
Safety of toys —

Part 1:

**Safety aspects related to mechanical
and physical properties**

Sécurité des jouets —

*Partie 1: Aspects de sécurité relatifs aux propriétés mécaniques et
physiques*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 181, *Safety of toys*.

This sixth edition cancels and replaces the fifth edition (ISO 8124-1:2018), which has been technically revised. It also incorporates the amendments ISO 8124-1:2018/Amd.1:2020 and ISO 8124-1:2018/Amd.2:2020.

A list of the main technical changes made to the previous edition is given in [Annex G](#).

A list of all parts in the ISO 8124 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is largely based upon existing standards in the European Union (EN 71-1) and in the United States of America (ASTM F963).

Conformity to the requirements of this document will minimize potential hazards associated with toys resulting from their use in their intended play modes (normal use) as well as unintended play modes (reasonably foreseeable abuse).

This document does not, nor is it intended to, eliminate parental responsibility in the appropriate selection of toys. In addition, this document does not eliminate the need for parental supervision in situations where children of various ages have access to the same toy(s).

Although [Annexes A, B, C, D, E](#) and [F](#) are for information purposes only, they are crucial for the correct interpretation of this document.

The safety of electric toys is described in IEC 62115.

When age indications are required for safety labelling purposes, they may be given in either months or years.

A list of the main technical changes made to the previous edition is given in [Annex G](#).

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Safety of toys —

Part 1:

Safety aspects related to mechanical and physical properties

1 Scope

The requirements in this document apply to all toys, i.e. any product designed or clearly intended for use in play by children under 14 years of age. They are applicable to a toy as it is initially received by the consumer and, in addition, they apply after a toy is subjected to reasonably foreseeable conditions of normal use and abuse unless specifically noted otherwise.

The requirements of this document specify acceptable criteria for structural characteristics of toys, such as shape, size, contour, spacing (e.g. rattles, small parts, sharp points and edges, and hinge-line clearances) as well as acceptable criteria for properties peculiar to certain categories of toy (e.g. maximum kinetic energy values for non-resilient-tipped projectiles and minimum tip angles for certain ride-on toys).

This document specifies requirements and test methods for toys intended for use by children in various age groups from birth to 14 years. The requirements vary according to the age group for which a particular toy is intended. The requirements for a particular age group reflect the nature of the hazards and the expected mental and/or physical abilities of a child to cope with them.

This document also requires that appropriate warnings and/or instructions for use be given on certain toys or their packaging. Due to linguistic problems which may occur in different countries, the wording of these warnings and instructions is not specified but given as general information in [Annex B](#). It should be noted that different legal requirements exist in many countries with regard to such marking.

This document does not purport to cover or include every conceivable potential hazard of a particular toy or toy category. Except for labelling requirements indicating the functional hazards and the age range for which the toy is intended, this document has no requirements for those characteristics of toys which represent an inherent and recognized hazard which is integral to the function of the toy.

EXAMPLE 1 An example of such a hazard is the sharp point necessary for the proper function of a needle. The needle is a hazard which is well understood by the purchaser of a toy sewing kit, and the functional sharp-point hazard is communicated to the user as part of the normal educational process of learning to sew as well as at the point of purchase by means of cautionary labelling on the product's packaging.

EXAMPLE 2 As a further example, a two-wheeled toy scooter has inherent and recognized hazards associated with its use (e.g. instability during use, especially while learning). The potential hazards associated with its structural characteristics (e.g. sharp edges, pinch hazards) will be minimized by conformity to the requirements of this document.

Products not included within the scope of this document are:

- a) bicycles, except for those considered to be toys, i.e. those having a maximum saddle height of 435 mm (see [E.1](#));
- b) slingshots;

NOTE 1 “Slingshots” are also known as “catapults” and are usually held in the hand; examples are given in [Figure 1](#). Toy versions of medieval catapults and trebuchets are not exempt from this document; an example is given in [Figure 2](#).



NOTE Not within the scope of this document.

Figure 1 — Examples of slingshots



NOTE Within the scope of this document.

Figure 2 — Medieval toy catapult

- c) darts with metal points;
- d) public playground equipment;
- e) compressed air- and gas-operated guns and pistols (see [E.1](#));
- f) kites (except for the electric resistance of their strings, which is included);
- g) model kits, hobby and craft items, in which the finished item is not primarily of play value;
- h) sporting goods and equipment, camping goods, athletic equipment, musical instruments and furniture; however, toys which are their counterparts are included;

NOTE 2 It is recognized that there is often a fine distinction between, for example, a musical instrument or a sporting item and its toy counterpart. The intention of the manufacturer or distributor, as well as normal use and reasonably foreseeable abuse, determines whether the item is a toy counterpart or not.

- i) models of aircraft, rockets, boats and land vehicles powered by combustion engines; however, toys which are their counterparts are included (see [E.1](#));
- j) collectible products not intended for children under 14 years of age;
- k) holiday decorations that are primarily intended for ornamental purposes;
- l) aquatic equipment intended to be used in deep water;
- m) swimming-learning devices and flotation aids for children, such as swim-seats and swim-aids;
- n) toys installed in public places (e.g. arcades and shopping centres);
- o) puzzles for specialists, for example those with more than 500 pieces and those without a picture;

- p) fireworks, including percussion caps, except percussion caps specifically designed for toys;
- q) products containing heating elements intended for use under the supervision of an adult in a teaching context;
- r) steam engines;
- s) video toys that can be connected to a video screen and operated at a nominal voltage greater than 24 V;
- t) babies' pacifiers (dummies);
- u) faithful reproductions of firearms;
- v) electric ovens, irons or other functional products operated at a nominal voltage greater than 24 V;
- w) bows for archery with an overall relaxed length exceeding 120 cm;
- x) fashion jewellery for children (see [E.1](#)).

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.

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

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

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 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 21920-2, *Geometrical product specifications (GPS) — Surface texture: Profile — Part 2: Terms, definitions and surface texture parameters*

IEC 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

NOTE The requirements in this document are applicable to certain age ranges. For an interpretation of these age ranges, see [E.43](#).

3.1

accessible

<part or component> contactable by any portion forward of the collar of the accessibility probe

Note 1 to entry: The accessibility probe is described in [5.7](#).

3.2

aquatic toy

product, whether inflatable or not, intended to bear the mass of a child and used as an instrument of play in shallow water

Note 1 to entry: Bathroom toys and beach balls are not considered aquatic toys.

3.3

arrow

projectile (3.56) in the form of a shaft with a length of 150 mm or more, intended to be discharged from a bow held by the user

3.4

A-weighted equivalent sound pressure level

L_{pAeq}
level of a *steady-state sound* (3.75) which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound

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: This definition includes balls attached to a *toy* (3.82) or article by a string, elastic cord or similar tether and also any multi-sided object formed by connecting planes into, and any novelty item of, a generally spherical, ovoid or ellipsoidal shape designed or intended to be used as a ball.

Note 2 to entry: This definition does not include dice or balls permanently enclosed inside pinball machines, mazes or similar outer containers. A ball is permanently enclosed if, when tested according to 5.24, it is not removed from the outer container.

3.7

battery-operated toy

toy (3.82) having at least one function dependent on electricity and powered by batteries

3.8

burr

roughness caused by not cleanly severing or finishing the material

3.9

chain

series of connected links or rings of which the length is significantly greater than the thickness and width

3.10

close-to-the-ear toy

toy (3.82) that is intended to be used close to the ear, i.e. the sound-emitting part of such a toy is normally put against the ear of a child

EXAMPLE Toy cellphones or toy telephones that emit sounds from the handpiece.

3.11

collapse

sudden or unexpected folding of a structure

3.12**cord**

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

EXAMPLE Elastic material, monofilament polymeric material, *tape* (3.79), *ribbon* (3.77), rope, *straps* (3.76), *chains*, woven and twisted material and string, as well as certain weak and long *springs* (3.73).

Note 1 to entry: *Electrical cables* (3.21) are not considered to be cords. *Accessible* (3.1) electrical wires [e.g. between a battery box and a sound source in a *soft-filled toy* (3.71)] which are not electrical cables are, however, considered to be cords.

3.13**cord with the potential to tangle**

cord (3.12) with an attachment, fixed loop, knot or similar feature that can cause the cord to tangle and form a tangled loop or *noose* (3.49) during reasonably foreseeable use and without excessive or intricate manipulation

3.14**crushing**

injury to part of the body resulting from compression between surfaces

3.15**C-weighted peak sound pressure level**

L_{pCpeak}

peak sound pressure level obtained when using standardized C-weighting

3.16**dart**

projectile (3.56) in the form of a shaft less than 150 mm in length that is intended to be thrown or blown

3.17**discharge mechanism**

component of the *toy* (3.82), separate from the *projectile* (3.56), which releases or propels the projectile into free flight

3.18**driving mechanism**

assembly of linked parts or components (e.g. gears, belts and winding mechanisms), at least one of which moves, powered by a source (e.g. electrical or mechanical means) independent of a child

3.19**edge**

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

3.19.1**curled edge**

edge (3.19) in which the portion of the sheet adjacent to the edge is bent into an arc and forms an angle of less than 90° with the base sheet

Note 1 to entry: See [Figure 3](#).

3.19.2**hemmed edge**

edge (3.19) in which the portion of the sheet adjacent to the edge is folded back on the sheet itself through an angle of approximately 180°, so that the portion of the sheet adjacent to the edge is approximately parallel to the main sheet

Note 1 to entry: See [Figure 3](#).

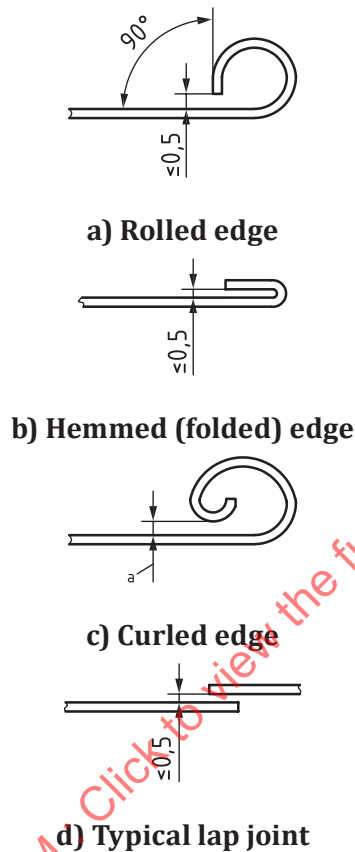
3.19.3

rolled edge

edge (3.19) in which the portion of the sheet adjacent to the edge is bent into an arc and forms an angle between 90° and 120° with the main sheet

Note 1 to entry: See [Figure 3](#).

Dimensions in millimetres



a No limit.

Figure 3 — Edges

3.20

elastic

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

3.21

electrical cable

flexible insulated conductor used for connecting a toy (3.82) to a supply of electricity or to a piece of electronic equipment which is not itself a toy or part of a toy

3.22

expanding material

material whose volume expands when exposed to water

3.23

explosive action

sudden release of energy characterized by the rapid expansion or bursting of a material

3.24**fastener**

mechanical device which attaches two or more elements together

EXAMPLE Screws, rivets and staples.

3.25**feathering**

beveling of an *edge* (3.19) (or decrease in thickness moving toward the edge) caused during shearing or cutting of material

3.26**fixed loop**

loop in a *cord* (3.12), the perimeter of which is fixed by any permanent means, including one or more knots, hook and loop *fasteners* (3.24), buckles or similar fasteners

Note 1 to entry: A fixed loop can include a part or parts of the toy. See [Figure 4](#).

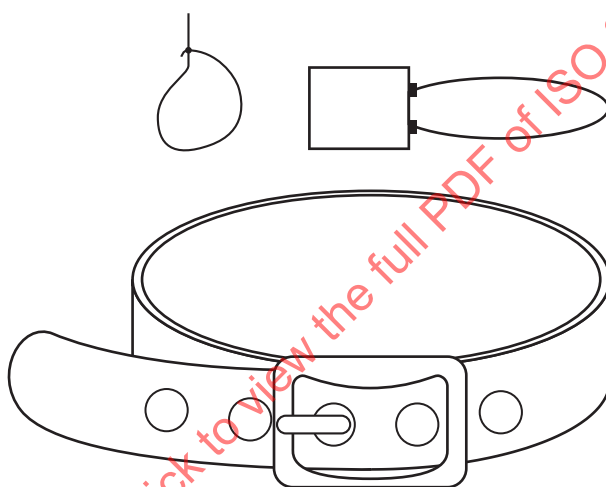


Figure 4 — Examples of fixed loops

3.27**flash**

excess material that escapes between the mating parts of a mould assembly

3.28**flying toy**

toy (3.82) 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

3.29**folding mechanism**

hinged, pivoted, folding or sliding assembly which could crush, scissor, pinch or shear during operation

EXAMPLE Toy ironing boards, toy pushchairs.

3.30**free flight**

unconstrained travel through the air

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

3.31

functional magnet

magnet necessary for the function of motors, relays, speakers and other electrical or electronic components in a *toy* (3.82) where the magnetic properties are not part of the play pattern of the toy

3.32

functional toy

toy (3.82) which performs and is used in the same way as, and is often a scale model of, a certain product, appliance or installation intended for adults

EXAMPLE Stove with heating properties.

3.33

fuzz

bits of fibrous-type material which can be readily removed from *toys* (3.82) with a pile surface

3.34

glass

hard, brittle, amorphous substance produced by fusion, usually consisting of mutually dissolved silica and silicates which also contain soda and lime

3.35

hand-held toy

toy (3.82) that is intended to be used or operated while being held in the hand

EXAMPLE Toy tools, small electronic games, stuffed animals, dolls, musical toys and cap-firing toys.

3.36

harm

physical injury or damage to the health of people or damage to property or the environment

3.37

hazard

potential source of *harm* (3.36)

Note 1 to entry: The term hazard can be qualified in order to define its origin or the nature of the expected harm (i.e. electric shock hazard, *crushing* (3.14) hazard, cutting hazard, toxic hazard, fire hazard or drowning hazard).

3.38

hazardous projection

projection that, because of its material or configuration or both, can present a puncture hazard should a child step on or fall onto it

Note 1 to entry: Excluded from this definition are puncture hazards to the eyes and/or mouth, because of the impossibility of eliminating puncture hazards to those areas of the body by product design.

Note 2 to entry: If the projection is on a small *toy* (3.82) which topples over when pressure is applied to the end of the projection, it is unlikely to present a *hazard* (3.37).

3.39

hazardous sharp edge

accessible (3.1) *edge* (3.19) of a *toy* (3.82) which presents an unreasonable risk of injury during normal use and reasonably foreseeable abuse

3.40

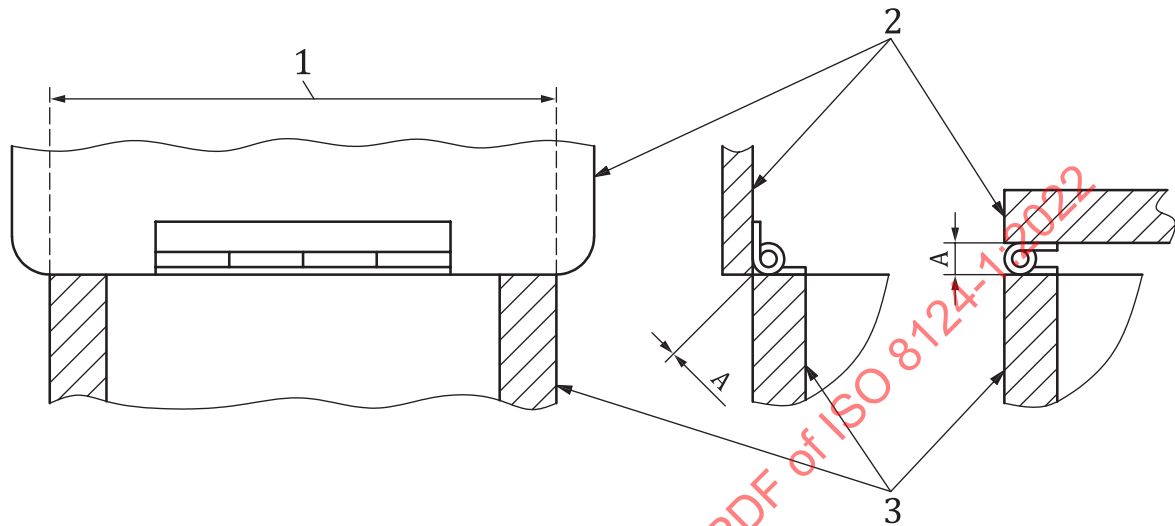
hazardous sharp point

accessible (3.1) *point* of a *toy* (3.82) which presents an unreasonable risk of injury during normal use or reasonably foreseeable abuse

3.41**hinge-line clearance**

distance between the stationary portion of a *toy* (3.82) and the movable portion along or adjacent to a line projected through the axis of rotation

Note 1 to entry: See [Figure 5](#).

**Key**

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

Figure 5 — Hinge-line clearance

3.42**lap joint**

joint in which an *edge* (3.19) overlaps a parallel surface but is not necessarily mechanically attached to it at all points along the length

Note 1 to entry: See [Figure 3](#).

3.43**large and bulky toy**

toy (3.82) 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 for toys having permanently attached legs is measured by calculating the area enclosed by straight lines connecting the outermost *edge* (3.19) of each leg of the perimeter.

3.44**leading edge**

area of the *projectile* (3.56) or *flying toy* (3.28) [e.g. tips, *edges* (3.19) or protrusions] which would be expected to make contact with the eyeball

Note 1 to entry: This includes all areas on *projectiles* (3.56) or *flying toys* (3.28) that travel in unpredictable orientations (e.g. tumbling) that could reasonably be expected to strike the eyeball.

3.45**magnetic component**

part of a *toy* (3.82) which contains an attached or fully or partially enclosed magnet

3.46

magnetic or electrical experimental set

toy (3.82) containing one or more magnets intended for carrying out educational experiments involving both magnetism and electricity

3.47

marble

sphere made of hard material, such as *glass* (3.34), agate, marble or plastic, which is used in various children's games, generally as a playing piece or marker

Note 1 to entry: This definition does not include marbles permanently enclosed inside pinball machines, mazes or similar outer containers. A marble is permanently enclosed if, when tested according to 5.24, it is not removed from the outer container.

3.48

maximum A-weighted sound pressure level

L_{AFmax}

maximum sound pressure level obtained when using standardized A-weighting and fast detector response time-weighting

3.49

noose

loop in a *cord* (3.12) whose perimeter reduces as the cord is pulled

Note 1 to entry: See Figure 6.

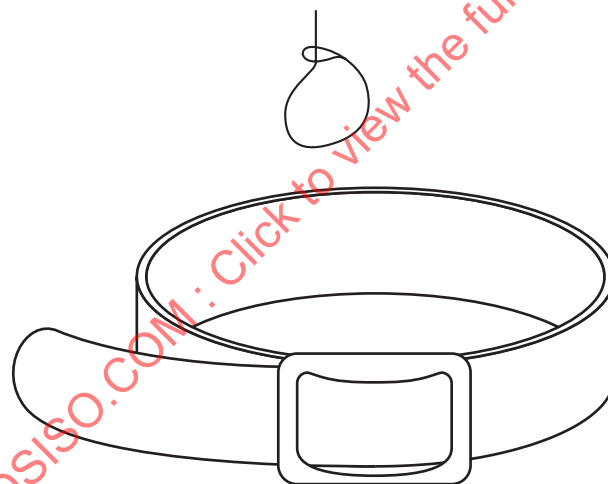


Figure 6 — Examples of a noose

3.50

normal use

play modes that conform to the instructions which accompany the *toy* (3.82), and which have been established by tradition or custom, or which are evident from an examination of the toy

3.51

packaging

material accompanying the *toy* (3.82) when purchased, but having no intended play function

3.52

paper

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

Note 1 to entry: If paper with polymeric lamination, or other treatments which can be resistant to wetting, no longer presents the same properties as paper, then it is not treated as such.

3.53**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.

Note 2 to entry: If paperboard with polymeric lamination, or other treatments which can be resistant to wetting, no longer present the same properties as paperboard, then they are not treated as such.

3.54**play furniture**

furniture intended for use by a child and intended to, or likely to, support the mass of a child

3.55**pompom**

lengths or strands of fibre, yarn or thread clamped or secured and tied in the centre, and brushed up to form a substantially spherical, ovoid or ellipsoidal shape as well as substantially spherical-, ovoid- and ellipsoidal-shaped attachments made of stuffed materials

Note 1 to entry: See [Figure 7](#) for examples of pompoms.

Note 2 to entry: Tassels with long strands are not considered pompoms (see [Figure 8](#)).



1



2

Key

- 1 ordinary pompom
- 2 stuffed pompom (ball on end of cap)

Figure 7 — Pompoms



Figure 8 — Tassel with long strands

3.56**projectile**

object without capacity for self-propulsion, intended to be launched into *free flight* ([3.30](#))

Note 1 to entry: The definition does not include self-propelled *flying toys* ([3.28](#)) such as remote-controlled helicopters and wind-up airplanes, unless the capacity for self-propulsion is from self-contained compressed gas and/or liquid (e.g. rockets).

3.57

projectile toy with stored energy

toy (3.82) with a *projectile* (3.56) launched by means of a *discharge mechanism* (3.17) capable of storing energy independent of the user and incorporating a release mechanism

Note 1 to entry: Release mechanisms should operate following at least one single discrete activation by the user.

Note 2 to entry: Toy rockets and similar toys propelled by a chemical reaction or compressed gases (e.g. air) where the energy can be stored independent of the user are considered as projectile toys with stored energy. For example, in a rocket propelled by a mixture of vinegar and baking soda, the user initiates the reaction by mixing the two substances but no longer has control of the actual launching. The rocket will launch when the pressure build-up overcomes the force that holds the rocket onto the launch platform.

3.58

projectile toy without stored energy

toy (3.82) with a *projectile* (3.56) propelled by energy imparted by the user or by means of a *discharge mechanism* (3.17) incapable of storing energy independent of the user

3.59

protective cap, cover or tip

component that is attached to a potentially hazardous *edge* (3.19) or projection to reduce the risk of injury

3.60

pull or push toy

toy (3.82) with a *cord* (3.12), tether or handle attached to the toy and where the toy is intended for use on the floor or ground with the child in a standing or upright position, typically walking, while pushing or pulling the toy

Note 1 to entry: Toys intended for children aged 36 months and over are not regarded as pull or push toys.

3.61

rattle

toy (3.82) that is clearly designed to emit sound when shaken, typically intended for children who are too young to sit up unaided

3.62

reasonably foreseeable abuse

use of a *toy* (3.82) under conditions or for purposes not intended by the supplier, but which can happen, induced by the toy in combination with, or as a result of, common behaviour in a child

EXAMPLE Deliberate disassembly, dropping or use of a toy for a purpose for which it was not intended.

Note 1 to entry: Tests simulating reasonably foreseeable abuse are given in 5.24.

3.63

reference box

hypothetical surface which is the smallest rectangular parallelepiped that can enclose the *toy* (3.82) without regard to minor appendages

3.64

remote-controlled flying toy

flying toy (3.28) with a mass of no more than 250 g, capable of being remotely controlled (e.g. by a wireless transmitter)

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

EXAMPLE Drones and helicopters.

3.65**removable component**

part or component that is intended to be removed from the *toy* (3.82) without the use of tools

3.66**resilient material**

material having a hardness value of 70 Shore A or less

Note 1 to entry: For resilience testing, see ISO 868.

3.67**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

3.68**rigidity**

hardness of material exceeding 70 Shore A

Note 1 to entry: For hardness testing, see ISO 868.

3.69**risk**

combination of the probability of occurrence of *harm* (3.36) and the severity of that *harm* (3.36)

3.70**simulated protective equipment**

toys (3.82) designed to mimic products which infer some sort of physical protection to the wearer

EXAMPLE Protective helmets and visors.

3.71**soft-filled toy****stuffed toy**

toy (3.82), clothed or unclothed, with soft body surfaces and filled with soft materials or a combination of soft and non-soft materials (e.g. pellets), allowing compression of the main part readily with the hand

Note 1 to entry: A soft-filled toy may only be filled with a combination of soft and non-soft material if the main part of the toy can still be readily compressed with the hand.

3.72**splinter**

sharp pointed fragment

3.73**spring**

resilient device, typically a helical metal coil, that can be pressed or pulled but returns to its former shape when released, used chiefly to exert constant tension or absorb movement

3.73.1**helical spring**

spring in the form of a coil

Note 1 to entry: See [Figure 9](#).

3.73.1.1**compression helical spring**

helical spring which essentially returns to its initial state after compression

3.73.1.2**extension helical spring**

helical spring which essentially returns to its initial state after tension

3.73.2

spiral spring

clockwork-type spring

Note 1 to entry: See [Figure 10](#).

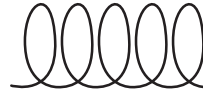


Figure 9 — Helical spring



Figure 10 — Spiral spring

3.74

squeeze toy

hand-held pliable *toy* ([3.82](#)), usually incorporating a noise-making feature activated by forcing air through an opening when flexed or squeezed and which usually recovers its original shape when released

3.75

steady-state sound

sound in which there are negligibly small fluctuations of sound pressure level within the period of observation

3.76

strap

strip of flexible material used for fastening, securing, carrying or holding

3.77

floor, tabletop and crib toy

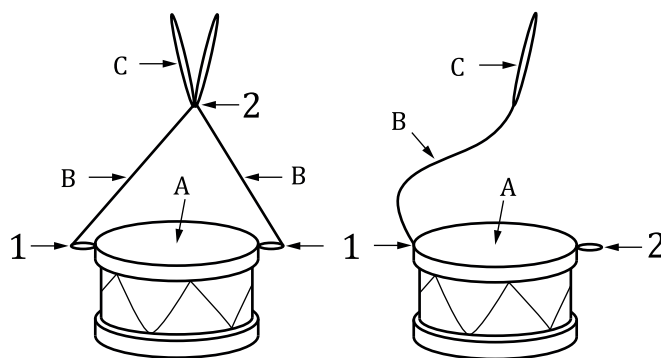
toy ([3.82](#)) intended to be played with while it is attached to or resting on a floor, tabletop or crib

3.78

tangled loop

loop created by twisting or snagging a *cord* ([3.12](#)) with the potential to tangle

Note 1 to entry: A tangled loop can include a part or parts of the toy. See [Figure 11](#).

**Key**

- 1 fixing point
- 2 tangle point
- A drum surface
- B cord attaching drumstick to drum
- C drumstick

Figure 11 — Example of a tangled loop**3.79****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

3.80**teether**

toy (3.82) designed for oral use and intended primarily for symptomatic relief of teething discomfort

3.81**tool**

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

3.82**toy**

product designed or clearly intended for use in play by children under 14 years of age

3.83**toy bag**

bag, clearly intended for use in play, often having features designed to encourage children to use it in play activities

Note 1 to entry: Bags that are used solely for storage of the toy or its components are to be considered *packaging* (3.51) regardless of whether they are attractive to children, for example if they are brightly coloured or have characteristics appealing to children. Such characteristics alone are not enough to define them as toy bags.

3.84**toy bicycle**

two-wheeled vehicle, with or without stabilizers, with a maximum saddle height of 435 mm and which is propelled solely by the muscular energy of a child on that vehicle, in particular by means of pedals

3.85**toy chest**

container with a hinged lid enclosing a volume greater than 0,03 m³, specifically designed for storing toys

3.86

toy scooter

ride-on toy which is propelled by the muscular action of the user or other means and can be foldable or not, intended for children with a body mass of 50 kg or less and comprising at least one platform for standing, at least two wheels and a steering system equipped with an adjustable or fixed-length steering tube

3.87

yo-yo ball

toy (3.82) with a tether made from an *elastic* (3.20) 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 Requirements

4.1 General

4.1.1 Normal use (see E.2)

All toys shall be tested in accordance with the relevant tests in 5.1 to 5.22 in order to ensure that risks as a result of normal wear and/or deterioration are minimized.

Toys labelled as washable shall be subjected to washing in accordance with 5.23.

After testing, the toy shall continue to conform to the relevant requirements of [Clause 4](#).

4.1.2 Location of warnings

In the following clauses that require warnings, the location of the warning is indicated. Warnings which are required to be on the packaging may instead be placed on the product itself as long as it is clearly visible to the consumer before the purchase.

4.2 Reasonably foreseeable abuse (see E.3)

After normal use tests, toys intended for children under 96 months, unless otherwise stated, shall be tested in accordance with the relevant tests in 5.24 to ensure that risks as a result of reasonably foreseeable abuse are minimized.

After testing, the toy shall continue to conform to the relevant requirements of [Clause 4](#).

4.3 Material

4.3.1 Material quality (see E.4)

All materials shall be visually clean and free from infestation. The materials shall be assessed visually by normal corrected vision rather than under magnification.

4.3.2 Expanding materials (see E.5)

Toys and components of toys which are expanding materials and fit entirely, whatever their orientation, into the small parts cylinder (see [Figure 26](#)) shall completely pass through the gauge specified in [Figure 39](#), if required when tested in accordance with 5.21. For a toy or component that at time of purchase is in an expanded state, the small part size assessment shall be performed when it is in a shrunken state.

This requirement does not apply to seeds in growing kits. The requirements in this subclause are not applicable after testing in accordance with 5.24.

4.4 Small parts

4.4.1 For children under 36 months (see E.6)

Toys intended for children under 36 months, removable components thereof and components liberated during testing in accordance with 5.24 shall not fit entirely, whatever their orientation, into the small parts cylinder when tested in accordance with 5.2.

The requirement also applies to fragments of toys, including, but not limited to, pieces of flash, slivers of plastics and pieces of foam or shavings.

The following are exempt before and after subjecting the toy to the tests according to Clause 5:

- paper books and other articles made of paper and pieces of paper;
- writing materials such as crayons, chalk, pencils and pens; this exemption does not include removable components such as pen caps;
- modelling clay and similar products;
- fingerpaints, water colours, paint sets and paint brushes;
- fuzz;
- fibrous filling material;
- balloons;
- textile fabric, including non-woven fabric such as felt;
- yarn;
- elastic fabric;
- string;
- audio and/or video discs which are not themselves small parts.

Additionally, toys, components of toys and removable components thereof made entirely of paperboard, that do not fit entirely in the cylinder when tested in accordance with 5.2, are exempt from testing in accordance with 5.24.

Guidance on categories of toys which can be considered as intended for children under 36 months is given in A.4.2.

4.4.2 For children 36 months and over but under 72 months

Toys which fit entirely in the small parts cylinder when tested in accordance with 5.2 or have components, including removable components, which fit entirely in the small parts cylinder when tested in accordance with 5.2 shall carry a warning. The warning shall be on the toy, on the toy's packaging or, if the toy is unpackaged and unlabelled, on any retail display container provided by the manufacturer. See B.2.3 and E.6 for guidance.

The requirements in this subclause are not applicable to small parts liberated after testing in accordance with 5.24.

If the toy presents more than one of the following hazards:

- small part(s);
- small ball(s);
- marble(s);

the toy, its packaging or retail display container provided by the manufacturer (for unpackaged and unlabelled toys) shall carry at least one of the relevant statements in [B.2.3](#) or [B.2.5](#) or a statement combining the multiple hazards present.

4.5 Shape, size and strength of certain toys (see [E.7](#))

4.5.1 Squeeze toys, rattles, fasteners and certain other toys and components of toys

4.5.1.1 General

The requirements of [4.5.1](#) do not apply to:

- soft-filled (stuffed) toys or soft-filled parts of toys or parts made entirely of fabric;
- rigid elements having a major dimension equal to 30 mm or less.

4.5.1.2 Squeeze toys, rattles and certain other toys and components of toys

The requirements of [4.5.1.2](#) apply to the following types of toys:

- squeeze toys intended for children under 18 months;
- rattles;
- teething toys intended for children under 18 months;
- legs of baby gyms intended for children under 18 months;
- removable components of toys intended to be strung across a crib, playpen or perambulator if they have a mass less than 0,5 kg and are intended for children under 6 months;
- removable components of baby gyms if they have a mass less than 0,5 kg and are intended for children under 6 months.

The toys and components of the toys listed shall be designed so that no part of the toy protrudes past the base of test template A when tested in accordance with [5.3](#).

The toys and components of the toys listed shall, if they have nearly spherical, hemispherical or circular flared ends, be designed so that such ends do not protrude past the base of the supplemental test template B when tested in accordance with [5.3](#).

4.5.1.3 Other toys or components of toys with nearly spherical, hemispherical, circular flared or dome-shaped ends of toys having a mass less than 0,5 kg and intended for children under 18 months (see [E.7](#))

The requirements of [4.5.1.3](#) apply only to toys or components of toys where the nearly spherical, hemispherical, circular flared or dome-shaped end adjoins a shaft, handle or support that has a smaller cross section.

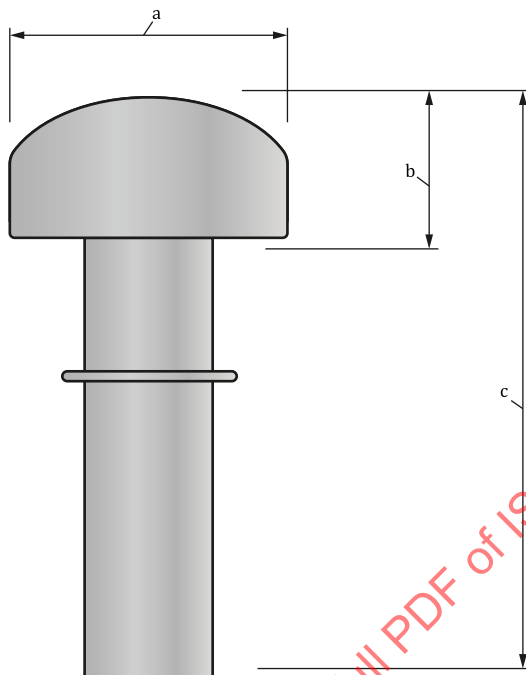
Nearly spherical, hemispherical, circular flared or dome-shaped ends of toys or components of toys shall be designed so that such ends do not protrude past the base of the supplemental test template B when tested in accordance with [5.3](#).

4.5.1.4 Toy fasteners (e.g. nails, bolts, screws and pegs) with nearly spherical, hemispherical or dome-shaped ends intended for children 18 months and over but under 48 months (see [E.7](#))

The requirements of [4.5.1.4](#) apply only to toy fasteners that meet all of the following criteria (see [Figures 12](#) and [13](#)):

- The nearly spherical, hemispherical or dome-shaped end has a diameter of 15 mm or more.

- The distance from the apex of the toy fastener to the undercut is 44,4 mm or less.
- The overall length is 57,1 mm or more.



- a Diameter of nearly spherical, hemispherical or dome-shaped end, ≥ 15 mm.
- b Distance from the apex of the toy fastener to the undercut, $\leq 44,4$ mm.
- c Overall length, $\geq 57,1$ mm.

