

Safety of toys —

Part 1: Mechanical and physical properties

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National foreword

This British Standard is the UK implementation of EN 71-1:2005+A6:2008, incorporating corrigendum February 2006. It supersedes BS EN 71-1:2005+A4:2007 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by **A1** **A1**.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Safety of toys - Part 1: Mechanical and physical properties

Sécurité des jouets - Partie 1: Propriétés mécaniques et physiques

Sicherheit von Spielzeug - Teil 1: Mechanische und physikalische Eigenschaften

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Foreword

This European Standard (EN 71-1:2005+A6:2008) has been prepared by Technical Committee CEN/TC 322 "Safety of toys", the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2008, and conflicting national standards shall be withdrawn at the latest by November 2008.

This document includes Amendment 1, approved by CEN on 2007-01-10, Amendment 2 approved by CEN on 2006-09-07, Amendment 4 approved by CEN on 2007-03-13, Amendment 5 approved by CEN on 2008-04-18, Amendment 6 approved by CEN on 2008-02-05 and the Corrigendum issued on 2008-12-01.

This document supersedes \square_{A4} EN 71-1:2005+A4:2007 \square_{A4} .

The start and finish of text introduced or altered by amendment is indicated in the text by tags \square_{A1} \square_{A1} , \square_{A3} \square_{A3} , \square_{A4} \square_{A4} , \square_{A5} \square_{A5} and \square_{A6} \square_{A6} .

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags \square_{AC} \square_{AC} .

\square_{A4} *deleted text* \square_{A4}

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this European Standard.

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

This European Standard for safety of toys consists of the following parts:

- Part 1: *Mechanical and physical properties*
- Part 2: *Flammability*
- Part 3: *Migration of certain elements*
- Part 4: *Experimental sets for chemistry and related activities*
- Part 5: *Chemical toys (sets) other than experimental sets*
- Part 6: *Graphical symbol for age warning labelling*
- Part 7: *Finger paints – Requirements and test methods*
- Part 8: *Swings, slides and similar activity toys for indoor and outdoor family domestic use*
- Part 9: *Organic chemical compounds – Requirements*
- Part 10: *Organic chemical compounds – Sample preparation and extraction*
- Part 11: *Organic chemical compounds – Methods of analysis*

NOTE 1 In addition to the above parts of EN 71, the following guidance documents have been published: CEN Report, CR 14379:2002, *Classification of toys - Guidelines*, CEN Technical Report CEN/TR 15071:2005, *Safety of toys - National translations of warnings and instructions for use in EN 71* and CEN Technical Report CEN/TR 15371:2006, *Safety of toys – Replies to requests for interpretation of EN 71-1, EN 71-2, and EN 71-8* \square_{A4} .

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

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

Introduction

The European Standards aim at reducing as far as possible those risks which are not evident to users, they do not cover inherent dangers (e.g. instability of scooters, sharp needles in a sewing kit etc.) that are obvious to children or the persons in charge of them. Assuming that the toys are used in the manner for which they are intended, they should not present any further risk to children for whom they are intended. Allowance should also be made for normal or foreseeable use, bearing in mind the normal behaviour of children who do not generally share the same degree of care as the average adult user.

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

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

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

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1 Scope (see A.2)

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

This European Standard applies to toys for children, toys being any product or material designed or clearly intended for use in play by children of less than 14 years. It refers to new toys taking into account the period of foreseeable and normal use, and that the toys are used as intended or in a foreseeable way, bearing in mind the normal behaviour of children.

It includes specific requirements for toys intended for children under 36 months and for children who are too young to sit up unaided. For the purpose of this European Standard, *soft-minded* toys with simple features intended for holding and cuddling are considered as toys intended for children under 36 months.

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

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

This European Standard does not cover electrical safety aspects of toys. These are covered by EN 50088, *Safety of electric toys*.

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

- Christmas decorations (see A.2);
- detailed scale models for adult collectors (see A.2);
- equipment intended to be used collectively in playgrounds;
- sports equipment;
- aquatic equipment intended to be used in deep water;
- folk dolls and decorative dolls and other similar articles for adult collectors;
- "professional" toys installed in public places (shopping centres, stations etc.) (see A.2);
- puzzles with more than 500 pieces or without picture, intended for specialists;
- air guns and air pistols (see A.2);
- fireworks, including percussion caps except percussion caps specifically designed for toys;
- slings and catapults (see A.2);
- sets of darts with metallic points;
- electric ovens, irons or other functional products operated at a nominal voltage exceeding 24 V;
- products containing heating elements intended for use under the supervision of an adult in a teaching context;
- vehicles with combustion engines (see A.2);
- toy steam engines;
- bicycles designed for sport or for travel on the public highway;
- video toys that can be connected to a video screen, operated at a nominal voltage exceeding 24V;
- babies' dummies (soothers);
- faithful reproductions of real fire arms;
- fashion jewellery for children (see A.2).

Also, for the purpose of this European Standard, the following items are not considered as toys:

- flotation aids such as arm bands and swim seats (see A.23);
- swimming goggles, sunglasses and other eye protectors as well as bicycle and skateboard helmets (see A.19);
- items that are propelled into free flight by a child releasing an elastic band (e.g. aeroplanes and rockets). These are considered as catapults (see 11th indent above);
- bows for archery with an overall relaxed length exceeding 120 cm.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 71-6, *Safety of toys — Part 6: Graphical symbol for age warning labelling*

EN 71-8, *Safety of toys — Part 8: Swings, slides and similar activity toys for indoor and outdoor family domestic use*

EN 60318-1, *Electroacoustics — Simulators of human head and ear — Part 1: Ear simulator for the calibration of supra-aural earphones (IEC 60318-1:1998)*

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003)*

EN ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:1995)*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method - Terms, definitions and surface texture parameters (ISO 4287:1997)*

EN ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T) (A6) (ISO 6508-1:2005) (A6)*

EN ISO 11201, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995)*

EN ISO 11202, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ (ISO 11202:1995)*

EN ISO 11204, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Method requiring environmental corrections (ISO 11204:1995)*

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

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

IEC 60126, *IEC reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts*

3 Terms and definitions

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

3.1

accessible

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

3.2

aquatic toy

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

3.3

backing

material adhering to flexible *plastic sheeting*

3.4

ball

^{A5} spherical, ovoid, or ellipsoidal object, usually but not always, designed or intended to be thrown, hit, kicked, rolled, dropped or bounced

The term *ball* also includes any multisided object formed by at least 48 connecting planes into a generally spherical, ovoid or ellipsoidal shape ^{A5}

^{A6} *deleted text* ^{A6}

3.5

burr

roughness, caused by not cleanly severing or finishing the material

3.6

close-to-the-ear toy

toy that is clearly designed to emit sound, intended to be used close to the ear, i.e. a hypothetical position, normally 2,5 cm from the nearest sound emitting part of the toy that can be put against the ear of a child (e.g. telephones that ring or beep in the ear piece and toys with ear phones)

3.7

collapse

sudden or unexpected folding of a structure

3.8

cord

piece of slender, flexible material including monofilaments, woven and twisted cord, rope, plastic textile tapes, ribbon and those fibrous materials commonly called string

NOTE Monofilament doll hair is not considered as a cord.

3.9

crack

fracture of a material to the full thickness of the material

3.10

crushing

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

3.11

driving mechanism

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

3.12

edge

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

3.13

expanding material

material, the volume of which expands when the material is exposed to water

3.14

fastening

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

3.15

filling

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

3.16

free-wheeling toy bicycle

two-wheeled vehicle, with or without stabilisers, with a *maximum saddle height* of 435 mm or less and which is propelled solely by the muscular energy of the person on that vehicle, in particular by means of pedals, and which does not have a fixed transmitted drive

3.17

functional edge or point

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

3.18

functional toy

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

3.19

fuzz

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

3.20

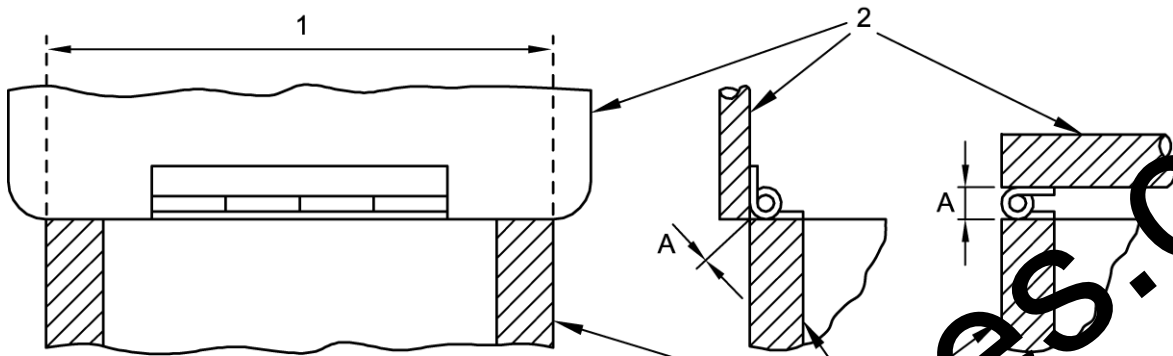
hand-held toy

toy that is clearly designed to emit sound, intended to be held in the hand (e.g. clicking toys, toy *tools*, musical toys and cap-firing toys), but excluding *close-to-the-ear toys* and child-actuated toys as well as mouth-actuated toys

3.21

hinge line

line along or parallel to the line projected through the axis of rotation as shown in Figure 1



Key

- 1 Hinge line
- 2 Lid
- 3 Box
- A Hinge-line clearance between assembled edges

Figure 1 Definition of hinge line

3.22 large and bulky toy

toy that has a projected base area of more than 0,26 m² or a volume of more than 0,08 m³ calculated without regard to minor appendages, or a mass of 1,5 kg or more

NOTE The base area of a toy having permanently attached legs, is the area enclosed by straight lines connecting the outermost edge of each leg of the perimeter.

3.23 maximum saddle height

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

3.24 overlap joint

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

3.25 packaging

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

3.26 paper

material, marketed as either paper or paperboard, with a mass per unit area of 400 g/m² or less

3.27 particle

object with a discrete three-dimensional form (e.g. expanded polystyrene), but excluding fibrous material

3.28 plastic sheeting

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

3.29 projectile

object intended to be launched into free flight or a trajectory in the air

3.30

projectile toy with stored energy

toy with a projectile propelled by means of a discharge mechanism capable of storing and releasing energy

3.31

projectile toy without stored energy

toy with a projectile discharged by the energy imparted by a child

3.32

rattle

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

3.33

removable component

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

3.34

soft-filled toy

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

3.35

splinter

sharp pointed fragment

3.36

spring

3.36.1

helical spring

spring in the form of a coil, which can be either a compression spring or an extension spring, see Figure 2

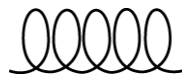


Figure 2 – Helical spring

3.36.1.1

compression spring

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

3.36.1.2

extension spring

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

AC 3.36.2 AC

spiral spring

clockwork type spring, see Figure 3



Figure 3 – Spiral spring

3.37

squeeze toy

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

**3.38
suction cup**

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

**3.39
table-top and floor toy**

toy that is intended to be used on a table or floor (e.g. cars, mechanical animals, *large and heavy toys*)

**3.40
teether**

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

**3.41
tool**

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

**3.42
toy scooter**

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

NOTE The definition includes ordinary "old-fashioned" scooters as well as foldable scooters.

4 General requirements

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

4.1 Material (see A.3)

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

4.2 Assembly (see A.4)

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

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

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

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

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

- Sheets without any backing and of an area greater than 100 mm x 100 mm shall have an average thickness of 0,038 mm or more when tested according to 8.25.1 (plastic sheeting, thickness).
- Sheets with an average thickness of less than 0,038 mm and of an area greater than 100 mm x 100 mm shall be perforated with defined holes so that a minimum of 1 % of the area has been removed over any area of 30 mm x 30 mm.

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

4.4 Toy bags

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

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

4.5 Glass (see 5.7 and A.6)

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

- a) its use is necessary to the function of the toy (e.g. optical toys, glass light bulbs, glass in experimental sets);
- b) it is textile glass used for reinforcement;
- c) it is in the form of solid glass marbles or solid glass eyes for dolls.

4.6 Expanding materials (see A.7)

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

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

4.7 Edges (see A.8)

Accessible edges shall not present an unreasonable risk of injury.

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

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

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

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

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

4.8 Points and A6 metallic A6 wires (see A.9)

A6 Metallic wires A6 and *accessible* points shall not present an unreasonable risk of injury.

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

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

- b) Where it is essential for the functioning of the toy, hazardous sharp *functional points* may be used in toys intended for children of 36 months and over. The potential danger presented by such points shall be drawn to the attention of the user (see 7.6). However, points of pieces intended to serve as electrical conductors do not require a warning.
- c) A6 Metallic wires and other metallic components that are designed and intended to be bent, for example, in order to change the shape or position of a toy or part of a toy (e.g. in *soft-filled toys*), shall not break and produce hazardous sharp points, or protrude through any surface covering of the toy, when tested according to 8.13.2 (metallic wires and other metallic components intended to be bent). A6
- d) A6 Metallic wires that are not designed to be bent but are likely to occasionally or accidentally be bent during play shall not break and produce hazardous sharp points, or protrude through any surface covering of the toy, when tested according to 8.13.3 (metallic wires likely to be bent). A6

4.9 Protruding parts (see A.10)

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

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

4.10 Parts moving against each other

4.10.1 Folding and sliding mechanisms (see A.11)

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

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

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

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

When tested according to 8.18.2 a) (toy pushchairs and perambulators), the toy shall not *collapse* and neither of the locking devices shall fail or disengage.

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

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

An example of a toy pushchair or perambulator covered by item a) is illustrated in Figure 4.

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

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

When tested according to 8.18.2 b) (toy pushchairs and perambulators) the toy shall not collapse and the locking device or safety stop shall not fail or disengage.

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

Examples of toy pushchairs and perambulators covered by item b) are illustrated in Figure 5.

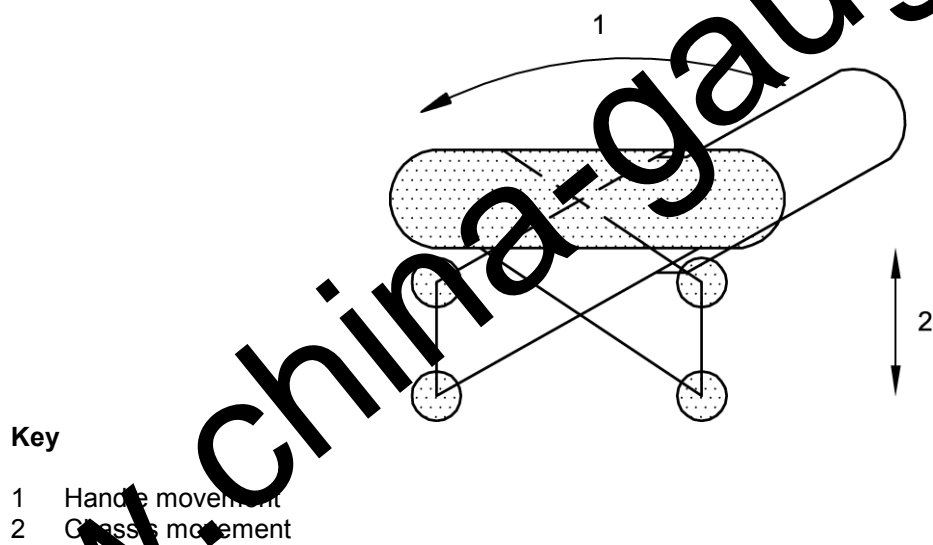
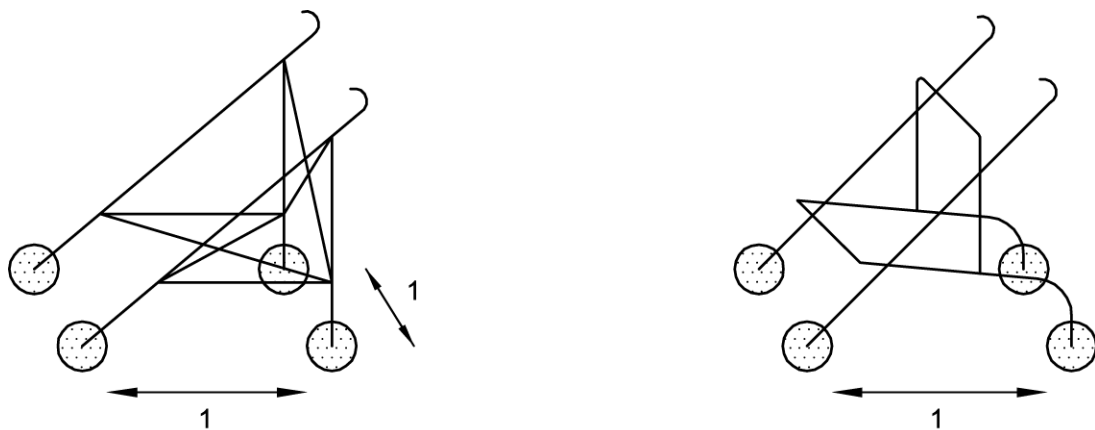


Figure 4 – Example of toy pushchair or perambulator covered by 4.10.1 a)



Key

- 1 Chassis movement

Figure 5 – Examples of toy pushchairs covered by 4.10.1 b)

- c) Folding devices on other collapsible toys (e.g. ironing boards, folding chairs and tables etc.) which may have a scissorlike action:

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

4.10.2 Driving mechanisms (see A.12)

The requirements in 4.10.2 a) and b) do not apply to *driving mechanisms* with insufficient power to injure fingers or other parts of the body.

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

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

4.10.3 Hinges (see A.13)

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

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

4.10.4 Springs (see A.14)

Springs shall conform to the following requirements:

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

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

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

The requirement in c) does not apply to *springs* that do not return to their original position after loading with a force of 40 N or to *springs* wound round a second component of the toy (for example a guiding rod) so that it is not possible to insert the *accessibility probe* A (see Figure 16, accessibility probe) between consecutive coils by more than 5 mm.

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

4.11 Mouth-actuated toys (see A.15)

Mouth-actuated toys shall conform to the following requirements:

- a) Mouth-actuated toys and *removable* mouthpieces of mouth-actuated toys shall not fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- b) Mouthpieces of mouth-actuated toys, if detached when tested first according to 8.3 (soaking test) and then according to 8.3 (torque test) and 8.4.2.1 (tension test, general), shall not fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- c) A_4 Mouth-actuated toys which contain loose components such as reeds in a whistle or reeds in a noisemaker shall not, when tested according to 8.17.2 (other mouth-actuated toys), release any objects that fit entirely in the cylinder when tested according to 8.2 (small parts cylinder). A_4
- d) Mouthpieces fitted to balloons shall conform to the requirements in items a) and b).
- e) A_4 Mouth-actuated projectile toys (e.g. peashooter) shall have a mouth piece which does not allow the intended *projectiles* to pass through when tested according to 8.17.1 (mouth-actuated projectile toys), and thereafter does not become detached when tested according to 8.3 (torque test) and 8.4.2.1 (tension test, general). A_4

4.12 Balloons (see 4.3 and A.16)

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

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

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

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

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

4.14 Enclosures

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

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

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

The ventilation area is not required if a permanent partition or bars (two or more) which effectively limit the continuous space by making the largest internal dimension less than 150 mm, are used to subdivide a continuous space.

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

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

- c) Toy chests with vertically opening hinged lids shall be provided with lid-support mechanisms to prevent sudden *collapse* or dropping of the lid. The lid-support mechanism shall support the lid so that at no position in the arc of travel of the lid from within 50 mm of the fully closed position through an arc not to exceed 60° from the fully closed position shall it drop more than 12 mm under the influence of its own mass, except in the last 50 mm of travel. The test shall be performed according to 8.31.1 (lid support).

The lid-support mechanism shall conform to this requirement before and after being subjected to 7 000 opening and closing cycles, as described in 8.31.2 (durability test for vertically opening hinged lids).

The lid-support mechanism shall not require adjustment by the consumer to ensure adequate lid support, nor shall it require adjustment in order to conform to the above requirement after being cycled according to 8.31.2 (durability test for vertically opening hinged lids).

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

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

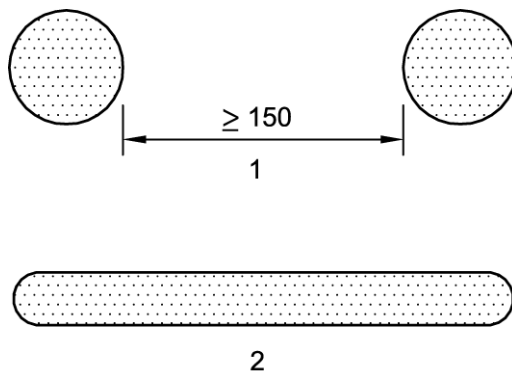
4.14.2 Masks and helmets (see A.19)

Masks and helmets shall conform to the following requirements:

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

An example of an equivalent single ventilation area is given in Figure 6.

