

Safety of toys —

Part 8: Swings, slides and similar activity toys for indoor and outdoor family domestic use

The European Standard EN 71-8:2003, with the incorporation of amendments A1:2006 and A2:2005, has the status of a British Standard

ICS 97.200.50

National foreword

This British Standard is the official English language version of EN 71-8:2003, including amendments A1:2006 and A2:2005.

The start and finish of text introduced or altered by CEN amendment is indicated in the text by tags $\boxed{A1}$ $\langle A1 \rangle$. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by $\boxed{A1}$ $\langle A1 \rangle$.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 35 and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments
16239	28 April 2006	See national foreword
16294	31 August 2006	See national foreword

ICS 97.200.50

English version

Safety of toys – Part 8: Swings, slides and similar activity toys for indoor and outdoor family domestic use

Sécurité des jouets – Partie 8: Balançoires, toboggans et jouets d'activité similaires à usage familial en extérieur et en intérieur

Sicherheit von Spielzeug – Teil 8: Schaukeln, Rutschen und ähnliches Aktivitätsspielzeug für den häuslichen Gebrauch (Innen- und Außenbereich)

This European Standard was approved by CEN on 5 March 2003. Amendment A1 was approved by CEN on 31 May 2006, amendment A2 was approved by CEN on 27 October 2005.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN 71-8:2003) 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of an identical text or by endorsement, at the latest by December 2003, and conflicting national standards shall be withdrawn at the latest by December 2003.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.

This standard is part 8 of the European Standard for Safety of toys. It should be read in conjunction with Part 1.

The European Standard EN 71 "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;
- Part 8: Swings, slides and similar activity toys for indoor and outdoor family domestic use.

This part of EN 71 includes clauses that have been moved from EN 71-1:1998 Part 1 *Mechanical and physical properties*.

Foreword to amendment A1

This document (EN 71-8:2003/A1:2006) 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 71-8:2003 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

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Foreword to amendment A2

This European Standard (EN 71-8:2003/A2:2005) 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 71-8:2003 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

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).

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1 Scope (see A1)

This part of EN 71 specifies requirements and test methods for *activity toys* for domestic family use attached to or incorporating a *crossbeam*, and similar toys intended for children under 14 years of age to play on or in and to bear the mass of one or more children. The scope excludes equipment intended for use in schools, kindergartens, public playgrounds, restaurants, shopping centres and similar public places dealt with in EN 1176 parts 1 to 6.

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.

EN 71-1:1998 *Safety of toys – Mechanical and physical properties*

3 Definitions

3.1

activity toy

toy intended for family domestic use, intended to bear the mass of one or more children, often attached to or incorporating a *crossbeam* and intended for children to play on or in. Examples of such toys are *swings*, *slides*, carousels and climbing frames

3.2

anchor

device used to fix the toy to the standing surface

3.3

barrier

guardrail to prevent a user passing beneath and through

3.4

crossbeam

bar or beam which forms a main load bearing part of the toy (see Figure 2)

3.5

entrapment

hazard presented by a situation in which a body, part of a body, or clothing is entrapped

3.6

forced movement

movement where the direction and the extent of the child's movement is determined by the operation of the equipment, for example swinging, sliding, rocking and revolving

3.7

free height of fall

the greatest vertical distance from the clearly intended body support to the impact area below

3.8

Free space

space in, on or around the *activity toy* that can be occupied by a user undergoing a *forced movement* by the equipment (e.g., swinging, sliding, rocking, revolving). The definition of *free space* does **not** include the three-dimensional area in which a falling movement takes place

3.9

Handrail

rail intended to assist the user to balance or climb

3.10

Platform

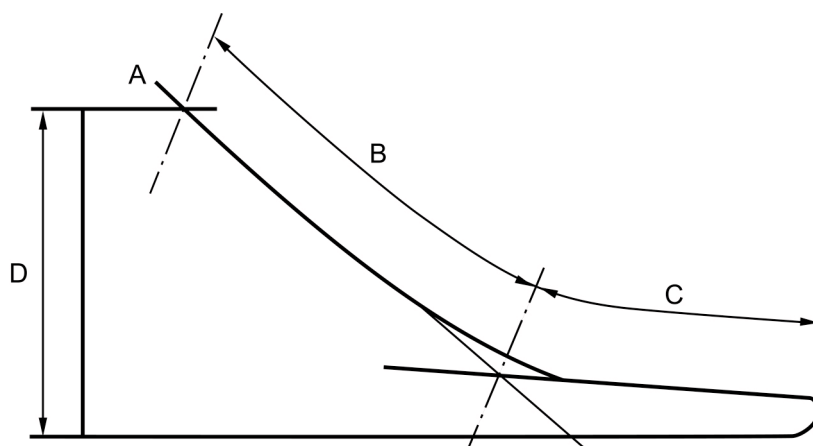
raised level surface

3.11

Slide

structure with inclined surface(s) on which the user slides in a defined track (see Figure 1)

NOTE Inclined planes, designed primarily for other purposes, such as roofs, do not constitute *slides*.



Key:

- A Starting section
- B Sliding section
- C Run-out section
- D Height of slide
- B + C Slide length

NOTE The dimensions A, B, and C shall be taken at the centreline of the sliding surface. Each of these sizes represents one of the zones of the sliding surface. Each zone of the sliding surface is determined by the intersection of the curve of the sliding surface (taken at the bottom of the sliding surface) and the bisecting line of the angle formed by the zones of the sliding surfaces between themselves.

Figure 1 — Diagrammatic representation of a slide

3.12

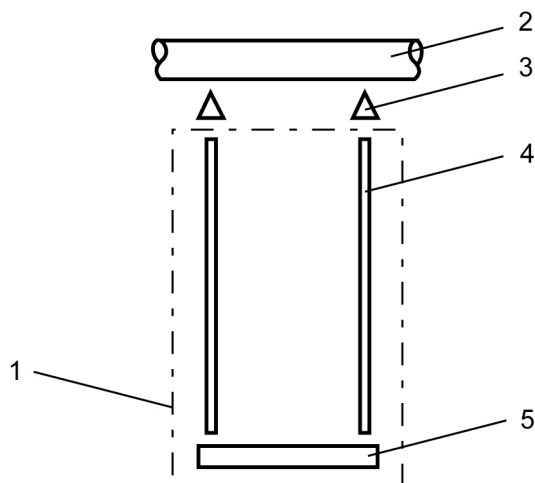
Suspension connector

device which forms the direct contact between a *crossbeam* and the means of suspension (see Figure 2)

3.13

Swing

structure incorporating a *crossbeam*, *suspension connectors* and a *swing device* with swing element and means of suspension (see Figure 2)

**Key:**

- 1 Swing device
- 2 Crossbeam
- 3 Suspension connector
- 4 Means of suspension
- 5 Swing element (e.g. seat, rings, bar, gondola)

Figure 2 — Diagrammatic representation of a swing

4 Requirements

NOTE Words in *italics* are defined in clause 3 of this part of the standard or in EN 71-1:1998.

4.1 General (see A.2)

4.1.1 Static strength

Activity toys, when tested according to 6.2.1 (strength of toys other than swings) shall not *collapse* such that they do not continue to comply with the relevant requirements of EN 71.

NOTE Additional requirements for *swings* are given in 4.6.2.

4.1.2 Maximum height

When measured from the ground, there shall be no part of the *activity toy* where the child is able to climb, sit or stand over a height of 2500 mm.

4.1.3 Corner and edges $\boxed{A_1}$ (see A.8) $\langle A_1 \rangle$

$\boxed{A_1}$ Exposed *edges* shall be rounded.

Corners and exposed *edges* on moving parts shall have a minimum radius of 3 mm. This does not apply to *swing* elements with a mass of 1 000 g or less, the corners and *edges* of which shall be rounded.

(See also new A.8) $\langle A_1 \rangle$

- f) The depth for treads on closed step ladders shall be 120 mm or more.
- g) The inclination for ladders that are fixed to the toy shall be between 55° and 90° to the horizontal.

