



BSI Standards Publication

Safety of toys

Part 1: Mechanical and physical properties

National foreword

This British Standard is the UK implementation of EN 71-1:2014+A1:2018. It supersedes BS EN 71-1:2014, which is withdrawn.

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Sicherheit von Spielzeug - Teil 1: Mechanische und
physikalische Eigenschaften

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European foreword

This document (EN 71-1:2014+A1:2018) has been prepared by Technical Committee CEN/TC 52 “Safety of toys”, the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2018, and conflicting national standards shall be withdrawn at the latest by November 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendments 1, 2 and 3 approved by CEN on 22 January 2018.

This document supersedes A1 EN 71-1:2014. A1

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This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2009/48/EC.

For relationship with EU Directive 2009/48/EC, see informative Annex ZA, which is an integral part of this European Standard.

This European Standard constitutes the first part of the European Standard on safety of toys.

This European Standard, *Safety of toys*, consists of the following parts:

- *Part 1: Mechanical and physical properties* [the present document];
- *Part 2: Flammability;*
- *Part 3: Migration of certain elements;*
- *Part 4: Experimental sets for chemistry and related activities;*
- *Part 5: Chemical toys (sets) other than experimental sets;*
- *Part 7: Finger paints — Requirements and test methods;*
- *Part 8: Activity toys for domestic use;*
- *Part 9: Organic chemical compounds — Requirements;*
- *Part 10: Organic chemical compounds — Sample preparation and extraction;*
- *Part 11: Organic chemical compounds — Methods of analysis;*
- *Part 12: N-Nitrosamines and N-nitrosatable substances;*
- *Part 13: Olfactory board games, cosmetic kits and gustative games;*
- *Part 14: Trampolines for domestic use.*

NOTE 1 In addition to the above parts of EN 71, the following documents have been published:  Deleted text  the CEN Technical Report CEN/TR 15071, *Safety of toys — National translations of warnings and instructions for use in EN 71*, and the CEN Technical Report CEN/TR 15371, *Safety of toys — Replies to requests for interpretation of EN 71-1, EN 71-2, and EN 71-8*.

NOTE 2 Different legal requirements may exist in non-EU countries.

The following significant editorial and technical changes have been implemented in this new edition:



Clause/Paragraph/ Table/Figure	Change
1	The scope has been expanded to include certain flying toys and toy slings and toy catapults supplied with projectiles
2	Addition of reference to EN 14682, <i>Safety of children's clothing — Cords and drawstrings on children's clothing — Specifications</i>
3	Changes to existing definitions and inclusion of new definitions
4.17	Complete revision of the requirements
4.17.2	New requirements for leading parts including suction cups
4.17.3	Introduction of the principle of using kinetic energy density in assessing projectiles with stored energy. New requirements for impact resistance. New requirements for improvised projectiles
4.17.4	New requirements for toy catapults and projectiles propelled by an elastic band. New requirement for certain projectiles without stored energy
4.26	New requirements for toys in disguise costumes
4.27	New requirements for flying toys, including requirements for rotors and propellers and certain remote controlled flying toys
5.4	Complete revision of the requirements for cords
5.4.2	This clause addresses toys for children under 18 months. Separation and clarification of requirements for cord or chains with the potential to tangle, and other cords. Addition of requirements for two cords or chains with the potential to tangle
5.4.3	This clause addresses toys for children 18 months and over. Separation and clarification of requirements for cord or chains with the potential to tangle, and other cords. Addition of requirements for two cords or chains with the potential to tangle
5.4.6	Clarification of requirements for electrical cables
5.4.9	Includes new requirements for toys intended to be attached to a cradle, cot or perambulator
5.15	Inclusion of new requirements for sledges with cords for pulling
7	Changes to the requirements for warnings
7.23	A requirement for a warning for toys intended to be attached to a cradle, cot or perambulator

8	Updates to test methods related to projectile toys, flying toys, cords and toy scooters
8.4.2.4	A new tension test for projectiles with suction cups
8.4.2.5	A new wall impact test for projectiles
8.22, 8.23, 8.27	Changes to the test methods and the test loads for toy scooters
8.40	Clarification of the methods to measure the length of cords and chains
8.41	New test method for the assessment of the tangle potential of two cords or chains
8.42	A new test for the determination of projectile range
A.58	New rational for flying toys and propellers



According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard aims at reducing as far as possible those hazards which are not evident to users; it does not cover inherent hazards (e.g. instability of two-wheeled scooters, sharp needles in a sewing kit, etc.) that are obvious to children or the persons in charge of them. Assuming that the toys are used in the intended manner they should not present any further hazard to children for whom they are intended (according to Directive 2009/48/EC “intended for use by” means that a parent or supervisor shall reasonably be able to assume by virtue of the functions, dimensions and characteristics of a toy that it is intended for use by children of the stated age group”). Allowance should also be made for foreseeable use, bearing in mind the behaviour of children who do not generally share the same degree of care as the average adult user.

As a general rule, toys are designed and manufactured for particular ages of children. Their characteristics are related to the age and stage of development of the children, and their use presupposes certain aptitudes.

Accidents are frequently due to a toy either being given to a child for whom it is not intended, or being used for a purpose other than that for which it was designed. Great care should therefore be taken when choosing a toy or game; account should be taken of the mental and physical development of the child who will be using it.

The requirements of this European Standard do not release parents or carers from their responsibility of watching over the child while he or she is playing.

1 Scope (see A.2)

This European Standard specifies requirements and methods of tests for mechanical and physical properties of toys.

This European Standard applies to toys for children, toys being any product or material designed or intended, whether or not exclusively, for use in play by children of less than 14 years. It refers to new toys taking into account the period of foreseeable and normal use, and that the toys are used as intended or in a foreseeable way, bearing in mind the behaviour of children.

It includes specific requirements for toys intended for children under 36 months, children under 18 months and for children who are too young to sit up unaided. According to Directive 2009/48/EC “intended for use by” means that a parent or supervisor shall reasonably be able to assume by virtue of the functions, dimensions and characteristics of a toy that it is intended for use by children of the stated age group. Therefore, for the purpose of this European Standard, e.g. *soft-filled toys* with simple features intended for holding and cuddling are considered as toys intended for children under 36 months.

NOTE Information relating to the age grading of toys and, in particular, which toys are intended for children under 36 months and which toys are not, can be found in A1 Deleted text A1 CEN/CENELEC Guide 11 and the European Commission’s Guidance Documents.

This European Standard also specifies requirements for *packaging*, marking and labelling.

This European Standard does not cover musical instruments, sports equipment or similar items but does include their toy counterparts.

This European Standard does not apply to the following toys:

- playground equipment intended for public use;
- automatic playing machines, whether coin operated or not, intended for public use;
- toy vehicles equipped with combustion engines (see A.2);
- toy steam engines;

A1

- toy slings and toy catapults, supplied without *projectiles*;
- *flying toys* incorporating rotor blade(s) which are capable of spinning approximately horizontally, each blade being greater than 175 mm in length, measured from the centre of rotation to the blade tip, and with an overall mass of the *flying toy* greater than 50 g.

Toy slings and toy catapults supplied with *projectiles* are covered by this standard. A1

A1 Deleted text A1

This European Standard does not cover electrical safety aspects of toys. These are covered by EN 62115.

Furthermore, it does not cover the following items which, for the purpose of this European Standard, are not considered as toys:

- a) decorative objects for festivities and celebrations;

- b) products for collectors, provided that the product or its *packaging* bears a visible and legible indication that it is intended for collectors of 14 years of age and above; examples of this category are:
- 1) detailed and faithful scale models (see A.2);
 - 2) kits for the assembly of detailed scale models;
 - 3) folk dolls and decorative dolls and other similar articles;
 - 4) historical replicas of toys;
 - 5) reproductions of real fire arms;
- c) sports equipment including roller skates, inline skates, and skateboards intended for children with a body mass of more than 20 kg;
- d) bicycles with a *maximum saddle height* of more than 435 mm, measured as the vertical distance from the ground to the top of the seat surface, with the seat in a horizontal position and with the seat pillar set to the minimum insertion mark;
- e) *scooters* and other means of transport designed for sport or which are intended to be used for travel on public roads or public pathways;
- f) electrically driven vehicles which are intended to be used for travel on public roads, public pathways, or the pavement thereof;
- g) aquatic equipment intended to be used in deep water, and swimming learning devices for children, such as swim seats and swimming aids;
- h) puzzles with more than 500 pieces;
- i) guns and pistols using compressed gas, with the exception of water guns and water pistols;
- j) bows for archery over 120 cm long;
- k) fireworks, including percussion caps which are not specifically designed for toys;
- l) products and games using sharp-pointed missiles, such as sets of darts with metallic points;
- m) functional educational products, such as electric ovens, irons or other *functional products*, as defined in EU Directive 2009/48/EC, operated at a nominal voltage exceeding 24 V which are sold exclusively for teaching purposes under adult supervision;
- n) products intended for use for educational purposes in schools and other pedagogical contexts under the surveillance of an adult instructor, such as science equipment;
- o) electronic equipment, such as personal computers and game consoles, used to access interactive software and their associated peripherals, unless the electronic equipment or the associated peripherals are specifically designed for and targeted at children and have a play value on their own, such as specially designed personal computers, key boards, joy sticks or steering wheels;
- p) interactive software, intended for leisure and entertainment, such as computer games, and their storage media, such as CDs;
- q) babies' soothers;
- r) child-appealing luminaires;
- s) electrical transformers for toys;
- t) fashion accessories for children which are not for use in play (see A.2);

 Deleted text 

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 71-8, *Safety of toys - Part 8: Activity toys for domestic use*



EN 14682, *Safety of children's clothing - Cords and drawstrings on children's clothing - Specifications*

EN 15649-2:2009+A2:2013, *Floating leisure articles for use on and in the water — Part 2: Consumer information*

EN 15649-3:2009+A1:2012, *Floating leisure articles for use on and in the water — Part 3: Additional specific safety requirements and test methods for Class A devices*



EN 50332-1, *Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 1: General method for "one package equipment"*

EN 61672-1, *Electroacoustics - Sound level meters - Part 1: Specifications (IEC 61672-1)*

EN ISO 868, *Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868)*

EN ISO 3744, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744)*

EN ISO 3745, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for anechoic rooms and hemi-anechoic rooms (ISO 3745)*

EN ISO 3746, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746)*

EN ISO 4287, *Geometrical product specifications (GPS) - Surface texture: Profile method - Terms, definitions and surface texture parameters (ISO 4287)*

EN ISO 6508-1, *Metallic materials - Rockwell hardness test - Part 1: Test method (ISO 6508-1)*

EN ISO 11201, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201)*

EN ISO 11202, *Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202)*

ISO 4593, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

ISO 7619-2, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 2: IRHD pocket meter method*

IEC/TS 60318-7, *Electroacoustics — Simulators of human head and ear — Part 7: Head and torso simulator for acoustic measurement of hearing aids*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1

accessible

contactable under the test conditions of 8.10 (accessibility of a part or component)



3.2

arrow

projectile in the form of a shaft with a total length of 150 mm or more, intended to be discharged from a bow held by a user



3.3

aquatic toy

toy, whether inflatable or not, intended for use in shallow water and which is capable of carrying or supporting a child on the water

3.4

asphyxiation

insufficient supply of air to the airways

Note 1 to entry: Insufficient supply of air could be caused e.g. by closing off the flow of air as a result of *choking* or *suffocation* or by entrapment in an unventilated, confined space.

