

Safety of toys —

Part 1: Mechanical and physical properties

The European Standard EN 71-1:1998, with the incorporation of amendments A1:2001, A2:2002, A4:2004, A5:2000, A6:2002, A7:2002, A8:2003, A9:2004, A10:2004 and A11:2004, has the status of a British Standard

ICS 97.200.50

National foreword

This British Standard is the English language version of EN 71-1:1998, including amendments A1:2001, A2:2002, A4:2004, A5:2000, A6:2002, A7:2002, A8:2003, A9:2004, A10:2004 and A11:2004, published by the European Committee for Standardization (CEN). It supersedes BS EN 71-1:1998 which is withdrawn.

The start and finish of text introduced or altered by CEN amendment is indicated in the text by tags **A1** **A1**. 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**.

The UK participation in its preparation was entrusted to Technical Committee CW/15, Safety of toys, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Textual error. The textual error set out below was discovered when the English language version of amendment A5:2000 to EN 71-1:1998 was adopted for incorporation in the national standard. It has been reported to CEN in a proposal to amend the text of the European Standard.

Clause C.5

“The test method in 8.27 for borosilicate glass is taken for EN 71-4.”

There is not a requirement in EN 71-4 for a test for borosilicate glass. Therefore, it is proposed that CEN delete this sentence.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 76, an inside back cover and a back cover.

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NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 71-1

July 1998

+ A1

January 2001

+ A2

February 2002

+ A4

May 2004

+ A5

November 2000

+ A6

March 2002

+ A7

May 2002

+ A8

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+ A9

May 2004

+ A10

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+ A11

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Descriptors: toys, plastic products, wood products, glass-ware, products made with metal, specifications, setting-up conditions, safety requirements, tests, physical properties, mechanical properties, packages, marking, instructions, technical notices

English version

Safety of toys — Part 1: Mechanical and physical properties

(includes amendments A1:2001, A2:2002, A4:2004, A5:2000, A6:2002, A7:2002, A8:2003, A9:2004, A10:2004 and A11:2004)

Sécurité des jouets —

Partie 1: Propriétés mécaniques et physiques

(inclut les amendements A1:2001, A2:2002, A4:2004, A5:2000, A6:2002, A7:2002, A8:2003, A9:2004, A10:2004 et A11:2004)

Sicherheit von Spielzeug —

Teil 1: Mechanische und physikalische Eigenschaften

(enthält Änderungen A1:2001, A2:2002, A4:2004, A5:2000, A6:2002, A7:2002, A8:2003, A9:2004, A10:2004 und A11:2004)

This European Standard was approved by CEN on 23 November 1997. Amendment A1 was approved by CEN on 2 December 2000. Amendment A2 was approved by CEN on 30 December 2001. Amendment A4 was approved by CEN on 2 January 2004. Amendment A5 was approved by CEN on 27 October 2000. Amendment A6 was approved by CEN on 14 February 2002. Amendment A7 was approved by CEN on 20 January 2002. Amendment A8 was approved by CEN on 12 December 2002. Amendment A9 was approved by CEN on 2 January 2004. Amendment A10 was approved by CEN on 16 September 2004. Amendment A11 was approved by CEN on 21 October 2004.

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CEN

European Committee for Standardization

Comité Européen de Normalisation

Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Documents
EN 71-1:2004 + A11:2004

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This European Standard replaces EN 71-1:1988 (including Corrigendum 1:1989).

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 January 1999, and conflicting national standards shall be withdrawn at the latest by January 2001.

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 standard.

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

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

This part of EN 71 is the result of a revision of EN 71-1:1988. The principal changes in this part of EN 71 compared with EN 71-1:1988 are as follows:

- an extensive list of definitions has been introduced;
- design restricting requirements have been avoided as far as possible in favour of an approach developed to reduce the occurrence of hazards (see Annex C);
- more stringent requirements and tests have been introduced for toys for children under 36 months and for toys for children who are too young to sit up unaided;
- requirements for percussion caps specifically designed for use in toys and acoustics have been introduced. More stringent acoustical requirements apply three years after the date of availability of this part of EN 71;
- requirements for warning labelling of balloons, toy bicycles, toys intended to bear the mass of a child under 36 months and toys comprising monofilament fibres have been introduced.

