BS EN 1930:2011

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Child use and care articles — Safety barriers — Safety requirements and test methods

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National foreword

This British Standard is the UK implementation of EN 1930:2011. It supersedes BS EN 1930:2000, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CW/1/3, Safety equipment.

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

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Child use and care articles - Safety barriers - Safety requirements and test methods

Articles de puériculture - Barrières de sécurité - Exigences de sécurité et méthodes d'essai

Artikel für Säuglinge und Kleinkinder - Kinderschutzgitter - Sicherheitstechnische Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 22 October 2011.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 1930:2011) has been prepared by Technical Committee CEN/TC 252 “Child use and care articles”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

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

This document supersedes EN 1930:2000.

The new edition of this European Standard is a hazard based standard. In comparison with the previous version, the main technical changes are:

— addition of a new hip probe;

— addition of new drawings for finger probes;

— removal of the disk from the ball and chain test so that the test is now more accurate and reproducible unlike the old one;

— improvement of the diagram for the ball and chain test;

— introduction of the rattle test which tests for security of the gate;

— deletion of the out of alignment requirement as not reproducible;

— improvement of the impact test and new test frame which provides a more reproducible test;

— improvement of the requirements for the closing system.

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

1 Scope

This European Standard specifies the safety requirements and test methods for child safety barriers for domestic indoor use which are designed to be fitted across openings to limit a child's access inside the home and to prevent young children up to 24 months of age passing through.

This European Standard does not apply to products designed to be fitted across windows.

2 Normative references

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

EN 71-2, *Safety of toys — Part 2: Flammability*

EN 71-3, *Safety of toys — Part 3: Migration of certain elements*

3 Terms and definitions

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

3.1
safety barrier
product designed to limit a child's access inside the home

3.2
opening system
system allowing access by opening the safety barrier or a section of the safety barrier or by removing the safety barrier

3.3
closing system
system restricting access by closing and/or locking the opening system

4 Test equipment

4.1 Tolerances for test equipment

Unless otherwise stated, the following tolerances apply:

Forces:	± 5 % of the nominal force;
Masses:	± 0,5 % of the nominal mass;
Dimensions:	± 1,0 mm of the nominal dimension;
Angles:	± 2° of the nominal angle;
Positioning of loading pads:	± 5 mm;
Duration of forces:	(2 ± 1) s for durability tests;

(10 ± 2) s for static load tests.

The tests are described in terms of the application of forces. Masses can however be used. The relationship 10 N = 1 kg may be used for this purpose.

Unless otherwise specified, the test forces may be applied by any suitable device which does not adversely affect the results.

4.2 Hip probe

A probe made from plastics or other hard, smooth material with the dimensions given in Figure 1.

Dimensions in millimetres

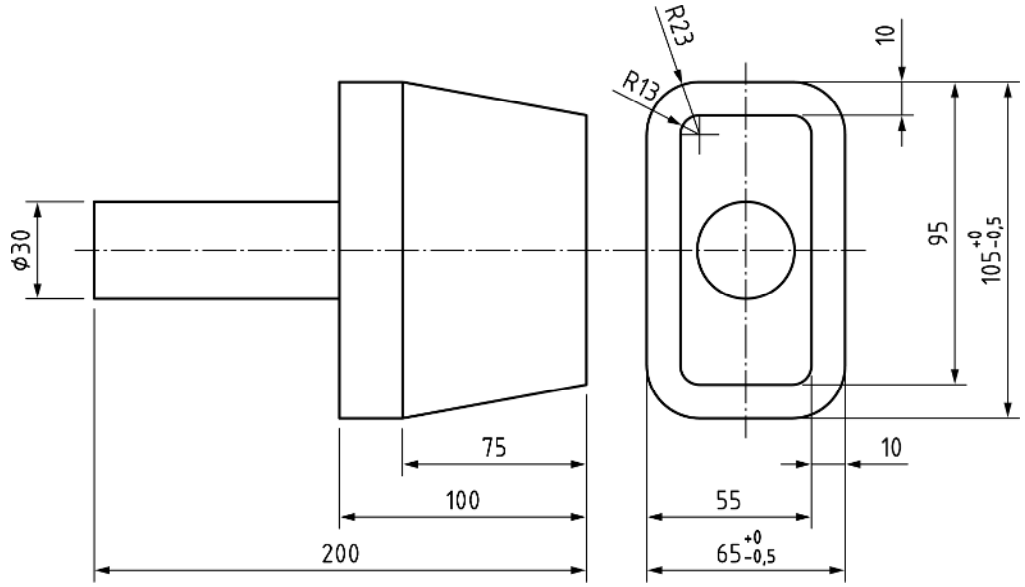


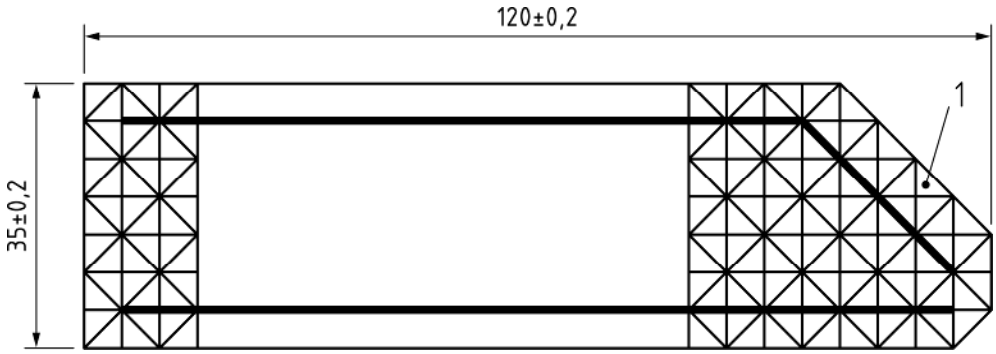
Figure 1 — Hip probe

4.3 Foothold template

A strip of 10 mm thick transparent material cut to the shape as shown in Figure 2.

The sides of the template shall be square to the faces. All edges and corners shall be left as machined without any radius.

Dimensions in millimetres



Key

1 triangular cells plotted on a $5 \times 5 \pm 0,2$ grid

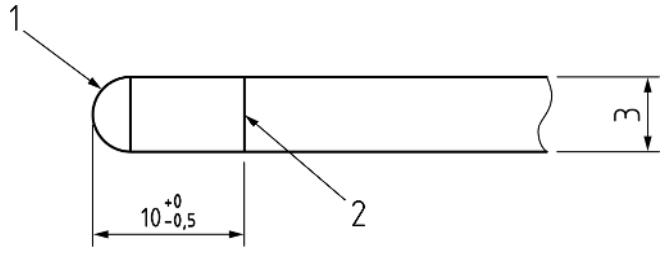
Figure 2 — Template for foothold test (example of left hand template)

Two templates are required to provide a left and right hand template. The markings shown in Figure 2 are on the bottom face of each template to avoid parallax errors.

4.4 Finger probes

Probes made from plastics or other hard, smooth material of diameters 5 mm, 7 mm and 12 mm with a full hemispherical end, which shall be capable of being mounted on a force-measuring device, so that the hemispherical end can be presented to the opening being assessed see Figure 3.

Dimensions in millimetres



Key

1 spherical ends R2,5 (for 5 mm diameter) R3,5 (for 7 mm diameter) or R6 (for 12 mm diameter)

2 line scribed around circumference showing depth of penetration

3 $\varnothing\ (5^{\ 0}_{-0,1})$, $\varnothing\ (7^{\ 0}_{-0,1})$ or $\varnothing\ (12^{\ +0,1}_{\ 0})$

Figure 3 — 5 mm, 7 mm and 12 mm finger probes for gaps

4.5 Finger probe for mesh

Probe for assessing mesh made from plastics or other hard, smooth material as shown in Figure 4 which is capable of being mounted on a force measuring device, so that the conical end can be presented to the opening being assessed.

Dimensions in millimetres

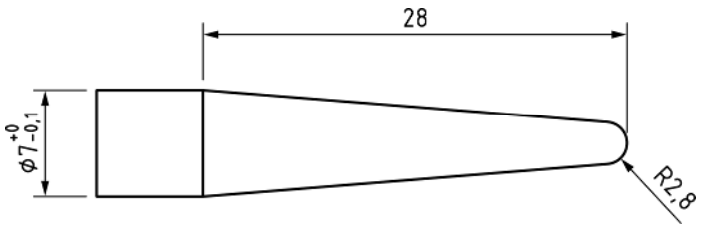


Figure 4 — Finger probe for mesh

4.6 Ball chain loop and spherical mass

This equipment comprises a ball chain loop attached to a spherical mass at a common fixing point.

The ball chain comprises maximum of 10 balls per 40 mm, equally distributed along the length of the chain when the chain is loaded with a mass of 2,5 kg.

The diameter of each ball is (3,2 ± 0,2) mm.

