
Furniture — Children's high chairs —
Part 1:
Safety requirements

Ameublement — Chaises hautes pour enfants —
Partie 1: Prescriptions de sécurité

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Materials	2
4.1 Materials and surfaces.....	2
5 Construction	3
5.1 General.....	3
5.2 Holes, gaps and openings.....	3
5.3 Moving parts.....	3
5.3.1 Shear and squeeze points when setting up and folding away.....	3
5.3.2 Shear and squeeze points under the influence of powered mechanism.....	3
5.3.3 Shear and squeeze points under the influence of body weight or other external forces.....	3
5.4 Locking mechanisms for folding high chairs.....	4
5.4.1 General.....	4
5.4.2 Incomplete deployment.....	4
5.4.3 Unintentional folding of the high chair.....	4
5.4.4 Locking mechanism strength.....	4
5.5 Small parts.....	4
5.6 Restraint system.....	4
5.6.1 General.....	4
5.6.2 Requirements for high chairs with an active restraint system.....	5
5.6.3 Requirements for high chairs with a passive restraint system.....	5
5.7 Lateral protection.....	6
5.7.1 General.....	6
5.7.2 Lateral protection length and height for high chairs fitted with an active restraint system.....	6
5.7.3 Lateral protection length and height for high chairs with a passive restraint system.....	6
5.8 Back rest.....	6
5.9 Reclinable back rest.....	7
5.10 Seat front edge.....	7
5.11 Castors and wheels.....	7
5.12 Structural integrity.....	7
5.13 Durability of locking mechanism.....	7
6 Stability	7
6.1 General.....	7
6.2 Sideways.....	7
6.3 Rearwards.....	7
6.4 Forwards.....	7
6.5 Footrest.....	7
6.6 Tray.....	7
7 Packaging	8
8 Product information	8
8.1 General.....	8
8.2 Marking.....	8
8.3 Instructions for use.....	8
8.3.1 Warnings.....	8
8.3.2 Additional information.....	9

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 136, *Furniture*.

This second edition cancels and replaces the first edition (ISO 9221-1:1992), which has been technically revised.

ISO 9221 consists of the following parts, under the general title *Furniture — Children's high chairs*:

- *Part 1: Safety requirements*
- *Part 2: Test methods*

Introduction

This part of ISO 9221 is intended to minimize accidents to children resulting from normal use and reasonably foreseeable misuse of children's high chairs.

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Furniture — Children's high chairs —

Part 1: Safety requirements

1 Scope

This part of ISO 9221 specifies safety requirements for children's high chairs intended for children from 6 months to 36 months of age.

If the product can be converted into a product for which an ISO safety standard exists, it is intended that the product also fulfil the requirements of that International Standard.

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.

ISO 9221-2:—¹⁾, *Furniture — Children's high chairs — Part 2: Test methods*

EN 71-1, *Safety of toys — Part 1: Mechanical and physical properties*

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

children's high chair

free standing chair that elevates the child to approximately dining table height, intended for holding the child from 6 months to 36 months of age who is capable of remaining in a sitting position due to his or her own coordination

3.2

crotch restraint

strap or bar passing between the legs of the child which prevents the child from slipping forward out of the high chair

3.3

integral harness

assembly intended to retain the child in the high chair comprising either a crotch restraint, waist strap and shoulder straps or comprising straps that pass over the child's shoulders and between the child's legs

3.4

waist belt

strap, which when fastened, "fully" surrounds the child's waist

3.5

waist strap

strap, which when fastened, goes from one side of the child to the other passing in front of the child's waist

1) To be published. (Revision of ISO 9221-2:1992)

3.6

opening

space between structural members or components

3.7

shear and squeeze points

gaps which can cause harm to parts of the body and which occur when two parts close together or open during relative movements

3.8

locking device

device which is mounted on a frame and which will maintain parts of the frame in position of use

3.9

locking mechanism

mechanism composed by a locking device and one or more operating devices

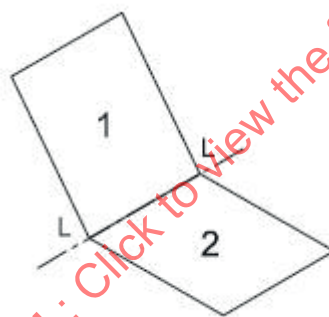
Note 1 to entry: An action deactivates the locking devices, e.g. pushing a button, pressing a lever or turning a knob.