Dimensions in millimetres



Key

- 1 Total ventilation area, 1 300 mm² or more
- 2 Alternative equivalent ventilation area, 1 300 mm² or more

Figure 6 – Example of an equivalent single ventilation area

- b) All rigid materials that cover the face such as goggles, space helmets or face shields shall not expose hazardous sharp *edges* (see 8.11, sharpness of edges), hazardous sharp points (see 8.12, sharpness of

points) or loose parts that could enter the eye, before and after being tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test).

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

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

4.15 Toys intended to bear the mass of a child (see A.20)

4.15.1 Toys propelled by a child or by other means

4.15.1.1 General

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

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

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

The requirements in 4.15.1.2 ~~deleted text~~ and 4.15.1.5 do not apply to *free-wheeling toy bicycles*, which are covered in 4.15.2, and to *toy scooters*, which are covered in 4.15.5.

4.15.1.2 Warnings and instructions for use

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

Roller skates, inline skates and skateboards for children offered for sale as toys shall carry a warning (see 7.10).

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

4.15.1.3 Strength

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

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

4.15.1.4 Stability

The requirement in 4.15.1.4 does not apply to:

- roller skates, inline skates and toy skateboards;
- toys that by their design do not have a stable base (e.g. pogo sticks, moon hoppers);

- toys intended for children of 36 months and over where the feet of the child can provide sideways stability (i.e. where the legs are unrestricted in their sideways motion) and where the height of the seat is such that a child of the age group for which the toy is intended can reach the ground with both feet when seated (with fore and aft stability remaining);
- toys with aligned wheels. Wheels with a spacing of 150 mm or less between the centres of the outermost wheels are considered to be a single wheel;
- A4 toy bicycles with a fixed transmitted drive. A4

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

4.15.1.5 Braking

The requirements in 4.15.1.5 do not apply to:

- roller skates and toy skateboards;
- toys where the hands or feet provide the motive power to the driving wheel(s) via direct transmission (e.g. pedal cars, tricycles);
- electrically propelled ride-on toys which are propelled at a speed of 1 m/s or less unloaded, having a seat height below 300 mm and in which the feet are free.

- a) Mechanically or electrically propelled toys with a free-wheeling facility shall have a braking device. For such toys having a mass of 30 kg or more, it shall be possible to lock at least one brake in a braking position.

The toy shall not move more than 5 cm when tested according to 8.26.1 (brake performance for toys other than *toy bicycles*).

NOTE A toy can be expected to be free-wheeling if it accelerates down a slope of 10° when loaded with a mass of 50 kg, but the same toy is not free-wheeling when loaded as in 8.21 (static strength) and pulled on a horizontal plane covered with a surface of abrasive paper (aluminium oxide P60) at a constant speed of $(2 \pm 0,2)$ m/s:

$$FT_1 \geq (M + 25) \times 1,7; \text{ or} \tag{1}$$
$$FT_2 \geq (M + 50) \times 1,7 \tag{2}$$

where

FT_1 is the maximum pull force in newtons for a toy intended for children under 36 months;
 FT_2 is the maximum pull force in newtons for a toy intended for children of 36 months and over;
 M is the mass of the toy in kilograms.

- b) Electrically 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 automatically cut power to the drive.

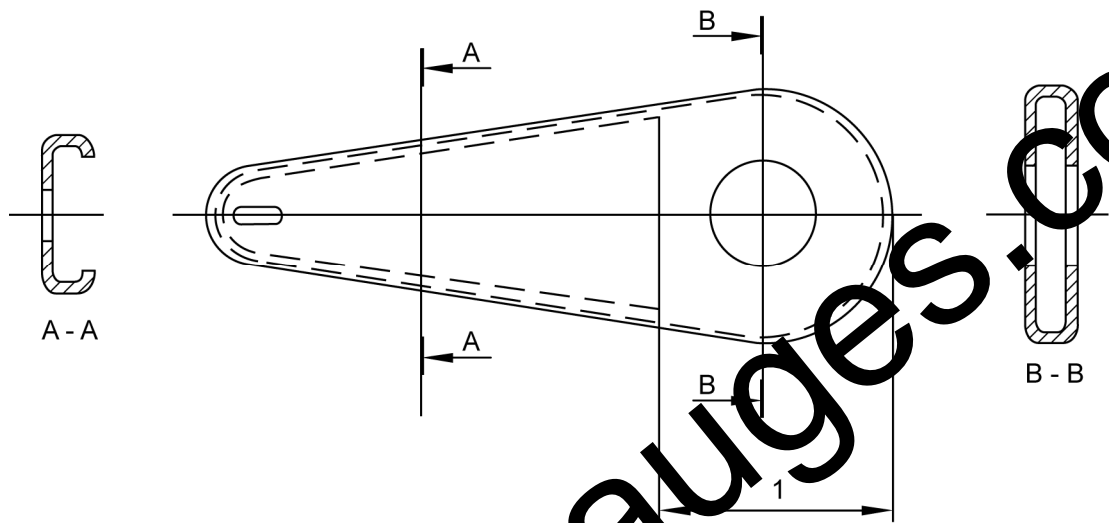
4.15.1.6 Transmission and wheel arrangement

Transmission and wheel arrangement shall conform to the following requirements:

- a) Propelling chains shall have a shield from the crank to the gear wheel at the side where the leg of the child is nearest the chain (side A), and a shield around the crank on the opposite side (side B), (see Figure 7). The shield shall not have slots or holes with a width greater than 5 mm.

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

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



Key

- 1 Extent of cover on inside face
- A Chain side
- B Crank side

Figure 7 – Propelling chains and chain shield

- c) Spaces between the wheels and the body or parts of the body (e.g. mudguards) shall also allow a 12 mm diameter rod to be inserted if they allow a 5 mm diameter rod to be inserted. This requirement does not apply to the friction surfaces of braking mechanisms, toy skateboards or roller skates.
- d) Tricycles provided with an attached handle used for pushing the child, shall be constructed in such a way as to prevent entrapment of the child's feet in the pedals etc. while being pushed (e.g. free-wheeling mechanism or foot rests).

4.15.2 Free-wheeling toy bicycles (see A.20)

4.15.2.1 General

In addition to relevant requirements in Clause 4, *free-wheeling toy bicycles* shall conform to the following requirements:

4.15.2.2 Instructions for use

Free-wheeling toy bicycles shall be accompanied by assembly and maintenance instructions. The potential dangers of riding *toy bicycles* and precautions to be taken shall be brought to the attention of the parents or carers (see 7.15).

4.15.2.3 Seat pillar minimum insertion mark

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 not less than two and a half times the diameter of the pillar from the bottom of the full diameter of the pillar and shall not affect the seat pillar strength.

4.15.2.4 Braking requirements

Free-wheeling toy bicycles shall be equipped with two independent braking systems, one which operates on the front wheel and one which operates on the rear wheel.

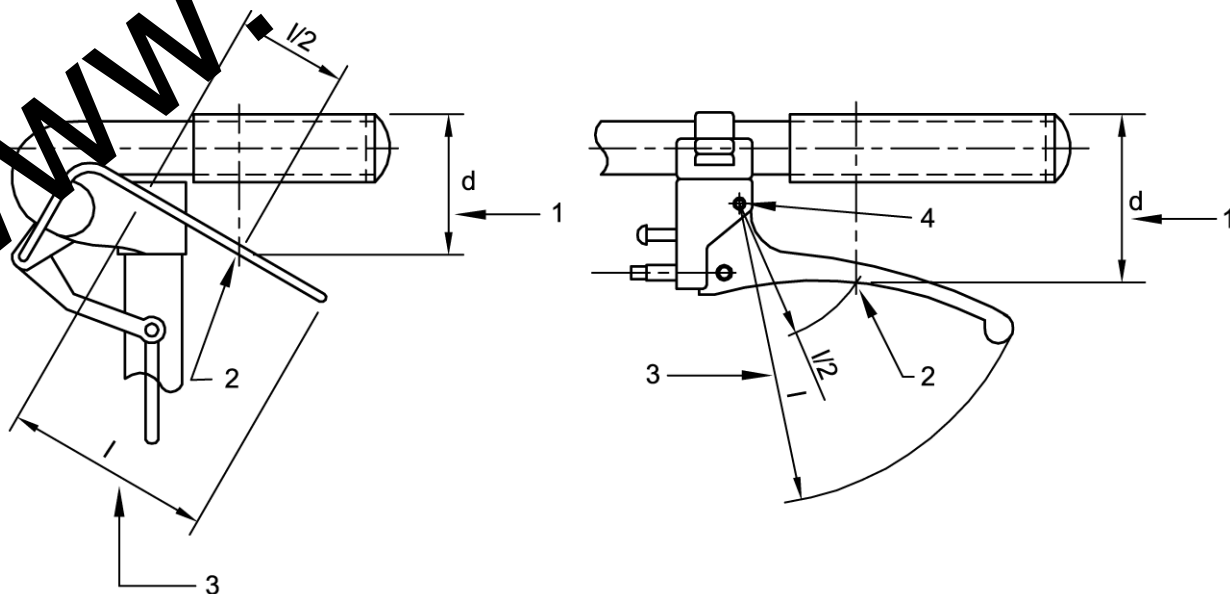
For handbrakes, the brake lever dimension d measured at the midpoint of the lever as shown in Figure 8 shall not exceed 60 mm. The range of adjustment on an adjustable lever shall permit this dimension to be attained. The lever length shall be 80 mm or more.

The toy shall not move more than 5 cm when tested according to 8.26.2 (brake performance for toy bicycles).

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

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

- a) The bow rocker of any bow-mounted rocking horse or other rocking toy shall have a limit to its movement which shall at all times hold the user within the extreme of the bow. Compliance is checked by visual inspection.
- b) The toy shall not tip over when tested according to 8.23.1 (stability, toys intended to bear the mass of a child).
- c) Toys shall not collapse so that they do not continue to conform to relevant requirements of this European Standard when tested according to 8.21 (static strength).
- d) Toys that due to their construction, strength, design or other factors are not suitable for use by children of 36 months and over shall carry a warning (see 7.16).



Key

- 1 Brake lever dimension, d
- 2 Midpoint of lever
- 3 Lever length, l
- 4 Pivot

Figure 8 – Handbrake lever dimensions

4.15.4 Toys not propelled by a child

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

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

4.15.5 Toy scooters (see A.49)



4.15.5.1 General

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

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

In addition to relevant requirements in Clause 4, *toy scooters* shall conform to the requirements of 4.15.5.

4.15.5.2 Warnings and instructions for use

Toy scooters shall carry a warning and an indication about the intended weight group. They shall also be accompanied by instructions for use and precautions to be taken. The potential dangers of riding a *toy scooter* shall be brought to the attention of the parents or carers (see  7.18 .

4.15.5.3 Strength

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

4.15.5.4 Adjustable and folding steering tubes

- a) To prevent sudden changes of height, steering tubes with adjustable height shall
 - 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.

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

- b) **A3** Steering tubes intended to be folded shall have a locking device on the folding mechanism.
- c) The space between moving elements capable of injuring fingers, shall also allow a 12 mm rod to be inserted if it allows a 5 mm rod to be inserted.
- d) Accessible openings in moving elements capable of shearing a finger shall not allow the insertion of a 5 mm rod. **A3**

4.15.5.5 Braking

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

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

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

4.15.5.6 Wheel size

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

4.15.5.7 Protruding parts

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

4.16 Heavy immobile toys

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

4.17 Projectiles (see A.22)

4.17.1 General

Projectiles and *projectile toys* shall conform to the following requirements:

- a) All rigid *projectiles* shall have a tip radius of 2 mm or more.
- b) **A4** Resilient materials used as impact surfaces shall not become detached when tested according to 8.4.2.3 (tension test, protective components) unless the resulting elements still conform to the relevant requirements of this part of EN 71. If the impact surface is a *suction cup* it shall not become detached when tested according to 8.4.2.3 (tension test, protective components). **A4**
- c) Helicopter rotors and single propellers intended to be powered into vertical or nearly vertical free flight by a *spring* mechanism or similar device, shall have a ring around the perimeter in order to reduce the risk of injuries.
- d) *Projectiles* with a *suction cup* as impact area shall have a length of 57 mm or more when measured as indicated in Figure 9, and with its *suction cup* on a flat surface under a force that is produced by its own mass.

Dimensions in millimetres

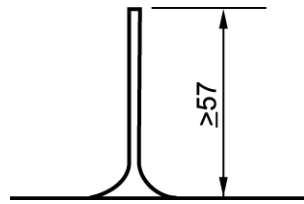


Figure 9 – Measurement of length of projectiles with blunt point

4.17.2 Projectile toys without stored energy

Projectile toys without stored energy shall conform to the following requirements:

Projectiles in the form of darts shall have blunted points or points that are protected by a resilient material (e.g. rubber) having an impact area of 3 cm² or more. Points shall not be made of metal. However, darts fitted with magnetic metal discs are permitted if the disc has an area of 3 cm² or more.

4.17.3 Projectile toys with stored energy

Projectiles propelled from a discharge mechanism shall conform to the following requirements:

- a) The maximum kinetic energy of *projectiles*, when tested according to 8.24.1 (kinetic energy of projectiles) shall not exceed:
 - 1) 0,08 J for rigid *projectiles* without resilient impact surfaces;
 - 2) 0,5 J for resilient *projectiles* or *projectiles* with resilient impact surfaces (e.g. rubber).
- b) For *projectiles* in the form of arrows whose maximum kinetic energy exceeds 0,08 J, their impact surfaces shall be protected by a resilient material (e.g. rubber). The maximum kinetic energy per unit area of the resilient impact surface shall not exceed 0,16 J/cm² when tested according to 8.24.1 (kinetic energy of projectiles).
- c) If a discharge mechanism is able to discharge an object other than that provided with the toy, or if a toy is capable of discharging a *projectile* with a kinetic energy greater than 0,08 J, the potential danger shall be drawn to the attention of the user (see 7.7).

NOTE In order to reduce the risk of eye injuries, manufacturers are strongly recommended to design toys so that they are not able to discharge missiles other than those provided with the toy.

4.17.4 Bows and arrows

For the purpose of this European Standard, bows offered for sale with arrows are to be considered as toys.

Arrows discharged from a bow shall comply with the following requirements:

- a) Points of arrows shall not be made of metal; however, points fitted with magnetic metal discs are permitted if the disc has an area of 3 cm² or more.
- b) The maximum kinetic energy of arrows discharged from a bow shall not exceed the values given in 4.17.3 a) when tested according to 8.24.2 (kinetic energy of bows and arrows).
- c) Arrows whose maximum kinetic energy exceeds 0,08 J, shall conform to 4.17.3 b). The potential danger of discharging such arrows shall be drawn to the attention of the user (see 7.7).

4.18 Aquatic toys (see A.23)

Aquatic toys shall conform to the following requirements:

- a) All air-inflation inlets shall have stoppers permanently attached to the toy. When the 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.

The stopper, if detached when tested according to 8.3 (torque test), and 8.4.2.1 (tension test, general) shall not fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).

- b) The potential danger of using *aquatic toys* shall be drawn to the attention of the user (see 7.4).

4.19 **A1** Percussion caps specifically designed for use in toys and toys using percussion caps (see A.24) **A1**

Assuming reasonably foreseeable use, percussion caps specifically designed for use in toys shall not produce debris which could cause eye injuries, flames or glowing residues.

A1 Toys intended to be used with percussion caps shall carry an indication regarding which make and model of percussion caps they can be safely used with, and a warning (see 7.14). The warning may alternatively be placed on the packaging (see 7.14). **A1**

The *packaging* of percussion caps shall carry a warning (see 7.13).

4.20 Acoustics (see A.25)

The requirements in 4.20 do not apply to:

- mouth-actuated toys, i.e. toys the noise level of which is determined by the blowing action of the child (e.g. whistles and imitation instruments such as trumpets, flutes);
- **A4** child-actuated toys, that is toys the noise level of which is determined by the muscular action of the child (e.g. xylophones, bells, drums). *Rattles* and *squeeze toys* are, however, covered by the requirements except those that are attached to a device fixed across a cradle, cot, perambulator, etc. unless those *rattles* and *squeeze toys* are *removable components* **A4**;
- tape-players, CD-players and other similar electronic toys. However, if such toys are provided with headphones or earphones, they are covered by the requirements.

When tested according to 8.28 (determination of emission sound pressure levels), toys which are clearly designed to emit sound shall conform to the following requirements:

- a) The A-weighted emission sound pressure level, L_{pA} , produced by *close-to-the-ear toys* shall not exceed 80 dB when measured in a free field.

The A-weighted emission sound pressure level, L_{pA} , produced by *close-to-the-ear toys* shall not exceed 90 dB when measured using an ear coupler.

- b) The A-weighted single event emission sound pressure level, L_{pA1s} , produced by *rattles* or *squeeze toys* shall not exceed 85 dB.

- c) The C-weighted peak emission sound pressure level, $L_{pC peak}$, produced by *rattles* or *squeeze toys* shall not exceed 110 dB.

- d) The C-weighted peak emission sound pressure level, $L_{pC peak}$, produced by a toy using percussion caps shall not exceed 125 dB.

- e) The C-weighted peak emission sound pressure level, $L_{pC\ peak}$, produced by any type of toy excluding toys using percussion caps shall not exceed 115 dB.
- f) If the C-weighted peak emission sound pressure level, $L_{pC\ peak}$, produced by a toy exceeds 115 dB, the potential danger to hearing shall be drawn to the attention of the user (see 7.14).

4.21 A_6 Toys containing a non-electrical heat source A_6

The following requirements do not cover burners in chemistry sets or related experimental kits, A_6 *deleted text* A_6 and similar items.

- a) Toys containing a heat source shall not ignite when used at the maximum input when tested according to 8.30 (measurement of temperature rises).
- b) The temperature rise of all handles, knobs and similar parts which are likely to be touched by hand, shall not exceed the following values when tested according to 8.30 (measurement of temperature rises):
- | | |
|-------------------------------|------|
| — parts of metal | 25 K |
| — parts of glass or porcelain | 30 K |
| — parts of plastics or wood | 35 K |
- c) The temperature rise of other accessible parts of the toy shall not exceed the following values when tested according to 8.30 (measurement of temperature rises):
- | | |
|--|-------------------|
| — parts of metal | 45 K |
| — A_6 parts of glass or porcelain | 50 K A_6 |
| — parts of other materials | 55 K |

A_6 NOTE Requirements for toys containing an electrical heat source are given in EN 62115:2005. A_6

4.22 Small balls (see 5.10 and A.48)

A_6 This requirement does not apply to *soft-filled balls*.

Any *ball* that entirely passes through template E when tested according to 8.32.1 (small balls and suction cups) is considered to be a small *ball*.

Any *ball* attached to a toy by a string, elastic *cord* or similar, such that the *ball* is suspended freely, is considered to be a small *ball* if it passes through the base of template E such that the distance A is greater than 30 mm when tested according to 8.32.2 (small balls attached to a toy by a string).

Toys that are small *balls* or contain *removable* small *balls* or contain small *balls* that become detached when tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test) shall carry a warning (see 7.2). For *large and bulky toys* the drop test above is substituted by 8.6 (tip over test). A_6

5 Toys intended for children under 36 months

Toys intended for children under 36 months shall in addition to relevant requirements of Clause 4 conform to the following requirements, where applicable.

5.1 General requirements (see A.26)

The requirements in 5.1 do not apply to the following:

- *paper*, fabric, elastics, yarn, strings and *fuzz*;

- crayons, chalks, pencils and similar writing and drawing implements without *removable components*;
- balloons;
- modelling clay and similar products.

The general requirements are as follows:

- a) Toys and *removable components* of toys shall not, whatever their position, fit entirely in the cylinder when tested according to 8.2 (small parts cylinder) (see A.26).
- b) When tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test), toys shall not produce any parts which, whatever their position, fit entirely in the cylinder when tested according to 8.2 (small parts cylinder), or exhibit accessible hazardous sharp edges (see 8.11, sharpness of edges), or *accessible* hazardous sharp points (see 8.12, sharpness of points), and toys with springs shall continue to conform to the requirements in 4.10.4 (springs).
- c) Metal points and wires with a cross section of 2 mm or less that do not necessarily present a sharp point according to 8.12 (sharpness of points) are considered to be potentially hazardous sharp points. They shall therefore be assessed to determine whether they present an unreasonable risk of injury taking into account the foreseeable use of the toy (see also A.9).
- d) *Large and bulky toys* shall be tested according to item b) above with the exclusion of 8.5 (drop test) and with the inclusion of a test according to 8.6 (tip over test).

