BRITISH STANDARD

BS EN
1130-2 : 1996

Furniture — Cribs and cradles for domestic use

Part 2. Test methods

The European Standard EN 1130-2 : 1996 has the status of a British Standard

ICS 97.140; 97.190

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee CW/52, Children's cots, bunk beds and mattresses, upon which the following bodies were represented:

Association of Consulting Scientists
Baby Equipment Hirers' Association
Baby Products Association
British Association of Nursery and Pram Retailers
British Furniture Manufacturers' Federation
British Retail Consortium
British Toy and Hobby Association
BSI Testing Services
Chemical Industries Association
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Furniture Industry Research Association
Institute of Trading Standards Administration
National Bed Federation Limited
Royal Society for the Prevention of Accidents
Youth Hostels Association (England and Wales)

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National foreword

This Part of BS EN 1130 has been prepared by Technical Committee CW/52, and is the English language version of EN 1130-2 : 1996 *Furniture — Cribs and cradles for domestic use — Part 2: Test methods* published by the European Committee for Standardization (CEN).

BS EN 1130 consists of two Parts:

BS EN 1130-1 *Cribs and cradles for domestic use — Part 1: Safety requirements*

BS EN 1130-2 *Cribs and cradles for domestic use — Part 2: Test methods*

Cross-references

Publication referred to	Corresponding British Standard
EN 1130-1 : 1996	BS EN 1130 *Furniture — Cribs and cradles for domestic use* Part 1 : 1996 *Safety requirements*

The Technical Committee has reviewed the provisions of ISO 48 : 1979, to which normative reference is made in the text, and has decided that it is acceptable for use in conjunction with this standard. Note that the latest edition of ISO 48 is ISO 48 : 1994, which is identical with BS 903 : Part A26 : 1995 *Physical testing of rubber Part A26. Method for determination of hardness (hardness between 10 IRHD and 100 IRHD)*.

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 1130-2

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ICS 97.140; 97.190

Descriptors: Child care articles, household appliances, cots, safety, tests, mechanical tests, stability tests, impact tests, inspection

English version

Furniture — Cribs and cradles for domestic use — Part 2: Test methods

Meubles — Berceaux à usage domestique — Partie 2: Méthodes d'essai

Möbel — Krippen und Wiegen für den Wohnbereich — Teil 2: Prüfverfahren

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Ref. No. EN 1130-2 : 1996 E

Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 207, Furniture, of which the secretariat is held by IBN.

The text was prepared by CEN/TC 207/WG1, Domestic furniture, the secretariat of which is held by UNI, and in particular by its TG3, Children's and nursery furniture, the secretariat of which is held by Belgium. This European Standard is part of a series of standards on requirements and test methods for children's and nursery furniture.

This European Standard contains two Parts:

EN 1130-1 *Cribs/cradles for domestic use — Part 1: Safety requirements*

EN 1130-2 *Cribs/cradles for domestic use — Part 2: Test methods*

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 September 1996, and conflicting national standards shall be withdrawn at the latest by September 1996.

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

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0 Introduction

This Part of European Standard EN 1130 has been prepared in order to provide assurance that cribs/cradles for domestic use, complying with the requirements of EN 1130-1 : 1996, are reasonably safe.

It describes a number of tests, consisting of the application, to various parts of the item, of loads or forces simulating normal functional use, as well as misuse that can reasonably be expected to occur.

The tests are designed to evaluate properties without regard to materials, design/construction or manufacturing processes.

1 Scope

This Part of EN 1130 describes test methods that assess the safety of cribs and cradles for domestic use.

The tests are designed to be applied to cribs/cradles that are fully assembled and ready for use.

NOTE. The test results are only valid for the article tested. When the test results are intended to be applied to other similar articles, the test specimen should be representative of the production model.

2 Normative references

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

EN 1130-1 : 1996	*Furniture — Cribs and cradles for domestic use — Part 1: Safety requirements*
ISO 48 : 1979	*Vulcanized rubbers — Determination of hardness (Hardness between 30 and 85 IRHD)*

3 General

Unless otherwise specified, the locking mechanism of swinging cribs/cradles shall be locked.

For tolerances, all forces shall have an accuracy of ± 5 %, all masses an accuracy of $\pm 0{,}5$ % and all dimensions an accuracy of $\pm 0{,}5$ mm.