Dimensions in millimetres

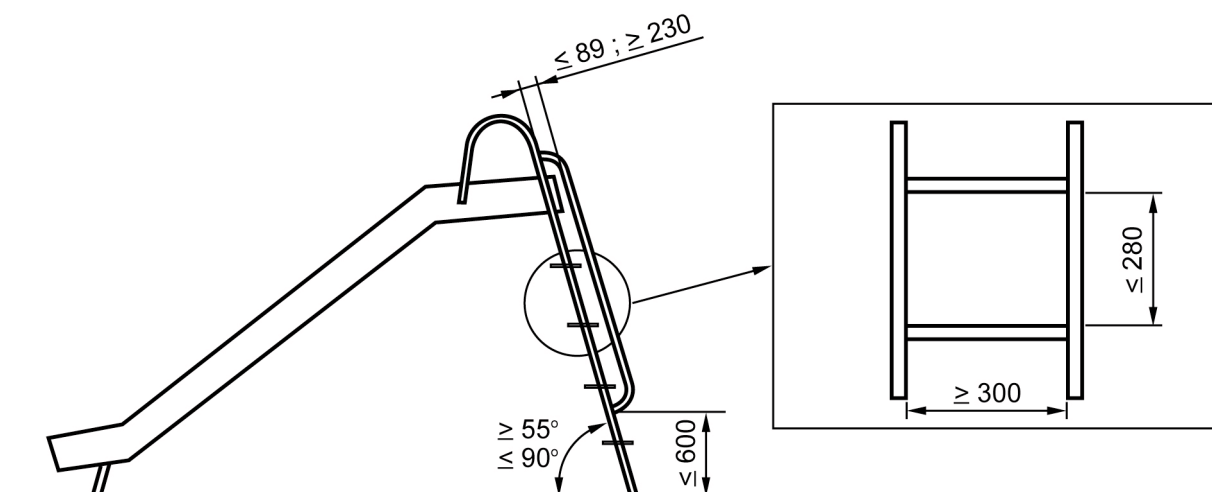


Figure 3 — Dimensions of ladders

4.3 Entrapment (see A.4)

4.3.1 Head and neck entrapment

Activity toys shall be constructed so that no openings create head and neck *entrapment* hazards either by head first or feet first passage.

NOTE Hazardous situations in which this type of *entrapment* can be encountered include the following:

- completely bound openings through which a user can *slide* head first or feet first;
- partially bound or V-shaped openings; and
- shearing and moving openings.

When choosing materials, the manufacturer shall take into account the *entrapment* hazards that can occur due to distortion of material during use.

- a) *Accessible* completely bound openings with a lower *edge* of 600 mm or more above the ground, or above any other surface which is of such a size that it will support a child, shall, if they allow passage of probe C (see Figure 10), also allow passage of probe D (see Figure 11) when tested in accordance with 6.5.1 (head and neck *entrapment* in completely bound openings).
- b) *Accessible* rigid circular openings with a lower *edge* of 600 mm or more above the ground, or above any other surface which is of such a size that it will support a child shall not have an internal diameter between 130 mm and 230 mm.
- c) *Accessible* completely bound openings, when tested according to 6.5.1 shall have no parts that converge in the downward direction at an angle of less than 60° if the lower *edge* is 600 mm or more above the ground (V-shaped opening).

- d) Partially bound and V-shaped openings with a lower *edge* of 600 mm or more above the ground, or above any other surface which is of such a size that it will support a child, shall be constructed so that either:
 - 1) the opening is not *accessible* as defined in Figure 13 and when tested according to 6.5.2.3 a) (head and neck *entrapment* in partially bound and V-shaped openings), or
 - 2) the tip of the template contacts the base of the opening when tested according to 6.5.2.3 b) (head and neck *entrapment* in partially bound and V-shaped openings).
- e) Non-rigid members (for example ropes) shall not overlap if by doing so they create openings that do not comply with the requirements in a).
- f) Openings between flexible parts of suspended bridges and any rigid side members shall not be less than 230 mm in diameter under the worst case condition of loading. Both loaded and unloaded situations shall be considered.

4.3.2 Entrapment of clothing and hair

- a) *Slides*, fireman's poles and roofs shall be constructed so that hazardous situations in which clothing or hair can be *entrapped* are not created. Such situations may be created by:
 - 1) gaps or V-shaped openings in which parts of clothing can become *entrapped* while or immediately before the user is undergoing a *forced movement*;
 - 2) protrusions; and
 - 3) spindles/rotating parts.

When tested according to 6.6 (toggle test), *entrapment* of the toggle or chain shall not occur.

The toggle test, as given in 6.6, is restricted to the *free space*, as practical experience has shown that natural material and connections between different parts can vary over time.

NOTE 1 When using elements of circular cross section, special consideration should be given to avoid clothing and hair entanglement. This can be achieved by using spacers or similar devices.

- b) *Slides* and fireman's poles shall be constructed so that openings located within the *free space* do not *entrap* the toggle or chain when tested in accordance with 6.6 (toggle test).
- c) Roofs shall be constructed so that they do not *entrap* the toggle or chain when tested in accordance with 6.6 (toggle test).
- d) Spindles and rotating parts shall have means of preventing entanglement of clothing or hair.

NOTE 2 This can be achieved by use of suitable covering or shields.

4.3.3 Entrapment of feet

Surfaces intended for standing, running or walking shall not contain any gaps likely to cause foot or leg *entrapment*. There shall be no gaps greater than 30 mm measured in one direction (see Figure 4).

Dimensions in millimetres

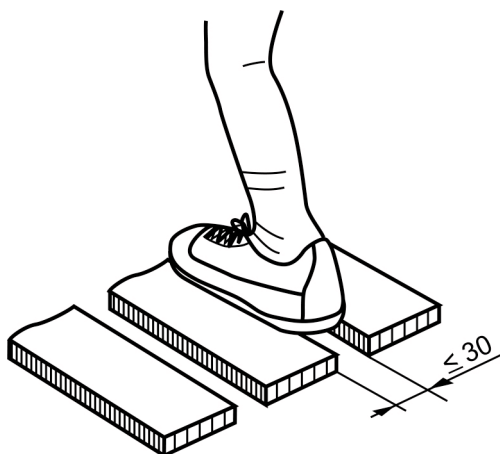


Figure 4 — Measurement of surface gap on running and walking levels

4.3.4 Entrapment of fingers

The requirements in 4.3.4 do not apply to weather induced dry cracks in solid wood.

Activity toys shall be constructed so that hazardous situations in which *entrapment* may occur are not created.

Accessible holes, slots and gaps in any rigid material, for example open ended tubes or pipes and variable gaps (excluding chains), where the body is in a *forced movement* and which can admit a 5 mm diameter rod to a depth of 10 mm or more shall also admit a 12 mm diameter rod.

4.4 Stability of activity toys other than slides, swings and toys with crossbeams

A1 *Activity 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 stability tests.

Activity toys supplied with *removable* ground *anchors* shall be tested with *anchors* fixed to the standing surface according to the manufacturer's instructions.

Activity toys not supplied with *anchors* shall be subjected to stability tests. **A1**

NOTE Stability requirements for *slides* are given in 4.5.1 and for *swings* and other activity toys with *crossbeams* in 4.6.1.

4.4.1 Stability of activity toys with a free height of fall of 600 mm or less

Activity toys with a *free height of fall* of 600 mm or less shall not tip over when tested according to 6.1.1 (stability of *activity toys* with a *free height of fall* of 600 mm or less).

4.4.2 Stability of activity toys with a free height of fall of more than 600 mm

Activity toys with a *free height of fall* of more than 600 mm shall not tip over when tested according to 6.1.2 (stability of *activity toys* with a *free height of fall* of more than 600 mm).

4.5 Slides (see A.5)

4.5.1 Stability of slides

A1 *Slides* 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 stability tests.

Slides supplied with *removable* ground *anchors* shall be tested with *anchors* fixed to the standing surface according to the manufacturer's instructions.

Slides not supplied with *anchors* shall be subjected to stability tests. **A1**

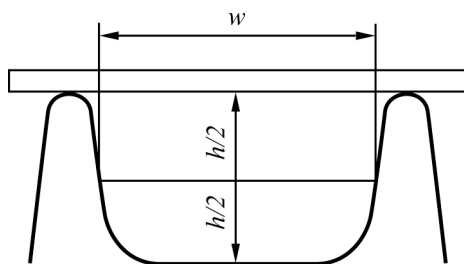
Slides shall not tip over when tested according to 6.1.3 (stability of *slides*).