Dimensions in millimetres

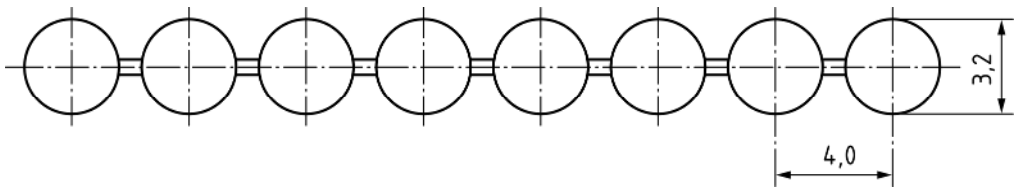
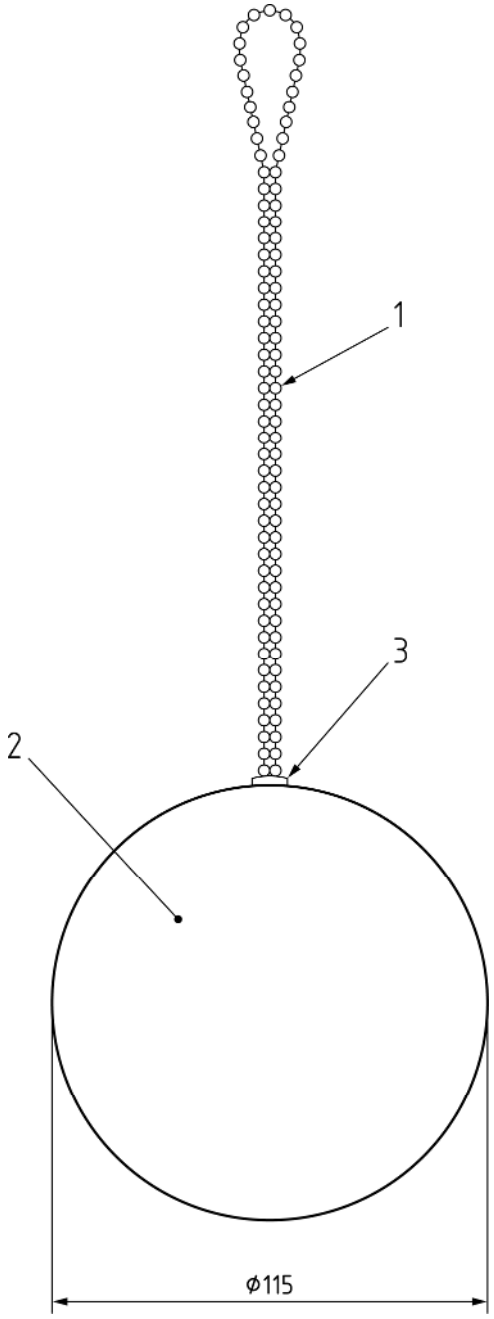


Figure 5 — Ball chain

The ball chain loop is formed by the ball chain entering the spherical mass at a common fixing point with a ball from each side of the chain in contact with each other. The external peripheral length of the ball chain loop shall be 400^{+5}_{0} mm see Figure 6.

A smooth spherical mass of (2,5 ± 0,05) kg and a diameter of 115 mm.

Dimensions in millimetres



Key

1 ball chain loop
2 spherical mass
3 common fixing point

Figure 6 — Ball chain loop and spherical mass

4.7 Small parts cylinder

Cylinder having the dimensions given in Figure 7.

Dimensions in millimetres

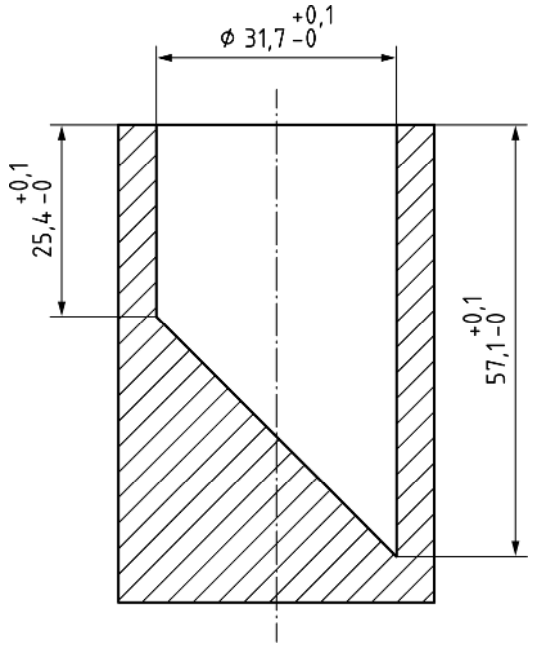


Figure 7 — Small parts cylinder

4.8 Test frame

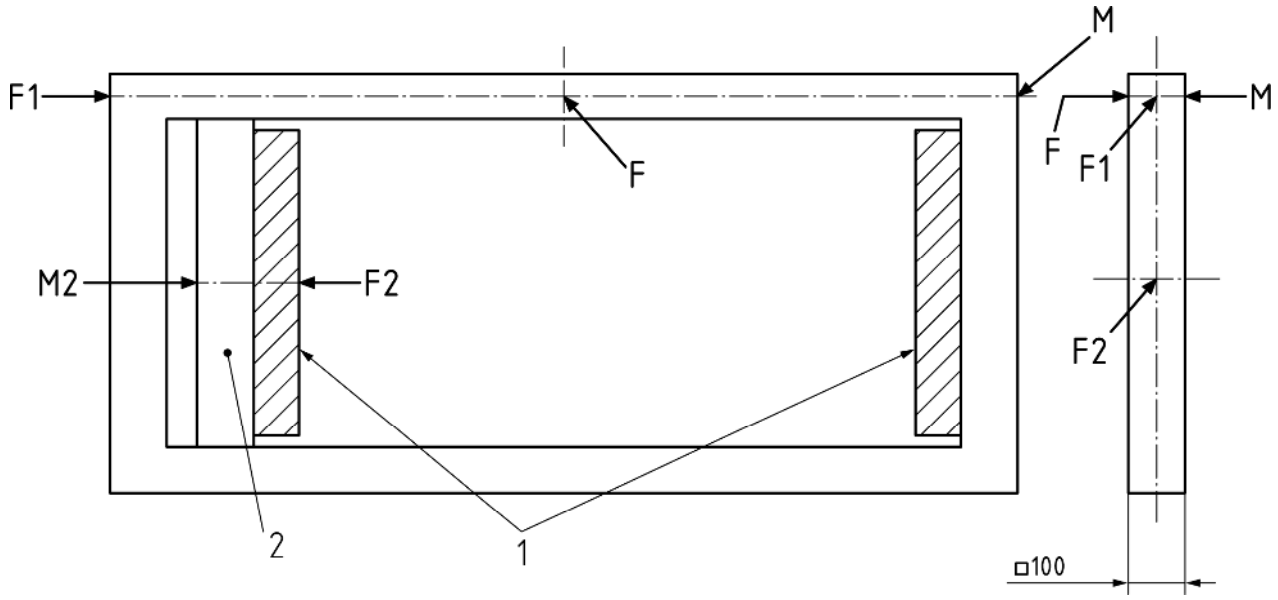
A rigid construction made from 100 mm × 100 mm steel tube, having a vertical beam adjustable in the horizontal direction within the frame made from 100 mm × 100 mm steel tube, see Figure 8.

The maximum deflection of the test frame and the adjustable vertical beam shall be 1 mm when a force of a 1 000 N is applied in the positions and directions given in Figure 8. The application of the forces shall be done in the sequence of F, F1 and F2 and take the measurements in the sequence M, M1 and M2.

Smooth, planed beech pads of thickness (50 ± 1) mm shall be fixed to the surface of the vertical beams on to which the safety barrier is fitted.

The vertical beams and beech pads shall, once adjusted, not move or twist during fitting and testing of the safety barrier.

Dimensions in millimetres



Front view and side view

Key

F force
M measurement
1 beech pads
2 adjustable beam

Figure 8 — Test frame

4.9 Rattle test equipment

The apparatus, Figure 9, consists of a steel driving disc of 110 mm diameter, having a mass of 1 kg and capable of rotating at a speed of $120\,^{+5}_{0}$ rpm. The disc shall be mounted on the pivot support arm, pivoted at its base.

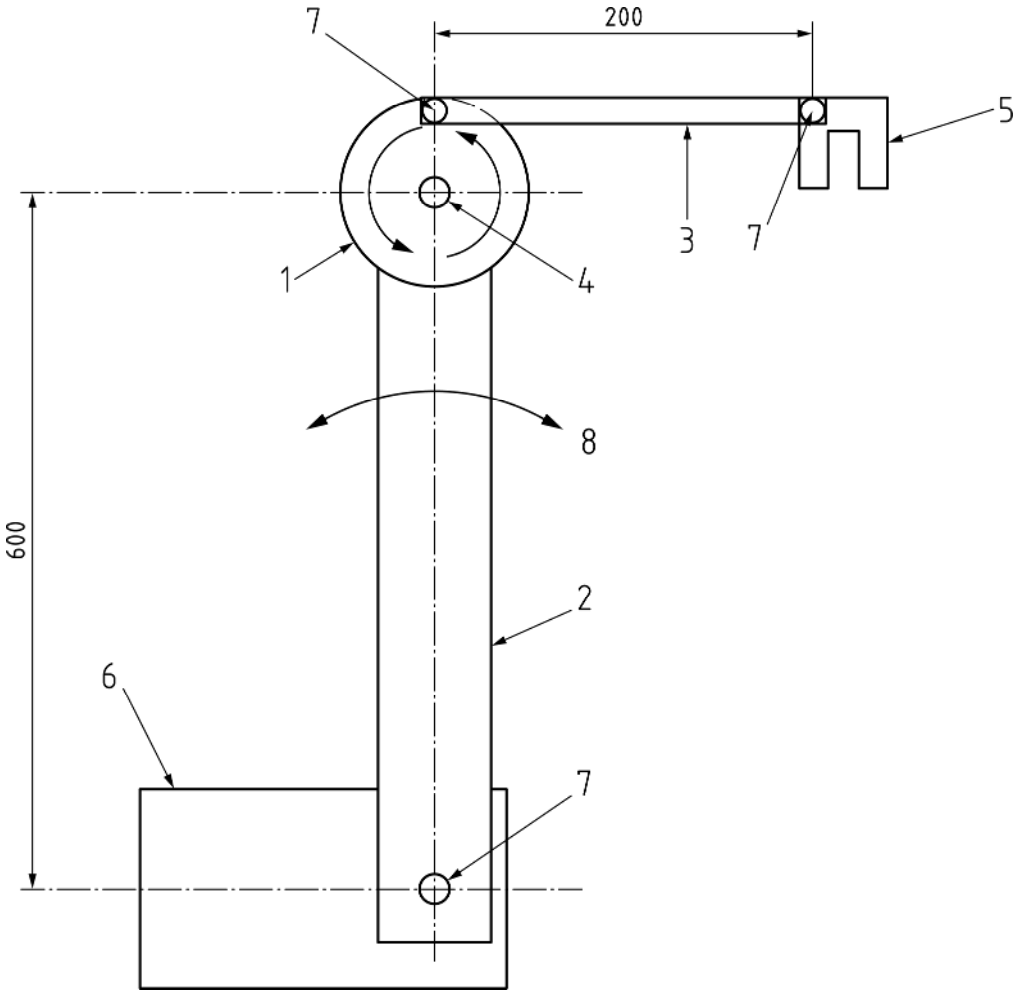
The disc shall be linked to the safety barrier by means of a 200 mm link arm having a mass of (0,15 ± 0,02) kg. The link arm shall be freely pivoted on the disc. The centre of the pivot point for the link arm shall be located (45 ± 1) mm from the centre of the disc.