3.5

backing

material adhering to flexible *plastic sheeting*

3.6

ball

spherical, ovoid or ellipsoidal object, usually but not always designed or intended to be thrown, hit, kicked, rolled, dropped or bounced

Note 1 to entry: The term *ball* also includes any multisided object formed by at least 48 connecting planes into a generally spherical, ovoid or ellipsoidal shape.

3.7

burr

roughness, caused by not cleanly severing or finishing the material

3.8

cap-firing toy

toy clearly designed to emit sound caused by discharge of a percussion cap

Note 1 to entry: Examples of *cap-firing toys* include cap guns.

3.9

chain

connected series of links or rings

3.10

choking

closing off the flow of air as a result of internal *asphyxiation*

Note 1 to entry: *Choking* can, for example, be caused by inhalation of an object, by an object becoming wedged in the mouth or pharynx, or by an object becoming lodged over the entrance to the lower airways.

3.11

close-to-the-ear toy

toy clearly designed to emit sound, intended to be used within 2,5 cm of the ear

Note 1 to entry: Examples of close-to-the-ear toys are toy telephones and toy rifles with a loudspeaker in the stock.

3.12

collapse

sudden or unexpected folding of a structure

ⓘ

3.13

cord

narrow piece of flexible textile or non-textile material of which the length is significantly greater than its thickness and width

EXAMPLE Examples of *cords* include *elastic material*, monofilament polymeric material, *tape*, *ribbon*, rope, *strap*, woven and twisted material and string as well as certain weak and long *springs*.

Note 1 to entry: *Electrical cables* (see 3.22) are not considered to be *cords*. Accessible electrical wires (e.g. between a battery box and a sound source in a soft filled toy) which are not *electrical cables* are however considered to be *cords*. ⓘ

3.14

crack

fracture of a material to the full thickness of the material

ⓘ

3.15

cord or chain with the potential to tangle

cord or *chain* with an attachment, *fixed loop*, knot or similar feature that can cause the *cord* or *chain* to tangle and form a *tangled loop* or *noose* during reasonably foreseeable use and without excessive or intricate manipulation ⓘ

3.16

crushing

injury to part of the body resulting from compression between two surfaces

ⓘ

3.17

dart

projectile in the form of a shaft with a total length less than 150 mm that is intended to be blown by the mouth or thrown

3.18**discharge mechanism**

component(s) of the toy which releases or propels the *projectile* into *free flight* ^(A1)

3.19**driving mechanism**

assembly of linked parts of a toy, at least one of which moves and is driven either electrically, by clockwork or by other mechanical means and including gears, belts and winding mechanisms

3.20**edge**

line formed at the junction of two surfaces, the length of which exceeds 2,0 mm

3.21**elastic material**

material or item that is stretchable when subjected to an external force and which is able to recover or nearly recover its original length or shape when the force is removed

3.22**electrical cable**

flexible insulated conductor used for connecting a toy to a supply of electricity or to a piece of electronic equipment which is not itself a toy or part of a toy

Note 1 to entry: Electronic equipment includes computers and television sets which do not have a play value on their own.

3.23**emission sound pressure level**

sound pressure level at a specified position near a sound source, when the source is in operation under specified operating and mounting conditions on or above a reflecting plane surface, excluding the effects of background noise as well as the effects of reflections other than those from the plane or planes permitted for the purpose of the test

3.24**expanding material**

material, the volume of which expands when exposed to water

3.25**fastening**

mechanical device which attaches two or more components of a toy together (e.g. a screw)

3.26

filling

material intended to be wholly contained within a *soft-filled toy* or within *soft-filled* parts of a toy

3.27

fixed drive

transmission without *free-wheeling mechanism*

Note 1 to entry: In a *fixed drive* the drive mechanism cannot be disengaged from the driven shaft. An example is a bicycle where the pedals are driven by the rear wheel when the bicycle is going downhill.



3.28

fixed loop

loop made of a *cord* or *chain*, the perimeter of which is fixed by any means including stitching, knots, hook and loop fasteners, buckles or similar fasteners

Note 1 to entry: A *fixed loop* can include a part or parts of the toy (see Figure 1).

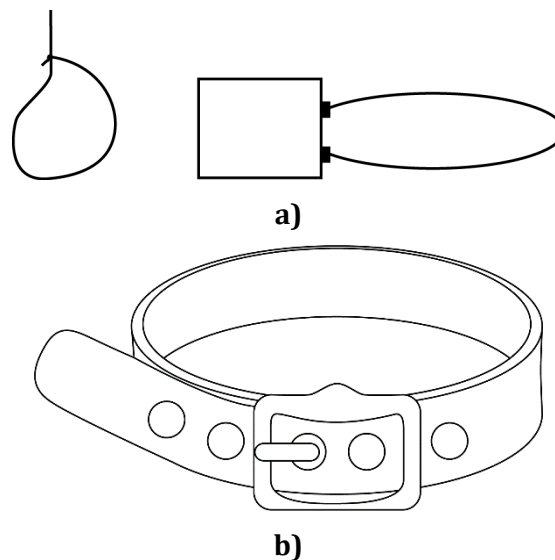


Figure 1 — Examples of fixed loops

3.29

flying toy

toy or part of a toy intended to be launched into *free flight* with an on-board energy source (e.g. compressed gas, springs, electricity or inertial energy) that continues to propel the object after the initial release, for part or all of the flight

3.30

free flight

unconstrained travel through the air

Note 1 to entry: This will include portions of unconstrained travel that may ultimately be constrained by means of a tether.

3.31**free-wheeling mechanism**

transmission in which the drive mechanism is disengaged from the driven shaft when the driven shaft rotates faster than the drive mechanism

Note 1 to entry: An example of the use of a *free-wheeling mechanism* is a bicycle which is going downhill without the pedals moving. Without a *free-wheeling mechanism* the rear wheel would drive the pedals around.

3.32**functional edge or point**

edge or *point* which is essential for the functioning of a toy (e.g. microscope slides, electrical conductors, needles)

3.33**functional magnet in electrical or electronic components of toys**

magnet necessary for the function of motors, relays, speakers and other electrical or electronic components in a toy where the magnetic properties are not part of the play pattern of the toy

3.34**functional product**

product which performs and is used in the same way as a product, appliance or installation intended for use by adults, and which may be a scale model of such product, appliance or installation

3.35**functional toy**

toy which performs and is used in the same way as a product, an appliance or an installation intended for use by adults and which may be a scale model of a such a product (e.g. a stove with heating properties)

3.36**fuzz**

bits of fibrous type material that can be readily removed from toys with a pile surface

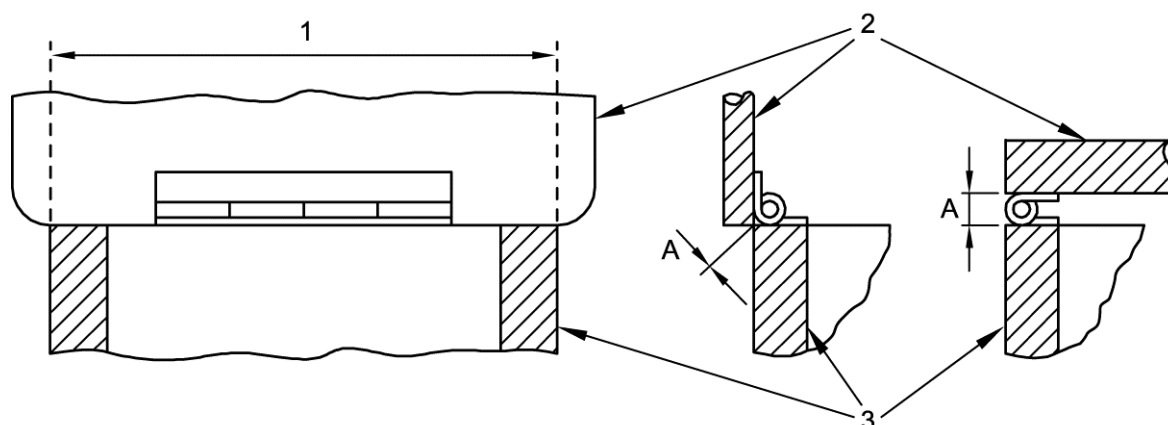
3.37**hand-held toy**

toy clearly designed to emit sound, intended to be held in the hand but excluding *close-to-the-ear* toys, *rattles*, *squeeze toys*, *cap-firing toys*, *wind toys*, *voice toys* and *percussion toys*

Note 1 to entry: Examples of hand-held toys are clicking toys, toy tools, and toy guns.

