BS EN 16232:2013

BSI Standards Publication

# Child use and care articles — Infant swings

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**National foreword**

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

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EUROPEAN STANDARD

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# EN 16232

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# Child use and care articles - Infant swings

Articles de puériculture - Balancelles suspendues pour enfant

Artikel für Säuglinge und Kleinkinder - Babyschaukeln

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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# Foreword

This document (EN 16232:2013) 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of an identical text or by endorsement, at the latest by February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.

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# 1 Scope

This European Standard specifies safety requirements and the corresponding test methods for infant swings intended for children up to a weight of 9 kg or unable to sit up unaided.

If an infant swing has several functions or can be converted into another function, the relevant European Standards apply to it.

Swings falling under the scope of EN 71-8 are excluded from the scope of this European Standard.

See rationale in A.1.

# 2 Normative references

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

EN 71-3:1994, *Safety of toys — Part 3: Migration of certain elements*

EN 1103 *Textiles — Fabrics for apparel — Detailed procedure to determine the burning behaviour*

EN 61558-2-7, *Safety of power transformers, power supplies, reactors and similar products — Part 2-7: Particular requirements and tests for transformers and power supplies for toys (IEC 61558-2-7)*

EN 61558-2-16, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V — Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units (IEC 61558-2-16*)

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

EN 61672-2, *Electroacoustics — Sound level meters — Part 2: Pattern evaluation tests (IEC 61672-2*)

EN 62115:2005, *Electric toys — Safety (IEC 62115:2003, modified + A1:2004)*

EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

# 3 Terms and definitions

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

**3.1**
**infant swing**
stationary unit with a frame and mechanism that enables a child unable to sit up unaided to be swung

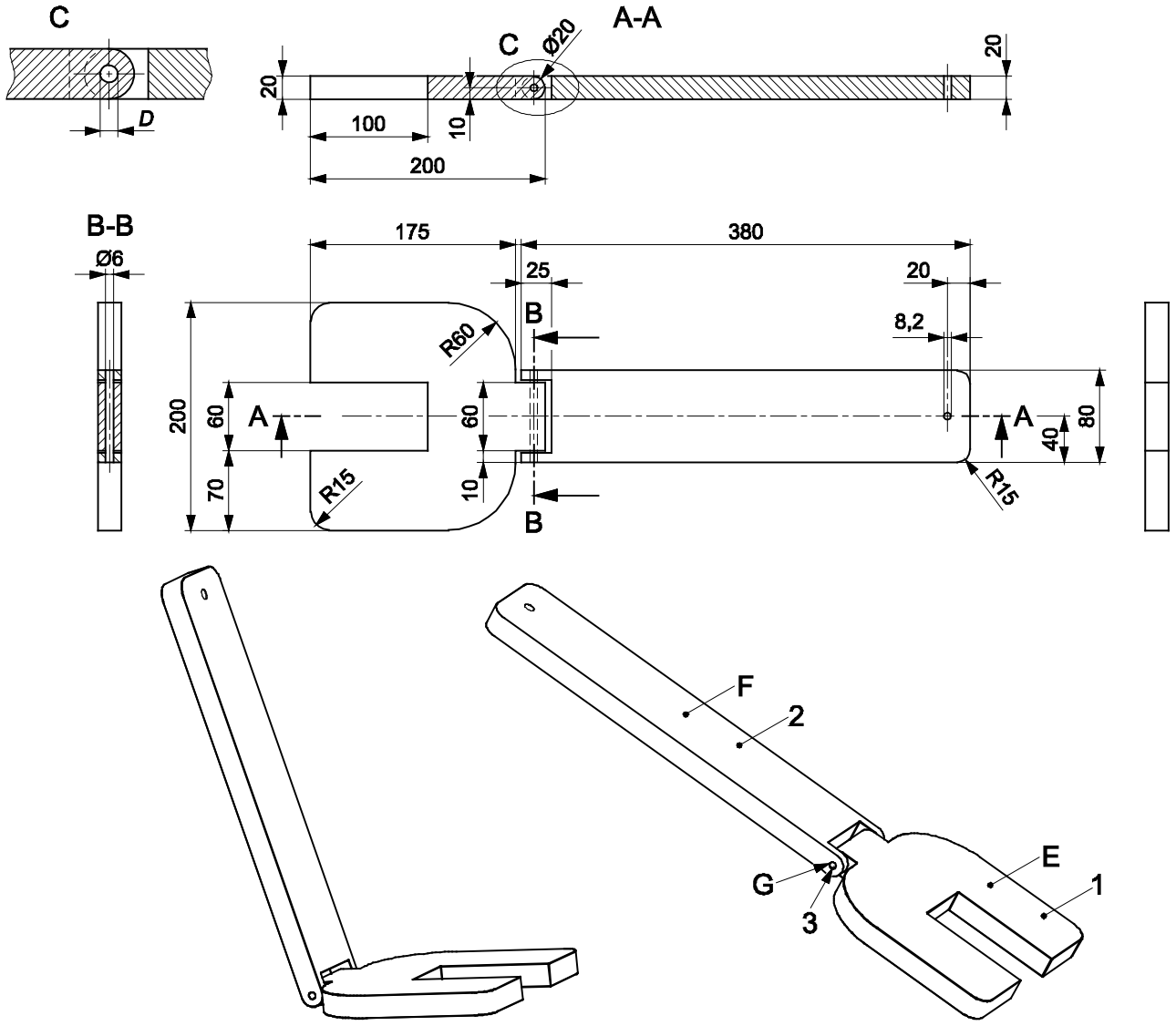
**3.2**
**junction line**
intersection of the seat and the backrest

# 4 Test equipment

## 4.1 Articulated test mass

9 kg articulated test mass made of steel (see Figure 1).

Dimensions in millimetres




**Key**

1 part to be placed onto the seat surface

2 part to be placed onto the backrest surface

3 hinge pin made of steel

E mass: (4 495 ± 50) g

F mass: (4 501 ± 50) g

G mass of hinge axle: (17 ± 0,5) g, length: 79,5 mm

Mass tolerance: (9 ± 0,1) kg

Dimensions tolerance: ± 2 mm

All edges shall be chamfered.

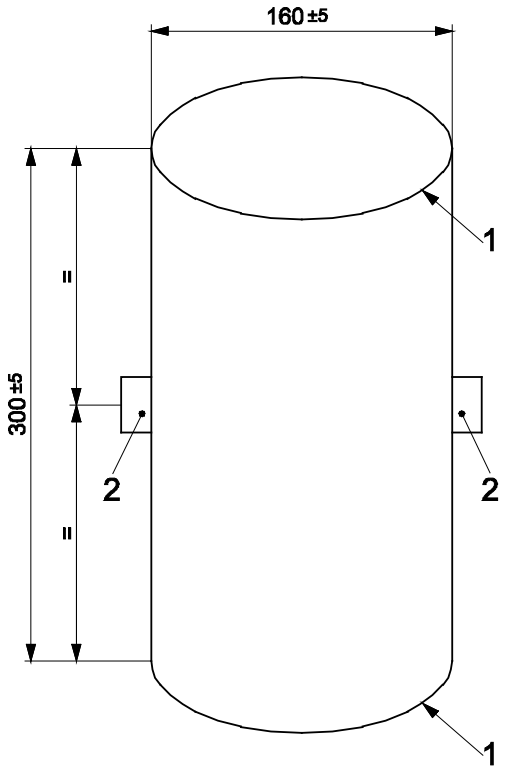
**Figure 1 — Articulated test mass**

## 4.2 Test mass A

Test mass A is a rigid cylinder (160 ± 5) mm in diameter and (300 ± 5) mm in height, having a mass of $\left(9^{+0,01}_{0}\right)$ kg and with its centre of gravity in the centre of the cylinder. All edges shall have a radius of (5 ± 1) mm.