The link arm shall be connected to the safety barrier by the use of any suitable means that allows the arm, at the point at which it attaches to the safety barrier, to pivot e.g. a clamp with pivot attachment.

The distance between the pivot point of the support arm (4 and 7) and centre of the steel driving disc shall be 600 mm of the arm (2) see Figure 9, with a tolerance of ± 20 mm.

The total mass of the test equipment shall be (11 ± 1) kg with the majority of the weight positioned within the base to prevent movement whilst in use.

Dimensions in millimetres



Key

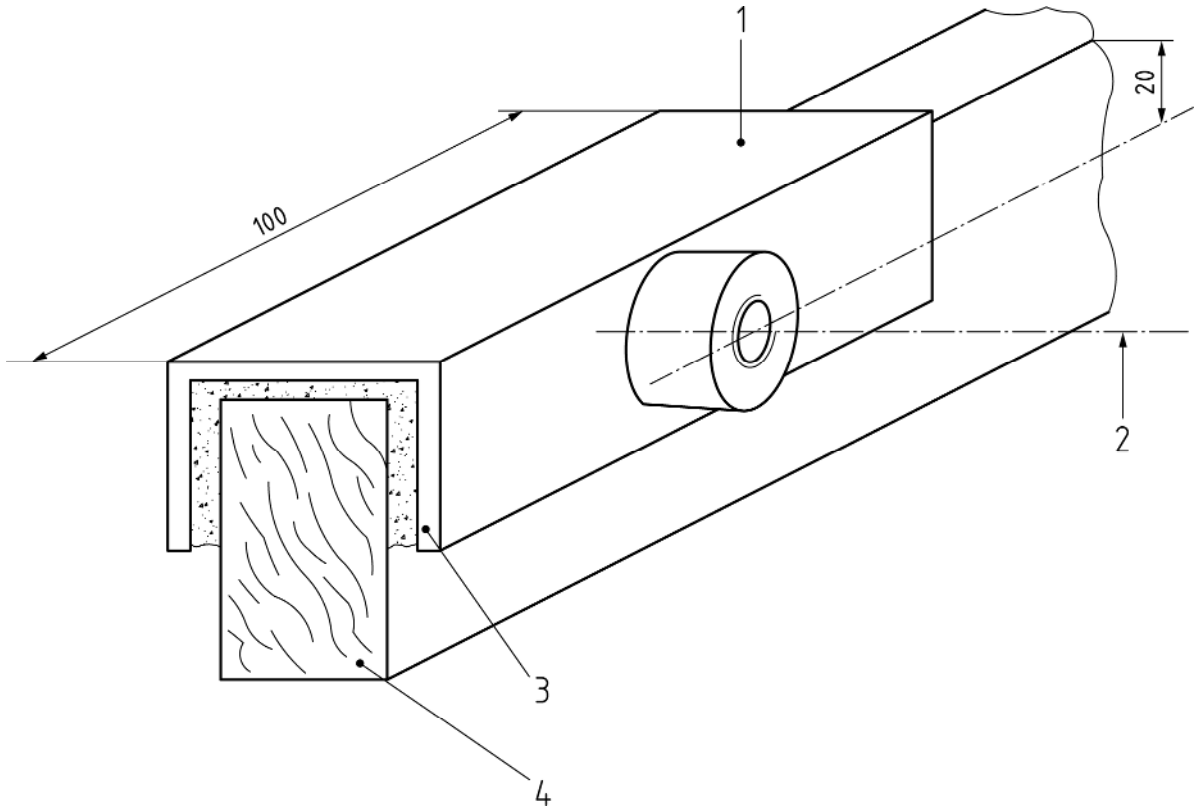
1 driving disc
2 pivot support arm, which incorporates a drive mechanism from the motor to the driving disc
3 link arm
4 centre of rotation
5 clamp
6 base, which incorporates a drive mechanism (electric motor)
7 pivot points
8 movement of pivoting support arm

Figure 9 — Rattle test equipment

4.10 Push - pull test equipment

A 100 mm rigid clamp. The width shall be adjustable to the thickness of the top rail of the safety barrier to which forward, backward and horizontal forces are applied.

Dimensions in millimetres

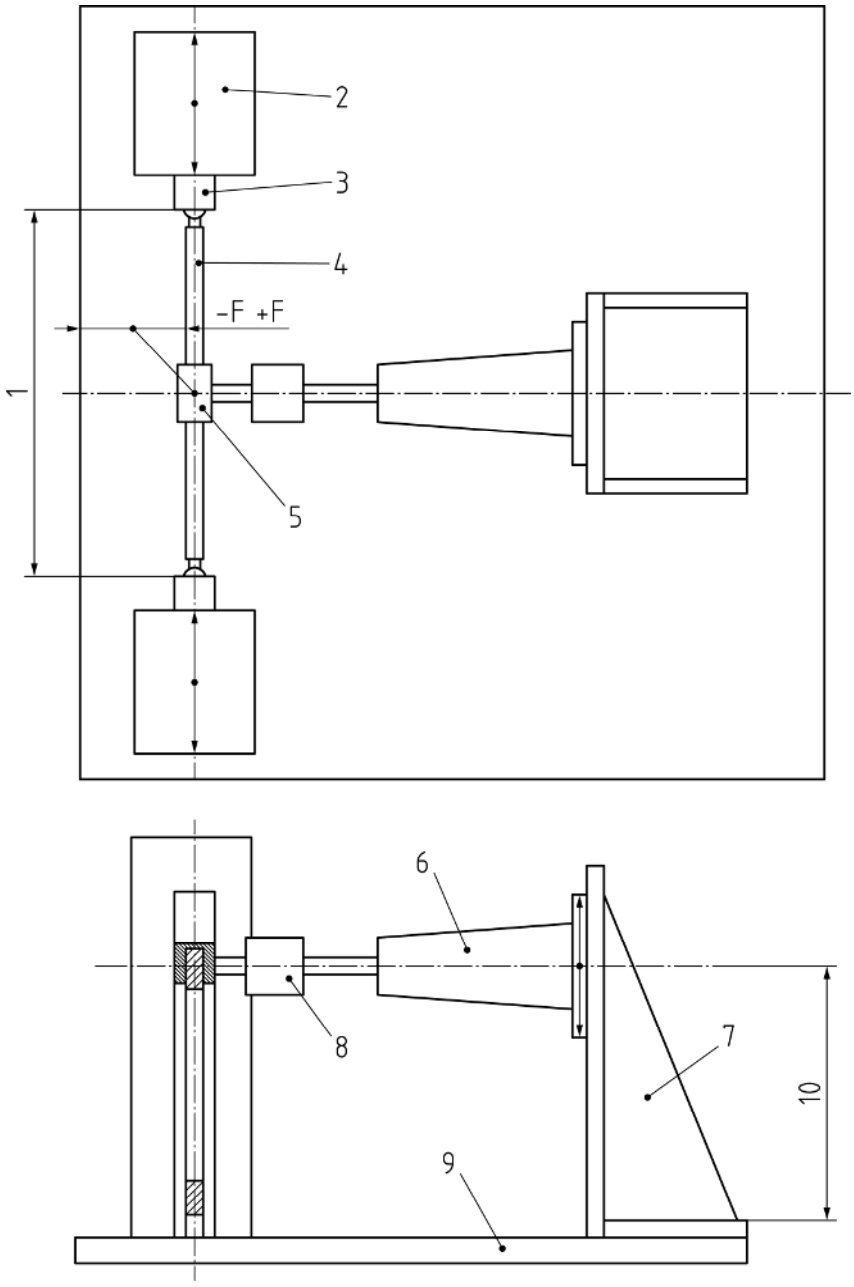


Key

1 rigid clamp
2 centre line indicating direction and position for the application of the force
3 foam, to prevent undue damage
4 top of the barrier

Figure 10 — Clamp pad

Dimensions in millimetres



Key

1 adjustable opening
2 test frame
3 beech pads
4 safety barrier
5 clam/pads
6 force applicator
7 support
8 force gauge
9 floor
10 adjustable height