Before any of the tests described in this Part of EN 1130 are commenced, the item shall be old enough to ensure that it has developed its full strength. At least 4 weeks in normal indoor conditions shall have elapsed between manufacture and testing in the case of glued joints.

Before testing, any fabrics used for cribs/cradles shall be cleaned or washed twice according the manufacturer's instructions.

Immediately before testing, the cribs/cradles shall be stored for at least 1 week in a standardized atmosphere at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 5) %.

The furniture shall be tested as delivered. If of knock-down type, it shall be assembled according to the instructions supplied with it. If the furniture can be assembled or combined in different ways, the most adverse combinations shall be used for each test. The tests shall be carried out as listed and on the same test specimen.

Knock-down fittings shall be tightened before testing and shall not be retightened throughout the testing procedure.

In the case of designs not catered for in the test procedures, the tests should be carried out as far as possible as described, and a list made of the deviations from the test procedure.

4 Test equipment

NOTE. Unless specified otherwise, test forces may be applied by any suitable device, because results are dependent only upon correctly applied forces and loads, and not upon the apparatus.

4.1 *Test dummy.* A cylinder with a diameter of (120 ± 5) mm, a height of (180 ± 5) mm and a mass of 9 kg with the centre of gravity at the centre of the cylinder. The edges shall have a radius of (5 ± 1) mm.

4.2 *Test load.* A mass of 20 kg distributed over an area of approximately 150 mm $\times$ 300 mm.

4.3 *Slide gauge.* A cone made of plastics or other hard, smooth material mounted on a force-measuring device (see figure 1). There shall be five cones, having a diameter of 5 mm, 7 mm, 25 mm, 45 mm and 65 mm.

4.4 *Stops*, to prevent the article from sliding but not tilting, not higher than 12 mm, except in cases where the design of the item necessitates the use of higher stops, in which case the lowest possible shall be used.

4.5 *Floor surface*, horizontal, rigid and flat.

4.6 *Cylinder*, with main dimensions as shown in figure 2, for assessment of small components.

4.7 *Side impacter.* Pendulum (see figure 3) made of steel, and with a cylindrical head surrounded by a 10 mm thick layer of rubber of hardness 76 to 78 IRHD in accordance with ISO 48 : 1979. The centre of gravity shall be 250 mm from the centre of the pivoting point A. The point of impact shall be 300 mm from the pivoting point. The total mass shall be 2 kg.

4.8 *Force-measuring device*, e.g. a spring balance.

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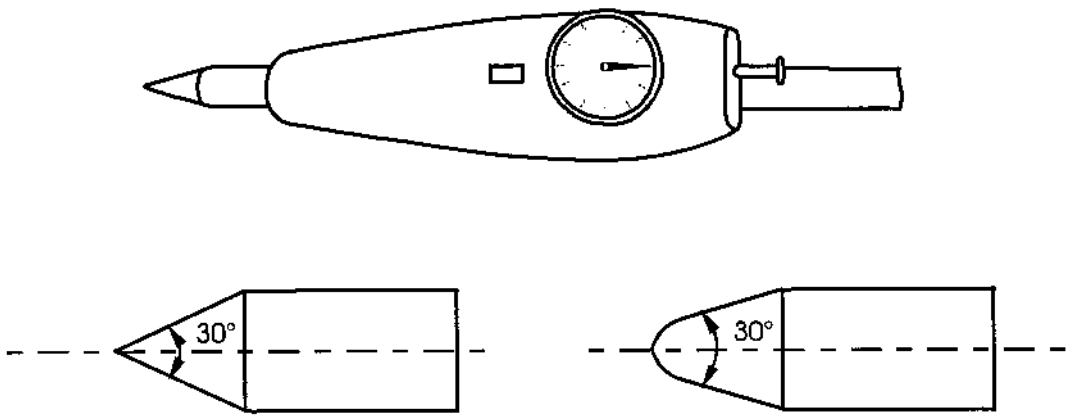
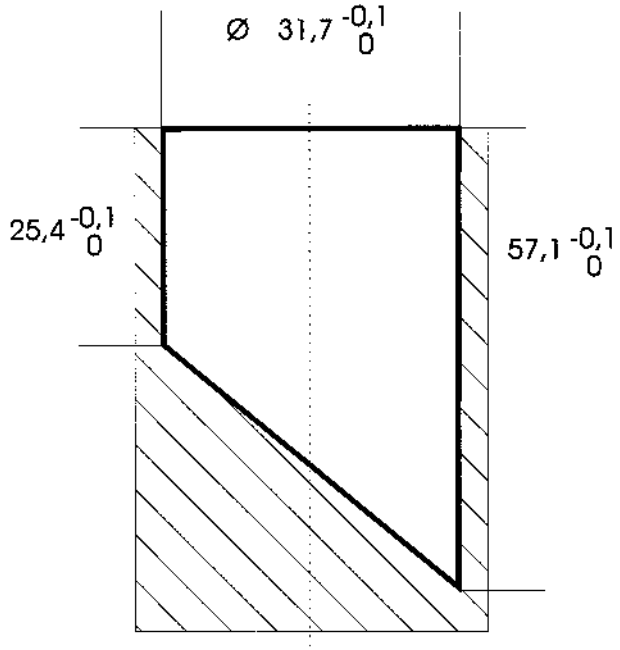