4.5.2 Retaining sides for slides

Retaining sides for *slides* shall comply with the following (see Figure 5):

- For *slides* with a height of more than 1000 mm measured from the ground, the height (h) of the retaining sides shall be 100 mm or more.
- For *slides* with a height of 1000 mm or less measured from the ground, the height (h) of the retaining sides shall be 50 mm or more.

Retaining sides are not required for the run-out section.



Key:

- h height of the retaining sides
- w width of the *slide*

Figure 5 — Height of retaining sides

4.5.3 Starting, sliding and run-out section on slides

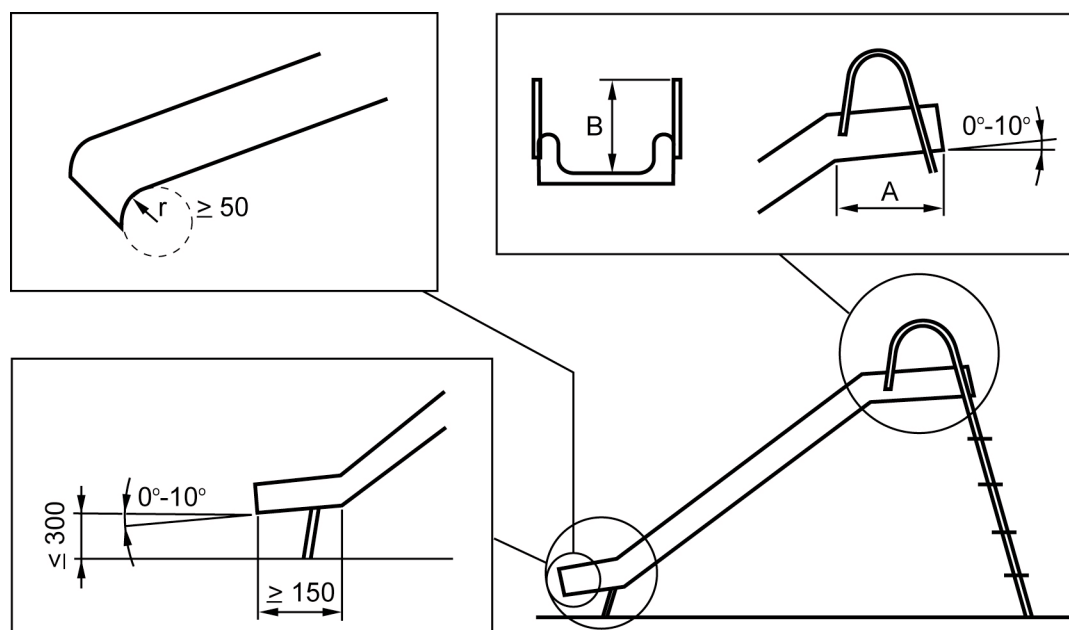
NOTE For attachment *slides*, the *platform* may be used as starting section.

The starting and run-out section on *slides* shall comply with the following (see Figure 6):

- The starting section for *slides* with a height of less than 1000 mm measured from the ground shall have at least the same width as the sliding section, a length of 150 mm or more and an inclination of between 0° and 10° to the horizontal. The width is measured as indicated in Figure 5.
- The starting section for *slides* with a height of 1000 mm or more measured from the ground shall have at least the same width as the sliding section, a length of 250 mm or more and an inclination of between 0° and 10° to the horizontal. The width is measured as indicated in Figure 5.
- The starting section shall be provided with *handrails* in order to provide assistance to the child coming from the stair/ladder into the sitting position.
 - For *slides* with a height of less than 1000 mm, the height of the *handrail* shall be 150 mm or more.
 - For *slides* with a height between 1000 and 1800 mm, the height of the *handrail* shall be 350 mm or more.
 - For *slides* above 1800 mm, the height of the *handrail* shall be 500 mm or more.
- The run-out section for the *slide* shall have a length of 150 mm or more. The inclination shall be between 0° and 10° to the horizontal, and the height of the end of the section shall be 300 mm or less from the ground.

- e) The finishing end of the run-out section shall have a radius of 50 mm or more. This requirement does not apply to *slides* where the run-out section ends 50 mm or less from the ground.

Dimensions in millimetres



Key:

- A** Length of starting section:
 150 mm for *slides* with a height of less than 1000 mm (see 4.5.3 a));
 250 mm for *slides* with a height of 1000 mm or more (see 4.5.3 b)).
- B** Height of *handrails* (see 4.5.3 c):
 150 mm for *slides* with a height of less than 1000 mm;
 350 mm for *slides* with a height between 1000 mm and 1800 mm;
 500 mm for *slides* with a height above 1800 mm.

Figure 6 — Requirements for slides

4.5.4 Means of access to slides

In addition to the requirements in 4.2.2 (means of access to toys), ladders with a height of 1200 mm or more shall be provided with *handrails* from a height of 600 mm from the ground (see Figure 3) to the top of the *slide* (does not apply to ladders with rungs) (see Figure 3).

4.6 Swings (see A.6)

A1 4.6.1 Stability of swings and other activity toys with crossbeams

4.6.1.1 General

Swings and other activity toys with crossbeams 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 stability tests.

Swings and other activity toys with crossbeams supplied with *removable* ground *anchors* shall be tested with *anchors* fixed to the standing surface according to the manufacturer's instructions.

Swings and other activity toys with crossbeams not supplied with *anchors* shall be subjected to stability tests.

4.6.1.2 Swings and other activity toys with crossbeams more than 1 200 mm over the ground

When tested according to 6.1.4.1 (stability of swings and other activity toys with crossbeams more than 1 200 mm over the ground), the toy shall not tip over. **A1**

^{A1} 4.6.1.3 Swings and other activity toys with crossbeams 1 200 mm or less over the ground intended for children under 36 months

When tested according to 6.1.4.2 (stability of swings and other activity toys with crossbeams 1 200 mm or less over the ground), the toy shall not tip over.

(See also amendments to 6.1.4) ^{A1}

4.6.2 Strength of crossbeams, swing devices and suspension connectors

When tested according to 6.2.2 (strength of *swings*), structures and/or *crossbeams* shall not *collapse* and *swing devices*, *suspension connectors* and climbing frames shall not become deformed, so that the toy does not comply with relevant requirements of EN 71.

4.6.3 Swings intended for children under 36 months

Swings seats shall be provided with a back and a safety device preventing the child from falling off the seat.

The following have been found appropriate:

- a T-bar or a protective bar with a crotch strap, the horizontal section of which shall be situated between 200 mm and 300 mm above the seat;
- a device to fasten the child to the seat, e.g. a belt which is provided with a crotch strap.

When tested according 6.2.2.2 (strength of swings intended for children under 36 months), frames and/or *crossbeams* shall not *collapse* and *swing devices*, *suspension connectors* and climbing frames shall not become deformed, so that the toy does not comply with relevant requirements of EN 71.

^{A2} Text deleted ^{A2}

4.6.5 Minimum clearance between swing elements, and similar equipment and adjacent structures

These requirements do not apply to single *swing* elements in swings with a *crossbeam* height of 1200 mm or less.

The minimum clearances between adjacent *swing* elements shall be as given in table 1:

Table 1 – Minimum clearances between swing elements

<i>Clearances in millimetres between:</i>	Free swinging elements	Semi-flexible elements	With rigid means of suspension	Adjacent structure of swing device
Free swinging elements	450	450	450	300
Semi-flexible elements	450	300	300	300
Elements with rigid means of suspension	450	300	300	300

4.6.6 Lateral stability of swing elements

^{A1} This requirement does not apply to *swings* with rigid means of suspension. ^{A1}

The minimum distance between the suspension points of a *swing* measured along the *crossbeam* shall be calculated as follows (see Figure 7):

$$A = 0,04 h + B$$

where:

A is the distance between the suspension points along the *crossbeam*;
 B is the distance between the junction points of the *swing* element and the means of suspension;
 h is the distance from the ground to the lower side of the *crossbeam*.