The requirement in e) does not apply to *large and bulky toys* and books and other items of *paper* and paperboard.

- e) Glued wooden toys and toys with glued-on plastic decals shall be tested according to 8.9 (soaking test) before being tested according to 5.1 b) above. Flakes of paint that have come loose from painted toys are exempt from being tested according to 8.2 (small parts cylinder). Thick surface coatings such as varnish are not exempt.
- f) The surfaces and *accessible edges* of toys shall be free from *splinters*.
- g) The casing of toys intended for children too young to sit up unaided, shall not *crack* when tested according to 5.1 b) above. A *crack* may be accepted if it clearly does not create a hazard (see also A.26).
- h) For foam toys and toys containing *accessible* foam components, clamps and test fixtures used to perform the tests shall not damage the toy or component such as to affect the results when tested according to 8.3 (torque test) and 8.4.2.1 (tension test, general).

5.2 Filling materials (see A.27)

Filling materials shall conform to the following requirements:

- a) Soft *filling* materials shall not contain any hard or sharp contaminants such as metal *particles*, nails, needles and *splinters*.
- b) *Soft-filled toys* containing small parts (e.g. rattling components, bells, shredded foam) or with *filling* materials from which pieces can be bitten or torn thereby producing small parts, which fit entirely in the cylinder when tested according to 8.2 (small parts cylinder), shall have a covering so that, after being tested according to 8.4.2.2 (tension test, seams and materials), it shall not be possible to insert freely the front part of probe A, as specified in 8.10 (accessibility of part or component), through any one opening in the seam or cover material. An opening may be accepted if it clearly does not create a hazard.

NOTE *Filling* materials from which pieces can be bitten or torn off include, for example, plastic foam but exclude *paper*, fabric, elastics, yarn, strings and *fuzz*.

5.3 Plastic sheeting (see A.28)

Plastic sheeting which becomes detached when tested according to 8.25.2 (plastic sheeting, adhesion) and 8.4.2.1 (tension test, general) and has an area greater than 100 mm x 100 mm, shall have an average thickness of 0,038 mm or more when tested according to 8.25.1 (plastic sheeting, thickness).

5.4 Cords on toys (see A.29)

Cords shall conform to the following requirements:

- a) *Cords* shall have a thickness (smallest dimension) of 1,5 mm or more when tested according to 8.20 (cord thickness). This does not apply to ribbons.
- b) The free length of *cords* (e.g. on pull-along toys) which include attachments that can form nooses shall either:
 - not exceed 220 mm when stretched by a force of (25 ± 2) N or
 - when subjected to a force of (25 ± 2) N, separate into parts not exceeding 220 mm when stretched by a force of (25 ± 2) N. It shall be possible to join the parts together after they have been separated without altering the characteristics of the joints (see Figure 10).

The free length of the *cord* shall be measured from the fixing point to the end of the *cord* or to the fixing point on the other part of the *cord*. If the fixing point has the same shape or form as the *cord*, this part shall be measured as a part of the entire *cord* (see Figure 11).

- c) The perimeter of any nooses of *cords* shall not exceed 380 mm when stretched by a force of (25 ± 2) N.
- d) Toys with self-retracting *cords* shall have a mechanism recoil force less than 10 N.
- e) *Cords* intended to be fixed across cradles, cots, perambulators etc., shall not exceed 750 mm when stretched by a force of (25 ± 2) N, and their length under these conditions shall be not more than 40 % longer than their relaxed length.

A warning shall be given (see 7.11).

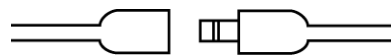


Figure 10 – Example of a joint on cords

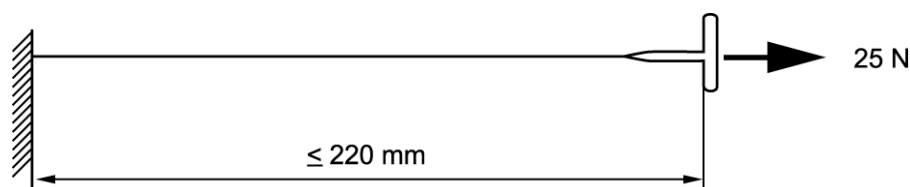


Figure 11 – Fixing points of cords

5.5 Liquid-filled toys (see A.30)

Upon completion of relevant tests according to Clauses 4 and 5, toys with non-accessible liquid shall be tested according to 8.15 (leakage of liquid-filled toys) and there shall be no leakage of the contents nor any splitting or *cracking* which could lead to leakage of the contents.

Liquid-filled *teethers* shall carry a warning not to be placed in a freezer compartment (see 7.12).

5.6 Speed limitation of electrically driven toys

Electrically driven ride-on toys shall have a speed limit of 8 km/h or less when tested according to 8.29 (determination of speed of electrically driven ride-on toys).

5.7 Glass and porcelain (see 4.5 and A.6)

Accessible glass and *accessible* porcelain shall not be used in the construction of toys intended for children under 36 months.

5.8 Shape and size of certain toys (see A.31)

The requirements in 5.8 a) and b) do not apply to *soft-filled* toys, *soft-filled* parts of toys or parts of fabric. They do not apply to rigid elements having a major dimension equal to 30 mm or less.

The shape and size of toys intended for children who are too young to sit up unaided, shall conform to the requirements in a) and b), as supplied.

Toys that are clearly marketed for such children include, but are not limited to:

- *rattle*-shaped toys and *squeeze* toys with or without noise making features;
 - *teethers*, toys or components intended to be chewed on;
 - *hand-held* activity toys;
 - blocks and building blocks covered by textile or vinyl;
 - *removable components* of toys intended to be strung across a crib, playpen or perambulator;
 - *removable components* of baby gyms;
 - legs of baby gyms. The requirements in a) and b) below apply regardless of the mass of the baby gym.
- a) For such toys having a mass of 0,5 kg or less, no part of the toy shall protrude past the base of template A when tested according to 8.16 (geometric shape of certain toys).
- b) For such toys with nearly spherical, hemispherical or circular flared ends having a mass of 0,5 kg or less, no part of the toy shall protrude past the base of template B when tested according to 8.16 (geometric shape of certain toys).

5.9 Toys comprising monofilament fibres (see A.32)

Toys comprising monofilament fibres of straightened length greater than 50 mm and attached to a fabric base shall carry a warning (see 7.17).

5.10 Small balls (see also 4.22 and A.48)

A5 This requirement does not apply to *soft-filled balls*.

Any *ball* that entirely passes through template E when tested according to 8.32.1 (small balls and suction cups) is considered to be a small *ball*.

Any *ball* attached to a toy by a string, elastic *cord* or similar, such that the *ball* is suspended freely, is considered to be a small *ball* if it passes through the base of template E such that the distance *A* is greater than 30 mm when tested according to 8.32.2 (small balls attached to a toy by a string).

- a) Toys shall not be small *balls* or contain removable small *balls*.
- b) Small *balls* shall not become detached when tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test), and for glued wooden toys 8.9 (soaking test). For *large and bulky toys*, the drop test above is substituted by 8.6 (tip over test); ^(A5)

5.11 Play figures

This requirement does not apply to *soft-filled toys*.

Play figures having:

- a) a round, spherical or hemispherical end with tapered neck attached to a cylindrical shape without appendages; and
- b) an overall length not exceeding 64 mm (see examples in Figure 12),

shall be designed so that when tested according to 8.33 (test for play figures), the rounded end shall not protrude past the base of template B. The requirement applies to figures with added or moulded features such as hats or hair which retain the rounded shape of the end.

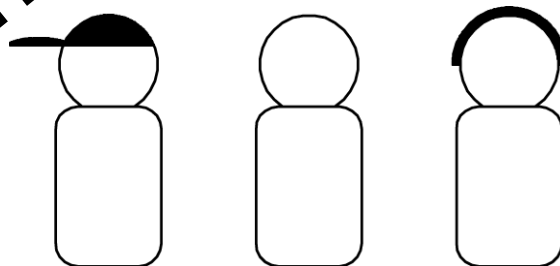


Figure 12 – Examples of play figures

5.12 Hemispheric-shaped toys (see A.50)

These requirements apply to cup-shaped, bowl-shaped or one half of an egg-shaped toys having a nearly round, oval or elliptical opening with the minor and major outer diameters between 64 mm and 102 mm, a volume of less than 177 ml and a depth greater than 13 mm.

The following toys are exempt from these requirements:

- ^(A6) ~~deleted text~~ ^(A6)
- containers that must be airtight so the contents can maintain their functional integrity (e.g. modelling clay containers);
- components of larger products (e.g. bowl-shaped smoke stack that is permanently attached to a toy train or a swimming pool that is moulded into a larger toy playscape) that do not become detached when tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test) and for glued wooden toys 8.9 (soaking test). For *large and bulky toys*, the drop test above is substituted by 8.6 (tip over test);

— containers that are part of the packaging, intended to be discarded once the toy is removed from the packaging.

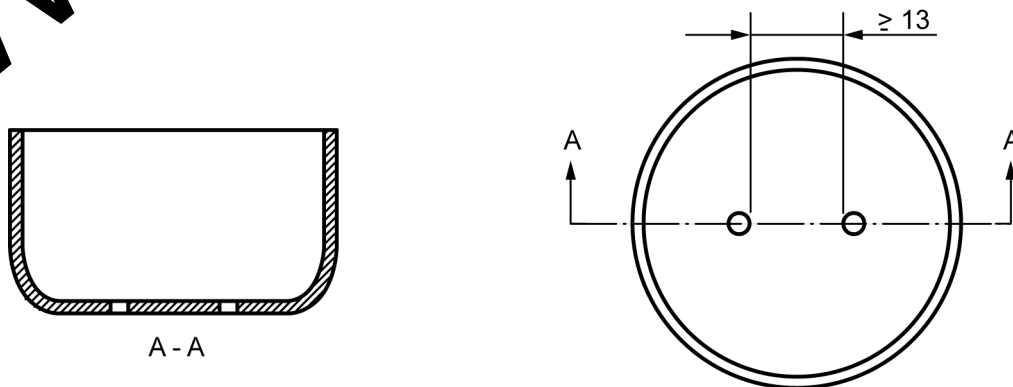
Cup-shaped, bowl-shaped or one half of an egg-shaped toys shall comply with one or more of the requirements in items a), b), c) or d) below:

- a) The object shall have two or more openings that are 13 mm or more from the rim as measured along the outside contour;
 - if the openings are placed in the base of the object, two or more of the openings shall be 13 mm or more apart (see Figure 13 a));
 - if the openings are not placed in the base of the object, two or more of the openings shall be placed at least 30° but not more than 150° apart (see Figure 13 b));
- b) The plane of the open end of the cup shape shall be interrupted at the centre by some type of divider that extends 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 13 c));
- c) The object shall have three openings located between 6 mm and 13 mm from the rim and 100° or more apart as measured along the outside contour;
- d) The object shall have a repeating scalloped edge pattern around the entire rim. The distance between centrelines of adjacent peaks shall be 25 mm or less and the depth shall be 6 mm or more (see Figure 13 d)).

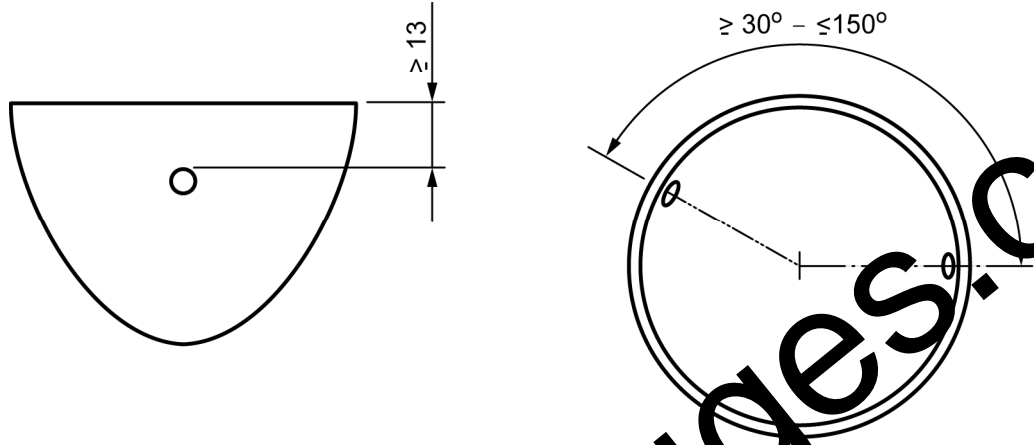
For the purpose of these requirements, an opening is defined as a hole of any shape with a dimension of 2 mm or more.

The requirements above apply before and after testing according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test) and for glued wooden toys 8.9 (soaking test). For *large and bulky toys* the drop test above is substituted by 8.6 (tip over test).

Dimensions in millimetres



a) Openings in the base of bowl



b) Opening placement

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Dimensions in millimetres

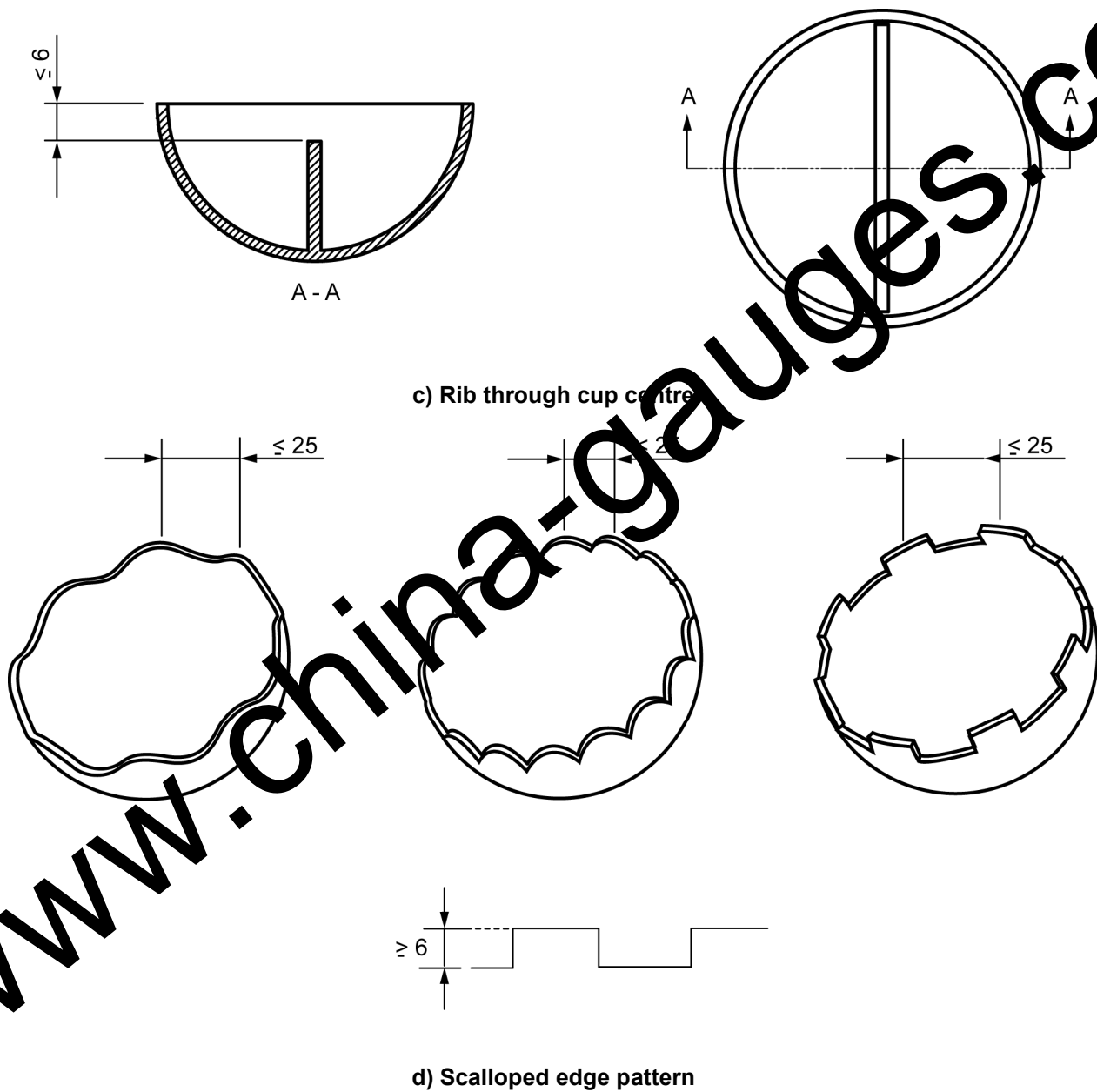


Figure 13 – Examples of hemispheric-shaped toys

5.13 Suction cups

- Loose *suction cups*, removable *suction cups* and *suction cups* attached to a toy by a string, elastic cord or similar tether shall not pass entirely through template E when tested according to 8.32.1 (small balls and suction cups).
- Suction cups* that become detached from a toy when tested according to 8.3 (torque test), 8.4.2.1 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test) shall not pass entirely through template E when tested according to 8.32 (small balls and suction cups test) and shall continue to conform to relevant requirements in this European Standard.

6 Packaging

The requirement in 6 a) does not apply to:

- shrunk-on film *packaging*, which is normally destroyed when the *packaging* is opened by the user;
- bags made of perforated sheets which conform to the requirements in 4.3 b).

The *packaging* of toys shall conform to the following requirements:

- a) Bags made of flexible plastics with an opening perimeter greater than 38 mm used for external or internal *packaging*, shall have an average sheet thickness of 0,038 mm or more when tested according to 8.25.1 (plastic sheeting, thickness).
- b) Bags made of flexible plastics with an opening perimeter greater than 300 mm shall not have a draw-string or *cord* as a means of closing.

7 Warnings and instructions for use (see A.3)

7.1 General

NOTE Users of this European Standard are reminded of the legal requirements in each country.

For the European Union, note that

- toys must be accompanied by appropriate clearly legible warnings in order to reduce inherent risks in their use as described in the essential safety requirements in European Council Directive 88/378/EEC of 3 May 1988 concerning the safety of toys (published in the Official Journal of the EC No. L 187 of 16 July 1988).
- the manufacturer or his authorised representative or the importer into the community shall in a visible, easily legible and indelible form affix his name and/or trade name and/or mark and address on the toy or on its *packaging* together with the CE-marking as declaration of presumption of conformity with the essential safety requirements of the above directive.

The legal requirements for the CE-marking are given in European Council Directive 93/68/EEC of 22 July 1993.

For details, refer to the directives or corresponding national legislation.

7.2 Toys not intended for children under 36 months (see A.34)

The provisions in 7.2 do not apply to toys which, on account of their function, dimensions, characteristics, properties or other cogent grounds, are clearly unsuitable for children under 36 months. Toys which are not intended for but might be dangerous for children under 36 months shall carry a warning, for example:

"Not suitable for children under 36 months" or "Not suitable for children under three years"

together with a brief indication of the specific hazard calling for this restriction.

NOTE The word "Warning" may precede the above sentences.

The age warning shall be clearly legible at the point of sale of the product.

The age warning shall appear either on the toy itself or on its retail *packaging*.

The indication of the specific hazard may appear in a leaflet or in the instructions for use.

The age warning may be substituted by a symbol as specified in EN 71-6.

7.3 Latex balloons (see 4.12 and A.16)

The *packaging* of latex balloons shall carry the following warning:

"Warning! Children under eight years can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once."

The *packaging* of natural rubber latex balloons shall indicate "Made of natural rubber latex".

7.4 Aquatic toys (see 4.18 and A.23)

Aquatic toys and their *packaging* shall carry the following warning:

"Warning! Only to be used in water in which the child is within its depth and under supervision."

The warning on the toy shall be indelible and in a colour which contrasts with the body of the toy. The height of letters shall be 3 mm or more and the marking on inflatable toys shall be 100 mm or less from one of the air inflation inlets.

No advertising copy or graphics shall state or imply that the child will be safe with such a toy if left unsupervised.

7.5 Functional toys (see A.35)

Functional toys or their *packaging* shall carry the following warning:

"Warning! To be used under the direct supervision of an adult."

In addition, these toys shall be accompanied by directions giving working instructions and precautions to be taken by the user, with the warning that failure to take these precautions would expose the user to the hazards - to be specified - normally associated with the appliance or product of which the toy is a scale model or an imitation. It shall also be indicated that the toy shall be kept out of the reach of very young children.