This standard contains five annexes:

- Annex A (normative) Percussion caps specifically designed for use in toys — Requirements;
- Annex B (informative) Requirements guide by toy categories;
- Annex C (informative) Background and rationale;
- Annex D (informative) Bibliography;
- Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives.

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

Foreword to amendment A1

This amendment EN 71-1:1998/A1:2001 to EN 71-1:1998 has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This amendment to the European Standard EN 71-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2001, and conflicting national standards shall be withdrawn at the latest by May 2001.

This amendment to the European Standard EN 71-1:1998 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).

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Foreword to amendment A2

This amendment EN 71-1:1998/A2:2002 to EN 71-1:1998 has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This amendment to the European Standard EN 71-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2002, and conflicting national standards shall be withdrawn at the latest by August 2002.

This amendment to the European Standard EN 71-1:1998 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 standard.

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Foreword to amendment A4

This document (EN 71-1:1998/A4:2004) has been prepared by Technical Committee CEN/TC 52, Safety of toys, the secretariat of which is held by DS.

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Foreword to amendment A5

This amendment EN 71-1:1998/A5:2000 to EN 71-1:1998 has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This amendment to the European Standard EN 71-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2001, and conflicting national standards shall be withdrawn at the latest by May 2001.

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Foreword to amendment A6

This document EN 71-1:1998/A6:2002 has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

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Foreword to amendment A7

This document EN 71-1:1998/A7:2002 has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This amendment to the European Standard EN 71-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2002, and conflicting national standards shall be withdrawn at the latest by November 2002.

This document 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 document.

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

Foreword to amendment A8

This document (EN 71-1:1998/A8:2003) has been prepared by CEN/TC 52, Safety on toys, the Secretariat of which is held by DS.

This amendment to the European Standard EN 71-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2003, and conflicting national standards shall be withdrawn at the latest by October 2003.

This document 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 document.

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

Foreword to amendment A9

This document (EN 71-1:1998/A9:2004) has been prepared by Technical Committee CEN/TC 52, Safety of Toys, the secretariat of which is held by DS.

This amendment to the European Standard EN 71-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2004, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document 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 document.

NOTE According to usual CEN practice, EN 71-1:1998/A9, when adopted and published by CEN (*DAV* = *date of availability*), shall be given the status of a national standard by member bodies (*DOP* = *date of national publication*) at the latest 6 months after its publication by CEN (*DAV* + 6 months).

CEN/TC 52 has, however, taken Resolution 83 requesting a transitional period of one year for implementation of the amendment after CEN publication.

Therefore, in the voting form for the formal vote, the date for DOW (*date of withdrawal*) with regard to the present requirement for toy scooters in EN 71-1:1998 will be set for (*DAV* + 12 months).

This means that there will be a 12 month period from the date of the publication by CEN of EN 71-1:1998/A9 where the requirements for toy scooters in EN 71-1:1998 will still be valid.

This also means that the requirements for toy scooters in

EN 71-1:1998 and

the additional requirements and changes in EN 71-1:1998/A9

will co-exist for a period of 12 months after the DAV-date (and 6 months after the DOP-date).

After this date, the additional requirements and changes given in EN 71-1:1998/A9 shall be applied.

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

Foreword to amendment A10

This document (EN 71-1:1998/A10:2004) has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2005, and conflicting national standards shall be withdrawn at the latest by April 2005.

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Foreword to amendment A11

This document (EN 71-1:1998/A11:2004) has been prepared by Technical Committee CEN/TC 52, Safety of toys, the Secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

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Introduction

This European Standard for the 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.*

The standard aims at reducing as far as possible those risks which are not evident to users but it does 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 the 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 be taken therefore 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 the standard do not release parents or carers from their responsibility of watching over the child while he or she is playing.

1 Scope

This part of EN 71 specifies requirements and methods of test for mechanical and physical properties of toys.

The 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 of age. It refers to new toys taking into account the period of foreseeable and normal use and when 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. Soft filled toys with simple features intended for holding and cuddling are, for the purposes of this standard, considered as toys intended for children under 36 months. This standard also specifies requirements for packaging, marking and labelling.