3.10

junction line

intersection of the seat and the backrest

Note 1 to entry: See [Figure 1](#).



Key

LL junction line

1 backrest

2 seat

Figure 1 — Junction line

4 Materials

4.1 Materials and surfaces

Materials shall be visually clean and free of infestation.

The manufacturer/importer/retailer shall provide verification that accessible materials and surfaces meet the relevant requirements of EN 71-3.

5 Construction

5.1 General

The requirements apply to a high chair assembled and erected in accordance with the manufacturer's instructions. If parts of the high chair are designed to be removable (e.g. a tray or a footrest), the requirements apply to the high chair with and without this part(s).

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 high chair for the purpose of transportation or storage.

Exposed edges and protruding parts shall be rounded or chamfered and free from burrs and sharp edges.

5.2 Holes, gaps and openings

With the exception of all parts of the high chair below the under-surface of the seat, the integral harness and the waist belt, there shall be no holes, gaps or openings between 7 mm and 12 mm accessible when the child is seated, which are deeper than 10 mm, when tested in accordance with ISO 9221-2:—, 6.6.2.

With the exception of the entrance to the seat unit and the two openings for the child's legs to pass through, there shall be no holes, gaps or openings above the seat surface which allow the small torso probe to pass through when tested according to ISO 9221-2:— 6.6.2.

5.3 Moving parts

The requirements of this subclause do not apply to locking mechanisms.

To avoid the risk of shearing and crushing, shear and compression points shall be avoided. If shear and compression points cannot be eliminated for functional reasons, then the conditions for individual cases in 5.3.1, 5.3.2 and 5.3.3 shall be applied.

5.3.1 Shear and squeeze points when setting up and folding away

Shear and squeeze points that are accessible only when the product is being set up or folded away are permitted if they are not under the influence of a powered mechanism.

5.3.2 Shear and squeeze points under the influence of powered mechanism

If shear and squeeze points are created by parts operated by spring force or other sources of energy, the distance between moving parts shall not be less than 18 mm unless the distance is always less than 5 mm when tested according to ISO 9221-2:—, 6.6.1.

5.3.3 Shear and squeeze points under the influence of body weight or other external forces

When tested in accordance with ISO 9221-2:—, 6.6.1, any part of the product which can fold or be detached shall be locked to avoid release by the child using the product, by another child or by unintentional action by an adult.

Unintentional movement is ruled out in any of the following:

- a) locking mechanism is automatically engaged and the load has a closing effect on the locking mechanism;
- b) at least two independent locking mechanisms are provided for the movable part or system;
- c) locking mechanisms under load cannot be released unintentionally.

When the product has been deployed for use, there shall be no accessible squeeze points which can be closed to less than 12 mm when tested according to ISO 9221-2:—, 6.6.2.

5.4 Locking mechanisms for folding high chairs

5.4.1 General

Locking mechanisms are required to prevent a high chair from folding whilst a child is in the high chair and also when a child is being put in and taken out of the high chair.

5.4.2 Incomplete deployment

To avoid the hazard due to incomplete deployment, either

- a) weight of the child using the product shall act to prevent the folding, or
- b) at least one locking mechanism shall engage automatically when the product is deployed for use.

5.4.3 Unintentional folding of the high chair

Unintentional folding of the high chair shall be avoided.

This requirement is fulfilled if

- a) at least one locking mechanism requires a minimum force of 50 N before and after test in accordance with ISO 9221-2:—, 6.3,
- b) at least one locking mechanism requires the use of a tool to be released,
- c) folding is only possible when two independent locking mechanisms are operated simultaneously,
- d) there are two or more automatically engaging locking devices that cannot be released by one single action, or
- e) folding of the high chair requires two consecutive actions, the first of which shall be maintained while the second is carried out.

5.4.4 Locking mechanism strength

When tested in accordance with ISO 9221-2:—, 6.4, the high chair shall not collapse. The locking mechanism shall remain engaged.

5.5 Small parts

When tested in accordance with ISO 9221-2:—, 6.5, no part that can be detached shall fit wholly within the cylinder. Parts that clearly will not fit in this cylinder shall not be tested.

Any component intended to be removable without the use of a tool shall not fit wholly within the cylinder.

5.6 Restraint system

5.6.1 General

The high chair shall have an active restraint system complying with [5.6.2](#) or a passive restraint system complying with [5.6.3](#).