7.6 Hazardous sharp functional edges and points (see 4.7 and 4.8)

For toys that incorporate hazardous sharp *functional edges* (see 8.11, sharpness of edges) or hazardous sharp *functional points* (see 8.12, sharpness of points), attention shall be drawn to the potential hazards of such points and *edges* on the *packaging* and in the instructions for use accompanying the toy, when appropriate.

7.7 Projectiles (see 4.17.3 c) and 4.17.4 c))

Toys with *projectiles* shall be accompanied by instructions for use which draw attention to the hazards of using missiles other than those supplied or recommended by the manufacturer.

Toys capable of discharging a *projectile* with a kinetic energy greater than 0,08 J shall carry the following warning:

"Warning! Do not aim at eyes or face."

7.8 Imitation protective masks and helmets (see 4.14.2 and A.19)

Toys that are imitations of protective masks and helmets (for example motorcycle helmets, industrial safety helmets and fireman's helmets) and their *packaging*, if any, shall carry the following warning:

"Warning! This is a toy. Does not provide protection."

7.9 Toy kites (see 4.13)

Toy kites and other flying toys with *cords* exceeding 2 m linking the toy to the child shall carry the following warning:

"Warning! Do not use near overhead power lines or during thunderstorms."

7.10 Roller skates, inline skates and toy skateboards (see 4.15.1.2)

Roller skates, inline skates and skateboards for children offered for sale as toys shall carry the following warning:

"Warning! Protective equipment should be worn.
Not for children with a body weight of more than 20 kg."

Moreover, the instructions for use shall contain a reminder that the toy shall be used with caution since it requires great skill, so as to avoid falls or collisions causing injury to the user and third parties. Some indication shall also be given as to recommended protective equipment (helmets, hand/wrist protection, knee-pads, elbow-pads etc.).

7.11 Toys intended to be strung across a cradle, cot, or perambulator (see 5.4 e)

Toys intended to be strung across a cradle, cot, or perambulator by means of strings, *cords*, elastics or straps shall carry the following warning:

"Warning! To prevent possible injury by entanglement, remove this toy when the child begins to push up on hands and knees."

7.12 Liquid-filled teethers (see 5.5)

Liquid-filled *teethers* shall be accompanied by the following instruction:

"Cool only in a domestic refrigerator, do not place in the freezer compartment."

7.13 Percussion caps specifically designed for use in toys (see 4.19)

The *packaging* of percussion caps shall carry the following warning:

"Warning! Do not fire indoors or near eyes and ears. Do not carry caps loose in a pocket."

7.14 Acoustics (see 4.20 f))

Toys which produce high impulse sound levels, or their *packaging* shall carry the following warning:

"Warning! Do not use close to the ear! Misuse may cause damage to hearing."

For toys using percussion caps add A_1 adjacent to the text above A_1 :

"Do not fire indoors! A_1 Use only percussion caps recommended by the manufacturer. A_1 "

7.15 Toy bicycles (see 4.15.2.2)

Toy bicycles shall carry the following warning:

"Warning! A protective helmet should be worn when cycling!"

In addition, the instructions for use shall contain a reminder that the bicycle is not suitable for use on public highways. Moreover, 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.

7.16 Toys intended to bear the mass of a child (see 4.10.1, 4.15.1.2, 4.15.3 and 4.15.4)

Toys that due to their construction, strength, design or other factors are not suitable for children of 36 months and over shall carry a warning, for example:

"Warning! Not to be used by children over 36 months."

together with a brief indication of the specific reason for this restriction (e.g. insufficient strength).

The age warning shall be clearly legible at the point of sale of the product.

7.17 Toys comprising monofilament fibres (see 5.9)

Toys comprising monofilament fibres of straightened length greater than 50 mm and attached to a fabric base shall be labelled as follows:

"Caution! Not suitable for children under 10 months due to long hair."

 *deleted text* 

7.18 Toy scooters (see 4.15.5.2)

Toy scooters intended for children with a body mass of 20 kg or less shall carry the statement:

"20 kg max"

Toy scooters intended for children with a body mass of 50 kg or less shall carry the statement:

"50 kg max"

In addition, the *packaging*, if there is one, and the instructions for use, shall carry the following warning:

"Warning. Protective equipment should be worn.

Not for children with a body weight of more than 20 kg (or, as appropriate, 'of more than 50 kg')."

The instructions for use shall contain a reminder that the toy shall be used with caution, since it requires great skill, so as to avoid falls or collisions causing injury to the user and third parties. They shall also, as appropriate, include information such as:

- the warnings indicated above;
- how to safely fold or unfold foldable scooters;
- the necessity to pay attention that all locking devices are engaged;
- the dangers of using it in public highways;
- a recommendation to use protective equipment such as helmet, gloves, knee-pads and elbow-pads.

8 Test methods

8.1 General requirements for testing

This European Standard specifies different forces and/or loads to be used when testing toys intended for children of different age groups. If no age group is specified, or a toy spans over more than one age group, or there is reasonable doubt as to which age group the toy is intended for, the toy shall be subjected to the more severe test.

The tests shall be performed in the order specified in the requirements. If a toy during a test has been materially affected by a clamp or similar test equipment, the following test(s) shall be performed on a new toy.

8.2 Small parts cylinder (see 4.6, 4.11, 4.18, 5.1, 5.2 and A.36)

Place the toy or component without compressing it and in any orientation in a cylinder having dimensions as indicated in Figure 14.

Determine whether the toy or component fits entirely within the cylinder.

Dimensions in millimetres

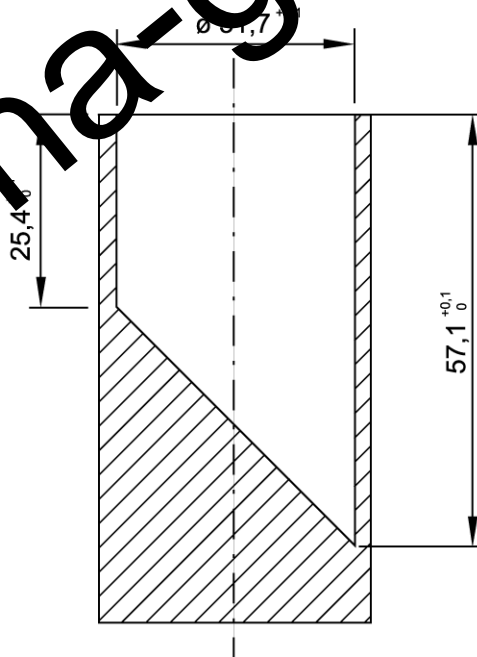


Figure 14 – Small parts cylinder

8.3 Torque test (see 4.6, 4.11, 4.14.2, 4.18, 4.22, 5.1, 5.10, 5.12 and 5.13)

If a component can be gripped between thumb and forefinger, gradually apply a torque to the component within a period of 5 s in a clockwise direction until either

- a rotation of 180° from the original position has been attained; or
- a torque of 0,34 Nm is reached.

Maintain the maximum rotation or required torque for 10 s. Permit the test component to return to a relaxed condition. Repeat this procedure in a counter-clockwise direction.

To prevent rotation, 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.

If a component which is attached by a screw thread becomes loosened during application of the required torque, continue to apply the torque until the required torque is exceeded or the part disassembles, or until it becomes apparent that the part will not disassemble.

8.4 Tension test (see A.37)

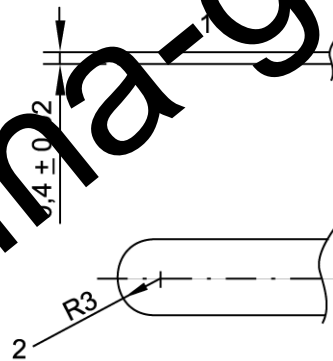
8.4.1 Apparatus

8.4.1.1 Tensile testing machine or **dead-weight arrangement** with means of applying forces up to at least 90 N with an accuracy of 2 N.

8.4.1.2 Clamps and straps.

8.4.1.3 Feeler gauge with a thickness of $(0,4 \pm 0,02)$ mm and an insertion edge radius of approximately 3 mm (see Figure 15).

Dimensions in millimetres



Key

- 1 Edge broken
- 2 Insertion edge radius

Figure 15 – Feeler gauge

8.4.2 Procedure

8.4.2.1 General (see 4.6, 4.11, 4.14.2, 4.18, 4.22, 5.1, 5.3, 5.10, 5.12 and 5.13)

If a requirement indicates that 8.3 (torque test) and 8.4 (tension test) shall be performed, the tension test shall follow after the torque test and be performed on the same component of the toy.

If the component to be tested cannot be gripped between thumb and forefinger, establish whether it is grippable by inserting the feeler gauge between the component and the underlying layer or body of the toy at an angle 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.

If the component is grippable, affix a suitable clamp behind the component taking care not to damage the attachment mechanism or the body of the toy.

Fasten the toy in the test apparatus and apply a tensile force to the component by means of a clamp or by other means.

Apply a force of:

- (50 ± 2) N when the largest *accessible* dimension is 6 mm or less; or
- (90 ± 2) N when the largest *accessible* dimension is greater than 6 mm.

Apply the force gradually within a period of 5 s. Maintain the force for 10 s.

Determine whether the component has become detached.

8.4.2.2 Seams and materials (see 5.2)

Use clamps with jaws to which discs with a diameter of 19 mm are affixed.

Attach the clamps to the cover material in any position on the textile or plastic surface of the toy after removing any clothing supplied with the toy. Attach the clamps at the most onerous position of the casing (e.g. seam joint between the leg and body) not less than 30 mm apart and equidistant to the seam. Ensure that there is sufficient material for full clamping by the 19 mm disc jaws.

Gradually apply a force of (70 ± 2) N between the two clamps within a period of 5 s. Maintain the force for 10 s.

Apply the test to this area of casing or seam only once.

Determine whether it is possible to insert the front part of accessibility probe A (see Figure 16) under a force of 10 N or less.

8.4.2.3 Protective components (see 4.9 and 4.17.1)

Gradually apply a force of (50 ± 2) N within 5 s. Maintain the force for 10 s.

Determine whether the component has become detached.

8.5 Drop test (see 4.6, 4.10.2, 4.14.2, 4.22, 5.1, 5.10, 5.12 and 5.13)

Drop the toy five times through a height of (850 ± 50) mm on to a 4 mm thick steel plate with a 2 mm thick coating of Shore A hardness (75 ± 5) as measured according to EN ISO 868 or ISO 7619-2 and which is placed on a non-flexible horizontal surface.

Prior to release, orientate the toy in a position that allows the most onerous impact onto the coated surface of the steel plate.

Determine whether the casing of toys intended for children too young to sit up unaided has separated into parts or *cracked*. Determine whether small parts (8.2, small parts cylinder), hazardous sharp edges (8.11, sharpness of edges), hazardous sharp points (8.12, sharpness of points) or hazardous *driving mechanisms* (4.10.2, driving mechanisms) have become *accessible*.

8.6 Tip over test (see 4.10.2, 4.22, 5.1, 5.10 and 5.12)

A6) Place the toy on a horizontal surface as prescribed in 8.5 (drop test) and attempt to tip it over by pushing the toy slowly past its centre of balance three times, one of which shall be in its most onerous position, by gradually applying 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.

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.

NOTE 1 800 mm corresponds to the length (95th percentile) of a 14-year-old child.

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.

Determine whether small parts (8.2, small parts cylinder), hazardous sharp edges (8.11, sharpness of edges), hazardous sharp points (8.12, sharpness of points) or hazardous driving mechanisms (4.10.2, driving mechanisms) have become accessible and whether small *balls* (4.22 and 5.10, small balls) or hemispheric-shaped toys (5.12, hemispheric-shaped toys) have become detached. ^{A6}

8.7 Impact test (see 4.6, 4.10.2, 4.14.2, 4.22, 5.1, 5.10, 5.12, 5.13 and A.38)

Place the toy in its 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 an area with a diameter of (80 ± 2) mm through a distance of (100 ± 2) mm on to the toy.

Perform the test once.

Determine whether the casing of toys intended for children too young to sit up unaided has separated into parts or *cracked*. Determine whether small parts (8.2, small parts cylinder), hazardous sharp edges (8.11, sharpness of edges), hazardous sharp points (8.12, sharpness of points) or hazardous *driving mechanisms* (4.10.2, driving mechanisms) have become *accessible*.

8.8 Compression test (see 4.6, 4.14.2, 4.22, 5.1, 5.10, 5.12, 5.13 and A.39)

Any *accessible* area on the surface of a toy that is inaccessible to flat surface contact during the drop test (8.5) or tip over test (8.6) shall be subjected to a compression test.

Place the toy on a horizontal rigid surface with the part of the toy to be tested uppermost. Apply a compression force of (100 ± 5) N through a rigid metal disc with a diameter of $(30 \pm 1,5)$ mm to the area to be tested. The perimeter of the disc shall be rounded.

Apply the force gradually within a period of 5 s. Maintain the force for 10 s.

Determine whether the casing of toys intended for children too young to sit up unaided has separated into parts or *cracked*. Determine whether small parts (8.2, small parts cylinder), hazardous sharp edges (8.11, sharpness of edges), hazardous sharp points (8.12, sharpness of points) or hazardous *driving mechanisms* (4.10.2, driving mechanisms) have become *accessible*.

8.9 Soaking test (see 4.11, 5.1, 5.10 and 5.12)

Submerge the toy or the component completely in a container of demineralised water at a temperature of (20 ± 5) °C for 4 min. Remove the toy, shake off excess water and keep the toy at room temperature for 10 min.

Perform the test cycle four times.

Immediately after the last cycle, determine whether any components released fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).

8.10 Accessibility of a part or component (see 4.5, 4.7, 4.8, 4.10.2, 4.10.4, 4.15.1.3, 4.21, 5.1 and 5.7)

8.10.1 Principle

An articulated probe is manoeuvred to the part or component being tested. If the probe contacts the part or component, the part or component is considered to be *accessible*.

8.10.2 Apparatus

Articulated accessibility probes illustrated in Figure 16, manufactured from rigid material, and with dimensions as specified in Table 1. The tolerance on the dimensions shall be $\pm 0,1$ mm except for r_1 and r_2 which shall have a tolerance of ± 1 mm.

8.10.3 Procedure

Remove all components that are intended to be removed without the use of a *tool*.

NOTE 1 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.

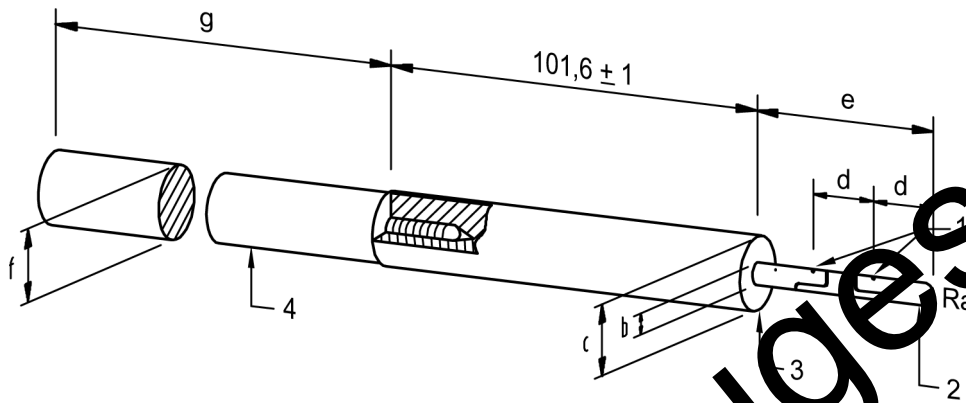
Manoeuvre, as described in a), b) and c), the appropriate articulated *accessibility* probe in any convenient attitude towards the part or component to be tested and, if necessary, pivot the probe at any of its joints in an attempt to contact that part or component.

NOTE 2 Each probe joint may be rotated up to 90° to simulate knuckle movement.

NOTE 3 Where the part is a sharp point that lies adjacent to a plane surface so that the gap between the point and the surface is 0,5 mm or less, the point is considered to be *inaccessible* and the procedure specified in b) need not be performed.

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Dimensions in millimetres



Key

- 1 Pivot points
- 2 Spherical radius (Ra)
- 3 Collar
- 4 Extension

Figure 16 Accessibility probe

Table 4 Dimensions of accessibility probes

Age group	Probe	Dimensions (mm)						
		a	b	c	d	e	f	g
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
Toys intended for children of both age groups	A and B (both probes shall be used)	According to specifications above.						

- a) For any hole, recess, or other opening having a minor dimension (see Note 4) smaller than the collar diameter of the appropriate probe, insert the probe so that the total insertion depth for *accessibility* is up to the collar;

NOTE 4 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 diameter of the collar of probe A but less than 187 mm when probe A is used, or
- a minor dimension larger than the diameter of the collar 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 16, in any direction for 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 that have dimensions conforming to a) or b) of this subclause; in such instances, follow the procedure in a) or b) as appropriate. If both probes shall 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 forward of the collar of the *accessibility* probe.

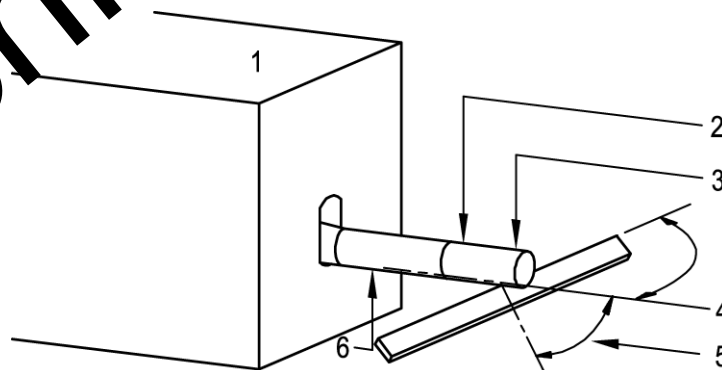
8.11 Sharpness of edges (see 4.7, 4.9, 4.10.2, 4.14.2, 4.15.3 and 5.1)

8.11.1 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.

8.11.2 Apparatus

The apparatus shall be as illustrated in Figure 17.



Key

- 1 Any suitable device, portable or non-portable, to apply a known force and rotation to the mandrel
- 2 $(6 \pm 0,5)$ N applied to the mandrel axis
- 3 Single wrap of self-adhesive tape
- 4 $(90 \pm 5)^\circ$ (test edge relationship to mandrel)
- 5 Variable angle to seek worst case situation
- 6 During the test the mandrel rotates one full revolution

Figure 17 – Edge test apparatus

8.11.2.1 Mandrel, made of steel

The test surface of the mandrel shall be free from scratches, nicks or *burr* and shall have a surface roughness R_a according to EN ISO 4287 which is not greater than $\overline{AC} 0,40 \mu\text{m}$. The surface shall have a Rockwell C scale hardness of not less than 40 when measured according to EN ISO 6508-1. The diameter of the mandrel shall be $(9,53 \pm 0,12)$ mm.

8.11.2.2 Device for rotating the mandrel and applying a force to it

The device shall be 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.

8.11.2.3 Self-adhesive tape

The self-adhesive tape shall be pressure-sensitive polytetrafluoroethylene (PTFE) high temperature electrical insulation tape.

The thickness of the polytetrafluoroethylene *backing* shall be between 0,080 mm and 0,090 mm. The adhesive shall be pressure-sensitive silicone polymer with a nominal thickness of 0,08 mm. The width of the tape shall be 6 mm or more. During the tests, the temperature of the tape shall be maintained at (20 ± 5) °C.

8.11.3 Procedure

Ascertain that the *edge* to be tested is *accessible* by the method described in 8.10 (accessibility of a part or component).

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 (8.11.2.2) is applied. Ensure that the support is 15 mm or more 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 to the *edge* stiffness in the assembled toy.

Wrap the mandrel with one layer of the tape (8.11.2.3) to provide a sufficient area for performing the test.

Place the taped mandrel so that its axis is at $(90 \pm 5)^\circ$ to the line of a straight *edge*, or at $(90 \pm 5)^\circ$ 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 (see Figure 17).

Apply a force of $(6 \pm 0,5)$ N to the mandrel at the centre 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 the 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 that is cut, including any intermittent cuts. Measure the length of tape which has contacted the *edge* during the test. In this way, calculate the percentage of the length of tape which has been cut during the test. If this is more than 50 % of the contact length, the *edge* tested is considered to be a sharp *edge*.