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

It 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 are not considered as toys for the purposes of this standard:

- Christmas decorations (see **C.1**);
- detailed scale models for adult collectors (see **C.1**);
- 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 **C.1**);
- puzzles with more than 500 pieces or without picture, intended for specialists;
- air guns and air pistols (see **C.1**);
- fireworks, including percussion caps except percussion caps specifically designed for toys;
- slings and catapults (see **C.1**);
- 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 **C.1**);
- 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 24 V;
- babies’ dummies (soothers);
- faithful reproductions of real firearms;
- fashion jewellery for children (see **C.1**).

In addition, for the purposes of this standard, the following items cannot be considered as toys:

- flotation aids such as arm bands **A6** and swim seats **A6** (see **C.24**);
- swimming goggles, sunglasses and other eye protectors as well as bicycle and skateboard helmets (see **C.18**);
- items that are propelled into free flight by a child releasing an elastic band (for example aeroplanes and rockets). These are considered as catapults (see the eleventh indent above);
- bows for archery with an overall relaxed length exceeding 120 cm.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

IEC 60126:1973, *IEC reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts*.

IEC 60318:1970, *An IEC artificial ear, of the wide band type for the calibration of earphones used in audiometry*.

IEC 60651:1979, *Sound level meters*.

IEC 60804:1985, *Integrating-averaging sound level meters*.

prEN ISO 868:1997, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*.

EN ISO 3744:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane*.

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 4287-2:1984, *Surface roughness — Terminology — Part 2: Measurement of surface roughness parameters.*

ISO 4593:1993, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning.*

ISO 6508:1986, *Metallic materials — Hardness test — Rockwell test (Scales A – B – C – D – E – F – G – H – K).*

ISO 7619:1986, *Rubber — Determination of indentation hardness by means of pocket hardness meters.*

EN ISO 11201:1995, *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.*

EN ISO 11202:1995, *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.*

EN ISO 11204:1995, *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.*

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1

accessible

contact 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 weight of a child and used as an instrument of play in shallow water

3.3

backing

material adhering to flexible plastic sheeting

3.4

burr

roughness, caused by not cleanly severing or finishing the material

3.5

close-to-the-ear toy

toy that is manifestly 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 such a toy that can be put against the ear of a child

Examples of such toys are telephones that ring or beep in the ear piece and toys with earphones.

3.6

collapse

sudden or unexpected folding of a structure

3.7

cord

piece of slender, flexible material including monofilaments, woven and twisted cord, rope, plastic textile tapes, ribbon and those fibrous materials commonly called string. Monofilament doll hair is not considered as cord

3.8

crack

fracture of a material to the full thickness of the material

3.9

crushing

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

3.10

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

3.11

edge

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

3.12

expanding material

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

3.13

fastening

mechanical device which attaches two or more components of a toy together, for example a screw