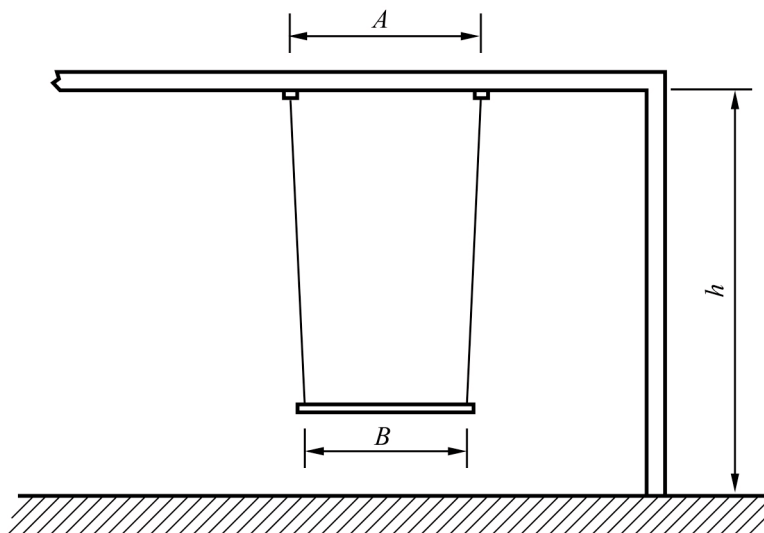


Figure 7 — Minimum distance between suspension points of swings

4.6.7 Minimum clearance between swing elements and the ground

Minimum clearance between *swing* elements and the ground shall be as follows:

Semi-flexible <i>swing</i> elements with two suspension points	350 mm
<i>Swing</i> elements with rigid means of suspension	400 mm

4.6.8 Suspension connectors and means of suspension

- a) A_1 *Suspension connectors* on suspended *swing* elements shall be prefixed when supplied. This requirement does not apply to *swings* with rigid means of suspensions.

Methods of attachments requiring the consumer to tie a knot during assembly or adjustment as the sole means of securing the suspensions to a *crossbeam* or the seat are not permitted. A_1

- b) *Suspension connectors* shall be of a design that will prevent unintentional disconnection.

NOTE Examples of such hooks are hooks wound over at least 540° or of a spring-hook type.

- c) In the case of ropes and chains, the means of suspension shall have a diameter of 10 mm minimum when tested according to 6.7 (diameter of ropes and chains for *swings*) or, in the case of straps, a width of 10 mm minimum.
- d) Chains shall have an opening of 5 mm maximum in order to prevent fingers from being jammed (see Figure 8).
- e) The need for carrying out checks and maintenance of the main parts at intervals shall be drawn to the attention of the users (see 5.3).

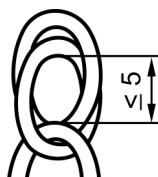


Figure 8 — Maximum openings in chains for swings

4.7 See-saws

The central point of the sitting or standing position of the see-saw shall not exceed a height of 1200 mm. The beams of the see-saw may swing out of the horizontal for max. 20°.

For see-saws where the central point of the sitting or standing position can reach a height of 1000 mm or more, each end of the see-saw shall be provided with dampening material on the part that touches the ground or have a dampening device incorporated in the swing centre.

4.8 Carousels and rocking activity toys (see A.7)

^{A1} These requirements do not apply to bow-mounted rocking horses and similar toys which are covered by EN 71-1.

Carousels, rocking *activity toys* and similar toys shall comply with the following requirements:

When tested according to 6.1.1 (stability of *activity toys* with a *free height of fall* of 600 mm or less), toys shall not tip over.

When tested according to 6.2.1 (strength of toys other than *swings*), toys shall not collapse.

When measured from the ground and surface to any sitting or standing position, the maximum *free height of fall* for carousels and rocking *activity toys* shall not exceed 600 mm.

(See also amendment to A.7) ^{A1}

5 Warnings and labelling

5.1 Labelling

The toy or the *packaging* if there is one shall carry a clearly legible label "For family domestic use only" also stating whether it is intended for indoor or outdoor use.

The toy or the *packaging* if there is one shall give information as to mass and/or age of the child for whom the toy is intended.

5.2 Assembly and installation instructions

The information given on the labelling/purchase information shall also be given in the installation instructions.

Toys that require assembly by the consumer shall be accompanied by appropriate assembly instructions including drawings which shall enable an unskilled layman to correctly assemble the toy.

The assembly and installation instructions shall also, when appropriate, include the following:

- a recommendation to place the toy on a level surface at least 2 m from any structure or obstruction such as a fence, garage, house, overhanging branches, laundry lines or electrical wires;
- detailed instructions on how *anchors* are to be installed to prevent overturning or lifting of the support members during normal or foreseeable misuse also taking into account the condition of the soil normally encountered;
- instructions that *anchors* shall be placed level with or under the ground in order to reduce tripping hazards;
- instructions that toys (for example *swings*, *slides*, climbing frames) shall not be installed over concrete, asphalt or any other hard surface;
- a recommendation on the orientation of the toy in relation to the sun (e.g. *slides*);
- information to keep assembly and installation instruction for further reference.

5.3 Maintenance

Toys shall also be accompanied by maintenance instructions drawing attention to the need of carrying out checks and maintenance of the main parts (*crossbeams*, suspensions, *anchors* etcetera) at regular intervals, pointing out that if these checks are not carried out the toy could overturn or otherwise become a hazard. Whenever practical, the instructions shall also be affixed to the toy.

The maintenance instructions shall, when appropriate, also include the following recommendations pointing out that it is of particular importance that they be followed at the beginning of each season as well as at regular intervals during the usage season:

- check all nuts and bolts for tightness and tighten when required;
- oil all metallic moving parts;
- check all coverings for bolts and sharp *edges* and replace when required;
- check *swing* seats, chains, ropes and other means of attachments for evidence of deterioration. Replace when required in accordance with the manufacturer's instructions.

6 Test methods

6.1 Stability

6.1.1 Stability of activity toys with a free height of fall of 600 mm or less (see 4.4.1 and 4.8)

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

For toys labelled as not suitable for children over 36 months (see 7.17 of EN 71-1:1998), load the toy with a mass of 25 kg \pm 0,2 kg.

The dimensions of the load are given in EN 71-1, Figure 19 (load for determination of strength and stability).

Place the toy on a 10° \pm 1° 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 simultaneously.

Observe whether the toy tips over.

6.1.2 Stability of activity toys with a free height of fall of more than 600 mm (see 4.4.2)

6.1.2.1 Principle

A horizontal force is applied at the top of the toy to simulate a child climbing on the toy.

6.1.2.2 Apparatus

- Suitable device(s) to apply a horizontal force of $120 \text{ N} \pm 5 \text{ N}$;
- Stops, if needed.

6.1.2.3 Procedure

Assemble the toy according to the manufacturer's instruction and place it on a rigid horizontal *platform*.

For a free standing toy, stops may be used to prevent its slipping on the surface. They shall, however, not prevent the toy from overturning.

$\overline{A_1}$ Activity toys supplied with *removable* ground *anchors* shall be tested with *anchors* fixed to the standing surface according to the manufacturer's instructions. $\overline{A_1}$

Apply a force of 120 N in the direction most likely to cause the toy to tip over. The force shall be applied at the outermost and highest grippable point. The highest grippable point is, however, limited to 1500 mm over the highest surface of such a size that it will always support a child.

NOTE 1 1500 mm is the maximum shoulder height of 95 % of the children aged up to 14.

Apply any number of forces of 120 N up to the number of children intended to play at the same time on the toy (consult product information). The distance between any two points of application of the force shall be at least 600 mm.

NOTE 2 The most onerous stability condition may occur when less than the maximum number of forces are applied on the toy.

Observe whether the toy tips over.

6.1.3 Stability of slides (see 4.5.1)

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

$\overline{A_1}$ Slides supplied with *removable* ground *anchors* shall be tested with *anchors* fixed to the standing surface according to the manufacturer's instructions. $\overline{A_1}$

$\overline{A_1}$ Load the geometric centre of all places where the child can sit or stand considering the intended use (starting section, ladder, run-out section, sliding section) with a mass of $50 \text{ kg} \pm 2 \text{ kg}$. $\overline{A_1}$ For *slides* with a width of 450 mm or more, load the centre of the *platform* with a mass of $100 \text{ kg} \pm 5 \text{ kg}$.

Observe whether the toy tips over.

6.1.4 Stability of swings and other activity toys with crossbeams (see 4.6.1)

A1 6.1.4.1 Stability of swings and other activity toys with crossbeams more than 1 200 mm over the ground (see 4.6.1.2)

6.1.4.1.1 Principle

A horizontal force is simultaneously applied at each suspension point to simulate horizontal force created by pendulum effect.