3.38**hinge line**

line along or parallel to the line projected through the axis of rotation as shown in Figure 2

**Key**

- 1 hinge line
- 2 lid
- 3 box
- A hinge-line clearance between assembled edges

Figure 2 — Definition of hinge line**3.39****large and bulky toy**

toy that has a projected base area of more than 0,26 m² or a volume of more than 0,08 m³ calculated without regard to minor appendages, or a mass of 4,5 kg or more

Note 1 to entry: The base area of a toy having permanently attached legs is the area enclosed by straight lines connecting the outermost *edge* of each leg of the perimeter.

A1

3.40**leading part**

area(s) of the *projectile* or *flying toy* (e.g. tips, edges or protrusions) which would be expected to make contact with the eyeball in the event of launching towards the eye

Note 1 to entry: This includes all areas on *projectiles* that travel in unpredictable orientations (e.g. tumbling) that could reasonably be expected to strike the eyeball. **A1**

3.41**magnetic component**

part of a toy which contains an attached or fully- or partially-enclosed magnet

3.42**magnetic/electrical experimental set**

toy containing one or more magnets intended for carrying out educational experiments involving magnetism and electricity

3.43**maximum emission sound pressure level**

highest instantaneous *emission sound pressure level* measured during a specified time interval using specified frequency and time-weighting

Note 1 to entry: In this standard frequency weighting A and time-weighting F are specified and the quantity is denoted L_{AFmax} .

3.44**maximum saddle height**

vertical distance from the ground to the top of the seat surface, measured with the seat in a horizontal position and with the seat pillar set to the minimum insertion mark

**3.45****noose**

loop in a *cord* or *chain* which reduces in perimeter as the *cord* or *chain* is pulled (see Figure 3)

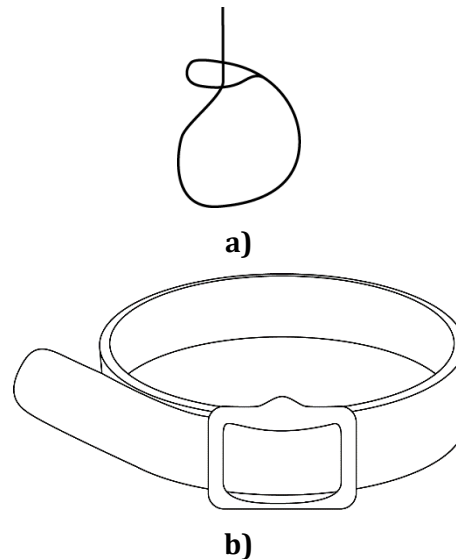


Figure 3 — Examples of a noose

**3.46****overlap joint**

joint in which an *edge* overlaps a parallel surface but is not necessarily mechanically attached to it at all points along the length

3.47**packaging**

material accompanying the toy when purchased but having no intended play function

3.48**paper**

sheet formed by irregularly intervened cellulose fibres with a mass per unit area of 400 g/m² or less

3.49**paperboard**

sheet formed by irregularly intervened cellulose fibres with a mass per unit area over 400 g/m² excluding pressed wooden fibreboards such as medium density fibreboard (MDF), chipboard and materials with similar properties

Note 1 to entry: The term *paperboard* also includes materials commonly referred to as card or cardboard with a mass per unit area over 400 g/m².

3.50

peak emission sound pressure level

highest *emission sound pressure level* during a specified time interval recorded by a sound level meter using time-weighting *peak*

Note 1 to entry: The *peak emission sound pressure level* is normally C-weighted and then denoted L_{pCpeak} .

3.51

percussion toy

toy clearly designed to emit sound when struck with a beater, such as a drumstick, or by the hand

Note 1 to entry: Examples of *percussion toys* include drums, xylophones and tambourines.

3.52

plastic sheeting

thin section plastic sheeting which is used as part of the toy or as part of the *packaging*



3.53

projectile

object intended to be launched, thrown or released into *free flight* or trajectory in the air

Note 1 to entry: This includes objects where the travel is ultimately constrained by means of a tether (e.g. pop-gun).

3.54

projectile toy with stored energy

toy with a *projectile* launched by means of a *discharge mechanism* capable of storing energy independent of the user and incorporating a release mechanism

3.55

projectile toy without stored energy

toy with a *projectile* launched by energy imparted by the user or by means of a *discharge mechanism* incapable of storing energy independent of the user

3.56

pull-along or push toy

toy on which movement is imparted by the user for example by pulling it by a *cord* or pushing it by means of a rigid extension

3.57

rattle

toy, intended for children who are too young to sit up unaided, that is clearly designed to emit sound when shaken or activated by the child or another person

3.58

removable component

part or component which is intended to be removed from the toy without the use of a *tool*

**3.59****remote controlled flying toy**

flying toy, capable of being controlled by a wireless transmitter, incorporating rotor blade(s) which are capable of spinning approximately horizontally

Note 1 to entry: Wireless transmitters are typically hand-held devices and include smart devices such as telephones, tablets, etc.

EXAMPLE Examples of remote control toys include Drones and Helicopters.

3.60**ribbon**

narrow piece of fabric or textile material, the length of which is significantly greater than the width and the width of which is significantly greater than the thickness 

3.61**soft-filled toy**

toy, clothed or unclothed, with soft body surfaces and filled with soft materials, readily allowing compression of the main part of the toy with the hand

3.62**splinter**

sharp pointed fragment

3.63**spring****3.63.1****helical spring**

spring in the form of a coil, which can be either a *compression spring* or an *extension spring*, see Figure 4

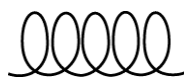


Figure 4 — Helical spring

3.63.2**compression spring**

spring which returns to its initial state after release of the compressive force

3.63.3**extension spring**

spring which returns to its initial state after release of the tensile force

3.63.4

spiral spring

clockwork type *spring*, see Figure 5



Figure 5 — Spiral spring

3.64

squeeze toy

pliable toy, intended for children who are too young to sit up unaided, incorporating a sound-making feature activated by forcing air through an opening, clearly designed to emit sound when flexed or squeezed by the child or another person



3.65

strap

strip of flexible material used for fastening, securing, carrying or holding, the length of which is significantly greater than the width and the width of which is significantly greater than the thickness 

3.66

suction cup

means of temporarily attaching a toy to a smooth surface made of soft, flexible, polymeric material, normally having a circular base which adheres to the surface when pressed against it, and in this way creating a vacuum

3.67

suffocation

closing off the flow of air as a result of airway obstruction external to the mouth and nose

3.68

table-top or floor toy

toy clearly designed to emit sound, intended to be used on a table, floor or another large surface

Note 1 to entry: Examples of table-top or floor toys are toy cars, mechanical animals, and large and bulky toys.

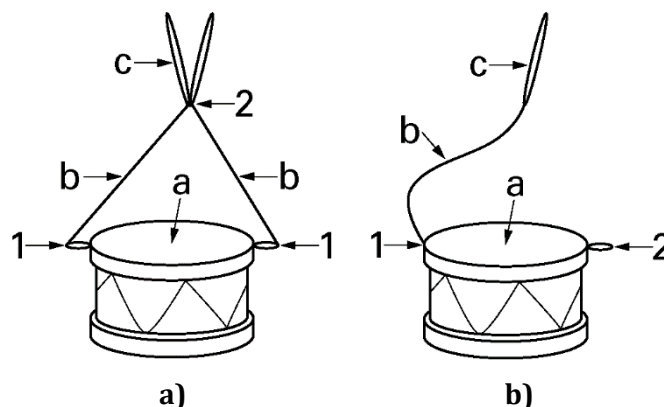


3.69

tangled loop

loop created by twisting or snagging a *cord or chain with the potential to tangle*, which can include parts of the toy which are not *cords*

Note 1 to entry: Figure 6 shows a *tangled loop* comprising two cords b) and a toy drum a).

**Key**

- 1 fixing point
- 2 tangle point
- a drum surface
- b cords attaching drumsticks to drum
- c drumsticks

Figure 6 — Example of tangled loop**3.70****tape**

narrow piece of non-textile material, the length of which is significantly greater than the width, and the width of which is significantly greater than the thickness $\sqrt[4]{1}$

3.71**teether**

toy designed for oral use intended primarily for symptomatic relief of children's teething discomfort

3.72**time-averaged emission sound pressure level**

ten times the logarithm to the base 10 of the ratio of the time average of the square of the sound pressure during a stated time interval of duration to the square of a reference sound pressure, expressed in decibels, the sound pressure being obtained with a standard frequency weighting

Note 1 to entry: The *time-averaged emission sound pressure level* is normally A-weighted and for the purpose of this standard then denoted L_{pA} .

3.73**tool**

screwdriver, coin or any other object which can be used to operate a screw, clip or similar fixing device

3.74**toy bag**

bag, clearly intended for use in play, often having features designed to encourage the child to use the bag in play activities

Note 1 to entry: Bags that are *packaging* can be attractive to children for example if they are brightly coloured or have child appealing characteristics. Such characteristics alone are not enough to define them as *toy bags*.

3.75

toy bicycle

two-wheeled vehicle, with or without stabilizers, with a *maximum saddle height* of 435 mm or less and which is propelled solely by the muscular energy of the person on that vehicle, in particular by means of pedals, and which has either a *free-wheeling mechanism* or a *fixed drive*



3.76

toy catapult with projectiles

hand-held *projectile* toy, supplied with *projectiles*, with forked stick with an elastic band that is capable of holding a *projectile*, and is fastened to the two fork-ends and is intended to launch a *projectile* into *free flight* by stretching and releasing it

3.77

toy scooter

ride-on toy, not intended for sport or to be used for travel on public roads or public pathways, which is propelled by the muscular action of the user and may be foldable or not, intended for children with a body mass of 50 kg or less: comprising at least one platform for standing, at least two wheels, and a steering system equipped with an adjustable or fixed-length steering tube



3.78

toy sling with projectiles

hand-held *projectile* toy, supplied with *projectiles*, with a non-elastic *cord* that is capable of holding a *projectile*, which is energized by swinging the whole toy and intended to launch a *projectile* into *free flight* by releasing one end of the *cord*

3.79

voice toy

toy clearly designed to emit sound by electronically amplifying or distorting the voice and where the output sound level depends on the input sound level of the voice

Note 1 to entry: Examples of *voice toys* could include telephones, walkie-talkies, voice recording toys, sing-along microphones and electronic bull horns (toy megaphones).