3.14

filling

material intended to be contained wholly within a soft filled toy

3.15

free-wheeling toy bicycle

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

3.16

functional edge or point

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

3.17

functional toy

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

3.18

fuzz

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

3.19

hand-held toy

toy that is manifestly 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

3.20

hinge line

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

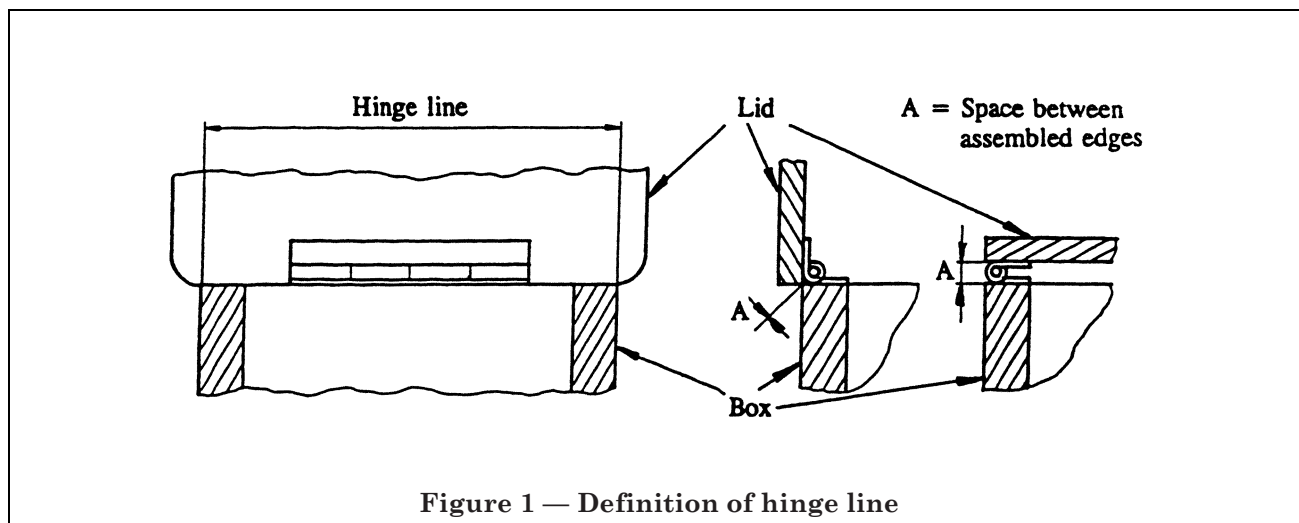


Figure 1 — Definition of hinge line

3.21**large and bulky toy**

toy that has a projected base area of more than $0,26 \text{ m}^2$ or a volume of more than $0,08 \text{ m}^3$ calculated without regard to minor appendages or a mass of $4,5 \text{ kg}$ or more

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

3.22**maximum saddle height**

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

3.23**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

3.24**packaging**

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

3.25**paper**

material, marketed as either paper or paperboard, with a mass per unit area of 400 g/m^2 maximum

3.26**particle**

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

3.27**plastic sheeting**

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

3.28**projectile**

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

3.29**projectile toy with stored energy**

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

3.30

projectile toy without stored energy

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

3.31

rattle

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

3.32

removable component

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

3.33

soft filled toy

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

3.34

splinter

sharp pointed fragment

3.35 spring

3.35.1

helical spring

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

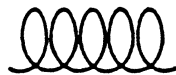


Figure 2 — Helical spring

3.35.1.1

compression spring

spring which returns to its initial state after compressive force has been released

3.35.1.2

extension spring

spring which returns to its initial state after the tensile has been realized

3.35.2

spiral spring

clockwork type spring, see Figure 3



Figure 3 — Spiral spring

3.36

squeeze toy

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

3.37**table-top and floor toy**

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

3.38**teether**

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

3.39**tool**

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

Ag 3.40**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 steer tube.

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

Ag 3.41**ball**

spherical, ovoid, or ellipsoidal object designed or intended to be thrown, hit, kicked, rolled, dropped or bounced

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

This definition does not include dice, or balls permanently enclosed inside pinball machines, mazes, or similar outer containers. A ball is permanently enclosed if, when tested according to 8.3 (torque test), 8.4 (tension test), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test), it is not removed from the outer container. For *large and bulky toys* the drop test above is substituted by 8.6 (tip over test). Ag

A11 3.42**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 thus creating a vacuum A11

4 General requirements

NOTE Words in *italics* are defined in Clause 3. Additional information is given in Annex C.

4.1 Material (see C.2)

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

4.2 Assembly (see C.3)

If a toy is intended to be assembled by a child, the requirements in this part of EN 71 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 if it is necessary that an adult assembles the toy or that the proper assembly is checked by an adult before use.

4.3 Flexible plastic sheeting (see C.4)

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

- a) Sheets without any *backing* and of an area greater than 100 mm × 100 mm when tested according to 8.26.1 (plastic sheeting, thickness) shall have an average thickness of 0,038 mm or more.
- b) Sheets with an average thickness of less than 0,038 mm and of an area greater than 100 mm × 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 × 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 the requirements given in 4.14.2a).

4.5 Glass (see 5.8 and C.5)

Accessible glass may be used in the construction of toys for children over 36 months 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 C.6)

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, shall not expand more than 50 % in any dimension when tested according to 8.14 (expanding materials).

4.7 Edges (see C.7)

Accessible edges shall not present an unreasonable risk of injury.

- a) *Edges* of metal or glass on toys 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 then 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 are subject to being 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*, when the clearance between the sheet metal having a thickness of 0,5 mm maximum and the underlying surface is greater than 0,7 mm, the *edge* of the sheet metal shall conform to item a).
- c) *Edges* of metal (including *fastenings*, e.g. screw heads) and of rigid polymeric material shall be free from *burr* capable of causing wound 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 (cover slips), sharp *edges* may be used in toys intended for children over 36 months.