Two anchorage points shall be provided. These shall be positioned (150 ± 2,5) mm from the base and at 180° to each other around the circumference (see Figure 2).

Dimensions in millimetres




**Key**

1 radius: (5 ± 1) mm

2 two anchorage points

**Figure 2 — Test mass A**

## 4.3 Test mass B

Test mass B is a (150 ± 30) mm by (200 ± 30) mm rectangular shaped sand bag with a mass of (3 ± 0,1) kg.

## 4.4 Small parts cylinder

Small parts cylinder for the assessment of small components, having dimensions in accordance with Figure 3.

Dimension in millimetres

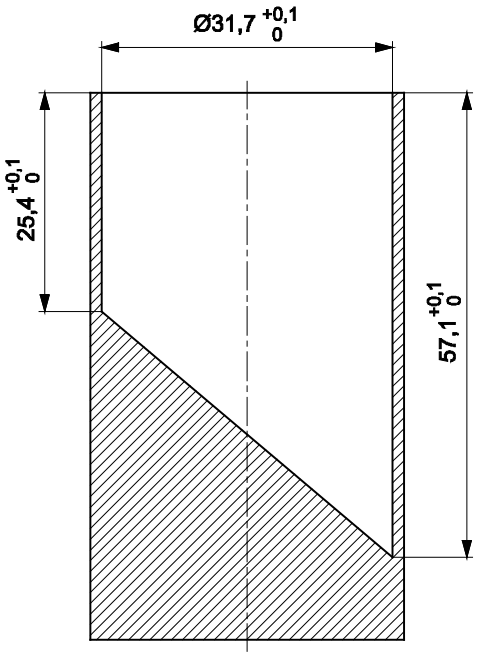



**Figure 3 — Small parts cylinder**

## 4.5 Feeler gauge

Gauge with a thickness of (0,4 ± 0,02) mm and an insertion edge radius of (3 ± 0,5) mm (see Figure 4).

Dimensions in millimetres

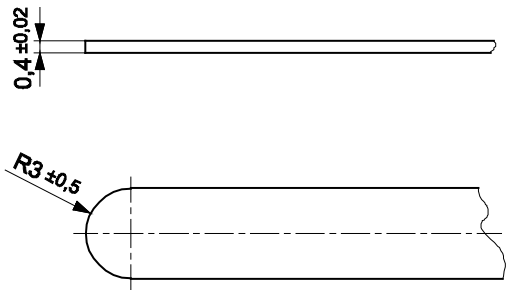


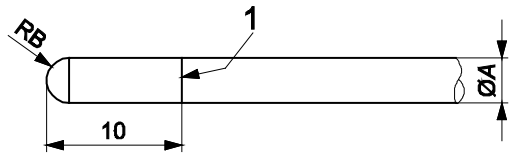

**Figure 4 — Feeler gauge**

## 4.6 Test probes for finger entrapment

Probes made from plastics or other hard, smooth material of diameters $\left(7\,^{0}_{-0,1}\right)$ mm and $\left(12\,^{+0,1}_{0}\right)$ mm with a full hemispherical end that can be mounted on a force-measuring device, see Figure 5.

Mesh probe made from plastics or other hard, smooth material as shown in Figure 6.

Dimensions in millimetres




**Key** (dimensions in millimetres)

| **Probe type** | **7mm probe** | **12mm probe** |
|---|---|---|
| Diameter A | $7^{\ 0}_{-0,1}$ | $12^{+0,1}_{\ 0}$ |
| Radius RB | 3,5 ± 0,2 | 6 ± 0,2 |
| 1 line scribed around circumference showing depth of penetration | | |

**Figure 5 — Test probes with hemispherical end**

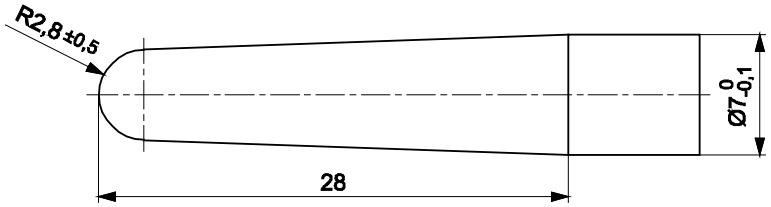



**Figure 6 — Test probe for mesh**

## 4.7 Test surface for static slippage

Rigid plane covered with uncoated tempered float glass with a smooth surface and thickness of (6 ± 0,5) mm, inclined at angle of (12 + 0,5/0)° to the horizontal.

## 4.8 Test surface for stability

Test surface, inclined at (15° + 0,5/0)° to the horizontal, covered with aluminium oxide paper of grade 80.

## 4.9 Test equipment for sound level measurement

The instrumentation system, including the microphone and cable, shall meet the requirements of a type 1 or type 2 instrument specified in EN 61672-1 and EN 61672-2.

When measuring high peak emission sound pressure levels, the microphone and the entire instrumentation system shall have the capability of handling linear peak levels at least up to 125 dB.

# 5 General requirements and test conditions

## 5.1 Product conditioning

Before testing, any fabrics used shall be cleaned or washed and dried twice in accordance with the manufacturer's instructions.

## 5.2 Test conditions

The tests shall be carried out in ambient conditions of (20 ± 5) °C.

The tests are designed to be applied to infant swings that are fully assembled and ready for use in accordance with the manufacturer's instructions. If the infant swing can be assembled or adjusted in different ways, the most onerous combinations shall be used for each test.

If the infant swing has any battery-powered mechanism, it shall be tested using new non-rechargeable alkaline batteries; if the infant swing is supplied with its own rechargeable battery pack, it shall be tested with the battery pack fully charged in accordance with the instructions for use.

The batteries used are those with the voltage and size specified on the infant swing or in the instructions.

Lithium batteries or rechargeable batteries shall not be used unless their use is recommended in the instructions.

If the infant swing fails to withstand a test and this could be due to a defective battery, the test shall be repeated with a new set of batteries.

### 5.3 Application of forces

The forces in the static load tests shall be applied sufficiently slowly to ensure that negligible dynamic force is applied.

### 5.4 Tolerances

Unless otherwise stated, the accuracy of the test equipment shall be:

— Forces: ± 5 % of the nominal force;

— Masses: ± 0,5 % of the nominal mass;

— Dimensions: ± 0,5 mm of the nominal dimension;

— Angles: ± 0,5° of the nominal angle;

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.

### 5.5 Order of tests

Unless otherwise stated in the test methods, the tests shall be carried out on the same infant swing in the order listed in this standard.

## 6 Chemical hazards – migration of certain elements

The migration of synthetic or natural elements from coatings of paint, varnish, lacquer, polymer and similar coatings on exterior surfaces 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 71-3:1994.

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.

# 7 Thermal hazards

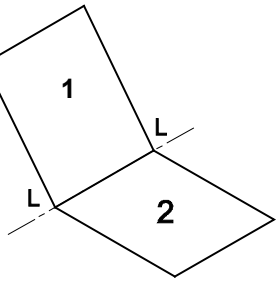
Fabrics shall not produce a surface flash when applying a flame as described in EN 1103. A separate sample may be used for these tests.

# 8 Mechanical hazards

## 8.1 General

### 8.1.1 Determination of the junction line

The junction line is determined as in Figure 7.




**Key**

LL junction line

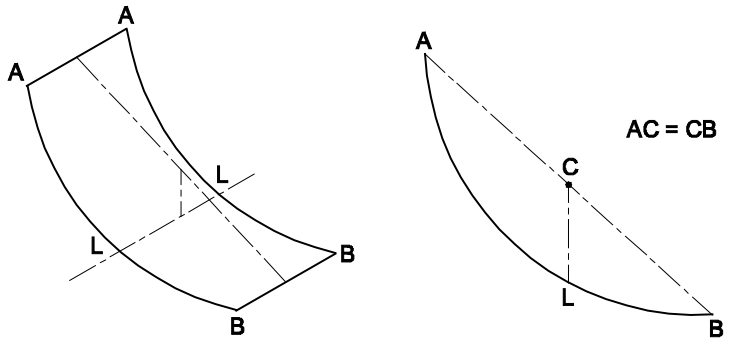
1 backrest

2 seat

**Figure 7 — Junction line**

When the seat unit is in the form of a hammock, then a theoretical junction line, “LL”, is determined as shown in Figure 8.