Figure 12 — Dimensions of toy fasteners

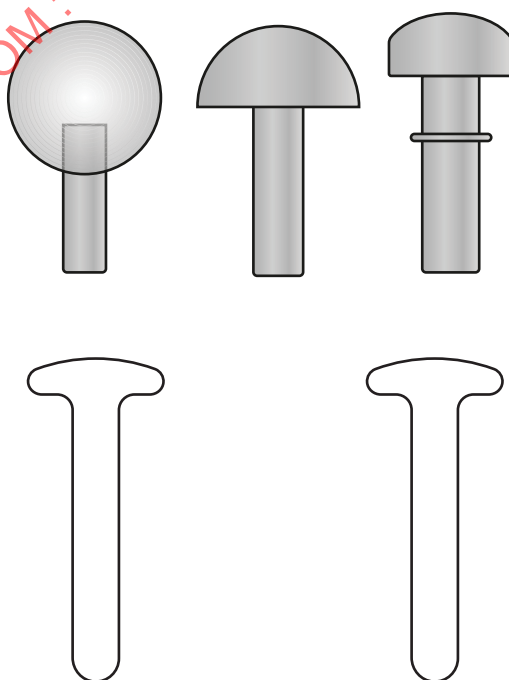


Figure 13 — Examples of toy fasteners

The requirements of [4.5.1.4](#) do not apply to toy fasteners:

- with non-rigid ends; or
- that are tethered to a toy where the weight of the combined toy or fastener is more than 0,5 kg and the length of the tether is less than 300 mm.

Nearly spherical, hemispherical or dome-shaped ends of toy fasteners (e.g. nails, bolts, screws and pegs) shall be designed so that such ends do not protrude past the base of the supplemental test template B when tested in accordance with [5.3](#).

4.5.2 Small balls

A small ball is any ball that passes entirely through the template when tested in accordance with [5.4](#).

- a) Toys intended for children under 36 months shall not be small balls, contain small balls or contain removable small balls.
- b) Toys intended for children 36 months and over but under 96 months which are small balls, contain small balls, contain removable small balls or small balls liberated after testing in accordance with [5.24](#) shall carry a warning. The warning shall be on the toy, on the toy's packaging or, if the toy is unpackaged and unlabelled, on any retail display container provided by the manufacturer. See [B.2.5](#) for guidance.

If the toy presents more than one of the following hazards:

- small part(s);
- small ball(s);
- marbles;

the toy, its packaging or retail display container provided by the manufacturer (for unpackaged and unlabelled toys) shall carry at least one of the relevant statements in [B.2.3](#) or [B.2.5](#), or a statement combining the multiple hazards present.

4.5.3 Pompoms (see [E.8](#))

Pompoms intended for children under 36 months which become detached when tested in accordance with [5.24.6.3](#) shall not pass entirely through the test template when tested in accordance with [5.5](#). Any components, pieces or individual strands that are detached from the pompom during the torque or tension tests shall not be subjected to the test in [5.5](#).

4.5.4 Pre-school play figures (see [E.9](#))

Except for soft play figures made of textiles, pre-school play figures intended for children under 36 months having:

- a) a round, spherical or hemispherical end with tapered neck attached to a simple cylindrical shape without appendages; and
- b) an overall length not exceeding 64 mm (see [Figure 14](#));

shall be designed so that the rounded end shall not be capable of entering and penetrating past the full depth of the cavity of the test template when tested in accordance with [5.6](#). The requirement applies to figures with added or moulded features such as hats or hair, which retain the rounded shape of the end.

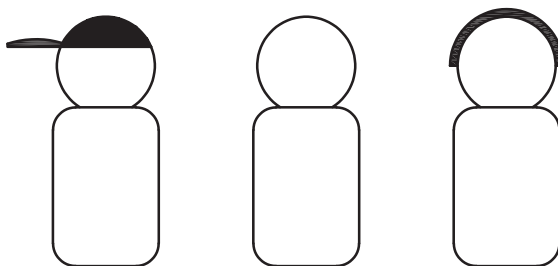


Figure 14 — Examples of pre-school play figures

4.5.5 Toy pacifiers

Toy pacifiers attached to or sold with toys intended for children under 36 months shall have a nipple length no longer than 16 mm. This dimension shall be measured from the nipple side of the shield to the end of the nipple.

4.5.6 Balloons

See also [4.10](#), [4.26](#) d) and [E.10](#).

The packaging of rubber latex balloons shall carry a warning. See [B.2.4](#) for guidance.

4.5.7 Marbles

Toys intended for children 36 months and over, but under 96 months, which are marbles, include loose marbles, include removable marbles or marbles liberated after testing according to [5.24](#) shall carry a warning. The warning shall be on the toy, on the toy's packaging or, if the toy is unpackaged and unlabelled, on any retail display container provided by the manufacturer. See [B.2.5](#) for guidance.

If the toy presents more than one of the following hazards:

- small part(s);
- small ball(s);
- marbles;

the toy, its packaging or retail display container provided by the manufacturer (for unpackaged and unlabelled toys) shall carry at least one of the relevant statements in [B.2.3](#) or [B.2.5](#) or a statement combining the multiple hazards present.

4.5.8 Hemispheric-shaped toys (see [E.41](#))

The requirements for hemispheric-shaped toys apply to cup-shaped, bowl-shaped or one-half-of-an-egg-shaped toys having a nearly round, oval or elliptical opening with the dimensions of minor and major axes between 64 mm and 102 mm, a volume of less than 177 ml, a depth greater than 13 mm and intended for children under 36 months.

Cup-shaped, bowl-shaped or one-half-of-an-egg-shaped toys shall, as a minimum, conform to at least one of the requirements in [4.5.8](#) a), b), c) or d).

- a) The object shall have at least two openings which are at least 13 mm from the rim as measured along the outside contour:
 - if the openings are placed in the base of the object, at least two of the openings shall be at least 13 mm apart; see [Figure 15](#) a);

- if the openings are not placed in the base of the object, at least two of the openings shall be placed at least 30° but not more than 150° apart; see [Figure 15 b](#)).
- b) The plane of the opening to the cup shape shall be interrupted at the centre by some type of divider which extends to 6 mm or less from the plane of the opening. An example of an interruption includes a rib through the centre of the opening; see [Figure 15 c](#)).
- c) The object shall have three openings located between 6 mm and 13 mm from the rim and at least 100° apart as measured along the outside contour.
- d) The object shall have a repeated scalloped-edge pattern around the entire rim. The maximum distance between centre lines of adjacent peaks shall be 25 mm and the minimum depth shall be 6 mm. See [Figure 15 d](#)) for examples of scalloped-edge patterns.

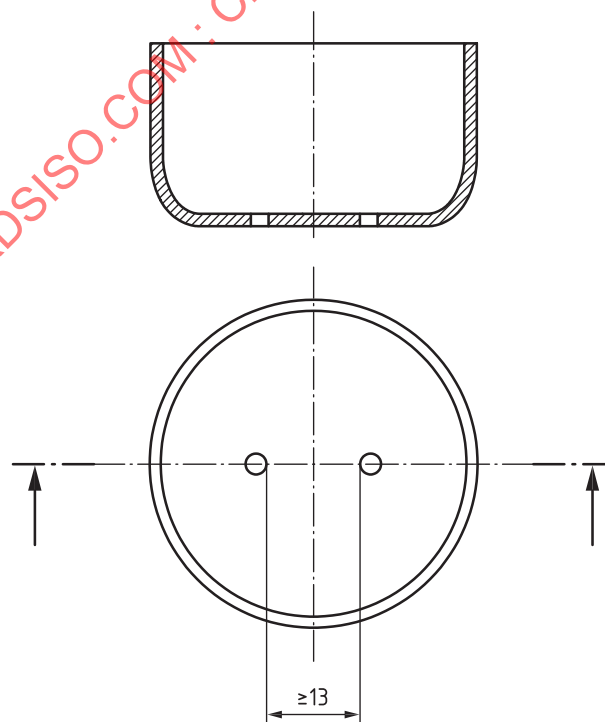
For the purpose of these requirements, an opening is defined as a hole of any shape with a minimum dimension of 2 mm.

The above-mentioned requirements apply before and after testing in accordance with [5.24](#).

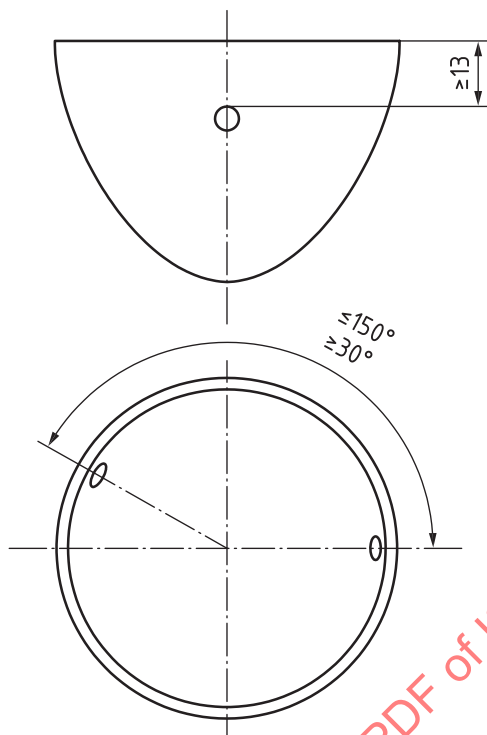
The following toys are exempt from these requirements:

- objects intended to hold liquids in products appropriate for children of 24 months and over (e.g. pots and pans);
- containers which must be airtight so that the contents can maintain their functional integrity (e.g. modelling clay containers);
- components of larger products which do not become detached when tested in accordance with [5.24](#) (e.g. a bowl-shaped smoke stack which is permanently attached to a toy train or a swimming pool which is moulded into a larger toy playscape);
- containers that are part of packaging intended to be discarded once the toy is removed from the packaging.

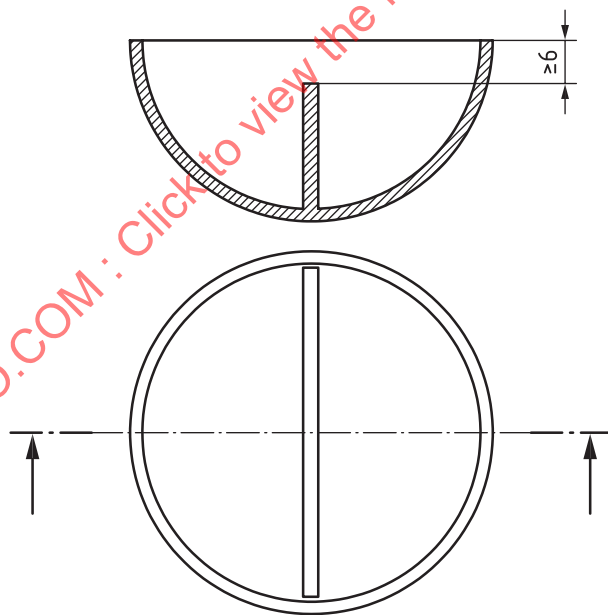
Dimensions in millimetres



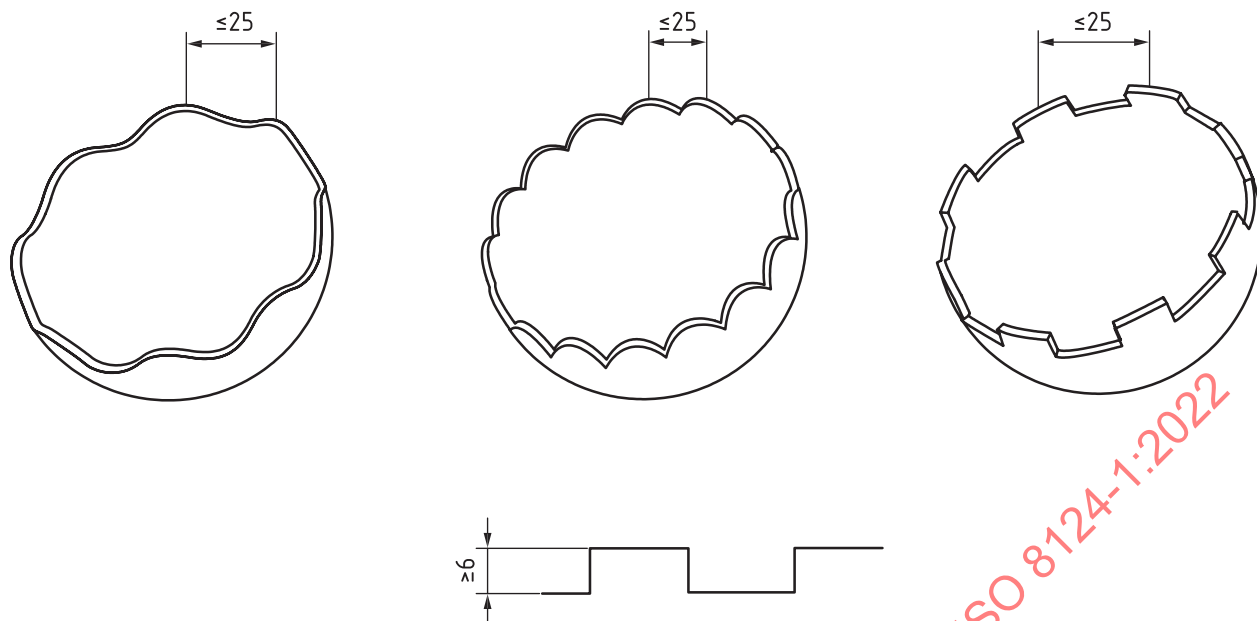
a) Openings in the base of the bowl



b) Opening placement



c) Rib-through-cup centre



d) Scalloped-edge pattern

Figure 15 — Examples of hemispheric-shaped toys

4.6 Edges (see E.11)

4.6.1 Accessible sharp edges of glass or metal

The accessible sharp edges of glass or metal on toys shall fulfil the following requirements:

- Accessible edges on toys intended for children under 96 months shall not be hazardous sharp edges of glass or metal when tested in accordance with 5.8.
- If an accessible edge fails the sharp-edge test as given in 5.8, the edge shall be assessed to determine whether it presents an unreasonable risk of injury, taking into account the foreseeable use and intended age grade of the toy.
- Potentially sharp glass or metal edges shall be considered non-accessible if they lie adjacent to a surface of the test sample and any gap between the edge and the adjacent surface does not exceed 0,5 mm (e.g. in lap joints and hemmed edges, see Figure 3).
- Edges of pieces intended to serve as electrical conductors and microscope slides and cover slips are considered as functional edges and do not require a warning.

4.6.2 Functional sharp edges

The following requirements apply to toys which include functional sharp edges:

- Toys intended for children under 36 months shall not have accessible hazardous functional sharp edges.
- Toys intended for children 36 months and over but under 96 months, which by reason of their function (e.g. functional toy scissors and functional toy tool kits) necessarily include a sharp edge and which do not include any non-functional sharp edges, are exempt from 4.6 provided the packaging carries a warning. See B.2.11 for guidance.

4.6.3 Edges on metal toys

Accessible metal edges, including those of holes and slots, on toys intended for children under 96 months shall be free of hazardous burrs and feathering or shall be hemmed, rolled or curled (see [Figure 3](#)) or shall incorporate a permanently affixed protective equipment or finish.

Regardless of the manner in which edges are finished, they shall be subject to the sharp-edge test as given in [5.8](#).

4.6.4 Edges on moulded toys

Accessible edges, corners or mould-parting areas of moulded toys intended for children under 96 months shall be free of hazardous sharp edges produced by burrs and flash or so protected that hazardous sharp edges are not accessible.

4.6.5 Edges on exposed bolts or threaded rods

Accessible ends of threaded bolts or threaded rods shall be free of sharp edges and burrs, or the ends shall be covered by smooth protective caps so that sharp edges and burrs are not accessible. Any protective caps used shall be subjected to the compression test in [5.24.7](#), regardless of whether or not the protective cap is accessible to flat-surface contact during the appropriate test(s) in [5.24](#). Protective caps shall also be subjected to [5.24.5](#) followed by [5.24.6.1](#).

4.7 Points (see [E.12](#))

4.7.1 Accessible sharp points

The following requirements apply to toys having accessible sharp points:

- a) Accessible points on toys intended for children under 96 months shall not be hazardous sharp points when tested according to [5.9](#).

If an accessible point fails the sharp-point test as given in [5.9](#), the point shall be assessed to determine whether it presents an unreasonable risk of injury, taking into account the foreseeable use and intended age grade of the toy.

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

- b) Potentially sharp points shall be considered non-accessible if they lie adjacent to a surface of the test sample and any gap between the point and the adjacent surface does not exceed 0,5 mm.
- c) Points on toys intended for children under 36 months, whose largest cross-sectional dimension is 2 mm or less and which do not necessarily present a sharp point when tested in accordance with [5.9](#), are considered to be potentially hazardous sharp points. They shall therefore be assessed to determine whether or not they present an unreasonable risk of injury, taking into account the foreseeable use and intended age grade of the toy.

4.7.2 Functional sharp points

The following requirements apply to toys having functional sharp points:

- a) Toys intended for children under 36 months shall not have accessible hazardous functional sharp points.
- b) Toys intended for children 36 months and over but under 96 months, which by reason of their function (e.g. a toy sewing machine with a needle) necessarily include a sharp point and which do not include any non-functional sharp points, are exempt from [4.7.1](#) provided the packaging carries a warning. See [B.2.11](#) for guidance.

4.7.3 Wooden toys

The accessible surfaces and edges of wood used in toys shall be free of splinters.

4.8 Projections

4.8.1 General requirements (see [E.13](#))

These requirements are intended to address the hazards associated with the users of toys falling on projections or on rigid components possibly causing skin puncture or internal injury.

If a projection presents a skin puncture hazard, the projection shall be protected by suitable means, such as turning back the end of a wire or by affixing a smoothly finished protective cap or cover, which effectively increases the surface area for potential contact with the skin. The protective cap or cover shall not become detached when tested in accordance with [5.24](#).

If a rigid handlebar presents a potential internal injury hazard or a skin puncture hazard, it shall be equipped with handle-grips with enlarged ends. Ends of tubes that present a potential internal injury hazard or a skin puncture hazard shall be equipped with end plugs or other means of protection at the end of the tube.

Handle grips, end plugs and other protective devices shall not become detached when subjected to a removal force of 70 N.

Since this requirement relates to hazards arising from a child falling on a toy, only vertical or nearly vertical projections shall be evaluated. However, the toy and its projection shall be tested in the most onerous position.

4.8.2 Special considerations for bath toy projections

Rigid projections on toys designed primarily for use in the bath tub pose a specific hazard that can result in serious penetration and impalement injuries. Design guidelines that intend to minimize penetration and impalement hazards are presented in [Annex F](#).

4.9 Metal wires and rods (see [E.14](#))

- a) Wires and other metallic components that are designed and intended to be bent, for example, 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 [5.24.8.2](#).
- b) 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 [5.24.8.3](#).
- c) The ends of spokes on toy umbrellas shall be protected. If the protection is removed when tested according to [5.24.6.4](#), the ends of the spokes shall be free from sharp edges and sharp points when tested in accordance with [5.8](#) and [5.9](#). Furthermore, if the protective components are removed by the tension test, the spokes shall have a minimum diameter of 2 mm and the ends shall be smooth, rounded and approximately spherical with no burrs.

4.10 Plastic film or plastic bags in packaging and in toys (see [E.15](#))

These requirements do not apply to:

- shrink film, which is in the form of an overwrap, which would normally be destroyed when the packaging is opened;

- flexible plastic bags or flexible plastic film with a minor dimension of 100 mm or less; bag dimensions shall be measured while in the form of a bag, not cut open into a single thickness sheet.

Flexible plastic film or flexible plastic bags without backing and used in toys shall either:

- have an average thickness of $\geq 0,038$ mm and individual thickness of $\geq 0,032$ mm when tested in accordance with 5.10; or
- have perforations with well-defined holes (where material has been removed) of 1 % minimum area on any maximum area of 30 mm $\times$ 30 mm. See Figure 16.

NOTE The requirement in 4.10 b) can be fulfilled by having 3,4 mm diameter holes in a square grid pattern where the vertical and horizontal distance between the centre of two holes is 22,9 mm or less [the area of a 3,4 mm hole is larger than 9 mm² which is more than 1 % of 900 mm² (30 mm $\times$ 30 mm)].

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

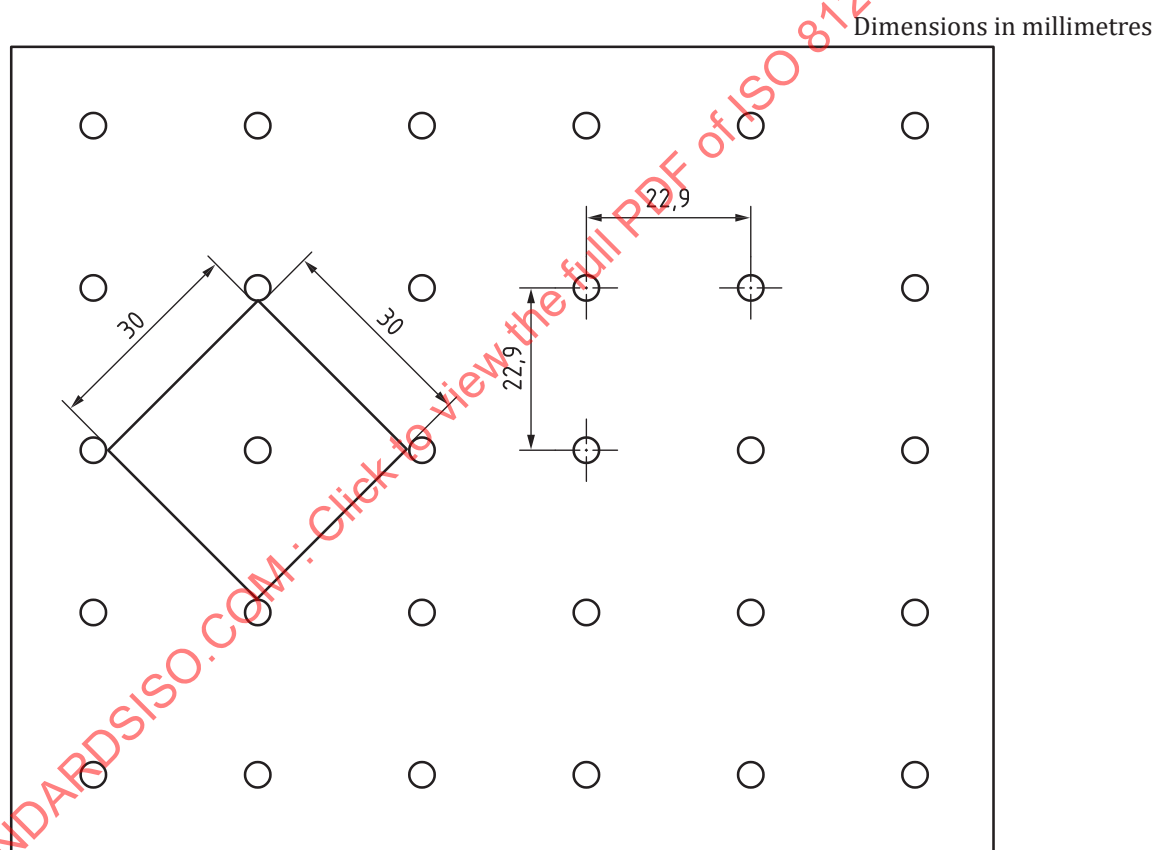


Figure 16 — Example of perforation pattern

4.11 Cords

4.11.1 General (see E.16)

The requirements in 4.11 do not apply to:

- ropes and chains that are covered by the diameter requirements of ISO 8124-4 (e.g. climbing and swinging ropes);
- straps intended to be worn fully or partially around the neck (see 4.33);
- straps in safety harnesses;

- straps in imitation safety harnesses (e.g. on toy pushchairs);
- shoulder or waist straps (e.g. on toy bags, toy backpacks or toy fairy wings);
- handles (e.g. on toy bags, toy cradles, toy carry cots, or toy buckets and boxes);
- cords intended for pulling sledges or toboggans, intended for outdoor use on snow under adult supervision (see 4.34).

NOTE Straps in safety harnesses include straps for securing children to ride-on toys and seats.

The requirements from 4.11.2 to 4.11.8 do not apply to:

- toys intended to be strung across a cradle, cot, perambulator or carriage. However, any elements hanging down from such toys that are intended to be within the reach of children are not exempt from these clauses and shall fulfil the applicable requirements;
- toys intended to be attached to a cradle, cot, perambulator or carriage with cords which are intended to be out of reach of the children.

The requirements of 4.11.2 to 4.11.5 and 4.11.7 to 4.11.11 do not apply to electrical cables on toys intended for children 18 months and over; such electrical cables shall conform to 4.11.6.

4.11.2 Cords in toys intended for children under 18 months

4.11.2.1 Cords with the potential to tangle

Cords with the potential to tangle shall either:

- have a length not exceeding 220 mm when measured according to 5.11.2; or
- separate into parts when tested according to 5.11.3.

It shall be possible to join the parts after they have been separated without altering the characteristics of the joints (see Figure 17). In addition, any cord with the potential to tangle included with or attached to the toy after the breakaway has been separated shall continue to conform to the requirement of 4.11.2.1 a).

Where two or more cords with the potential to tangle are attached to the toy in the same position (e.g. using the same fixing point or same stitching), the total of the two longest individual cord lengths, each measured from the fixing point, shall be considered as one cord length for the purpose of this requirement.

4.11.2.2 Other cords

Other cords included with or attached to toys, excluding pull toys, shall have a free length not exceeding 300 mm when measured according to 5.11.2. This requirement applies to any cords remaining attached to the toy or becoming separated from the toy after assessment against 4.11.2.1 b).

Where two or more cords are attached to the toy in the same position (e.g. using the same fixing point or same stitching), each cord length, measured from the fixing point, is considered a separate cord.

4.11.3 Cords in toys intended for children 18 months and over but under 36 months

4.11.3.1 Cords with the potential to tangle

Cords with the potential to tangle shall either:

- have a length not exceeding 300 mm when measured according to 5.11.2; or
- separate into parts when tested according to 5.11.3.

It shall be possible to join the parts after they have been separated without altering the characteristics of the joints (see [Figure 17](#)). In addition, any cord with the potential to tangle included with or attached to the toy after the breakaway has been separated shall continue to conform to the requirements of [4.11.3.1 a\)](#).

Where two or more cords with the potential to tangle are attached to the toy in the same position (e.g. using the same fixing point or same stitching), the total of the two longest individual cord lengths, each measured from the fixing point, shall be considered as one cord with their lengths combined for the purpose of this requirement.



Figure 17 — Example of a joint on cords

4.11.3.2 Other cords

Where other cords are included with or attached to toys (excluding pull toys) with a free length exceeding 300 mm, when measured according to [5.11.2](#), the toy's packaging shall carry a warning indicating that the toy is not suitable for children under the age of 18 months. This requirement applies to any cords remaining attached to toys after assessment against [4.11.3.1 b\)](#). See [B.2.21](#) for guidance.

Where two or more cords are attached to the toy in the same position (e.g. using the same fixing point or same stitching), each cord length, measured from the fixing point, is considered a separate cord.

4.11.3.3 Other cords without a free end

Where other cords are included with or attached to toys and are without a free end and with a length exceeding 220 mm but not exceeding 300 mm when measured according to [5.11.2](#), the toy's packaging shall carry a warning indicating that the toy is not suitable for children under the age of 18 months. See [B.2.21](#) for guidance.

4.11.4 Fixed loops and nooses intended for children under 36 months

Cords that comprise fixed loops or nooses on toys as received shall either:

- a) not permit the passage of the head probe (see [Figure 35](#)) when tested in accordance with [5.11.4](#). Specifically, the loop shall not allow the head probe to be inserted so deep that it admits the base of the probe; or
- b) be separable such that the loop or noose is no longer intact, when tested according to [5.11.3](#).

In addition, any cords with the potential to tangle attached to the toy after the breakaway has been separated and without a free end shall continue to conform to the requirement of [4.11.2.1 a\)](#) or [4.11.3.1 a\)](#), as appropriate, for the intended age grade of the toy.

4.11.5 Cords on pull toys

Cords on pull toys intended for children under 36 months shall have a free length not exceeding 800 mm when measured according to [5.11.2](#).

4.11.6 Electrical cables

Toys with electrical cables longer than 300 mm, when measured according to [5.11.2](#), intended for children 18 months and over shall carry a warning on the packaging. See [B.2.20](#) for guidance.

Electrical cables on toys intended for children under 18 months shall conform to [4.11](#), as applicable.

4.11.7 Diameter of certain cords intended for children under 36 months

Cords connected to a self-retraction mechanism and cords in pull toys shall have an average cross-sectional dimension of 1,5 mm or more when measured according to [5.11.1](#).

4.11.8 Self-retracting cords intended for children under 36 months

The force of self-retraction mechanisms for cords in toys shall not retract the cord by more than 6 mm under any of the testing conditions specified in [5.11.5](#).

4.11.9 Toys attached to or intended to be strung across, or otherwise attached to, a cradle, cot, perambulator or carriage

4.11.9.1 Toys intended to be strung across a cradle, cot, perambulator or carriage

Toys intended to be strung across a cradle, cot, perambulator or carriage shall carry a warning on the toy. See [B.2.9](#) for guidance.

NOTE This requirement is intended to ensure that the message is available on the product during its foreseeable life.

The toy shall be accompanied by instructions which indicate proper assembly, installation and use (as applicable) to ensure that the product does not present an entanglement hazard. See [B.3.3](#) for guidance.

4.11.9.2 Toys otherwise intended to be attached to a cradle, cot, perambulator or carriage or intended to be suspended over a cot from a wall or ceiling

Toys intended to be attached to, but not strung across, a cradle, cot, perambulator or carriage, or suspended over a cot from a wall or ceiling, where any attached cords do not conform to the requirements of [4.11.2](#) to [4.11.8](#), shall carry a warning that states that it is to be affixed so that the cords are out of the reach of children and that they are to be removed before the child can reach them. The warning shall be on the toy and on the packaging. See [B.2.23](#) for guidance.

The toy shall be accompanied by instructions which indicate how the toy is to be assembled, affixed out of reach of children and used (as applicable) to ensure that the product does not present an entanglement hazard. See [B.3.2](#) for guidance.

4.11.10 Cords on toy bags

Toy bags made of impermeable material with an opening perimeter greater than 360 mm shall not have a drawstring or a cord as a means of closing (see also [4.10](#)).

4.11.11 Cords, strings and lines for flying toys

Hand-held cords, strings and lines over 1,8 m long, attached to toy kites or other flying toys, shall have an electrical resistance of more than $10^8 \Omega/\text{cm}$ when tested in accordance with [5.11.6](#).

Toy kites and other flying toys shall carry a warning that they are not to be used near overhead power lines or during thunderstorms. The warning shall appear on the toy. See [B.2.14](#) for guidance.

4.12 Folding mechanisms (see [E.17](#))

4.12.1 Toy pushchairs, perambulators and similar toys

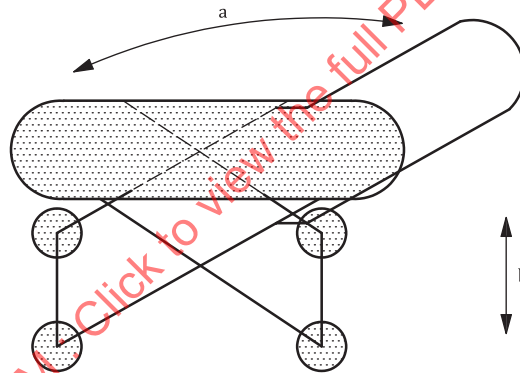
The requirements in [4.12.1](#) do not apply to toys with a potential sitting surface width of less than 140 mm.

Toy pushchairs, strollers, perambulators and similar toys with folding and sliding mechanisms shall conform to the following requirements.

- a) Toys with a handle or other structural member which can fold down over a child shall:
- 1) have at least one main locking device and at least one secondary locking device, both of which act directly on the folding mechanism;
 - 2) have at least one of the locking devices which automatically engages when the toy is erected;
 - 3) not collapse and neither shall any of the locking devices fail or disengage, when the toy is tested in accordance with [5.22.2](#);
 - 4) be considered as having one locking device if the toy comprises two devices of the same construction (e.g. locking rings), one on the left-hand side and one on the right-hand side;
 - 5) be subjected to the test given in [5.22.2](#) with one of the locking devices disengaged, if it is a toy pushchair or perambulator which can be partially erected without one of the locking devices being engaged.

NOTE 1 Partially erect means erected in such a way that the user might wrongly believe the toy to be fully erect.

NOTE 2 An example of a toy pushchair or perambulator covered by [4.12.1 a\)](#) is illustrated in [Figure 18](#).



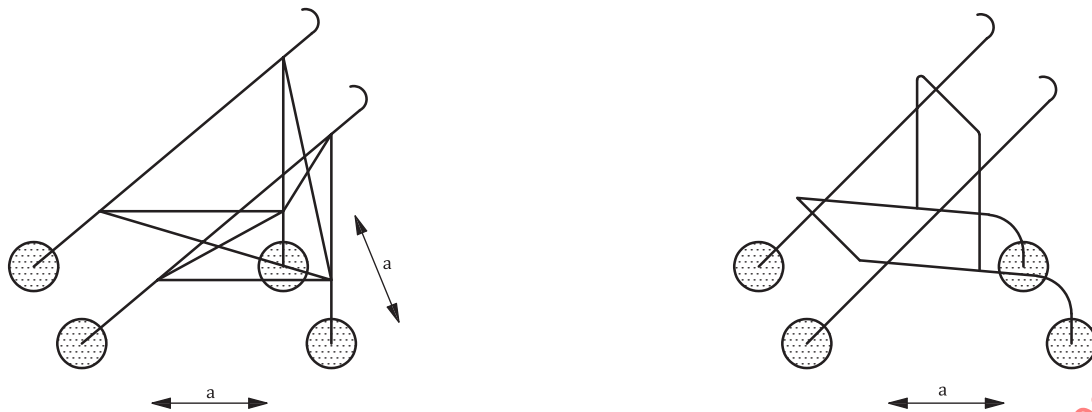
- a Direction of handle movement.
b Direction of chassis movement.

Figure 18 — Toy pushchair or perambulators covered by [4.12.1 a\)](#)

- b) Toy pushchairs and perambulators that do not present a hazard of a handle or other structural member folding down over a child shall:
- 1) have at least a locking device or a safety stop, which may be manual in operation;
 - 2) not collapse and neither shall the locking device or safety stop fail or disengage, when tested according to [5.22.2](#);
 - 3) be subjected to the test given in [5.22.2](#) if it is a toy pushchair or perambulator which can be partially erected without a locking device being engaged (see Note 1).

NOTE 3 Partially erect means erected in such a way that the user might wrongly believe the toy to be fully erect.

NOTE 4 Examples of toy pushchairs and perambulators covered by [4.12.1 b\)](#) are illustrated in [Figure 19](#).



a Direction of chassis movement.