6.1.4.1.2 Apparatus

- Suitable device(s) to apply a horizontal force of $500 \text{ N} \pm 20 \text{ N}$.
- Stops, if needed.

6.1.4.1.3 Procedure **A1**

Assemble the toy according to manufacturer's instruction and place or fixate it on a rigid horizontal surface.

For a free-standing toy, stops may be used to prevent its slipping on the surface. They shall, however, not prevent the toy from overturning.

Swings and other *activity toys* with *crossbeams* supplied with *anchors* shall be tested with *anchors* fixed to the standing surface according to the manufacturer's instructions.

On each suspension point, apply simultaneously horizontal forces of $500 \text{ N} \pm 20 \text{ N}$ in the swinging direction and in the same way.

Observe whether the toy tips over.

A1 6.1.4.2 Stability of swings and other activity toys with crossbeams 1 200 mm or less over the ground intended for children under 36 months (see 4.6.1.3)

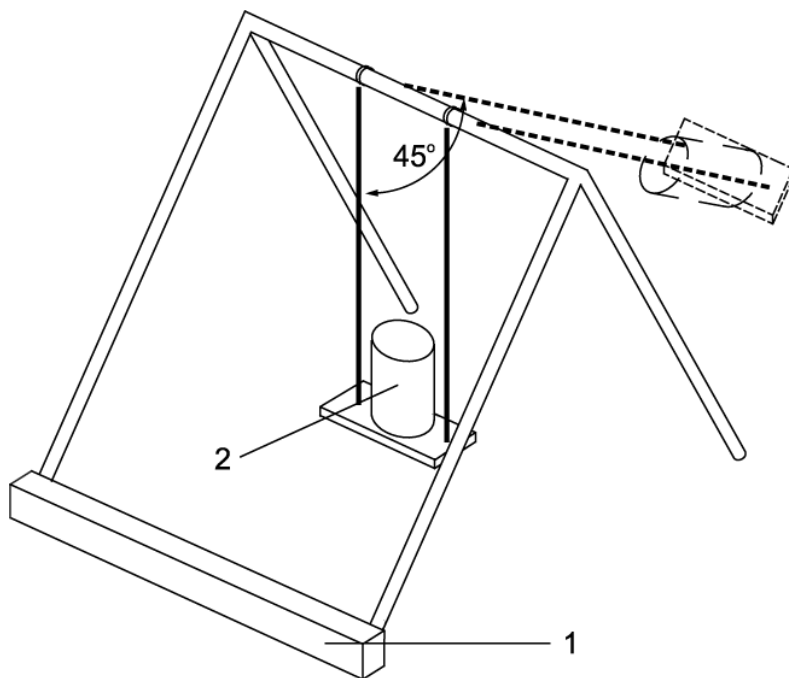
Place the toy on a horizontal surface. Blocks shall be used to prevent the front legs from slipping on the surface. They shall, however, not prevent the toy from overturning.

Load the seat with a mass of $25 \text{ kg} \pm 0,2 \text{ kg}$ and secure it. The dimensions of the load are given in Figure 21 in EN 71-1:2005.

Raise the seat backwards to a position 45° from the vertical and release it (see figure in 6.1.4.2).

For *swings* where the seat cannot reach a position of 45° or more from the vertical, the seat shall instead be raised to the maximum possible angle from the vertical before it is released.

Observe whether the toy tips over. **A1**



Key

- 1 block for the front legs of the swing
- 2 2 mass of 25 kg

Figure in 6.1.4.2 - Testing of stability of swing sets with crossbeams 1 200 mm or less over the ground A1

6.2 Static strength

6.2.1 Strength of toys other than swings (see 4.1.1 and 4.8)

Load the toy in the most onerous position with a mass of $50\text{ kg} \pm 0,5\text{ kg}$ on its standing or sitting surface or at the centre of a crossbeam for 5 min.

For toys labelled as not suitable for children over 36 months (see 7.17 of EN 71-1:1998), load the toy with a mass of $25\text{ kg} \pm 0,2\text{ kg}$.

The dimensions of the load are given in Figure 19 in EN 71-1 (load for determination of strength and stability).

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

Toys which due to their design are inherently unstable shall be supported for the duration of the test.

For toys where, by design, the mass of the child 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 the number of distribution points has to be taken into account.

Examine whether the toy still complies with the relevant requirements of this EN 71.

6.2.2 Strength of swings similar toys (see 4.6.2)

6.2.2.1 Apparatus

a) for *swings* according to 4.6 except those covered by b) below:

- a load with a mass of 200 kg \pm 10 kg;
- loads with a mass of 50 kg \pm 2 kg.

b) for *swings* intended for children under 36 months and with suspension points less than 120 cm above the base level:

- a load with a mass of 66 kg \pm 3 kg.

6.2.2.2 Procedure

6.2.2.2.1 Strength of swings intended for children over 36 months (see 4.6.2)

Assemble the toy according to the manufacturer's instructions and place or fixate it on a rigid horizontal surface.

For multi-*swings* and climbing frames, determine the number of children that are intended to use the toy at the same time (consult the manufacturer's instructions for use).

For *swing-boats* and suspended see-saws (i.e. a swinging toy with two seats, but only one suspension point) ensure that the load is evenly distributed over the two seats or standing surfaces.

Test a centre swinging pole on a climbing frame as if it were a *swing*, using the appropriate load.

Apply a load of 200 kg on each standing or sitting surface in turn for a period of 1 h.

Then apply a load of 50 kg on each standing or sitting surface simultaneously for 1 h.

Examine whether the toy still complies with the relevant requirements of EN 71.

6.2.2.2.2 Strength of swings intended for children under 36 months (see 4.6.3)

Swings intended for children under 36 months and with suspension points less than 120 cm above the base level shall be tested as follows:

Load the toy with a mass of 66 kg for a period of 1 h.

Ensure that the load is spread evenly over the seat.

NOTE Several methods are possible by using either a framework or by hanging loads from the seat.

Examine whether the *swing* still complies with the relevant requirements of EN 71.

6.3 Dynamic strength of barriers and handrails (see 4.2.1)

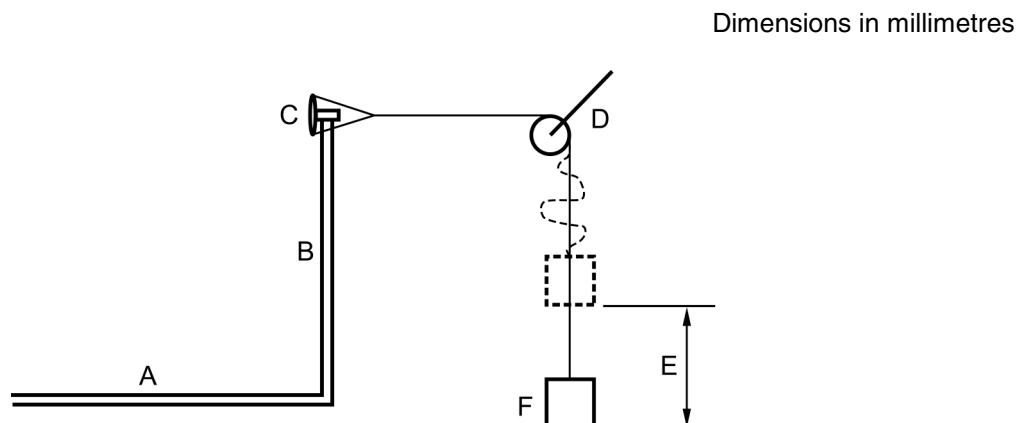
6.3.1 Principle

A sudden horizontal impact stress is applied to the *barrier* or *handrail* through a pad by a falling load.

2 Apparatus

- A pad with a length of 200 mm and a height of 50 mm minimum made of textile, leather or similar material and stuffed with suitable material and with a shape able to install it on top of a *barrier* or rail.
- A device with a load with a mass of $25\text{ kg} \pm 1\text{ kg}$ attached to a non-elastic cord with a pulley and able to give a vertical impact to the pad through free fall.

example is given in Figure 9.



y:

Platform
Barrier
Pad
Pulley
Falling height
Load

Figure 9 – Example of apparatus for dynamic test of barriers and handrails

3 Procedure

Assemble the toy according to the manufacturer's instructions and place or fixate it on a rigid horizontal face.