NOTE The junction line might vary when the backrest is adjusted in different positions.




**Key**

LL junction line

CL vertical projection of C on the hammock

**Figure 8 — Junction line for infant swings in form of a hammock**

### 8.1.2 Determination of protected volume

#### 8.1.2.1 General

The protected volume is determined as follows.

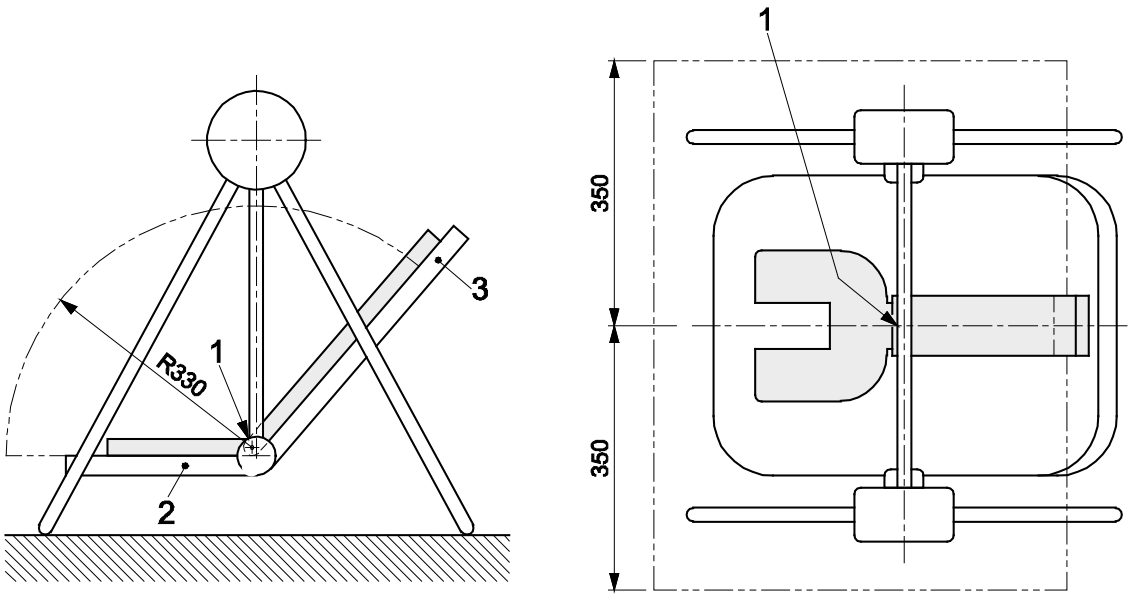
Place articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit as shown in Figure 9.

The protected volume is the space around the test mass defined by a part of a cylinder with its main axis along the projection of the junction line on the top surface of the test mass, a radius of 330 mm and a width of 350 mm on each side from the longitudinal axis of the test mass as shown in Figure 9.

The area located behind the backrest and the area located underneath the seat is outside of the protected volume.

The width of the protected volume may be reduced by the presence of protective barriers complying with 8.1.2.2. If another barrier (e.g. mesh or fabric decoration …) does not comply with 8.1.2.2, the full protected volume as described above shall be considered. See A.2.

Dimensions in millimetres




**Side view** **Top view**

**Key**

1 origin from which the protected volume shall be measured: middle point of the junction line on the top surface of the test mass

2 seat

3 backrest

**Figure 9 — Protected volume**

### 8.1.2.2 Protective barriers

#### 8.1.2.2.1 Requirements

If present, protective barriers shall enclose a circular section with a radius of 350 mm and with its centre on the junction line (see Figure 10).

NOTE The measurement of dimensions of protective barriers is taken without removing the articulated test mass from the product.

Dimensions in millimetres

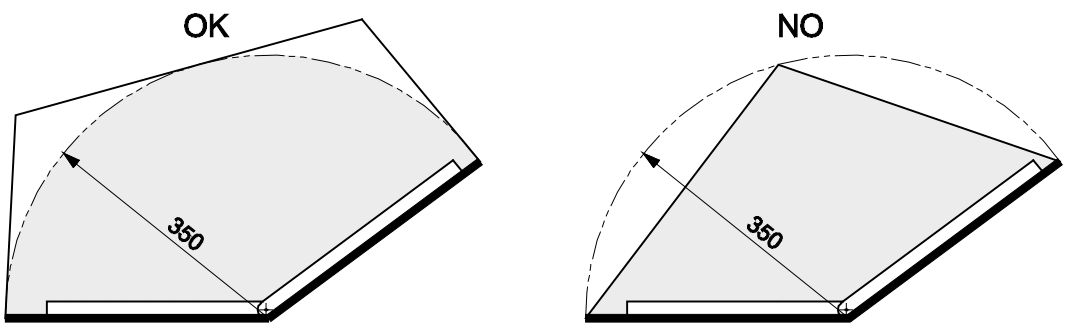



**Figure 10 — Examples of protective barriers**

If present, protective barriers shall not allow the test probe to come into contact to an entrapment, compression or shearing point when tested in accordance with 8.1.2.2.2.

#### 8.1.2.2.2 Test method

Push the 7mm probe (see 4.6) against the barrier from the inside of the infant swing with a force of 30 N; check if it is possible to put the probe in any compression, shearing or entrapment point behind the barrier.

This test shall be carried out in the most onerous position.

## 8.2 Hazards due to sound level

### 8.2.1 Requirement

When tested in accordance with 8.2.2, infant swings that include any device which generates sounds shall conform to the following requirements:

a) the A-weighted emission sound pressure level, $L_{pA}$, shall not exceed 80 dB when measured in a free field.

b) the C-weighted peak emission sound pressure level, $L_{pC\ peak}$, shall not exceed 115 dB.

This requirement does not apply to loudspeakers connected to external sound generating devices (e.g. personal music players …).

### 8.2.2 Test method

Place the infant swing on a concrete floor in a test environment which meets the qualification requirements of EN ISO 3746:2010, Annex A.

NOTE In practice this means that most normally furnished rooms with a volume exceeding 30 $m^3$ will qualify.

Test rigs used for the mounting of the measuring device and/or the operator shall not affect the sound emission of the infant swing nor cause sound reflections which will increase the sound pressure levels at the measuring points.

The microphone (see 4.9) shall be placed at a distance of (30 ± 5) mm above the geometrical centre of the top surface of the backrest and perpendicular to the backrest. The microphone shall be fixed to the backrest to follow the swinging movement.

Operate the infant swing in the mode of its intended or foreseeable use which produces the highest emission sound pressure level to the microphone position.

Allow the infant swing to reach normal operating mode(s) (e.g. speed, music level, …) before the tests are performed.

If the infant swing has a clearly defined operating cycle, measure the A-weighted emission sound pressure level, $L_{pA}$, and the C-weighted peak emission sound pressure level, $L_{pC\ peak}$, during at least one whole cycle. Quiet periods longer than 15 s shall be excluded from the measurement period.

Repeat the measurement three times.

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

## 8.3 Entrapment hazards

### 8.3.1 Entrapment of fingers

#### 8.3.1.1 Requirement

When tested in accordance with 8.3.1.2, there shall be no completely bounded circular openings, within the protected volume, between 7 mm and 12 mm unless the depth is less than 10 mm.

When tested in accordance with 8.3.1.2, there shall be no openings in mesh, within the protected volume, that allow the test probe for mesh (see 4.6) to penetrate to the 7 mm diameter section.

The test shall be carried out with the product in any intended position of use.