8.12 Sharpness of points (see 4.8, 4.10.2, 4.14.2, 4.15.1.3, 5.1 and A.40)

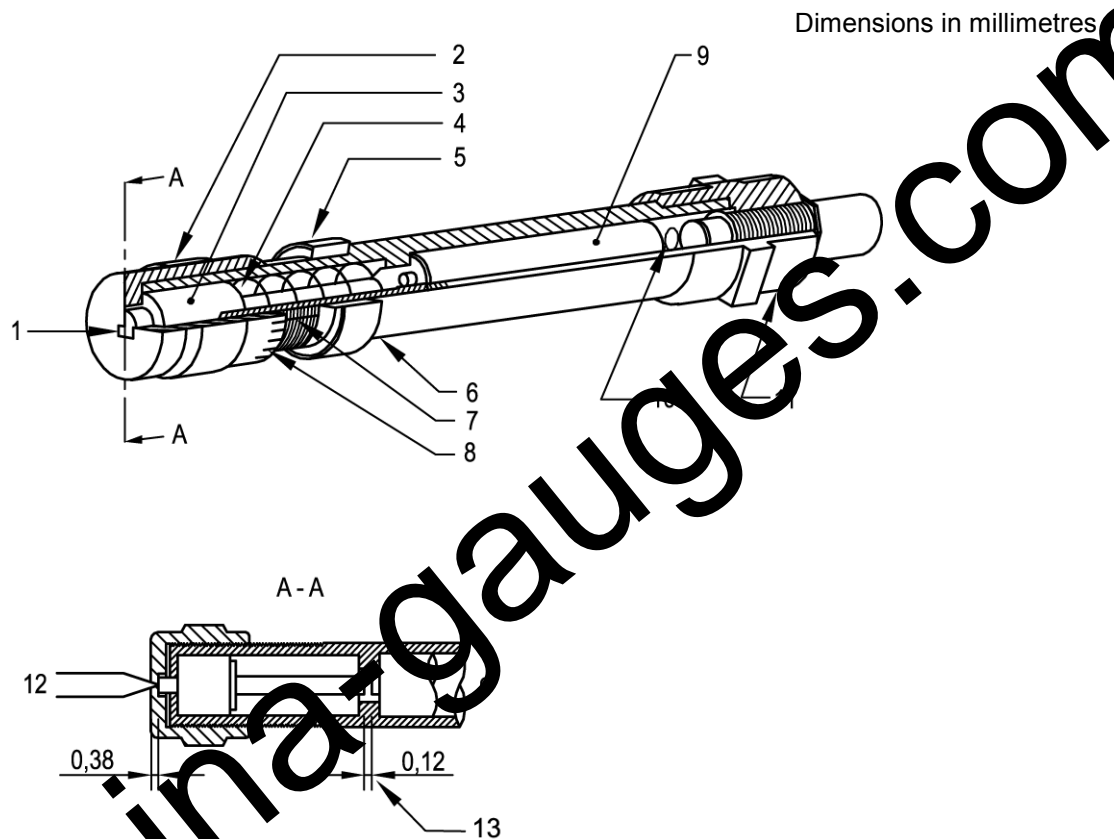
8.12.1 Principle

A point tester is applied to an *accessible* sharp point and it is determined whether or not the point being tested penetrates a specified distance into the sharp point tester.

8.12.2 Apparatus

Point tester (for example as shown in Figure 18).

A rectangular opening measuring $(1,02 \pm 0,02)$ mm by $(1,15 \pm 0,02)$ mm in the end of the slotted cap establishes two reference dimensions. The sensing head is recessed $(0,38 \pm 0,02)$ mm below the end cap. There is a distance of $(0,12 \pm 0,02)$ mm between it and a return spring having a force of $\begin{matrix} 0 \\ 2,5 \text{ N} \\ -0,3 \text{ N} \end{matrix}$.



Key

- 1 Gauging slot
- 2 Gauging cap
- 3 Sensing head
- 4 Loading spring
- 5 Lock ring
- 6 Panel
- 7 Adjusting reference mark
- 8 Micrometer divisions
- 9 R03 dry cell
- 10 Electrical contact spring
- 11 Indicator lamp assembly and adapter nut
- 12 Test point
- 13 Gap is closed upon insertion of sufficiently sharp point to pass through gauging slot and depress sensing head 0,12 mm. Electrical circuit is thereby completed and indicator test lamp lights – sharp point fails test

Figure 18 – Point tester

8.12.3 Procedure

Ascertain that the point to be tested is *accessible* by the method described in 8.10 (accessibility of a part or component).

Support the toy in such a manner that the *accessible* point to be tested does not move during the test. In most cases it will not be necessary to support the point directly; if necessary, ensure that the support is 6 mm or more 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 to the point stiffness in the assembled toy.

Adjust the point tester (8.12.2) by loosening the locking ring and rotating it so that it moves a distance toward the indicator lamp assembly sufficient to expose the calibration reference mark on the barrel. Rotate the gauging cap clockwise until the indicator lamp lights. Rotate the cap counter-clockwise 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 18.

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

Insert the point into the cap slot in the direction which confers the greatest rigidity on the point and apply a force of 4,5 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.

Determine whether or not the indicator lamp lights up.

If the point penetrates a distance of 0,50 mm or more into the gauging slot, causing the indicator lamp to light, and the point maintains its original shape while under a force of 4,5 N, the point tested is considered to be a sharp point.

8.13 Flexibility of A_6 metallic A_6 wires (see 4.8 and A.11)

8.13.1 A_6 General

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 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 more than 60° , continue the test as follows.

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

8.13.2 Metallic wires and other metallic components intended to be bent

Perform the cycle described in 8.13.1 (general) 30 times 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.

Examine the metallic wire or metallic component for breakage or hazardous sharp points (8.12, sharpness of points), removing any covering material, if applicable, to aid the examination.

8.13.3 Metallic wires likely to be bent

Perform the cycle described in 8.13.1 (general) one time.

Examine the metallic wire for breakage or hazardous sharp points (8.12, sharpness of points), removing any covering material, if applicable, to aid the examination. A_6

8.14 Expanding materials (see 4.6)

Condition the toy or component at $(20 \pm 5)^\circ\text{C}$ and at a relative humidity of 40 % to 65 % for at least 7 h before the test. Measure the maximum dimensions of the toy or any component of the toy in the x, y and z dimensions using callipers. Submerge the toy or component completely in a container of demineralised water at $(20 \pm 5)^\circ\text{C}$ for $(72 \pm 0,5)$ h. Ensure that sufficient water is used so that the toy or component still remains under water at the end of the test.

Remove the item using a pair of tongs. If the item cannot be removed because of insufficient mechanical strength, it is considered to pass this test.

Allow water adhering to the toy or component to drain for 1 min and re-measure the item.

Calculate the expansion in the x, y and z dimensions as a percentage of the original dimension.

8.15 Leakage of liquid-filled toys (see 5.5 and A.42)

Condition the toy at a temperature of $(37 \pm 1) ^\circ\text{C}$ for 4 h or more.

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

Apply the force gradually within a period of 5 s. Maintain the force for 5 s.

After completion, examine the toy for leakage of the contents. In determining leakage, apply cobalt-chloride paper over the area where the force was applied while compressing with a force of $5 \text{ N}^{+0,5}_0$ using suitable means other than a needle.

Repeat the test after conditioning the toy at a temperature of $(5 \pm 1) ^\circ\text{C}$ for 4 h or more.

NOTE Cobalt-chloride paper should not be used after the $5 ^\circ\text{C}$ test as condensation may give false results.

After completion, visually examine the toy and determine whether leakage of its contents has occurred.

8.16 Geometric shape of certain toys (see 5.8, 5.11 and A.43)

Position and clamp template A shown in Figure 19 so that the axis of the slot is substantially vertical and the slot is unobstructed at its top and bottom openings.

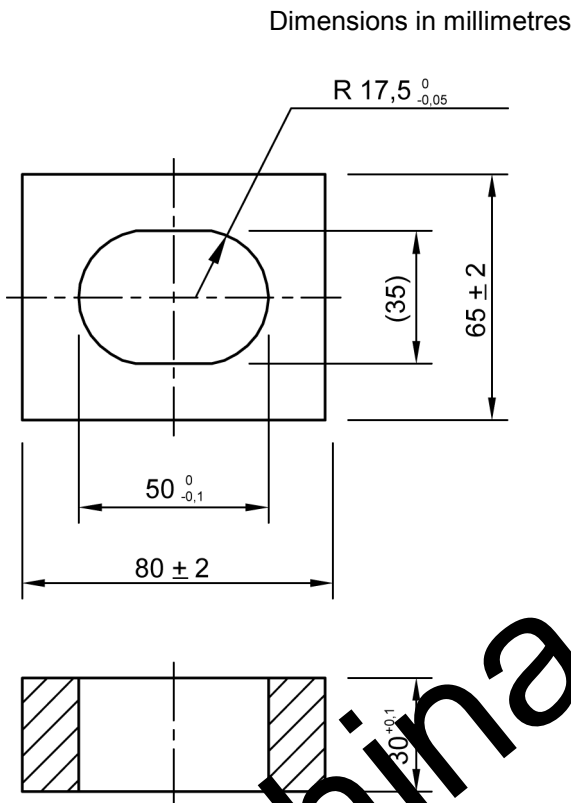


Figure 19 – Template A

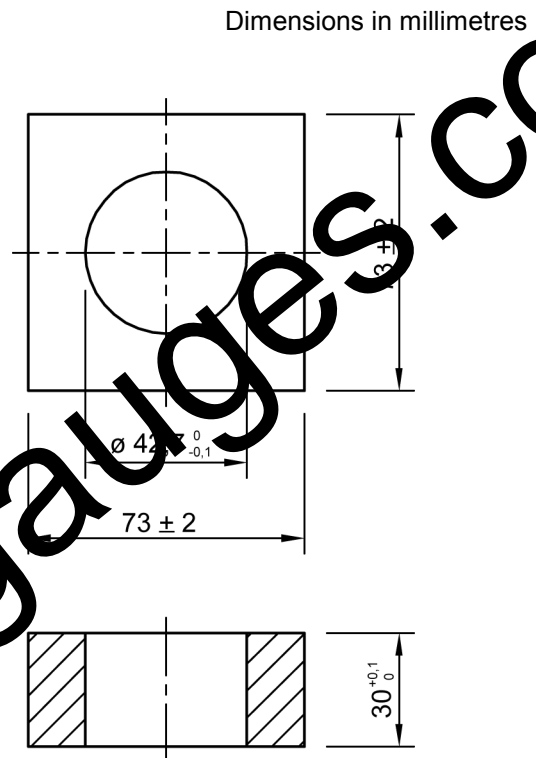


Figure 20 – Template B

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

Determine whether the toy passes through the slot or whether any part of the toy protrudes past the base of template A.

Repeat the procedure for toys with nearly spherical, hemispherical or circular flared ends using template B shown in Figure 20.

8.17 Durability of mouth-actuated toys (see 4.11 and A.44)

8.17.1 Mouth-actuated projectile toys

Load the mouth-actuated projectile toy with the intended *projectile* and apply a pressure of 13,8 kPa ± 5 % in the direction of the mouth piece for 5 s.

Carry out the test 10 times in total.

8.17.2 Other mouth-actuated toys

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 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 the above is also applied to the outlet.

Determine whether any released component fits entirely in the small parts cylinder when tested according to 8.2 (small parts cylinder). $\sqrt{A_4}$

8.18 Folding or sliding mechanisms (see 4.10.1 and A.45)

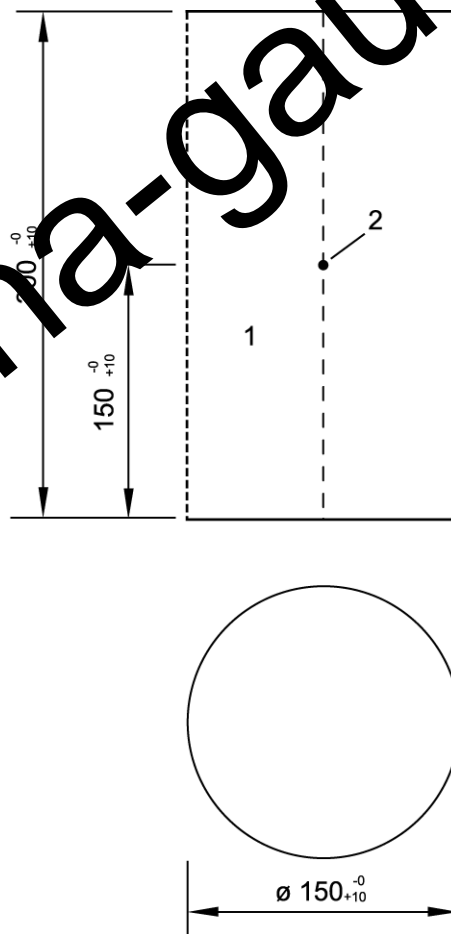
8.18.1 Loads

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

For toys labelled as not suitable for children of 36 months and over, load the toy with a mass of $(25 \pm 0,2)$ kg.

The dimensions of the load are given in Figure 21.

Dimensions in millimetres



Key

- 1 Mass, < 36 months, 25 kg
Mass, \geq 36 months, 50 kg
- 2 Centre of gravity

Figure 21 – Load for determination of strength and stability

8.18.2 Toy pushchairs and perambulators

Precondition the toy by erecting and folding it ten times.

- a) Toy pushchairs and perambulators covered by 4.10.1 a).

Erect the toy on a horizontal surface with the locking devices engaged and load the toy with the appropriate mass ensuring that the load is borne by the frame. Where necessary, use support so 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 for 5 min.

Determine whether it is possible to partially erect the toy without engaging either of the locking devices. If so, also perform the above loading in the partially erect position.

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

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

- b) Toy pushchairs and perambulators covered by 4.10.1 b).

Erect the toy on a horizontal surface with the locking devices engaged and load the toy with the appropriate mass ensuring that the load is borne by the frame. Where necessary, use support so 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 for 5 min.

Determine whether it is possible to partially erect the toy without engaging the locking device. If so, also perform the above loading in the partially erect position.

Determine whether the toy *collapses* and whether the locking device or safety stop is still operable and engaged.

8.18.3 Other collapsible toys (see 4.10.1 c))

- a) Erect the toy. Lift the toy and determine whether the locking device disengages when the toy is tilted in any $(30 \pm 1)^\circ$ angle from the horizontal.

- b) Erect the toy on a surface inclined at $(10 \pm 1)^\circ$ and 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. Apply the load wherever it is possible for a child to sit and in the most onerous position with respect to the folding parts. Ensure that the load is borne by the frame. Where necessary, use support so that the seat material is not damaged (see A.45).

Determine whether the toy *collapses* or the locking mechanism disengages.

8.19 Electric resistivity of cords (see 4.13)

Condition the samples for 7 h or more at a temperature of $(25 \pm 3)^\circ\text{C}$ and at a relative humidity of 50 % to 65 % and perform the test in this atmosphere.

Determine the electric resistance, using an appropriate appliance.

8.20 Cord thickness (see 5.4)

While under a tension of (25 ± 2) N, measure the thickness of the *cord* at between three and five points along its length and determine the average thickness to a tolerance of 0,1 mm. For *cords* approaching 1,5 mm in thickness, use a non-compressible method, e.g. an optical projector.

8.21 Static strength (see 4.15.1.3, 4.15.1.5, 4.15.3, 4.15.4 and A.46)

Load the toy in the most onerous position with a mass of $(50 \pm 0,5)$ kg on its standing or sitting surface for 5 min.

For toys labelled as not suitable for children of 36 months and over, load the toy with a mass of $(25 \pm 0,2)$ kg.

The dimensions of the load are given in Figure 21.

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

Toys which due to their design are inherently unstable (e.g. pogo sticks) shall be supported for the duration of the test.

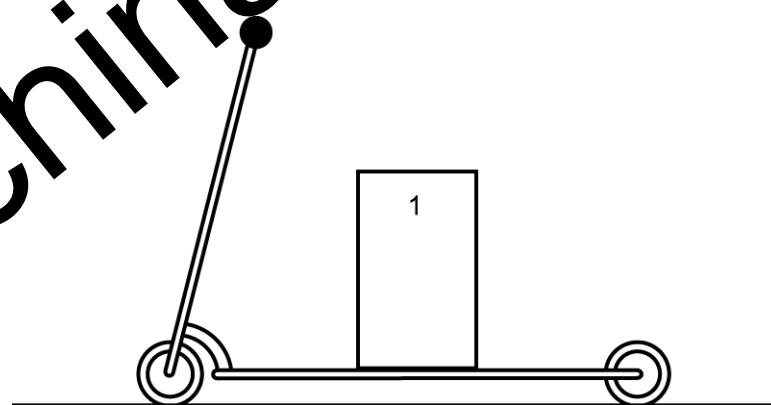
For toys where the mass of the child, by design, is distributed over various positions on the toy, distribute the prescribed load consistent with the recommended use of the toy. In this case apply other test loads where consideration of the number of distribution points has to be made.

For *toy scooters* labelled as intended for children with a body mass of 20 kg or less, the test load shall be positioned in the centre of the platform and shall be $(50 \pm 0,5)$ kg.

For other *toy scooters* the load shall be (100 ± 1) kg.

The approximate diameter of the base of the load shall be 150 mm (see Figure 21).

Determine whether the toy continues to conform to relevant requirements of this European Standard.



Key

1 Test load

Figure 22 – Static strength test for toy scooters

8.22 Dynamic strength (see 4.15.1.3)

8.22.1 Principle

A load is secured to the toy, and articulated arms with the elbow joints in a downward position are attached to the steering wheel or handlebars if the toy is so equipped. The toy is driven three times into a non-resilient step.

Determine whether the toy continues to conform to relevant requirements of this European Standard.

8.22.2 Loads

Loads as specified in Figure 23, equipped with two articulated arms and a removable cushion with straps shall be used.

For toys intended for children of 36 months and over, use load A with a mass of $(50 \pm 0,5)$ kg.

For toys labelled as unsuitable for children of 36 months and over, use load B with a mass of $(25 \pm 0,2)$ kg.

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 two loads giving a nominal mass of 54,5 kg for load A and 29,5 kg for load B.

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 used for securing the arms to the toy.

8.22.3 Procedure

8.22.3.1 General

Load the toy on its sitting or standing surface with the appropriate mass in a position that corresponds approximately to the normal use of the toy and secure the load to the toy by means of the straps. To prevent undue damage to the toy 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 steering wheel or handlebar of the toy in a position that corresponds approximately to the normal use of the toy, and lock the joints at the elbows and the wrists.

Accelerating smoothly, drive the toy 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.

NOTE 1 During the setting up of the test, adequate precautions for the safe handling of the 50 kg test load should be taken.

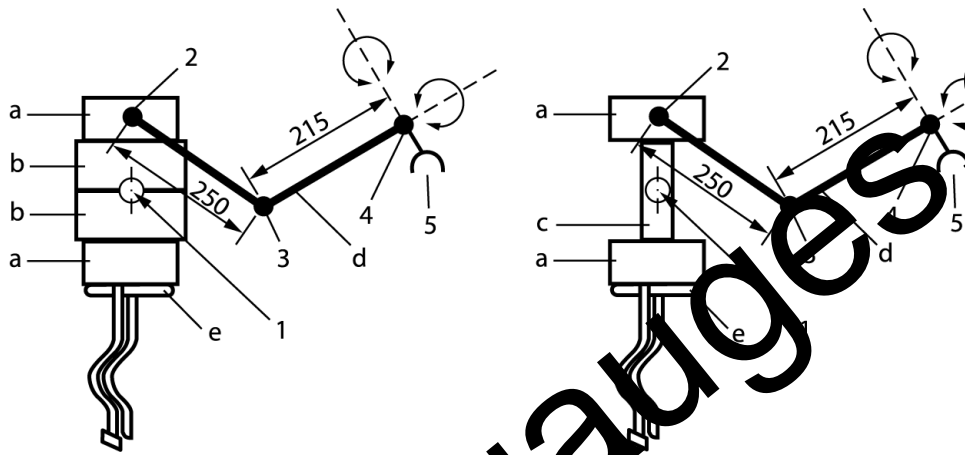
NOTE 2 To achieve the suspension and for the safety of the test personnel, it is recommended to connect the load by a wire to an overhead telfer line or similar arrangement.

NOTE 3 A means of constraining the toys should be used in order to assure that the wheel(s) runs into the non-resilient step perpendicularly.

NOTE 4 Stabilizers may be used in order to keep the toy and the load in a vertical position during the test.

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

Dimensions in millimetres



a) Load A for toys intended for children of 36 months and over
b) Load B for toys labelled as not suitable for children of 36 months or over

Specification of loads 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		
d (each)	2,00		
e	0,50		

Key

- 1 Centre of gravity
- 2 Spherical joint
- 3 1-way joint
- 4 2-way joint
- 5 Clamp
- d Articulated arms
- e Cushion with straps (removable)

Figure 23 – Loads for determination of dynamic strength

8.22.3.2 Toys intended for use sitting down

Attach the clamps of the articulated arms to the steering wheel or handlebar of the toy in a position that corresponds approximately to the normal use of the toy, and lock the joints at the elbows and the wrists.