Figure 1. Examples of measuring cones



Dimensions in millimetres

Figure 2. Cylinder

5 Procedures

5.1 Assembly and inspection before test

Assemble the crib/cradle in accordance with the manufacturer's instructions. Prior to the test, inspect the crib/cradle visually for defects.

5.2 Inspection of workmanship

Inspect the test specimen to determine whether exposed edges, screws, bolts, zips and other fittings are rounded or chamfered and free of burrs and sharp edges.

5.3 Measurement

5.3.1 *Measurement of height of sides*

Measure the internal height of the sides from the top of the crib/cradle base in its highest position vertically to the top of the handrails in its lowest position, without the mattress and with the mattress, if any.

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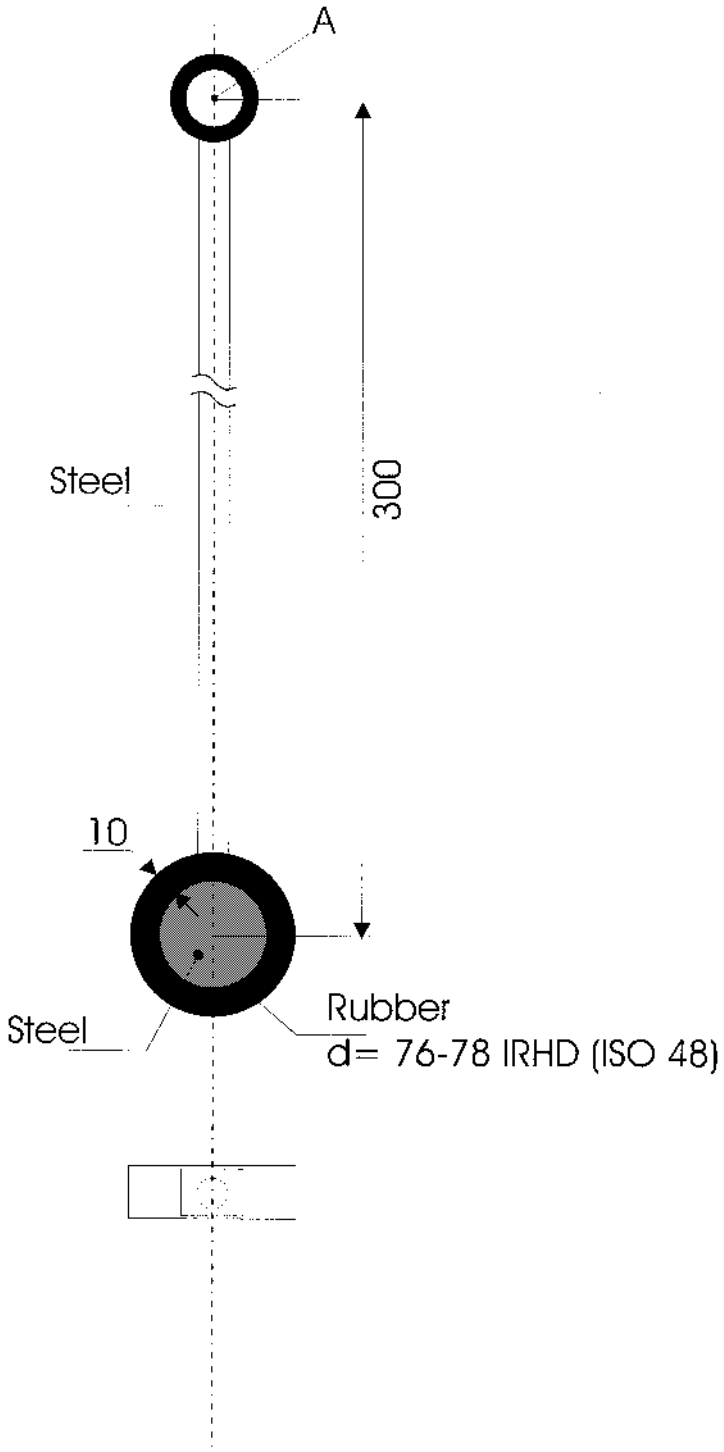