Place and secure the pad on the top of the *barrier* or *handrail* in the most onerous position and without any damage to the toy. Attach the free end of the rope to the pad.

Arrange the rope and the pulley so that the load hangs freely. Raise the load vertically $125\text{ mm} \pm 10\text{ mm}$ and let it drop freely giving an impact force of $30\text{ J} \pm 1\text{ J}$. Within 10 s remove all tension from the *barrier*.

Verify whether the toy still complies with the relevant requirements of EN 71.

Text deleted

Text deleted

6.5 Test for head and neck entrapment (see 4.3)

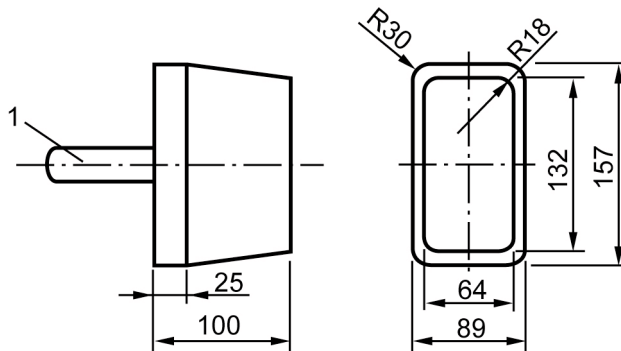
6.5.1 Head and neck entrapment in completely bound openings (see 4.3.1)

Toys with completely bound openings with a lower *edge* of 600 mm or more above the ground or any other surface which is of such a size that it will support a child, shall be assessed using probes made of any material and of sizes according to Figures 10 and 11.

First insert probe C and then probe D and examine whether they protrude more than 100 mm through the opening. Insert the probes perpendicular to the opening and do not tilt them.

Determine whether the toy still complies with the relevant requirements of EN 71.

Dimensions in millimetres

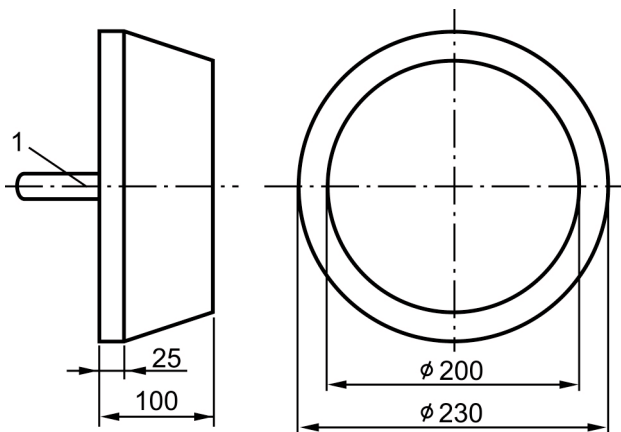


Handle

Unless stated otherwise, tolerances on measurements are ± 1 mm for dimensions and $\pm 1^\circ$ for angles.

Figure 10 — Probe C (torso) for assessment of completely bound openings

Dimensions in millimetres



Handle

Unless stated otherwise, tolerances on measurements are ± 1 mm.

Figure 11 — Probe D (large head) for assessment of completely bound openings

2 Head and neck entrapment in partially bound and V-shaped openings (see 4.3.1)

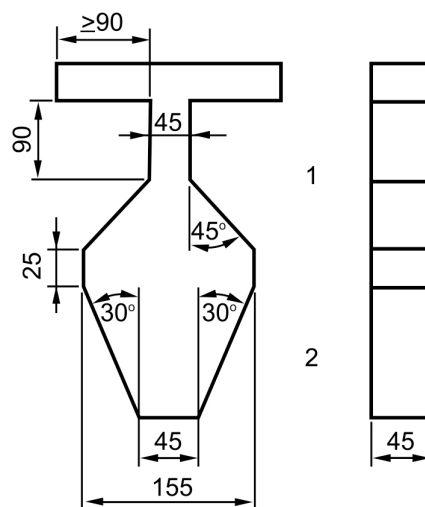
2.1 Principle

A test template is used for assessing partially bound and V-shaped openings for head and neck *entrapment*.

2.2 Apparatus

The test template made of any material and with dimensions as given in Figure 12.

Dimensions in millimetres

**Key:**

- 1 Portion B
2 Portion A

NOTE Unless stated otherwise, tolerances on measurements are ± 1 mm for dimensions and $\pm 1^\circ$ for angles.

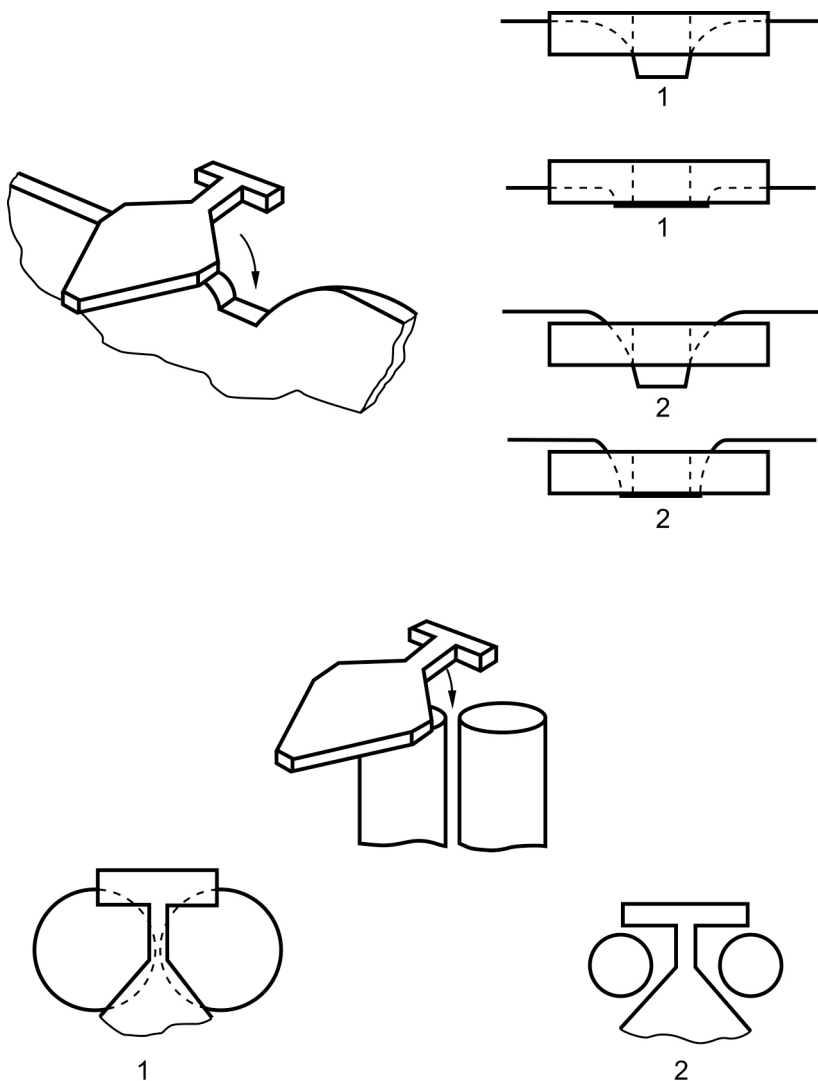
Figure 12 — Test template D for assessment of head and neck entrapment in partially bound and V-shaped openings

6.5.2.3 Procedure

- a) Position the “B” portion of the test template between and perpendicular to the boundaries of the opening, as shown in Figure 13.

Observe whether the template fits within the boundaries of the opening or if it cannot be inserted to its full thickness as indicated in Figure 13.

Determine whether the toy complies with the requirements of this standard.