Figure 19 — Toy pushchairs or perambulator covered by 4.12.1b)

4.12.2 Other toys with folding mechanisms (see E.18)

Play furniture and other toys in which a folding mechanism, arm or brace is capable of supporting a child or a comparable mass shall have one of the following:

- A safety stop or locking device to prevent unexpected or sudden movement or collapse of the toy. The safety stop or locking device shall not fail or disengage when tested in accordance with 5.24 and the toy shall not collapse when tested in accordance with 5.22.3; or
- Adequate clearance between moving parts to protect the fingers and toes against crushing or laceration in the event of sudden movement or collapse of the toy. If it is possible to insert a 5 mm diameter rod between moving parts, it shall also be possible to insert a 12 mm diameter rod.

4.12.3 Hinge-line clearance (see E.19)

Toys having a gap or clearance along the hinge line between a stationary portion and a movable portion which weighs more than 0,25 kg shall be so constructed that if the accessible gap at the hinge line will admit a 5 mm diameter rod, it shall also admit a 12 mm diameter rod at all positions of the hinge.

4.13 Holes, clearances and accessibility of mechanisms

4.13.1 Circular holes in rigid materials (see E.20)

For toys intended for children under 60 months, if an accessible circular hole in any rigid material less than 1,58 mm in thickness can admit a 6 mm diameter rod to a depth of 10 mm or greater, it shall also admit a 12 mm diameter rod.

4.13.2 Accessible clearances for movable segments (see E.21)

For toys intended for children under 96 months, if accessible clearances for movable segments can admit a 5 mm diameter rod, they shall also admit a 12 mm diameter rod.

4.13.3 Chains or belts in ride-on toys (see E.22)

Power transmission chains and belts in ride-on toys shall have a shield from, and including, the driving chain- or belt-wheel to, and including, the driven chain- or belt-wheel at the side(s) where the limb of a child is nearest the chain or belt (see Figure 20, side A). There shall also be a shield around the driving

chain- or belt-wheel on any side (see [Figure 20](#), side B) where the chain or belt is separated from the limb of the child (e.g. by a frame on a bicycle).

NOTE A toy can have two sides "A".

The shield shall be such that the chain or belt and any chain- or belt-wheels are not accessible from side A and that the junction between the chain or belt and the chain- or belt-wheel is not accessible from side B (if any) when tested according to [5.7](#).

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

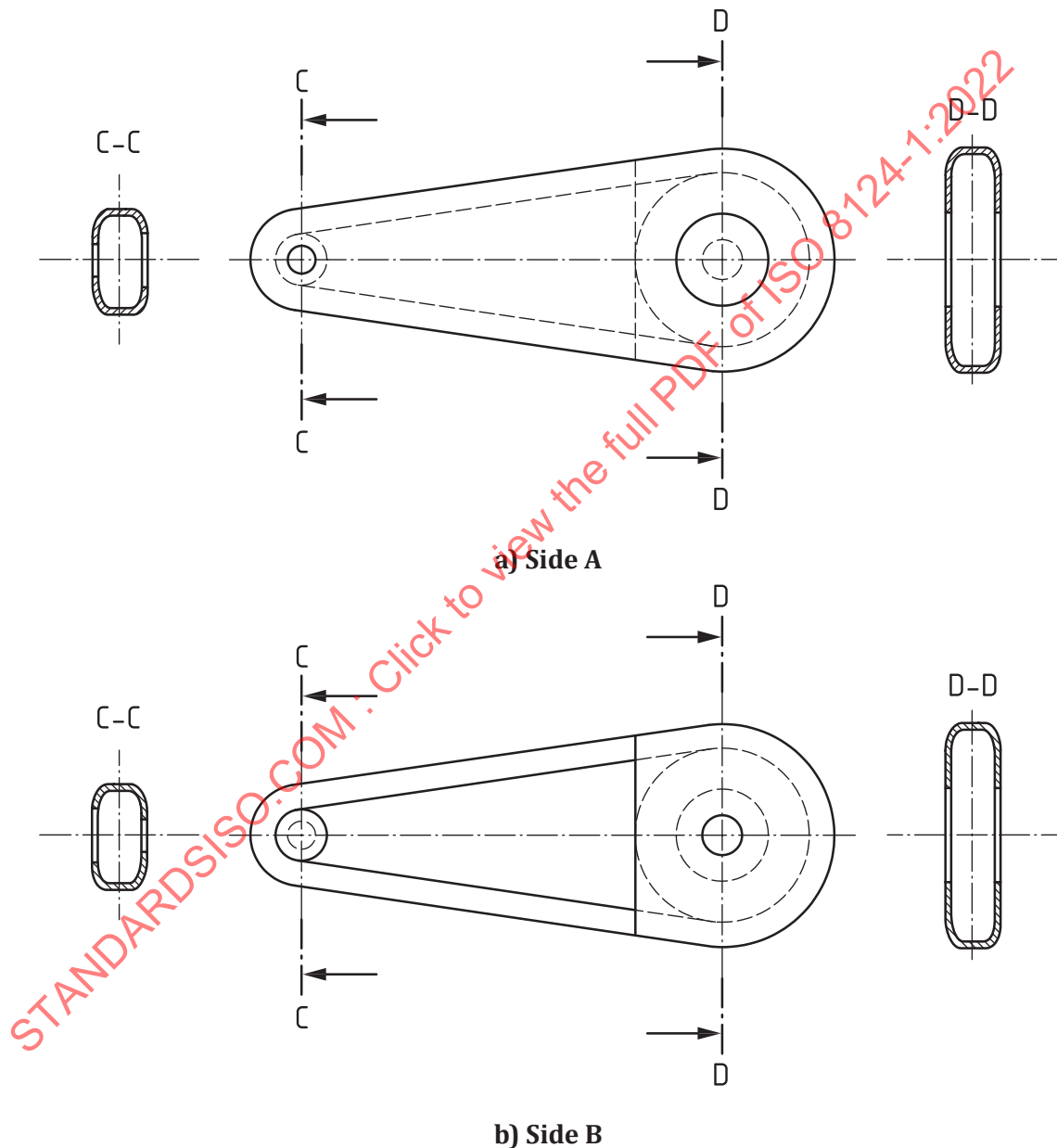


Figure 20 — Propelling chains and chain shields

4.13.4 Other driving mechanisms (see [E.23](#))

Clockwork, battery-operated, inertial or other power-driven mechanisms in toys shall be so enclosed that they do not expose accessible sharp edges or sharp points or otherwise present a hazard of crushing the fingers or other parts of the body.

4.13.5 Winding keys (see E.24)

This requirement applies to toys intended for children under 36 months which use winding keys that rotate as the mechanism unwinds. The requirement applies to keys with flat plates attached to the stem and which protrude from a rigid surface of the body of the toy.

If the clearance between the flukes of the key and the body of the toy can admit a 5 mm diameter rod, it shall also admit a 12 mm diameter rod at all positions of the key. For keys covered by this requirement, there shall be no opening in the flukes of the key which can admit a 5 mm diameter rod.

4.14 Springs (see E.25)

Springs shall conform with the following:

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

This requirement does not apply to springs which do not essentially return to their original position after unloading.

- 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, when the toy is used, can be subjected to a compression force of 40 N or more.

This requirement does not apply to springs which do not essentially return to their original position after loading with a force of 40 N, nor to springs wound around a second component of the toy (e.g. a guiding rod) so that it is not possible to insert the accessibility probe A (see 5.7) between consecutive coils further than 5 mm.

4.15 Stability and overload requirements

4.15.1 Stability of ride-on toys and seats

4.15.1.1 General

The requirements in 4.15.1.2 to 4.15.1.4 apply to ride-on toys, rocking toys (e.g. rocking horses) and stationary toys with seats, such as play furniture intended for children under 60 months. Ride-on toys of spherical, cylindrical or other shapes which do not normally have a stable base (e.g. toy bicycles and similar toys) are not covered by these requirements.

NOTE Stability requirements for toy scooters with a stable base are given in 4.30.4.

4.15.1.2 Sideways stability, feet available for stabilization (see E.26)

Ride-on toys and stationary toys with seats, where the height of the seat from the ground is 27 cm or more and where the feet and/or legs of the child are unrestricted in their sideways motion and thus are available for stabilization, shall not tip over when tested in accordance with 5.12.2.

4.15.1.3 Sideways stability, feet unavailable for stabilization (see E.26)

Ride-on toys and stationary toys with seats, where the feet and/or legs of the child are restricted in their sideways motion, such as by the enclosed sides of a toy automobile, shall not tip over when tested in accordance with 5.12.3.

4.15.1.4 Fore and aft stability (see E.27)

Ride-on toys and stationary toys with seats, where the rider cannot easily use his or her legs for stabilization, shall not tip forward or backward when tested in accordance with 5.12.4.

4.15.2 Overload requirements for ride-on toys and seats (see E.28)

Ride-on toys, stationary toys with seats and toys designed to support all or part of the mass of a child shall not collapse when tested in accordance with 5.12.5 and 5.24.4. The requirements in 4.15.2 do not apply to toy scooters (which are instead covered by the requirements in 4.30.3).

Manufacturers are recommended to consider the strength of the seat and seat pillar under dynamic conditions.

4.15.3 Stability of stationary floor toys (see E.29)

Stationary floor toys greater than 760 mm in height and weighing more than 4,5 kg shall not tip over when tested in accordance with 5.12.6.

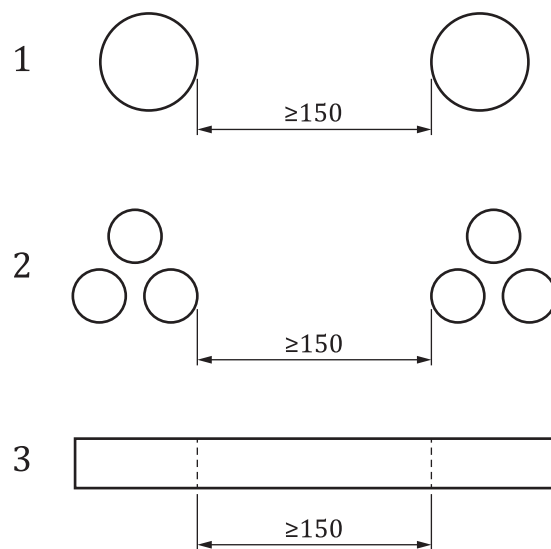
4.16 Enclosures (see E.30)**4.16.1 Ventilation**

Any toy made of impermeable material and having a door or lid which encloses a continuous volume greater than 0,03 m³ and in which all internal dimensions are 150 mm or more shall provide means for breathing by the incorporation of unobstructed ventilation openings. The ventilation openings are not required if the continuous volume is effectively subdivided 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.

The ventilation shall be provided by an opening or a group of openings placed at least 150 mm from a second opening or group of openings. Each opening or group of openings shall provide a total area of at least 650 mm². Alternatively, one opening which is equivalent to two 650 mm² openings expanded to include the separation area may be used (see Figure 21).

The ventilation opening shall remain unobstructed when the toy is placed on the floor in any position and adjacent to two vertical plane surfaces meeting at a 90° angle, to simulate the corner of a room.

Dimensions in millimetres

**Key**

- 1 two openings; each opening $\geq 650 \text{ mm}^2$
- 2 two groups of openings; each group $\geq 650 \text{ mm}^2$
- 3 single opening with two areas separated by at least 150 mm and each $\geq 650 \text{ mm}^2$

Figure 21 — Examples of ventilation openings**4.16.2 Closures****4.16.2.1 Lids, doors and similar devices**

Closures such as lids, covers and doors or devices similar to enclosures shall not be fitted with automatic locking devices.

Closures shall be of a type which can be opened with a force $\leq 45 \text{ N}$ when tested in accordance with [5.13.1](#).

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

4.16.2.2 Lid support for toy chests and similar toys

The requirements for lid support for toy chests and similar toys are as follows.

- a) Toy chests and similar toys with vertically opening hinged lids shall have 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 conducted in accordance with [5.13.2.2](#).

The lid-support mechanism shall conform to this requirement before and after being subjected to 7 000 opening and closing cycles, as described in [5.13.2.3](#).

- b) 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 [4.16.2.2 a\)](#) after being cycled in accordance with [5.13.2.3](#).
- c) The lid and lid-support mechanism shall conform to the requirements in [4.12](#).

- d) Toy chests shall be accompanied by instructions for proper assembly and maintenance. See [B.3.4](#) for guidance.

4.16.3 Toys that enclose the head

Toys that enclose the head, such as space helmets, and which are made of impermeable material shall provide means for breathing by the incorporation of unobstructed ventilation areas close to the mouth and nose area. The ventilation shall be provided by an opening or a group of openings placed at least 150 mm from a second opening or group of openings. Each opening or group of openings shall provide a total area of at least 650 mm². Alternatively, one opening which is equivalent to two 650 mm² openings expanded to include the separation area may be used (see [Figure 21](#)).

4.17 Items that cover the face and simulated protective equipment (see [E.31](#))

All rigid toys that cover the face, such as goggles, space helmets or face shields, when tested in accordance with [5.14](#), shall not produce sharp edges, sharp points or loose parts which could enter the eye. This applies to toys with cut-out eye holes as well as items that cover the eyes.

Toys that simulate safety protective equipment and are intended to be worn by children (examples include but are not limited to construction helmets, sports helmets, fire-fighter helmets and safety goggles in toy tool benches) shall carry a warning. The warning shall be on the toy and on its packaging. See [B.2.10](#) for guidance.

4.18 Projectile toys (see [E.32](#))

4.18.1 General

- a) The requirements of [4.18.2](#) a) to c) and [4.18.3](#) b) to d) do not apply to projectiles where the maximum range of the discharged projectile is 300 mm or less when measured in accordance with [5.35](#).
- b) The requirement of [4.18.3](#) a) does not apply to projectile toys for children 3 years and over with a range of 100 mm or less when measured in accordance with [5.35](#).
- c) The requirements of [4.18.2](#), [4.18.3](#) and [4.18.4](#) do not apply to:
 - components that function as projectiles which are permanently enclosed within a toy unless they are liberated when the outer container is tested according to [5.24](#);
 - ground-based toys propelled along a track or launched onto another surface.

NOTE These are not considered to be projectile toys even if they include an element of motion in free flight, for example leaps between tracks or surfaces.

4.18.2 Projectiles

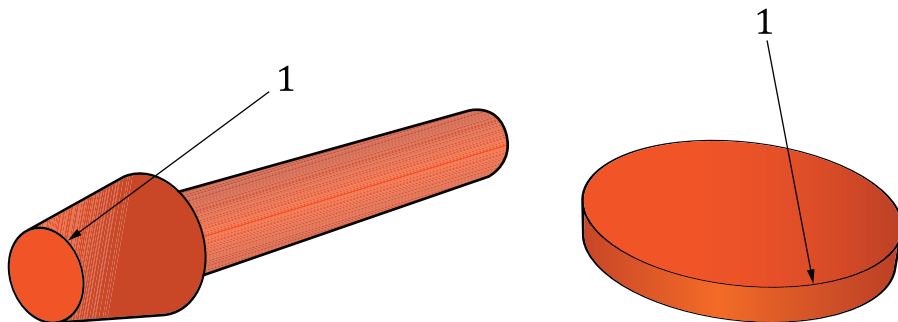
Projectile toys shall conform to the following requirements:

- a) Tips or leading edges on rigid projectiles shall not protrude beyond the depth of the gauge shown in [Figure 60](#) when tested according to [5.36](#).
- b) The leading edge(s) of a projectile, as well as any corners that are adjacent to the leading edge(s), shall be smooth and free of points, burrs, flash or similar projections.
- c) For rigid projectiles discharged by projectile toys with stored energy, the corners of the projectile that are adjacent to the leading edge(s) shall have rounded edges. For the purposes of this requirement a radius of 0,25 mm shall be considered sufficient. This requirement does not apply to projectiles made from paper or paperboard.

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

To determine if a leading edge and/or adjacent corner can strike the eye, the spherical shape of the eyeball should be considered, as well as the size and shape of the projectile relative to the eye, the regularity or predictability of the flight path and any other relevant factors.

See [Figure 22](#) for examples of corners adjacent to leading edges.

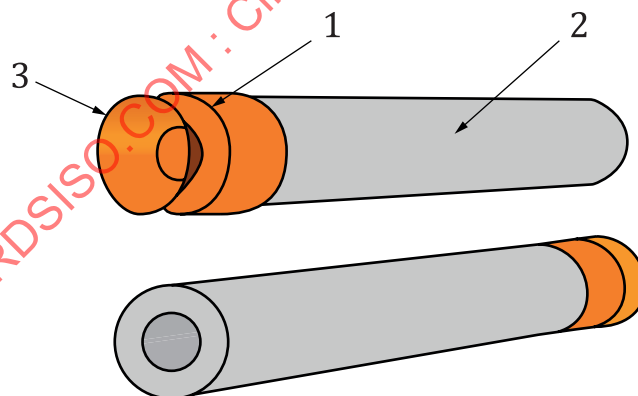


Key

- 1 corners adjacent to leading edges

Figure 22 — Examples of corners adjacent to leading edges on missile and disc-type projectiles

- d) Projectiles with a suction cup as a contact surface shall have a length of 57 mm or more when measured according to [5.37](#) before and after testing according to [5.24.5](#) and [5.24.6.5](#). This requirement does not apply to:
- projectiles with a suction cup that does not pass entirely through test template C when tested according to [5.4](#);
 - foam shaft projectiles which are 57 mm or more in the as-received state when measured according to [5.37](#), and where the suction cup has a diameter, measured in the relaxed state, that is less than or equal to the diameter of the foam shaft (see [Figure 23](#)).



Key

- 1 plastic collar
2 foam
3 suction cup

Figure 23 — Foam projectile with suction cup diameter less than or equal to the diameter of the foam shaft

The requirement of 4.18.2 d) applies to both suction cups that have been separately affixed to the shaft and those that are integral with the shaft (i.e. one-piece mouldings).

- e) Suction cups on projectiles with a suction cup as a contact surface shall not detach when tested according to 5.24.5 and 5.24.6.5 unless:
 - the detached suction cup does not pass entirely through test template C when tested according to 5.4 and the exposed shaft end conforms to 4.8; or
 - the suction cup is on a foam projectile where the suction cup diameter, when measured in the relaxed state, is less than or equal to the diameter of the foam shaft. See Figure 23.

The requirement of 4.18.2 e) applies to both suction cups that have been separately affixed to the shaft and to those that are integral with the shaft (i.e. one-piece mouldings).

4.18.3 Projectile toys with stored energy

Projectile toys with stored energy shall conform to the following requirements:

- a) Projectiles shall not, whatever their orientation, fit entirely into the small parts cylinder when tested in accordance with 5.2. This requirement applies before and after testing in accordance with 5.24 and 5.15.2. This requirement applies to projectile toys intended for children 3 years and over unless excluded by 4.18.1 b).

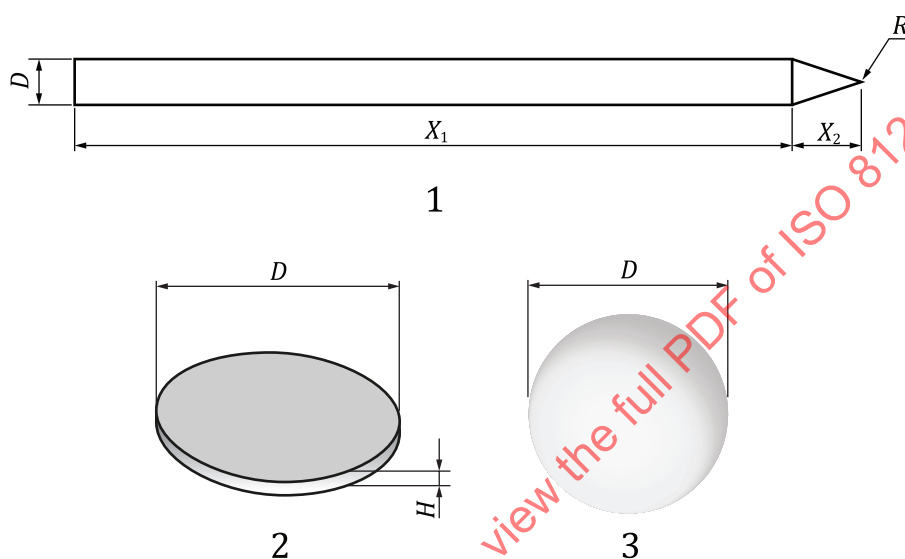
This requirement does not apply to:

- small parts that are released after testing in accordance with 5.24 and 5.15.2 that cannot be discharged or are unable to travel a distance greater than 100 mm when measured in accordance with 5.35;
- small parts of foam that are released from projectiles whose shafts are completely made of foam following testing in accordance with 5.24 and 5.15.2.
- b) Projectiles with a kinetic energy greater than 0,08 J when tested according to 5.15.1 shall:
 - have a contact surface(s) made of a resilient material;
 - be accompanied by instructions for use that give the user information on how to use the toy safely (this requirement only applies to projectiles that it might reasonably be possible to aim at the face; see B.3.7 and E.32 for guidance); and
 - have a kinetic energy per unit area not greater than 2 500 J/m² when tested according to 5.15.1.3.3.
- c) Where a protective cap, cover or tip is used:
 - it shall not become detached from the projectile when tested in accordance with 5.24.5 and 5.24.6.4; or
 - if the protective cap, cover or tip becomes detached and if any resulting component can still be discharged from the discharge mechanism, the toy shall continue to conform to the requirements of 4.18.3.
- d) When tested in accordance with 5.15.2, projectiles shall not produce a hazardous sharp edge or a hazardous sharp point and shall continue to meet the requirements of 4.18.3.
- e) The discharge mechanism shall be designed so that it is unable to launch the improvised projectiles, specified in Figure 24 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.

NOTE Improvised projectiles that travel a distance of 300 mm or less when discharged are not considered to be hazardous [see 4.18.1 a)].

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 distance travelled by the improvised projectile;
- other factors considered to be relevant.



Key

- 1 cylindrical shaft
- 2 disc
- 3 sphere

Figure 24 — Improvised projectiles

Table 1 — Dimensions of improvised projectiles shown in Figure 24

Dimensions in millimetres

Designation	Name	Material	Diameter D	Shaft length X_1	Length of cone X_2	Radius of tip ^a R	Thickness H
Cylindrical shafts							
A	Pencil	Hardwood	7	155	15	0,5	
B	Long nail/pen refill	Aluminium	3	100	5	0,1	
C	Pen refill	Aluminium	3	50	5	0,1	
D	Short nail/toothpick	Aluminium	1,5	50	2,3	0,05	
E	Toothpick	Aluminium	1,5	25	2,3	0,05	
Spheres							
F	Steel ball	Steel	8				
G	Small marble	Glass	16				
^a Radius on shaft tips are non-critical dimensions.							

Table 1 (continued)

Designation	Name	Material	Diameter D	Shaft length X_1	Length of cone X_2	Radius of tip ^a R	Thickness H
H	Large marble	Glass	25				
Discs							
I	Small coin	Steel	15				1,5
J	Medium coin	Steel	20				2
K	Medium/large coin	Steel	25				3
L	Large coin	Steel	30				3
^a Radius on shaft tips are non-critical dimensions.							

4.18.4 Projectile toys without stored energy

4.18.4.1 General

Projectile toys without stored energy that might reasonably be possible to launch at the face shall be accompanied by instructions for use that give the user information on how to use the toy safely. This recommendation does not apply to projectile toys intended to be thrown towards people, for example flying discs, balls or similar objects. See [B.3.7](#) for guidance.

4.18.4.2 Mouth-actuated projectile toys

Mouth-actuated projectile toys shall not permit the intended projectile to pass through the mouthpiece when tested according to [5.20](#).

4.18.4.3 Projectiles in the form of a dart

Projectiles in the form of a dart shall conform to the following requirements:

- a) When measured in accordance with [5.15.1.3.3](#) a) to d), the contact area of the dart shall be at least 3 cm².
- b) The dart shall either:
 - have a protective cap, cover or tip that is integral with the front end of the shaft;
 - have a blunted front end to which a protective cap, cover or tip is attached; or
 - be made of a resilient material, unless it is reliant on magnetic forces.
- c) After testing in accordance with [5.24.5](#) and [5.24.6.4](#), projectiles in the form of a dart with a protective cap, cover or tip shall conform with at least one of the following requirements:
 - the protective cap, cover or tip shall not become detached from the projectile;
 - if the protective cap, cover or tip becomes detached from the projectile, the projectile shall not be capable of being discharged by the discharge mechanism;
 - if the protective cap, cover or tip becomes detached from the projectile and the projectile is made of a resilient material, it shall continue to have a contact area of at least 3 cm² when measured in accordance with [5.15.1.3.3](#) a) to d).

4.18.4.4 Arrows (e.g. bow and arrow set)

Projectiles in the form of an arrow with a kinetic energy greater than 0,08 J when tested in accordance with [5.15.1](#) shall have a maximum kinetic energy per area of contact not greater than 2 500 J/m² when determined in accordance with [5.15.1.3.3](#).

After testing in accordance with [5.15.2](#), a projectile in the form of an arrow shall not produce a hazardous sharp edge or hazardous sharp point and shall continue to meet the requirements of [4.18.4](#).

Projectiles in the form of an arrow shall also:

- a) have a protective cap, cover or tip that is integral with the front end of the shaft;
- b) have a blunted front end to which a protective cap, cover or tip is attached; or
- c) be made of a resilient material, unless it is reliant on magnetic forces.

After testing in accordance with [5.24.5](#) and [5.24.6.4](#), projectiles in the form of an arrow with a protective cap, cover or tip shall conform to at least one of the following requirements:

- the protective cap, cover or tip shall not become detached from the projectile;
- if the protective cap, cover or tip becomes detached from the projectile, the projectile shall not be capable of being discharged by the discharge mechanism;
- projectiles in the form of an arrow with a kinetic energy greater than 0,08 J when tested in accordance with [5.15.1](#) shall have a maximum kinetic energy per area of contact not greater than 2 500 J/m² when determined in accordance with [5.15.1.3.3](#).

4.19 Flying toys (see [E.33](#))

4.19.1 General

Leading edges on rigid parts of flying toys shall not protrude beyond the depth of the gauge shown in [Figure 60](#) when tested according to [5.36](#).

Remote-controlled flying toys shall be accompanied by instructions that give the user information on how to use the toy safely. See [B.3.10](#) for guidance.

4.19.2 Rotor blades on flying toys

These requirements do not apply to flying toys with propellers that normally rotate in the vertical plane, for example a propeller on an aeroplane.

Rotor blades on flying toys that present the potential for injury shall minimize the potential of rotating blades causing eye injury. One or more of the following features may accomplish this, for example:

- a) The design of the toy prevents the blade ends making contact with the eyes (e.g. a protective ring around the perimeter of the rotor blade, a cage enclosing the rotor blade or rotor blades are fully enclosed and not accessible).
- b) The blades are made of flexible material that easily bends when a force is applied at the outer end of the blade perpendicular to the horizontal plane of the blade, and that does not break or permanently deform when tested according to [5.24.6.6](#). The blade shall bend without breaking and return approximately to its initial position after the test.
- c) The blade ends are “clutched” or loosely coupled to the rotor so that the ends are not directly powered by the rotor drive.
- d) A partial ring around the perimeter of the rotor blade.

- e) Rotor blades are designed so that the leading edges are protected with a resilient material or flexible part.

Examples of designs that achieve these conditions are given in [E.33](#), [Figure E.2](#).

Flying toys with rotor blades that might reasonably be able to make contact with the face shall be accompanied by a warning about the potential hazard of rotor blades impacting the eyes or face. The warning shall be on the packaging or instructions for use. This warning is not required where the design of the toy prevents the rotor blade ends making contact with the eyes [see [4.19.2](#), a)]. See [B.2.24](#) for guidance.

Rotor blades that are designed to be replaceable shall be accompanied by instructions that clearly indicate the steps necessary to remove and securely replace the rotor blades.

4.19.3 Rotor blades on remote-controlled flying toys

These requirements do not apply to propellers that normally rotate in the vertical plane, for example a propeller on an aeroplane.

In addition to the requirements in [4.19.2](#), rotor blades on remote-controlled flying toys shall conform to the following requirements:

- a) Rotor blade edges that could come into contact with the eyeball shall be visibly rounded.
- b) Rotor blades shall not detach when tested according to [5.24.6.7](#).

Rotor blades that are designed to be replaceable shall be accompanied by instructions that clearly indicate the steps necessary to remove and securely replace the rotor blades.

4.20 Aquatic toys (see [E.34](#))

Aquatic toys shall conform to the following:

- a) All air inlets of inflatable aquatic toys shall have non-return valves with stoppers permanently attached to the toy.
- b) When an aquatic toy is inflated, the stopper shall be capable of being pushed into the toy so that it does not stand more than 5 mm from the surface of the toy.
- c) Advertising copy or graphics on aquatic toys shall not state or imply that a child will be safe with such a toy if left unsupervised.
- d) Aquatic toys shall carry a warning addressing the potential danger of using aquatic toys. The warning shall be on the toy. See [B.2.6](#) for guidance.

4.21 Braking (see [E.35](#))

The braking requirements for toys are as follows.

- a) Mechanically or electrically propelled ride-on toys with a freewheeling facility in accordance with [5.16.1](#):
 - shall have a braking device;
 - when tested in accordance with [5.16.2](#) shall not move more than 5 cm.

For such toys which have a mass of 30 kg or more, it shall be possible to lock the brake (parking brake).

- b) Electrically propelled 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 shall cut power automatically to the drive.

Braking requirements in [4.21 a\)](#) and [4.21 b\)](#) do not apply to:

- toys where the hands or feet provide the motive power to the driving wheel or wheels via direct transmission (e.g. pedal cars, tricycles);
- electrically propelled ride-on toys which are propelled at a maximum speed of 1 m/s unloaded, having a seat height of less than 300 mm and in which the feet are free;
- toy bicycles (see [4.22.3](#)).

4.22 Toy bicycles (see [4.13.3](#) and [E.36](#))

4.22.1 General

Toy bicycles shall carry a warning that directs the user to wear protective equipment. The warning shall be on the toy and the packaging. See [B.2.15](#) for guidance.

4.22.2 Instructions for use

Toy bicycles shall be accompanied by assembly and maintenance instructions that also bring to the attention of parents or caregivers the potential dangers of riding toy bicycles and precautions to be taken. See [B.3.8](#) for guidance.

NOTE Requirements for bicycles with a maximum saddle height between 435 mm and 635 mm are given in ISO 8098.

4.22.3 Determination of maximum saddle height

The seat pillar shall have a permanent mark that indicates the minimum insertion depth of the pillar into the frame. The minimum insertion mark shall be positioned at a distance equal to or greater than two and a half times the diameter of the pillar measured from the bottom of the full diameter of the pillar and shall not affect the seat pillar strength.

4.22.4 Braking requirements

Toy bicycles with a freewheeling facility in accordance with [5.16.1](#) shall be equipped with a braking system which operates on the rear wheel.

For handbrakes, the brake lever dimension, d , measured at the midpoint of the lever as shown in [Figure 25](#) shall not exceed 60 mm. The range of adjustment on an adjustable lever shall permit this dimension to be attained. The lever length, l , shall be ≥ 80 mm.

When tested in accordance with [5.16.3](#), the toy shall not move more than 5 cm.

Dimensions in millimetres

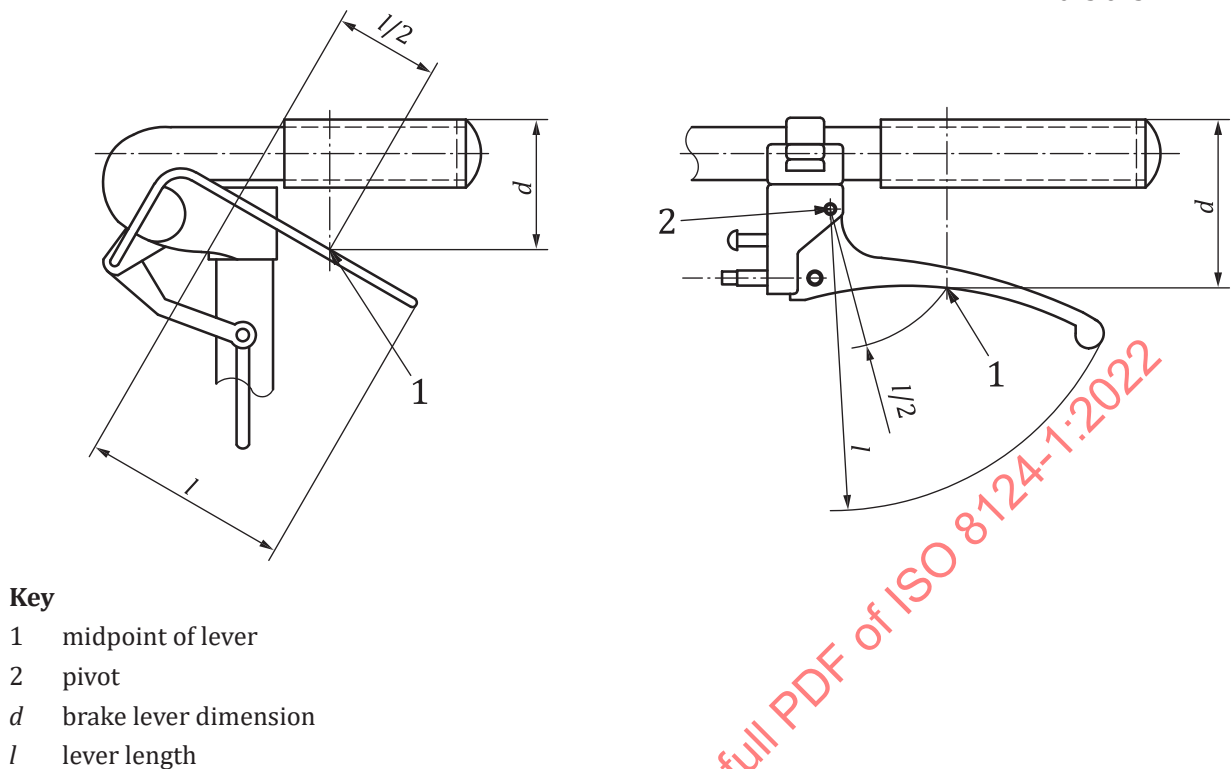


Figure 25 — Handbrake lever dimensions

4.23 Speed limitation of electrically driven ride-on toys (see E.37)

The speed of electrically driven ride-on toys shall not exceed the following limits when tested in accordance with 5.17:

- 8 km/h for toys intended for under 3 years;
- 12 km/h for toys intended for children 3 years and over and under 6 years;
- 16 km/h for toys intended for children 6 years and over.

4.24 Toys containing a heat source

This requirement does not cover burners in chemistry sets or related experimental kits, or light bulbs and similar items.

When tested in accordance with 5.18:

- a) toys containing a heat source shall not ignite when used at the maximum input;
- b) the rise in temperature of handles, knobs and similar parts which are likely to be touched by hand shall not exceed the following values:
 - parts made of metal: 25 K;
 - parts made of glass or porcelain: 30 K;
 - parts made of plastics or wood: 35 K.
- c) the rise in temperature of other accessible parts of the toy shall not exceed the following values:
 - parts made of metal: 45 K;

- parts made of other materials: 55 K.