3.80

wind toy

toy clearly designed to emit sound when actuated by the blowing action of the child or another person

Note 1 to entry: Examples of *wind toys* include toy trumpets and toy whistles.



3.81

yo-yo ball

toy with a tether made from an *elastic material* usually having a ring at one end (i.e. a loop to place around a finger), and a flexible object at the other end intended to be thrown and returned to the hand

4 General requirements¹⁾

4.1 Material cleanliness (see A.3)

Toys and material used in toys shall be visually clean and free from infestation. The material shall be assessed visually by the unaided eye rather than under magnification.

4.2 Assembly (see A.4)

If a toy is intended to be assembled by a child, the requirements in this European Standard apply to each unit made available to the child and to the assembled toy. The requirements for the assembled toy do not apply to toys where the assembling provides a significant part of the play value of the toy.

If a toy is intended to be assembled by an adult, the requirements apply to the assembled toy.

Toys intended to be assembled shall be accompanied by detailed assembly instructions, if appropriate. The instructions shall indicate whether it is necessary that an adult assemble the toy or whether the proper assembly shall be checked by an adult before use.

¹⁾ Words in *italics* are defined in Clause 3 (Terms and definitions). Additional information on the background and rationale for various requirements is given in Annex A.

4.3 Flexible plastic sheeting (see A.5 and A.16)

Toys with flexible *plastic sheeting* shall conform to the following requirements:

Sheets without any *backing* and of an area greater than 100 mm × 100 mm shall:

- a) have an average thickness of 0,038 mm or more when tested according to 8.25.1 (plastic sheeting, thickness), or
- b) be perforated with defined holes so that a minimum of 1 % of the area has been removed over any area of 30 mm × 30 mm.

For plastic balloons, the requirements in 4.3 a) apply to double layers of *plastic sheeting* (i.e. the thickness is measured without inflating or destroying the balloon).

4.4 Toy bags

Toy bags with an opening perimeter greater than 380 mm having a drawstring as a means of closure shall either:

- a) be made of material permeable to air, or
- b) comply with requirements given in 4.14.2 a) (masks and helmets).

4.5 Glass (see 5.7 and A.6)

Accessible glass may be used in the construction of toys for children of 36 months and over where:

- a) its use is necessary to the function of the toy (e.g. optical toys, glass light bulbs, glass in experimental sets);
- b) it is textile glass used for reinforcement;
- c) it is in the form of solid glass marbles or solid glass eyes for dolls;
- d) it is in the form of other glass elements (e.g. glass beads) that after being subjected to 8.5 (drop test) and 8.7 (impact test) do not expose *accessible* hazardous sharp *edges* (see 8.11, sharpness of edges) or *accessible* hazardous sharp points (see 8.12, sharpness of points).

4.6 Expanding materials (see A.7)

The requirement in 4.6 does not apply to seeds in growing kits.

Expanding materials in toys or components of toys which fit entirely in the cylinder specified in 8.2 (small parts cylinder) before or after being tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test) shall not expand more than 50 % in any dimension when tested according to 8.14 (expanding materials).

If the *expanding material* is enclosed by a material intended to break during soaking, the requirement in 4.6 shall be fulfilled also when the test is performed after removal of the breakable material.

4.7 Edges (see A.8)

Accessible edges shall not present an unreasonable risk of injury.

- a) *Edges* of metal or glass are considered as potentially hazardous sharp *edges* if they are sharp as determined according to 8.11 (sharpness of edges). If the *edges* fail the test, they shall be assessed to determine whether they present an unreasonable risk of injury taking into account the foreseeable use of the toy. Regardless of the manner in which the *edges* are finished, they shall be tested according to 8.11.

NOTE Edges can be folded, rolled or spiralled in order to make them inaccessible, or protected by a coating of plastic or other similar material.

- b) In *overlap joints*, the *edge* of the sheet metal shall conform to 4.7 a) when the sheet metal has a thickness of 0,5 mm or less and the clearance to the underlying surface is greater than 0,7 mm.
- c) *Edges* of metal including *fastenings* (e.g. screw heads) and of rigid polymeric material shall be free from *burr* capable of causing wounds or abrasion.

Flashings on pliable polymeric materials (e.g. polyolefins) are not considered as *burr*.

- d) Where it is essential for the functioning of the toy, hazardous sharp *functional edges* may be used in toys intended for children of 36 months and over. The potential danger presented by such *edges* shall be drawn to the attention of the user (see 7.6, hazardous sharp functional edges and points (see 4.7 and 4.8)). However, the sharpness of *edges* of pieces intended to serve as electric conductors, microscope slides and cover slips do not need to be drawn to the attention of the user.

4.8 Points and metallic wires (see A.9)

Metallic wires and *accessible points* shall not present an unreasonable risk of injury.

- a) Points are considered as potentially hazardous sharp points if they are sharp as determined according to 8.12 (sharpness of points). If the points fail the test, they shall be assessed to determine whether they present an unreasonable risk of injury taking into account the foreseeable use of the toy (see also 5.1 c)).

Points of pencils and similar writing and drawing implements are not considered as sharp points.

- b) Where it is essential for the functioning of the toy, hazardous sharp *functional points* may be used in toys intended for children of 36 months and over. The potential danger presented by such points shall be drawn to the attention of the user (see 7.6, hazardous sharp functional edges and points (see 4.7 and 4.8)). However, the sharpness of points of pieces intended to serve as electrical conductors do not need to be drawn to the attention of the user.
- c) Metallic wires and other metallic components that are designed and intended to be bent, for example, in order to change the shape or position of a toy or part of a toy (e.g. in *soft-filled toys*), shall not break and produce hazardous sharp points, or protrude through any surface covering of the toy, when tested according to 8.13.2 (metallic wires and other metallic components intended to be bent).
- d) Metallic wires that are not designed to be bent but are likely to occasionally or accidentally be bent during play shall not break and produce hazardous sharp points, or protrude through any surface covering of the toy, when tested according to 8.13.3 (metallic wires likely to be bent).
- e) *Splinters* on surfaces and *accessible edges* of toys shall not present an unreasonable risk of injury taking into account the foreseeable use of the toy.

4.9 Protruding parts (see A.10)

Tubes and rigid components in the form of projections which constitute a puncture hazard to a child shall be protected. This protection shall not be removed when tested according to 8.4.2.3 (tension test, protective components).

The ends of spokes on toy umbrellas shall be protected. If the protection is removed when tested according to 8.4.2.3 (tension test, protective components), the ends of the spokes shall be free from hazardous sharp *edges* and hazardous sharp points when tested according to 8.11 (sharpness of edges) and 8.12 (sharpness of points). In addition, if the protection is removed, the spokes shall have a diameter of 2 mm or more and shall have ends with no *burr* and a smooth, rounded and approximately spherical finish.

4.10 Parts moving against each other

4.10.1 Folding and sliding mechanisms (see A.11)

The requirements in 4.10.1 do not apply to toys with a potential sitting surface width of less than 140 mm.

Toys with folding and sliding mechanisms shall conform to the following requirements:

- a) Toy pushchairs and perambulators incorporating a handle or other structural member which can fold down over a child, shall have at least one main locking device and at least one secondary locking device, both of which shall act directly on the folding mechanism.

At least one of the locking devices shall automatically engage when the toy is erected.

When tested according to 8.18.2 a) (toy pushchairs and perambulators), the toy shall not *collapse* nor shall either of the locking devices fail or disengage.

Two devices of the same construction (e.g. locking rings), one on the left-hand side and one on the right-hand side of the toy, are considered to be one locking device.

If it is possible to partially erect a toy pushchair or perambulator without one of the locking devices being engaged, the test of 8.18.2 a) (toy pushchairs and perambulators) shall be performed in this orientation.

An example of a toy pushchair or perambulator covered by 4.10.1 a) is illustrated in Figure 7.

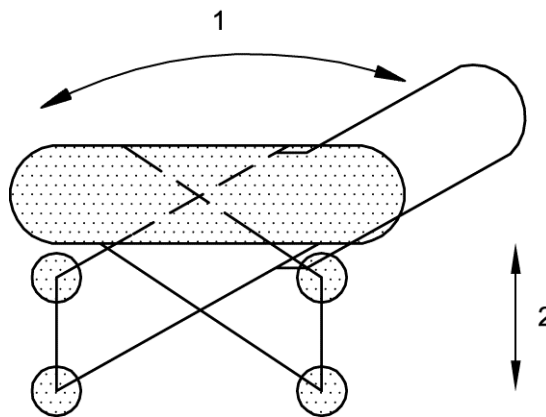
NOTE Partially erect means erected in such a way that the user might wrongly believe the toy to be fully erect.

- b) Toy pushchairs and perambulators that do not otherwise constitute a hazard of a handle or other structural member folding down over a child, shall have at least a locking device or a safety stop, which may be manual in operation.

When tested according to 8.18.2 b) (toy pushchairs and perambulators) the toy shall not *collapse* nor shall the locking device or safety stop fail or disengage.

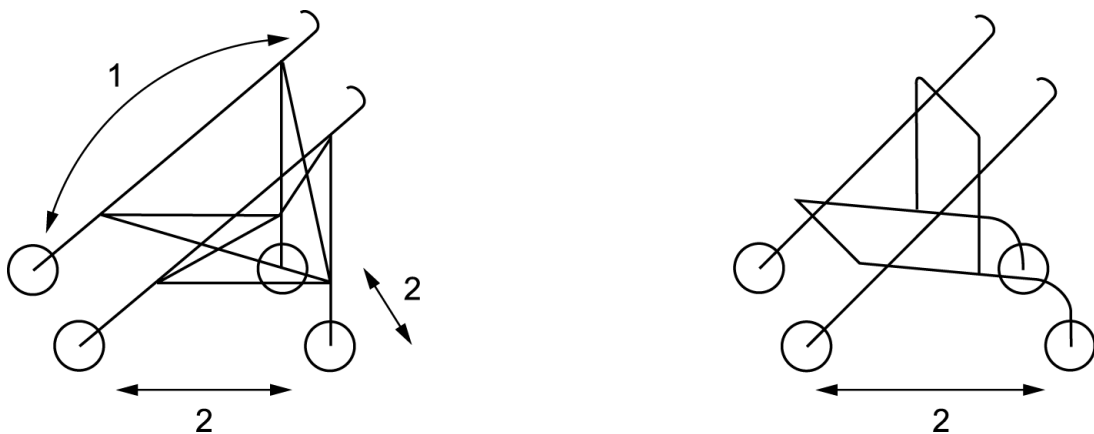
If it is possible to partially erect a toy pushchair or perambulator without a locking device being engaged, the test of 8.18.2 b) shall be performed in this orientation (see also Note in 4.10.1 a)).