The potential danger presented by sharp *edges* shall be drawn to the attention of the user (see 7.7).

Edges of pieces intended to serve as electrical conductors and microscope slides and cover slips are considered to be *functional edges* and do not require a warning.

4.8 Points and wires (see C.8)

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

a) Points on toys 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 then 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).

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, sharp points may be used in toys intended for children over 36 months.

The potential danger presented by sharp points shall be drawn to the attention of the user (see 7.7).

Points of pieces intended to serve as electrical conductors are considered to be *functional points* and do not require a warning.

c) Toys which contain wires, likely to be bent, and wires used for stiffening or retention of form (e.g. in *soft filled toys*) shall not break and produce sharp points or protrude through the surface covering of the toy when tested according to 8.13 (flexibility of wires).

4.9 Protruding parts (see C.9)

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 in accordance with 8.4.2.3 (tension test, protective components), the ends of the spokes shall be free from sharp edges and sharp points when tested in accordance with 8.11 (sharpness of edges) and 8.12 (sharpness of points). Furthermore, if the protections are removed as above, the spokes shall have a minimum diameter of 2 mm and shall have ends with no burr and with a smooth, rounded and approximately spherical finish.

4.10 Parts moving against each other

4.10.1 Folding and sliding mechanisms (see C.10)

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 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 8.18.2a) (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 partially to erect a toy pushchair or perambulator without one of the locking devices being engaged, then the test of 8.18.2a) shall be conducted in this orientation.

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

NOTE 2 An example of a toy pushchair or perambulator covered by item a) is illustrated in Figure 4.

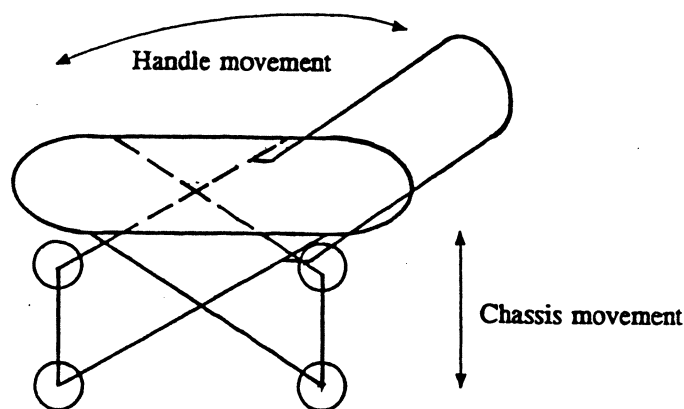


Figure 4 — Toy pushchair or perambulator covered by item a)

b) Toy pushchairs and perambulators that otherwise do not 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 8.18.2b) (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 partially to erect a toy pushchair or perambulator without a locking device being engaged, then the test of 8.18.2b) shall be conducted in this orientation (see note 1).

NOTE 3 Examples of toy pushchairs and perambulators covered by item b) are illustrated in Figure 5.

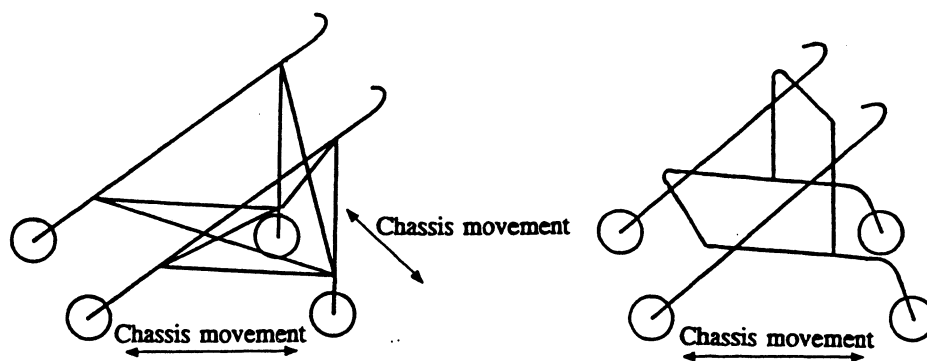


Figure 5 — Toy pushchairs covered by item b)

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

- 1) 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) a minimum clearance of 12 mm between moving parts which constitute a scissor-like action.

d) Toys other than those covered by items 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, if it allows a 5 mm diameter rod to be inserted, shall also allow a 12 mm diameter rod to be inserted.