NOTE A temperature difference of 1 K equals a temperature difference of 1 °C.

4.25 Liquid-filled toys (see E.38)

Upon completion of any relevant tests in accordance with [Clause 5](#), liquid-filled toys with non-accessible liquid shall be tested according to [5.19](#) and there shall be no leakage of the contents which could result in a potential hazard.

Liquid-filled teething toys and liquid-filled teething toys shall be accompanied by instructions that contain a statement that they are not to be placed in a freezer compartment. See [B.3.5](#) for guidance.

4.26 Mouth-actuated toys (see E.39)

These requirements relate to toys such as noisemakers, toy musical instruments and similar toys that are intended to be actuated by blowing or sucking. Mouth-actuated toys shall conform to the following requirements.

- Mouth-actuated toys and removable mouthpieces of mouth-actuated toys shall not fit entirely in the small parts cylinder when tested in accordance with [5.2](#).
- Non-detachable mouthpieces of mouth-actuated toys, if detached when tested in accordance with [5.24.5](#) and [5.24.6.1](#), shall not fit entirely in the small parts cylinder when tested in accordance with [5.2](#).
- Mouth-actuated toys which contain loose components such as spheres in a whistle or reeds in a noisemaker shall not, when tested in accordance with [5.20](#), release any objects that fit entirely in the small parts cylinder when tested in accordance with [5.2](#).
- Removable or non-detachable mouthpieces fitted to balloons shall conform to the requirements in [4.26 a\)](#) and [4.26 b\)](#) (see also [4.5.6](#)).

4.27 Toy roller skates, toy inline skates and toy skateboards

Toy roller skates, toy inline skates and toy skateboards are products that are intended for children with a mass of 20 kg maximum.

Toy roller skates, toy inline skates and toy skateboards shall carry a warning advising that protective equipment be worn, the product is not to be used in traffic and the product is intended for children with a mass of 20 kg maximum. The warning shall be on the toy and its packaging. See [B.2.13](#) for guidance.

4.28 Percussion caps specifically designed for use in toys (see E.40)

Assuming reasonably foreseeable use, percussion caps specifically designed for use in toys shall not produce flames, glowing parts or other debris which are potential eye injury hazards.

The packaging of percussion caps shall carry a warning. See [B.2.16](#) for guidance.

4.29 Acoustic requirements (see E.42)

When tested in accordance with [5.25](#), toys that are designed to emit sound shall conform to the following requirements:

- The A-weighted equivalent sound pressure level, L_{pAeq} , of sounds produced by close-to-the-ear toys shall not exceed 65 dB.
- The maximum A-weighted sound pressure level, L_{AFmax} , of toys where the sound is caused as a result of the movement imparted on the toy by the child (e.g. a toy vehicle with a sound-making

mechanism attached to an axle) shall not exceed 85 dB. This requirement is not applicable to pull or push toys.

- c) The maximum A-weighted sound pressure level, L_{AFmax} , of pull or push toys where the sound is caused as a result of pulling or pushing of the toy by the child shall not exceed 94 dB.
- d) The A-weighted equivalent sound pressure level, L_{pAeq} , produced by all toys not covered by a), b) or c) shall not exceed 85 dB.
- e) The C-weighted peak sound pressure level, L_{pCpeak} , produced by close-to-the-ear toys shall not exceed 110 dB.
- f) The C-weighted peak sound pressure level, L_{pCpeak} , produced by toys, other than close-to-the-ear toys and toys using percussion caps or other explosive action, shall not exceed 115 dB.
- g) The C-weighted peak sound pressure level, L_{pCpeak} , produced by toys using percussion caps or other explosive action shall not exceed 125 dB.
- h) If the C-weighted peak sound pressure level, L_{pCpeak} , produced by toys using percussion caps or other explosive action exceeds 115 dB, the toy or its packaging shall carry a warning regarding the potential for hearing damage. See [B.2.17](#) for guidance.

The requirements in this subclause do not apply to:

- sounds produced by mouth-actuated toys where the sound pressure level is determined by the blowing action of the child (e.g. whistles and imitation musical instruments, such as trumpets and flutes);
- sounds such as those produced by xylophones, bells, drums and squeeze toys where the sound pressure level is determined by the muscular action of the child [this exemption does not apply to rattles, which are subject to the C-weighted peak requirement in [4.29 e\)](#)];
- sounds produced by radios, MP3 players, CD players and other similar electronic toys where the sound output is dependent on the content of removable or rewriteable media such as discs, flash cards or internet downloaded content;
- sounds produced by toys that are connected to or interfaced with non-toy external devices, such as televisions and computers, where the sound pressure level is determined by the external device;
- sound emitted from earphones or headphones;
- sounds produced by toys that reproduce or electronically or mechanically alter the child's voice, such as walkie-talkies, recording devices and megaphones;
- sounds quantified by A-weighted equivalent sound pressure level, L_{pAeq} , produced by percussion caps or other explosive action.

4.30 Toy scooters (see [E.44](#))

4.30.1 General

For the purposes of this document, 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 between 20 kg and 50 kg.

In addition to relevant requirements in other subclauses of [Clause 4](#), toy scooters shall conform to the requirements of [4.30](#).

4.30.2 Warnings and instructions for use

Toy scooters shall carry a warning advising that protective equipment be worn, that the product is not to be used in traffic and of the maximum weight of the user. The warning shall be on the product and its packaging. They shall also be accompanied by assembly and maintenance instructions, instructions for use and precautions to be taken. See [B.2.18](#) for guidance.

Toy scooters shall also be accompanied by assembly and maintenance instructions, instructions for use and precautions to be taken. See [B.3.9](#) for guidance.

4.30.3 Strength

When tested according to [5.26](#) and [5.27](#) toy scooters shall not:

- produce accessible hazardous sharp edges (see [5.8](#));
- produce accessible hazardous sharp points (see [5.9](#));
- make accessible driving mechanisms that present a hazard of crushing the fingers or other parts of the body;
- collapse so that they do not continue to conform to relevant requirements of this document.

When tested according to [5.29](#):

- steering tubes shall not collapse so that they do not continue to conform to relevant requirements of this document;
- steering tubes shall not separate into two or more parts;
- locking devices shall not fail or disengage.

4.30.4 Stability

Where the spacing is more than 150 mm between the centres of the outermost wheels, toy scooters with three wheels or more shall not tip over when tested with a load of 50 kg according to [5.12.2](#).

4.30.5 Adjustable and folding steering tubes and handlebars

The requirements for adjustable and folding steering tubes and handlebars are as follows:

- a) To prevent sudden changes of height, steering tubes with adjustable height shall:
 - be adjustable with the use of a tool; or
 - 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.
- b) The separation of the steering tube shall not be possible unless intended.
- c) Steering tubes intended to be folded shall have a locking device on the folding mechanism.
- d) 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.
- e) Accessible openings in moving elements capable of shearing a finger shall not allow the insertion of a 5 mm rod.
- f) Handlebars shall not separate into two or more parts when tested according to [5.30](#).

4.30.6 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 5.28, the force required to hold the toy scooter on the inclined plane shall be less than 50 N.

4.30.7 Wheel size

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

4.30.8 Projections (see E.13)

The handlebars on toy scooters shall be protected by rounded handlebar grips or plugs of resilient material, which have a diameter of 40 mm or more when measured not more than 20 mm from the end of the grip.

4.31 Magnets and magnetic components (see E.45)

4.31.1 General

The requirements in 4.31.2 and 4.31.3 do not apply to functional magnets in electrical or electronic components of toys.

4.31.2 Magnetic or electrical experimental sets intended for children 8 years and over

Magnetic or electrical experimental sets intended for children 8 years and over that contain magnets or magnetic components that have a magnetic flux index equal to or greater than $50 \text{ kG}^2\text{mm}^2$ ($0,5 \text{ T}^2\text{mm}^2$) when tested according to 5.32 and fit entirely in the cylinder when tested according to 5.2 shall carry a warning. The warning shall be on the packaging and instructions for use. See B.2.19 for guidance.

NOTE Requirements for magnetic or electrical experimental sets intended for children under 8 years are given in 4.31.3.

4.31.3 All other toys with magnets and magnetic components

- a) Any loose-as-received magnet(s) and magnetic component(s) either shall have a magnetic flux index less than $50 \text{ kG}^2\text{mm}^2$ ($0,5 \text{ T}^2\text{mm}^2$) when tested in accordance with 5.32 or shall not fit entirely in the cylinder when tested in accordance with 5.2.
- b) Wooden toys, toys intended to be used in water and mouth pieces of mouth-actuated toys with magnets or magnetic components shall be tested in accordance with 5.34 before being tested in accordance with 4.31.3 c).
- c) The following tests shall be carried out in the prescribed order on all unique magnetic component(s). The components used for this testing shall not have been previously subjected to normal use and reasonably foreseeable abuse tests. Any magnet(s) and magnetic component(s) that become liberated from a toy or from a loose-as-received magnetic component shall either, when tested according to the subclauses listed below, have a magnetic flux index less than $50 \text{ kG}^2\text{mm}^2$ ($0,5 \text{ T}^2\text{mm}^2$) when tested in accordance with 5.32 or not fit entirely in the cylinder when tested according to 5.2.
 - 5.31;
 - 5.24.2 or, if applicable, 5.24.3;

- [5.24.5](#);
- [5.24.6.1](#);
- [5.24.6.2](#), if applicable;
- [5.33](#);
- [5.24.7](#), for magnets that are accessible but cannot be grasped (as specified in [5.24.6.1](#));
- [5.31](#).

NOTE 1 Examples of unique magnetic components are rods of different sizes or shapes containing magnets.

NOTE 2 If the toy contains one magnet, the component holding the magnet is considered to be a unique component.

NOTE 3 An example of a magnet that is accessible but cannot be grasped is a magnet that is recessed.

4.32 Yo-yo balls (see [E.46](#))

The initial length (l_0) of the yo-yo ball tether, measured as described in [5.38.2](#), shall not be greater than 370 mm.

The ratio of the mass m (in grams) to the elastic constant k of the yo-yo ball tether, measured as described in [5.38.1](#), shall be less than 2,2, see [Formula \(1\)](#).

$$m/k < 2,2 \quad (1)$$

where

m is the total mass of the ball and the tether made of elastic material;

k is the elastic constant of the yo-yo ball tether as measured in [5.38.1](#).

4.33 Straps intended to be worn fully or partially around the neck (see [E.47](#))

Toys intended for children under 36 months with straps intended to be worn fully or partially around the neck, and which create a fixed loop, shall have a breakaway feature which breaks when tested according to [5.11.3](#).

Safety harnesses, backpack shoulder straps and the straps of bag, bucket or box handles are excluded from this requirement.

4.34 Sledges and toboggans with cords for pulling

Sledges and toboggans, which are intended for outdoor use on snow under adult supervision, that are equipped with a cord for pulling shall carry a warning. See [B.2.22](#) for guidance.

4.35 Jaw entrapment in handles and steering wheels (see [E.48](#))

4.35.1 These requirements are intended to address potential jaw entrapment in handles and steering wheels that are located such that they are accessible for teething in the following categories of toys intended for children under 18 months of age:

- activity tables intended to be played with by a standing child;
- large and bulky toys;
- stationary floor toys;

- toys intended to be pushed by a child walking upright;
- ride-on toys.

4.35.2 Handles that are connected to the toy with a hinge and handles made from a pliable material (e.g. straps and ropes) are exempt from this requirement.

4.35.3 When tested in accordance with [5.39](#), openings in handles and steering wheels that allow the small test fixture to pass completely through shall also allow the large test fixture to pass completely through.

4.36 Assembly

4.36.1 General

Toys intended to be assembled shall be accompanied by assembly instructions with sufficient detail to ensure that the toy is assembled as intended by the manufacturer.

4.36.2 Toys intended to be assembled by a child

If a toy is intended to be assembled by a child, the requirements in this document apply to each component made available to the child and to the assembled toy.

Toys, such as construction sets, where assembling provides a significant part of the play value of the toy, shall be evaluated to determine if any potential hazards exist (e.g. projection hazards, projectile hazards, strangulation hazards). The evaluation is limited to those assemblies depicted on the packaging and/or instructions for use. Based on this evaluation, assemblies that have the potential to be hazardous shall be constructed and tested according to the appropriate subclauses of this document. For example, a toy that requires the child to assemble a working catapult shall be evaluated for any potential projectile hazards. Where a large number of assembly configurations are possible, the tests in [5.24](#) do not need to be carried out on the assembled toy.

NOTE It might only be necessary to construct a portion of the entire assembly to carry out the necessary testing.

4.36.3 Toys intended to be assembled by an adult

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

Toys intended to be assembled by an adult shall:

- have packaging and instructions that prominently indicate that the article is to be assembled by an adult (see [B.2.8](#) and [B.3.6](#) for guidance);
- have assembly instructions that highlight any connections that are important for the safe use of the toy, for example connections that prevent failures that may be, or cause, hazards.

4.36.4 Toys that are intended to be disassembled between uses

- The assembly instructions shall highlight the importance of keeping the instructions for future reference.
- Any connections that are important for the safe use of the toy shall be marked to indicate that the product must not be used without the connection in place.

4.37 Functional toys

Functional toys shall carry a warning requiring adult supervision. The warning shall be on the toy and the packaging. See [B.2.12](#) for guidance.

4.38 Toys intended to come into contact with food

Toys intended to come into contact with food shall carry a statement about cleaning the toy. The statement shall be on the packaging or instructions for use. See [B.2.7](#) for guidance.

4.39 Inflatable toys

Inflatable toys that can be inflated with the mouth shall not liberate objects during inflation or deflation that fit entirely in the small parts cylinder when tested in accordance with [5.2](#).

5 Test methods

5.1 General

The test methods specified in [Clause 5](#) shall be used to determine the conformity of toys to the requirements of this document.

The tests in [5.2](#) to [5.23](#) apply to particular types of toys as specified in the requirements of [Clause 4](#).

The objective of the tests in [5.24](#) is to simulate reasonably foreseeable abuse and damage to which the toys may be subjected. The test methods are for use in exposing potential hazards which could result from the reasonably foreseeable abuse and damage of toys intended for children.

Certain test methods have been established for the following ages:

- from birth but under 18 months;
- from 18 months and over but under 36 months;
- 36 months and over but under 96 months.

If a toy is marked, labelled, advertised or otherwise intended for children of ages spanning more than one of these age groups, the toy shall be subjected to the test(s) providing the most stringent requirements.

If a toy or its packaging is not age-labelled in a clear and conspicuous manner, or (based on such factors as marketing practices and the customary patterns of usage of a toy by children) is inappropriately age-labelled and is intended or appropriate for children under 96 months, it shall also be subjected to the most stringent test requirements.

If during a test the toy has been materially affected, for example by a clamp or similar test equipment, further relevant testing shall be carried out on a new toy.

Unless otherwise specified in the test method, each sample shall, prior to testing, be subjected to a temperature of $(21 \pm 5) ^\circ\text{C}$ for at least 4 h. Textile toys and textile soft-filled (stuffed) toys shall be conditioned at a temperature of $(21 \pm 5) ^\circ\text{C}$ and $(65 \pm 10) \%$ relative humidity for at least 4 h. The testing shall commence within 5 min of the toy being removed from the preconditioning atmosphere.

In situations where a test procedure can be applied in more than one way to a toy test component, the point (or direction) of force (or torque) application which results in the most onerous conditions shall be used.

5.2 Small parts test

See [4.3.2](#), [4.4](#), [4.18.3](#), [4.26](#) and [4.31](#).

Place the toy, without compressing it and in any orientation, into the cylinder as shown in [Figure 26](#).

Repeat the procedure with any removable component of the toy and any component liberated after testing according to [5.24](#). Repeating the procedure after testing in accordance with [5.24](#) is only applicable if specified by the associated requirement in [Clause 4](#).

Determine whether the toy or any removable component or liberated component fits entirely within the cylinder.

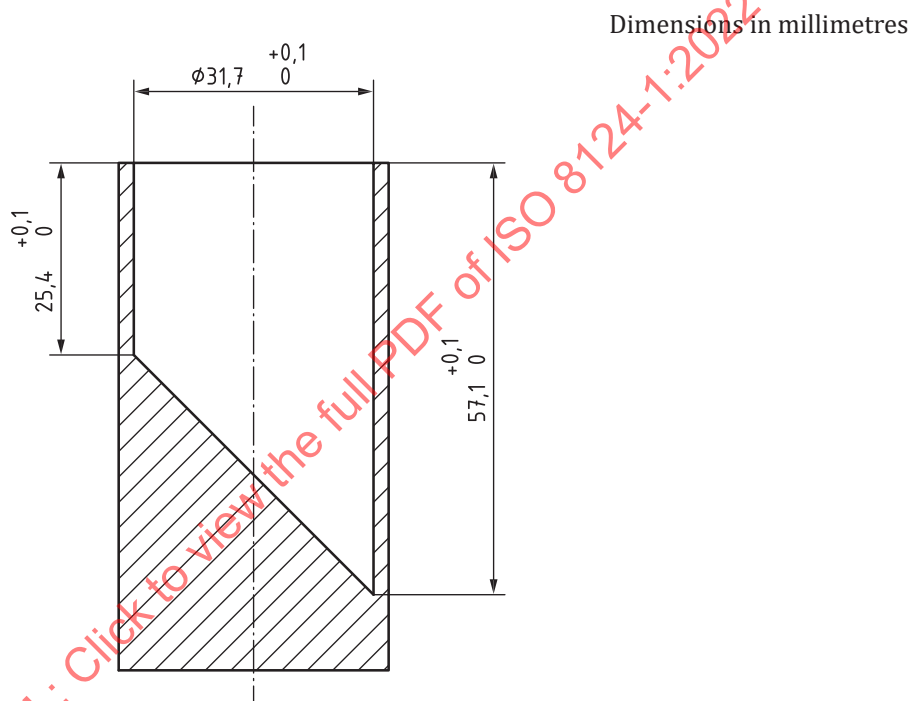


Figure 26 — Small parts cylinder

5.3 Test for shape and size of certain toys

See [4.5.1](#).

Position and clamp the test template A shown in [Figure 27](#) so that the axis of the slot is essentially vertical and the slot is unobstructed at its top and bottom openings.

Orientate the toy to be tested in a position which would most likely permit the entry of the toy through the slot in the test template. Place the toy in the slot in the orientation stated so that the force on the toy is only the force due to its mass.

Determine whether any part of the toy penetrates past the full depth of the cavity of the test template.

Repeat the procedure for toys with nearly spherical, hemispherical, circular flared or dome-shaped ends using supplemental test template B shown in [Figure 28](#), except that only the spherical, hemispherical, circular flared or dome-shaped ends shall be presented to the template.

Dimensions in millimetres

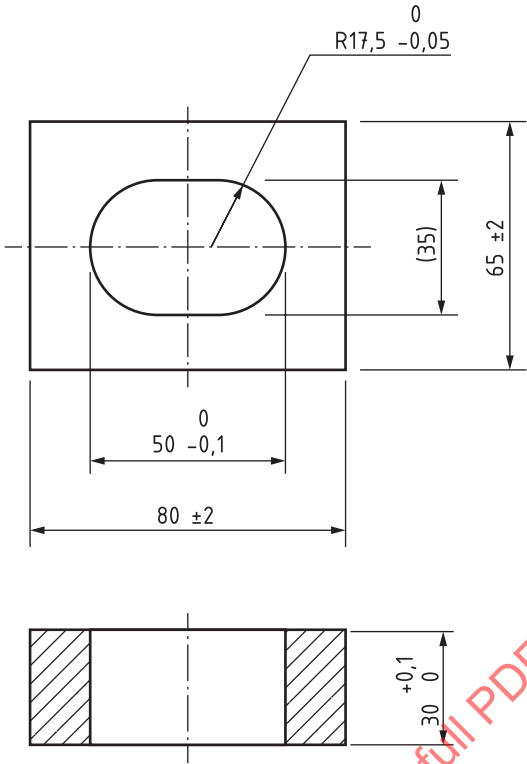


Figure 27 — Test template A

Dimensions in millimetres

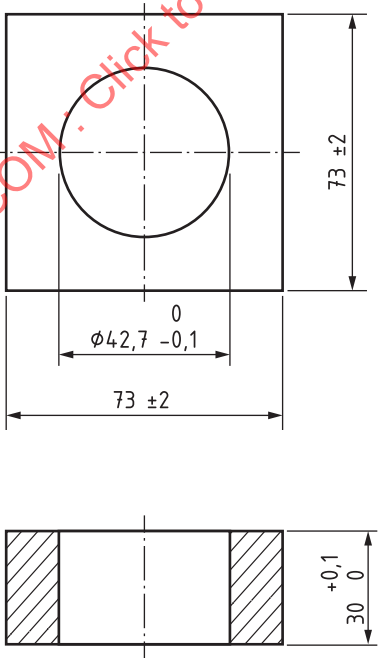


Figure 28 — Supplemental test template B

5.4 Small balls test

See [4.5.2](#) and [4.18.2](#).

Position and clamp the test template C shown in [Figure 29](#) so that the axis of the slot is essentially vertical and the slot is unobstructed at its top and bottom openings.

Dimensions in millimetres

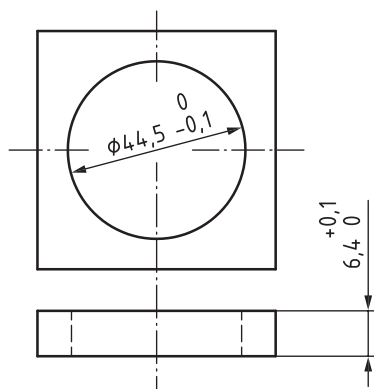


Figure 29 — Test template C

Orientate the ball to be tested in a position which would most likely permit the entry of the ball through the slot in the test template. Place the ball in the slot so that the force on the toy is only the force due to its mass.

Determine whether the ball passes entirely through the test template.

5.5 Test for pompoms

See [4.5.3](#).

Position and clamp the test template C shown in [Figure 29](#) so that the axis of the slot is essentially vertical and the slot is unobstructed at its top and bottom openings.

Orientate the pompom to be tested in a position which would most likely permit the entry of the pompom through the slot in the test template and put the free ends of fibres into the template first. Place the pompom in the slot so that the force on the toy is only the force due to its mass.

Determine whether the pompom passes entirely through the test template.

5.6 Test for pre-school play figures

See [4.5.4](#).

Position and clamp the supplemental test template B shown in [Figure 28](#) so that the axis of the slot is substantially vertical and the slot is unobstructed at its top and bottom openings.

Orientate the play figure to be tested in a position which would most likely permit the entry of the rounded end through the slot in the test template. Place the toy in the slot so that the force on the toy is only the force due to its mass.

Determine whether the rounded end penetrates past the full depth of the cavity of the test template.

5.7 Accessibility of a part or component

5.7.1 General

See [4.6](#), [4.7](#), [4.13](#) and [4.14](#).

5.7.2 Principle

An articulated probe is manoeuvred to the part or component being tested. If any portion forward of the collar contacts the part or component, that part or component is considered to be accessible.

5.7.3 Apparatus

5.7.3.1 Articulated accessibility probe, as specified in Table 2 and illustrated in Figure 30, manufactured from rigid material.

The tolerance on the dimensions shall be $\pm 0,1$ mm except for f and g , which have a tolerance of ± 1 mm.

Table 2 — Dimensions of accessibility probes

Age grading ^a	Probe	Dimensions ^b						
		<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>
Under 36 months	A	2,8	5,6	25,9	14,7	44,0	25,4	464,3
36 months and over	B	4,3	8,6	38,4	19,3	57,9	38,1	451,6

^a Toys intended for children spanning both age groups should be tested using both probes.

^b See Figure 30.

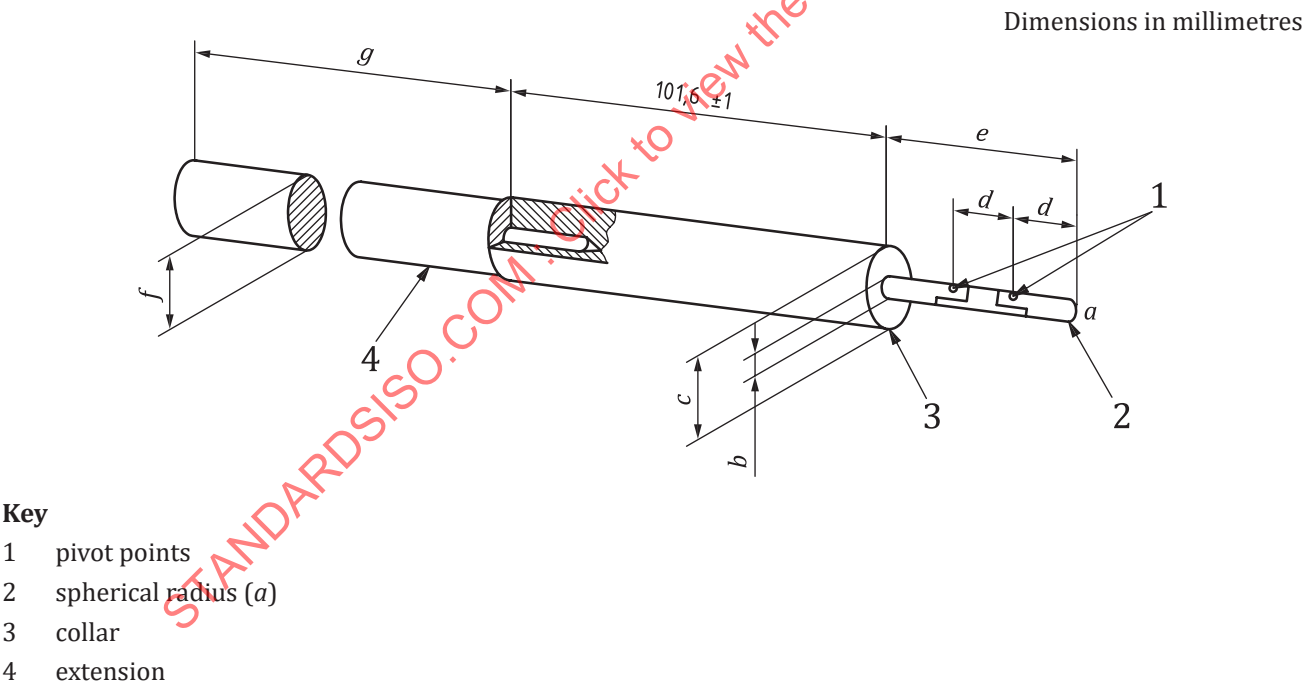


Figure 30 — Accessibility probe

5.7.4 Procedure

Remove all components on the toy which are intended to be removed without the use of a tool.

Where a tool is intended to be used in conjunction with the toy, all the components on the toy that are capable of being removed by that tool should be removed.

Manoeuvre, as described in 5.7.4 a) to 5.7.4 c), the appropriate articulated accessibility probe in any convenient position towards the part or component of the toy being tested. Each probe joint may be rotated up to 90° to simulate knuckle movement. If necessary, pivot the probe at any of its joints in an attempt to make contact with the part or component of the toy.

NOTE 1 Where the part is a sharp point that lies adjacent to a plane surface such that the gap between the point and the surface is 0,5 mm or less, the point is considered to be non-accessible and the procedure specified in 5.7.4 b) need not be carried out.

- a) For any hole, recess or other opening having a minor dimension (see Note 2) smaller than the collar diameter of the appropriate probe, insert the probe such that the total insertion depth for accessibility is up to the collar.

NOTE 2 The minor dimension of an opening is the diameter of the largest sphere that will pass through the opening.

- b) For any hole, recess or other opening having a minor dimension larger than the collar diameter of probe A but less than 187 mm when probe A is used, or a minor dimension larger than the collar diameter of probe B but less than 230 mm when probe B is used, determine the total insertion depth for accessibility by inserting the appropriate probe, with the extension shown in Figure 30, in any direction for a distance up to 2,25 times the minor dimension of the hole, recess or opening, measured from any point in the plane of the opening.
- c) For any hole, recess or other opening having a minor dimension of 187 mm or larger when probe A is used, or a minor dimension of 230 mm or larger when probe B is used, the total insertion depth for accessibility is unrestricted unless other holes, recesses or openings within the original hole, recess or opening are encountered which have dimensions conforming to a) or b) of this subclause. In such instances follow the procedure in 5.7.4 a) or 5.7.4 b) as appropriate. If both probes are to be used, a minor dimension of 187 mm or larger shall determine the unrestricted access.

Determine whether a tested part or component can be contacted by any portion of the accessibility probe forward of the collar.

5.8 Sharp-edge test

5.8.1 General

See 4.6, 4.9 and 4.30.3.

5.8.2 Principle

A self-adhesive tape is attached to a mandrel which is then rotated for a single 360° revolution along the accessible edge being tested. The tape is then examined for the length of cut.

5.8.3 Apparatus

The apparatus shall be as illustrated in Figure 31.

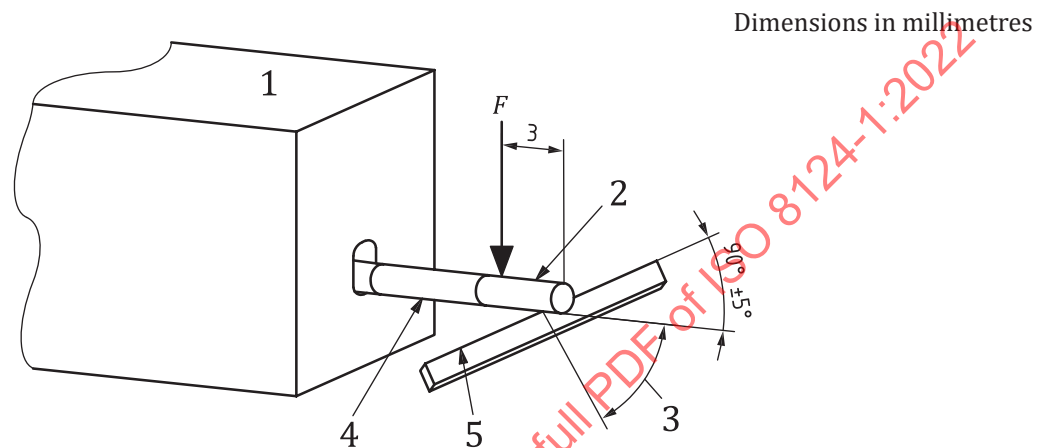
5.8.3.1 Mandrel, made of steel, with diameter of $(9,53 \pm 0,12)$ mm, with test surface free of scratches, nicks or burrs and of surface roughness value $Ra \leq 0,40 \mu\text{m}$ in accordance with ISO 21920-2.

This surface shall have a Rockwell hardness value of ≥ 40 HRC when measured in accordance with ISO 6508-1.

5.8.3.2 Device for rotating the mandrel and applying a force to it, capable of rotating the mandrel at a constant tangential velocity of (23 ± 4) mm/s during the central 75 % of its 360° travel, starting and stopping of the mandrel being smooth.

Portable or non-portable and of any suitable design, the device shall be capable of applying any force up to 6 N to the mandrel, perpendicular to the mandrel axis.

5.8.3.3 Pressure-sensitive polytetrafluoroethylene (PTFE) tape, of thickness between 0,066 mm and 0,090 mm, of width ≥ 6 mm and with adhesive made of pressure-sensitive silicone polymer with a nominal thickness of 0,08 mm.



Key

- 1 device, portable or non-portable, to apply a known force, F , and rotation to the mandrel (see 5.8.3.2)
- 2 single wrap of PTFE tape (see 5.8.3.3)
- 3 variable angle to seek worst-case situation (see 5.8.4)
- 4 mandrel
- 5 edge under test

Figure 31 — Edge test apparatus

5.8.4 Procedure

Ascertain that the edge to be tested is accessible by the method described in 5.7.

Support the toy in such a manner that the accessible edge to be tested does not bend or move when the force of the mandrel is applied. Ensure that the support is not less than 15 mm from the edge to be tested.

If part of the toy has to be removed or disassembled in order to test a particular edge, and as a result the rigidity of the edge being tested is affected, support the edge so that its stiffness approximates the edge stiffness in the assembled toy.

Wrap the mandrel (5.8.3.1) with one layer of the tape (5.8.3.3) to provide sufficient area for performing the test.

Place the taped mandrel such that its axis is at $(90 \pm 5)^\circ$ to the line of a straight edge, or $(90 \pm 5)^\circ$ to a tangent at the test point of a curved edge, and the tape is in contact with the sharpest part of the edge (i.e. the worst-case situation) when the mandrel is rotated one full revolution (see Figure 31).

Apply a force, F , of $\left(6_{-0,5}^{0,0}\right)$ N to the mandrel, 3 mm from the leading edge of the tape, and rotate the mandrel 360° about its axis against the edge, ensuring that no relative motion occurs between the

mandrel and the edge during rotation of the mandrel. If this procedure causes the edge to bend, apply the maximum force that will not cause the edge to bend.

Remove the tape from the mandrel without enlarging any cut in the tape or causing any score in the tape to become a cut. Measure the length of tape which has come into contact with the edge during the test. Measure the length of tape which is cut, including any intermittent cuts.

Calculate the percentage length of the tape which has been cut during the test. If this is more than 50 % of the contact length, the edge is a potentially hazardous sharp edge.

5.9 Sharp-point test

5.9.1 General

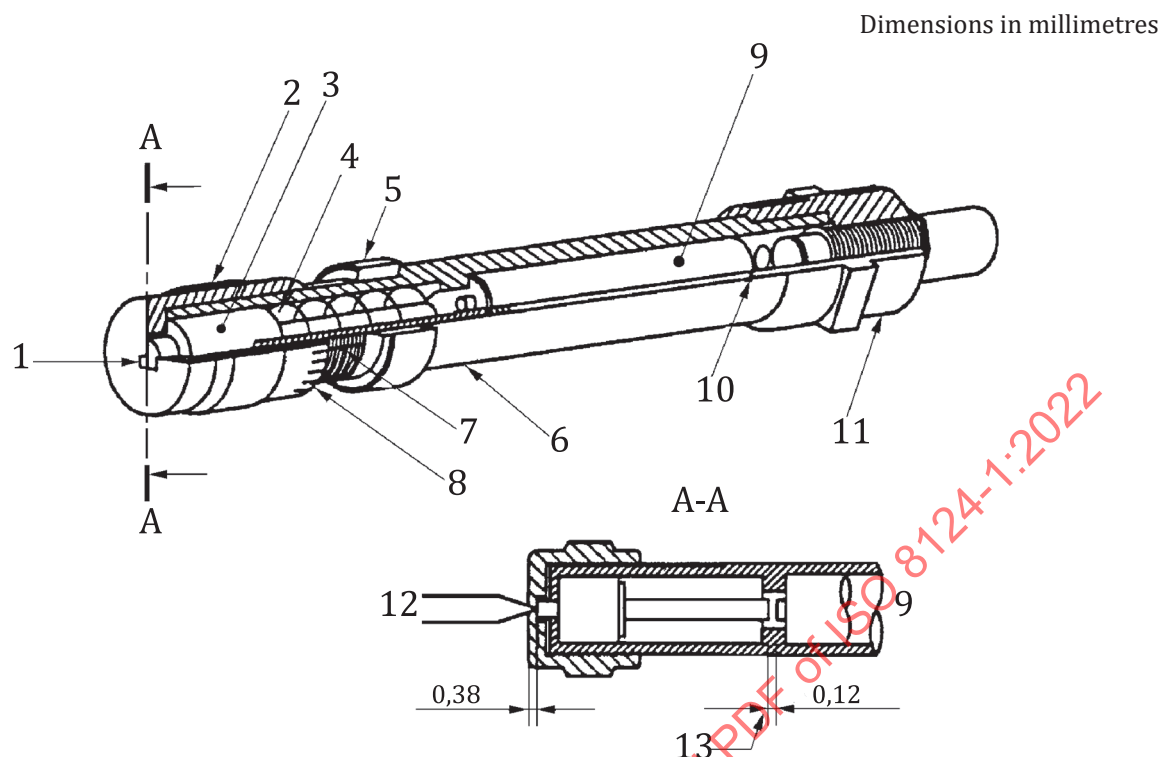
See [4.7](#), [4.9](#) and [4.30.3](#).