This requirement does not apply to the restraint system.

#### 8.3.1.2 Test method

Check whether the 7 mm probe (see 4.6) with an applied force of up to 30 N, enters 10 mm or more into the completely bounded circular openings in any possible orientation.

If the 7 mm probe enters 10 mm or more than the 12 mm probe (see 4.6) it shall also enter 10 mm or more with an applied force of up to 5 N.

Check whether the test probe for mesh (see 4.6) with an applied force of up to 30 N, penetrates openings in mesh to the 7 mm diameter section.

## 8.4 Hazards due to falling of the child

### 8.4.1 Angles

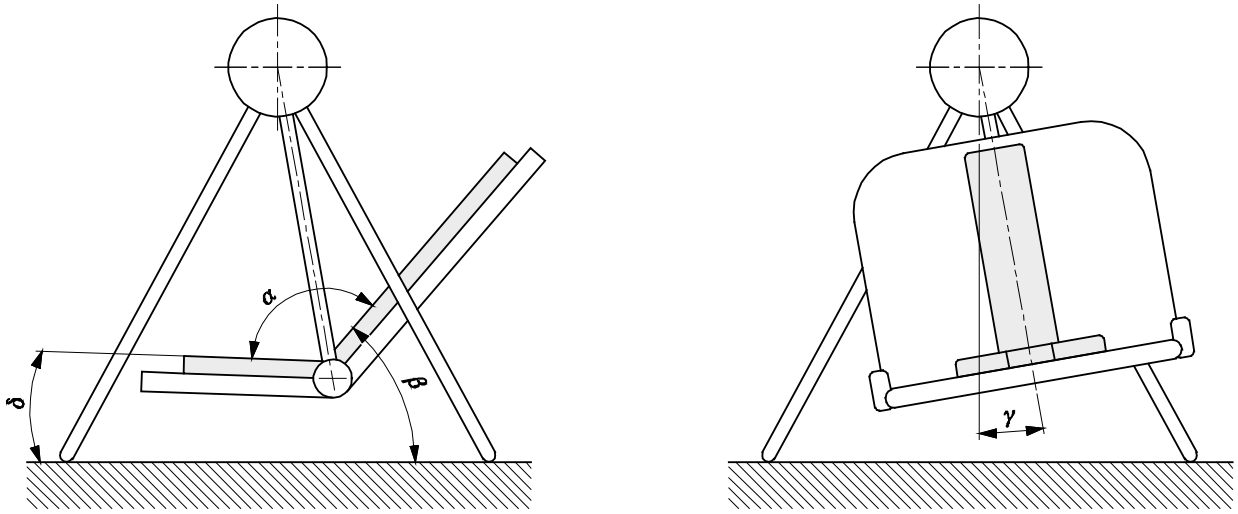
#### 8.4.1.1 Requirement for angles

When tested in accordance with 8.4.1.2.1, the angle between part 1 and part 2 of the articulated test mass ($\alpha$ angle – see Figure 11) shall be not less than 90° in any position of use.

When tested in accordance with 8.4.1.2.2, the angle between part 2 of the articulated test mass and the horizontal surface ($\beta$ angle – see Figure 11) shall be between (0 and 80)°.

When tested in accordance with 8.4.1.2.2, the angle between part 1 of the articulated test mass and the horizontal surface ($\delta$ angle – see Figure 11) shall not be less than 0°.

The lateral swinging angle ($\gamma$ angle – see Figure 11) shall be between +20° and −20° when tested in accordance with 8.4.1.2.3.




**Key**

*α* angle between part 1 and part 2 of the test mass

*β* angle between part 2 of the test mass and the horizontal surface

*δ* angle between part 1 of the test mass and the horizontal surface

γ angle drawn by the swinging frame from its rest position during lateral swinging movement

**Figure 11 — Angles**

### 8.4.1.2 Test methods for angles

#### 8.4.1.2.1 Test method for *α* angle

Place the infant swing on a horizontal plane.

Place articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit as shown in Figure 9.

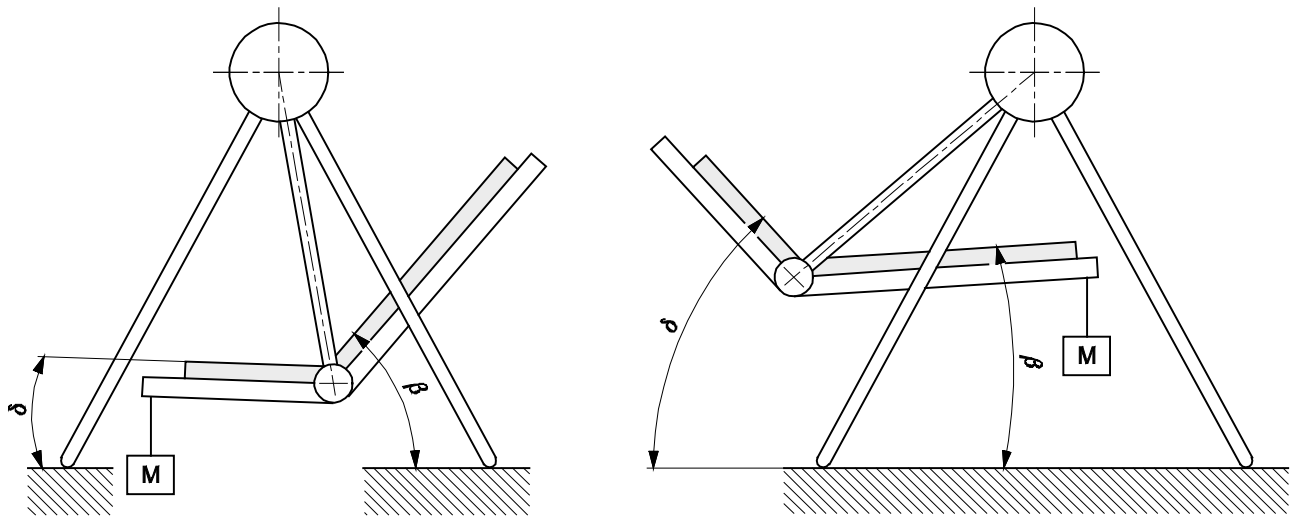
If applicable, adjust the backrest in the most upright position.

Let the test mass and the seat unit reach the equilibrium.

Measure the *α* angle.

#### 8.4.1.2.2 Test method for *β* and *δ* angles

Place the infant swing on a horizontal plane with some space under the plane to allow hanging of weights (see Figure 12).




**Key**

*β* angle between part 2 of the test mass and the horizontal surface

*δ* angle between part 1 of the test mass and the horizontal surface

M 9 kg test mass

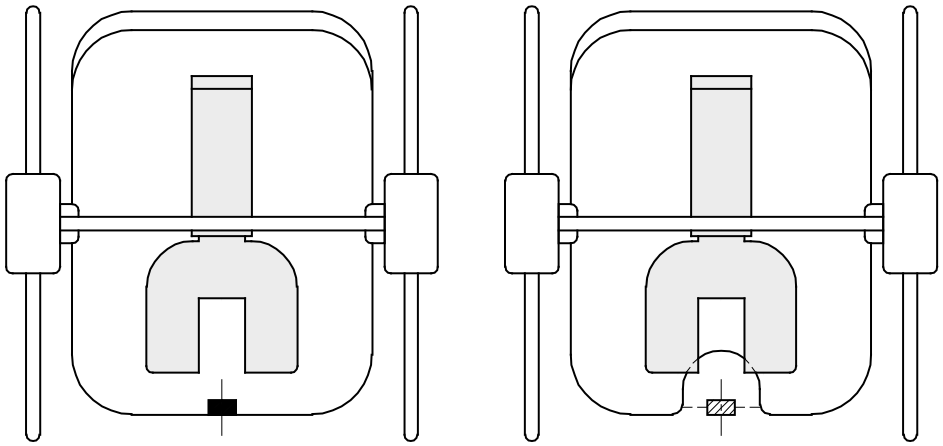
**Figure 12 — Measurement of angles *β* and *δ***

If applicable, adjust the backrest in the most upright position.