Dimensions in millimetres

Figure 3. Side impacter

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5.3.2 *Measurement of holes and the distance between structural members, mesh width, clearance between the bed base and ends and sides and openings in the bed base*

Press the slide gauge (see **4.3**), with a force as specified in table 1, into the holes, between the structural members, into the mesh openings, between the bed base and sides and ends, and into the openings in the bed base.

Repeat the test with the test dummy (see **4.1**) placed horizontally in the most onerous position on the base of the crib/cradle.

Table 1. Cone diameters and applied forces

Gaps	**Cone diameter** mm	**Force** N
Holes Mesh of sides and ends	5	30
Assembly holes	7	30
Distance between frame and body of swinging cots	25	0
Bed base/sides, ends Openings in bed base	25	30
Distance between structural members	45	0
Distance between structural members	65	30

5.4 Detachable parts

NOTE. Components are considered detachable if children can grip them with their teeth or fingers.

Apply a tensile force to the components to be tested, using a clamp or other suitable means.

Apply a force of:

– 50 N when the largest accessible dimension is less than or equal to 6 mm;

– 90 N when the largest accessible dimension is greater than 6 mm.

Apply the force gradually over 5 s and maintain for 10 s.

If the component has become detached, examine whether the component fits wholly within the cylinder (see **4.6**).

5.5 Sustained load test to base

Place the test load (see **4.2**) over the centre of the base and maintain for one week. The major axis of the load shall be parallel to the major axis of the crib/cradle.

Record any break, deformation or any other damage.

5.6 Strength of the structural members of the sides (bending test)

Position the crib/cradle on the floor with all the legs secured against stops (see **4.4**).

Use an appropriate force-measuring device (see **4.8**).

Apply a force of 150 N in turn to one structural member positioned in the middle and one at the end of each side. The force shall act horizontally in the direction of the longitudinal and transverse axis of the crib/cradle. It shall be applied midway between the top and the bottom of the structural member. The load duration shall be at least 30 s.

Record any break or deformation of structural members, or any other damage.

5.7 Strength of sides, structural members of the sides and corners (impact test)

NOTE. This test only applies to cribs/cradles whose sides have an internal height greater than 400 mm.

Position the crib/cradle on the floor with all the legs secured against stops (see **4.4**).

Place the side impacter (see **4.7**) so that the impact acts on the structural member of side, from both the outside and inside directions, at a height of 200 mm below the top edge of the side (see figure 4). One structural member shall be hit from the outside, the next from the inside, and so forth.

Carry out the test first from the outside and subsequently from the inside.

When testing cribs/cradles with solid sides, the impacts shall act on 10 evenly distributed points on the long sides and four evenly distributed points on the end sides, with the direction of impact alternating from inside to outside of the crib/cradle.

Allow the impacter to swing from a horizontal position onto the structural member or side. Repeat 10 times. Then place the impacter at the next member or next point of impact. Continue the test until all members or all previously determined impact points have been tested.

Place the impacter to hit side frames as high and as close to the corner post as possible (see figure 5). Allow the impacter to swing freely from an angle of 60° from the vertical. Carry out this procedure at each side member of each corner of the crib/cradle, making five impacts from inside the crib/cradle and five impacts from outside the crib/cradle, at each position.

Record any break or deformation of structural members, or any other damage.

5.8 Vertical static load test

Apply a vertically downward force $F_s v$ of 200 N, as shown in figure 6, to the top of the crib/cradle side 10 times. During each application, maintain the force for at least 10 s.