4.10.2 *Driving mechanisms* (see C.11)

The requirements in 4.10.2a) 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 so enclosed that, when tested according to 8.5 (drop test) and 8.7 (impact test), they do not expose *accessible sharp edges* (8.11) or sharp points (8.12) or otherwise present a hazard of *crushing* the fingers or other parts of the body.
- b) *Driving mechanisms* within *large and bulky toys* shall be so enclosed that, when tested according to 8.6 (tip over test) they do not expose *accessible sharp edges* (8.11) or sharp points (8.12) or otherwise present a hazard of *crushing* fingers or other parts of the body.
- 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, if it allows a 5 mm diameter rod to be inserted, shall also allow a 12 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 C.12)

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, if it allows a 5 mm diameter rod to be inserted, shall also allow a 12 mm diameter rod to be inserted with the parts in any position.

4.10.4 *Springs* (see C.13)

Springs shall conform to the following requirements.

- a) Spiral *springs* shall not be *accessible* according to 8.10 (accessibility of a part or component) 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. the elastic limit is exceeded).

- b) Extension helical *springs* shall not be *accessible* according to 8.10 (accessibility of a part or component) 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 between consecutive coils by more than 5 mm.

- c) Compression helical *springs* shall not be *accessible* according to 8.10 (accessibility of a part or component) if the gap between two consecutive turns is greater than 3 mm at rest and the *spring*, when the toy is used, can be subjected to a force of 40 N or more.

4.11 *Mouth-actuated toys* (see C.14)

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) Non-detachable mouthpieces of mouth-actuated toys, if detached when tested first according to 8.9 (soaking test) and then according to 8.3 (torque test) and 8.4 (tension test, general), shall not fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- c) Mouth-actuated toys which contain loose components such as spheres in a whistle or reeds in a noisemaker shall not, when tested according to 8.17 (durability of mouth-actuated toys), release any objects that fit entirely in the cylinder when tested according to 8.2 (small parts cylinder).
- d) Removable or non-detachable mouthpieces, fitted to balloons, shall conform to the requirements in items a) and b).

4.12 Balloons (see 4.3 and C.15)

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

The *packaging* of natural latex balloons shall indicate that the balloons are made of natural rubber latex.

4.13 Cords of toy kites and other flying toys (see C.16)

Cords of toy kites and other flying toys, materially linking the toy to the child and with a length exceeding 2 m, shall be made of material with an electric resistance exceeding 100 M Ω per centimetre 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 7.10).

4.14 Enclosures

4.14.1 Toys which a child can enter (see C.17)

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.

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, the ventilation area shall not be required.

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 maximum from the inside.

NOTE This requirement notably precludes the use of buttons, zips and similar *fastenings* on the 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 weight, except in the last 50 mm of travel. The test shall be conducted according to 8.34.1 (lid support).

The lid support mechanism shall comply with this requirement before and after being subjected to 7 000 opening and closing cycles, as described in 8.34.2 (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 comply with above after being cycled according to 8.34.2.

The lid and lid support mechanism shall comply with the relevant requirements in 4.10.

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

4.14.2 Masks and helmets (see C.18)

Masks and helmets shall conform to the following requirements.