Figure 11 — Example of push-pull test apparatus top and side view

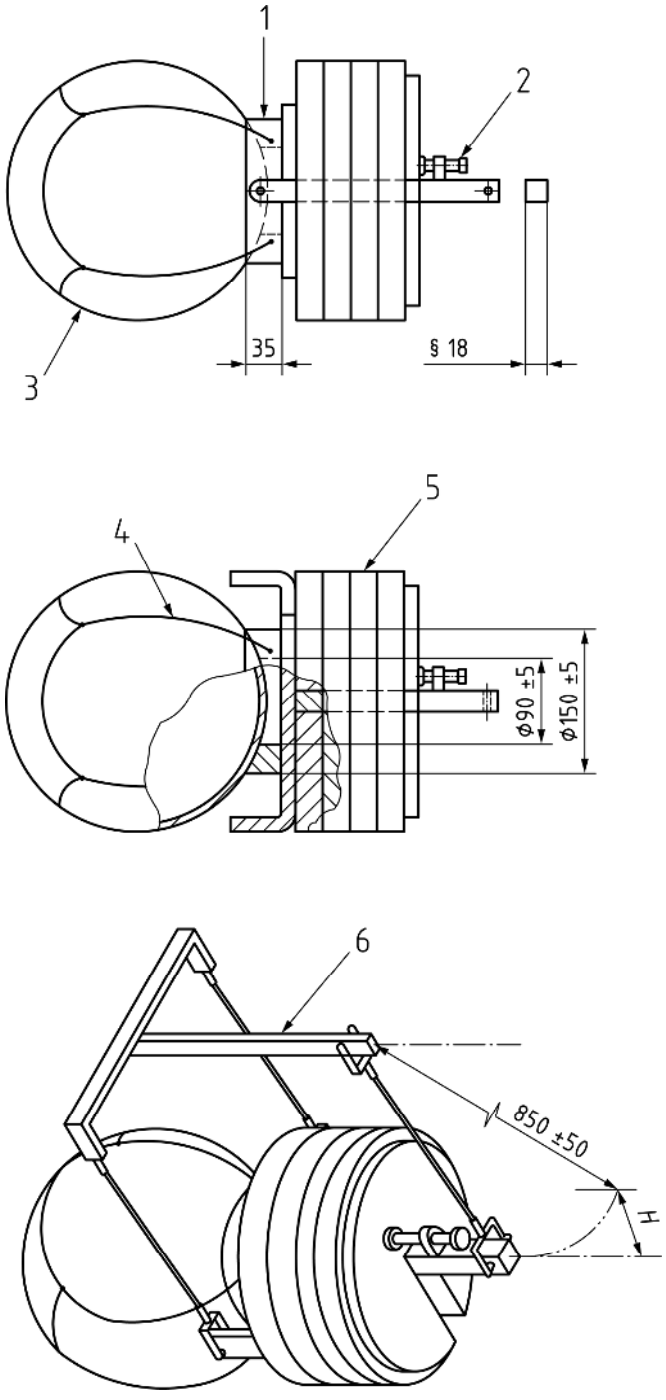
4.11 Test impactor

The impactor see Figure 12 shall consist of a basketball made of a synthetic material and having a circumference of 750 mm to 780 mm inflated to a pressure of (72,5 ± 5) kPa and attached by a network of elastic cords to a mounting ring. The ball mounting shall consist of a ring having an outside diameter of (150 ± 5) mm and an inside diameter of (90 ± 5) mm. The rear face of this ring shall be attached to the main body of the impactor and its front face shaped to fit the ball.

The main body of the impactor, shall consist of a mass supported by cords or flexible wire (850 ± 10) mm long attached to a rigid support structure, see Figure 12.

The total mass of the impactor shall be 10 kg, excluding the support structure.

Dimensions in millimetres



Key

1 ball mounting
2 retaining device
3 basket ball
4 elastic cord
5 disc mass
6 rigid support structure

Figure 12 — Test impactor

5 Conditioning

Before testing, removable fabrics shall be cleaned or washed and dried twice in accordance with the manufacturer's instructions. Any resulting shrinkage shall not prevent any removable fabric from being refitted.

Safety barriers shall be stored in ambient conditions of (23 ± 10) °C for a minimum of 24 h immediately prior to testing.

6 Mechanical hazards

6.1 General

The tests shall be carried out in ambient conditions of (23 ± 10) °C.

All requirements for 6.1 to 6.12 shall be checked and all tests shall be conducted with the safety barrier set up for normal use in the closed position in accordance with the manufacturer's instructions within the test frame specified in 4.8.

The requirements and test methods do not apply to the safety barrier when it is being set up or dismantled.

Unless otherwise specified the tests shall be carried out on the same safety barrier in the order listed in this European Standard. Where the safety barrier can be fitted with extensions in accordance with the manufacturer's instructions, the most onerous combination shall be used to determine whether the safety barrier conforms to the requirements of this European Standard.

If a safety barrier has several functions or can be converted into another function it shall conform to relevant European Standards.

6.2 Barrier Function

6.2.1 Protective height

The rationale for this requirement is given in A.2.1.

6.2.1.1 Requirement

There shall be a rectangular area at least 650 mm high and extending across the full width of the safety barrier between the two beech pads of the test frame in which there shall be no footholds when tested in accordance with 6.2.2.

This requirement applies to rigid structures and any opening in any material. Rigid structures shall not include seams in fabrics of multiple layers. After testing in accordance with 6.2.2 the safety barrier shall still function as intended in accordance with the manufacturer's instructions.

6.2.2 Test methods

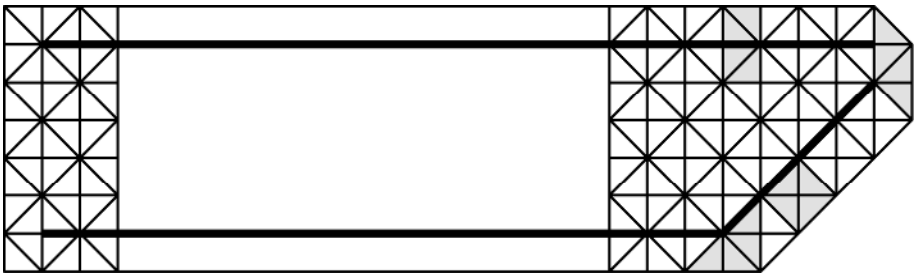
6.2.2.1 General

Footholds shall be assessed with the safety barrier in the test frame with a vertical force of 250 N applied centrally at the top of the safety barrier.

6.2.2.2 Determination of a foothold

6.2.2.3 Continuous structure

A foothold exists on a continuous structure if four triangles marked on the template are completely obscured by the structure being checked. These four triangles shall have at least one side in common with another of the triangles, see Figure 13.



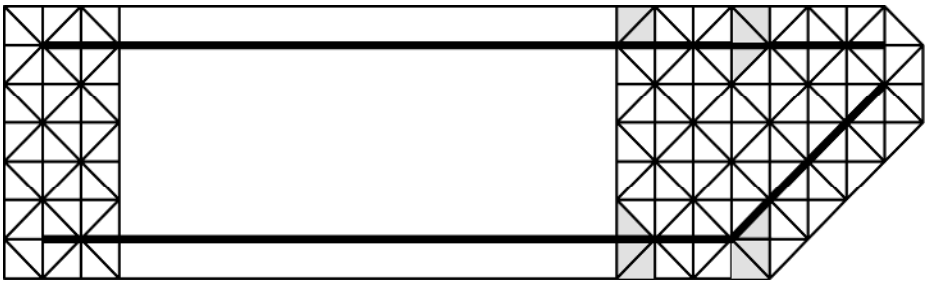
Key

this shaded area denotes one triangle; four shaded areas denotes four covered triangles

Figure 13 — Examples of obscured triangles indicating a foothold on a continuous structure

6.2.2.4 Non-continuous structure

A foothold exists on a non-continuous structure if two or more triangles marked on the template are completely obscured between the edge of the template and both the bold lines of the template by the structure being checked. The two or more triangles on each side of the template shall have at least one side in common with each other, see Figure 14.



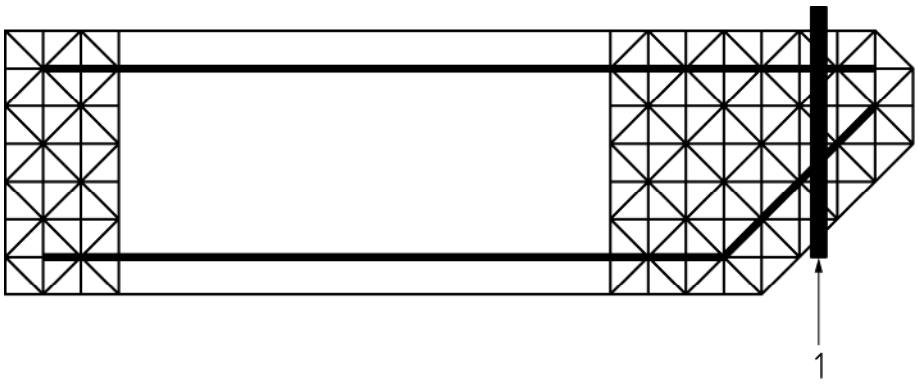
Key

this shaded area denotes one triangle

Figure 14 — Examples of obscured triangles on a foothold on a non- continuous structure

6.2.2.5 Wire, thin structures and similar parts

A foothold exists on a wire, thin structure and similar part if it projects across the bold lines on the template, see Figure 15.



Key

1 denotes a wire, thin structure or similar part

Figure 15 — Example of a foothold on a wire, thin structure and similar part

6.2.2.6 Footholds on a continuous structure at an angle less than 55°

Using either the left or right hand template, place the template with its marked face on any continuous structure inclined at an angle of less than 55° to the horizontal. Orientate either template, Figure 2, to check whether any four triangles are obscured indicating a foothold; see Figure 16 for examples.