Perform the test as described in 8.22.3.1.

Determine whether the toy continues to conform to relevant requirements of this European Standard.

8.22.3.3 Toys intended for use standing

Load the toy on its standing surface with the appropriate mass using a suitable platform with a height of (250 ± 25) mm that will place the centre of gravity of the load at a position 400 mm above the standing surface. Secure the load and the platform to the toy by means of straps.

The mass of the platform shall be $(4,8 \pm 0,2)$ kg.

Attach the clamps of the articulated arms to the steering wheel or handlebar of the toy in a position that corresponds approximately to the normal use of the toy, and lock the joints at the elbows and the wrists.

Perform the test as described in 8.22.3.1.

Determine whether the toy continues to conform to relevant requirements of this European Standard.

8.22.3.4 Roller skates and toys without steering wheel or handles

For roller skates and toys without steering wheel or handles, secure the articulated arms to the sides of the load. When testing roller skates, the test shall be performed with two roller skates using a suitable bridge to support the load.

Perform the test as described in 8.22.3.1.

Determine whether the toy continues to conform to relevant requirements of this European Standard.

8.23 Stability

8.23.1 Toys intended to bear the mass of a child (see 4.15.1.4, 4.15.3 and 4.15.4)

Load the toy in the most onerous position with a mass of $(50 \pm 0,5)$ kg on its standing or sitting surface.

For toys labelled as not suitable for children of 36 months and over, load the toy with a mass of $(25 \pm 0,2)$ kg.

The dimensions of the load are given in Figure 21.

Place the toy on a $(10 \pm 1)^\circ$ slope in the most onerous position with respect to stability.

Where the toy is intended to bear the mass of more than one child at a time, test every sitting or standing area reproducing all possible combinations.

Determine whether the toy tips over.

8.23.2 Heavy immobile toys (see 4.16)

Place the toy in the most onerous position on a $(5 \pm 1)^\circ$ slope. Adjust any moving parts so as to produce the most onerous position for stability.

Determine whether the toy tips over.

8.24 Determination of kinetic energy (see A.47)

8.24.1 Kinetic energy of projectiles (see 4.17.3)

Measure the kinetic energy of the toy under normal conditions of use by a means that is capable of determining the energy to an accuracy of 0,005 J. Take five measurements. Take the kinetic energy as the maximum of the five readings. Ensure that the readings are taken in such a way that the maximum energy is determined.

If more than one type of *projectile* is supplied with the toy, the kinetic energy of each type of *projectile* shall be measured.

8.24.2 Kinetic energy of bows and arrows (see 4.17.4)

For bows, use an arrow intended for the bow and stretch the bow string, using a force of 30 N or less as far as the arrow allows but to no more than 70 cm.

Measure the kinetic energy as specified in 8.24.1.

8.25 Plastic sheeting

8.25.1 Thickness (see 4.3, 5.3 and 6)

8.25.1.1 Apparatus

Measuring device, capable of measuring thickness to an accuracy of 1 µm according to ISO 4593.

8.25.1.2 Procedure

Without stretching the plastic bags, cut along the seams so that two single sheets are produced.

Measure the thickness of any sheet at 10 equidistant points across the diagonal of any area having dimensions of at least (100 x 100) mm and average the readings.

8.25.2 Adhesion (see 4.3)

8.25.2.1 Apparatus

Feeler gauge, with a thickness of $(0,4 \pm 0,02)$ mm and an insertion *edge* radius of approximately 3 mm (A4) (see Figure 15) (A4).

8.25.2.2 Procedure

Using a force of (25 ± 2) N, insert the feeler gauge between the component and the underlying layer or body of the toy at any angle between 0° and 10° from the toy surface. The feeler gauge shall be inserted at any place around the component but shall not be inserted at the same place more than 5 times.

Perform the test 30 times.

Determine whether the gauge is inserted more than 2 mm.

8.26 Brake performance

8.26.1 Brake performance for toys other than toy bicycles (see 4.15.1.5)

Load the toy as in 8.21 (static strength) and place it on a plane inclined at $(10 \pm 1)^\circ$ covered with a surface of abrasive paper (aluminium oxide 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. Apply the force to the brake handle at the point where it is normally applied in use.

If the brake is operated by a pedal, apply the force to the pedal in the operating direction to produce the effect of the brake.

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

Determine whether the toy moves more than 5 cm.

8.26.2 Brake performance for toy bicycles (see 4.15.2.4)

Load the *toy bicycle* with a mass of $(50 \pm 0,5)$ kg with the centre of gravity 150 mm above the surface on which the child sits. Place the *toy bicycle* on a plane inclined at $(10 \pm 1)^\circ$ with its longitudinal axis parallel to the incline.

If the brake is operated by a handle, 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 to produce the effect of the brake.

Test each brake separately.

Determine whether the *toy bicycle* moves more than 5 cm.

8.26.3 Brake performance for toy scooters (see 4.15.5.5)

8.26.3.1 Toy scooters with handbrake

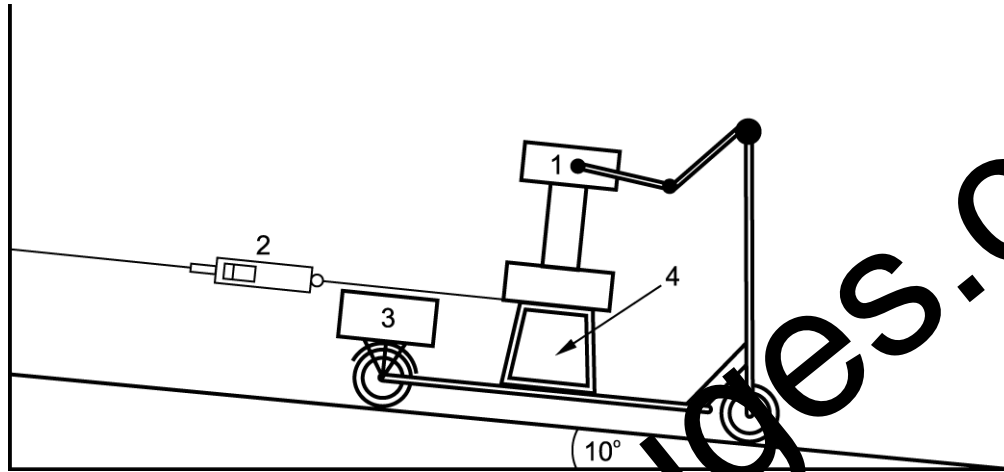
Using a 250 mm high platform, load the *toy scooter* with a mass of $(50 \pm 0,5)$ kg as described in 8.22.2 so that the centre of gravity is 400 mm over the deck of the *toy scooter*. Attach the articulated arms to the handle bar and place the *toy scooter* on a plane inclined at $(10 \pm 1)^\circ$ 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 at the middle of the handle.

Using a dynamometer, ensure that the force required to hold the *toy scooter* on the inclined plane, parallel to the plane, is less than 50 N.

8.26.3.2 Toy scooters with foot brake

Using a 250 mm high platform, load the *toy scooter* with a mass of $(25 \pm 0,2)$ kg as described in 8.22.2 so that the centre of gravity is 400 mm over the deck of the *toy scooter*. Attach the articulated arms to the handle bar 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 2). Apply a mass of (20 ± 1) kg on the foot brake.

Using a dynamometer, ensure that the force required to hold the *toy scooter* on the inclined plane, parallel to the plane, is less than 50 N.



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 24 Brake performance for toy scooters with foot brake

8.27 Strength of toy scooter steering tubes (see 4.15.5.3)

8.27.1 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 the 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 25 a)). Maintain the load for 5 min.

Determine whether the steering tube *collapses* and the locking devices are still operable and engaged.

Remove the 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 and maintain the load for 5 min.

Determine whether the secondary locking device is still operable and engaged.

NOTE If it is not evident which locking device is the main locking device, each locking device should be tested under the assumption that it is the main locking device.

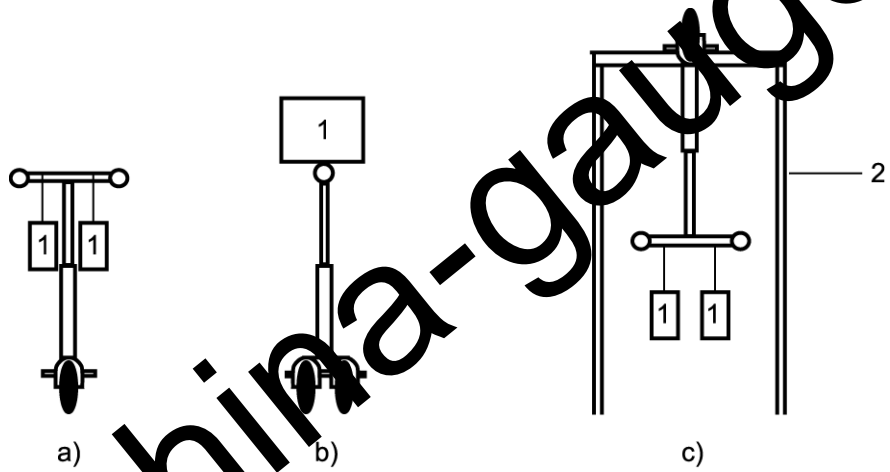
- b) For toy scooters with steering tubes without handles, perform the test as in a) above using a load with a mass of (100 ± 1) kg and $(50 \pm 0,5)$ kg respectively on top of the tube (see Figure 25 b)).

8.27.2 Resistance to upward forces

Place and secure the *toy scooter* upside down on a podium (see Figure 25 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 correctly and engaged.



Key

- 1 Test load
- 2 Podium

Figure 25 – Test of steering tubes

8.28 Determination of emission sound pressure levels (see 4.20)

8.28.1 Installation and mounting conditions

8.28.1.1 General

Perform the measurements on a new toy. Test battery toys using new primary batteries or fully charged secondary batteries.

NOTE External power supplies should not be used as they will, in many cases, affect the performance of the toy.

8.28.1.2 Test environment

Any environment which meets the qualification requirements of EN ISO 3746:1995, Annex A.

NOTE 1 In practice this means that most normally furnished rooms with a volume exceeding 30 m^3 will qualify at measurement distances of 50 cm providing that the largest dimension of the toy does not exceed 50 cm. For distances shorter than 25 cm almost any environment will qualify.

NOTE 2 If the more accurate EN ISO 11201 is used the test environment should meet the requirements of EN ISO 3744.

8.28.1.3 Mounting

Test rigs used for the mounting of toys and/or the operator of the toy shall not affect the sound emission of the toy nor cause sound reflections which will increase the sound pressure levels at the measuring point.

NOTE 1 It is often convenient to be able to rotate the test object instead of moving the microphone.

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

NOTE 2 If an operator is used, hearing protectors should be used when testing very loud toys.

Place stationary *Table-top and floor toys* on the reflecting plane (the floor).

NOTE 3 Alternatively, the toys may be placed on a standard test table as described in EN ISO 11201.

Mount self-propelled *Table-top and floor toys* on the reflecting plane in a test rig so that they can be operated with full power but are prevented from moving around.

Place pull and push toys on the reflecting plane and fix them in a test rig enabling them to be moved with varying speed along a direct line which passes the measuring microphones ("passing-by" test). Make sure that the friction of the reflecting plane prevents wheels from skidding.

Place hand-actuated wind-up toys with the wind-up *spring* fully loaded on the reflecting plane so that the front of the toy is (40 ± 1) cm along the *x*-axis from the microphones of the "passing-by" test (see Figure 29).

Mount insert earphones in an artificial ear according to IEC 60126. Mount supra-aural earphones on an artificial ear according to EN 60318-1. Mount circum-aural earphones on an artificial ear according to EN 60318-1 but supplied with a special adaptor.

Mount other types of toys in the most appropriate way using the principles described in previous paragraphs.

8.28.1.4 Operating conditions

Operate the toy in the mode of its intended or foreseeable use which produces the highest emission sound pressure level to the microphone position, i.e. where the maximum noise level is observed.

In particular:

- Operate a hand-actuated toy manually, excluding pull and push toys, by applying the force at the point and direction of the intended or foreseeable use which will give the maximum emission sound pressure level. For a toy intended to be shaken, use a movement of ± 15 cm three times per second.
- 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. Ensure that the radiated sound is not affected by the grip of the hand. Strike downwards ten times with hard lashes in a slow tempo. Use the wrist and keep the forearm essentially horizontal. Endeavour to achieve the highest possible sound level. Stand side-face with the microphone and keep the *rattle* at the same height as the microphone at a distance of 50 cm.
- Operate a *squeeze toy* by grasping the toy with both hands and holding it where it is meant to be held or, if in doubt, where the highest sound level can be achieved. Squeeze with both thumbs to achieve the highest possible sound level. Squeeze ten times in a manner which maximizes the sound emission. Stand directly in front of the microphone. Keep the air hole at a distance of 50 cm from the microphone and direct it towards the microphone.
- Operate a pull and push toy at a speed of 2 m/s or less, giving the maximum emission sound pressure level.

- Operate a cap-firing toy using percussion caps recommended by the manufacturer and which are available on the market.
- Operate tape-players, CD-players and similar electronic toys, provided with headphones or earphones, with a standardised recording.

NOTE Further work is needed to obtain standardized recordings. In the interim, the following recording may be used: Recorded tape created by BASF and TEAC for IEC in March 1981, called TEAC test tape – Level 1 kHz – 0 dB.

8.28.2 Measurement procedure

8.28.2.1 Basic standards to be used

The minimum requirement is to determine emission sound pressure levels at the specified positions around the toy according to EN ISO 11202 and EN ISO 11204, which are survey methods. In case of dispute, the more accurate EN ISO 11201 shall be used.

NOTE 1 Because of fewer reflections from the room boundaries, EN ISO 11201 will tend to give slightly lower values than EN ISO 11202 and EN ISO 11204.

NOTE 2 In certain cases, EN ISO 11204 can have the accuracy of an engineering method.

8.28.2.2 Instrumentation

The instrumentation system, including the microphone and cable, shall meet the requirements of a type 1 or type 2 instrument specified in IEC 61672-1 and IEC 61672-2 or, in the case of integrating-averaging sound level meters, in IEC 61672-1 and IEC 61672-2. When measuring high peak emission sound pressure levels, e.g. 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. When EN ISO 11201 is used, type 1 instrument is required.

8.28.2.3 Microphone positions

8.28.2.3.1 General

Seven microphone positions shall be used. 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.

8.28.2.3.2 Close-to-the-ear toys

Locate the position of the maximum sound pressure level (L_{PA}) (see 8.28.2.4) of a *close-to-the-ear toy* by moving the toy or the measuring microphone so that the measuring distance is $(2,5 \pm 0,5)$ cm from that surface of the toy where the main sound source exists. This position is the microphone position for measurements. For earphones and headphones the microphone positions are given by the coupler.

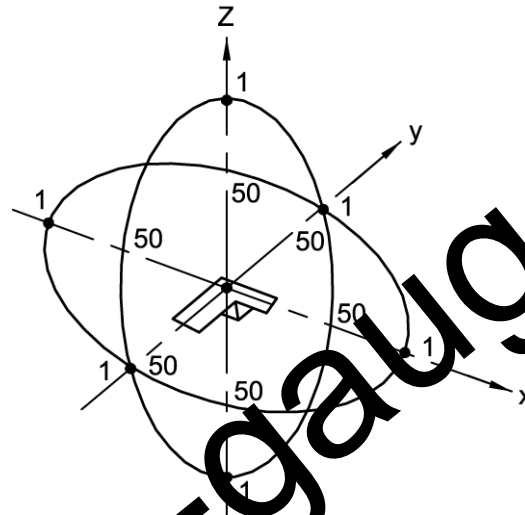
8.28.2.3.3 Child-actuated and hand-held toys

8.28.2.3.3.1 Cap-firing toy

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 (Figure 26). 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 26.

Dimensions in centimetres



Key

1 Microphone

Figure 26 – Microphone positions for the measurement of the emission sound pressure levels of hand-held and child-actuated toys

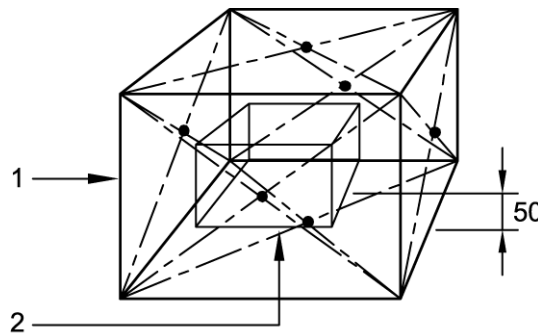
8.28.2.3.3.2 Rattles and squeeze toys

Mount the microphone 1,2 m above the floor and at a distance of 0,5 m from the sound source in a room that is large enough or sound absorbing enough to make all sound reflections negligible.

8.28.2.3.3.3 Other hand-held toys

Select six microphone positions on a box-shaped measurement surface at a measuring distance of 50 cm from the reference box of the toy, as defined in EN ISO 3746 and as specified in Figure 27. The positions are at the centres of the sides of the measurement surface at a distance of 50 cm from the reference box.

Dimensions in centimetres



Key

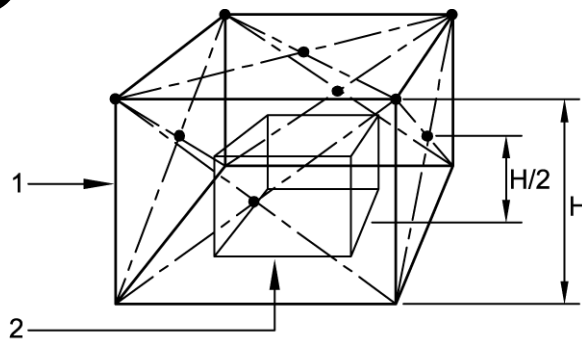
- 1 Measurement box
- 2 Reference box

Figure 27 – Microphone positions for other hand-held toys than cap-firing toys

8.28.2.3.4 Stationary and self-propelled table-top and floor toys

Select five, or if the length or width of the toy is larger than 100 cm, nine microphone positions on a box-shaped measurement surface at a measuring distance of 50 cm from the reference box of the toy as specified in Figure 28. A_6 The sides of the measurement box with height H are always 50 cm from the sides of the reference box, except for the bottom of the boxes, which lie in the same plane. A_6 All microphone positions are on the measurement box.

A_6



A_6

Key

- 1 Measurement box
- 2 Reference box

Figure 28 – Microphone positions for the measurement of stationary and self-propelled table-top and floor toys

8.28.2.3.5 Pull and push toys and hand-activated *spring*-propelled toys

For toys with a width (w) of 25 cm or less, use two microphones at distances (d) 50 cm from the x -axis of the measuring coordinate system as shown in Figure 29.

For toys with a width (w) of more than 25 cm, use two microphones at distances (d) 40 cm plus half the width of the toy from the x -axis ($40 + w/2$) as shown in Figure 29.

Place the toy on a test rig or on the reflecting plane in its normal operating orientation in such a way that movement of the toy is possible along the x -axis passing the microphone positions.

8.28.2.4 Measurements

8.28.2.4.1 General

Normal operating mode(s) shall be reached before the tests are performed.

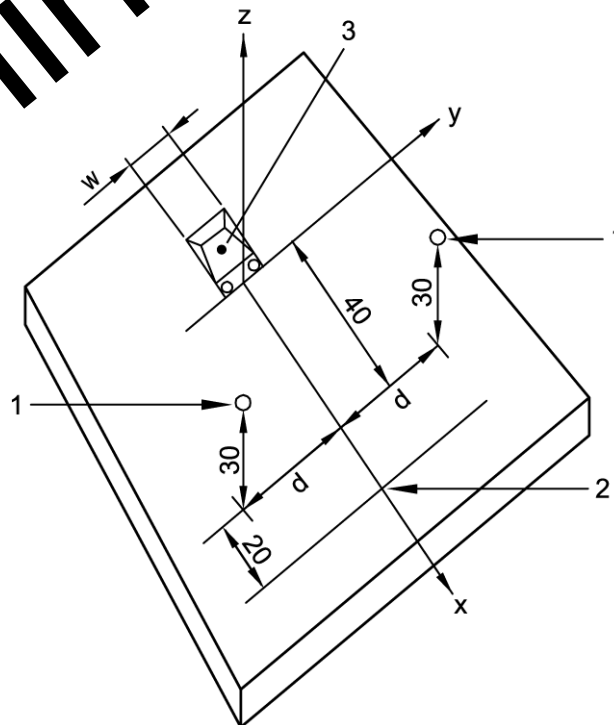
If the toy has a clearly defined operating cycle, measure the time average (the equivalent continuous) sound pressure level in each microphone position during at least one whole cycle. Quiet periods longer than 15 s shall be excluded from the measurement period.