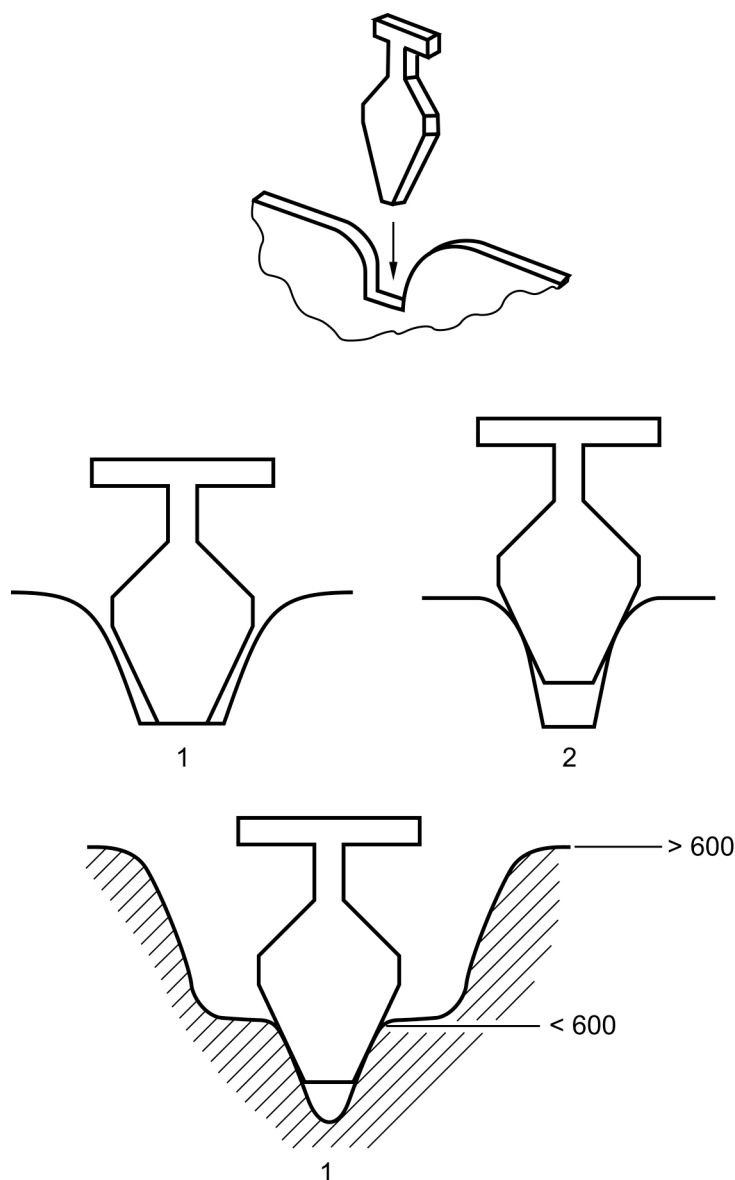
y:

Not accessible
 Accessible

Figure 13 — Method of insertion of the “B” portion of the test template

If the test template can be inserted to a depth greater than the thickness of the template (45 mm) when tested according to a), apply the “A” portion of the test template, so that its centre line is in line with the centre line of the opening. Ensure that the plane of the test template is parallel and applied in line with the opening, as shown in Figure 14.

Dimensions in millimetres

**Key:**

- | | |
|---|--------|
| 1 | Passes |
| 2 | Fails |

Figure 14 — Method of insertion of the “A” portion of the test template

Insert the test template along the centre line of the opening until its motion is arrested by contact with the boundaries of the opening or the tip of the template contacts the base.

Observe whether the tip of the template contacts the base of the partially bound or V-shaped opening as indicated in Figure 14.

Determine whether the toy complies with the requirements of this standard.

Toggle test (see 4.3.2)

1 Principle

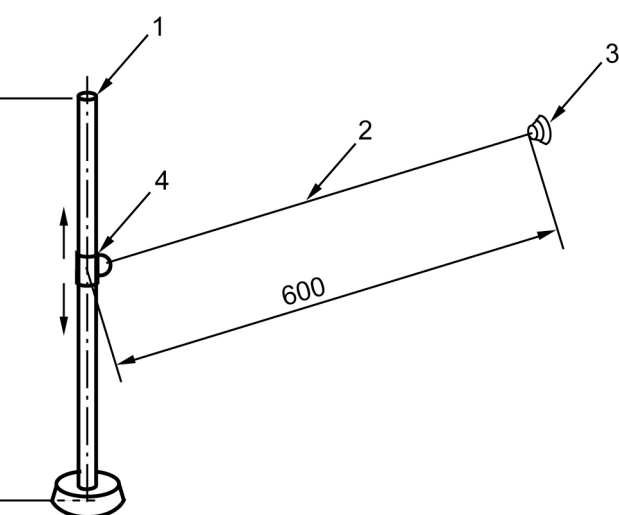
The toggle test device is moved along the direction of a *forced movement* in order to establish if there is a potential *entrapment hazard*.

2 Apparatus

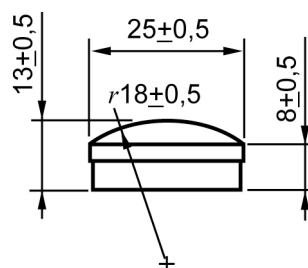
The toggle test device as shown in Figure 15 a) comprising of:

- toggle, as shown in Figure 15 b), made of polyamides (PA) (e.g. nylon) or polytetraflouraethylene (PTFE), which have been found to be suitable materials;
- chain, as shown in Figure 15 c);
- collar, detachable and with good slip;
- pole.

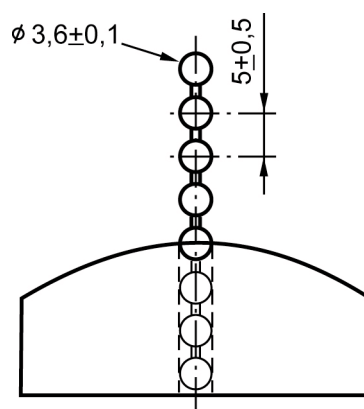
Dimensions in millimetres



a) Complete test device



b) Toggle



c) Chain

y:

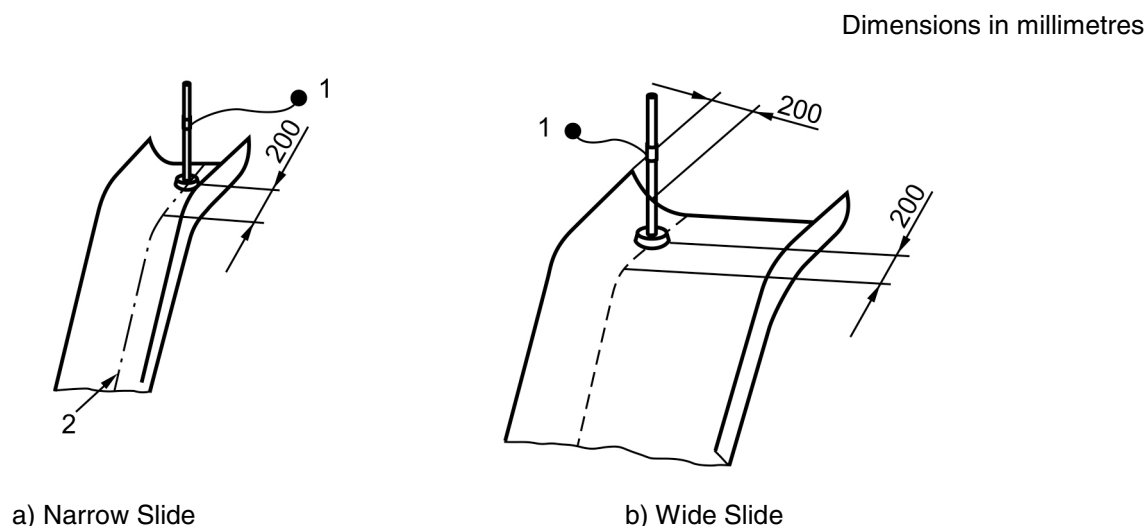
Pole
Chain
Toggle
Collar

Figure 15 — Toggle test device

6.6.3 Procedure

6.6.3.1 Slides

Position the test device vertically, 200 mm from the transition point of the starting section of the *slide* and at the appropriate lateral location, as shown in Figure 16.



Key:

- 1 Toggle test device
2 Centre line

Figure 16 — Positioning of the test device on slides

Apply the toggle and cord to all positions within the range, as follows:

- Move the test device in the direction of the *forced movement*, ensuring that the pole of the test device remains vertical and that the application of the toggle/chain is influenced solely by its own mass. Do not apply any additional initial force to wedge the toggle or chain in an opening.
- Where a *slide* is wider than the width of the test device, carry out the test twice with the base positioned at both width extremities of the bed way, as shown in Figure 16.
- Carry out the test three times.