6.2.2.7 Footholds on a non- continuous structure at an angle of less than 55°

Using either the left or right hand template place the template with its marked face on any non-continuous structure inclined at an angle of less than 55° to the horizontal. Orientate either template, see Figure 2, to check whether two or more triangles are obscured between the edges of the template and the bold lines on the template indicating a foothold; see Figure 17 for examples.

6.2.2.8 Footholds on wire, thin structures or similar parts at an angle less than 55°

Using either the left or right hand template, place the template with its marked face on any wire, thin structure or similar parts at an angle less than 55° to the horizontal. Check whether the wire, thin structure or similar part has a line of contact extending between the two bold lines marked along the template, see Figure 18 for examples.

6.2.2.9 Footholds on an intersecting or adjacent structure where the second structure prevents slipping

Using either the left or right hand template place the template with its marked face on any structure, thin structure or similar parts between 55° and 80° to the horizontal where there is also a supporting structure. Orientate either template, see Figure 2 to check whether any four triangles are obscured indicating a foothold; see Figure 19 for examples.

6.2.2.10 Footholds on rigid components covered by flexible materials

Where flexible materials or fabrics are covering rigid components the template is pushed against the flexible material or fabric with a horizontal force of up to 30 N acting along the longitudinal axis of the template. Orientate either the left hand or the right hand template, see Figure 2, to check whether any four triangles are obscured by the rigid components indicating a foothold.

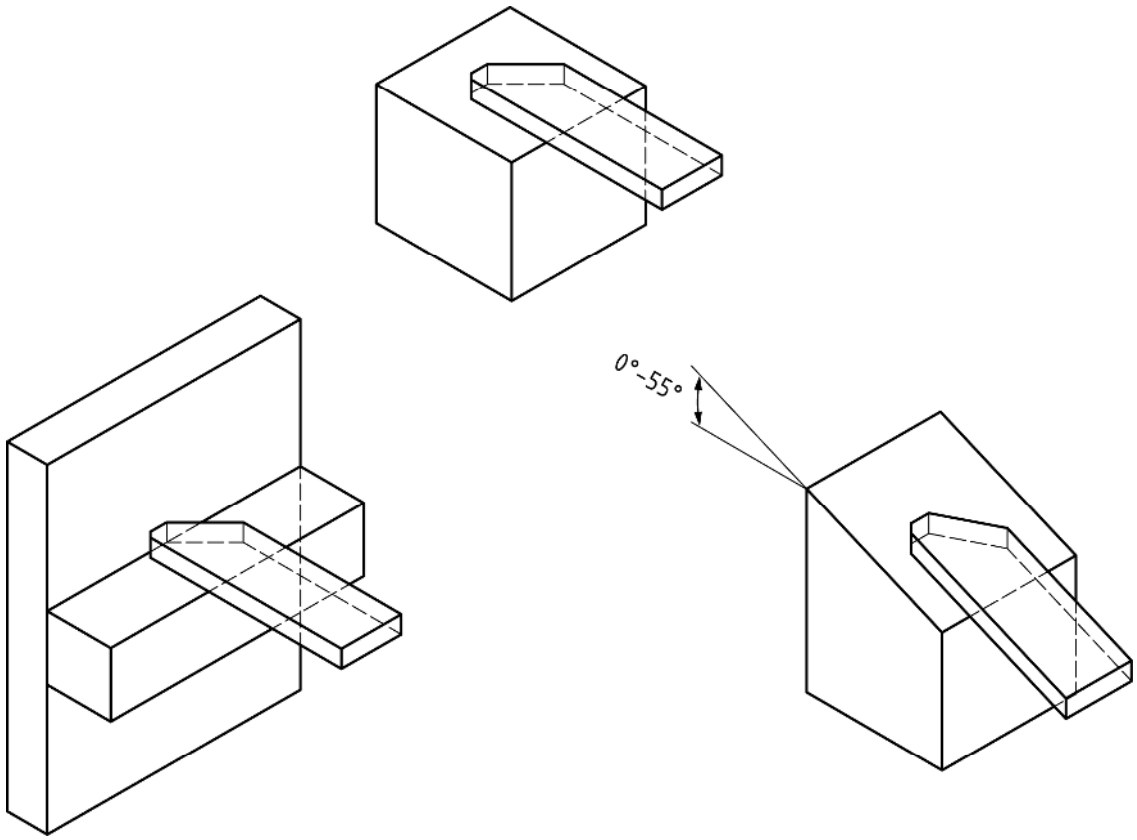


Figure 16 — Examples of footholds on a continuous structure at an angle less than 55°

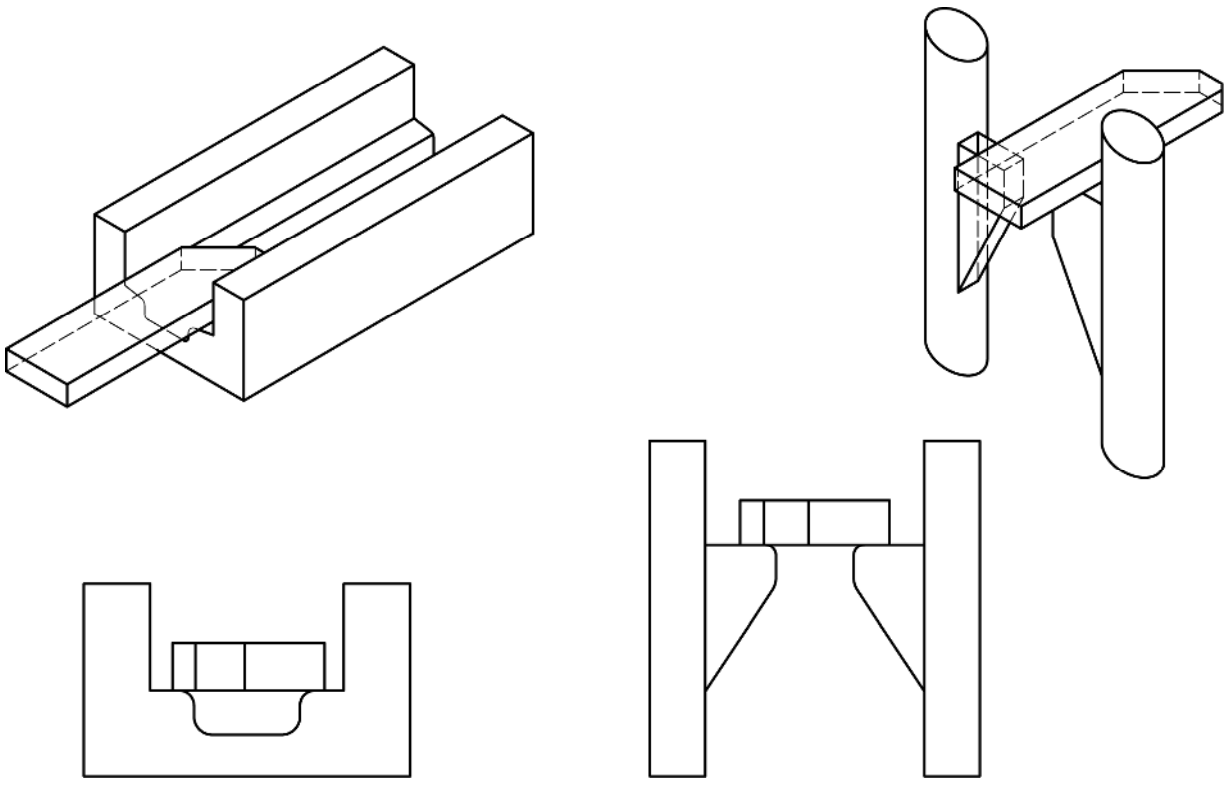


Figure 17 — Examples of footholds on a non-continuous structure at an angle less than 55°

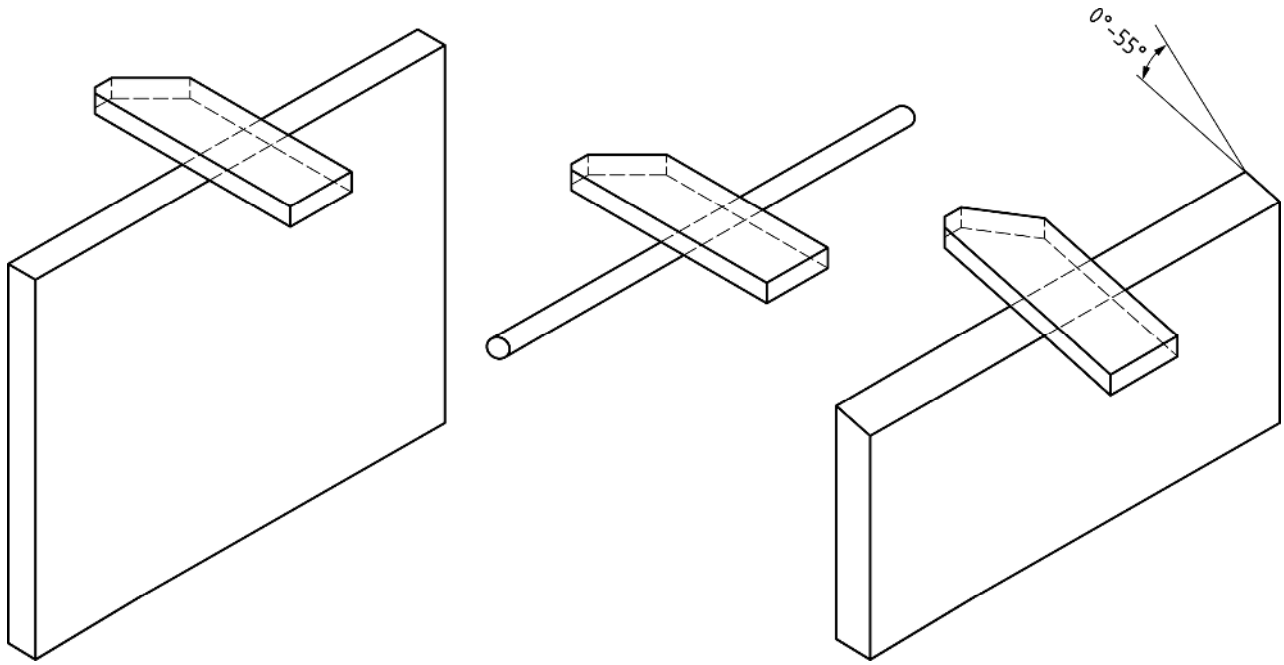


Figure 18 — Example of footholds on wire, thin structures or similar parts at an angle less than 55°