Place articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit as shown in Figure 9.

Restrain the articulated test mass with the restraint system and adjust the restraint system as close as possible to the size of the test mass. Any movement of the test mass shall be avoided using wedges of negligible mass.

Hang a mass of 9 kg within 20 mm from the most external edge of the seat along the longitudinal axis of the seat (see Figure 13 a). If the most external edge of the seat does not lie on the longitudinal axis, suitable means of negligible mass shall be used to hang the mass within 20 mm from the projection of the most external edge of the seat on the longitudinal axis (see Figure 13 b).




**Key**

a) mass positioned within 20 mm from the most external edge

b) mass positioned within 20 mm from the projection of the most external edge

**Figure 13 — Positioning of the mass**

Let the seat unit reach the equilibrium.

Measure the $\beta$ and $\delta$ angle.

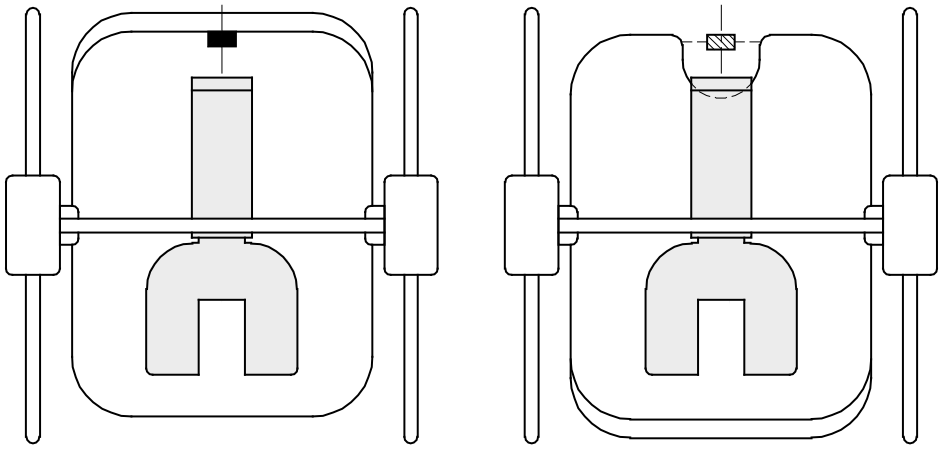
Remove the masses.

If applicable, adjust the backrest in the most reclined position.

Place articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit as shown in Figure 9.

Restrain the articulated test mass with the restraint system and adjust the restraint system as close as possible to the size of the test mass. Any movement of the test mass shall be avoided using wedges of negligible mass.

Hang a mass of 9 kg within 20 mm from the most external edge of the backrest along the longitudinal axis of the backrest (see Figure 14 a). If the most external edge of the backrest does not lie on the longitudinal axis, suitable means of negligible mass shall be used to hang the mass within 20 mm from the projection of the most external edge of the backrest on the longitudinal axis (see Figure 14 b).



**a)** **b)**

**Key**

a) mass positioned within 20 mm from the most external edge

b) mass positioned within 20 mm from the projection of the most external edge

**Figure 14 — Positioning of the mass**

Let the seat unit reach the equilibrium.

Measure the $\beta$ and $\delta$ angle.

### 8.4.1.2.3 Test method for $\gamma$ angle

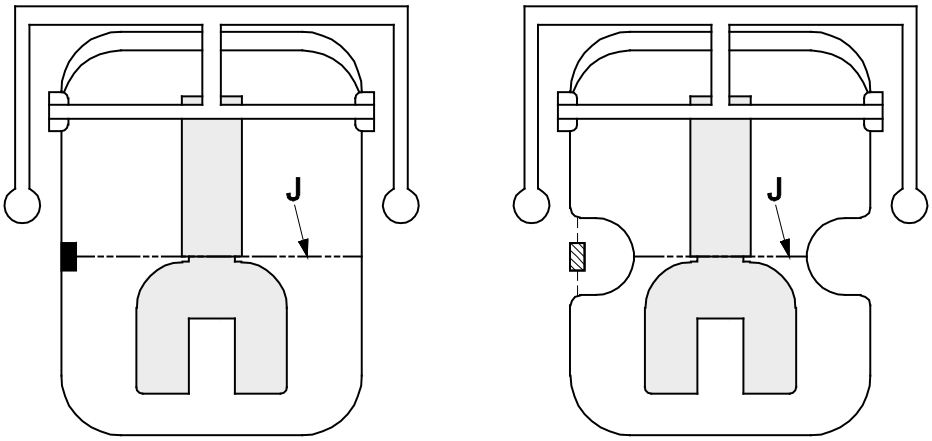
Place the infant swing on a horizontal plane with some space under the plane to allow hanging of weights.

If applicable, adjust the backrest in the most onerous position.

Place articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit as shown in Figure 9.

Restrain the articulated test mass with the restraint system and adjust the restraint system as close as possible to the size of the test mass. Any movement of the test mass shall be avoided using wedges of negligible mass.

Hang a mass of 9 kg within 20 mm from the most external edge of one side of the seat along the junction line of the seat (see Figure 15 a). If the most external edge of the side of the seat does not lie on the junction line, suitable means of negligible mass shall be used to hang the mass within 20 mm from the projection of the most external edge of the side of the seat on the junction line (see Figure 15 b).




**Key**

a) mass positioned within 20 mm from the most external edge of one side of the seat

b) mass positioned within 20 mm from the projection of the most external edge of the side of the seat

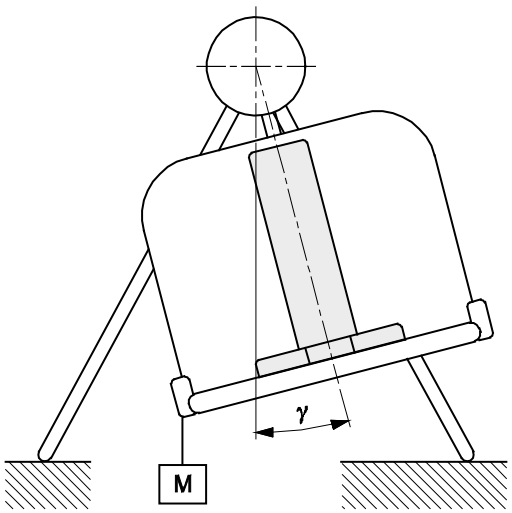
J junction line

**Figure 15 — Positioning of the hanging mass**

Let the seat unit reach the equilibrium.

Measure the angle $\gamma$ (see Figure 16).

Repeat the measurement by hanging the 9 kg mass on the opposite side.




**Key**

$\gamma$ angle drawn by the swinging frame from the vertical during lateral swinging movement

M 9 kg test mass

**Figure 16 — Measurement of angle $\gamma$**

### 8.4.2 Restraint system

#### 8.4.2.1 Requirements

The infant swing shall be fitted with a restraint system that is adjustable to the size of the child and shall comprise of at least a crotch restraint and shoulder straps. It shall not be possible to use the restraint system without the crotch restraint being used.

Any straps included in the restraint system shall have a minimum width of 19 mm.

When tested in accordance with 8.4.2.2.1, the restraint system, straps and anchorage points shall not break, become loose or tear away from their support.

When tested in accordance with 8.4.2.2.2 in any orientation, fasteners shall not be released and shall not have suffered damage which impairs their normal operation and function.

When tested in accordance with 8.4.2.2.3 any adjusters, sliders, buckles or clasps shall not slip by more than 20 mm.

#### 8.4.2.2 Test methods

##### 8.4.2.2.1 Test method for strength of the restraint system

Secure the infant swing against movement by any appropriate means.

