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Child use and care articles — Guidelines for the safety of children's slings

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National foreword

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

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Articles de puériculture - Lignes directrices pour la sécurité des écharpes porte-enfants

Artikel für Säuglinge und Kleinkinder - Leitfaden zur Sicherheit von Babytragetüchern

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Foreword

This document (CEN/TR 16512:2015) has been prepared by Technical Committee CEN/TC 252 "Child use and care articles", the secretariat of which is held by AFNOR.

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Introduction

This Technical Report has been produced to provide safety guidance for designers, manufacturers, suppliers and users of slings which are products designed to carry a child solely on the carer's torso.

Slings are similar to soft carriers which are also designed to carry a child on the carer's torso, the main differences are that slings do not have integral openings for the child's limbs and form their structure only when attached to the carer's torso. Slings consist of a variety of designs ranging from a hammock shaped product suspended on the carer's torso to a length of material wrapped around the carer's body. Because of this wide variety of designs, which in many cases can result in an unstructured product, it has proven very difficult to draft a safety standard similar to that for EN 13209-2, *Child use and care articles — Baby carriers — Safety requirements and test methods — Part 2: Soft carrier*.

These guidelines have been drafted to address potential hazards associated with slings. Where there are similar hazards to those associated with soft carriers, these have been identified. Any requirements and test methods which are given in EN 13209-2 and are appropriate to slings are detailed in Annex A. Any other requirements and test methods from other standards which are also appropriate to slings have also been included in Annex A.

The bibliography contains a list of standards that have been considered when drafting this Technical Report.

1 Scope

This Technical Report covers a product which is designed to carry a child solely on the carer's torso, which does not have integrated openings for the child's limbs and is designed to allow the carer a hands-free operation when standing and/or walking.

An integrated leg opening is an opening for the child's legs which exists in the product prior to installation on the carer's torso. A leg opening which is formed when the carer wears the product is not an integrated opening.

Children's slings are not covered by EN 13209-1 and EN 13209-2.

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

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

EN 13209-2, *Child use and care articles — Baby carriers — Safety requirements and test methods — Part 2: Soft carrier*

EN ISO 14184-1, *Textiles — Determination of formaldehyde — Part 1: Free and hydrolysed formaldehyde (water extraction method) (ISO 14184-1)*

3 Chemical hazards

Harmful toxic chemicals can enter a child's body by ingestion and inhalation. Information detailing chemical hazards and their risk to young children can be found in CEN/TR 13387:2004, Clause 2.

The chemical hazards and risks for a sling are very similar to those of a soft carrier. Subclause A.1.1 states the requirements given in EN 13209–2, which are used to address the hazards related to the ingestion of harmful chemicals by a child. Subclause A.1.2 references the test method which is used to determine the toxic content of these chemicals.

EN 13209-2 does not address the hazard of inhalation of formaldehyde. As slings may envelop the child, the level of formaldehyde in the materials used should be controlled. Subclause A.1.3 references the standard which details the requirements and test methods for the assessment of the level of formaldehyde.

4 Thermal hazards

Thermal hazards include hazards associated with flammability, the burning characteristics of materials and overheating (hyperthermia) or exposure of a child to very low temperatures (hypothermia).

As slings may be used by the carer in and around the home, possibly near a naked flame, the flammability of the materials used in slings and their burning characteristics should be controlled. Subclause A.2.1 gives the requirements for the rate of spread of the flame and references the standard which details the test method.

Materials with a surface pile may be subject to surface flash which could occur if cigarette ash or a spark lands on the sling. Subclause A.2.2 references the standard which details the requirements and test methods to assess surface flash.

Overheating or hyperthermia, is a rise in the child's core temperature. This could occur if the child becomes too hot particularly in a sling which encompasses the child's body. Consideration should be given to the type of

material used for the sling and to the product information which should alert the carer to the potential hazard of the child becoming too hot.

The lowering of the child's body temperature, hypothermia, is less likely to be a hazard.

5 Choking and ingestion hazards

Both choking and ingestion hazards can occur if a child puts small objects into their mouth and either attempts to swallow them or actually swallows them.

Choking occurs when a child's internal airways become blocked and their breathing is impeded. This is a serious hazard as air cannot pass into a child's lungs and irreversible brain damage can occur.

Ingestion of small objects which pass into the child's stomach can cause internal blockages.

Where possible it is preferable to avoid the use of small objects attached to the sling. If however small objects are used, they should be firmly attached to the product and there should be no possibility of them detaching and/or breaking into small pieces.

Choking and ingestion hazards have been addressed for soft carriers. Clause A.3 gives the requirements and test methods detailed in EN 13209–2 which are used to address these hazards.