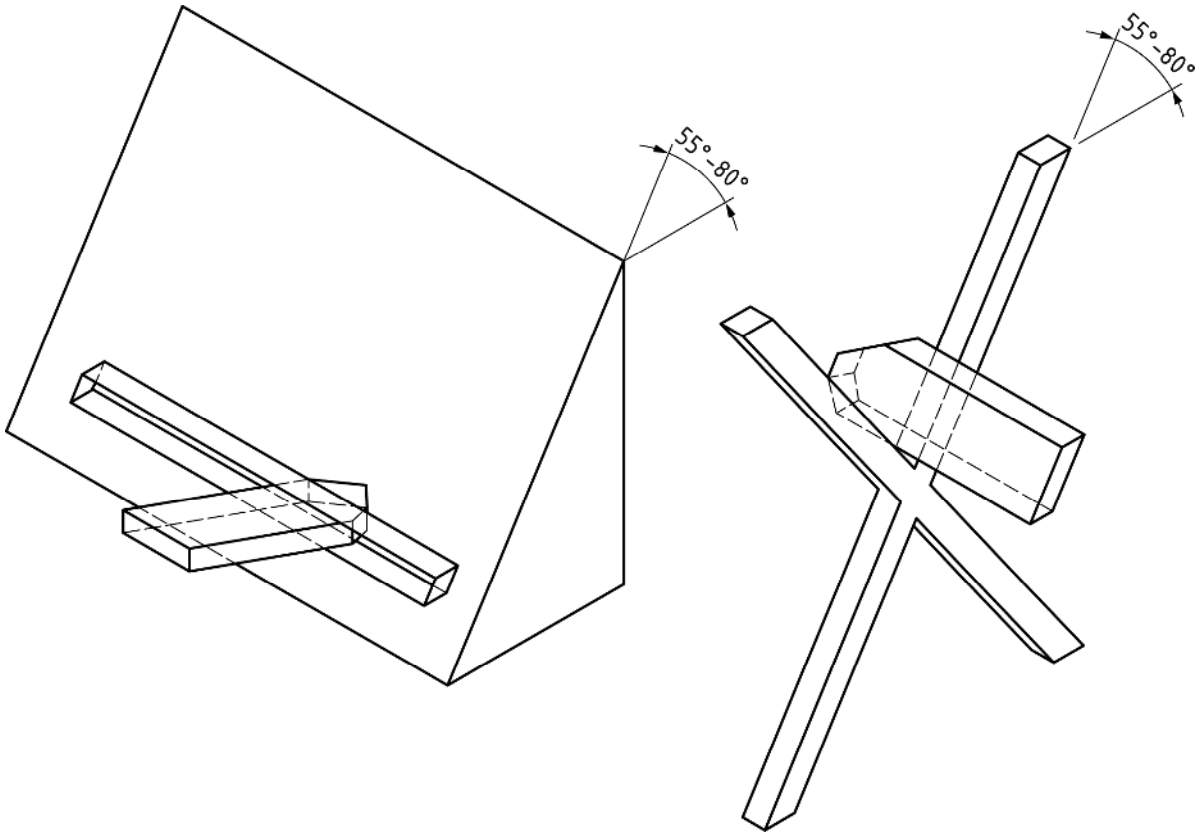


Figure 19 — Examples of footholds on intersecting or adjacent structures where the second structure prevents slipping

6.3 Gaps

6.3.1 Requirements

When tested in accordance with 6.3.2 there shall be no gap within the safety barrier or between the safety barrier and the side of the test frame or between the safety barrier and the floor/base of the test frame that allows the hip probe to pass through from either side of the safety barrier.

The rationale for this requirement is given in A.2.2.

6.3.2 Test method

Apply the hip probe, specified in 4.2, perpendicular to the gap, using one movement only and an applied force of up to 30 N into any accessible gap.

6.4 Opening and closing system

6.4.1 Requirements

6.4.1.1 Unintentional opening

The rationale for this requirement is given in A.2.3.

Safety barriers shall conform to one of the following conditions:

— at least two consecutive actions are required to release the opening system, the operation of the second being dependent on the first having been carried out and maintained; or

— at least two separate but simultaneous actions are required to release the opening system operating on different principles.

Components for fitting the safety barrier into an opening that are not intended to be removed or released for allowing access are excluded from this requirement.

6.4.1.2 Closing system

The rationale for this requirement is given in A.2.3.

After testing in accordance with 6.4.2.1 the closing system shall continue to operate as intended in accordance with the manufacturer's instructions.

6.4.1.3 Closing system with a mechanism that closes the system without the intervention of the user

The rationale for this requirement is given in A.2.3.

Closing systems with a mechanism that closes the opening system without the intervention of the user shall also lock the opening system without the intervention of the user. After testing in accordance with 6.4.2.2 a closing system with a mechanism that closes the opening system without the intervention of the user shall continue to close and lock the opening system without the intervention of the user.

Closing systems that close and lock without the intervention of the user shall have a means of indicating that the opening system has either closed or remained open. The means of indication shall be either audible or visual. The means of indication shall be explained in the instructions for use.

6.4.2 Test methods

6.4.2.1 Closing systems

Operate the opening and locking system 300 times in accordance with the manufacturer's instructions.

6.4.2.2 Closing systems with a mechanism that closes the system without the intervention of the user

Operate the opening and closing system 10 times from the maximum opening position and 10 times from the minimum position.

6.5 Entrapment hazards

6.5.1 Finger entrapment

6.5.1.1 Requirements for openings

The rationale for these requirements are given in A.2.4.

There shall be no openings between 7 mm and 12 mm unless the depth of penetration is less than 10 mm when tested in accordance with 6.5.1.2.

There shall be no openings in the mesh that allow the finger probe for mesh as specified in 4.5 to penetrate to the 7 mm diameter section when tested in accordance with 6.5.1.2.

6.5.1.2 Test methods

Check whether the 7 mm probe, as specified in 4.4 with an applied force of up to 30 N, enters 10 mm or more into any accessible opening in any possible orientation. If the 7 mm probe enters 10 mm or more then the 12 mm probe, specified in 4.4, must also enter 10 mm or more with an applied force of up to 5 N.

Check whether the finger probe for mesh specified in 4.5, with an applied force of up to 30 N, penetrates openings in the mesh to go past the 7 mm diameter section.

6.6 Shearing and crushing hazards

6.6.1 Requirements

The rationale for this requirement is given in A.2.5.

Between the safety barrier and the floor and between the lowest edge of any closing section and the upper surface of the horizontal member directly below there shall be no gaps between 5 mm and 12 mm and any gap equal to or greater than 12 mm shall not close to less than 12 mm when tested in accordance with 6.6.2.

After testing in accordance with 6.6.2 the safety barrier shall still function as intended in accordance with the manufacturer's instructions.

6.6.2 Test method

Check all gaps without any load, then gradually apply a vertical downwards force of 250 N over a period of 5 s and with the force still applied and maintain for 30 s on the centre of the top rail of the safety barrier and with this force applied immediately check all gaps. The gaps shall conform to 6.6.1.

6.7 Protrusion hazards

6.7.1 Requirements

The rationale for this requirement is given in A.2.6.

When tested in accordance with 6.7.2 the ball chain loop and spherical mass as specified in 4.6 shall not be retained by any protruding part.

6.7.2 Test method

The test shall be carried out using one hand only.

Using the ball chain loop and spherical mass specified in 4.6 hold the spherical mass using one hand only below the level of the top rim and in contact with barrier allowing the loop to hang freely over the top rail of the safety barrier.

Move the spherical mass evenly along the top rail of the safety barrier so that the ball chain loop is draped and then dragged over and across any protruding parts. If the loop is retained by a protruding part lower the spherical mass until it is supported by the protruding part.

The tests shall be conducted starting at each end and on each side of the safety barrier.

6.8 Choking and ingestion hazards

6.8.1 Requirements

The rationale for this requirement is given in A.2.7.

When tested in accordance with 6.8.2, any component or part of a component that is removed, whether intended to be removed without the use of a tool or not, shall not fit entirely within the small parts cylinder specified in 4.7.

6.8.2 Test methods

6.8.2.1 Torque test

Apply a torque gradually to the component within a period of 5 s in a clockwise direction until either:

— a rotation of 180° from the original position has been attained; or

— a torque of 0,34 Nm is reached.

The maximum rotation or required torque shall be applied for 10 s.

The component shall then be allowed to return to a relaxed condition and the procedure repeated in an anticlockwise direction.

Where projections, components or assemblies are rigidly mounted on an accessible rod or shaft designed to rotate together with the projections, components or assemblies, during the test, the rod or shaft shall be clamped to prevent rotation.

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

When using clamps and test equipment care must be taken not to damage the attachment mechanism or body of the component.

Check whether any component or part of a component that is removed during the test fits wholly in any orientation without compression or manipulating it within the small parts cylinder specified in 4.7.

6.8.2.2 Tensile test

The tensile test shall be carried out on the same components as the torque test.