Examples of toy pushchairs covered by 4.10.1 b) are illustrated in Figure 8.

**Key**

- 1 handle movement
- 2 chassis movement

Figure 7 — Example of toy pushchair or perambulator covered by 4.10.1 a)

**Key**

- 1 handle movement
- 2 chassis movement

Figure 8 — Examples of toy pushchairs covered by 4.10.1 b)

- c) Folding devices on other collapsible toys (e.g. ironing boards, folding chairs and tables, etc.) which may have a scissor-like action:
 - 1) shall have a safety stop or locking device. When tested according to 8.18.3 (other collapsible toys), the toy shall not *collapse* nor shall the locking device fail or disengage, and
 - 2) shall have a clearance of 12 mm or more between moving parts which constitute a scissor-like action.
- d) Toys other than those covered by 4.10.1 a), b) or c), with folding or sliding mechanisms intended to bear or capable of bearing the mass of a child and capable of injuring fingers, shall be so constructed that the space between moving elements shall also allow a 12 mm diameter rod to be inserted if it allows a 5 mm diameter rod to be inserted.

4.10.2 Driving mechanisms (see A.12)

The requirements in 4.10.2 a) and b) do not apply to *driving mechanisms* with insufficient power to injure fingers or other parts of the body, nor to transmissions on toys intended to bear the mass of a child which are covered in 4.15.1.6 (transmission and wheel arrangement).

Driving mechanisms and winder keys shall conform to the following requirements:

- a) *Driving mechanisms* shall be enclosed in such a way that they do not expose *accessible* hazardous sharp *edges* (see 8.11, sharpness of edges) or hazardous sharp points (see 8.12, sharpness of points) or otherwise present a hazard that could cause *crushing* of the fingers or other parts of the body when tested according to 8.5 (drop test) and 8.7 (impact test).
- b) *Driving mechanisms* within *large and bulky toys* shall be enclosed in such a way that they do not expose *accessible* hazardous sharp *edges* (see 8.11, sharpness of edges) or hazardous sharp points (see 8.12, sharpness of points) or otherwise present a hazard that could cause *crushing* of the fingers or other parts of the body when tested according to 8.6 (tip over test).
- c) The shape and dimensions of winder keys or starting handles shall be such that the clear space between the key or the handle and the body of the toy shall also allow a 12 mm diameter rod to be inserted if it allows a 5 mm diameter rod to be inserted. Any holes in keys or handles shall not permit the insertion of a 5 mm diameter rod.

4.10.3 Hinges (see A.13)

The requirement in 4.10.3 does not apply if any part joined by one or more hinges has a mass of less than 250 g.

Toys having two parts joined by means of one or more hinges and with a space between the assembled *edges* along the *hinge line*, shall be so constructed that this space with the parts in any position shall also allow a 12 mm diameter rod to be inserted if it allows a 5 mm diameter rod to be inserted.

4.10.4 Springs (see A.14)

Springs shall conform to the following requirements:

- a) *Spiral springs* shall not be *accessible* if the gap between two consecutive spirals is greater than 3 mm in any position of use.

The requirement in 4.10.4 b) does not apply to *springs* that do not return to their original position after unloading (i.e. if the elastic limit is exceeded).

- b) Extension *helical springs* shall not be *accessible* if the gap between two consecutive turns is greater than 3 mm when the *spring* is subjected to a tensile force of 40 N.

The requirement in 4.10.4 c) does not apply to *springs* that do not return to their original position after loading with a force of 40 N or to *springs* wound round a second component of the toy (for example a guiding rod) so that it is not possible to insert the *accessibility* probe A (see Figure 24, accessibility probe) between consecutive coils by more than 5 mm.

- c) Compression *helical springs* shall not be *accessible* if the gap between two consecutive turns is greater than 3 mm at rest, and the *spring* can be subjected to a force of 40 N or more when the toy is in use.

4.11 Mouth-actuated toys and other toys intended to be put in the mouth (see A.15)

A1 Stoppers for air-inflation inlets on toys which can be inflated using the mouth are excluded from the requirements in 4.11.

NOTE Requirements for stoppers on air-inflation inlets are found in 4.18 (aquatic toys and inflatable toys (see A.23)). **A1**

Toys or parts of toys made of materials excluded from 5.1 (general requirements) are excluded from the requirements in 4.11 a), b) and d).

Toys intended to be put in the mouth shall conform to the following requirements:

- a) Toys intended to be put in the mouth, *removable* mouthpieces and other *removable components* of toys intended to be put in the mouth shall not fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- b) Mouthpieces and other components of toys intended to be put in the mouth, excluding mouth-actuated *projectile* toys, if detached when tested first according to 8.9 (soaking test) and then according to 8.3 (torque test) and 8.4.2.1 (tension test, general), shall not fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- c) Mouth-actuated toys which contain loose components such as spheres in a whistle or reeds in a noisemaker shall not, when tested according to 8.17.2 (other mouth-actuated toys), release any objects that fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- d) Mouthpieces fitted to balloons shall conform to the requirements in 4.11 a) and b).
- e) Mouth-actuated *projectile* toys (e.g. peashooters) shall have a mouthpiece which does not allow the intended *projectiles* to pass through when tested according to 8.17.1 (mouth-actuated projectile toys), and thereafter does not become detached when tested according to 8.3 (torque test) and 8.4.2.1 (tension test, general).

4.12 Balloons (see 4.3 and A.16)

The *packaging* of latex balloons shall carry a warning (see 7.3).

The *packaging* of natural rubber latex balloons shall indicate that the balloons are made of natural rubber latex (see 7.3).

4.13 Cords of toy kites and other flying toys (see A.17)

Cords of toy kites and other flying toys linking the toy to the child and with a length of more than 2 m, shall be made of material with an electric resistance exceeding 100 M Ω /cm of *cord*, when measured according to 8.19 (electric resistivity of cords).

The potential danger of flying a toy kite near overhead power lines and during thunderstorms shall be drawn to the attention of the user by a warning (see 7.9).

4.14 Enclosures

4.14.1 Toys which a child can enter (see A.18)

Toys which a child can enter shall conform to the following requirements:

- a) Any toy having a door, lid or similar device which encloses a continuous volume greater than 0,03 m³ and in which all internal dimensions are 150 mm or more, shall provide at least two unobstructed ventilation holes, each 650 mm² or more, situated at least 150 mm apart. The total ventilation area shall be provided when the toy is placed on the floor in any position and adjacent to two vertical plane surfaces meeting at a 90° angle, so as to simulate the corner of a room.

The ventilation area is not required if the continuous volume is effectively sub-divided into compartment(s) by a permanent partition(s) or one or more bars making at least one dimension in the compartment less than 150 mm.

- b) For such toys having a door, lid or similar device, it shall be possible to open the door, lid or similar device by applying a force of 50 N or less from the inside.

NOTE This requirement notably precludes the use of buttons, zips and similar fastenings on doors, lids or similar devices.

- c) Toy chests with vertically opening hinged lids shall be provided with lid-support mechanisms to prevent sudden *collapse* or dropping of the lid. The lid-support mechanism shall support the lid so that at no position in the arc of travel of the lid from within 50 mm of the fully closed position through an arc not to exceed 60° from the fully closed position shall it drop more than 12 mm under the influence of its own mass, except in the last 50 mm of travel. The test shall be performed according to 8.31.2 (lid support).

The lid-support mechanism shall conform to this requirement before and after being subjected to 7 000 opening and closing cycles, as described in 8.31.3 (durability test for vertically opening hinged lids).

The lid-support mechanism shall not require adjustment by the consumer to ensure adequate lid support, nor shall it require adjustment in order to conform to the above requirement after being cycled according to 8.31.3 (durability test for vertically opening hinged lids).

The lid and lid-support mechanism shall conform to the requirements in 4.10.3 (hinges).

Toys chests with vertically opening hinged lids shall be accompanied by instructions for proper assembly and maintenance.

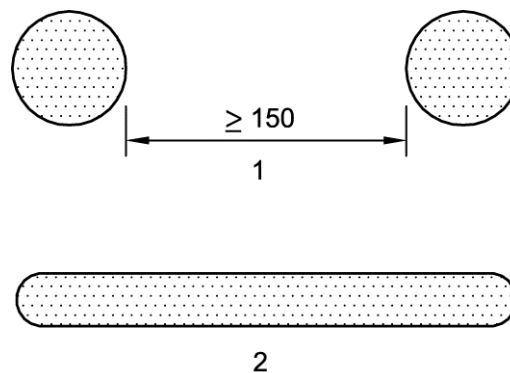
4.14.2 Masks and helmets (see A.19)

Masks and helmets shall conform to the following requirements:

- a) Masks and helmets that fully enclose the head and which are made of impermeable material shall provide a total ventilation area of 1 300 mm² or more through at least two holes at least 150 mm apart or through any equivalent single ventilation area.

An example of an equivalent single ventilation area is given in Figure 9.

Dimensions in millimetres

**Key**

- 1 total ventilation area, 1 300 mm² or more
- 2 alternative equivalent ventilation area, 1 300 mm² or more

Figure 9 — Example of ventilation areas

- b) All rigid materials that cover the face such as goggles, space helmets or face shields shall not expose hazardous sharp *edges* (see 8.11, sharpness of edges), hazardous sharp points (see 8.12, sharpness of points) or loose parts that could enter the eye, before and after being tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test).