Gradually apply a tensile force of 150 N within 5 s to each strap and to each anchorage point of the restraint system and keep it for (60 ± 3) s in the direction most likely to cause failure.

##### 8.4.2.2.2 Test method for strength of fasteners

Gradually apply a tensile force of 150 N within 5 s to the straps either side of the fastener. Maintain this force for (60 ± 3) s.

##### 8.4.2.2.3 Test method for slippage of adjustment devices of the restraint system

This test shall be conducted as the last test of the entire test procedure.

Remove from the product sufficient length of the restraint system on both sides of each adjustment device.

Fix one end of the test piece to a fixed clamping device (the jaw of the clamping device shall have at least the width of the strap), in such a way that the strap and the adjusting device hang freely in a vertical direction.

Apply a force to the other end of the test piece by means of a clamping device as described below (the jaw of the clamping device shall have at least the width of the strap).

The adjustment device shall be approximately in the middle point between the fixed clamping device and the point to which the force is applied.

The strap shall be under tension in the same way it is intended to be in the product.

Gradually apply a force of 10 N within 5 s to the strap and keep it for (10 ± 1) s. Remove the force. Draw a line across the width of strap flush with the adjuster.

Gradually apply a force of 150 N within 5 s to the strap and keep it for (60 ± 3) s. Remove the force. Draw again a line across the width of the strap flush with the adjuster (on the same side of the adjuster).

Remove the strap from the adjuster. Measure the distance between the centre of the two lines drawn flush with the adjuster. This distance is the amount of slippage.

## 8.5 Hazards due to moving parts

### 8.5.1 Requirements for compression points

After the infant swing is set up for normal use in accordance with the manufacturer's instructions there shall be no compression points, within the protected volume, which can close to less than 12 mm unless they are always less than 3 mm, through the whole range of movement.

Movement due to play and/or elasticity of materials shall not be considered as a compression hazard.

### 8.5.2 Requirements for shear points

After the infant swing is set up for normal use in accordance with the manufacturer's instructions there shall be no shear points which can close to less than 12 mm within the protected volume.

Movement due to play and/or elasticity of materials shall not be considered as a shearing hazard.

## 8.6 Hazards due to folding of the product

### 8.6.1 Requirements

#### 8.6.1.1 General

Infant swings which may be folded for storage or transportation purposes shall be fitted with a locking mechanism(s) for the folding system.

A locking mechanism(s) is required to prevent an infant swing folding whilst the child is in the infant swing and also during the process of a child being put in and taken out of the infant swing.

Folding mechanisms for the seat and the backrest for products where the weight of the child acts to prevent folding, are excluded from these requirements.

#### 8.6.1.2 Incomplete deployment

To avoid the hazard due to incomplete deployment, at least one locking mechanism shall engage automatically when the product is deployed for use in accordance with the manufacturer's instructions for use.

#### 8.6.1.3 Unintentional release of locking mechanism(s)

To avoid the hazards due to unintentional release, when tested in accordance with 8.6.2.1, the infant swing shall not collapse and one of the following conditions shall be fulfilled:

a) at least one locking mechanism requires an operating force greater than 50 N before and after testing in accordance with 8.6.2.2, or

b) at least one locking mechanism is released by the use of a tool, or

c) folding requires at least two consecutive actions, the first of which shall be maintained while the second is carried out, or

d) folding requires at least two independent and simultaneous actions.

#### 8.6.1.4 Locking mechanism(s) strength

When tested in accordance with 8.6.2.3, the infant swing shall not fold and the locking mechanism(s) shall remain engaged.

### 8.6.2 Test methods

#### 8.6.2.1 Test method for unintentional release of locking mechanisms

Place the articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge in contact with the junction line.

If the requirement in 8.6.1.3 a) applies, apply a 50 N force to the operating device (e.g. button, lever, etc.) of the locking mechanism(s).

If the requirement in 8.6.1.3 c) or 8.6.1.3 d) applies, carry out one of the unlocking actions.

Repeat the test without the test mass.

#### 8.6.2.2 Test method for the durability of the locking mechanism(s)

Operate any locking mechanisms 300 times.

#### 8.6.2.3 Strength of the locking mechanism(s)

Gradually apply and maintain for 1 min a force of 100 N at the point on the frame and in the direction considered most likely to fold the infant swing. The force shall not be applied to the operating device (e.g. button, lever, etc.) of the locking mechanism(s).

If the infant swing tends to tilt secure it in a manner which does not prevent the folding.

## 8.7 Hazards from entanglement in cords, ribbons and similar parts

### 8.7.1 Requirements

These requirements apply to cords, ribbons and similar parts within the protected volume.

Cords, ribbons and similar parts, excluding child restraint system, shall have a maximum free length of 220 mm when tested in accordance with 8.7.2.

Where cords, ribbons and similar parts are attached to the infant swing together or within 80 mm from each other, any single cord shall have a maximum free length of 220 mm and the combined length from one loose end to another loose end shall be a maximum of 360 mm.

Loops shall have a maximum perimeter of 360 mm when tested in accordance with 8.7.2.

Monofilament threads shall not be used as cords, ribbons and parts used as ties and loops or as sewing threads.

### 8.7.2 Test method

The length of a cord, ribbon or similar part is measured from the fixing point on the article to the free end of the cord, ribbon or similar part while a 25 N tensile force is applied.

The perimeter of a loop shall be measured while a 25 N tensile force is applied.

## 8.8 Choking and ingestion hazard

### 8.8.1 Requirements

When tested in accordance with 8.8.2 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 4.4.

This requirement does not apply to components or parts made of paper or of textile materials.

### 8.8.2 Test methods

#### 8.8.2.1 Assessment of child's ability to grip components

A component is considered to be able to be gripped by a child if it can grip the component between its thumb and forefinger or between its teeth.

Where it is difficult to assess whether a child can grip a component, establish whether it can be gripped by inserting once the feeler gauge specified in 4.5 between the component and the underlying layer or body of the infant swing at an angle between 0° and 10° from the surface of the underlying layer or body of the infant swing using a force of (10 ± 1) N. If the gauge can be inserted more than 2 mm, the component is considered to be able to be gripped by the child.

#### 8.8.2.2 Torque test

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

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

b) a torque of 0,34 Nm is reached.

The maximum rotation or required torque shall be applied for (10 ± 1) 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 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 shall 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 compressing or manipulating it, within the small parts cylinder specified in 4.4.

#### 8.8.2.3 Tensile test

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

Attach a suitable clamp to the component, 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 90 N to the component to be tested. Apply the force gradually within a period of 5 s and maintain for (10 ± 1) s.

Check whether any component or part of a component that is removed during the test fits wholly in any orientation, without compressing or manipulating it, within the small parts cylinder specified in 4.4.

## 8.9 Suffocation hazards from packaging materials

Any plastic covering used for packaging with an area greater than 100 mm x 100 mm shall conform to any of the following requirements:

a) have an average sheet thickness of 0,038 mm or more; or

b) be perforated with defined holes so that a minimum of 1 % of the area has been removed over any area of 30 mm x 30 mm.

Any plastic covering used for packaging with an opening perimeter greater than 360 mm shall not have a drawstring or cord as a means of closing and shall be marked in the official language(s) of the country where the product is sold with the following statement:

“Keep plastic covering away from children to avoid suffocation”.

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

Shrunk-on films that are destroyed when the packaging is opened by the user are excluded from these requirements.

## 8.10 Hazards from edges, corners and protruding parts

All edges, corners and protruding parts in the protected volume of the infant swing shall be rounded and free from burrs.

All surfaces shall be free from burrs and sharp edges.

## 8.11 Hazards from inadequate structural integrity

### 8.11.1 Static strength

#### 8.11.1.1 Requirement

When tested in accordance with 8.11.1.2, the infant swing shall not collapse and it shall still fulfil the function for which it is intended.