5.9.2 Principle

A point tester is applied to an accessible sharp point and it is observed whether or not the point being tested penetrates a specified distance into the sharp-point tester. Depth of penetration of the point being tested determines sharpness. If the point can make contact with a sensing head which is recessed a distance of $(0,38 \pm 0,02)$ mm below the end cap and can move the sensing head a further $(0,12 \pm 0,02)$ mm against a $(2,5_{-0,3}^0)$ N force of a return spring, the point shall be identified as potentially sharp.

5.9.3 Apparatus

5.9.3.1 Point tester, with gauging slot measuring $(1,02 \pm 0,02)$ mm wide by $(1,15 \pm 0,02)$ mm long in the end of the slotted cap of the point tester, which establishes two reference dimensions, and sensing head recessed $(0,38 \pm 0,02)$ mm below the end cap (as shown in [Figure 32](#)).



Key

- | | | | |
|---|----------------|----|---|
| 1 | gauging slot | 7 | adjustment reference mark |
| 2 | gauging cap | 8 | micrometer divisions |
| 3 | sensing head | 9 | R03 dry cell |
| 4 | loading spring | 10 | electrical contact spring |
| 5 | locking ring | 11 | indicator lamp assembly and adaptor nut |
| 6 | barrel | 12 | test point |
| | | 13 | air gap |

Figure 32 — Point tester

5.9.4 Procedure

Ascertain that the point to be tested is accessible by the method described in [5.7](#).

Support the toy to be tested in such a manner that the point does not move during the test. In most cases it will not be necessary to support the point directly; however, if necessary, support at not less than 6 mm from the point to be tested.

If part of the toy has to be removed or disassembled in order to test a particular point, and as a result the rigidity of the point being tested is affected, support the point so that its stiffness approximates the point stiffness in the assembled toy.

Adjust the point tester ([5.9.3.1](#)) by loosening the locking ring and rotating it so that it moves toward the indicator lamp assembly a sufficient distance to expose the calibration reference mark on the barrel. Rotate the gauging cap clockwise until the indicator lamp lights. Rotate the cap anticlockwise until the sensing head moves a distance of $(0,12 \pm 0,02)$ mm from making contact with the dry cell, as shown in [Figure 32](#).

NOTE Where the gauging cap includes micrometer markings, the distance can be readily achieved by rotating the cap anticlockwise until the appropriate micrometer marking corresponds with the calibration reference mark. The gauging cap can now be locked in this position by rotating the locking ring until it fits firmly against the cap.

Insert the point, in the most onerous direction, into the cap slot and apply a force of $(4,5_{-0,2}^0)$ N to depress the spring as far as possible without shaving the point on the edges of the slot or extruding the point through the slot. If the point being tested penetrates a distance of 0,5 mm or more into the gauging slot, causing the indicator lamp to light, and the point under test maintains its original shape while under a force of $(4,5_{-0,2}^0)$ N, the test point is a potentially hazardous sharp point.

5.10 Determination of thickness of plastic film and sheeting

5.10.1 General

See [4.10](#).

Prepare plastic bags by cutting the sides, without stretching, into two single sheets.

5.10.2 Apparatus

A measuring device capable of measuring thickness to an accuracy of 1 µm in accordance with ISO 4593.

5.10.3 Procedure

Condition the specimen for at least 1 h at (21 ± 5) °C.

Ensure that the specimens and the faces of the measuring device are free from contamination (e.g. dust).

Check the zero point of the measuring device before starting the measurements and recheck after each series of measurements.

When determining the thickness, lower the foot gently to avoid deforming the material.

Measure the thickness of any sheet at 10 equidistant points across the diagonal of any 100 mm × 100 mm area.

Determine whether the thickness conforms to the requirements of [4.10 a](#)).

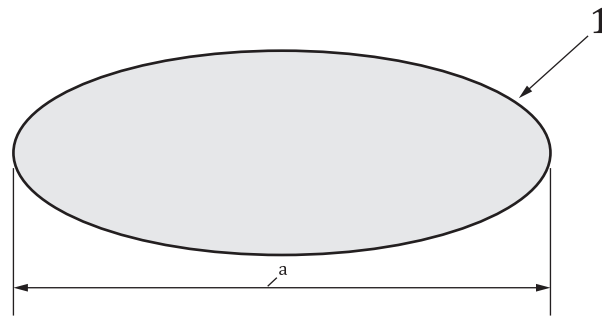
5.11 Test for cords

5.11.1 Cord cross-sectional dimension

See [4.11.7](#).

While under a tension of (25 ± 2) N, measure the maximum cross-sectional dimension of the cord (see [Figure 33](#)) at five points along its length using an instrument capable of measuring in units of 0,1 mm or less.

Determine the average cross-sectional dimension to the nearest 0,1 mm. For cords approaching 1,5 mm in cross-sectional dimension, use a non-compressible measuring device, e.g. an optical projector.



Key

- 1 cord transversal section
- a Cross-sectional dimension.

Figure 33 — Example of measurement of the cross-sectional dimension of a cord

5.11.2 Length of cords and electrical cables

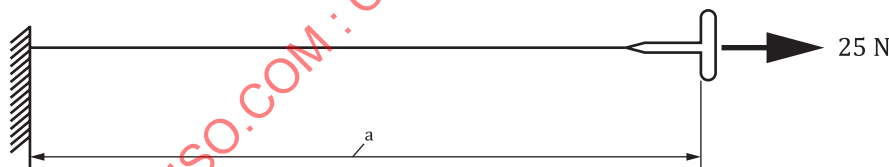
5.11.2.1 General

See [4.11.2.1 a\)](#), [4.11.2.2](#), [4.11.3.1](#), [4.11.3.2](#) and [4.11.6](#).

5.11.2.2 Free lengths of cords and electrical cables

Fix the toy and apply a force of (25 ± 2) N to the other end of the cord or electrical cable along its axis. Measure, to an accuracy of ± 1 mm, the length of the cord or electrical cable from the point where it attaches to the toy to its end.

If an attachment has the same shape or form as the cord or electrical cable, this part is measured as part of the entire cord or electrical cable (see [Figure 34](#)).



- a Length of cord.

Figure 34 — Measurement of the length of a cord with attachments of the same shape or form as the cord

5.11.2.3 Tangled loops of length of cords

When measuring the length of a cord that can form a tangled loop, only the length of cord between the toy and the entanglement point shall be measured (in the example shown in [Figure 11](#) the drumsticks are not included in the length measurement).

NOTE For the purposes of this test method an electrical cable is regarded as a cord.

5.11.3 Breakaway feature separation test

See [4.11.2.1 b\)](#), [4.11.3.1 b\)](#), [4.11.4 b\)](#) and [4.33](#).

Fix one end of the cord. Apply a force of (25 ± 2) N to the other end along the axis of the cord, in such a way that the breakaway feature is in the middle between the fixing points. The required tensile force shall be applied evenly within a period of 5 s and maintained for 10 s. Observe whether or not the cord, strap or breakaway feature separates.

5.11.4 Test for fixed loops and nooses

5.11.4.1 General

See 4.11.4 a).

5.11.4.2 Head probe push test

Anchor or secure the toy. Place the head probe (see Figure 35) in the loop or opening formed by the cord(s), tapered end first, with the plane of its base parallel to the plane of the opening. Rotate the probe to any orientation about its own axis while keeping its base parallel to the plane of the opening. Apply 45 N while attempting to push the probe through the opening.

Dimensions in millimetres

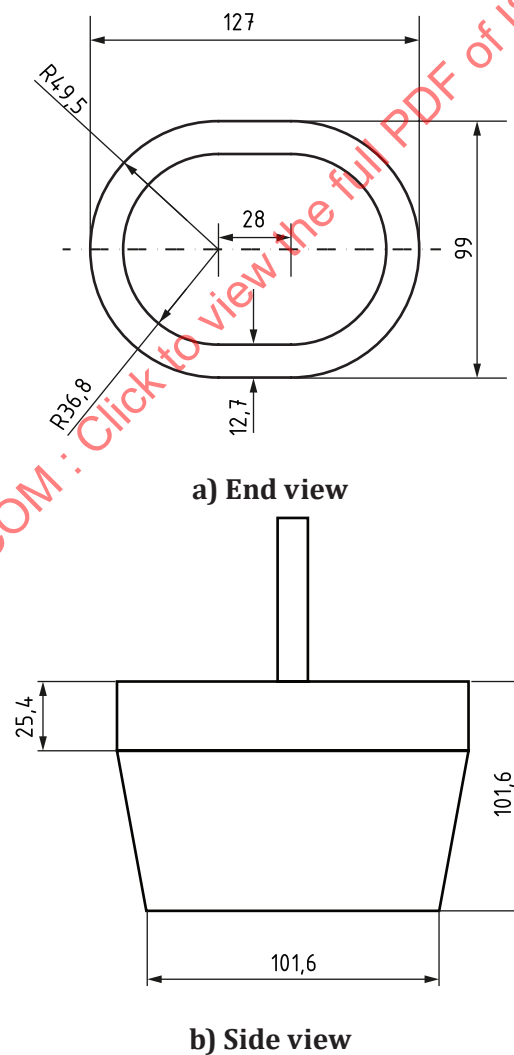


Figure 35 — Head probe

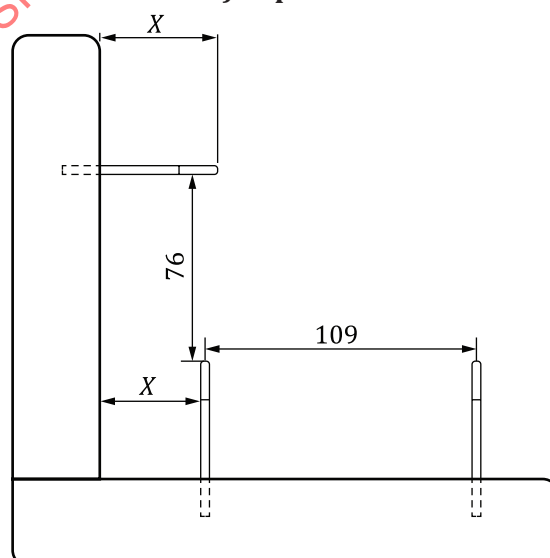
5.11.4.3 Elastic materials

- a) Elastic materials or loops that are smaller than the tapered diameter of the head probe shall be stretched before applying the head probe test fixture using the hook test fixture illustrated in [Figure 36](#). The hook fixture shall be constructed so that:
 - 1) all hooks are of equal height when measured from the base or the upright as appropriate;
 - 2) the distance from the upright to the first hook is the same as the height of the hooks;
 - 3) the base and the upright are made of any suitable material.
- b) To begin the evaluation, the elastic material shall first be looped around the bottom-left hook. Then, hooking the elastic material with the hook attachment of the force gauge, pull the elastic material to the bottom-right hook without exceeding a force of 22 N.
- c) The elastic material shall then be pulled to the upper-left hook without exceeding a force of 22 N.
- d) Pull the elastic material to the right side so that the hook of the force gauge is adjacent to the upper-left hook and parallel to the bottom-right hook, without exceeding a force of 22 N.
- e) The hook of the force gauge should remain in this position during testing.
- f) If the elastic material cannot be stretched and held in this position, or if the force needed to stretch the elastic material exceeds 22 N, the elastic material conforms to this requirement.
- g) The testing sequence is illustrated in [Figure 37](#) a) to e).
- h) If the body of the toy forms part of the loop, position the body of the toy so that it is on the open, right-hand side of the hook test fixture.
- i) Apply the head probe in accordance with [5.11.4.2](#).

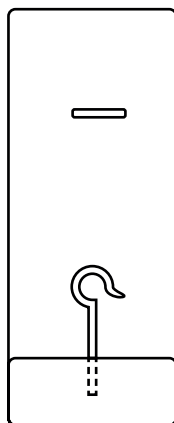
Dimensions in millimetres



a) Top view



b) Front view

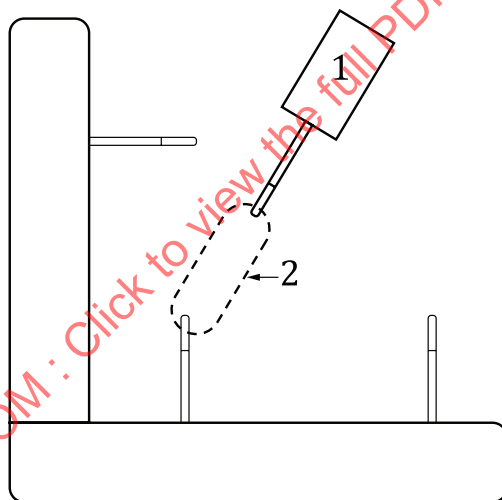


c) Side view

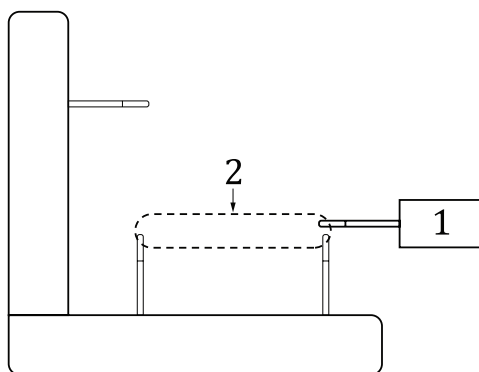
Key

X any suitable value; the height of the hooks in the vertical and horizontal

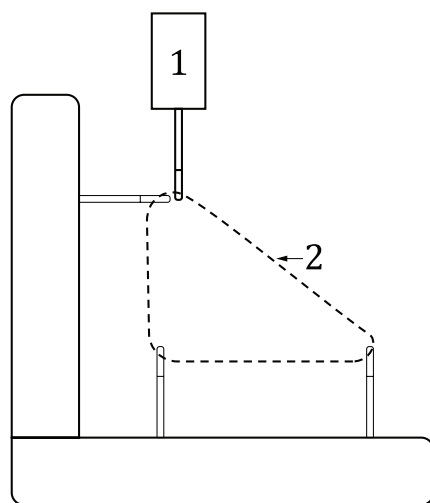
Figure 36 — Hook test fixture for cords and loops



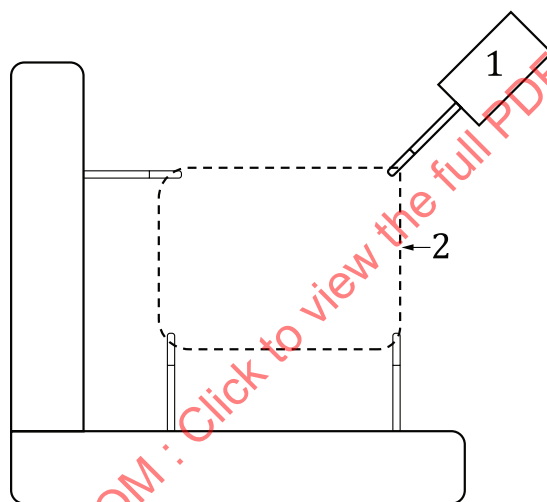
a) Step 1



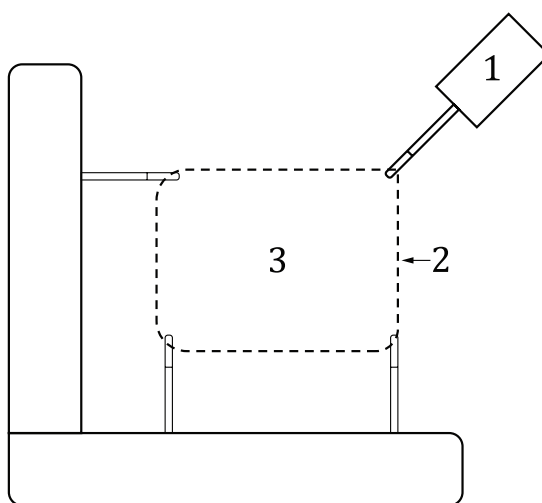
b) Step 2



c) Step 3, front view



d) Step 4, front view



e) Step 5, front view

Key

- 1 force gauge
- 2 elastic material
- 3 insert probe here

Figure 37 — Test procedure for cords and loops**5.11.5 Self-retracting cords**

See [4.11.8](#).

Position the toy such that the cord is suspended vertically beneath the toy and the recoil mechanism is not impaired or impeded in any way.

Attach a mass of $(1 \pm 0,1)$ kg to the free end of the cord. Determine whether the recoil mechanism is able to lift the mass by retracting the cord by more than 6 mm, under any of the following conditions:

- with the cord extracted from the mechanism to the extent of 20 mm;
- with the cord extracted from the mechanism for a length equal to half of its maximum extractable length;
- with the cord extracted from the mechanism to its maximum extent.

5.11.6 Electrical resistance of cords

See [4.11.11](#).

Condition the samples for 7 h minimum at a temperature of (25 ± 3) °C and at a relative humidity of 50 % to 65 % and carry out the test in this atmosphere.

Using an appropriate appliance, determine whether the electrical resistance is more than 10^8 Ω/cm.

5.12 Stability and overload tests

5.12.1 General

See 4.15 (stability and overload requirements).

Where the toy is intended to bear the mass of more than one child at a time, test each sitting or standing area simultaneously.

5.12.2 Sideways stability test, feet available for stabilization

See 4.15.1.2 and 4.30.4.

Place the toy on a smooth surface inclined at $(10^{+0,5}_{0,0})^\circ$ to the horizontal plane.

Position the toy on the inclined surface so that it is facing in a direction that would most likely cause it to tip sideways. Turn the steering mechanism, if any, to the most onerous position. Chock wheels to restrict rolling but allow casters to assume their natural position before chocks are applied.

Load the toy on its standing or sitting surface with the appropriate mass in accordance with Table 3.

Table 3 — Loads for stability test

Age group	Load kg
Under 36 months	$25 \pm 0,2$
36 months and over	$50 \pm 0,5$

Apply the load so that the major axis is perpendicular to the true horizontal while the toy is on the specified incline. Design the load so that the height of its centre of gravity is (220 ± 10) mm above the seat surface. For toy scooters, however, use a test load with dimensions as specified in Figure 53. For all ride-on toys, secure the centre of gravity of the load both (43 ± 3) mm rearward of the frontmost portion of the designated seating area and (43 ± 3) mm forward of the rearmost portion of the designated seating area.

NOTE This involves two separate tests.

If there is no designated seating area, place the load at the least favourable position in which it is reasonable to anticipate that a child will choose to sit or stand.

Observe whether the toy tips over within 1 min of applying the load.

5.12.3 Sideways stability test, feet unavailable for stabilization

See 4.15.1.3. Perform the test in accordance with 5.12.2 except with a slope inclined at $(15^{+0,5}_{0,0})^\circ$ to the horizontal plane. Observe whether the toy tips over within 1 min of applying the load.

5.12.4 Fore and aft stability test

See 4.15.1.4.

Ride-on toys shall be tested with the steering mechanism, if any, in the position where the toy is most likely to tip.

For rocking horses, displace the toy to the limit of its bow.

Place the toy on a slope of a smooth surface inclined at $(15^{+0,5}_{0,0})^\circ$ to the horizontal plane. Test the toy facing both up and down the slope.

Load the toy as specified in 5.12.2. Observe whether the toy tips over within 1 min of applying the load.

5.12.5 Overload test for ride-on toys and seats

See 4.15.2. Place the toy on a horizontal plane.

Load the toy on its standing or sitting surface with the appropriate mass in accordance with Table 4.

Table 4 — Loads for overload test

Age group	Load kg
Under 36 months	$35 \pm 0,3$
36 months and over but under 96 months	$80 \pm 1,0$
96 months and over	$140 \pm 2,0$

Conduct the test for overload requirements so that it will be consistent with the advertised mass capacity of the toy, if that mass is higher than the required load according to Table 4.

Determine whether the toy collapses such that it does not conform to the relevant requirements.

5.12.6 Stability test of stationary floor toys

See 4.15.3.

Place the toy on a smooth surface inclined at $(10 \pm 1)^\circ$ to the horizontal plane. Position the toy on the inclined surface such that it is facing in a direction that would most likely cause it to tip. Adjust any movable portions to the most onerous position, e.g. drawers fully drawn out or fully pushed in, whichever is more onerous.

Observe whether the toy tips over within 1 min.

5.13 Test for closures and toy chest lids

5.13.1 Closures

See 4.16.2.

With the closure in a closed position, apply a force of $(45 \pm 1,3)$ N in an outward direction to the inside of the closure perpendicular to the plane of the closure and anywhere within 25 mm of the geometric centre of the closure.

Observe whether the closure opens.

5.13.2 Toy chest lids

5.13.2.1 General

Before testing the toy chest lid (see 4.16.2), assemble the toy chest in accordance with the manufacturer's instructions.

5.13.2.2 Lid support

Lift the lid to any position in its arc of travel to a distance greater than 50 mm, but not through an arc of more than 60° from its fully closed position, as measured at the outermost edge of the lid. Release the lid and measure any dropping motion at a point in the approximate centre of the outermost edge of the lid.

Determine whether the lid drops more than 12 mm (see [4.16.2](#)).

5.13.2.3 Durability test for toy chest lids

Subject the lid to 7 000 opening-and-closing cycles, where one cycle consists of raising the lid from its fully closed to its fully open position and returning it to fully closed. To prevent undue stress on screws or other fasteners used to attach the lid support mechanism, care should be taken not to force the lid beyond its normal arc of travel.

The time to complete one cycle shall be approximately 15 s. The 7 000 cycles shall be completed within a time period of 72 h, after which the test described in [5.13.2.2](#) shall be repeated.

Determine whether the toy chest lid and the lid support mechanism still conform to the requirements of [4.16.2.2](#).

5.14 Impact test for toys that cover the face

See [4.17](#).

Affix the toy firmly in a suitable clamp with that portion which covers or, in the case of cut-out eye holes, surrounds the eyes, in a horizontal plane.

Drop a steel ball with a diameter of $(16 \pm 0,15)$ mm and mass of $(16,9 \pm 0,7)$ g from a height of $(130 \pm 0,5)$ cm onto the horizontal upper surface of the toy in the area that would cover the eyes in normal use.

The ball may be guided but not restricted in its fall by being dropped through a perforated tube extending to within approximately 100 mm of the toy.

Determine whether the toy has produced hazardous sharp edges, hazardous sharp points or loose parts which could enter the eye.

5.15 Kinetic energy and wall impact test (see [4.18](#))

5.15.1 Kinetic energy of projectiles

5.15.1.1 Principle

The kinetic energy of the projectile, when used under normal conditions, is calculated from the maximum of five velocity determinations. If more than one type of projectile is supplied with the toy, the kinetic energy of each type of projectile is calculated.

5.15.1.2 Apparatus

Timing device for determining the velocity, to give a calculated kinetic energy to an accuracy of 0,005 J.

5.15.1.3 Procedure

5.15.1.3.1 Determination of velocity

Determine the velocity, v , of the projectile using [Formula \(2\)](#):

$$v = d/t \quad (2)$$

where

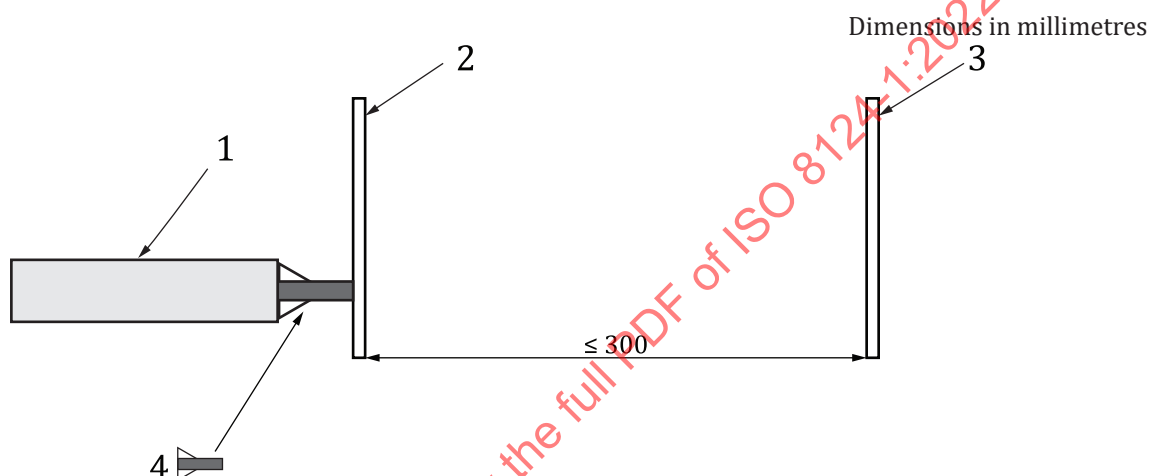
d is the distance in metres;

t is the time in seconds.

Position the discharge mechanism so that the projectile is launched in its intended manner, e.g. vertically for a rocket, through a suitable timing device (e.g. a chronoscope or ballistic screen). Measure the time (t) over a distance (d) of not more than 300 mm, measured from the contact surface of the projectile as soon as it has entered free flight. See [Figure 38](#).

The measurement distance (d) shall be reduced, if necessary, to ensure that the entire measurement is done with the projectile in free flight.

NOTE The natural deceleration of the projectile once it has left the discharge mechanism can cause different results to be obtained depending on the measurement distance.



Key

- 1 discharge mechanism
- 2 first screen
- 3 second screen
- 4 projectile at the point of horizontal free flight

Figure 38 — Example of determination of velocity using ballistic screens

Discharge the projectile through the timing device five times and use the minimum time for the calculation of the velocity. If more than one type of projectile is supplied with the toy, repeat this process and use the projectile with the greatest velocity for the calculation of kinetic energy in [5.15.1.3.2](#).

For bows, use an arrow intended for the bow and stretch the bowstring until one of the following occurs, before firing the arrow:

- a) a 150 N pull force is reached;
- b) the arrow cannot be pulled back further due to its length;
- c) a 70 cm pull-back distance is reached.

5.15.1.3.2 Determination of kinetic energy

Determine the maximum kinetic energy E_k of the projectile in free flight using [Formula \(3\)](#):

$$E_k = mv^2/2 \quad (3)$$

where

m is the mass of the projectile, in kilograms;

v is the maximum velocity of the projectile, in metres per second measured according to 5.15.1.3.1;

E_k is the maximum kinetic energy, in joules.

5.15.1.3.3 Determination of kinetic energy per area of contact

Determine the maximum kinetic energy per area of contact, $E_{k, \text{area}}$, using Formula (4):

$$E_{k, \text{area}} = mv^2 / (2A) \quad (4)$$

where

m is the mass of the projectile, in kilograms;

v is the maximum velocity of the projectile, in metres per second measured according to 5.15.1.3.1;

A is the contact area of the projectile, in square metres;

E_k is the maximum kinetic energy per area of contact, in joules per square metre.

For the measurement of contact area of a resilient-tipped projectile, one acceptable method is to apply a suitable staining or inking agent (e.g. Prussian blue) to the projectile, firing it at a suitable perpendicular hard, flat surface from a distance of (300 ± 5) mm and measuring the area of residual impression. An alternative method suitable for some projectiles is the use of an impressionable contact surface (e.g. covered with a carbon paper system) rather than inking the projectile. Determine the contact area as follows:

- a) Apply a suitable staining or inking agent to the contact surface of the projectile. Place a sheet of clean white paper on a hard, flat surface. Support this surface so that it will not move when impacted. Alternatively, place a sheet of carbon paper against a sheet of white paper and hold these sheets against a hard, flat surface so that the projectile impact image will be transferred from the carbon paper onto the white paper.
- b) Load the projectile to be tested into the discharge mechanism. Orientate the loaded discharge mechanism perpendicular to the hard, flat surface, with the contact surface of the projectile from a distance of (300 ± 5) mm from the hard, flat surface.

If the discharge mechanism has more than one speed setting, set to the maximum speed.

For bows, use an arrow intended for the bow and stretch the bowstring until one of the following occurs:

- 1) a 150 N pull force is reached;
 - 2) the arrow cannot be pulled back further due to its length;
 - 3) a 70 cm pull-back distance is reached.
- c) Discharge the projectile onto the paper.
 - d) Measure the image area on the white paper. The contact area is the average of a minimum of 10 measurements. When calculating the contact area, exclude any areas of white, i.e. areas without ink transfer.
 - e) Calculate the maximum kinetic energy per area of contact in J/m^2 .

5.15.2 Wall impact test for projectiles

If the discharge mechanism has multiple speed settings, set it to discharge at maximum speed.

Position the toy such that the projectile will discharge in a direction perpendicular to a vertically orientated concrete block or similar hard, flat impact surface. The distance between the leading edge of the projectile and the impact surface shall be such that the projectile enters free flight (disengaged from the discharge mechanism) as it strikes the impact surface.

For bows, use an arrow intended for the bow and stretch the bowstring until one of the following occurs:

- a) a 150 N pull force is reached;
- b) the arrow cannot be pulled back further due to its length;
- c) a 70 cm pull-back distance is reached.

Discharge the projectile onto the impact surface.

If possible, use a projectile that has not been previously subjected to any test.

Carry out the test three times. Examine the projectile for any hazardous sharp edges or hazardous sharp points.

5.16 Freewheeling facility and brake performance test

5.16.1 Determination of freewheeling facility

See [4.21](#) and [4.22.4](#).

To determine freewheeling facility, load the toy as in [5.12.2](#) with the appropriate mass as given in [Table 3](#) and place it on a horizontal plane.

Pull the toy at a constant speed of $(2 \pm 0,2)$ m/s on a surface covered with aluminium oxide paper P60 and determine the maximum pull force, F .

The toy is not freewheeling if [using [Formula \(5\)](#) or [Formula \(6\)](#)]:

$$F_1 \geq (m + 25) \times 1,7 \quad (5)$$

or

$$F_2 \geq (m + 50) \times 1,7 \quad (6)$$

where

F_1 is the maximum pull force, in newtons, for a toy intended for children under 36 months;

F_2 is the maximum pull force, in newtons, for a toy intended for children 36 months and over;

m is the mass of the toy, in kilograms.

NOTE If a toy accelerates down a slope of 10° when loaded with a mass of 50 kg, it can be expected to be freewheeling.

5.16.2 Brake performance for mechanically or electrically powered ride-on toys other than toy bicycles

See [4.21](#).

Load the toy as in 5.12.2 with the appropriate mass as given in Table 3 and place it on a plane inclined at $(10^{+0,5}_0)^{\circ}$ covered with a surface of aluminium oxide paper P60, with its longitudinal axis parallel to the incline.

Apply a force of (50 ± 2) N in the direction in which the brake handle is normally operated.

If the brake is operated by a handle similar to that of a bicycle, apply a force of (30 ± 2) N at right angles to the axis of the handle, at the middle of the handle.

If the brake is operated by a pedal, apply a force of (50 ± 2) N to the pedal in the operating direction producing the effect of the brake.

If the vehicle has several brakes, test each brake separately.

Determine whether the toy moves more than 5 cm upon application of the braking force.

5.16.3 Brake performance for toy bicycles

See 4.22.4.

Load the toy bicycle with a mass of $(50 \pm 0,5)$ kg whose centre of gravity is 150 mm above the surface on which a child sits. Place the toy bicycle on a plane inclined at $(10^{+0,5}_0)^{\circ}$ with its longitudinal axis parallel to the incline.

If the brake is operated by a handle similar to that of a bicycle, apply a force of (30 ± 2) N at right angles to the axis of the handle, at the middle of the handle.

If the brake is operated by a pedal, apply a force of (50 ± 2) N in the operating direction producing the effect of the brake.

Determine whether the toy moves more than 5 cm upon application of the braking force.

5.17 Determination of speed of electrically driven ride-on toys

See 4.23.

Load the toy in its normal sitting or standing position with a mass of $(25 \pm 0,2)$ kg.

Operate the toy on a horizontal surface and determine whether the maximum velocity exceeds those specified for the appropriate age range in 4.23.

5.18 Determination of temperature increases

See 4.24.

In an ambient draft-free atmosphere with a temperature of (21 ± 5) °C, operate the toy according to the instructions for use at the maximum input until equilibrium temperature is reached.

Measure the temperature of the accessible parts and calculate the temperature increases. Observe whether the toy ignites.

5.19 Leakage of liquid-filled toys

See 4.25.

Condition the liquid-filled toy at a temperature of (37 ± 1) °C for a minimum of 4 h.

Within 30 s of removing the toy from conditioning, apply a force of $(5^{+0,5}_0)$ N to the external surface of the toy through a steel needle with a diameter of $(1 \pm 0,1)$ mm and with a tip radius of $(0,5 \pm 0,05)$ mm. Apply the force gradually within a period of 5 s. Maintain the force for 5 s.

After completion, determine leakage by applying cobalt chloride paper over the area where the force was applied while elsewhere compressing with a force of $(5^{+0,5}_0)$ N using suitable means other than a needle.

Repeat the test after conditioning the toy at a temperature of (5 ± 1) °C for a minimum of 4 h. After completion, examine the toy for leakage of the contents.

If liquid other than water is used, confirm leakage using another suitable method.

Cobalt chloride paper should not be used for the 5 °C test as condensation can give false results.

5.20 Durability of mouth-actuated toys

See [4.26](#).

Connect a piston pump capable of discharging and receiving more than 300 cm³ of air in less than 3 s to the mouthpiece of the mouth-actuated toy. Arrange a relief valve so that the pump will not generate a positive or negative pressure of more than 13,8 kPa. Subject the toy to 10 alternating blowing and sucking cycles, each within 5 s and of at least (295 ± 10) cm³ of air including the volume which may be discharged through the relief valve. If the air outlet is accessible, ensure that this procedure is also applied to the outlet.

Determine whether any released component fits entirely in the cylinder when tested in accordance with [5.2](#).

5.21 Expanding materials

See [4.3.2](#).

Test the toy or component in accordance with 1) to 4) from the following list and determine whether it expands according to 5) and 6). Toys or components that expand more than 50 % are tested according to 7) and 8).