This also applies to toys made of rigid materials with cut-out eye holes and toys that cover the eyes.

- c) Toys that are imitations of protective masks and helmets (e.g. motorcycle helmets, industrial safety helmets and firemen's helmets) shall carry a warning (see 7.8).

4.15 Toys intended to bear the mass of a child (see A.20)**4.15.1 Toys propelled by a child or by other means****4.15.1.1 General**

Toys propelled by a child or by other means and intended to bear the mass of a child, e.g.:

- roller skates, inline skates and skateboards intended for children with a body mass of 20 kg or less,
- tricycles, cars, hand carts, moon-hoppers and pogo sticks,

shall conform to the requirements of the following subclauses of 4.15.1.

The requirements in 4.15.1.2 and 4.15.1.5 do not apply to *toy bicycles*, which are covered in 4.15.2, and to *toy scooters*, which are covered in 4.15.5.

4.15.1.2 Warnings and instructions for use

Roller skates, inline skates and skateboards for children offered for sale as toys shall carry a warning regarding protective equipment (see 7.10.1).

Mechanically-driven ride-on toys that do not have a *free-wheeling mechanism* or a braking device, and are either intended to bear the mass of two or more children, or have an unloaded mass of 30 kg or more, shall carry a warning regarding the lack of a brake (see 7.10.2).

In addition, electrically-driven ride-on toys for which a brake is not required according to 4.15.1.5, shall carry a warning regarding the lack of a brake (see 7.10.2) if they do not have a *free-wheeling mechanism* or a braking device, and are either intended to bear the mass of two or more children, or have an unloaded mass of 30 kg or more.

Roller skates, inline skates, skateboards and electrically-driven ride-on toys where the electrical motor itself provides sufficient braking (see 4.15.1.5 a)) are not required to carry this warning.

Electrically-driven ride-on toys and/or their *packaging*, and their instructions for use, shall carry a warning regarding protective equipment (see 7.10.3). This warning is not required on electrically-driven ride-on toys that are equipped with a seat, and are either covered by the requirement in 4.15.1.4 or have a maximum design speed of less than 8,2 km/h when tested according to 8.29 (determination of maximum design speed of electrically-driven ride-on toys).

Electrically-driven ride-on toys shall carry a warning regarding the intended age group (see 7.10.3).

The *packaging* and the instructions for use of electrically-driven ride-on toys shall be accompanied by a warning regarding safe riding areas (see 7.10.3).

Toys intended to bear the mass of a child shall be accompanied by instructions for use, assembly and maintenance. The potential dangers of using the toy and precautions to be taken shall be brought to the attention of the user (see 7.10.4).

Toys that due to their construction, strength, design or other factors are not suitable for use by children of 36 months and over shall carry a warning (see 7.16).

4.15.1.3 Strength

Toys, when tested according to 8.21 (static strength) and 8.22 (dynamic strength) shall not:

- a) produce *accessible* hazardous sharp *edges* (see 8.11, sharpness of edges);
- b) produce *accessible* hazardous sharp points (see 8.12, sharpness of points);
- c) make *driving mechanisms accessible* that present a hazard that could cause *crushing* of the fingers or other parts of the body;
- d) *collapse* so that they do not continue to conform to relevant requirements of this European Standard.

4.15.1.4 Stability

The requirement in 4.15.1.4 does not apply to:

- roller skates, inline skates and toy skateboards;
- toys that by their design do not have a stable base (e.g. pogo sticks, moon hoppers);
- toys intended for children of 36 months and over where the feet of the child can provide sideways stability (i.e. where the legs are unrestricted in their sideways motion) and where the height of the seat is such that a child of the age group for which the toy is intended can reach the ground with both feet when seated (with fore and aft stability remaining);
- toys with aligned wheels. Wheels with a spacing of 150 mm or less between the centres of the outermost wheels are considered to be a single wheel.

The toy shall not tip over when tested according to 8.23.1 (stability, toys intended to bear the mass of a child).

4.15.1.5 Braking

The requirements in 4.15.1.5 do not apply to:

- roller skates, inline skates and toy skateboards;
- toys where the hands or feet provide the motive power to the driving wheel(s) via direct transmission;
- electrically-driven ride-on toys with a maximum design speed, when tested according to 8.29 (determination of maximum design speed of electrically-driven ride-on toys), of 1 m/s (3,6 km/h) or less, having a seat height below 300 mm and in which the feet are able to effect braking.

A1

- tricycles that are provided with a handle that can be used for pushing the child, and that comply with 4.15.1.6 d). **A1**
- a) Mechanically- or electrically-driven ride-on toys with a *free-wheeling mechanism* shall have a braking device. For such toys having a mass of 30 kg or more, it shall be possible to lock at least one brake in a braking position.

The toy shall not move more than 5 cm when tested according to 8.26.1 (brake performance for certain ride-on toys). This requirement applies to all brakes on toys covered by 4.15.1.5 regardless of whether or not a brake is required by this European Standard.

The requirement in 4.15.1.5 a) does not apply to electrically-driven ride-on toys on which the electrical motor itself supplies sufficient braking. The motor shall be considered to supply sufficient braking if:

- 1) the average speed of the vehicle is less than or equal to 0,36 m/s (1,3 km/h) when tested according to 8.26.1.2 (motor brake performance – ramp test), or
- 2) the following is fulfilled when tested according to 8.26.1.3 (motor brake performance – horizontal test):

$$FT1 \geq (M + 25) \times 1,7 \text{ or} \quad (1)$$

$$FT2 \geq (M + 50) \times 1,7 \quad (2)$$

where

FT1 is the maximum pull force in Newtons for a toy intended for children under 36 months;

FT2 is the maximum pull force in Newtons for a toy intended for children of 36 months and over;

M is the mass of the toy in kilograms.

- b) Electrically-driven ride-on toys shall be operated by means of a switch which cuts off the power automatically when it is released, without tilting the toy. Application of the brakes, if present, shall automatically cut power to the drive.

4.15.1.6 Transmission and wheel arrangement

Transmission and wheel arrangement shall conform to the following requirements:

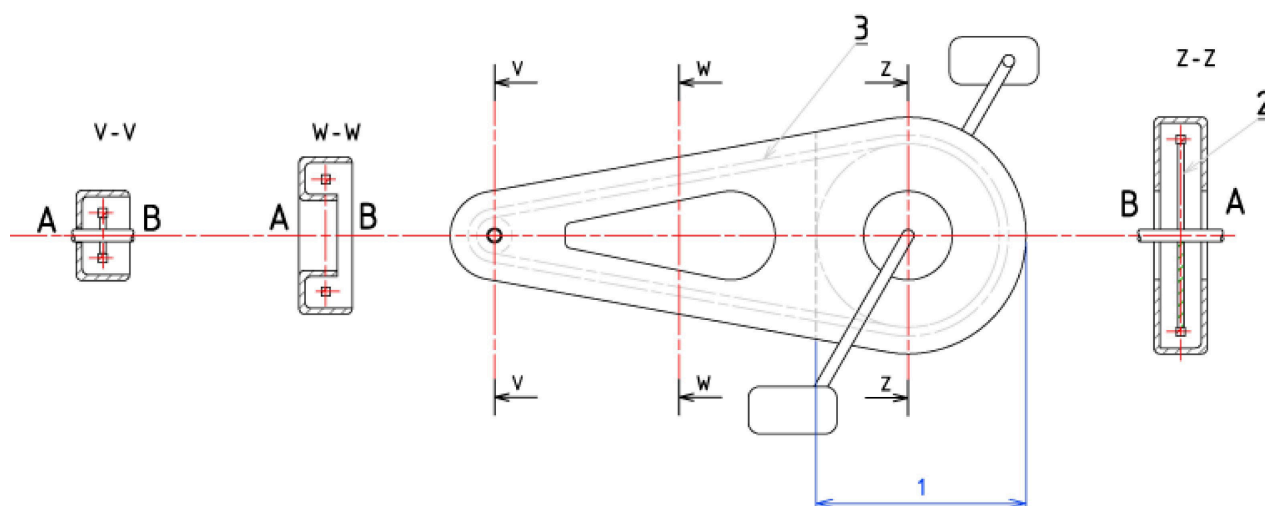
- a) Power transmission *chains* and belts on ride-on toys shall have a shield from, and including, the driving *chain*- or belt-wheel to, and including, the driven *chain*-wheel or belt-wheel at the side(s) where the limb of the child is nearest the *chain* or belt (see Figure 10, Side A). There shall also be a shield around the driving *chain*- or belt-wheel on any side where the *chain* or belt is separated from the limb of the child (e.g. by a frame on a bicycle), (see Figure 10, Side B).

On ride-on toys where the transmission *chain* or belt can be reached by the rider's hand during use, the transmission shield(s) shall have two sides that comply with the design of Side A (see Figure 10).

Drainage holes in the shield(s) are permitted provided that they have a diameter of 5 mm or less.

It shall not be possible to remove the shield without the use of a *tool*.

- b) Wheels directly propelled by pedals shall not have slots or holes with a width greater than 5 mm.



Key

- 1 extent of cover on inside face
- 2 front *chain* wheel
- 3 *chain*
- A side where the limb of the child is nearest the *chain*
- B side where the *chain* or belt is separated from the limb of the child

Figure 10 — Transmission chain shields

- c) Spaces between the wheels and the body or parts of the body (e.g. mudguards) shall also allow a 12 mm diameter rod to be inserted if they allow a 5 mm diameter rod to be inserted. This requirement does not apply to the friction surfaces of braking mechanisms, toy skateboards or roller skates.