All sides and ends with different construction shall be tested.

Record any fracture, deformation or other damage.

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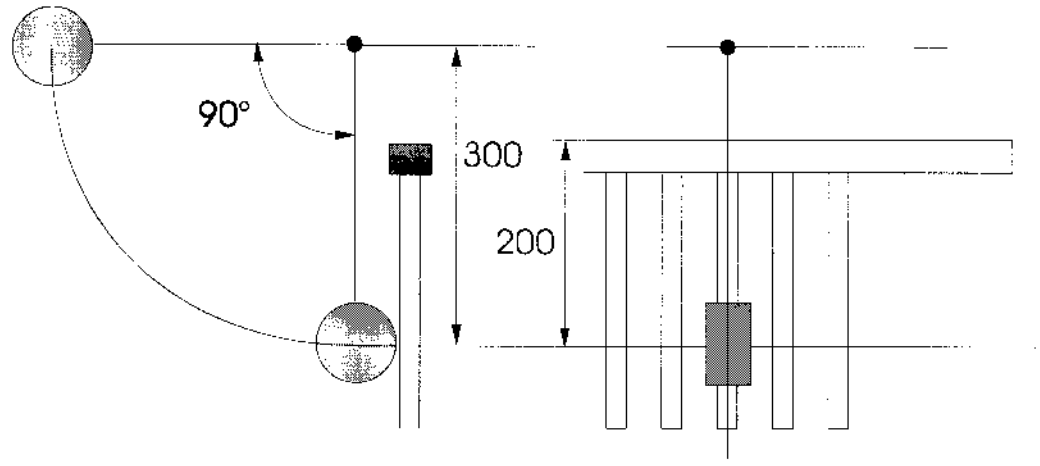