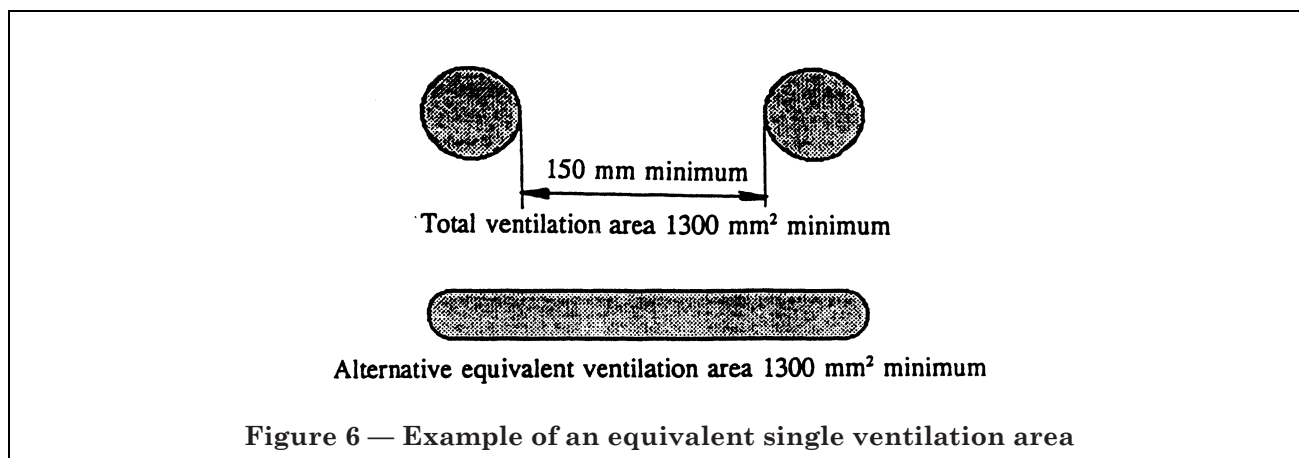
a) Masks and helmets that fully enclose the head and which are made of impermeable material shall provide a total ventilation area of 1 300 mm² minimum through at least two holes at least 150 mm apart or through any equivalent single ventilation area.

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

b) All rigid materials that cover the face such as goggles, space helmets or face shields shall, before and after being tested according to 8.3 (torque test), 8.4 (tension test, general), 8.5 (drop test), 8.7 (impact test) and 8.8 (compression test), not expose sharp *edges* (8.11), sharp points (8.12) or loose parts that could enter the eye.

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

c) Toys that are imitations of protective masks and helmets (for example motor cycle helmets, industrial safety helmets and firemen's helmets) shall carry a warning (see 7.9).



4.15 Toys intended to bear the mass of a child (see C.19)

4.15.1 Toys propelled by the child or by other means

[Ag] Toys propelled by the 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 in 4.15.1.

These requirements do not apply for free-wheeling toy bicycles, which are covered in 4.15.2 and for *toy scooters* which are covered in 4.15.6. **[Ag]**

4.15.1.1 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 instructions. The potential dangers of using the toy and the precautions to be taken shall be brought to the attention of the user (see 7.4).

Toys that, due to their construction, strength, design or other factors, are not suitable for use by children over 36 months shall carry a warning according to 7.17.

4.15.1.2 Strength

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

- a) produce *accessible sharp edges* (8.11);
- b) produce *accessible sharp points* (8.12);
- c) make *driving mechanisms accessible* that present a hazard of *crushing* the fingers or other parts of the body;
- d) *collapse* such that they do not continue to conform to the relevant requirements of this part of EN 71.

4.15.1.3 Stability

The requirement of 4.15.1.3 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, scooters);
- toys intended for children over 36 months, 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 (fore and aft stability has to remain);
- toys with aligned wheels (e.g. scooters). Wheels with a spacing of 150 mm or less between the centres of the outermost wheels are considered to be a single wheel.

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

4.15.1.4 Braking

The requirement of 4.15.1.4 does not apply to:

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

If a toy accelerates down a slope of 10°, when loaded with a mass of 50 kg, it can be expected to be free-wheeling, 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 m/s ± 0,2 m/s:

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

$$FT_2 \geq (M + 50) \times 1,7;$$

where

b)

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 over 36 months;

M is the mass of the toy in kilograms.

The toy when tested according to 8.30.1 (brake performance for toys other than *toy bicycles*), shall not move more than 5 cm.

c) 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.

4.15.1.5 Transmission and wheel arrangement

Transmission and wheel arrangement shall conform to the following requirements.

a) Propelling chains shall have, at the side where the leg of the child is nearest the chain (side A), a shield from the crank to the gear wheel and, on the opposite side (side B), a shield around the crank (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.

The requirement in c) does not apply to the friction surfaces of braking mechanisms, toy skateboards or to roller skates.

c) Spaces between the wheels and the body or parts of the body (e.g. mudguards) shall, if they allow a 5 mm diameter rod to be inserted, also allow a 12 mm diameter rod to be inserted.

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. whilst being pushed (for example, free-wheeling mechanism or foot rests).