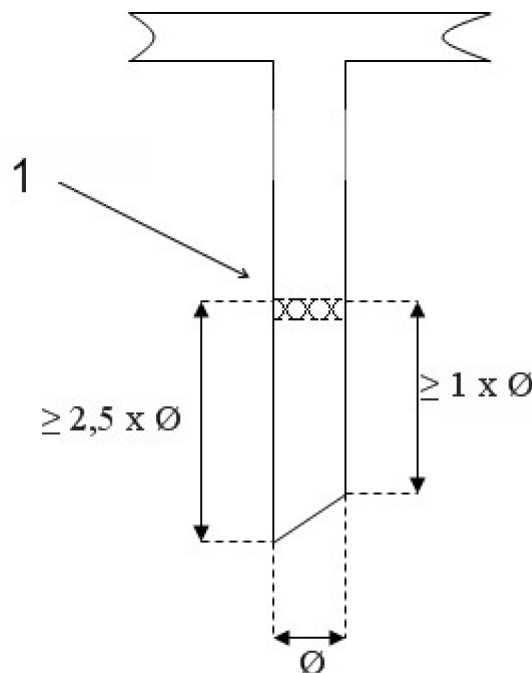
- d) *Toy bicycles* and tricycles provided with a handle that can be used for pushing the child, shall be constructed in such a way as to prevent entrapment of the child's feet in the pedals, etc. while being pushed e.g. pedals that can be disengaged from the hub, an adjustable *free-wheeling mechanism*, or foot rests. For designs other than those only involving foot rests the toy shall be accompanied by instructions for use which draw attention to the hazards of not making the correct adjustments when the push handle is removed.

4.15.1.7 Adjustable seat pillar and handlebar stem minimum insertion marks

Any adjustable seat pillar and adjustable handlebar stem shall have a permanent mark that indicates the minimum insertion depth of the part into the frame of the toy. The minimum insertion mark shall be positioned at a distance not less than two-and-a-half times the diameter of the pillar or stem from the bottom of the pillar -or stem, and there shall be at least one stem diameter's length of contiguous circumferential stem material below the mark (see Figure 11).

The requirement for a minimum insertion mark does not apply if

- there are one or more fixed adjusting positions that all fulfil the dimensional requirements, or
- the minimum insertion depth is defined and limited by the design.



Key

- 1 permanent mark

Figure 11 — Illustration of dimensional requirement for insertion mark

4.15.1.8 Electrically-driven ride-on toys

Electrically-driven ride-on toys intended for children under 6 years shall be equipped with a seat.

Electrically-driven ride-on toys shall have a maximum design speed which does not exceed the following values when tested according to 8.29 (determination of maximum design speed of electrically-driven ride-on toys):

- toys intended for children over 3 years, but under 6 years: 6 km/h or 8,2 km/h The higher speed (8,2 km/h) is applicable only if the toy is equipped with a two-position device which limits the maximum design speed to 6 km/h or less in one position, and to 8,2 km/h or less in the other position. The device shall only be intended to be adjusted by an adult by means of a *tool* and shall be in the low speed position at the point of sale;
- toys intended for children of 6 years and over: 16 km/h.

4.15.2 Toy bicycles (see A.20)

4.15.2.1 General

In addition to relevant requirements in Clause 4, *toy bicycles* shall conform to the requirements in 4.15.2.2 and 4.15.2.3.

4.15.2.2 Warnings and instructions for use

Toy bicycles shall carry a warning regarding their use in traffic and the need for protective equipment to be worn. They shall also be accompanied by assembly and maintenance instructions, instructions for use and precautions to be taken. The potential dangers of riding a *toy bicycle* shall be brought to the attention of the parents or carers (see 7.15).

Toy bicycles that due to their construction, strength, design or other factors are not suitable for use by children of 36 months and over shall carry a warning (see 7.16).

4.15.2.3 Braking requirements

Toy bicycles with a *free-wheeling mechanism* shall be equipped with two independent braking systems, one which operates on the front wheel and one which operates on the rear wheel.

For handbrakes, the brake lever dimension d measured at the midpoint of the lever as shown in Figure 12 shall not exceed 60 mm. The range of adjustment on an adjustable lever shall permit this dimension to be attained. The lever length shall be 80 mm or more.

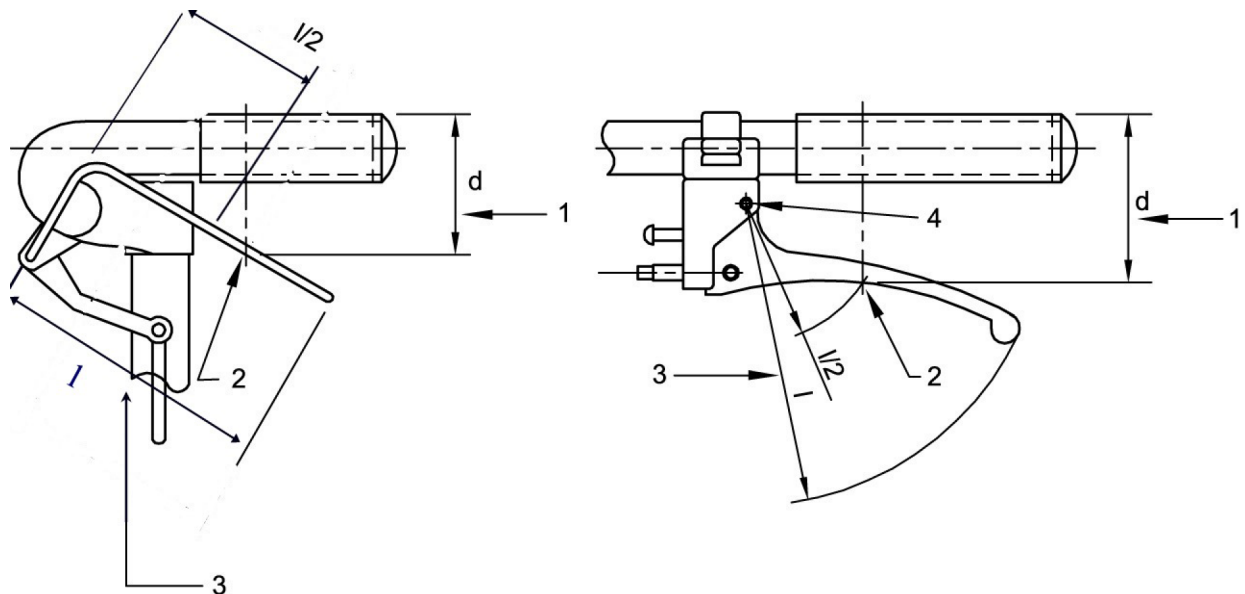
The toy shall not move more than 5 cm when tested according to 8.26.2 (brake performance for toy bicycles). This requirement applies also to *toy bicycles* with a *fixed drive*, if they have been equipped with a brake, although not required by this European Standard.

4.15.3 Rocking horses and similar toys (see A.21)

Rocking horses and similar toys shall conform to the following requirements:

- a) The bow rocker of any bow-mounted rocking horse or other rocking toy shall have a limit to its movement which shall at all times hold the user within the extreme of the bow. Compliance is checked by visual inspection.
- b) The toy shall not tip over when tested according to 8.23.1 (stability, toys intended to bear the mass of a child).

- c) Toys shall not *collapse* so that they do not continue to conform to relevant requirements of this European Standard when tested according to 8.21 (static strength).
- d) Toys that due to their construction, strength, design or other factors are not suitable for use by children of 36 months and over shall carry a warning (see 7.16).
- e) Toys where the intended sitting surface is 600 mm or more above the ground, shall carry a warning (see 7.19).



Key

- 1 brake lever dimension, d
- 2 midpoint of lever
- 3 lever length, l
- 4 pivot

Figure 12 — Handbrake lever dimensions

4.15.4 Toys not propelled by a child

Toys not propelled by a child but designed to bear the mass of a child (but not toys covered by EN 71-8) shall conform to the following requirements:

- a) Toys shall not *collapse* so that they do not continue to conform to relevant requirements of this European Standard when tested according to 8.21 (static strength).
- b) Toys shall not tip over when tested according to 8.23.1 (stability, toys intended to bear the mass of a child). This requirement does not apply to toys which for evident reasons cannot be considered as being stable (e.g. big *balls* and *soft-filled* toy animals).
- c) Toys intended to bear the mass of a child shall, when appropriate, be accompanied by instructions for use, assembly and maintenance instructions.
- d) Toys that due to their construction, strength, design or other factors are not suitable for use by children of 36 months and over shall carry a warning (see 7.16).

4.15.5 Toy scooters (see A.49)

4.15.5.1 General

For the purpose of this European Standard, *toy scooters* are divided into two groups:

- those intended for children with a body mass of 20 kg or less;
- those intended for children with a body mass of 50 kg or less.

Toy scooters shall conform to the requirements of 4.15.5.

4.15.5.2 Warnings and instructions for use

Toy scooters shall carry a warning regarding the need for protective equipment to be worn and the maximum weight of the user. They shall also be accompanied by assembly and maintenance instructions, instructions for use and precautions to be taken. The potential dangers of riding a *toy scooter* shall be brought to the attention of the parents or carers (see 7.18).

4.15.5.3 Strength

- a) *Toy scooters* shall conform to the requirements in 4.15.1.3 (strength).
- b) When tested according to 8.27 (strength of toy scooter steering tubes):
 - 1) steering tubes shall not *collapse* so that they do not continue to conform to relevant requirements of this European Standard;
 - 2) steering tubes shall not separate into two or more parts;
 - 3) steering tubes made of metal shall not show visible *cracks*;
 - 4) locking devices shall not fail or disengage.

4.15.5.4 Adjustable and folding steering tubes

- a) To prevent sudden changes of height, steering tubes with adjustable height shall:
 - 1) be adjustable with the use of a *tool*, or
 - 2) have at least one main locking device and one secondary locking device of which at least one shall automatically be engaged when the height is adjusted.

The separation of the steering tube shall not be possible unless intended.

- b) Steering tubes intended to be folded shall have a locking device on the folding mechanism.
- c) The space between moving elements capable of injuring fingers, shall also allow a 12 mm rod to be inserted if it allows a 5 mm rod to be inserted.

Accessible openings in moving elements capable of shearing a finger shall not allow the insertion of a 5 mm rod.

4.15.5.5 Braking

Toy scooters labelled as intended for children with a body mass of 20 kg or less do not require a braking system.

Other *toy scooters* shall have at least one braking system which shall operate on the rear wheel and which shall effectively and smoothly reduce the speed without coming to an abrupt stop.