Dimensions in millimetres

Figure 4. Side impact test

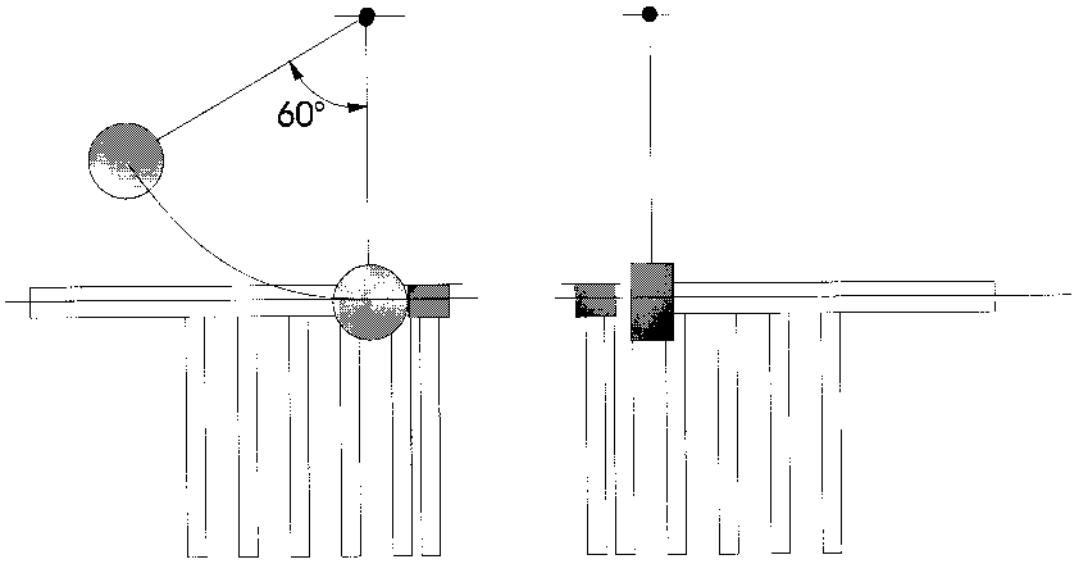

Figure 5. Corner impact test

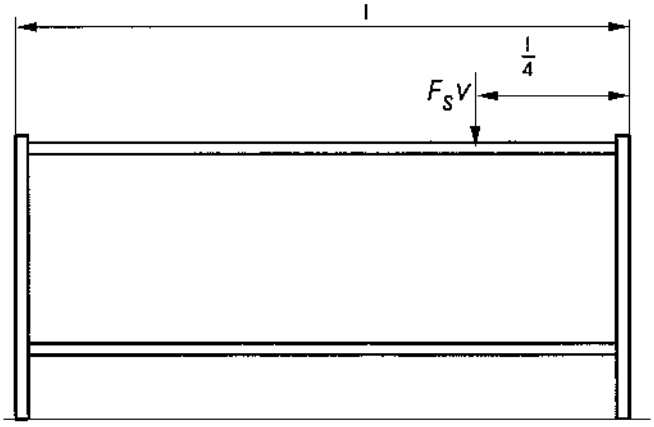

Figure 6. Vertical static load test

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5.9 Stability test

Place the crib/cradle on the floor with the legs secured against stops (see **4.4**). If this is not applicable, use any other suitable means to prevent the crib/cradle from sliding, but not from tilting.

In the case of cribs/cradles with wheels or castors, place the wheels/castors in the most onerous position.

Fix the base at its highest position.

Load the crib/cradle with the test dummy (see **4.1**) fixed on the base of the crib/cradle in the most onerous position against one long side.

Apply a horizontal force of 30 N perpendicular to the centre line of the top edge of one side of the crib/cradle in a direction which tends to overturn the crib/cradle towards the weighted side. The horizontal force shall be applied to the side which tends to rise when the load is applied (see figure 7a).

Record whether more than one leg, wheel/castor or corner of the crib/cradle lifts from the floor.

For swinging cribs/cradles, repeat the test with the locking mechanism unlocked (see figures 7b and 7c).

Record whether the crib/cradle overturns.

5.10 Test of locking mechanism

Operate (open and close) the locking mechanism 300 times. After this test, measure the force needed to operate the locking mechanism.

In the case of revolving elements, measure the tangential force.

5.11 Castors/wheels

Place the castors/wheels in the locked position.

Check by inspection and by moving the crib/cradle around whether the locks prevent the castors or wheels from rolling, or whether they become unlocked.

6 Test report

The test report shall include at least the following information:

a) a reference to this Part of EN 1130;

b) a description of the unit tested (relevant data);

c) a description of the delivery condition of the unit;

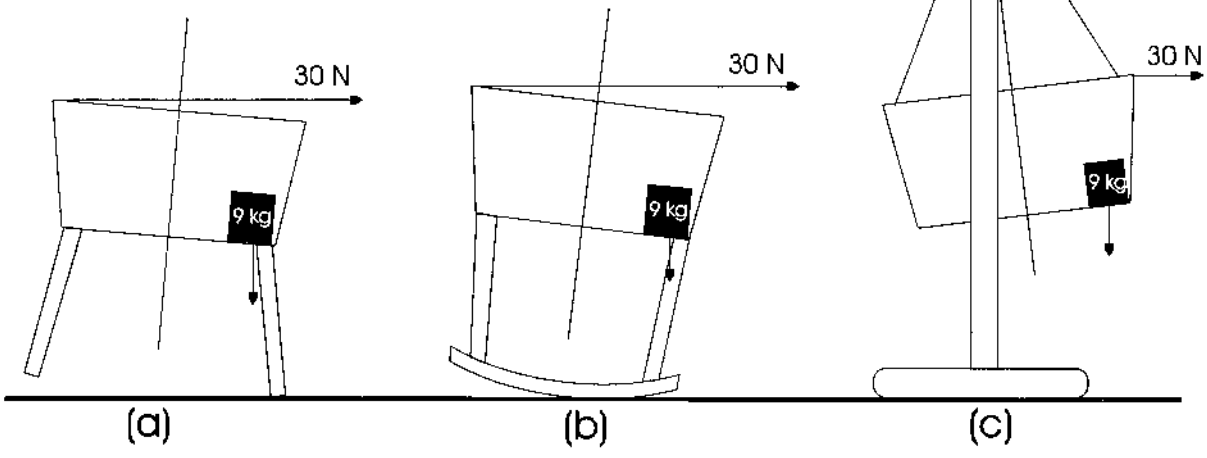
d) test results according to **5.1** to **5.11**;

e) conformance to requirements of EN 1130-1 : 1996;

f) details of any deviations from this Part of EN 1130;

g) the name and address of the test facility;

h) the date of the test.



Figures 7a, 7b and 7c. Crib/cradle stability test

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List of references

See national foreword.

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