (see 4.24) | 137 |
| A.53 | Straps intended to be worn fully or partially around the neck (see 5.14) | 140 |
| A.54 | Suction cups (see 5.13) | 140 |
| A.55 | Toys attached to food (see 4.25) | 140 |
| A.56 | Packaging (see Clause 6) | 141 |
| Annex B (informative) Significant technical changes between this European Standard and the previous version | | 143 |
| Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives | | 145 |
| Bibliography | | 147 |