When tested according to 8.26.3 (brake performance for toy scooters), the force required to hold the *toy scooter* on the inclined plane shall be less than 50 N.

4.15.5.6 Wheel size

The diameter of the front wheel(s) on *toy scooters* shall be 120 mm or greater.

4.15.5.7 Protruding parts

The handles on *toy scooters* shall have an end with a diameter of 40 mm or more.

4.16 Heavy immobile toys

Immobile toys with a mass of 4,5 kg or more and intended to rest on the floor but not to bear the mass of a child, shall not tip over when tested according to 8.23.2 (stability, heavy immobile toys).

4.17 Projectile toys (see A.22)

4.17.1 General

 The requirements of 4.17.2, 4.17.3 and 4.17.4 do not apply to:

- components that function as *projectiles* which are permanently enclosed within a toy unless they become accessible when the outer container is tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.7 (impact test), 8.8 (compression test), and the component is still capable of being launched;
- ground based toys, or components of toys, intended to be propelled along a track, gameboard, tabletop, floor or onto another surface even if they include an element of motion in *free flight*, for example leaps between tracks or surfaces.

The requirements of 4.17.2.1, 4.17.3 and 4.17.4 do not apply to *projectiles* that have a maximum range of 300 mm or less when measured in accordance with 8.42 (determination of *projectile* range).

The requirements in 4.17.4.4 do not apply to *projectile* toys covered by 4.17.4.2 and 4.17.4.3. 

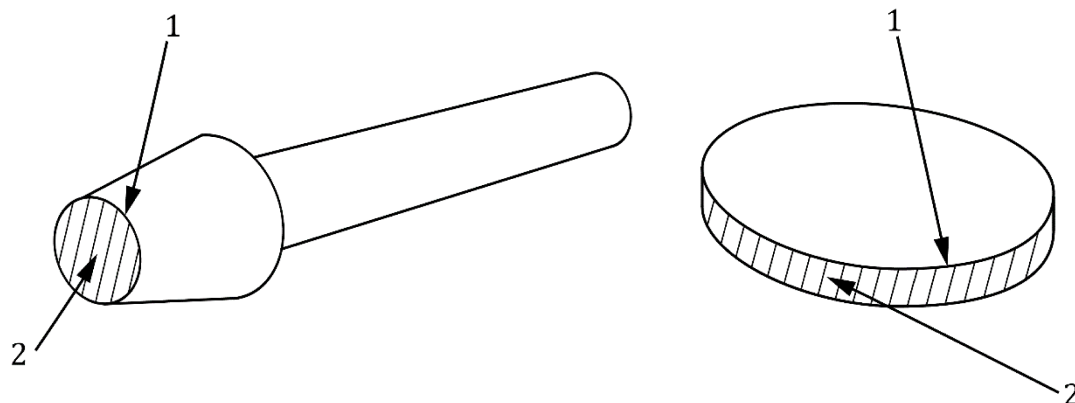
4.17.2 All projectiles



4.17.2.1 Leading parts

Leading parts on rigid *projectiles* shall not protrude through the centre of the gauge beyond the depth of the gauge shown in Figure 57 when tested according to 8.43 (assessment of leading parts of *projectiles* and flying toys).

The *leading parts* of a *projectile* as well as edges that are adjacent to the *leading part(s)* shall be smooth and free of flash or similar projections. See Figure 13 for examples of *edges* adjacent to *leading parts*.

**Key**

- 1 edges adjacent to *leading parts*
- 2 *leading parts* (with hatching)

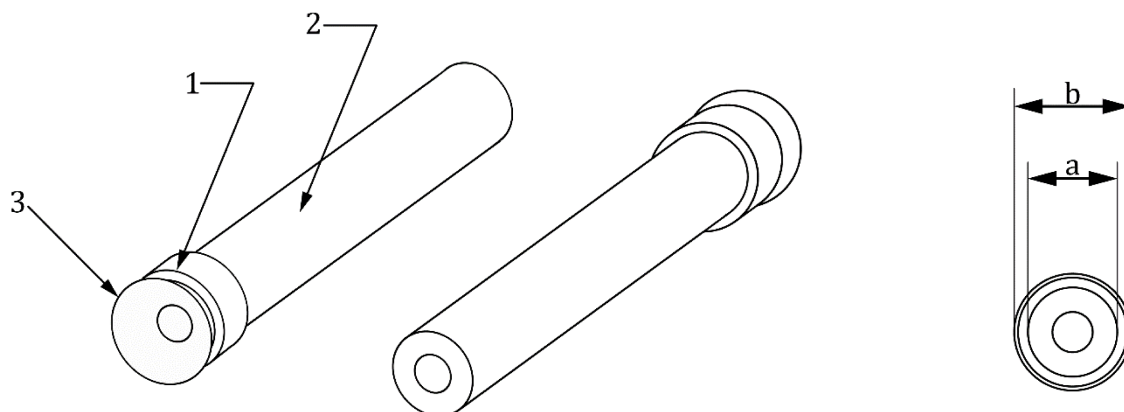
Figure 13 — Examples of edges adjacent to leading parts on missile and disc-type projectiles

4.17.2.2 Foam shaft projectiles with a suction cup as a leading part

Projectiles with a shaft made entirely of foam and with a *suction cup* as a *leading part* where that *suction cup* has a diameter that is less than or equal to the maximum diameter of the collar or foam shaft, when measured in the relaxed state, (see Figure 14) shall:

- a) not pass entirely through template E when tested according to 8.32.1 (small balls test and suction cups), or
- b) have a length of 57 mm or more when measured according to 8.44 (length of suction cup *projectiles*) in the as received state; and
- c) the suction cup shall not detach when tested in accordance with 8.4.2.4.2 (tension test for a foam shaft *projectile* with a suction cup that has a diameter the same as or less than the maximum diameter of the shaft/collar) or shall detach in such a way that the diameter of the suction cup remains less than or equal to the maximum diameter of any remaining collar or foam shaft.

The *projectile* shall comply with either a) or both b) and c). *Projectiles* not addressed by this subclause shall comply with 4.17.2.3.

**Key**

- 1 plastic collar
- 2 foam
- 3 suction cup
- a suction cup diameter
- b shaft/collar diameter

Figure 14 — Example of a foam projectile with suction cup diameter less than or equal to the maximum diameter of foam shaft

4.17.2.3 Other types of projectile with a suction cup as a leading part

Projectiles with a suction cup as a leading part shall:

- a) not pass entirely through template E when tested according to 8.32.1 (small balls test and suction cups), or
- b) have a length of 57 mm or more when measured according to 8.44 (length of suction cup *projectiles*) before and after testing according to 8.3 (torque test) and 8.4.2.4.1 (tension test for a non-foam shaft *projectile*), and
- c) not detach when tested according to 8.3 (torque test), 8.4.2.4.1 (tension test for a non-foam shaft *projectile*), 8.7 (impact test), 8.8 compression test).

The *projectile* shall comply with either a) or both b) and c). This subclause does not apply to *projectiles* covered in 4.17.2.2. A1

4.17.3 A1 Projectile toys with stored energy A1

A1

4.17.3.1 Energy limitation

*Projectiles discharged from a projectile toy with stored energy with a kinetic energy greater than 0,08 J when tested according to 8.24 (kinetic energy of *projectiles*) shall:*

- a) have a *leading part(s)* made of a resilient material.
- b) be accompanied by a warning about the potential hazard of aiming at the eyes or face (see 7.7). This requirement does not apply to *projectile* toys where it would be considered unreasonable to aim at the eyes or face of the user or a third party;
- c) have a kinetic energy per unit area not greater than 2 500 J/m² when tested according to 8.24 (Kinetic energy of *projectiles*).

4.17.3.2 Edges

Edges on projectiles discharged from a *projectile toy with stored energy* that are adjacent to the *leading part(s)*, see Figure 13, shall be visibly rounded. This requirement does not apply to *projectiles* with resilient *leading part(s)* or *leading part(s)* made of *paper* or *paperboard*.

NOTE There may be multiple *leading parts* that require evaluation, especially in situations where the *projectile* may travel in irregular or unpredictable orientations (e.g. tumbling).

4.17.3.3 Projectiles with a protective cap, cover or tip

Projectiles with a resilient *leading part* that is a protective cap, cover or tip, covering a rigid shaft or other rigid part, shall meet one of the following conditions:

- a) the protective cap, cover or tip shall not become detached from the *projectile* when tested in accordance with 8.3 (torque test) and 8.4.2.3 (tension test, protective components), or
- b) any detached component(s) shall not be capable of being discharged by the *discharge mechanism* further than 300 mm when measured in accordance with 8.42 (determination of *projectile range*), or
- c) any detached component(s) shall continue to comply with 4.17.3.1, 4.17.3.2, 4.17.3.3 a) and b) and 4.17.3.4.

4.17.3.4 Impact resistance

When tested in accordance with 8.4.2.5 (wall impact test for *projectiles*), *projectiles* shall not produce a hazardous sharp *edge* (see 8.11, sharpness of edges) or a hazardous sharp point (see 8.12, sharpness of points) and shall continue to comply with 4.17.3.1, 4.17.3.2 and 4.17.3.3.

4.17.3.5 Improvised projectiles

The *discharge mechanism* shall be designed so that it is unable to launch the improvised *projectiles* specified in Figure 15 and Table 1, in a manner determined to be hazardous. The *discharge mechanism* shall be assessed in the form in which it is supplied in the toy, i.e. there shall be no user modifications.

When evaluating the ability of a *discharge mechanism* to launch improvised *projectiles* in a hazardous manner, consideration should be given to the following factors:

- the repeatability and ease of loading and then launching the improvised *projectile*;
- the orientation of the *discharge mechanism*;
- the speed and/or distance travelled by the improvised *projectile*;
- other factors considered to be relevant such as the ability to aim the improvised *projectile*.

The improvised *projectile* is not considered to be hazardous if the supplied *projectile* is discharged from the toy with an energy less than or equal to 0,08 J when tested according to 8.24.1 (kinetic energy of *projectiles*).