For pass by tests, measure the maximum C-weighted emission sound pressure level. Measure twice on each side.

Measure the peak level of at least 3 impulses (events, cycles) at each microphone position.

Repeat the measurement procedure at each microphone position.

Dimensions in centimetres



Key

- 1 Microphone
- 2 End of measurement
- 3 Toy

Figure 29 – Microphone positions for the measurement of pull and push toys and for hand-actuated spring-propelled toys ("passing-by" test)

8.28.2.4.2 Measurement for rattles and squeeze toys

Measure the A-weighted single-event emission sound pressure level, $L_{pA,1s}$, and the C-weighted peak emission sound pressure level, $L_{pC\ peak}$ for ten movements (squeezes, beats). Carry out the test three times.

NOTE As an alternative to SEL, L_{Aeq} can be measured and the total measurement time t registered. The single-event emission sound pressure level can then be calculated from $SEL = L_{Aeq} + 10 \lg(t)$.

8.28.2.4.3 Measurement results

Sound measurement results shall be given as:

- A-weighted emission sound pressure level at the specified position, L_{pA} , in decibels.
- A-weighted single event emission sound pressure level at the specified position, $L_{pA,1s}$, in decibels.
- C-weighted peak emission sound pressure level at the specified position, $L_{pC\ peak}$, in decibels.

NOTE Because of the low cost of toys, the primary method used in this European Standard has the grade of accuracy of an ISO survey method which requires a lower measurement effort than the corresponding engineering method which is normally used for noise measurements. However, users of this document are encouraged to use the more accurate engineering method, especially when the noise levels are close to the limit values.

The highest value recorded (L_{pA} and $L_{pC\ peak}$) at any of the microphone positions is the measurement result.

For *rattles* and *squeeze toys*, the result is the average of the SEL-levels and the highest of the peak levels. Subtract 10 dB from the $L_{pA,1s}$ to get this value for one.

8.29 Determination of speed of electrically driven ride-on toys (see 5.6)

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

The dimensions of the load are given in Figure 21.

Operate the toy on a horizontal surface and determine the maximum velocity.

8.30 Measurement of temperature rises (see 4.21)

At an ambient temperature of (20 ± 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 rises.

Determine whether the toy ignites.

8.31 Toy chest lids (see 4.14.1 c))

The lid shall be assembled according to the manufacturer's instructions before testing.

8.31.1 Lid support

Lift the lid to any position in its arc of travel to a distance greater than 50 mm from its fully closed position measured at the outermost *edge* of the lid, but not to cause the lid to move through an arc of more than 60°. 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.

8.31.2 Durability test for vertically opening hinged lids

Subject the lid to 7 000 opening and closing cycles. One cycle consists of raising the lid from its fully closed position to fully open and returning it to fully closed. To prevent undue stress on screws or other fastenings 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 period of 72 h, after which the test described in 8.31.1 (lid support) shall be repeated.

Determine whether the toy chest lid and the lid support mechanism conforms to conform to relevant requirements of this European Standard.

8.32 Small balls and suction cups test (see 4.22, 5.10 and 5.13)

8.32.1 Small balls and suction cups

Position and clamp template E shown in Figure 30 so that the axis of the slot is substantially vertical and the slot is unobstructed at its top and bottom openings.

Place the *ball* or *suction cup* without compressing it, in any orientation in the slot so that the force on the *ball* or *suction cup* is only the force due to its mass.

Determine whether the *ball* or *suction cup* passes entirely through template E.

Dimensions in millimetres

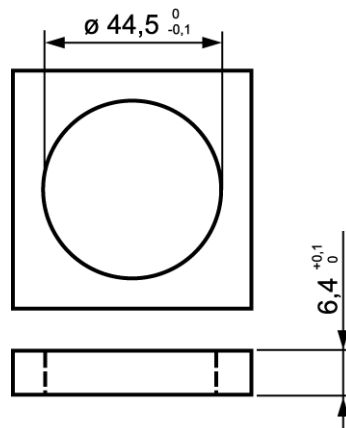


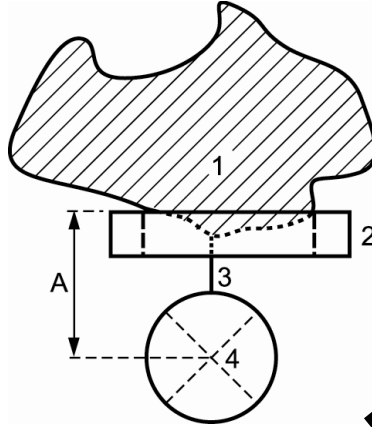
Figure 30 – Template E

8.32.2 Small balls attached to a toy by a string

Position and clamp template E shown in Figure 30 so that the axis of the slot is substantially vertical and the slot is unobstructed at its top and bottom openings.

Suspend the *ball* by the toy and string, elastic cord or similar or by the toy and lower the *ball* without compressing it into the slot so that the force on the *ball* is only the force due to its mass. The *ball* shall be lowered as far as the string and the attached toy allows before the distance A is measured.

Determine whether the *ball* passes through the base of template E such that the distance A indicated in Figure 31 is greater than 30 mm. The distance A shall be measured from the top of the template to the intersection point of the major and minor axes of the *ball*.



Key

- 1 toy
- 2 template E
- 3 string, elastic *cord* or similar
- 4 intersection point of the major and the minor axes

Figure 31 – Example of test of a ball attached to a toy by a string A_5

8.33 Test for play figures (see 8.11)

Position and clamp template B shown in Figure 20 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 in a position which would most likely permit the entry of the rounded end through the slot in the 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 of the play Figure protrudes past the base of template B.

Annex A (informative)

A4 Background and rationale for this standard

A.1 General

This standard seeks as far as possible to apply a hazard approach instead of specific restrictions for toys. The following definitions should be kept in mind when reading the standard:

- Hazard is a potential source of harm or a product characteristic which could lead to injury.
- Risk is the probable rate of occurrence of a hazard causing harm and the degree of severity of the harm.
- Harm is physical injury and/or damage to health or property.

For most of the requirements, the hazard which is addressed is explained in Annex A together with a background and rationale.

A.2 Scope (see Clause 1)

In the scope, a number of products are listed which, for the purpose of this standard, are not considered as toys. However, some comments are considered to be necessary:

- "Christmas decorations" also includes other holiday decorations (Easter, carnivals, etc.);
- "Detailed scale models for adult collectors" covers, for example, replicas of ships but also advanced kits for the assembly of such models;
- "Professional toys" includes for example toys, whether coin operated or not, that are used to amuse children while the parents are shopping;
- "Air guns and air pistols" refers to weapons which use high-compressed air or other gases to eject metal or plastic bullets or small darts and which are often used by adults in competitions. In many countries there are legal restrictions on the sale of such guns to children. The exemption does not include toy guns which for example eject water by means of compressed air;
- "Slings and catapults" includes slingshots but also, according to a communication from the EU Commission, toys (e.g. aeroplanes and rockets) which are propelled into free flight by a child releasing an elastic band;
- "Vehicles with combustion engines" also includes the engine itself as well as spare parts;
- "Fashion jewellery for children" does not include jewellery which is part of for example a doll's accessories and is not intended to be worn by a child. Nor does it include kits for making jewellery.

It should also be observed that the CE-marking is not to be affixed to products excluded from this standard (unless it is under the scope of another EU Directive which requires the affixing of the CE-marking).

A.3 Material (see 4.1)

This requirement is intended to ensure that materials used in toys are new or, if reprocessed, so refined that the level of contamination of hazardous substances does not exceed that found in new material. There should be no infestation from animals or vermin.

A.4 Assembly (see 4.2)

These requirements are intended to address hazards associated with toys which have to be assembled before they can provide play but have not been properly assembled (e.g. ride-on toys which, for practical reasons, are shipped in an unassembled state).

The requirements only apply to such assembly which is important from a safety point of view. The assembly of, for example, a model plastic kit is therefore not covered by this requirement.

For evident reasons, it is not possible to establish any safety criteria for something that a child builds using, for example, building blocks.

A.5 Flexible plastic sheeting (see 4.3)

These requirements are intended to address the asphyxiation hazards that might be associated with thin flexible plastic film, should it cover the face of a child or be inhaled.

Thin *plastic sheeting* may adhere to the child's mouth and nose making it impossible to breathe. If the thickness is greater than 0,38 mm, the risk is considered less significant.

With respect to balloons, see A.6.

A.6 Glass (see 4.5 and 5.7)

These requirements are intended to address the hazards associated with broken glass – for example sharp edges.

Accessible glass should as far as possible be avoided and should not be used unless necessary for the function of the toy.

Porcelain is used in, for example, toy tea sets and should still be allowed for children of 36 months and over. The hazard associated with broken porcelain is well known.

A.7 Expanding materials (see 4.6)

This requirement is intended to address the hazards associated with certain toys which expand dramatically if swallowed. Fatal accidents have occurred when children have swallowed such toys.

A.8 Edges (see 4.7)

These requirements are intended to address the hazards associated with sharp *edges* on toys.

The standard refers to metal and glass *edges* only as there is no test method available for plastic *edges*. Manufacturers should however, in designing toys and in the production of tooling, avoid sharp plastic *edges* as far as possible.

It has been agreed that the test method for assessing sharp *edges* should be supplemented with a subjective assessment to determine the associated risk. There could be *edges* on toys that, although sharp according to the test method, are not a significant risk to the user of the toy.

The presence of *burr* on an *edge* is established by drawing a finger along the *edge*. To fail the requirement, the roughness needs to be sufficient to fail the sharp *edge* tester.

It has been established that it is not possible to manufacture electrical conductors (for example in battery boxes) which do not present sharp *edges*. This hazard has, however, been considered to be of a minor nature and allowance has therefore been given for such *edges*.

A.9 Points and \square_{A6} metallic \square_{A6} wires (see 4.8)

These requirements are intended to address the hazards associated with sharp points capable of causing punctures of the skin, etc. It should, however, be noted that they do not intend to cover risks related to the eyes, which are too delicate to be protected.

It has been agreed that the test method for assessing sharp points should be supplemented with a subjective assessment to determine the associated risks. There could be points on toys that, although sharp according to the test method, are not a significant risk to the user of the toy, for example the points of pipe-cleaners, used as toys, that are so weak that they are not capable of puncturing the skin.

For children under 36 months, however, even points that are not sharp according to the test method may be hazardous. In 5.1 c) (toys intended for children under 36 months, general requirements), requirements are given for points with a cross section of 2 mm or less.

\square_{A6} Metallic wires and other metallic components that are designed and intended to be bent and metallic wires likely to be bent, whether covered by other materials or not, are tested according to a flexibility test to ensure that they do not break and produce sharp points.

Metallic wires and other metallic components designed and intended to be bent are subjected to 30 test cycles and metallic wires likely to be bent are subjected to one test cycle.

Metallic wires and other metallic components designed and intended to be bent are often used in *soft-filled* toys, which are considered suitable for children under 36 months. Should such a metallic wire break, it will eventually protrude through the covering and be hazardous. Metallic wires and other metallic components designed and intended to be bent are also often used in other types of toys for stiffening or retention of form.

Metallic wires likely to be bent accidentally can be found, for example, in the form of antennas on toys.

The requirements in 4.8 d) are not intended to cover for example U- or L-shaped cross-sections such as those often used in spokes in toy-umbrellas. Toys where the metallic wires cannot be bent in the manner that is described in the test method, without the metallic wires being removed from the toy, need not be tested. \square_{A6}

A.10 Protruding parts (see 4.9)

These requirements are intended to address the hazards associated with the users of toys falling on projections or rigid components on toys (e.g. toy bicycle handle bars, levers on go-carts, pram frames) possibly causing bruising or skin puncture. Such protruding parts should be protected. The size and shape of the end protection has not been stipulated, except for *toy scooters*, but the end protection should be given a sufficiently large surface area to avoid puncturing of the body.

Since the requirement concerns hazards arising from a child falling on to a toy, it follows that this requirement relates only to vertical or nearly vertical projections. The toy is tested in its most onerous position.

If the projection is on a small toy which topples over when pressure is applied to the end of the projection, it is unlikely to be hazardous.

A.11 Folding and sliding mechanisms (see 4.10.1)

These requirements are intended to address some but not all of the possible *crushing*, laceration and pinching hazards that might occur due to the sudden and unexpected *collapse* of folding toys whether intended to support the mass of a child or not.

They are also intended to address the hazards associated with the child being trapped in a collapsing pushchair or perambulator, and with children getting their fingers jammed when playing with a toy.

Fatal accidents are known to have occurred when toy pushchairs have *collapsed* and the handle has come down over the head or throat of the child when the child has been trying to sit in or climb into the toy pushchair. It is, therefore, necessary to require that such pushchairs or perambulators should be equipped with two separate locking and/or safety devices as is the case for full-size pushchairs and perambulators.

Certain pushchairs are not designed with a handlebar that folds down over the toy when it collapses but folds together in a sideways direction. It has been agreed that such toys do not present the same severe hazard and consequently do not require two separate locking devices.

However, it has not been considered possible to eliminate all possible jamming hazards of toys when they are folded together in their intended way. Manufacturers should reduce those hazards as far as possible, for example by allowing for a 12 mm clearance between moving parts and by using safety stops. Great care should also be used when designing toys with folding or sliding parts so that scissor-like actions of moving parts are avoided as far as possible.

Items a), b), and c) of 4.10.1 cover toys that may *collapse*. Item d) refers to other toys with moving parts (e.g. excavating equipment on a ride-on tractor), and the requirement that these toys are intended for or capable of bearing the mass of a child excludes smaller toys.

A.12 Driving mechanisms (see 4.10.2)

These requirements are intended to address the laceration and puncture hazards associated with sharp *edges* and points being exposed if the toy has been damaged. They are also intended to address pinching or laceration by entrapment of fingers in holes, in winder keys or between the winder key and the body of the toy.

Driving mechanisms should be enclosed in order to prevent jamming or *crushing* of fingers and other parts of the body. Toys that should be assembled by an adult are tested when assembled (see 4.2, assembly).

Small mechanisms are excluded, such as in small cars which would have insufficient power to jam fingers, and where power may be checked with a finger or a pencil inserted into the mechanism.

A mechanism would fail the requirement in this clause, were it to become *accessible* and the moving parts would be liable to jam the fingers or otherwise injure a child.

A.13 Hinges (see 4.10.3)

This requirement is intended to address the possible *crushing* hazard related to varying clearances along the *hinge line*, admitting fingers in one position of the hinged part but not in another.

It is only applicable to hinged assemblies in which both parts have a mass of 250 g or more and where the hinged moving part could be construed as a 'door' or a 'lid'. For the purposes of this requirement, a door or lid can be defined as a closure of extended surface area with an extended *hinge line*. Other hinged parts without a significant surface area or *hinge line* would probably fall into the category of a folding mechanism (see 4.10.1, parts moving against each other, folding and sliding mechanisms).

The requirement relates to the entrapment of a finger and injury through squashing between *edges* along the *hinge line* and between surfaces parallel with the *hinge line* as shown in Figure 1 (see 3.21, *hinge line*, definition) but not between other *edges* and surfaces of the assembly. There is only concern with the

considerable forces which can be applied to the *edges* of the *hinge line* when the door or lid is closed or opened.

It has not been considered possible to specify a hinge area instead of *hinge line*. Manufacturers should, however, consider this and try to reduce the associated hazards, e.g. by allowing for a 12 mm clearance between moving parts near the *hinge line*.

A.14 Springs (see 4.10.4)

These requirements are intended to address the pinching or *crushing* hazard to fingers, toes and other parts of the body, associated with toys with *springs*.

A.15 Mouth-actuated toys (see 4.11)

These requirements are intended to address the asphyxiation hazard associated with unintentional inhalation of mouth-actuated toys or their mouthpieces.

It is essential that such toys as well as *removable* mouthpieces and mouthpieces of toys which become detached when tested according to relevant requirements (e.g. the mouthpiece of a trumpet), are not so small that they can be unintentionally swallowed or inhaled.

To ascertain that small parts do not come loose when a mouth-actuated toy like a harmonica or whistle is used, these toys are subjected to a sucking and blowing test where a specified volume of air is forced through the toy.

This requirement applies regardless of the age of the child for whom the toy is intended.

A.16 Balloons (see 4.3, 4.12 and 7.3)

Balloons may be made of expandable latex or plastic. Plastic balloons made of metallized plastic are normally stronger than latex balloons and do not present the same choking or suffocation hazards. They therefore do not require the warning text in 7.3 (latex balloons).

Latex balloons are not covered by 4.3 (flexible plastic sheeting) as they are not made of plastic. Plastic balloons are normally so strong that they cannot be taken apart by a child and the thickness of the *plastic sheeting* should therefore be measured with double layers of sheeting (i.e. without tearing the balloon apart).

Products made from natural rubber latex may cause severe allergic reactions in some individuals. It is therefore important that balloons made from natural rubber latex are marked accordingly (see 7.3, latex balloons).

A.17 Cords of toy kites (see 4.13)

These requirements are intended to address the electrocution hazard associated with toy kites that come in contact with overhead power lines. They also highlight the danger of flying a toy kite in thunderstorms.

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

These requirements are intended to address the asphyxiation hazard associated with toys which might entrap and enclose the child completely (e.g. tents and toy chests).

All toys forming a confined space into which a child can enter are covered by this requirement regardless of whether the toy is designed to hold a child or not. Even if ventilation is ensured, it should be possible for the child to escape easily from the confinement without help from the outside.

Clause 4.14.1c) relating to toy chests was introduced to address the hazard associated with a child placing its head into the chest and the lid accidentally falling on to the child's neck, trapping the neck and causing asphyxiation. Such chests also have a play value.

A.19 Masks and helmets (see 4.14.2 and 7.8)

These requirements are intended to address the asphyxiation hazard associated with insufficient ventilation of masks and helmets which enclose the head. Requirements are also necessary to address the hazards associated with visors on toy motorcycle helmets and similar articles which might break and damage the eyes.

It is essential that flexible masks do not adhere to the face of the child so that breathing becomes difficult.

The requirements also cover products that mimic protective equipment but are not intended to provide any protection to the child. Therefore items such as swimming goggles and diving masks, which offer real protection to the child, are not classified as toys and are not covered by this standard.

For such products, refer to EN 166, EN 167 and EN 188, *Personal eye-protection*.

Sunglasses intended for eye protection are not classified as toys but as personal protective equipment and are required to offer protection against ultraviolet light and meet the requirements in EN 170, *Personal eye-protection*. However, sunglasses that have a play-value for children (e.g. decorated with little pictures) should also fulfil the requirements in EN 71-1 (e.g. sharp edges). Sunglasses for dolls, teddy-bears, etc. are classified as toys if they are too small for children to wear.

A.20 Toys intended to bear the mass of a child (see 4.15)

These requirements are intended to address various hazards associated with inadequate strength and stability of the toys as well as insufficient braking capabilities of toy vehicles. The requirements are also intended to address the hazards associated with chain transmissions and wheel arrangements capable of crushing fingers and other parts of the body, if entrapped.

This standard contains requirements and test methods for bicycles with a *saddle height* of 435 mm or less. These small bicycles are not intended to - and should not - be used in the streets or on the highway. EN 14765, *Bicycles for young children – Safety requirements and test methods* contains requirements and test methods for bicycles with a maximum *saddle height* that is less than 635 mm but more than 435 mm. Although it is not advisable, these bicycles are often used by young children in the streets near traffic. Legal requirements may exist in some countries relating to bicycles and their use by young children.

Requirements are given for roller skates, inline skates and skateboards intended for children with a body mass of 20 kg or less. Requirements for similar products intended for users over 20 kg have been developed by CEN/TC 136 Sports equipment.

The strength of the toy is tested by static and dynamic strength tests by applying a load to the toy. Two loads are specified, 50 kg for toys intended for children of 36 months and over, and 25 kg for toys intended for children under 36 months. In case of doubt as to which age range the toy is intended for, the greater load should be used. The dimensions of the loads are defined; however, when products such as pogo sticks are tested, the load will have to be distributed to the two foot pedals and it becomes impossible to define the design of the loads. For pogo sticks, the strength of the foot pedals is an important safety criteria since failure could result in injury.

The masses are based on anthropometric data and take into consideration the deterioration that toys are subject to during their lifetime.

The stability requirements do not apply to products which are not intended to be stable in their own right, e.g. pogo sticks.

Hand carts are wheeled toys in which one or more children may sit while being pulled along by another child or an adult.

If a toy which is designed to bear the weight of a child allows the child to use its feet to provide stability, the requirements do not apply. If the child is completely enclosed, the requirements should apply. It is a natural reaction for children to stabilise a toy with their feet when possible. However, the stability requirements apply to all toys intended for children under 36 months unless specifically excluded.