- 1) Condition the toy or component at (20 ± 5) °C and at a relative humidity of 40 % to 65 % for a minimum of 7 h prior to the test.
- 2) Measure and record all dimensions of the toy or component, using calipers or another suitable measurement tool, to the nearest 0,1 mm; these dimensions represent the “as-received” state.
- 3) Submerge the toy or component under test in a bath of deionized water maintained at (37 ± 2) °C for the duration of immersion, without agitation. For toys or components that exhibit positive buoyancy, place weight(s) (with mass just sufficient to achieve complete submersion) atop the toys or components. Care should be taken to minimize contact of the test toy or component with the sides or bottom of the container.
- 4) Maintain submersion for 72 h, measuring the sample dimensions as in 2) at 6 h, 24 h, 48 h and 72 h durations.
- 5) If the toy or component exhibits expansion greater than 50 % in any dimension from its as-received state [see 2)] at any time interval, the toy or component shall be tested according to 7) and 8).
- 6) If the toy or component exhibits expansion less than or equal to 50 % in all dimensions from its as-received state [see 2)] at all measurement time intervals, the toy or component shall be considered to meet the requirements of [4.3.2](#) and no further testing according to [5.21](#) is required.

- 7) If the greatest expansion was observed at 72 h of immersion, proceed to immediately test the toy or component according to 8). If the greatest expansion was observed at another time interval, condition a new sample according to 1) and submerge this new sample according to 3) for the time interval at which the greatest expansion was observed, then immediately test the toy or component according to 8) at the conclusion of that interval.
- 8) While the toy or component is submerged in deionized water at $(37 \pm 2) ^\circ\text{C}$, attempt to push the object through the gauge pictured in [Figure 39](#) (starting from the radiused side) with a force perpendicular to the flat surface of the gauge of up to 20 N using a 10 mm diameter rod with a hemispherical end, with the rod roughly centred within the hole in the gauge. Position the toy or component in the orientation least likely to pass through the gauge opening. The gauge shall be constructed of polytetrafluoroethylene (PTFE).

Dimensions in millimetres

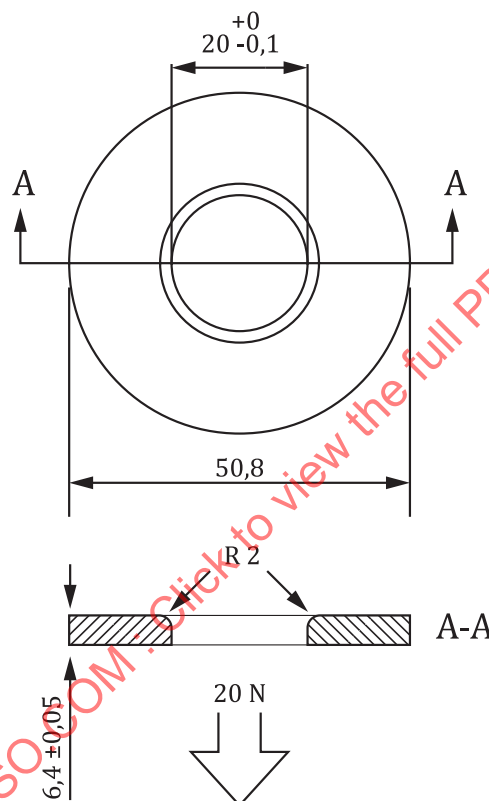


Figure 39 — Expanding toy test template

5.22 Folding or sliding mechanisms

5.22.1 Loads

Load the toy with a mass of $(50 \pm 0,5)$ kg.

For toys intended for children under 36 months, load the toy with a mass of $(25 \pm 0,2)$ kg.

5.22.2 Toy pushchairs and perambulators

See [4.12.1](#). Precondition the toy by erecting and folding it 10 times.

- a) For toy pushchairs and perambulators covered by [4.12.1](#) a), carry out the following.

Erect the toy on a horizontal surface with the locking devices engaged and load the toy with the appropriate mass specified in [5.22.1](#), ensuring that the load is borne by the frame. Where necessary,

use a suitable support to ensure that the seat material is not damaged. Apply the load to the frame in the least favourable position with respect to the folding parts. Apply the load evenly over 5 s and maintain for 5 min.

Determine whether it is possible to partially erect the toy without engaging one of the locking devices. If so, also carry out the loading in the partially erect position.

If the seat of the body is detachable from the chassis, this test shall also be carried out on the chassis only, using suitable support for the test mass.

Determine whether the toy collapses and whether the locking devices are still operable and engaged.

- b) For toy pushchairs and perambulators covered by 4.12.1 b), carry out the following

Erect the toy on a horizontal surface with the locking devices engaged and load the toy with the appropriate mass specified in 5.22.1, ensuring that the load is borne by the frame. Where necessary, use a suitable support to ensure that the seat material is not damaged. Apply the load to the frame in the most onerous position with respect to the folding parts. Apply the load evenly over 5 s and maintain for 5 min.

Determine whether it is possible to partially erect the toy without engaging the locking devices. If so, also carry out the loading in the partially erect position.

Determine whether the toy collapses and whether the locking devices or safety stop are still operable and engaged.

5.22.3 Other toys with folding mechanisms

See 4.12.2.

- a) Erect the toy. Lift the toy and observe whether the locking device disengages when the toy is tilted in any $(30 \pm 1)^\circ$ angle from the horizontal.
- b) Erect the toy and position it on a surface inclined at $(10^{+0,5}_0)^\circ$ in the most onerous position with respect to the folding parts. Engage any locking device. Load the toy for 5 min with the appropriate mass specified in 5.22.1. Apply the load wherever it is possible for a child to sit and in the least favourable position with respect to the folding parts. Ensure that the load is borne by the frame. Where necessary, use a suitable support to ensure that the seat material is not damaged.

Determine whether the toy collapses or the locking device disengages.

5.23 Washable toys

See 4.1.

Determine the mass of each washable toy prior to the beginning of the test.

Subject the toy to six washing-machine and tumble-dryer cycles, unless a different method is specified by the toy manufacturer by means of a permanent label.

Any commercially available washer, dryer or laundry detergent intended for use in the home may be used for this test. Consideration should be given to the specific types of washing machines (top- or front- loading) used in the country in which the toy is meant to be sold.

Wash the toys plus a dummy load of clothes sufficient to bring the total dry mass to a minimum 1,8 kg in an automatic washing machine, using the “warm” water setting and approximately 12 min wash cycle at the “normal” setting.

Dry the toys and dummy load in accordance with the manufacturer's instructions.

NOTE For equivalent settings on other types of machines, "warm" is approximately 40 °C and a "normal" load is for an average size load according to the machine being used.

The toy shall be deemed to be dry when the final mass does not exceed the original dry mass by more than 10 %.

Determine whether the toy still conforms to the relevant requirements of [Clause 4](#).

5.24 Reasonably foreseeable abuse tests

5.24.1 General

See [4.2](#).

The tests in [5.24](#) are meant to simulate situations in which possible damage can occur to a toy as a result of reasonably foreseeable abuse.

Unless otherwise stated, these tests are only applicable for toys intended for children under 96 months.

After undergoing each of the appropriate tests, the toy shall still continue to conform to the relevant requirements of [Clause 4](#).

NOTE The tests specified in [4.31.3](#) are carried out in the order specified in [4.31.3](#) on a toy, or part of a toy, that has not been previously tested according to [5.24](#).

5.24.2 Drop test

Except for toys covered in [5.24.3](#), toys falling below the mass limits indicated in [Table 5](#) shall be dropped onto a specified impact surface. The number of times the toy shall be dropped and the height from which it is dropped shall also be determined from [Table 5](#). The toy shall be dropped in random orientation.

The impact surface shall consist of vinyl composition tiles of approximately 3 mm nominal thickness laid over concrete of at least 64 mm thickness. The impact surface shall be at least 0,3 m².

For battery-operated toys, the recommended batteries shall be in place during the drop test. If no specific type of battery is recommended, the heaviest battery which is generally available shall be used.

Table 5 — Drop test

Age group	Mass criterion kg	Number of drops	Drop height cm
Under 18 months	< 1,4	10	138 ± 5
18 months and over but under 96 months	< 4,5	4	93 ± 5

After each drop, the toy shall be allowed to come to rest and shall be examined and evaluated before continuing.

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

5.24.3 Tip-over test for large and bulky toys (see [E.3](#))

Large and bulky toys shall not be tested according to [5.24.2](#), but in accordance with the following procedure:

Place the toy on a horizontal surface, as prescribed in [5.24.2](#). Attempt to tip it over by pushing it slowly past its centre of balance three times, one of which shall be in its most onerous position. Gradually apply a force, which is not to exceed 120 N, in a horizontal direction and 1 500 mm above the horizontal surface or at the top edge of the toy for toys less than 1 500 mm in height. A non-resilient step with a

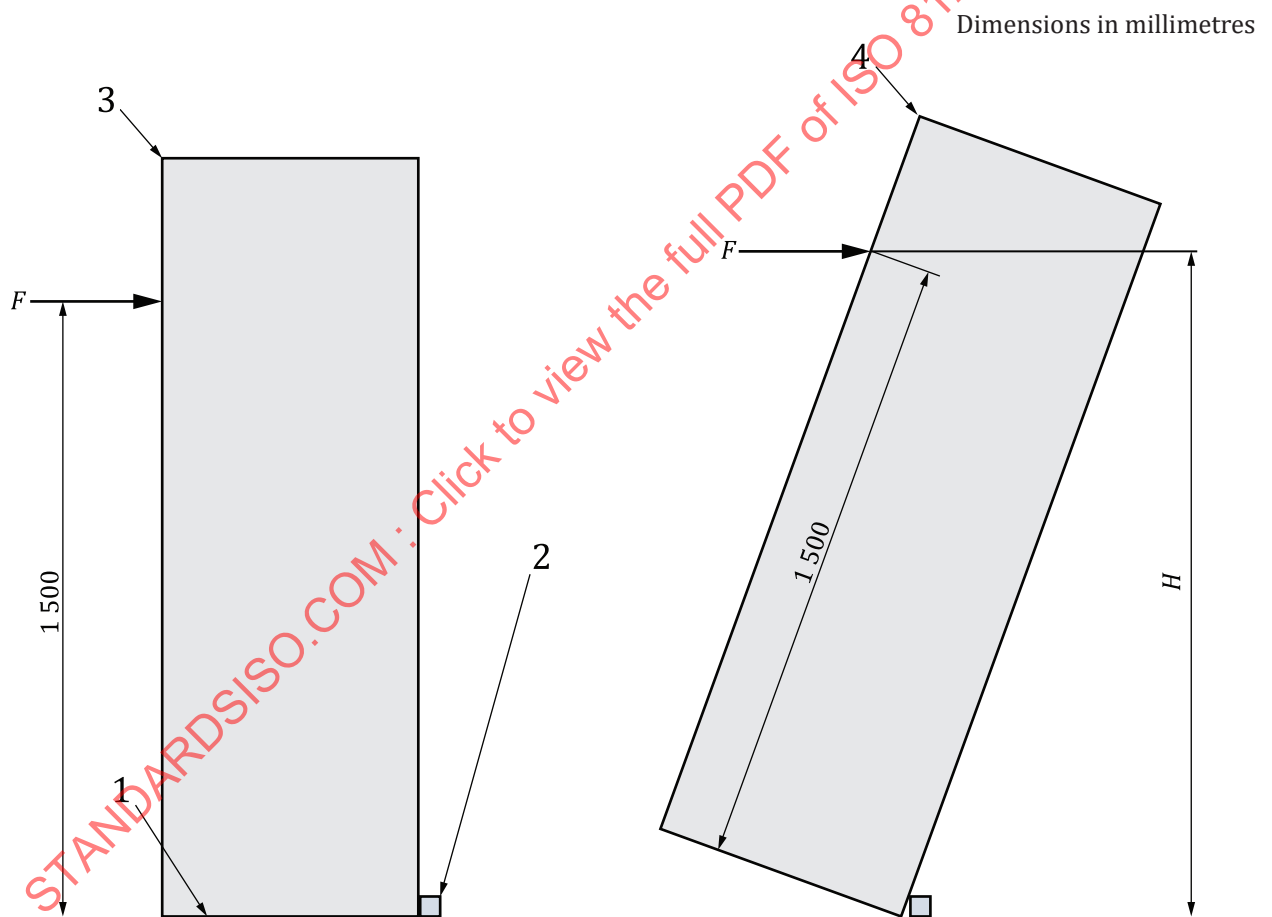
height of (25 ± 2) mm shall be positioned such that it prevents sliding or rolling of the toy during the test.

The original point of application relative to the toy shall be maintained and the force shall remain horizontal throughout the test. The vertical position of the point of application relative to the horizontal surface is permitted to increase during the test.

If a force greater than 120 N is required to bring the toy beyond its centre of balance, or if the vertical position of the point of application, relative to the horizontal surface, exceeds 1 800 mm, the tip-over test shall be stopped. The test shall also be stopped if the toy slides or rolls over the non-resilient step without tipping over (see [Figure 40](#)).

After each tip-over, the toy shall be allowed to come to rest and shall be examined and evaluated before continuing to determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

Toys supplied with anchors and intended to be permanently fixed (e.g. in concrete) when in use, according to the manufacturer's instructions, shall not be subjected to the tip-over test.



Key

- 1 test surface
- 2 25 mm step
- 3 toy at rest
- 4 toy during tipping
- F force direction and application point
- H height not to exceed 1 800 mm

Figure 40 — Tip-over test for large and bulky toys

5.24.4 Dynamic strength test for wheeled ride-on toys other than toy scooters

Load the toy for 5 min in the most onerous position with the appropriate mass in accordance with [Table 3](#) on its standing or sitting surface.

Secure the load to the toy in a position corresponding to the normal use of the toy.

Drive the toy three times at a speed of $(2 \pm 0,2)$ m/s into a non-resilient step with a height of 50 mm.

If the toy is intended to bear the mass of more than one child at a time, test each sitting or standing area simultaneously.

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

5.24.5 Torque test

Any toy with a projection, part or assembly that a child can grasp with at least the thumb and forefinger or the teeth shall be subjected to this test.

Position the toy rigidly in any reasonable test position. Apply a clamp capable of holding the test component firmly and transmitting a torsion force to the test object or component.

Using a torque gauge or torque wrench, apply a torque of $(0,45 \pm 0,02)$ Nm in a clockwise direction until either:

- a) a rotation of 180° from the original position has been attained; or
- b) the required torque is reached.

Apply the maximum rotation or required torque evenly over a 5 s period and maintain for an additional 10 s. The torque shall then be removed and the test component permitted to return to a relaxed condition.

Repeat the procedure in an anticlockwise direction.

Projections, parts or assemblies that are rigidly mounted on an accessible rod or shaft designed to rotate along with the projections, parts or assemblies shall be tested with the rod or shaft clamped to prevent rotation.

If a component which is attached by a screw thread which has been assembled by the manufacturer, or which has been assembled according to the manufacturer's instructions, becomes loosened during the application of the required torque, continue to apply the torque until either the required torque is exceeded or the part disassembles. If it becomes obvious that the part under test will continue to rotate at less than the required torque limit and will not disassemble, terminate the test.

If the part disassembles and exposes an accessible component which can be grasped as noted previously, repeat the torque test on the component.

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

5.24.6 Tension test

5.24.6.1 General procedure

Any toy with a projection, part or assembly that a child can grasp with at least the thumb and forefinger or the teeth shall be subjected to this test. The tension test shall be performed on the same components of the toy subjected to the test in [5.24.5](#).

If the component to be tested cannot be gripped between the thumb and forefinger, establish whether it is grippable by inserting the feeler gauge (see [Figure 43](#)) between the component and the underlying

layer or body of the toy at an angle of between 0° and 10° from the toy surface using a force of (10 ± 1) N. If the gauge can be inserted more than 2 mm, the component shall be considered as grippable.

Fasten the toy and apply a clamp capable of applying the tension load to the test component in a manner that will not affect the structural integrity of the attachment between the component and the toy. The loading device shall be a self-indicating gauge or other appropriate means having an accuracy of 2 N.

NOTE 1 For certain toy components, such as foam mats, it can be necessary to use a clamp with large clamping areas such as that used for soft toys, a clamp utilizing rubber pads or some other means to minimize the likelihood of a clamp-induced failure.

Apply a force of (70 ± 2) N parallel to the major axis of the test component evenly over a 5 s period and maintain for 10 s.

Release the force, replace or reposition the clamp, or reposition the toy such that the tension load can be applied perpendicular to the major axis of the test component.

Apply a force of (70 ± 2) N perpendicular to the major axis of the test component evenly over a period of approximately 5 s and maintain for 10 s, keeping the force vector substantially perpendicular to the original orientation of the test component.

If the test component bends during this process, adjust the position of the gauge or toy constantly as the force is applied in order to keep the force vector substantially perpendicular to the original orientation of the test component (see [Figure 41](#)).

NOTE 2 If it is difficult to maintain the correct direction of force, a more consistent result can be obtained by positioning the toy such that the major axis of the test component is horizontal and the force applied vertically with a mass rather than manually by the operator (see [Figure 42](#)).

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

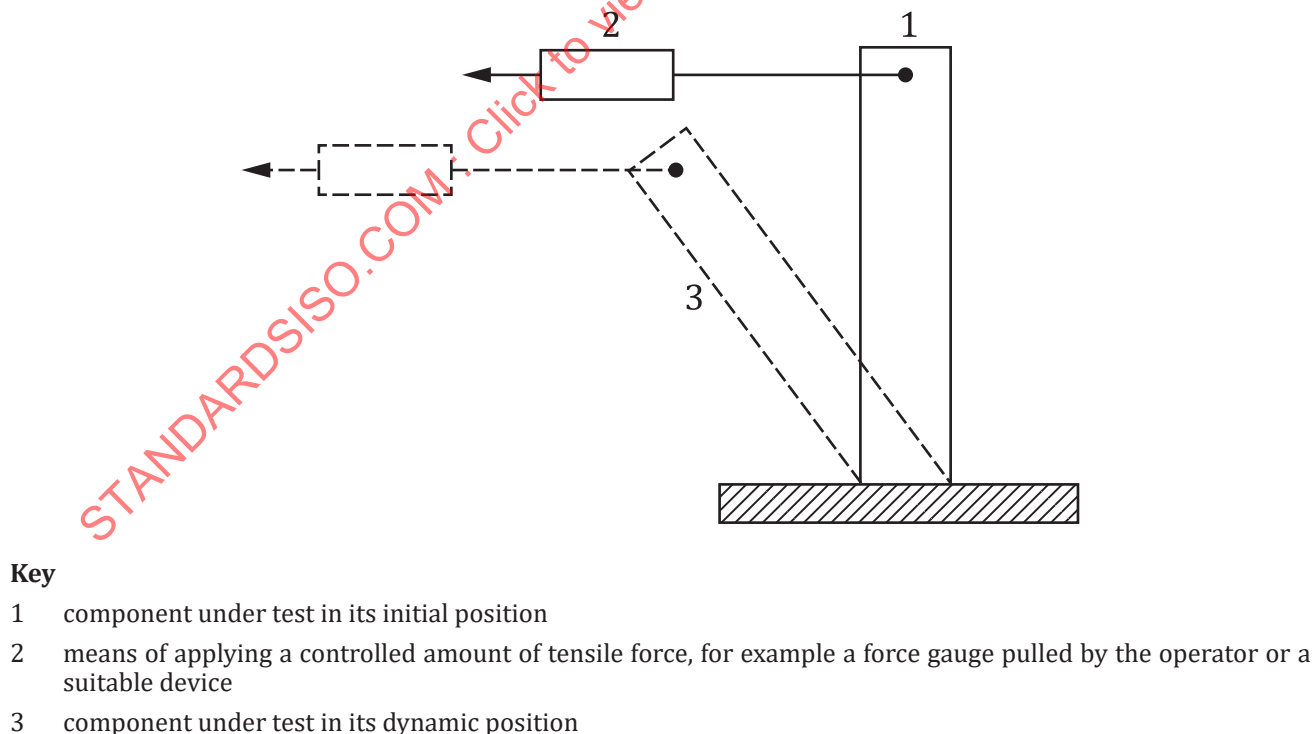
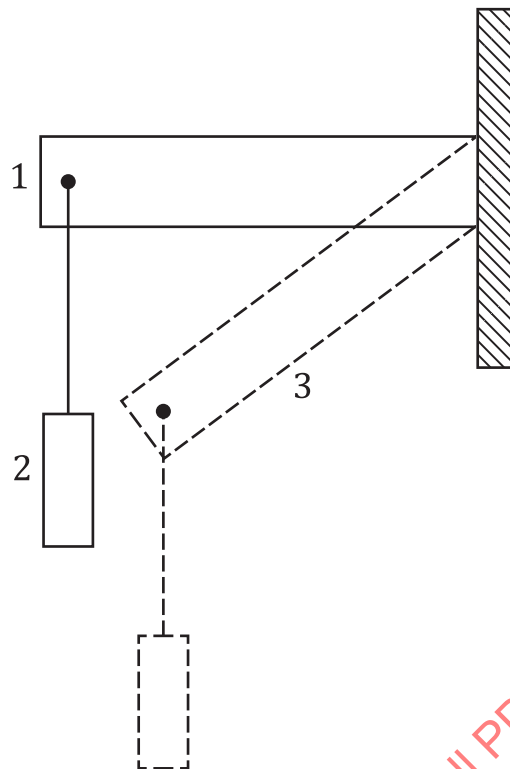


Figure 41 — Direction of force during perpendicular tension test

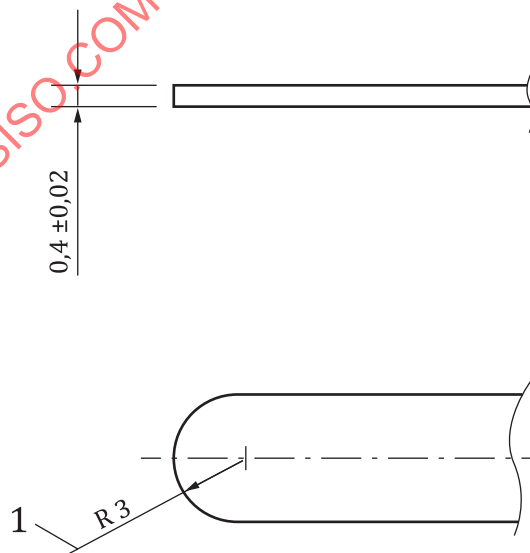


Key

- 1 component under test in its initial position
- 2 means of applying a controlled amount of tensile force, for example a suspended mass
- 3 component under test in its dynamic position

Figure 42 — Perpendicular tension test using a mass

Dimensions in millimetres



Key

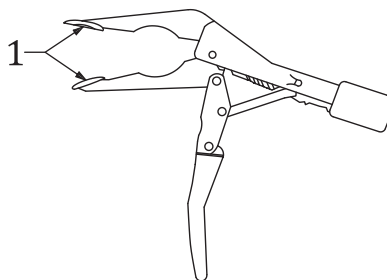
- 1 insertion edge radius

Figure 43 — Feeler gauge

5.24.6.2 Tension test for seams in soft-filled (stuffed) toys, beanbag-type toys and other similar filled toys

For toys constructed of pliable material having seams (including, but not limited to, seams which are stitched, glued, heat-sealed or ultrasonically welded), the seams shall be subjected to a separate tension test.

The clamps used to grip the material on either side of the seam to be tested shall have jaws with attached discs of diameter 19 mm (see [Figure 44](#)).



Key

1 flat discs

Figure 44 — Seam clamp

Attach the clamps to the cover material of a completely assembled toy in such a manner that the outside diameter of the 19 mm discs at a point nearest to the seams will be approximately 13 mm from the edge of the seam stitching thread, but no closer. If threads are not used to create the seam, attach the clamps in such a manner that the edges of the 19 mm discs are approximately 13 mm from the edge of the seam, but no closer.

Apply a force of (70 ± 2) N evenly over a 5 s period and maintain for 10 s.

If the material adjacent to the seam cannot be grasped between the thumb and the forefinger of the test personnel sufficient for full clamping by the 19 mm diameter washer discs, the seam test shall not be performed. If this is the case, instead of the seam test, an arm, leg or other appendage of the toy shall be tested according to [5.24.5](#) and [5.24.6.1](#).

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

5.24.6.3 Tension test for pompoms

See [4.5.3](#).

Pompoms shall be tested according to [5.24.5](#) and the tension test as described in this subclause.

The clamps used to grip the material to be tested shall have jaws with attached 19 mm diameter discs (see [Figure 44](#)). Attach one clamp to the pompom and use a second clamp to grip the base material.

Apply a force of (70 ± 2) N evenly over a 5 s period and maintain for 10 s.

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

5.24.6.4 Tension test for protective components

See [4.8](#), [4.9](#) and [4.18](#).

Subject the part to be tested to a tensile force of (70 ± 2) N, applied evenly over a 5 s period, and maintain for 10 s. Apply the force in the most onerous direction in an attempt to remove the component.

5.24.6.5 Tension test for a projectile with a suction cup

See [4.18.2](#).

For projectiles with a suction cup as a contact surface, attach a clamp on the shaft such that the edge of the clamp is at a point (57^{+1}_0) mm from the contact surface of the projectile. Determine this distance in accordance with the procedure contained in [5.37](#). If, due to the length of the projectile, it is not possible to achieve 57 mm between the clamp and the contact surface of the projectile, place the clamp such that its distance from the contact surface of the projectile is maximized. Place a second clamp around the suction cup such that it is held securely against a flat surface as shown in [Figure 45](#).

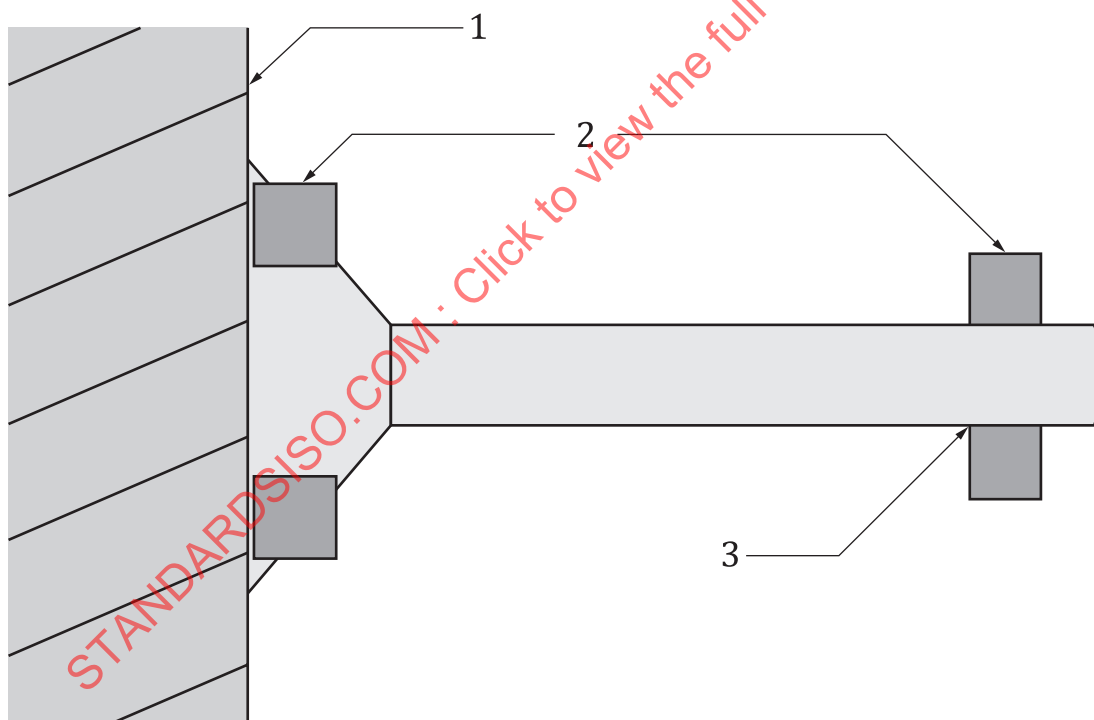
If clamping causes any damage to the projectile, it is allowable to use alternative methods to secure the projectile.

If glue is used to fasten the suction cup to a flat surface, care shall then be taken that the solvents in the glue do not influence the material properties of the suction cup or its fastening to the shaft.

Subject the projectile to a longitudinal force of (70 ± 2) N evenly over a 5 s period and maintain for 10 s.

If the suction cup has detached, determine whether the suction cup passes through test template C in [5.4](#).

If the shaft has broken, determine whether or not the remaining portion of the shaft and suction cup has a total length of 57 mm or more.



Key

- 1 flat surface
- 2 clamps
- 3 57 mm from tip

Figure 45 — Example of attachment of clamps when testing suction cups on projectiles

5.24.6.6 Perpendicular tension test for rotor blades

Gradually apply a $(6 \pm 0,5)$ N force at the outer end of the rotor blade, perpendicular to the major axis of the component, over a period of approximately 5 s as shown in [Figure 46](#). Maintain the force for 10 s.

Repeat the test in the opposite direction.

Determine whether the rotor blade breaks or whether it is permanently deformed.

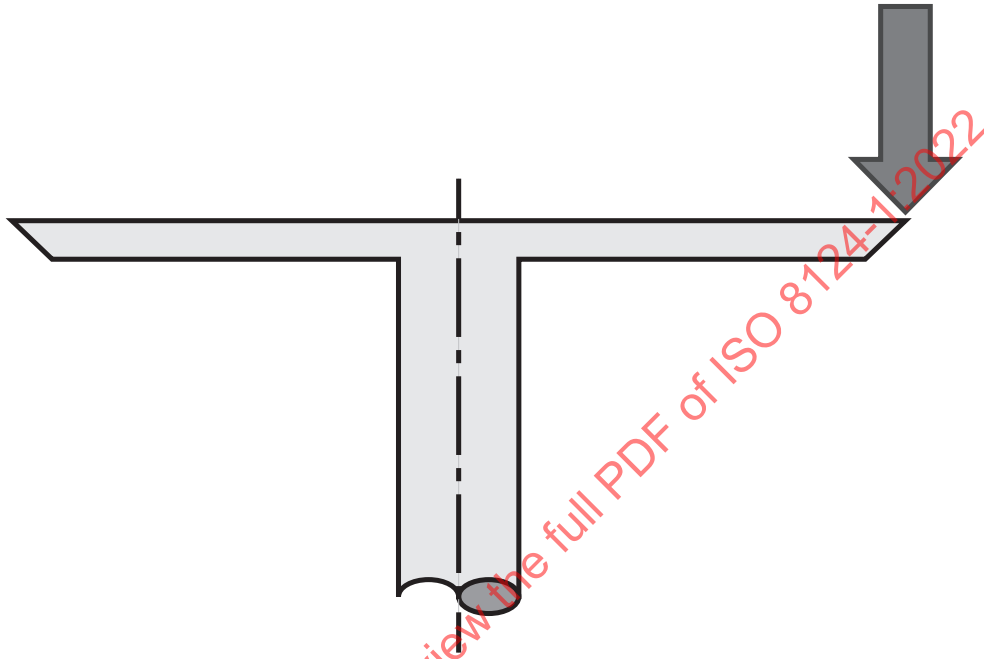


Figure 46 — Force applied relative to the axis of the rotor blades

5.24.6.7 Tension test for rotor blades

Gradually apply a tensile force of (90 ± 2) N on the extremity of each rotor blade, in a parallel direction to the major axis of the rotor blade surface, so as to simulate the centrifugal force which is applied on the rotor blade during flight, over a period of approximately 5 s as shown in [Figure 47](#). Maintain the force for 10 s.

Determine whether the blade has become detached.

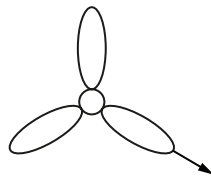


Figure 47 — Force applied in a parallel direction to the rotor blade

5.24.7 Compression test

Any area on the surface of a toy that is accessible to a child and non-accessible to flat surface contact when tested according to [5.24.2](#) shall be subjected to this test.

Determine the compression force from [Table 6](#) according to the age group for which the toy is intended.

Table 6 — Compression force

Age category	Compression force N
Under 36 months	114 ± 2,0
36 months and over but under 96 months	136 ± 2,0

The loading device shall be a rigid metal disc with a diameter of $(30 \pm 1,5)$ mm and a thickness of 10 mm minimum. The perimeter of the disc shall be rounded to a radius of 0,8 mm to eliminate irregular edges.

Attach the disc to an appropriate compression scale having an accuracy of ± 2 N.

Place the toy on a hard, flat surface in any convenient position. Position the disc so that the flat contact surface is parallel to the surface under test.

Apply the required force through the disc evenly over a 5 s period and maintain for 10 s.

Determine whether the toy continues to conform to the relevant requirements of [Clause 4](#).

5.24.8 Flexure test

5.24.8.1 General

See [4.9](#).

If the metallic wire has a covering, apply the test to the metallic wire in the condition in which it appears in the toy (i.e. do not remove the metallic wire from the toy).

Grip the metallic wire firmly between two metal cylinders, radiused pliers or equivalent metal pieces with a diameter of (10 ± 1) mm. At a point located 50 mm from the point of gripping or, if less than 50 mm protrudes, at the end of the metallic wire, apply a force of (70 ± 2) N perpendicular to the metallic wire. If the metallic wire bends by more than 60° continue the test as follows.

Bend the metallic wire from the upright position to one side through 60° , bend in the opposite direction through 120° and finally return to the upright position. This is one cycle.

5.24.8.2 Wires and other metallic components intended to be bent

Perform 30 times the cycle described in [5.24.8.1](#) at a rate of one cycle per 2 s with a 60 s rest period after each 10 cycles. To ensure that the metallic wire or other metallic component bends at the point emerging from the cylinders, it shall be kept taut during the test.

Determine whether the toy continues to conform to the relevant requirements of [4.9](#) (metal wires and rods), removing any covering material, if applicable, to aid the examination.

5.24.8.3 Wires likely to be bent

Perform the cycle described in [5.24.8.1](#) once.

Determine whether the toy continues to conform to the relevant requirements of [4.9](#) (metal wires and rods), removing any covering material, if applicable, to aid the examination.

5.25 Determination of sound pressure levels

5.25.1 General test conditions

5.25.1.1 General

See [4.29](#).

This subclause contains general test conditions. The specific methods for particular toy categories are given in [5.25.2](#). If there are differences between the methods specified in this subclause and those in [5.25.2](#), the direction given in [5.25.2](#) shall be followed.

Unless contradicted by this procedure, the measurement procedures in either ISO 11201 or ISO 11202 shall be used.

5.25.1.2 Test environment

An environment that meets the qualification requirements of either ISO 11201 or ISO 11202 shall be used.

If using ISO 11201, the value of the correction factor K_{2A} shall be $\leq 2,0$ dB. If using ISO 11202, the value of K_{3A} shall be $\leq 4,0$ dB. When ISO 11202:2010 is used, the local environmental correction K_3 shall be calculated using the actual distance between source and microphone, d , and not the minimum distance of 1 m as stated in Annex A of that document.

Caution should be used when selecting a testing environment. Typical furnished rooms might not meet the requirements of these standards and could cause inaccurate results.

Sound reflections caused by test rigs used for the mounting of toys and/or the operator of the toy shall be minimized.