Attach a suitable clamp to the component assessed as being grippable in accordance with 6.8.2.1, taking care not to damage the attachment mechanism or body of the component.

Fasten the component in a tensile testing machine and apply a tensile force of up to 90 N to the component to be tested. Apply the force gradually within a period of 5 s and maintain it for 10 s.

Check whether the component or any part of a component that is removed during the test fits wholly within the small parts cylinder specified in 4.7.

6.9 Suffocation hazards

The rationale for this requirement is given in A.2.8.

Plastic bags used for packaging shall conform to one of the following requirements:

a) bags made of flexible plastics with an opening perimeter greater than 380 mm used for external or internal packaging, shall have an average sheet thickness of 0,038 mm or more and shall not have a drawstring or cords as a means of closing or;

b) bags made of perforated sheets with an average thickness of less than 0,038 mm and of an area greater than 100 mm $\times$ 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 $\times$ 30 mm or;

c) packaging shall be conspicuously marked in the official language(s) of the country where the safety barrier is sold with the following statement:

“TO AVOID DANGER OF SUFFOCATION BEFORE INSTILLATION REMOVE ANY PLASTIC PACKAGING WHICH SHOULD BE DESTROYED OR KEPT AWAY FROM CHILDREN.”

NOTE The statement may be expressed in different words providing they clearly convey the same warning.

6.10 Hazardous edges and points

6.10.1 General

The rationale for these requirements is given in A.2.9.

Edges and protruding parts accessible during normal use shall be rounded or chamfered and free of burrs and sharp edges.

6.10.2 Requirements for edges on tubes

When the safety barrier is assembled for use any accessible external and internal edges on open ended tubes shall have a minimum radius of 2 mm or be chamfered.

Open ended tubes with a wall thickness of less than 4 mm shall be closed, covered or capped.

6.10.3 Requirements for points

There shall be no sharp points e.g. staples, nails or screws protruding from any part of the safety barrier.

Staples shall not be proud of the surface.

6.11 Structural integrity

6.11.1 Materials

6.11.1.1 General

Wood and wood based materials shall be free from decay and insect attack.

6.11.1.2 Requirements for connecting screws

Connecting screws for direct fastening, e.g. self tapping screws, shall not be used for the assembly of any component that is designed to be removed or loosened when dismantling the safety barriers for purposes of transportation or storage.

6.11.1.3 Requirements for staples

Staples shall be loaded in shear.

6.11.2 Effectiveness of the fixing, locking devices and opening systems

6.11.2.1 Requirements

The rationale for this requirement is given in A.2.10.

When tested in accordance with 6.11.2.2 fittings and fastening devices shall not be damaged, loosened or detached, locking devices shall not disengage and the safety barrier shall still function as intended in accordance with the manufacturer's instructions.

When tested in accordance with 6.11.2.3 fixing, locking and opening systems of the safety barrier shall not be dislodged. After the test the maximum movement of any fixing point of the safety barrier in the opening shall not exceed 25 mm.

6.11.2.2 Test method

Place the test equipment specified in 4.9 on the floor. Move the apparatus until the pivoted support arm is vertical with the link arm horizontal when the pivot point for the link arm is at the highest point of its rotation. Clamp the link arm to the top horizontal component of the safety barrier at its centre point, keeping it horizontal. Carry out 1 000 revolutions of the driving disc at $120\,^{+5}_{0}$ RPM.

Where it is not possible to position the link arm in a horizontal position, due to the height of the safety barrier, the base of the test equipment may be raised off the floor to a higher position so that the link arm is horizontal. The method of supporting the base at this increased height shall be such that the base is supported in the same manner as it would be on the floor.

6.11.2.3 Test method

Place a 100 mm rigid clamp as specified in 4.10 on the top of the safety barrier at mid-distance. The width of the clamp shall be adjustable to the thickness of the safety barrier.

Two forward and backward horizontal forces shall be applied to the safety barrier:

— force: (140 ± 10) N in each direction;

— one cycle equals: force going up from 0 N to 140 N in one direction then back to 0 N and up to 140 N in the opposite direction then back to 0 N; the form of the force versus time curve is nearly sinusoidal;

— frequency is $0{,}5\,^{+0{,}05}_{0}$ Hz;

— duration: 10 000 cycles.

A force application device is the best way to perform the test in order to be independent of the deformation of the barrier.

NOTE The safety barrier across an opening is submitted to a "push-pull" fatigue test simulating the action of a child.

6.12 Security of the safety barrier from Impact test

6.12.1 Requirements

The rationale for this requirement is given in A.2.11.

When tested in accordance with 6.12.2 the maximum permissible movement of the safety barrier shall be 25 mm from its initial position.

After testing in accordance with 6.12.2 the safety barrier shall function as intended.

6.12.2 Test method

The safety barrier shall be refitted in the test frame see as specified in 4.8 in accordance with the manufacturer’s instructions.

During the tests the impactor shall not be allowed to bounce or rebound on the safety barrier.

The tests shall be carried out on one side of the safety barrier. For safety barriers with an opening section the test shall be carried out on the most onerous side.

The testing is to be carried out in a continuous sequence.

A mechanical mechanism shall be used to release the impactor from its drop height (H, Figure 12).

Position the impactor as specified in 4.11 such that when hanging at rest it is not in contact with the impact surface and the distance between the intended impact surface and the striking point of the impactor is no more than 10 mm, and that the actual point of impact is within 20 mm radially of the desired impact point.

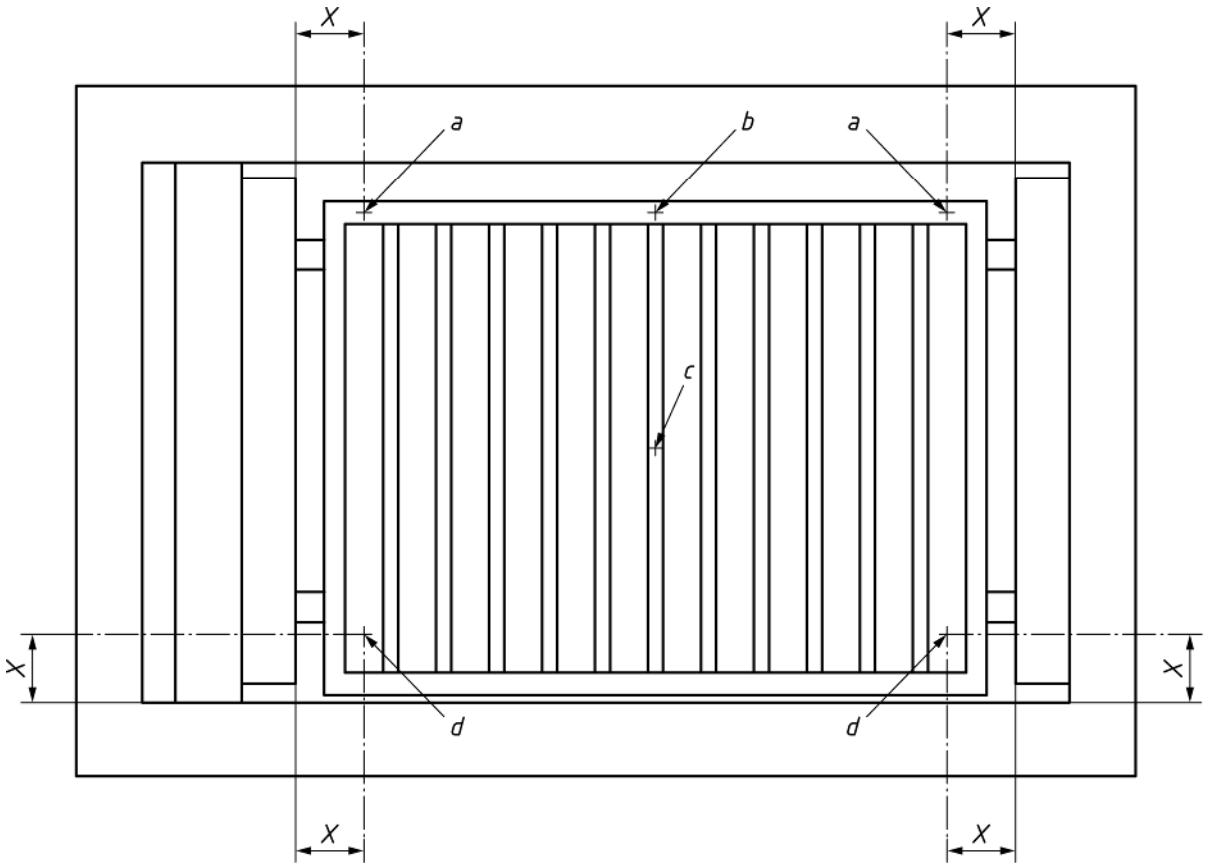
Raise the impactor along its arc of suspension through a vertical height as indicated below. Release the impactor so that it swings in a pendular arc and strikes the barrier as follows:

1) 5 impacts on points “a” which are on the top member 130 mm in from each of the beech pads of the test frame dropped from a height of (80 ± 1) mm, see Figure 20;

2) 5 impacts on point “b” which is on the centre of the top member dropped from a height of (120 ± 1) mm, see Figure 20;

3) 3 impacts on point “c” in the centre of the safety barrier dropped from a height of (150 ± 1) mm, see Figure 20;

4) 5 impacts on points “d” which are 130 mm in from each of the beech pads of the test frame and 130 mm up from the bottom of the test frame dropped from a height of (80 ± 1) mm, see Figure 20.



Key

X = 130 mm

Figure 20 — Impact points

7 Chemical hazards

The rationale for this requirement is given in A.3.