The braking requirements specify brakes for all ride-on toys with a free-wheeling facility. Toys with a direct transmission are excluded from these requirements, e.g. certain tricycles with pedals on the front wheel, pedal cars and also electrically driven cars with low speed (i.e. < 1 m/s) where the child's feet are free and can be used to brake the vehicle.

In assessing free-wheeling capability, it is often convenient and more practical to test the toy on a slope and establish whether it accelerates down the slope. Only in case of uncertainty, it should be necessary to use the formula. The complete formula for calculating the free-wheeling facility is $(M + 25) \times g \times \sin 10^\circ$. $\sin 10^\circ$ equals 0,173 and multiplied by 9,81 it equals 1,70.

There are no speed limitations in the standard for electrically driven toys intended for children over 3 years. However, certain countries may have such limitations in their national legislation.

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

This requirement is intended to address the hazards associated with insufficient strength and stability of rocking horses that might overturn unexpectedly.

A.22 Projectiles (see 4.17)

These requirements are intended to address certain but not all potentially unexpected hazards associated with projectile firing toys and by the firing of improvised *projectiles* from such toys.

A toy in which the kinetic energy is determined by the toy and not by the child is typically a gun or other *spring-loaded* device. A pea-shooter is an example of a toy with a *projectile* (a pea) of which the kinetic energy is determined by the child by blowing.

Ground-based vehicular toys propelled along a track or other surface are not considered as *projectile* toys even if they include an element of motion in free-flight, e.g. between tracks.

The velocity of *projectiles* may be measured by direct or indirect means.

Projectiles with *suction cups* have been involved in accidents, and it is important that the length of these projectiles is sufficient to aid removal if it is blocking the airway.

A.23 Aquatic toys (see 4.18 and 7.4)

These requirements are intended to address the hazards associated with the sudden loss of buoyancy of inflatable *aquatic toys* if air is released through the inlet with drowning as a possible consequence. They also aim at informing adults and children of the dangers of using these toys in deep water. The standard covers inflatable toys intended to bear the mass of a child and used for play in shallow water and generally under the supervision of an adult.

Stoppers on air-inflation inlets should not become detached and they should be protected against being inadvertently removed. Non-return valves are often provided to facilitate the inflation of the toy.

Other products such as large inflatable boats which because of their size and design are intended to be used in deep water, are not considered as toys. In addition, armbands and similar flotation aids are classified as swimming aids rather than toys.

Bathroom toys are generally used indoors in a bath tub and are not covered by 4.18 (aquatic toys), nor are inflatable beach *balls*, which are primarily used on the beach and not in the water.

A.24 A1 Percussion caps specifically designed for use in toys and toys using percussion caps (see 4.19) A1

These requirements are intended to address the thermal hazards associated with sparks, flame and glowing parts, capable of causing eye injuries, produced by toy percussion caps accidentally exploding outside the toy weapon, or by excessively dangerous explosive behaviour of properly used caps due to inadequate construction or manufacturing. They also apply to hazards associated with the simultaneous discharge of a large number of caps.

A.25 Acoustics (see 4.20)

These requirements are intended to address the auditory hazards associated with high continuous and impulse noise levels. They apply only to toys that are clearly designed to emit sound, i.e. toys that have sound-producing features such as electric or electronic devices, motors that emit sounds, percussion caps, rattling components etc.

The definitions in 3.6 (close-to-the-ear toy), 3.20 (hand-held toys), 3.32 (rattle), 3.37 (squeeze toy) and 3.39 (table-top and floor toy) are included to assist the interpretation of 4.20 (acoustics) and 8.28 (determination of emission sound pressure level).

Many toys emit continuous noise and/or impulse noise. The sensitivity of children to loud noise is basically unknown. However, there are scientists who hold the opinion that since the auditory canal in children is smaller than in adults, there is a different amplification which makes children more sensitive to high-frequency sounds.

Impulse sounds are especially hazardous since it is very difficult for the human ear to determine the sound levels due to the very short time factor. It is a fact that permanent damage to hearing may occur after only one exposure to high peak sound levels.

Acoustic toys should, of course, also conform to all other relevant requirements of this standard.

A.26 General requirements for toys intended for children under 36 months (see 5.1)

These requirements are intended to address the hazard associated with insufficient strength and durability of young children's toys, which are generally subject to considerable wear and tear. They are intended to address the hazards associated with small parts, capable of causing suffocation or asphyxiation, being inhaled or swallowed, as well as hazards in connection with sharp *edges*, sharp points and *springs*, which jam fingers, etc.

Young children have a well-known habit of putting things into their mouths, and toys and toy components for this age category should, therefore, have a minimum size to avoid asphyxiation. They should also have sufficient strength to resist considerable wear and tear.

The test programme for these toys is similar to the use and abuse tests in the USA.

Regarding the requirements for metal points and wires in 5.1.c), see comments in A.9.

The intention of the requirement for casing of toys in 5.1 g) is to ascertain the strength and durability of e.g. the casing of chiming toys, *rattles*, etc. which may include hazardous small parts, *edges* and points. If such casings crack, they will eventually fall apart and present hazards to the child.

The purpose of the soaking test in 5.1 e) for toys that are glued together is mainly to check the strength of the joint. Other properties of the toy which might be affected by the soaking are not considered except thick surface coatings such as varnish which may come loose.

Plastic stickers and decals (see 5.1 e)), self adhesive or not, glued on the toy and which come loose during the soaking test should pass the test for *plastic sheeting* as required in 4.3 (flexible plastic sheeting) and the small parts test (8.2).

Wood knots in wooden toys are by nature never the same, and no conclusion about the safety level for a certain kind of products can be drawn from a single toy with loose wood knots. Small wood knots in wooden toys which can easily be pulled or pushed out are, however, to be considered as *removable* small components.

A.27 Filling materials (see 5.2)

These requirements are intended to address the hazards related to objects that can cause cuts or lacerations if *accessible*, or asphyxiation if inhaled, or harm by ingestion.

Note that *soft-filled* toys and toys with coverings from which pieces can be bitten or torn off (e.g. foam toys) should meet the requirements in 8.3 (torque test) and 8.4 (tension test) as required in 5.1 (toys intended for children under 36 months, general requirements).

A.28 Adhesion of plastic sheeting (see 5.3)

These requirements are intended to address the hazards associated with *plastic sheeting* or plastic decals on toys - for example when children pull them off and put them over the face, forming an airtight seal capable of causing suffocation, or into the mouth.

A.29 Cords on toys (see 5.4)

These requirements are intended to address the hazards of strangulation associated with *cords* on toys that can form a noose around the neck of a child. They also address the hazards associated with self-retracting *cords* which might tangle with the fingers and other body parts, e.g. on a chiming toy.

The requirement in 5.4 b) is to ensure that *cords* cannot be wound around the neck and constitute a strangulation hazard. The requirement in 5.4 c) is to prevent the child from pulling a noose over its head.

A non-woven (monofilament) *cord* cannot easily form a noose. The requirement in 5.4 e) is intended to address the strangulation hazards associated with toys on a *cord* fixed across e.g. a cot. If the child tries to stand up in the cot, it might be entangled by the cord which could then form a loop around the neck, or the child might fall with the throat across it.

Normal plastic tips on shoelaces are not considered as attachments likely to form a noose.

A.30 Liquid-filled toys (see 5.5 and A.42)

These requirements are intended to address the hazards associated with punctured *teethers* and similar products where the child might come into contact with liquids that are contaminated or become contaminated due to a puncture.

The requirements do not apply to electrolyte in batteries nor to paints, finger paints or similar items in containers.

The warning required in 7.12 is intended to make parents aware of the hazard associated with a *teether* which is so cold that it could harm the child.

A.31 Shape and size of certain toys (see 5.8 and A.43)

These requirements are intended to address potential impaction hazards associated with toys intended for children who are too young to sit up unaided.

Toys should be tested according to 8.16 (geometric shape of certain toys) "as supplied". In other words, they should be tested for this requirement before other relevant tests are conducted.

In determining which toys are intended for such children, the following factors are relevant: the manufacturer's stated intent (such as on a label) if it is reasonable, the advertising, the promotion, the marketing and whether the toys are generally considered as suitable for the age group in question.

It is recognised that children normally sit up unaided between five and ten months of age.

A.32 Toys comprising monofilament fibres (see 4.9)

Monofilament fibres attached to fabric base is not the usual method of production, but a toy made in this way was involved in the death of a child of 5 months. This requirement does not apply to monofilament hair which is normally rooted in a dolls head or to pile fabric used in the manufacture of teddy bears and animals etc., for which there are no accident data.

A.33 Warnings and instructions for use (see 7.1)

Warnings, precautions and instructions for use should as a rule be given in the national language(s) of the country where the toy is sold.

Small toys that are sold without *packaging* (for example from a display box or from a vending machine) should have appropriate warnings etc. affixed to them. It is not sufficient to have the warning only on the display box.

General information on how to elaborate and present information for the consumer is given in ISO/IEC Guide 71 - *Instructions for use of products of consumer interest*.

A.34 Warning for toys not intended for children under 36 months (see 7.2)

Toys which, due to their characteristics and function, are generally considered suitable or intended for children under 3 years, should not be hazardous to those children as defined by this standard (for example due to small parts, small balls etc.). This requirement should be observed strictly. The use of a warning on such a toy does not release the manufacturer or his authorized representative from his obligation to meet this requirement.

The use of warnings should not be confused with the recommendation for use. Unnecessary warnings should be avoided as they reduce the effectiveness of such statements.

A.35 Warnings in connection with functional toys (see 7.5)

The text in 7.5 (functional toys) is taken from the EU Directive. The expression 'very small children' can be interpreted as covering children under 36 months.

A.36 Small parts cylinder (see 8.2)

This cylinder has been taken from the American Code of Federal Regulations, CFR Title 16, Part 1000 to end, §1501 Figure 1. For the purpose of this standard, tolerances have been added to the dimensions.

It is important to examine whether the toy fits entirely within the cylinder. This can be assessed by placing a sheet of clear plastic over the top of the cylinder to ensure that no parts of the toy protrude above the top of the cylinder. It is also important to ensure that the toy is not compressed in any way.

A.37 Tension test (see 8.4)

When dealing with soft materials, clamps used to attach the mass or force to the component can cause damage to the component or to the material to which the component is fixed and in this way compromise the test. If damage occurs, any further test(s) should be performed on a new toy.

A.38 Impact test (see 8.7)

The most onerous position can, in many instances, be the plastic seams of *rattles* and similar toys.

A.39 Compression test (see 8.8)

This test is restricted to those parts of relevant toys that in the drop test would not come into contact with the shore A hardness surface material whatever the orientation of the toy.

Ensure that the metal disc lies flat on the surface; if not, the force might be applied over a reduced area.

A.40 Sharpness of points (see 8.12)

The reference is American Code of Federal Regulations, CFR Title 16, Part 1000 to end, §1500.48, Figure 1. Before its introduction into the American Code of Federal Regulations, the sharp point tester was extensively used, but it still fails points that do not in reality present a risk of injury to a child. There is no objective test in this standard to address this situation, and a more subjective assessment has to be made.

It is suggested that the sharp point tester is incorporated into a device which together with the sharp point tester represents a force of 4,5 N. The sharp point can then be assessed in the vertical position by allowing the sharp point tester to be used under its own mass with support.

A.41 Flexibility of \square_{A6} metallic \square_{A6} wires (see 8.13)

During the test, carefully check that the \square_{A6} metallic \square_{A6} wire actually bends at the position where it is clamped rather than the 120° movement being taken up by the flexibility within the length of the \square_{A6} metallic \square_{A6} wire.

A.42 Leakage of liquid-filled teethers (see 8.15 and A.30)

Care should be taken when using cobalt-chloride paper to ensure that any water detected results from leakage and not from condensation on the *teether*. The note indicates that the test is applied only after incubation at 37 °C ± 1 °C.

A.43 Geometric shape of certain toys (see 8.16 and A.31)

It is important to emphasise that the toy is applied to the templates under its own mass.

A.44 Durability of mouth-actuated toys (see 8.17)

This requirement is based on ASTM F963 (8.13, test for mouth-actuated toys). This test is based on a volume of air passing through the toy with control on the maximum pressure that can be applied.

A.45 Folding or sliding mechanisms (see 8.18)

Ensure that fragile seats composed of such materials as textiles are not damaged by the test mass. When using a support for the test mass, the mass of the support should be considered as part of the load.

A.46 Static strength (see 8.21)

Where the child's mass is distributed in various positions on the toy, the tester should ascertain how the load is to be distributed. The centre of gravity is not taken into consideration, and sand bags or similar can be used.

A.47 Kinetic energy of projectiles, bows and arrows (see 8.24)

Where more than one type of *projectile* is supplied with the toy, the energy of these other *projectiles* should be assessed, as variations in mass and, in some systems, in the rigidity of the *projectile* can result in significant variations from *projectile* to *projectile*.

The kinetic energy of a *projectile* is determined from the equation:

$$\text{Kinetic energy} = 1/2 mv^2$$

where

m is the mass of the *projectile*, in kilograms;

v is the velocity of the *projectile*, in metres per second.

A.4.8 Small balls (see 4.22 and 5.10) ~~Ag~~ deleted text ~~Ag~~

Examples of objects which due to their *ball*-shaped design are covered by the definition of *ball* in 3.4 are:

- a *ball*-shaped part of a stacking toy,
- a removable or detachable *ball*-shaped part of a construction toy,
- a *ball*-shaped container with intended play-value.

Dice are not covered by the definition in 3.4.

The definition in 3.4 refers to spherical, ovoid, or ellipsoidal objects. There is presently no scientific data available to define an exact ratio between the major and the minor axes in this definition. However, the present interpretation is that these objects would typically have a ratio between the major and the minor axes higher than 70 %. Cylindrical objects and cylindrical objects with rounded ends are not included by the definition. An ambition for future revisions of the standard is to gather scientific data that will support the introduction of an exact ratio in the definition.

The hazard and risk intended to be covered by these requirements are different from what is covered by the small parts cylinder in 5.1 (toys intended for children under 36 months, general requirements) and 8.2 (small parts cylinder). The small parts cylinder addresses objects small enough to enter the child's lower throat.

Template E, as defined in Figure 30 (see 8.32, small balls and suction cups test), addresses *balls* capable of entering and blocking the airways at the back of the mouth and upper throat. *Ball*-shaped objects trapped behind the ridge of the hard palate can be very difficult to remove due to a reflex that causes muscular constriction of the throat. Therefore, ventilation holes are not considered to be an appropriate way of avoiding the hazards related to small *balls* since a *ball* can be trapped in any position and therefore many large holes in all directions would be needed.

Unlike small parts which only present a hazard when they become detached, small *balls* present a choking hazard even when they are attached to a toy by a *cord* or similar, provided that the total length of the *cord* and part of the *ball* is such that the *ball* can block the airway at the back of the mouth and upper throat. This length has been defined as 30 mm since this is identical to the depth of templates A and B.

A *ball* is considered to be “suspended freely” if it is attached to the end of a string, regardless of whether the string is attached to the top of the *ball* or runs through a part of the *ball* (see example in Figure 31). A single *ball* attached to the lowest part of a loop of string attached to a toy (as in Figure A.1), is also covered by the requirements.

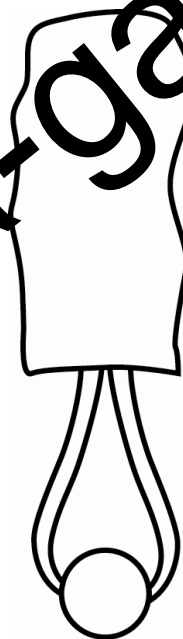


Figure A.1 – Ball attached to a toy by a loop

Balls and other *ball*-shaped three-dimensional objects with minor diameters larger than 44,5 mm are seldom implicated in incidents since these objects are too large to become trapped behind the ridge of the hard palate.

It is the shape of the *ball* rather than the intended use of the *ball* that presents the choking hazard. 

A.49 Toy scooters (see 4.15.5)

A body mass of 20 kg corresponds approximately to the average mass of a child of 5 years. A body mass of 50 kg corresponds approximately to the average mass of a child of 14 years.

The safety of scooters considered as sports equipment is covered by EN 14619.

It should be noted that the standard for scooters used as sports equipment is applicable to scooters that weigh 35 kg or more. Therefore there are two types of scooters for the weight group 35 kg to 50 kg – those classified as *toy scooters* and those classified as sporting goods.

It has not been considered necessary to require brakes for *toy scooters* for very young children because they do not normally travel with great speed and are not considered able to operate a brake.

A.50 Hemispheric-shaped toys (see 5.12)

This requirement is intended to address the asphyxiation hazards associated with toys of certain shapes (e.g. cup-shape, bowl-shape or one half of an egg-shape) that can be placed over a young child's nose and mouth forming an airtight seal. The available data indicate that the children involved in fatalities were between the ages of 4 and 24 months while near misses involved children up to 36 months.

The US Consumer Product Safety Commission staff has analyzed the incident data and concluded the following regarding the dimensions of the containers involved in these incidents:

Table A.1 - Dimensions

Hemispherical toys	Ranges
Diameter Range	69 mm to 97 mm
Depth Range	41 mm to 51 mm
Volume Range	100 ml to 177 ml

The work group observed children with cups in the diameter range of 51 mm to 114 mm. Based on these observations and the dimensions of the cups involved in the incidents, it was concluded that the size range of interest is 64 mm to 102 mm.

The two-hole positions described in Figure 12 a) and Figure 13 b) are intended to minimize the likelihood that both holes could be blocked simultaneously.

The size of the opening is specified to prevent a vacuum from forming. The openings are not intended as breathing holes. ^{A4}

^{A6} A previous exception for "objects intended for drinking (e.g. tea set cups)" from the requirements in 5.12 has been deleted due to the European Commission's decision 2007/184/EC of March 23, 2007, published in the Official Journal of the European Union on March 27, 2007. ^{A6}

Annex ZA
(informative)

Clauses of this European Standard addressing essential requirements or other provisions of EU Directives

This European standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 88/378/EEC.

Once this European Standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in table ZA confers, within the limits of the scope of this European Standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 - Correspondence between this European Standard and Directive 88/378/EEC

Clause(s)/sub-clause(s) of this Part of EN 71	Essential Requirements (ERs) of Directive 88/378/EEC, Annex II	Qualifying remarks/Notes
Introduction; 1	I.1 a) and b) (General)	
Introduction; 1.1, 6	I.2 a) and b) (General)	
7	I.3 (General)	
4.15.1.3; 4.15.1.4; 4.15.3; 4.15.4; 4.15.5.3; 4.15.5.4; 4.16	II.1 a) (Particular)	
4.2; 4.3; 4.7; 4.8; 4.9; 4.14.2; 4.15; 4.15.1.3; 4.15.5.7; 4.18; 5.1; 5.2; 5.4; 5.5	II.1 b) (Particular)	
4.10; 4.15.1.6; 4.15.5.4	II.1 c) (Particular)	
4.2; 4.6; 4.11; 4.18; 5.1	II.1 d) (Particular)	
4.2; 4.3; 4.4; 4.6; 4.12; 4.14; 4.22; 5.1; 5.2; 5.3; 5.4; 6	II.1 e) (Particular)	
4.18	II.1 f) (Particular)	
4.14.1	II.1 g) (Particular)	
4.15.1.5; 4.15.2.4; 4.15.5.5	II.1 h) (Particular)	
4.17	II.1 i) (Particular)	
4.21	II.1 j) (Particular)	
4.19	II.2 b), c) and d) (Particular)	
4.1	II.5 (Particular)	
Clause(s)/sub-clause(s) of this Part of EN 71	Provisions of Directive 88/378/EEC	
1	Annex I (Particular)	

7.2	Annex IV 1	(Particular)	
7.5	Annex IV 3	(Particular)	
7.10	Annex IV 5	(Particular)	
7.4	Annex IV 6	(Particular)	
A.33	Article 11, Clause 5	(General)	

WARNING: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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Bibliography

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- [4] American Code of Federal Regulations, CFR Title 16 Part 1000 to end, §1501 and §1500.48
- [5] ASTM F963 – 03 Standard Consumer Safety Specification on Toy Safety
- [6] EN 166:2001, *Personal eye-protection — Specifications*
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- [10] EN 14619, *Roller sports equipment — Kick scooters — Safety requirements and test methods*
- [11] ^{A4} EN 14763:2005, *Bicycles for young children - Safety requirements and test methods* ^{A4}
- [12] ^{A6} EN 62115:2005, *Electric toys - Safety (IEC 62115:2003 + A1:2004, modified)* ^{A6}
- [13] EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*
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