#### 8.11.1.2 Test method

Infant swings that can be adjusted in different configurations shall be adjusted to the most onerous one.

Place the infant swing on the floor and leave it in the rest position.

Load the infant swing with a mass of 20 kg, evenly distributed over the whole seat unit including the backrest.

Maintain the mass for (30 ± 1) min.

Remove the mass and allow the infant swing to recover.

### 8.11.2 Durability of powered swinging mechanisms

#### 8.11.2.1 Requirement

When tested in accordance with 8.11.2.2, the infant swing shall not collapse and it shall still fulfil the function for which it is intended.

#### 8.11.2.2 Test method

Infant swings that can be adjusted in different configurations shall be adjusted to the most onerous one.

Place the infant swing on the floor and leave it in the rest position.

Place the articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit.

Activate the powered mechanism that operates the swinging motion and adjust it to the maximum allowed speed (if applicable). Leave the powered mechanism on for 72 h.

Remove the mass and allow the infant swing to recover.

NOTE For battery powered infant swings, batteries can be replaced by any adequate power source (e.g. AC/DC adaptor).

### 8.11.3 Reclining system

#### 8.11.3.1 Requirement

Infant swing with adjustable backrest shall be fitted with a stop at the maximum reclined position to avoid inadvertent contact between the seat unit and the ground or any rigid part of the frame during testing in accordance with 8.11.3.2.

The reclining system shall still function after testing in accordance with 8.11.3.2.

#### 8.11.3.2 Test methods

Operate any reclining mechanism 300 times.

Adjust the backrest of the infant swing to the most upright position.

Place test mass A (see 4.2) on the seat unit so that its base is flush with the junction line and in the middle of the width.

Restrain the test mass with the restraint system and adjust the restraint system as close as possible to the size of the test mass.

Hold the backrest in its most upright position. Release the adjustment mechanism. Let the backrest fall freely. If the backrest engages into its next position, continue the operation until the backrest is in its most reclined position.

During movement of the backrest towards the most reclined position, record if the seat unit touches the ground or any rigid part of the frame.

## 8.12 Hazards from inadequate stability

### 8.12.1 Requirements

When tested in accordance with 8.12.2 and 8.12.3, the infant swing shall not tip over.

### 8.12.2 Test method for static stability

Infant swings that can be adjusted in different configurations shall be adjusted to the most onerous one.

Place the infant swing with the seat unit facing downward on the test surface (4.8). If the infant swing slips on the test surface, slippage shall be prevented by placing the lowest frame member(s) in contact with (25 ± 1) mm stop(s).

Place test mass A (see 4.2) on the seat unit so that its base is flush with the junction line and in the middle of the width.

Restrain the test mass with the restraint system and adjust the restraint system as close as possible to the size of the test mass.

Allow the seat unit to reach equilibrium.

Repeat the test with the seat unit facing upwards and with the seat unit perpendicular to the slope of the test surface in both directions.

### 8.12.3 Test method for dynamic stability

Place the infant swing on a flat horizontal surface.

Restrain the movement of the infant swing on the surface by means of rigid (25 ± 1) mm stops.

Place the articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit.

Restrain the test mass with the restraint system and adjust the restraint system as close as possible to the size of the test mass.

Allow the seat unit to reach the equilibrium.

Draw the seat unit backwards from the centre of the top edge of the backrest with a force of 50 N tangential to the direction of the movement of the seat unit.

Release the seat unit and allow it to swing freely.

Repeat the test for 2 other times in the backwards direction and 3 times in the forward direction.

## 8.13 Hazards from possible movement of the infant swing on the floor

### 8.13.1 Requirement

The product shall not move more than 20 mm when tested in accordance with 8.13.2.

See rationale in A.5.

### 8.13.2 Test method

Place the infant swing on the test surface for static slippage (4.7).

Removable stops shall be used to prevent the infant swing from moving while the test is being set up.

Adjustable backrests shall be adjusted to their maximum reclined position.

Place the articulated test mass (see 4.1) on the seat unit with part 1 against the seat and with part 2 against the backrest with the hinge aligned with the junction line and the longitudinal axis of the test mass aligned with the longitudinal axis of the seat unit.

Allow the infant swing to reach equilibrium to prevent dynamic effects due to swinging, bouncing and flexibility of materials.

Remove the stop(s) in such a way that their removal has no effect on the infant swing. Leave the infant swing for (60 ± 3) s.

Measure the maximum displacement of the product down the test surface.

Repeat the test with adjustable backrest adjusted to their maximum upright position.

Repeat the test with the seat unit facing upwards and with the seat unit perpendicular to the slope of the test surface in both directions.

## 8.14 Electrical hazards

### 8.14.1 General

If there are electrical components, the infant swing shall comply with the relevant safety requirements of EN 62115:2005 Clause 9; the preconditioning required in 5.15 of EN 62115:2005 shall not be performed.

Electrical components of the infant swing shall be powered by batteries and/or by an external AC/DC transformer complying with EN 61558-2-7 (for linear transformers) or with EN 61558-2-16 (for switching mode transformers).

If the electrical components are powered by an external power supply through an AC/DC transformer, the connection between the transformer and the infant swing shall be detachable and located outside of the protected volume.

The supply voltage shall not exceed 24 V.

The working voltage between any two parts of the infant swing shall not exceed 24 V when the infant swing is supplied at rated voltage.

### 8.14.2 Leakage prevention

Battery powered infant swings where the battery compartment is located above the seat unit in the space inside the vertical projection of the seat unit shall have the battery compartment that prevents water leakage when tested in accordance with 8.14.3.

### 8.14.3 Test methods

Remove the batteries from the battery compartment.

Fill the battery compartment with the quantity of water specified in Table 1, the water being at a temperature of (21 ± 1) °C.

After adding the water, close the battery compartment in accordance with the manufacturer’s instructions taking care to avoid losing any water from the battery compartment before the test is started.

Place the infant swing on a flat horizontal surface.

Leave the infant swing in position for a period of 5 min ± 10 s.

**Table 1 – Quantity of water per battery**

| Battery type | Quantity of water in ml |
|---|---|
| LR03/R03 (AAA) | 0,25 |
| LR6/R6 (AA) | 0,5 |
| LR14/R14 (C) | 1,0 |
| LR20/R20 (D) | 2,0 |
| 6LR61/6R61 (9V) | 0,75 |
| Button cells | 0,1 |

# 9 Product information

## 9.1 General

Product information shall be provided to reduce the possible consequences of foreseeable hazards connected with the use of the infant swing.

Product information shall be provided in the official language(s) of the country where the product is sold.

## 9.2 Marking of the product

### 9.2.1 General requirements

The infant swing shall be visibly and permanently marked with at least the following:

a) the name or trade mark of the manufacturer, importer or distributor;

b) the identification of the product (for example the model number, name or other means to identify it);

c) the warnings:

WARNING!

- Never leave the child unattended.

This warning may be accompanied by the graphical symbol of Figure 17.

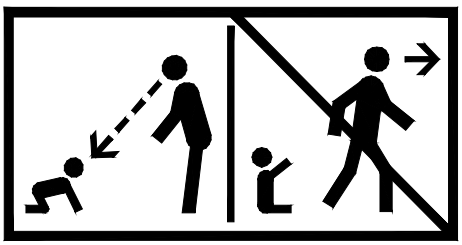


**Figure 17 — Graphical symbol**

- Never use this product on an elevated surface (e.g. a table).
- This product is not intended for prolonged periods of sleeping.
- Always use the restraint system.
- Do not move or lift this product with the baby inside it.

### 9.2.2 Requirements for infant swings with electrical components

Battery compartments of infant swings with replaceable batteries shall be marked with the nominal battery voltage, in or on the battery compartment.

If more than one battery is used, the battery compartment shall be marked with the shape of the batteries in proportional size, together with their nominal voltage and polarity (see examples in Figure 18).