The migration of synthetic or natural elements from coatings of paint, varnish, lacquer, printing ink, polymer and similar coatings and from any other accessible surfaces of materials whether mass coloured or not shall not exceed the following amounts:

Antimony : 60 mg/kg

Arsenic : 25 mg/kg

Barium : 1 000 mg/kg

Cadmium : 75 mg/kg

Chromium : 60 mg/kg

Lead : 90 mg/kg

Mercury : 60 mg/kg

Selenium : 500 mg/kg

These limits shall be verified in accordance with the test method given in EN 71-3.

Where a surface is coated with a multi-layer of paint or similar coating, the test sample shall not include the base material.

A separate sample may be used for these tests.

8 Thermal hazards

A rational is given in A.4.

When tested in accordance with EN 71-2 the maximum rate of spread of flame of textile materials or coated textile materials shall be 30 mm/s.

If the textile area is less than 5 % of the total barrier area, this requirement shall not apply.

A separate sample may be used for this test.

9 Additional hazards

9.1 Use of a tool

It shall be possible to remove a non-opening safety barrier without the use of a key or tool.

9.2 Toys

The rationale for this requirement is given in A.5.

Safety barriers shall not incorporate toys or any similar features that could be used as a child's plaything.

10 Product information

10.1 General

All product information required by this standard shall be given in the official language(s) of the country in which the safety barrier is sold.

10.2 Marking

10.2.1 Requirements

Safety barriers that conform to this standard shall be permanently marked with the following:

a) number and year of this European Standard (i.e. EN 1930:2011);

b) name, trademark or other means of identification of either the manufacturer, distributor, importer or retailer;

c) means of identifying the product e.g. model number;

d) maximum and minimum width of the opening for which the safety barrier is intended;

e) WARNING — Read the instructions before installation as incorrect installation can be dangerous;

f) if the product requires wall cups then the following warning shall be given:

WARNING — Never use without wall cups.

Any permanent labels shall be conspicuous and legible.

10.2.2 Durability of marking

10.2.2.1 Requirement

When tested in accordance with 10.2.2.2 any permanent label or marking shall not be removed. Labels shall show no curling. Markings shall be legible.

10.2.2.2 Test method

Any permanent label and/or marking shall be manually rubbed for 20 s using a water damped cotton cloth.

10.3 Purchase information

The following information shall be clearly visible at the point of sale and shall contain the following Warnings and be provided in the following format:

a) ‘‘WARNING — Read the instructions before installation as incorrect installation can be dangerous‘‘;

b) ‘‘WARNING — This safety barrier must not be fitted across windows’’;

c) if the safety barrier requires wall cups then the following warning shall be given:

WARNING — Never use without wall cups.

Purchase information shall also include the following:

d) safety barrier conforms to EN 1930:2011;

e) a statement that this safety barrier is for domestic use only;

f) means of identifying the product e.g. model number;

g) safety barrier is suitable for use with children up to 24 months of age;

h) minimum and maximum width of the openings for which the safety barrier/extensions are designed;

i) methods of fixing and suitability of surfaces for which the safety barrier/extensions are designed;

j) shall state whether the safety barrier has a manual or automatic closing system.

10.4 Instructions for use

10.4.1 General

The instructions shall be headed "IMPORTANT! READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY AND KEEP FOR FUTURE REFERENCE" in letters of minimum height 5 mm.

10.4.2 Warnings

The instructions shall contain the following warnings:

a) “WARNING — Incorrect installation can be dangerous”:

b) “WARNING — Do not use the safety barrier if any components are damaged or missing“;

c) “WARNING — The safety barrier must not be fitted across windows”;

d) if the product requires wall cups then the following warning shall be given:

“WARNING — Never use without wall cups”.

10.4.3 Additional information

The instructions shall contain at least the following information:

a) safety barrier conforms to EN 1930:2011;

b) a statement that this safety barrier is for domestic use only;

c) safety barrier has been designed for use with children up to 24 months of age;

d) list of contents provided;

e) instructions and/or diagrams illustrating the correct and safe means of assembly, fixing of the safety barrier;

f) if the safety barrier is used at the top of the stairs, it should not be positioned below the top level;

g) if the safety barrier is used at the bottom of the stairs, it should be positioned at the front of the lowest tread possible;

h) minimum and maximum width of the opening for which the safety barrier/extensions are designed;

i) methods of fixing and suitability of surfaces for which the safety barrier /extensions are designed;

j) hazards associated with children using or climbing over the safety barrier;

k) safety barrier should be checked regularly to ensure that it is secure and functioning in accordance with these instructions;

l) additional or replacement parts should only be obtained from the manufacturer or distributor;

m) washing and cleaning instructions if appropriate;

n) check that the safety barrier is correctly closed;

o) state whether the safety barrier has a manual or automatic closing system.

Annex A
(informative)

Rationales

A.1 General

This informative annex has been included with the purpose of providing the rationales for the inclusion of some of the requirements given in this European Standard.

A safety barrier is designed to prevent a child having access to an unsafe area within the home. It is essential therefore that the safety barrier should provide an effective protective function and also should be designed so that it cannot cause harm to the child.

A safety barrier should be constructed so that a child cannot, pass through, climb over, crawl under, be able to open or to dislodge the safety barrier.

Where appropriate, relevant clause numbers in the standard are given in this annex and the relevant reference for the annex is given in the normative part of the standard.

A.2 Mechanical hazards (see Clause 6)

A.2.1 Protective height (see 6.2)

The safety barrier should not contain footholds that would enable a child to climb over it. An area has been specified where potential footholds should not occur.

When measuring the height of the safety barrier a downward force is applied to simulate a child or adult applying a force to the top edge of the safety barrier.

A.2.2 Gaps (see 6.3)

Any gaps should prevent the child's entire torso to pass through. If the child's torso passes through a gap but not its head the air passages in the neck could be restricted reducing the air supply to the lungs which could result in brain damage.

A probe which, represents the hip dimension of a child of approximately 5 months of age, the age at which a child may first start to crawl, is specified in 4.1.

A.2.3 Opening and closing system (see 6.4)

Requirements to reduce the risk of a child operating a mechanism that secures the safety barrier into an opening or which secures a hinged section into position are given in 6.4.1.

A.2.4 Entrapment hazards (see 6.5)

Entrapment hazards occur when a child becomes trapped in a static gap and the child does not have the ability to extract itself. These hazards should not be confused with those gaps between moving parts where a child's finger or flesh could become crushed or severed.

A.2.2 covers the hazards of head and neck entrapment. 6.5.1 gives requirements to reduce gaps where a child's fingers could become trapped in a static situation. Holes in solid parts of the safety barrier and holes in mesh have been considered.

A.2.5 Shearing and crushing hazard (see 6.6)

6.6.1 gives requirements to reduce the risk of crushing hazards at the bottom of the safety barrier.

Other areas, such as hinges, where crushing hazards could occur have not been included in the requirements as it would be almost impossible to construct as a safety barrier with a hinged section that could conform.

A.2.6 Protrusion hazards (see 6.7)

Snagging hazards can occur if items around a child's neck can get caught on protrusions and projections along the top of a safety barrier where, if the child should slip or fall it could be left hanging by its neck. The requirements given in 6.7.1 are to reduce the shape and size of projections.

A.2.7 Choking and ingestion hazards (see 6.8)

Choking is a serious hazard which occurs when a child's internal airways are blocked and its breathing is impeded so that air cannot pass into the lungs when brain damage can occur.

Ingestion hazards result from small components passing into the child's digestive system which may cause toxic contamination or an internal blockage or lacerations.

The requirements given in 6.8.1 limit the size of components on the safety barrier that are either detachable or could be pulled off by the child.

A.2.8 Suffocation hazards (see 6.9)

If a child's external airways, mouth and nose are blocked simultaneously, air cannot pass into the child's lungs and brain damage can occur.

To avoid the hazard of suffocation, plastic bags should be of sufficient thickness so that they cannot mould over a child's face or it should contain ventilation holes so that if it should mould over the child's face air will still get into the lungs.

Plastic bags supplied with the safety barrier should be removed so that a child cannot gain access to them. 6.6 gives an indication for a suitable warning.

A.2.9 Hazardous edges and points (see 6.10)

Sharp edges and points on the safety barrier could cause cuts, lacerations or abrasions to a child's skin. Sharp points could puncture a child's skin or eye.

Requirements to eliminate sharp edges and points are given in 6.10.2 and 6.10.3.

A.2.10 Effectiveness of the fixing, locking devices and opening systems (see 6.11.2)

If a child grasps a safety barrier and shakes, and rattles it or pushes or pulls it, it is important that the fixings which retain the barrier in the opening do not become loose, that any locking devices continue to operate correctly and also that the opening system will not open. 6.11.2 has a requirement for a rattle test to address this.

A.2.11 Security of the safety barrier from impact (see 6.12)

If a child falls against the safety barrier or rides a toy into it, it should not become dislodged from the opening it is protecting. 6.12 has a requirement for an impact test to address this.

A.3 Chemical hazards (see Clause 7)

Children up to the age of 24 months spend a considerable amount of time both mouthing and chewing. The rational for setting the limits for the release of heavy metals from safety barriers is that, in general, they are accepted to be cumulative poisons that may pose health risks following relative low level of exposure primarily through the oral route. The aim has been to set the strictest limit that can be reasonably achieved and measured whilst maintaining the desired level of safety.

A.4 Thermal hazards (see Clause 8)

It is necessary to reduce the rate of spread of flame as low as is reasonably possible for the materials used in the manufacture of the safety barrier.

The requirements and test method for the flammability of any materials used in safety barriers are those specified in EN 71-2.

A.5 Toys (see 9.2)

The requirement that the safety barrier should not incorporate toys or other similar features has been included so that the child is not encouraged to play with the safety barrier.

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