No correction needs to be applied to measurements taken where the background noise is 15 dB or more below the sound being measured. Measurements taken where the background noise is between 15 dB and 6 dB below the sound being measured shall be corrected by the method contained in ISO 11201 or equivalent. Environments with a higher background noise shall not be used.

5.25.1.3 Instrumentation

The instrumentation system, including the microphone and cable, shall meet the requirements of a class 1 instrument as specified in IEC 61672-1. When measuring high peak sound pressure levels, for example, from toys using percussion caps, the microphone and the entire instrumentation system shall have the capability of handling linear peak levels exceeding the C-weighted peak levels by at least 10 dB.

5.25.1.4 Microphone positions

Microphone positions are prescribed in [5.25.2](#). They shall all be evaluated with respect to finding the position with the highest sound pressure level, but complete measurements are only required for the position yielding the highest level. In practice, this often means that one microphone is moved from position to position. Whenever it is practicable, it is always an alternative to rotate the test object instead. Attention shall be paid to maintaining the correct measuring distance.

The sound pressure level shall be measured with the microphone reference direction oriented towards the dominant sound source. Generally, for free-field response microphones (calibrated for “normal incidence” to the microphone diaphragm), the axis of the microphone-preamplifier body should be oriented towards the dominant sound source.

5.25.1.5 Toy operation

Carry out the measurements on a new toy not already subjected to testing. Test battery toys using new primary batteries or fully charged secondary batteries. Test transformer toys with the transformer supplied with the toy. If the toy is supplied without a transformer, it shall be tested with the transformer recommended in the instructions. Normal operating mode(s) shall be reached before the tests are performed.

Operate the toy under test in that mode of its intended or foreseeable use that produces the highest sound pressure level to the microphone position, where the maximum sound level is observed. For toys that have a volume control, the volume shall be set at the maximum level. If the toy has features that allow it to fit into multiple categories in 5.25.2, it shall be tested per all applicable methods. For example, a pull or push toy that also has a button, intended to be pushed by the child, that activates an electronic sound shall be tested to both the clauses for pull or push toys and floor toys.

If the toy under test has a clearly defined operating cycle, measure the A-weighted equivalent sound pressure level, L_{pAeq} , and the C-weighted peak sound pressure level, L_{pCpeak} , during at least one whole cycle. The completion of a whole cycle is intended to mean that all actions have been taken such that the toy is immediately ready to undergo another cycle. This may include acts such as winding, pumping or resetting. Cycles shall be completed as quickly as practical. If the operating cycle lasts less than 15 s it shall be repeated as quickly as possible and the measurement time shall be adapted to an integer number of operating cycles with a total duration of at least 15 s. If a toy has more than one clearly defined cycle, the cycle yielding the highest sound pressure level shall be used.

If the toy under test does not have a clearly defined operating cycle, measure the A-weighted equivalent sound pressure level, L_{pAeq} and the C-weighted peak sound pressure level, L_{pCpeak} , for at least 15 s in the operational mode during which the sound pressure level is highest. Test pull or push toys, and floor and tabletop toys that move along the table or floor, where the sound is caused as a result of the movement imparted on the toy by the child using the method described in 5.25.2.5. Measure the maximum A-weighted sound pressure level, L_{AFmax} , as well as the C-weighted peak sound pressure level, L_{pCpeak} , as the toy passes the microphone.

Toys that do not clearly fit into any of the categories listed in 5.25.2 shall be tested in the most appropriate way using the principles described in this subclause and those in 5.25.2.

5.25.2 Specific test methods

5.25.2.1 Close-to-the-ear toys

Mount close-to-the-ear toys in a test rig at least 100 cm above the reflecting plane or have them operated by an adult operator with the arm outstretched.

A-weighted equivalent sound pressure level, L_{pAeq} , measurements are to be made with the earpiece, if any, of the toy facing the microphone. The microphone shall be 50 ± 1 cm from the earpiece. For toys without earpieces, locate the microphone 50 ± 1 cm from the surface of the toy where the main sound source exists, such that the sound pressure level at the microphone is maximized.

C-weighted peak sound pressure level measurements, L_{pCpeak} , are to be made with the microphone 50 ± 1 cm from the surface of the toy where the main sound source exists, such that the sound pressure level at the microphone is maximized.

Operate the toy as described in 5.25.1. Conduct three trials. The highest observation for each respective measurement type (L_{pAeq} , L_{pCpeak}) is the measurement result.

5.25.2.2 Floor, tabletop and crib toys

Place stationary floor, tabletop and crib toys on a standard test table as described in ISO 11202. A table with a wooden top with a thickness of 4 cm or larger and leg construction providing a stable test surface is considered sufficient. The tabletop should be large enough such that, with the toy resting on and fully

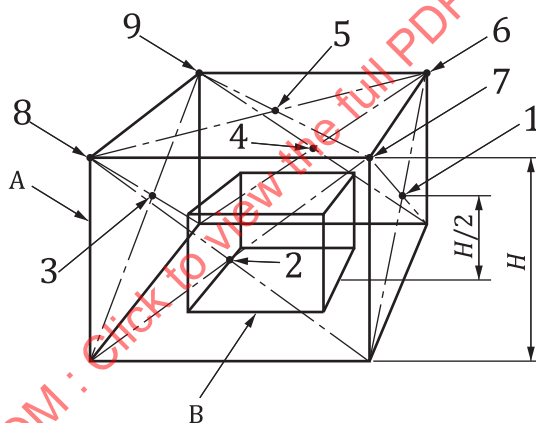
over the tabletop, the side of the measurement box from which the measurement is being made is also above the tabletop.

Mount self-propelled tabletop and floor toys on the standard test table described in a test rig so that they can be operated with full power but prevented from moving around. It is permissible to raise the toy up to 5 mm above the test table to allow for unrestricted movement (e.g. wheel rotation).

Test floor and tabletop toys that move along the table or floor, where the sound is caused as a result of the movement imparted on the toy by the child (e.g. a toy vehicle with a sound-making mechanism attached to an axle), in accordance with the methods of 5.25.2.5 instead of the methods given here. In addition to the L_{pCpeak} measurements specified in 5.25.2.5, measure the L_{AFmax} for both trials.

Microphone positions are on a hypothetical box-shaped measurement surface. Each side of the measurement surface is separated by (50 ± 1) cm from the nearest side of the reference box, with the exception of the bottoms of both the measurement and reference boxes, which lie in the same plane as the tabletop. For toys where all dimensions are ≤ 100 cm, there are five microphone locations, one at the centre of each side of the measurement surface, not including the bottom side. For toys with a dimension > 100 cm, there are four additional microphone locations at the upper corners of the measurement surface (see Figure 48).

Operate the toy as described in 5.25.1. Conduct three trials. The highest observation for each respective measurement type (L_{pAeq} , L_{pCpeak}) is the measurement result.



Key

- A measurement surface
- B reference box
- H height of the box-shaped measurement surface
- 1 to 5 basic microphone positions
- 6 to 9 additional microphone positions for large toys

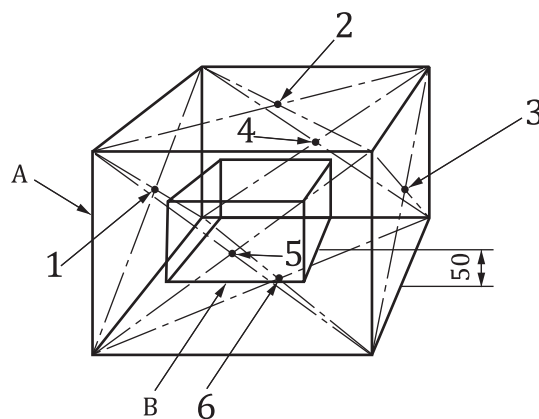
Figure 48 — Microphone positions for measurement of stationary and self-propelled floor, tabletop and crib toys

5.25.2.3 Hand-held toys other than rattles

Mount hand-held toys in a suitable test fixture at least 100 cm above the reflecting plane or have them operated by an adult operator with the arm outstretched.

Microphone positions are on a hypothetical box-shaped measurement surface (see Figure 49). The sides of the measurement surface are separated by (50 ± 1) cm from the nearest side of the reference box. There are six microphone locations, one at the centre of each side of the measurement surface.

Operate the toy as described in 5.25.1. Conduct the test three times. The highest observation for each respective measurement type (L_{pAeq} , L_{pCpeak}) is the measurement result.

**Key**

A measurement surface

B reference box

1 to 6 microphone positions

Figure 49 — Microphone positions for hand-held toys**5.25.2.4 Rattles**

Mount the microphone 100 cm above the floor.

Operate a rattle by grasping it where it is meant to be held or, if in doubt, where the longest lever between the hand and the sound emitting part of the rattle can be obtained. Make sure that the radiated sound is not affected by the grip of the hand. Stand side-face to the microphone, with the rattle 50 cm from the microphone. The forearm of the operator shall be essentially horizontal and at the same height as the microphone. Strike downwards 10 times with hard lashes in a slow tempo, with a movement of approximately 15 cm. Use the wrist and keep the forearm essentially horizontal. Endeavour to achieve the highest possible sound level. Avoid moving the rattle towards or away from the microphone.

Conduct the test three times. The highest observation for the C-weighted peak sound pressure level, L_{pCpeak} , is the measurement result.

5.25.2.5 Pull or push toys

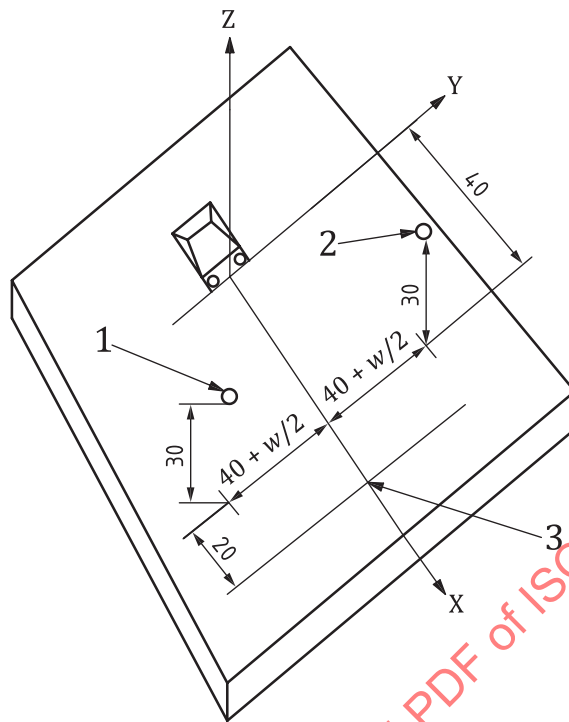
Place pull or push toys on the reflecting plane (e.g. concrete, tile or another hard surface) and fix them in a test rig which enables them to be moved with varying speed along a direct line (the x-axis in [Figure 50](#)) which passes the measuring microphones. Make sure that the friction of the reflecting plane prevents wheels from skidding.

Use two microphones 30 cm above the reflecting plane at distances (d) 40 cm plus half the width of the toy from the x-axis ($40 + w/2$) as shown in [Figure 50](#).

Operate the pull or push toy at a speed that yields the maximum sound pressure level. Do not exceed 1 m/s.

Conduct the test twice. The highest observation for each respective measurement type (L_{AFmax} , L_{pCpeak}) is the measurement result.

Dimensions in centimetres

**Key**

- 1 and 2 microphones
- 3 end of measurement
- w width of toy

Figure 50 — Microphone positions for measurements of pull or push toys

5.25.2.6 Cap firing toys

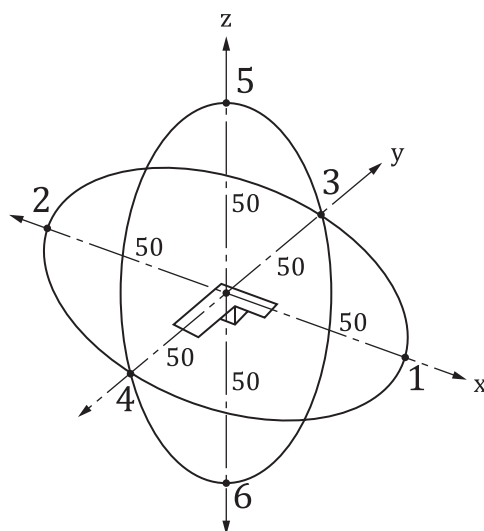
Mount cap firing toys in a test rig at least 100 cm above the reflecting plane or have them operated by an adult operator with the arm outstretched.

For cap guns, use six microphone positions around the toy. Place the main sound-emitting part of the toy at the origin of the measuring coordinate system in its normal operating orientation in such a way that the main axes of the toy coincide with the axes of the measuring coordinate system (see Figure 45). If the length of the toy exceeds 50 cm, rotate the toy in the xy-plane 45° around the z-axis without changing the microphone positions. Select two microphone positions along each axis at a distance of (50 ± 1) cm to both directions from the origin, as shown in Figure 51.

For other types of cap-firing toys, select the most appropriate mounting and microphone positions from the categories of toys described previously.

Operate a cap-firing toy using percussion caps available on the market, as recommended by the manufacturer. Fire the toy at least three times in each microphone position to find the position with the highest peak sound pressure level, L_{pCpeak} . Fire the toy six additional times in the position with the highest peak sound pressure level.

The highest observation for the C-weighted peak sound pressure level, L_{pCpeak} , of these final six shots is the measurement result.

**Key**

1 and 6 microphone positions

Figure 51 — Microphone positions for measurement of sound pressure levels of cap guns

5.26 Static strength for toy scooters

See [4.30.3](#).

Position a test mass in the centre of the platform (see [Figure 52](#)).

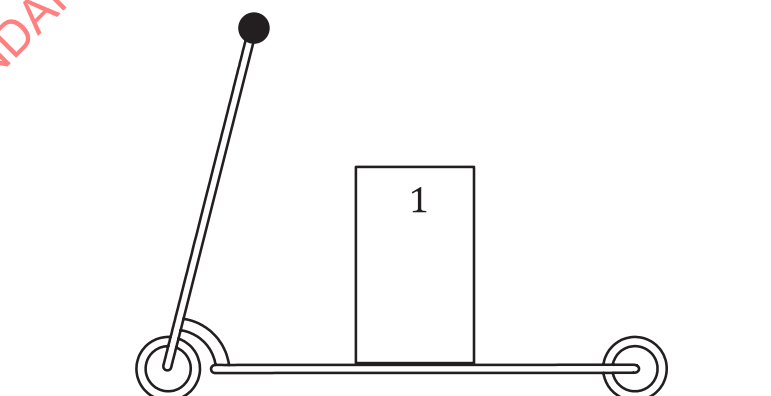
For toy scooters labelled as intended for children with a body mass of 20 kg or less, a test load of $(50 \pm 0,5)$ kg shall be used.

For other toy scooters, a test mass of (100 ± 1) kg shall be used. Maintain the load for 5 min.

The dimensions of the test mass are given in [Figure 53](#).

The approximate diameter of the base of the test mass shall be 150 mm (see [Figure 53](#)). The other dimensional requirements in [Figure 53](#) apply only for the stability test of toy scooters (see [5.12.2](#)).

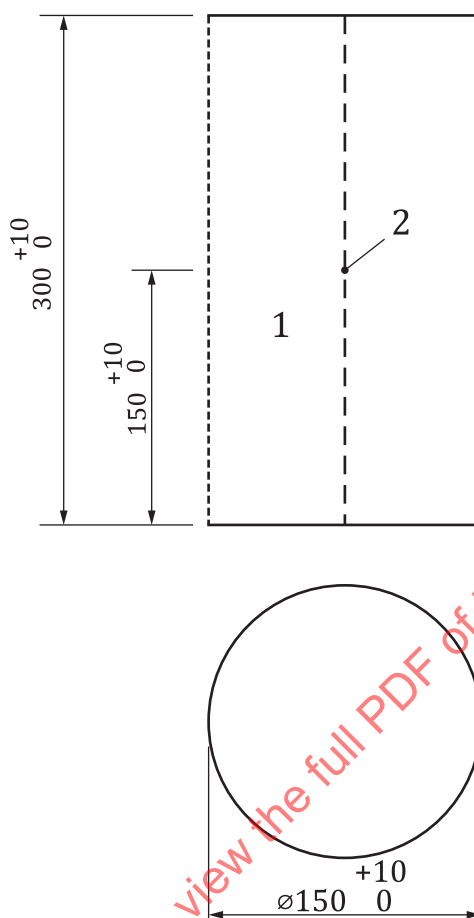
Determine whether the toy continues to conform to the relevant requirements of this document.

**Key**

1 test load

Figure 52 — Static strength test for toy scooters

Dimensions in millimetres

**Key**

- 1 mass, 50 kg or 100 kg
- 2 centre of gravity

Figure 53 — Load for determination of strength and stability

The sides of the load are dotted to indicate that the diameter of the load is permitted to vary between the base and the top. Thus, the 50 kg load and the 100 kg load may have different shapes, provided that the other dimensional requirements are fulfilled.

5.27 Dynamic strength for toy scooters**5.27.1 Principle**

See [4.30.3](#).

A load is secured to the toy scooter and then articulated arms with the elbow joints in a downward position are attached to the handlebars. The toy scooter is driven three times into a non-resilient step.

It is then determined whether the toy scooter continues to conform to the relevant requirements of this document.

5.27.2 Load

The load values as specified in [Table 7](#) shall be used. The load shall be equipped with two articulated arms and a removable cushion with straps, as shown in [Figure 54](#).

The mass of each articulated arm shall be $(2 \pm 0,02)$ kg.

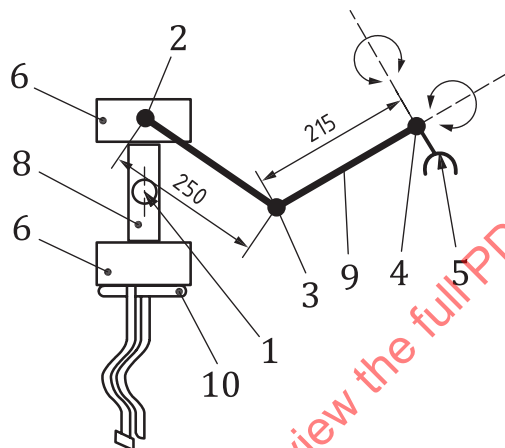
The mass of the cushion including sand and straps shall be $(0,5 \pm 0,01)$ kg.

The masses of the two articulated arms and the cushion shall be added to the load, giving a nominal mass of 54,5 kg for toy scooters intended for users up to 50 kg and 29,5 kg for toy scooters intended for users of 20 kg or less.

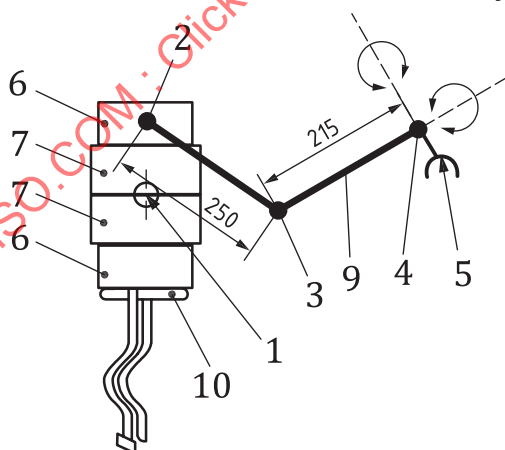
The articulated arms shall be attached with spherical joints to the top element diametrically opposite each other, allowing the arms to be moved in any direction.

The joints at the “elbows” move in one direction and shall be capable of being locked. The joints at the “wrists” move in two directions and shall be capable of being locked. The ends of the arms shall be equipped with clamps for securing the arms to the toy.

Dimensions in millimetres



a) Test load for scooters intended for children with a body mass of 20 kg or less



b) Test load for scooters intended for children with a body mass of between 20 kg and 50 kg

Key

1	centre of gravity	6	mass 1
2	spherical joint	7	mass 2
3	one-way joint	8	connecting rod
4	two-way joint	9	articulated arms
5	clamp	10	cushion with straps (removable)

Figure 54 — Load for determination of dynamic strength

Table 7 — Load specifications

Specification of load for determination of dynamic strength			
Part	Mass kg	Diameter mm	Height mm
a	10,42	150 ± 2	75 ± 2
b	14,58	178 ± 2	75 ± 2
c	4,16	—	150 ± 2
d (each)	2,00		
e	0,50 (maximum)		40 (maximum)

5.27.3 Procedure

Load the toy scooter onto its platform with the mass (appropriate for the type of scooter) using a platform with a height of (250 ± 25) mm and a mass of $(4,8 \pm 0,2)$ kg (see example of platform in [Figure 55](#)). Place the load in a position that corresponds approximately to the normal use of the toy and secure the load to the toy scooter by means of the straps. To prevent undue damage to the toy scooter by the test load, a cushion shall be used but may be omitted if the test load will clearly not cause damage.

Attach the clamps of the articulated arms to the handlebar of the toy scooter in a position that corresponds approximately to the normal use of the toy scooter and lock the joints at the elbows and the wrists.

Accelerating smoothly, drive the toy scooter three times at a steady speed of $(2 \pm 0,2)$ m/s perpendicularly into a non-resilient step with a height of (50 ± 2) mm. The load shall be suspended just after impact in order to prevent it from falling and thereby causing unrelated damage to the toy.

During the setting up of the test, adequate precautions for the safe handling of the 50 kg test load should be taken. To achieve the suspension and for the safety of the test personnel, it is recommended that the load is connected by a wire to an overhead telfer line or similar arrangement. A means of constraining the toy scooter should be used so that the wheel(s) runs into the non-resilient step perpendicularly. Stabilizers may be used in order to keep the toy scooter and the load in a vertical position during the test.

Determine whether the toy scooter continues to conform to the relevant requirements of this document.

5.28 Brake performance for toy scooters

5.28.1 General

See [4.30.6](#).

5.28.2 Toy scooters with handbrake

Using a 250 mm high platform (with stabilizers) with a total mass of $(4,8 \pm 0,2)$ kg as shown in [Figure 55](#), load the toy scooter with a mass of $(50 \pm 0,5)$ kg as described in [5.27.2](#), so that the centre of gravity is 400 mm over the platform of the toy scooter.

Attach the articulated arms to the handlebar and place the toy scooter on a plane inclined at $(10 \pm 1)^\circ$, covered with a surface of abrasive paper (aluminium oxide P60) and with its longitudinal axis parallel to the incline. Apply a force of (30 ± 2) N at right angles to the axis of the brake handle in the middle of the handle.

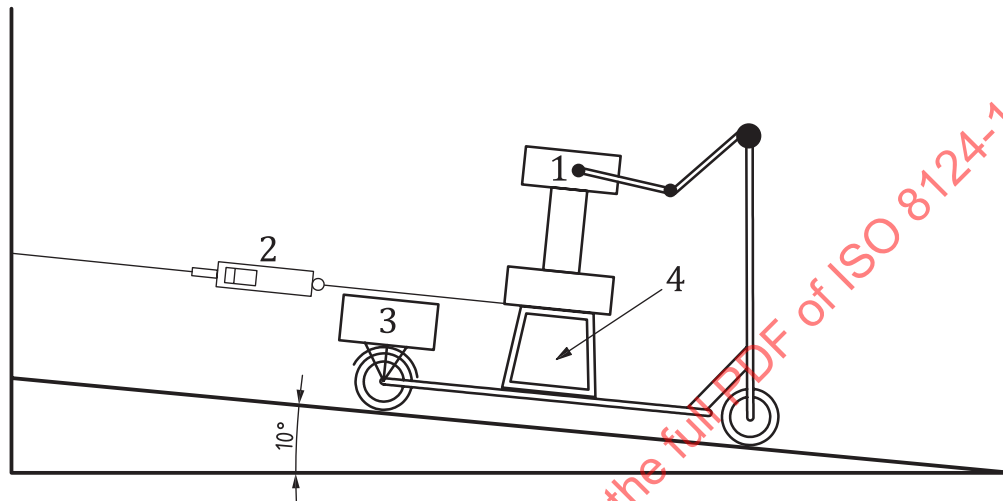
Determine the force required to hold the toy scooter on the inclined plane, parallel to the plane.

5.28.3 Toy scooters with foot brake

Using a 250-mm-high platform (with stabilizers) with a total mass of $(4,8 \pm 0,2)$ kg as shown in [Figure 55](#), load the toy scooter with a mass of $(25 \pm 0,2)$ kg as described in [5.27.2](#), so that the centre of gravity is 400 mm over the platform of the toy scooter.

Attach the articulated arms to the handlebar and place the toy scooter on a plane inclined at $(10 \pm 1)^\circ$, covered with a surface of abrasive paper (aluminium oxide P60) and with its longitudinal axis parallel to the incline (see [Figure 55](#)). Apply a mass of (20 ± 1) kg on the foot brake.

Determine the force required to hold the toy scooter on the inclined plane, parallel to the plane.



Key

- 1 test load, 25 kg, with articulated arm
- 2 dynamometer
- 3 test load, 20 kg
- 4 platform and stabilizers with a height of 250 mm and a mass of $(4,8 \pm 0,2)$ kg

Figure 55 — Brake performance for toy scooters with foot brake

5.29 Strength of toy scooter steering tubes

5.29.1 General

See [4.30.3](#).

5.29.2 Resistance to downward forces

Place the toy scooter on a horizontal plane and secure it so that it will stand upright during the test. Check that any locking devices are correctly engaged.

- a) For toy scooters with two handles, suspend a mass of $(50 \pm 0,5)$ kg at the centre of each handle [see [Figure 56 a](#)]. Maintain the load for 5 min.

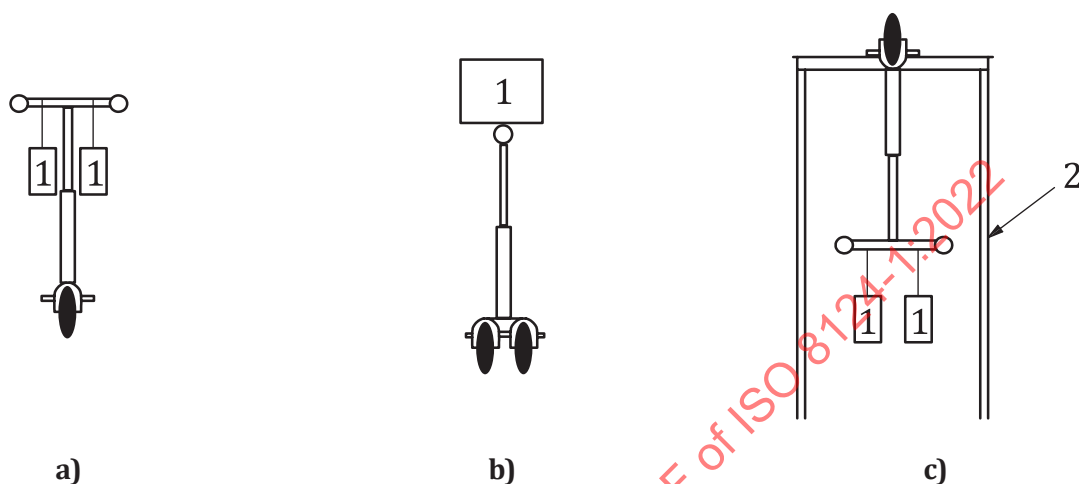
Determine whether the steering tube collapses and the locking devices are still operable and engaged.

If the steering tube has an adjustable height, remove the two 50 kg masses. Release the main locking device and with the secondary locking device still engaged load the handles with a mass of $(25 \pm 0,2)$ kg each; maintain the load for 5 min.

Determine whether the secondary locking device is still operable and engaged.

NOTE Each locking device is tested under the assumption that it is the main locking device.

- b) For toy scooters with steering tubes without handles, perform the test as in 5.29.2 a) using a load with a mass of (100 ± 1) kg and $(50 \pm 0,5)$ kg, respectively, on top of the tube [see Figure 56 b)].



Key

- 1 test load
2 podium

Figure 56 — Test of steering tubes

5.29.3 Resistance to upward forces

Place and secure the toy scooter upside down on a podium [see Figure 56 c)]. Check that the locking devices are correctly engaged.

- a) For toy scooters with two handles, suspend a mass of $(25 \pm 0,2)$ kg at the centre of each handle. Maintain the load for 5 min.
- b) For toy scooters with steering tubes without handles, place a mass of $(50 \pm 0,5)$ kg on the end of the steering tube. Maintain the load for 5 min.

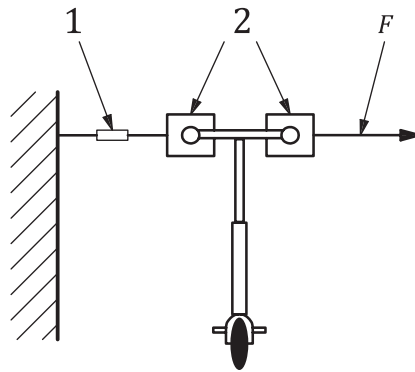
Determine whether the steering tube has separated and the locking devices are still operable and engaged.

5.30 Resistance to separation of handlebar

See 4.30.5.

Apply a load of 90 N to each end of the handlebar in opposite directions (see Figure 57). Maintain the loads for 5 min.

Determine whether the handlebar has separated.

**Key**

- 1 method of measuring force
- 2 clamping device
- F force, 90 N

Figure 57 — Test for separation of handlebars

5.31 Tension test for magnets

5.31.1 Principle

See [4.31.3 c](#)).

These tests simulate the intended or reasonably foreseeable play pattern. It is recognized that toys can contain a single magnet or a combination of magnets, magnetic components and/or metal mating parts; the tests are designed to simulate a reasonably foreseeable play pattern using these components to attach and detach the magnetic parts.

For toys that contain more than one magnet or magnetic component, the test specified in [5.31.2](#) shall be carried out unless it is not possible to perform the test without damaging the toy. In the latter case, the test shall be carried out using the reference disc, as described in [5.31.4](#).

NOTE An example of a case where it is not possible to perform the test in [5.31.2](#) with magnet(s) or magnetic component(s) without damaging the toy is a toy figurine with one accessible but non-graspable magnet in each foot.

Toys that contain one magnet only and a mating metal component shall be tested according to [5.31.3](#).

Toys that contain one magnet only and no mating metal component shall be tested according to [5.31.4](#), since this simulates a play pattern where the toy is attached and detached to a surface that is not delivered with the toy.

5.31.2 Toys with magnets or magnetic components

Identify the magnet or magnetic component in the toy that is most likely to be able to detach. The identified magnet or magnetic component shall be subjected to the tension test for magnets.

If it is not possible to determine which magnet or magnetic component(s) in the toy is most likely to be able to detach the magnet under test, it is permissible to repeat the test with another magnet or magnetic component from the toy.

Without damaging the toy, place the magnet or magnetic component in the orientation of attraction, as close as possible, making contact if possible, to the magnet to be tested. Gradually apply a pulling force to the magnet or magnetic component until it separates from the magnet under test. Perform the test 10 times or until the magnet under test is detached from the toy, whichever occurs first.

Repeat the procedure for any other magnet that, in accordance with [4.31.3](#), shall be subjected to the tension test for magnets.

5.31.3 Toys that contain one magnet only and a mating metal component

Without damaging the toy, place the metal components as close as possible, making contact if possible, to the magnet to be tested. Gradually apply a pulling force to the metal component until it separates from the magnet under test. Perform the test 10 times or until the magnet under test is detached from the toy, whichever occurs first.

5.31.4 Toys that contain one magnet only and no mating metal component

5.31.4.1 Apparatus

Nickel disc with a minimum nickel content of 99 %, a diameter of $(30 \pm 0,5)$ mm and a thickness of $(10 \pm 0,5)$ mm.

5.31.4.2 Procedure

Without damaging the toy, place the flat part of the disc as close as possible to the magnet to be tested, making contact if possible. Gradually apply a pulling force to the disc until it separates from the magnet under test. Perform the test 10 times or until the magnet under test is detached from the toy, whichever occurs first.

5.32 Magnetic flux index

5.32.1 General

See [4.31.2](#), [4.31.3](#) a) and c).

5.32.2 Principle

The magnetic flux index is calculated based on the results from measurements of the flux density and the pole surface area.

5.32.3 Apparatus

5.32.3.1 Direct current field Gauss meter, with a resolution of 5 G, capable of determining the field to an accuracy of 1,5 % or better. The meter shall have an axial type probe with an active area diameter of $(0,76 \pm 0,13)$ mm and a distance between the active area and probe tip of $(0,38 \pm 0,13)$ mm.

5.32.3.2 Calliper or similar device, with an accuracy of 0,1 mm.

5.32.4 Procedure

5.32.4.1 Measurement of flux density

Identify the surface of the magnet that is a pole.

Place the tip of the Gauss meter probe in contact with the pole surface of the magnet. For a magnetic component (where the magnet is fully or partially embedded in part of the toy), place the tip of the probe in contact with the surface of the component.

Maintain the probe in a position perpendicular to the surface.

Move the probe across the surface to locate the maximum absolute value of the flux density. Record the maximum absolute value of the flux density.

NOTE Since the meter can read both negative and positive values, the absolute value is used for calculations.

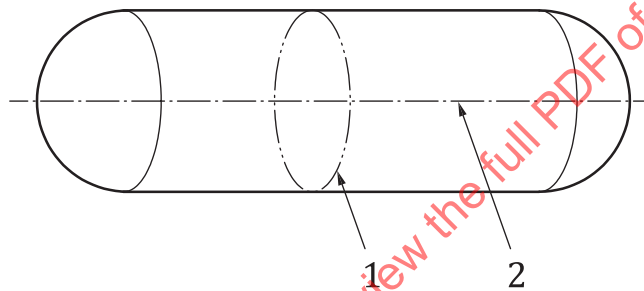
5.32.4.2 Measurement and calculation of the pole surface area

If the magnet is embedded or attached as part of a magnetic component, extract the magnet from the component, even if it is necessary to break the toy.

If the pole surface of the magnet is flat, measure the dimensions with an accuracy of $\pm 0,1$ mm and calculate the area using the appropriate geometric formula.

If the pole is not flat (e.g. hemispherical), measure the maximum diameter of the magnet perpendicular to an axis through the magnetic poles (see Figure 58) with an accuracy of $\pm 0,1$ mm and calculate the area of the corresponding cross-section. For multi-pole magnets, measure and calculate the area of the largest single pole, which can be identified using magnetic field viewing film or equivalent.

NOTE An example of a multi-pole magnet is a rubberized or plastoferrite magnet, consisting of multiple strips or poles.



Key

- 1 maximum cross-section perpendicular to the axis
- 2 axis through the magnet poles

Figure 58 — Maximum diameter of magnet with a non-flat pole

5.32.5 Calculation of magnetic flux index

The flux index (kG^2mm^2) is calculated by multiplying the calculated area of the pole surface (mm^2) of the magnet by the square of the maximum flux density (kG^2).

5.33 Impact test for magnets

See 4.31.3 c).

Place the relevant component of the toy in the most onerous position on a plane horizontal steel surface and drop a metallic weight with a mass of $(1 \pm 0,02)$ kg, distributed over a diameter of (80 ± 2) mm, through a distance of (100 ± 2) mm onto the toy.