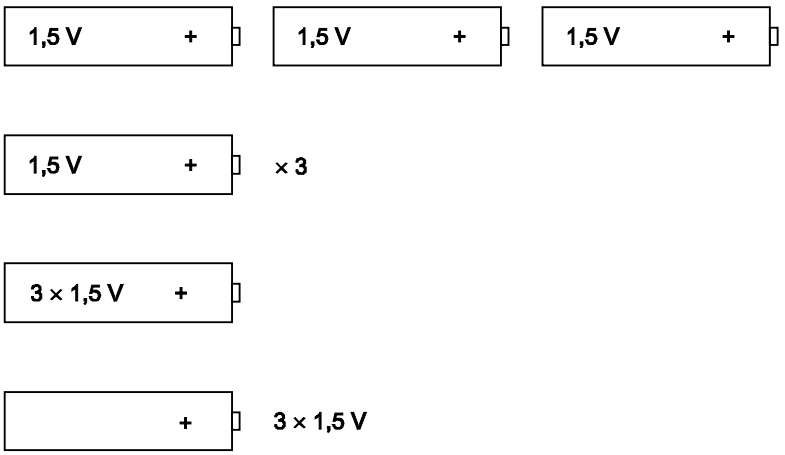



**Figure 18 — Examples of battery compartment marking for a 3 batteries product**

Infant swings that can be powered by an external AC/DC transformer shall be marked with:

— the rated voltage, in volts;

— the symbol for a.c. (⁓) or d.c. (⎓), as applicable;

— the rated power input, in watts or volt-amperes, if greater than 25 W or 25 VA;

— the symbol for transformers for toys (  ).

The marking of rated voltage and the symbol for a.c. or d.c. shall be placed adjacent to the terminals.

NOTE The symbols for a.c., d.c. and transformers for toys have been taken from IEC 60417-DB:2002 (symbols 5032, 5031 and 5219).

### 9.2.3 Durability of marking

When tested in accordance with 9.2.4, all markings shall remain legible and any label used for the marking shall not detach.

### 9.2.4 Test method for durability of marking

The markings shall be rubbed for 20 s with a cotton cloth moistened with water.

## 9.3 Purchase information

Purchase information shall be available at the point of sale and shall contain the following:

a) the name or trade mark of the manufacturer, importer or the organisation responsible for its sale and the respective address;

b) the warnings:

WARNING!

- Do not use this product once your child can sit up unaided or weighs more than 9 kg.
- This product is not intended for prolonged periods of sleeping.

c) the number and date of the standard.

## 9.4 Instructions for use

### 9.4.1 General

Instructions for use shall contain the name or trade mark of the manufacturer, importer or the organisation responsible for its sale and the respective address and the identification of the product (e.g. the model number, name).

Instructions concerning the correct and safe assembly and use of the infant swing shall be provided.

These instructions shall be headed: “IMPORTANT! KEEP FOR FUTURE REFERENCE”.

### 9.4.2 Warnings

Instructions shall include the following warnings:

WARNING!

- Never leave the child unattended.

This warning may be accompanied by the graphical symbol of Figure 17.

- Do not use this product once your child can sit up unaided or weighs more than 9 kg.
- This product is not intended for prolonged periods of sleeping.
- Never use this product on an elevated surface (e.g. a table).
- Always use the restraint system.
- To avoid injury ensure that children are kept away when unfolding and folding this product.
- Do not let children play with this product.
- Do not move or lift this product with the baby inside it.

If the infant swing has loudspeakers connected to external sound generating devices (e.g. personal music players ...) the following warning shall be included:

- When the product is connected to a music player, ensure that the volume of the music player is set to a low value.

### 9.4.3 Additional information

Following additional instructions shall be provided:

a) This product does not replace a cot or a bed. Should your child need to sleep, then it should be placed in a suitable cot or bed.

b) Do not use the product if any components are broken or missing.

c) Do not use accessories or replacement parts other than those approved by the manufacturer.

d) Instructions for the maintenance of the product and for cleaning or washing.

e) Instructions for storage (e.g. remove batteries, store away from children, ...).

### 9.4.4 Requirements for infant swings with electrical components

The instructions for infant swings with replaceable batteries shall contain the following information:

a) how to remove and insert the batteries;

b) non-rechargeable batteries are not to be recharged;

c) different types of batteries or new and used batteries are not to be mixed;

d) batteries are to be inserted with the correct polarity;

e) exhausted batteries are to be removed from the infant swing.

The instructions of infant swings that can be powered by an external AC/DC transformer shall contain the following instructions:

f) Transformers used with the infant swing are to be regularly examined for damage to the cord, plug, enclosure and other parts, and in the event of such damage, they shall not be used.

g) The infant swing shall only be used with the recommended transformer.

# Annex A
(informative)

# Rationales

## A.1 General (see Clause 1)

Infant swings covered by this standard should not be confused with swings classified as activity toys where the child can sit unaided.

Infant swings are used to allow a baby who cannot sit unaided to be swung as the baby is not positively acting to generate the swinging movement.

## A.2 Protective volume and protective barriers (see 8.1.2 and 8.1.2.2)

The protected volume is the volume which the child can reach with its arms, hands, legs, etc. when put in the product.

The presence of protective barriers of certain dimensions has been considered to be sufficient to limit the possibility for the child to reach parts of the product (theoretically inside the protected volume) that may create hazards.

The minimum dimensions of protective barriers have been defined in such a way to consider the ability of a child in the age range when the child is unable to sit up unaided; the minimum radius of the protective barrier has been defined greater than the radius of the protective volume so that the child cannot reach the top of the protective barrier and put its hands or arms over it or cannot lower the protective barrier.

Any barrier of smaller dimensions that may be present (e.g. for aesthetical or any other reason) are not considered as protective barriers and do not reduce the width of protective volume.

## A.3 Hazards due to sound level (see 8.2)

Specific requirements and test method for sound level have been defined to take into consideration the sound pressure in the area where the head of the child will be positioned.

This makes the measurement and the requirement more realistic compared to a measurement taken at a certain distance from the noise generating component.

## A.4 Hazards due to detachment of toy bars

The requirement for the detachment of toy bars covers the hazard that may be created if the parent or the carer tries to lift the infant swing by the toy bar which may suddenly detach during transportation causing the fall of the child.

This hazard is covered with a warning.

## A.5 Hazards from possible movement of the infant swing on the floor (see 8.13)

The requirements to cover the hazards from possible movement of the infant swing on the floor have been defined considering the possibility that the infant swing, if not placed on a perfectly horizontal surface or because of the swinging movement, may move creating hazardous conditions for the child.

# Annex B
(informative)

# A-deviation

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

This European Standard does not fall under any Directive of the EU.

In the relevant CEN/CENELEC countries these A-deviations are valid instead of the provisions of the European Standard until they have been removed.

**FRANCE:**

| Clause | Deviation |
|---|---|
| 7 | The French decree N° 91 1292 of December 20, 1991 relating to the prevention of hazards resulting from the use of child care articles, as published in the Official Journal of the French Republic of December 24, 1991, provides under article 2 of title II of its annex that: “child care articles must be made of materials which either do not burn under direct action of a flame, a spark or any other potential seat of fire, or are hardly flammable (the flame extinguishes as soon as the fire cause disappears), or, when flammable, burn slowly with a low flame propagation rate”.<br><br>Consequently, the requirements in Clause 7 of the standard will have to be supplemented, in France, by the following: “The flame propagation rate of textiles, coated textile supports and plastic coverings shall not exceed 30 mm/s when tested in accordance with 5.4 of EN 71-2:2011. |

# Bibliography

[1] EN 71-2:2011, *Safety of toys — Part 2: Flammability*

[2] EN 71-8, *Safety of toys — Part 8: Activity toys for domestic use*

[3] IEC 60417-DB:2002, *Graphical symbols for use on equipment — 12-month subscription to online database comprising all graphical symbols published in IEC 60417*

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