Observe whether *entrapment* of the toggle or chain occurs.

6.6.3.2 Fireman's poles

Conduct the test in two different ways as follows:

- Position the complete test device vertically at the *edge* of the *platform* at the point closest to the fireman's pole.

Apply the test device to all positions within range ensuring that the application of the toggle or chain is influenced solely by its own mass. Do not use any additional initial force to wedge the toggle or chain in an opening. If a potential *entrapment* point is thus identified, move the test device in the direction of the

71-8:2003 (E)

forced movement of a user.

Carry out the test three times.

Observe whether *entrapment* of the toggle or chain occurs.

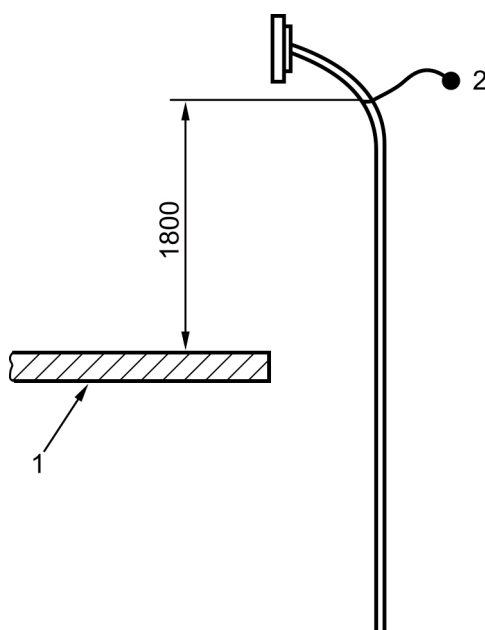
Detach the toggle and the chain from the complete test device and position it so that it is at a point 1800 mm above the surface of the adjacent *platform*, as shown in Figure 17.

Apply the toggle and chain to all positions along the entire length of the fireman's pole down to the point 1000 mm above ground level ensuring that the application of the toggle and chain is influenced solely by its own mass. Do not use any additional initial force to wedge the toggle/chain in an opening. If a potential *entrapment* point is thus identified, move the toggle and chain in the direction of the *forced movement* of a user.

Carry out the test three times.

Observe whether *entrapment* of the toggle or chain occurs.

Dimensions in millimetres



y:

Starting platform
Toggle test device

Figure 17 — Positioning of the test device on fireman's pole

3.3 Roofs

Apply the toggle or chain to any *accessible* opening at the apex or along the surface of the roof, ensuring that the application of the toggle or chain is influenced solely by its own mass. Do not use any additional initial force to wedge the toggle or chain in an opening.

Move the test device in the direction of any potential sliding movement of the user.

Carry out the test three times.

Observe whether *entrapment* of the toggle or chain occurs.

6.7 Diameter of ropes and chains for swings (see 4.6.8)

Measure the diameter of the rope at five positions and calculate the average diameter.

Ensure that the free end of a chain does not pass through a tube with an interior diameter of $10^{+0}_{-0.5}$ mm.

Annex A **(informative)**

Rationale

1 Activity toys

Products covered by this part of EN 71 have hazards in common with products intended as public playground equipment and there are sometimes difficulties in deciding whether they are toys for family domestic use or public playground equipment. As a general rule products that are bought by individuals exclusively for family use fall under the scope of this standard. EN 1176 Parts 1 to 6 cover public playground equipment and in case of uncertainty these standards should be closely studied.

2 General requirements (see 4.1)

This clause gives basic requirements for all *activity toys*. It intends to reduce the hazard resulting from inadequate strength and falls from heights and gives certain hardware requirements.

3 Barriers, ladders etc (see 4.2)

The intention of *barriers* is to prevent children from falling down. However, they can at the same time invite children to climb up on them, causing a more severe fall. Flexible *barriers* can in some cases be a better solution. The nature of children's play on flexible *platforms* is such that the hazard of falling from the toy is minimised because the children do not experience a false sense of security at a raised height, as they do with *platforms* such as those on wooden play sets. The fact that the *platform* moves leads the child to either kneel, or hold on to the framework of the toy for support.

4 Entrapment (see 4.3)

Several accidents are known to have happened when the a child head gets entrapped causing strangulation. Openings therefore have to be either so small that the head cannot pass through or so wide that the head and torso can pass. This hazard is further complicated by the fact that children sometimes wear bicycle or so-called play helmets.

Strings and hood-strings on clothing also involve a significant hazard for example when riding down a *slide*, and the toggle test given in 6.6 is intended to reduce the risk for *entrapment*.

This clause also includes requirements for *entrapment* of fingers as well as other parts of the body.

5 Slides (see 4.5)

The requirement for *handrails* for the starting section as well as for ladders are intended to prevent children from falling when moving into a sitting position at the starting section.

A.6 Swings (see 4.6)

These requirements are intended to reduce the risks resulting from inadequate frames and/or suspension arrangement and from children becoming entangled in the suspension ropes.

There are several types of *swings* on the market. The most common *swing*, used indoors, is for very young children who cannot walk and is often intended to be hung in, for example, a door opening. Such a *swing* is tested with a load of 200 kg as it can be expected that an older child will try to use the *swing*. However, if the *swing* is mounted in a separate structure with a *crossbeam* at a height of 120 cm maximum over the floor, the strength of the *swing* is tested with a load of 66 kg.

Accidents have been known to happen when young children have fallen down from such *swings* when the seat has tipped over. It is therefore important that the suspension ropes are attached in the four utmost corners of the seat in order to hold the centre of gravity of the child.

Swings for children over 36 months which a child can climb on are tested with a mass of 200 kg. For multi-*swings*, each *swing*, T-bar or *swing*-boat is loaded in turn with 200 kg for 1 h and then simultaneously with 50 kg on each sitting or standing surface.

A centre swinging pole on, for example, a climbing frame is tested as if it were a *swing*, using a 200 kg load.

If ropes or textiles are used in the construction of *swings*, they have to be so designed that the risk of strangulation due to the child's head being entangled in the ropes is reduced. Consideration should be given to the use of plastic tubing covering the main part of the ropes, as appropriate.

A₁ A.7 Rocking activity toys and similar toys (see 4.8)

The intention of this requirement is to ensure the strength and the sideways and fore and aft stability of activity toys so that they do not overturn unexpectedly.

Bow-mounted rocking activity toys such as rocking horses and similar toys, are covered by EN 71-1.

A.8 Corners and edges (see 4.1.3)

The requirement for a 3 mm curvature radius on moving parts apply to *swings*, carousels and similar items involving a certain mass and speed. It does not apply to doors, lids and similar movable items. However, whenever possible, manufacturers are recommended to use generous radii in order to minimize hazards.

Note that all *edges* shall comply with the general requirements for sharp *edges* in EN 71-1.**A₁**

Annex B (informative)

Bibliography

EN 1176-1:1998, *Playground equipment – Part 1: General safety requirements and test methods*

EN 1176-2:1998, *Playground equipment – Part 2: Additional specific safety requirements and test methods for swings*

EN 1176-3:1998, *Playground equipment – Part 3: General safety requirements and test methods for slides*

EN 1176-4:1998, *Playground equipment – Part 4: Additional specific safety requirements and test methods for runways*

EN 1176-5:1998, *Playground equipment – Part 5: Additional specific safety requirements and test methods for carousels*

EN 1176-6:1998, *Playground equipment – Part 6: Additional specific safety requirements and test methods for rocking equipment*

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 and supports essential requirements of EU Directive 88/378/EEC.

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

The following clause of this standard as detailed in table ZA.1, is likely to support requirements of Directive 88/378/EEC.

Table ZA.1: Correspondence between this European Standard and EU Directives

Essential Requirements of Directive 88/378/EEC as given in its Annex II	Corresponding clause of this Part of EN 71
I.2.a) (General)	4.6.3
I.2.b) (General)	5.1, 6.1.1
I.3 (General)	5
II.1.a) (Particular)	4.1.1, 4.4, 4.5.1, 4.6.1, 4.6.2, 4.6.3
II.1.b) (Particular)	4.1.3, 4.1.4, 4.1.5, 4.6.8
II.1.c) (Particular)	4.6.4, 4.6.5, 4.6.6, 4.6.7, 4.8

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