Determine whether any liberated magnets or magnetic components fit entirely in the cylinder when tested in accordance with 5.2.

5.34 Soaking test for magnets

See 4.31.3 b).

Submerge the toy or toy component completely in a container of demineralized water at a temperature of $(21 \pm 5) ^\circ\text{C}$ for 4 min. Remove the toy, shake off the excess water and keep the toy at room temperature for 10 min.

Perform the soaking test for a total of four cycles.

Immediately after the last cycle, determine whether any liberated magnets or magnetic components fit entirely in the cylinder when tested in accordance with 5.2.

5.35 Determination of projectile range

See 4.18 and 4.19.

Discharge the projectile in any normally foreseeable manner using a discharge angle that will maximize the distance travelled (typically this is 45°). At the point of discharge, the projectile shall be disengaged from the discharge mechanism and in free flight. Determine the maximum distance the projectile travels from the point of discharge while in the air. See Figure 59.

NOTE A projectile intended to be discharged vertically would also be launched at lower angles if this is possible.

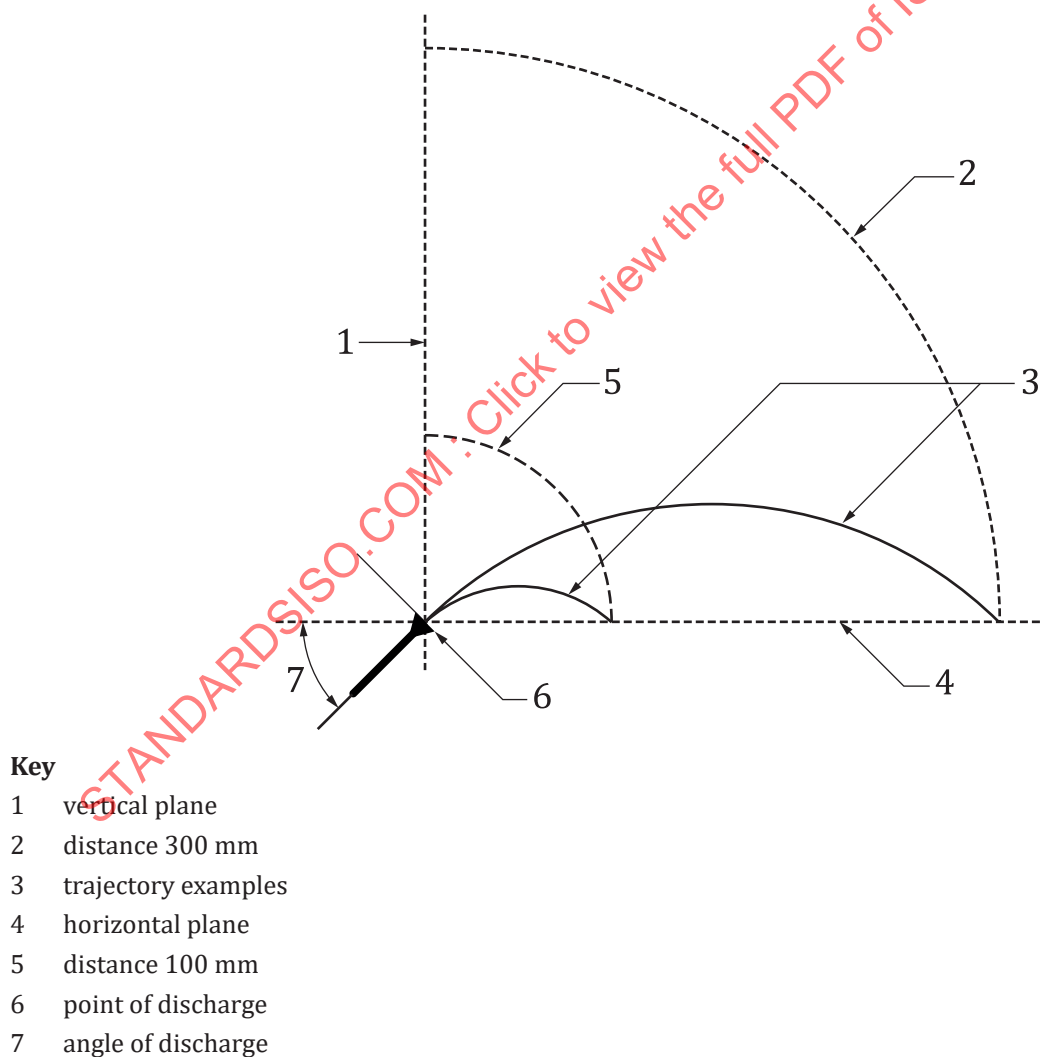


Figure 59 — Determination of projectile range

5.36 Tip assessment of rigid projectiles

See [4.18.2](#) and [4.19.1](#).

Apply the gauge shown in [Figure 60](#) to any leading edge using minimal force and in any case not greater than the force due to the mass of the projectile. Visually determine whether the tip or leading edge protrudes beyond the depth of the gauge.

Dimensions in millimetres

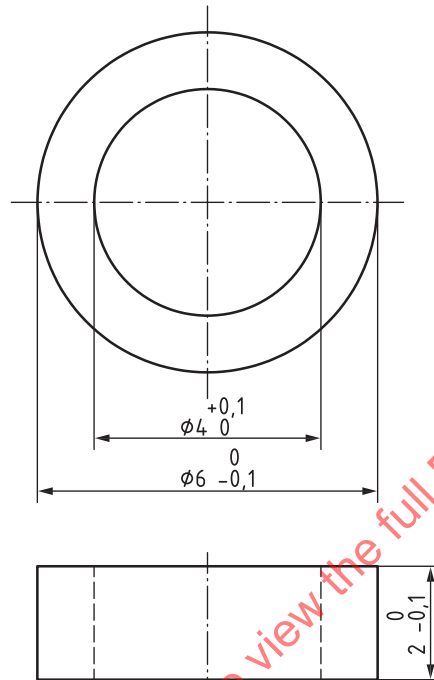


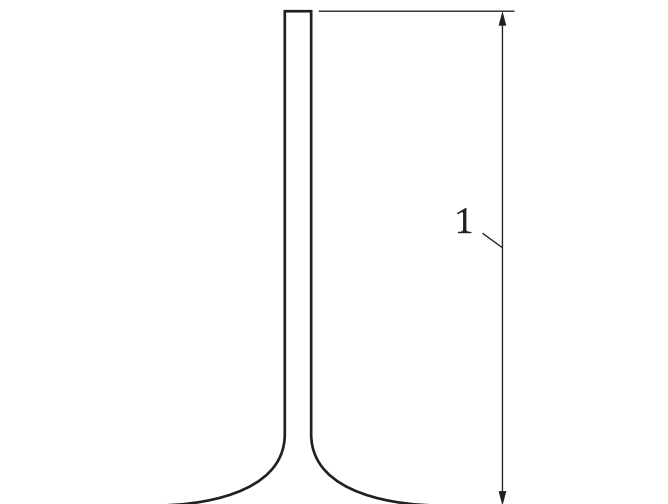
Figure 60 — Cylindrical gauge for measurement of projectile tips

A small handle may be added to the outer wall of the gauge to assist use.

5.37 Length of suction cup projectiles

See [4.18.2](#).

Rest the suction cup on a flat horizontal surface such that its shaft is substantially vertical without it being subjected to any force other than that produced by its own mass. If the projectile falls over without support, support the projectile with just a sufficient horizontal force during the measurement. Measure the length of the projectile as shown in [Figure 61](#).

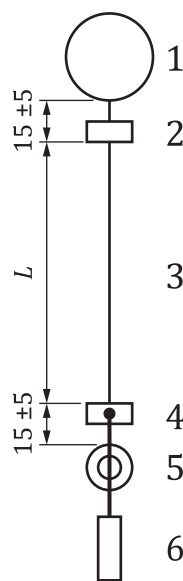
**Key**

1 length of projectile

Figure 61 — Measurement of length of projectiles with suction cup**5.38 Yo-yo ball measurements****5.38.1 Measurement of elastic constant, k** See [4.32](#).

Attach a fixed clamping device to the yo-yo ball tether (15 ± 5) mm from the ball. Position the tether vertically and attach a free clamping device to the tether at a distance of (15 ± 5) mm from the ring at the end of the tether or from the end if there is no ring (see [Figure 62](#)).

Dimensions in millimetres



- Key**
- 1 ball
 - 2 fixed clamp
 - 3 tether made of elastic material
 - 4 free clamp
 - 5 ring or other part made of elastic material
 - 6 mass
 - L* distance between the two clamps

Figure 62 — Clamp positioning to measure the constant, *k*, of yo-yo ball tether

Apply a mass (including the mass of the free clamping device) of (100 ± 5) g to the free clamping device parallel to the axis of the tether made of elastic material. Measure the distance L_1 between the two clamps in millimetres to an accuracy of ± 1 mm.

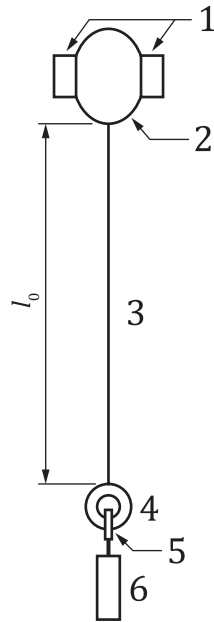
Remove the force and allow the tether made of elastic material to relax to its approximate original length. Apply a mass (including the mass of the free clamping device) of (200 ± 5) g to the free clamping device. Measure the distance L_2 between the two clamps in millimetres to an accuracy of ± 1 mm.

Calculate k as in [Formula \(7\)](#):

$$k=1\,000/(L_2-L_1) \tag{7}$$

5.38.2 Measurement of initial length, l_0

Attach a fixed clamp to the maximum diameter of the yo-yo ball so that the tether can hang vertically beneath the clamp (see [Figure 63](#)).

**Key**

- 1 fixed clamp
- 2 ball
- 3 tether made of elastic material
- 4 ring or other part made of elastic material
- 5 hook
- 6 mass
- l_0 distance between the ball and the ring

Figure 63 — Measurement of the initial length, l_0 , of yo-yo balls

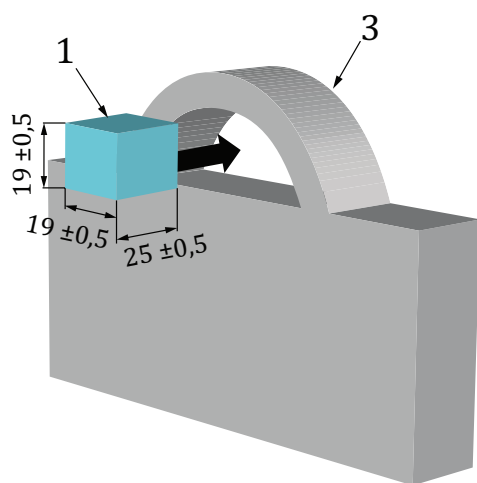
Apply a mass of (50 ± 1) g to the ring at the end of the tether made of elastic material or, if there is no ring, at a position 5 mm from the end of the elastic tether.

Measure the initial length (l_0) (see [Figure 63](#)) in millimetres to an accuracy of ± 1 mm.

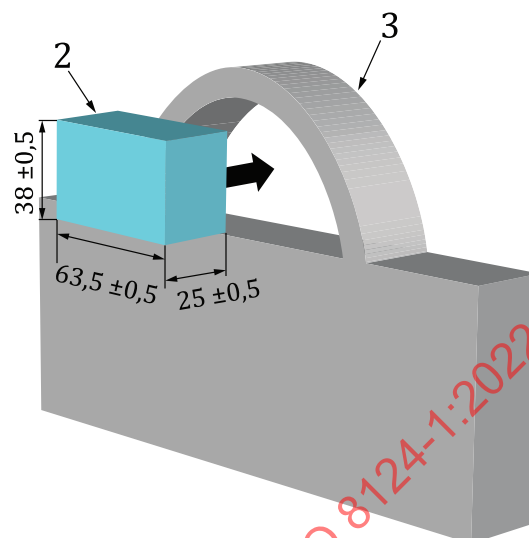
5.39 Jaw entrapment test

See [4.35.3](#).

The test fixtures specified in [Figure 64](#) may be made of any rigid material. Apply the test fixtures such that the 19 mm dimension (small test fixture) and the 63,5 mm dimension (large test fixture) are parallel with the major dimension of the handle or steering wheel opening (see [Figure 64](#)).



a)



~~b)~~

Key

- 1 alignment of small test fixture
- 2 alignment of large test fixture
- 3 handle on toy

Figure 64 — Jaw entrapment test

Annex A (informative)

Age-grading guidelines

A.1 General

Good age-grading practices are important to ensure that a toy is appropriate and safe at the various stages of physical and mental development of the child using the toy.

Age labelling is meant to provide point-of-purchase guidance to consumers for the selection of appropriate toys for children with respect to average abilities, interests of various age groups and safety aspects of the toys themselves.

ISO/TR 8124-8 provides guidance to designers and manufacturers of toys on establishing meaningful age recommendations for toy products.

A.2 Criteria for establishing age grades

The following criteria should be considered when establishing age grading for a toy. While all these should be considered in total, each one may be weighted individually to arrive at the appropriate age grading.

- a) The toy should match the physical ability of a child to manipulate and play with the specific features of the toy.

This necessitates an understanding of the physical coordination, fine and gross motor capabilities, size and strength generally available at a given age.

- b) The toy should match the mental ability of a child to understand how to use the toy (i.e. to understand instructions, sequences of operations and the objective of the toy).

Consideration of the mental skills at a given age is important in order to provide a concept that will challenge abilities and stimulate further development, yet not frustrate. Accomplishment should be neither too easy nor too difficult to be satisfying to a child.

- c) The toy should meet play needs and interests at different levels of development.

Understanding developmental levels and identifying play materials and play environments to enhance each development stage is important for assigning appropriate age grades. Play interests and toy preferences change rapidly; there should be careful attention to children's preference or aversion to specific toy subjects at certain stages. In order for a toy to enhance play time, it must be appealing to its user. In short, it has to be fun.

A.3 Resources for establishing age grades

Use of the following can help guide the establishment of meaningful age grading for a toy. These resources are not arranged in a particular order of importance; all of them should be considered during the age-grading process:

- prior experience with the toy or a similar toy in the marketplace indicating suitability for a specific age group;
- reference materials on comparative body measurements and human factor elements;

- reference resources on child development norms to establish developmental milestones;
- identification of developmental features to be enhanced or stimulated within certain age spans;
- expertise of outside consultants, child development specialists, physicians and psychologists;
- testing of models or prototypes with children;
- observing skills levels in children at play;
- seeking opinions of parents;
- interacting with children and asking questions.

A.4 Safety considerations of age grading

A.4.1 General

The toy should be safe for the intended user. Once the skill level has been determined, the design should be tailored to satisfy the requirements of this specification associated with the age level, that is, a toy within the skill and interest level of a child of 2 years and containing small parts cannot be age-graded at 3 years to avoid enlarging those parts.

Age grades are indicators of average development, which does not necessarily reflect suitability for an exceptional child. A parent remains the best judge of whether a child is at the appropriate development stage for safe play with a particular toy.

A.4.2 Toys appropriate for children under 3 years of age

A primary consideration should be potential choking and aspiration hazards associated with small parts. Children under the age of 3 are more prone to placing objects in their mouths. However, the propensity to put non-food objects in the mouth does not disappear at the chronological age of 3 years. The following toys are appropriate for children under 3 years of age.

- Squeeze toys, teethingers, crib exercisers, crib gyms, crib mobiles, toys intended to be affixed to a crib, toy pushchair or perambulator, playpen or baby carriage, pull and push toys, pounding toys, blocks and stacking sets, bathtub, wading pools and sand toys, rocking, spring and stick horses and other figures, chime and musical balls and carousels, jack-in-the-boxes, stuffed, plush and flocked animals and other figures, and pre-school toys, games and puzzles, riding toys, dolls and animal figures, cars, trucks and other vehicles that are intended for use by children under the age of 3.

Some of the characteristics that describe pre-school toys appropriate for children under the age of 3 are listed by class of toy as follows:

- Dolls: soft-bodied baby dolls or character dolls that are for holding or cuddling, stuffed or “beanbag” dolls, rag or cloth dolls with simple features (including accessories) and lightweight plastic dolls with small features and limited articulation at the limb joints.
- Infant toys: intended to be used in a crib or playpen, to be held easily by small hands, shaken, grasped, rattled or cuddled.
- Toy vehicles: cars, trucks, boats and trains of simple chunky shape, decorated in primary colours without extensive descriptive detail or representations of a particular make or model of vehicle, and which require simple actions such as rolling, dumping, pushing and releasing.
- Action toys: simple action toys for the identification of sounds or pictures and surprise-action toys.
- Early-learning toys: toys, books and puzzles for learning basics such as letters or numbers or shapes, and simple physical motions such as turning wheels or knobs, pulling and letting go or sorting by size.

- Soft balls and similar items: soft, lightweight balls or other shapes for squeezing, shaking, rolling or tossing.

A.4.3 Toys not appropriate for children under 3 years of age

Toys that should not be considered appropriate for children under 3 years of age, and therefore should not be age-labelled as such, have the following characteristics:

- toys that require intricate finger movements or controlled adjustments, fitting intricate pieces together;
- toys, such as games, that require or incorporate elements of reading elements of reading ability beyond the ABCs or 123s;
- toys that simulate adult figures or characters and their associated accessories;
- collecting sets (e.g. figures and vehicles);
- make-up sets.

A.4.4 Toys for children aged 8 years and over

Another major development cut-off has been cited at approximately 8 years of age, at which time reading ability has progressed so that a child can, on his or her own, read, understand and heed instructions and caution statements. Because the instructions and caution statements are necessary for the safe use of the product in some cases, those products should be labelled for use by children over the age of 8.

Products that fall into this category include the following:

- Science and environmental kits or sets containing breakable glass components and complex instructions.
- Complex model and craft sets requiring precision assembly and finger dexterity or incorporating sharp tools or components.
- Electrically operated toys incorporating heating elements.

Certain chemistry sets, fuelled model vehicles and rockets, which contain chemicals that may be hazardous, cannot generally be handled safely by children unable to read and understand instructions and cautionary statements. The minimum age for which any such product should be recommended is 8 years and then only with adult supervision.

A.5 Descriptive age-labelling

Manufacturers can assist parents and other purchasers in the appropriate selection of toys by incorporating descriptive labelling to identify potential safety concerns if the toy is accessible to children outside the recommended age group.

Factors to consider include the appeal of the toy to young children, market experience, the design or construction of the toy and whether the packaging provides visual indications of any small play pieces. In addition, a manufacturer should consider the probability that a purchaser may overestimate a child's physical or mental abilities and the child's understanding of a potential hazard related to the toy.

Annex B (informative)

Safety-labelling guidelines and manufacturer's markings

B.1 General

This annex provides guidance for labelling of certain types of toys.

The purpose of safety labelling is to supply appropriate safety information to the consumer at the point of purchase (i.e. on the toy or on the packaging if there is one) and/or prior to the initial use of the toy (i.e. in the instructions) and/or prior to each use of the toy (i.e. labelling on the toy).

Requirements for toy safety labelling for certain toys or toy characteristics are given in the appropriate subclauses of [Clause 4](#).

B.2 Safety-labelling guidelines

B.2.1 Good practice for visibility and legibility

The safety labelling should be in a clearly visible, easily legible, understandable, indelible and accurate form wherever placed. For placement, see [Clause 4](#).

Safety labelling and manufacturing markings should be in the language of the country in which the toys will be distributed.

The safety labelling should be in a format that draws the attention of the consumer and should be placed on the packaging and/or the product. Warnings that determine the decision to purchase the toy should appear on the consumer packaging or be otherwise clearly visible to the consumer before the purchase.

The following points provide information on good practice for the visibility and legibility of safety labelling. ISO/IEC Guide 37 has been considered and adopted where appropriate.

a) Emphasizing the warning:

- Emphasize warnings, for example by placing them in a prominent position on the toy and/or its packaging. The prominent position does not necessarily mean the front panel of the packaging. The age warning symbol alone (without the word “Warning”) (see [Figure B.1](#)) can be placed, for example, on the front of the packaging, and a complete warning (including the word “Warning”) can be somewhere else on the packaging.
- Avoid large amounts of information.
- Do not mix safety information with commercial information.
- The text of the warnings on the packaging should be conspicuous and reasonably related to the font, visibility, legibility and size of other printed matter on the packaging.
- In multi-language text, clearly separate the individual languages, for example by a flag, spacing, country code or other means.

b) Contrast, background and colours:

- The colour of the warning should be in sharp contrast to the colour of the background. Avoid using similar foreground and background colours such as white text on a yellow background. Dark ink on bright paper or bright ink on dark paper provides good contrast.

- When using the age warning symbol, ensure contrast between the red circle and the background on which the symbol is placed.
 - For the background of the warning, avoid patterns or images that may interfere with the warning.
 - Avoid red-green and blue-yellow colour combinations, as these may create problems for persons with colour-vision deficiency.
- c) Reflecting surfaces and obscuring material:
- Avoid highly reflecting surfaces and highly reflecting glossy paper, which leads to poor legibility for surfaces displaying warning text. Avoid transparent packaging material that may obscure, blur or deform the warning text.
- d) Font type:
- Preferably use sans-serif font types. Avoid the use of different font types within the warning text.
- e) Font and symbol size:
- No recommendations for a minimum font size have been set. Setting minimum recommendations might encourage the use of only the smallest specified font size. It is considered more appropriate to give recommendations on other factors that are important for the visibility and legibility of a warning text. Use font sizes that allow all target groups, including those with corrected vision, to read the warning.
 - Consider using a larger warning symbol than the minimum size as specified in [B.2.3](#).
- f) Logical direction of text:
- Place the warning in the logical direction considering the layout of the information on the surrounding packaging or, if appropriate, the normal orientation of the toy.

B.2.2 Age grading

Toys subject to any of the requirements of this document should be labelled to indicate the minimum age for intended use. If the toy or the packaging is not age-labelled in a clear and conspicuous manner, or is inappropriately age-labelled, the toy should be subjected to the most stringent applicable requirements within this document.

For certain toys such as costumes and riding toys, it may also be appropriate, from a safety point of view, to label the toy, its packaging or both in terms of size or weight limitations.

Guidelines for determining the appropriate age grade for toys are given in [Annex A](#).

B.2.3 Toys that are small parts, toys containing small parts and toys with removable small part components

When required by [4.4](#), a warning statement should be provided and be similar to the following:

“Warning! Not suitable for children under 3 years. Contains small parts.”

The words “Not suitable for children under 3 years” may be substituted by a graphical symbol ([Figure B.1](#)), in which case the symbol should be accompanied by the word “Warning”.

The indication of the hazard (i.e. “small parts”) should appear on the toy itself, on the packaging or in the instructions for use.



Figure B.1 — Graphical symbol for age warning

The details of the design of the graphical symbol should be as follows:

- the circle and the stroke should be red;
- the background should be white;
- the age range and the outline of the face should be black;
- the symbol should have a diameter of at least 10 mm and the proportions between its different elements should be such as those prescribed in [Figure B.1](#);
- the age range for which the toy is not suitable should be expressed in years, e.g. 0 to 3.

NOTE The graphic in [Figure B.1](#) is not a registered safety sign as it is not in accordance with the requirements for safety signs and the basic reference works of ISO developed by ISO/TC 145/SC 2 (ISO 3864 series, ISO 7010). It is, however, recognized that the graphic has been widely used in the toy industry (toy manufacturers, regulators, market surveillance authorities) and is therefore accepted for continued use in this document. In the years since the graphic was first used in the EN 71 series (1994) and in the ISO 8124 series (2000), it has been incorporated into toy regulations in multiple jurisdictions. These considerations and this graphic do not apply outside of the context of toys.

B.2.4 Balloons

See [4.5.6](#).

When required by [4.5.6](#), a warning statement should be provided and be similar to the following:

“Warning! Children under 8 years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.”

B.2.5 Small balls and marbles

See [4.5.2](#) and [4.5.7](#).

When required by [4.5.2](#) or [4.5.7](#), a warning statement should be provided and be similar to the following:

- a) In the case of small balls:

“Warning! Not suitable for children under 3 years. Small ball(s). Choking hazard.”

b) In the case of marbles:

“Warning! Not suitable for children under 3 years. Marble(s). Choking hazard.”

The words “Not suitable for children under 3 years” in a) and b) may be substituted by a graphical symbol as specified in [B.2.3](#), in which case the symbol should be accompanied by the word “Warning”.

The indication of the hazard (e.g. “small ball” or “marble”) should appear on the toy itself, on the packaging or in the instructions for use.

B.2.6 Aquatic toys

See [4.20](#).

When required by [4.20](#), a warning statement should be provided and be similar to the following:

“Warning! This is not a life-saving device. Only to be used in water in which the child is within its depth and under adult supervision.”

B.2.7 Toys intended to come into contact with food

See [4.38](#)

When required by [4.38](#), a statement should be provided to alert adults to wash the product thoroughly before and after use.

B.2.8 Toys intended to be assembled by an adult

See [4.36.3](#).

When required by [4.36.3](#), a statement should be provided that the toy is intended to be assembled by an adult. See also [B.3.6](#) for guidance.

B.2.9 Toys intended to be strung across a cradle, cot, perambulator or carriage

See [4.11.9](#).

When required by [4.11.9.1](#), a warning statement should be provided and be similar to the following:

“Warning! To prevent possible strangulation or injury by entanglement, remove this toy when the child starts trying to get up on its hands and knees in a crawling position.”

B.2.10 Simulated protective equipment

See [4.17](#).

When required by [4.17](#), a warning statement should be provided and be similar to the following:

“Warning! This toy does not provide protection.”

B.2.11 Toys with functional sharp edges and functional sharp points

See [4.6.2](#) and [4.7.2](#).

When required by [4.6.2](#) or [4.7.2](#), a warning statement should be provided that a sharp edge or sharp point, or both, exists.

B.2.12 Functional toys

See [4.37](#).

When required by [4.37](#), a warning statement should be provided and be similar to the following:

“Warning! To be used under the direct supervision of an adult.”

B.2.13 Toy roller skates, toy inline skates and toy skateboards

See [4.27](#).

When required by [4.27](#), a warning statement should be provided and be similar to the following:

“Warning! Protective equipment should be worn. Not to be used in traffic. 20 kg max.”

B.2.14 Toy kites

See [4.11.11](#).

When required by [4.11.11](#), a warning statement should be provided and be similar to the following:

“Warning! Do not use near overhead power lines or during thunderstorms.”

B.2.15 Toy bicycles

See [4.22.1](#).

When required by [4.22.1](#), a warning statement should be provided and be similar to the following:

“Warning! Protective equipment should be worn.”

B.2.16 Percussion caps

See [4.28](#).

When required by [4.28](#), a warning statement should be provided and be similar to the following:

“Warning! Do not fire indoors or near eyes and ears. Do not carry caps loose in a pocket.”

B.2.17 Toys which produce high peak sound pressure levels

See [4.29](#) h).

When required by [4.29](#), a warning statement should be provided and be similar to the following:

“Warning! Do not use close to the ear. Misuse may cause damage to hearing.”

For toys using percussion caps, add:

“Do not fire indoors.”

B.2.18 Toy scooters

See [4.30.2](#).

When required by [4.30.2](#), toy scooters intended for children with a body mass of 20 kg or less should provide a warning similar to the following:

“Warning! Protective equipment should be worn. Not to be used in traffic. 20 kg max.”

Toy scooters intended for children with a body mass of 50 kg or less should provide a warning similar to the following:

“Warning! Protective equipment should be worn. Not to be used in traffic. 50 kg max.”

B.2.19 Magnetic or electrical experimental sets for children 8 years and over

See [4.31.2](#) and [E.45](#).

When required by [4.31.2](#), a warning statement should be provided and be similar to the following:

“Warning! Not suitable for children under 8 years. This product contains (a) small magnet(s). Swallowed magnets can stick together across intestines causing serious injuries. Seek immediate medical attention if magnet(s) are swallowed.”

B.2.20 Toys with electrical cables exceeding 300 mm in length

See [4.11.6](#).

When required by [4.11.6](#), a warning statement should be provided and be similar to the following:

“Warning! Strangulation hazard. Long cable.”

B.2.21 Cords in toys intended for children 18 months and over but under 36 months

See [4.11.3](#).

When required by [4.11.3](#), a warning statement should be provided and be similar to the following:

“Warning! Strangulation hazard. Not suitable for children under 18 months. Long cord.”

B.2.22 Sledges and toboggans with cords for pulling

See [4.34](#).

When required by [4.34](#), a warning statement should be provided and be similar to the following:

“Warning! Strangulation hazard. Long cord. Adult supervision required.”

B.2.23 Toys intended to be attached to a cradle, cot, perambulator or carriage or intended to be suspended over a cot from a wall or ceiling

See [4.11.9.2](#).

When required by [4.11.9.2](#), a warning statement should be provided and be similar to the following:

“Warning! Attach this toy out of the reach of the child. To prevent possible strangulation or injury by entanglement, remove this toy when the child starts trying to get up on its hands and knees in a crawling position.”

B.2.24 Flying toys

See [4.19.2](#).

When required by [4.19.2](#), a warning statement should be provided and be similar to the following:

“Warning! Always operate the toy away from eyes or face.”

B.3 Instructional literature**B.3.1 Information and instructions**

Information and instructions provided for the safe use or assembly, or both, of a toy, whether on the packaging or in leaflet form, should be easy to read.

B.3.2 Crib and playpen toys and mobiles

See [4.11.9.2](#).

When required by [4.11.9.2](#), toys intended to be mounted on a crib, playpen, wall or ceiling should include instructions for proper assembly, installation and use to ensure that the product does not present an entanglement or strangulation hazard. The instructions should include at least the following information. For toys other than mobiles, substitute “toy” or other suitable description for “mobile” in the following statements.

Mobiles intended to be mounted on a crib, playpen, wall or ceiling should include instructions for proper assembly, installation and use to ensure that the product does not present an entanglement hazard. The instructions should include at least the following information:

- a mobile is not intended to be grasped by a child;
- if attached to the crib or playpen, remove when a baby begins to push up on hands and knees;
- if mounted on a wall or ceiling, install the mobile clearly out of a standing baby's reach;
- always attach all provided fasteners (e.g. strings, straps, clamps) tightly to a crib or playpen according to the instructions and check frequently;
- do not add strings or straps to attach to a crib or playpen.

B.3.3 Crib gyms and similar toys

See [4.11.9.1](#).

When required by [4.11.9](#), toys intended to be strung across a crib or playpen by means of string, cords, elastic or straps (including, but not limited to, crib exercisers, crib gyms and activity toys) should include instructions for proper assembly, installation and use to ensure that the product does not present an entanglement or strangulation hazard.

The instructions should include at least the following information:

- this toy is not intended to be “mouthed” by a baby and should be positioned clearly out of reach of the baby's face and mouth;
- on cribs with adjustable mattress levels, the highest position can cause the toy to be too close to the baby;
- the drop side of the crib should never be lowered with the toy in place and a baby left unattended;
- always attach all provided fasteners (e.g. strings, straps, clamps) tightly to a crib or playpen according to the instructions and check frequently;
- do not add additional strings or straps to attach to a crib or playpen.

B.3.4 Toy chests

See [4.16.2.2](#) d).

When required by [4.16.2.2](#), instructions for proper assembly and maintenance of toy chests should be provided in sufficient detail to describe the correct assembly of components, the resulting hazard if the lid support device is not installed and a description of how to determine whether the support is working properly.

B.3.5 Liquid-filled teethers and liquid-filled teething toys

See [4.25](#).

When required by [4.25](#), a statement should be provided and be similar to the following:

“Cool only in a refrigerator. Do not place in the freezer compartment.”

B.3.6 Toys intended to be assembled by an adult

When required by [4.36.3](#), assembly instructions that accompany toys which are intended to be assembled by an adult and that contain potentially hazardous sharp edges or sharp points, or contain small parts if the toy is intended for children under 3 years of age, should carry a statement stating this and also that the toy is to be assembled by an adult (see also [B.2.8](#)).

B.3.7 Projectile toys

See [4.18.3](#) b) and [4.18.4](#).

When required by [4.18.3](#) or [4.18.4](#), a statement should be provided and be similar to the following:

“Do not aim at eyes or face.”

B.3.8 Toy bicycles

See [4.22.2](#).

When required by [4.22.2](#), the following information should be provided:

- a statement recommending the use of a protective helmet when cycling;
- a statement that this bicycle should not be used on public highways;
- a statement that parents or carers should ensure that children are properly instructed in the use of toy bicycles, particularly in the safe use of the braking systems.

B.3.9 Toy scooters

See [4.30.2](#)

The instructions for use should contain a reminder that the toy should be used with caution, since skill is required to avoid falls or collisions causing injury to the user or third parties. The instructions for use should also include, as appropriate, information such as:

- the warnings indicated in [B.2.18](#);
- how to safely fold or unfold foldable scooters;
- the necessity to pay attention that all locking devices are engaged;
- the dangers of using scooters on public highways or public roads;
- a recommendation to use protective equipment such as a helmet, gloves, knee-pads and elbow-pads.

B.3.10 Remote-controlled flying toys

See [4.19.1](#)

The instructions for use for remote-controlled flying toys should provide the following information:

- a reminder that the toy must be used with caution since skill is required in order to control the flight and avoid collisions with the user, objects or third parties;
- precautions to be observed, such as “Do not touch the rotating rotor blades, avoid loose clothing or hair that could be caught in the rotor, do not fly near the face”;
- advice to adult supervisors to teach children how to safely fly and control the toy;

- conditions to be observed when using the toy (e.g. flying room or area needed, indoors or outdoors, no obstacles and persons within flying range, to keep the toy in line of sight, maximum operating distance);
- advice to keep the instructions for use.

B.4 Manufacturer's markings

A principal component of the toy, the packaging, a label or a leaflet accompanying the toy should be marked with the name and address of the manufacturer or the distributor, or with a trademark and/or mark which clearly identifies the manufacturer or distributor. All these markings should be visible and easily legible by the consumer and should resist normal use conditions.

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Annex C

(informative)

Design guidelines for toys attached to cribs or playpens

C.1 General

This annex provides guidance for design practices meant to encourage the careful examination of product characteristics and configurations with respect to safety. As there are no objective means for determining conformity to these design guidelines, they are not to be used to judge conformity to this document.

C.2 Guidelines

The design of products intended to be attached to cribs or playpens should be such that strings, ribbons, elastic or parts of clothing have minimal potential for being caught on the product and thereby creating a hazardous situation in which possible strangulation could occur.

Examples of the implementation of good design practice for crib and playpen environments include the following:

- avoidance of hazardous protrusions that could contribute to entanglement on toys attached to cribs and playpens;
- rounded corners with the use of generous radii wherever possible;
- smooth contours that minimize abrupt changes in shape that could easily become a catch point for strings, ribbons, elastic or loose clothing;
- concealing of fastening hardware using recesses, counterbores or other similar methods;
- reduction of the potential for any mismatch of surfaces where a catch point could develop.