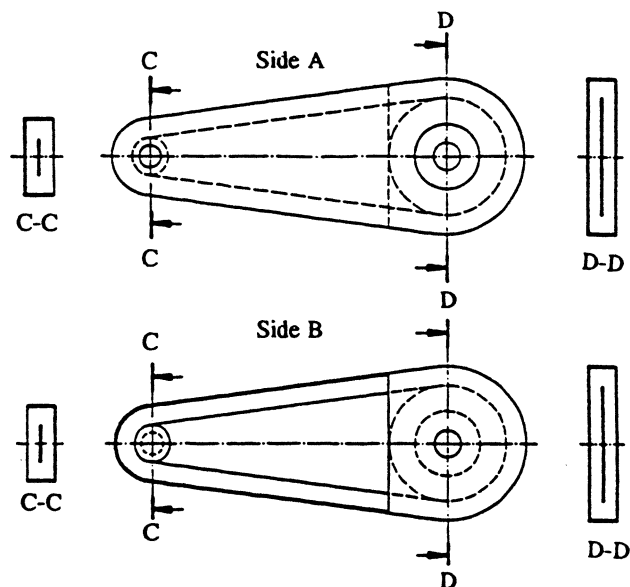


Figure 7 — Propelling chains and chain shield

4.15.2 Free-wheeling toy bicycles (see C.19)

In addition to the relevant requirements in 4.15.1.2 and 4.15.1.5, *free-wheeling toy bicycles* shall conform to the following requirements.

4.15.2.1 Instructions for use

Free-wheeling toy bicycles shall be accompanied by assembly and maintenance instructions. The potential dangers of riding *toy bicycles* and the precautions to be taken shall be brought to the attention of the parents or carers (see 7.16).

4.15.2.2 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 equivalent to and 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.

4.15.2.3 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 B 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 minimum.

When tested according to 8.30.2 (bicycle brake performance) the toy shall not move more than 5 cm.

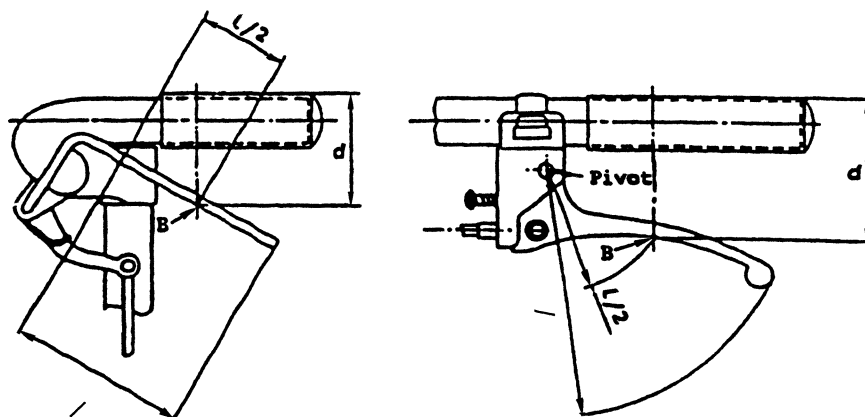


Figure 8 — Hand brake lever dimensions

4.15.3 Swings and similar toys (see 5.6 and C.20)

Swings shall conform to the following requirements.

- a) Frames and/or suspension of swings, when tested according to 8.24 (strength of swings), shall not *collapse* such that they do not continue to conform to the relevant requirements of this part of EN 71.
- b) The means of suspension shall, in the case of ropes and chains, have a diameter of 10 mm minimum when tested according to 8.29 (diameter of ropes and chains for swings) or, in the case of straps, a width of 10 mm minimum.

Chains shall have an opening of 5 mm maximum in order to prevent fingers from being jammed (see Figure 9).

Suspension hooks shall be of a design that will prevent unintentional disconnection (e.g. wound over at least 540° or of a spring-hook type).

- c) The need to carry out checks and maintenance of the main parts at intervals shall be drawn to the attention of the users (see 7.4).

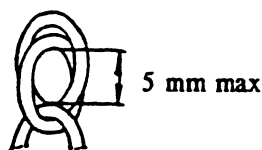


Figure 9 — Maximum openings in chains for swings

4.15.4 Rocking horses and similar toys (see C.21)

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

- a) The bow rocker of any bowmounted 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, when tested according to 8.21 (static strength), shall not *collapse* such that they do not continue to conform to the relevant requirements of this part of EN 71.