If the backrest can be reclined to less than 60° to the horizontal, measured in accordance with ISO 9221-2:—, 6.10.1, the product shall have an active restraint system complying with [5.6.2](#).

All straps of the restraint system shall have a minimum width of 19 mm.

When a high chair is fitted with attachment points for an additional harness as described in the instructions for use, these shall function as intended after testing in accordance with ISO 9221-2:—, 6.7. These attachment points shall be independently fixed and shall at all times remain within 50 mm in front of and not more than 75 mm above the junction line (see [Figure 2](#)).

All parts of the restraint system shall function as intended before and after testing in accordance with ISO 9221-2:—, 6.8.

The maximum slippage of the straps through any type of adjuster shall be 20 mm, when tested in accordance with ISO 9221-2:—, 6.9.

After testing in accordance with ISO 9221-2:—, 6.9, adjusters and buckles shall function as intended.

5.6.2 Requirements for high chairs with an active restraint system

The active restraint system shall be supplied with the high chair.

The high chair shall be fitted with lateral protection complying with [5.7.2](#) or [5.7.3](#).

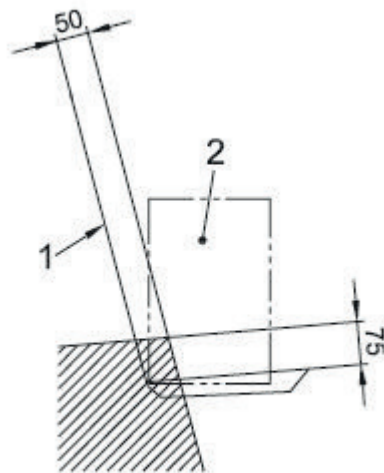
The restraint system shall comprise of at least one of the following:

- a) a waist belt adjustable to the size of the child and a crotch strap, where the crotch strap shall be such that the waist belt can be used only in conjunction with it;
- b) an integral harness adjustable to the size of the child and comprising of either
 - 1) a crotch restraint, a waist strap and shoulder straps, where the crotch restraint shall be such that the waist strap can be used only in conjunction with it, or
 - 2) straps that pass over the child's shoulders and between the child's legs.

5.6.3 Requirements for high chairs with a passive restraint system

When the high chair is not supplied with an active restraint system, a passive restraint system shall be provided complying with the following requirements:

- a) the high chair shall be fitted with lateral protection complying with [5.7.3](#);
- b) the high chair shall comprise a crotch restraint and a horizontal element which create two openings for the child's legs;
- c) the leg openings shall not allow passage of the wedge block when tested in accordance with ISO 9221-2:—, 6.14.1;
- d) when tested in accordance with ISO 9221-2:—, 6.14.2, there shall be no vertical gap between the passive crotch restraint and either the horizontal element or the seating surface that allows free passage of the leg probe from one leg opening to the other;
- e) the horizontal distance between the front surface of the backrest and the crotch restraint shall be less than 216 mm when measured in accordance with ISO 9221-2:—, 6.15;
- f) the horizontal distance between the front surface of the backrest and the horizontal member shall be less than 250 mm when measured in accordance with ISO 9221-2:—, 6.16.

**Key**

- 1 high chair
- 2 test dummy

Figure 2 — Location of harness or belt attachment points

Harness or belt attachment points shall be located in the shaded area.

5.7 Lateral protection

5.7.1 General

The high chair shall be fitted with lateral protections.

5.7.2 Lateral protection length and height for high chairs fitted with an active restraint system

The lateral protection shall have a height of at least 140 mm, when measured in accordance with ISO 9221-2:—, 6.13.1 for at least the length specified below. Openings in the lateral protections are allowed, provided that they comply with all the relevant requirements of this part of ISO 9221.

The lateral protection shall extend from the backrest to the position at which the crotch restraint is fixed to the seat, but shall never be shorter than 150 mm, when measured in accordance with ISO 9221-2:—, 6.13.2.

5.7.3 Lateral protection length and height for high chairs with a passive restraint system

The lateral protections shall extend from the backrest to the horizontal component in front of the torso of the child. Openings in the lateral protections are allowed, provided that they comply with all the relevant requirements of this part of ISO 9221.

The lateral protection shall have a height of at least 140 mm on the whole length of the lateral protection when measured in accordance with ISO 9221-2:—, 6.13.1.

5.8 Back rest

The high chair shall be fitted with a back rest with a minimum height of 250 mm, measured in the upright position, in accordance with ISO 9221-2:—, 6.10.2.