6 Entrapment hazards for fingers in mesh

If a child's finger becomes stuck in an opening, the flow of blood to the finger may be reduced. Slings should be designed to eliminate openings in mesh where fingers could be trapped.

Clause A.4 gives the requirements and test method to address the hazards associated with the entrapment of a child's finger in mesh.

7 Entanglement hazards

If a child becomes entangled in a product, strangulation can occur.

Any cords, ribbons or similar parts should have their length limited so that they cannot encircle a child's neck. Clause A.5 gives the requirements and test method for the determination of the safety of the length of cords

Any loops should be sufficiently small so that they cannot pass over the child's head. Clause A.5 gives the requirements and a test method to determine the maximum size of a loop.

Monofilament threads made of a single thread of man-made fibre are so strong that they cannot be broken in use. If this type of thread becomes wound round a child's finger the blood supply could be cut off. Monofilament threads should therefore not be used in the manufacture of a sling.

Slings should not be fitted with any form of harnessing to restrain the child.

8 Suffocation hazards

If air cannot pass into a child's lungs, irreversible brain damage can occur. Suffocation can occur if a child's external airways, i.e. the nose and mouth, are blocked simultaneously. This can occur if a child's face is in contact with a material through which air cannot permeate.

The airways can also become obstructed as a result of the position of the baby in the sling or if the child's chin drops down onto their chest.

For a hammock-shaped sling, there could be the potential for the child's face to be in contact with the material of the sling, which if made of a material through which air cannot permeate could lead to a hazardous situation. It is

important therefore that the material used for a hammock-shaped sling will allow air to circulate or the sling should be designed in such a way that the airways of the child can never be obstructed.

Consideration should also be given to the permeability of the material after washing, as some materials and some detergents could block the small air spaces; it is important therefore that adequate instructions are provided to the user for any washing and cleaning so that this does not occur.

Any carrying/storage bag supplied with the product with an opening greater than 360 mm should not have a drawstring.

As for all child use and care articles, care should be taken in the use of plastic packaging. Clause A.6 gives the requirements for plastic packaging which are common to child use and care articles.

9 Structural integrity

It is important that no part of the sling should be weakened in use and always maintains the child securely. Clause A.7 gives the requirements and test methods for the testing of the structural integrity of slings.

10 Product information

10.1 General

All product information should be given in the language(s) of the country in which the sling is sold.

10.2 Marking

The sling should be marked with the following:

- the name, trademark or other means of identification of either the manufacturer, distributor, importer or retailer;
- a means of identifying the product e.g. model number or batch number;
- the minimum and maximum weight and/or the minimum and the maximum age of the child for which the sling is intended.

WARNING When using this sling, constantly monitor your child.

These markings should be permanently attached to the sling and still be legible after washing/cleaning.

10.3 Purchase information

The following information should be provided at the point of sale:

- information which gives the maximum weight of the child for which the sling is suitable should be provided at the point of sale;
- a means of identifying the product, e.g. model number or batch number.

10.4 Instructions for use

10.4.1 General

Instructions for the safe use of the sling should be provided and be headed - **'IMPORTANT! KEEP FOR FUTURE REFERENCE'** in letters not less than 5 mm high. A statement should be included that the carer should read all the instructions before using the sling.

10.4.2 Instructions for use

The instructions for use should contain the following warnings:

WARNING Constantly monitor your child and ensure the mouth and nose are unobstructed.

WARNING For pre-term, low birthweight babies and children with medical conditions, seek advice from a health professional before using this product.

WARNING Ensure your child's chin is not resting on its chest as its breathing may be restricted which could lead to suffocation.

WARNING To prevent hazards from falling ensure that your child is securely positioned in the sling.

The warnings should be clearly indicated either grouped together in a list under the heading WARNINGS or as separate warnings where each warning is prefixed by the word WARNING.

10.4.3 Additional information

The instructions for use should contain at least the following statements:

- The name, trademark or other means of identification of either the manufacturer, distributor, importer or retailer.
- The maximum weight of the child for which the product is intended.
- Give instructions for any support required until the child can support its own head.
- Where a knot is used, clear instructions should be given on the formation of the knot.
- Awareness of hazards in the domestic environment e.g. heat sources, spilling of hot drinks. Only use the product for the number of children for which the product is intended.
- Your movement and the child's movement may affect your balance.
- Take care when bending and leaning forwards or sideways.
- The sling is not suitable for use during sporting activities e.g. running, cycling, swimming and skiing.
- The carer should be aware of the increased risk of your child falling out of the sling as it becomes more active.
- Washing/cleaning/drying instructions.
- Where applicable the fitting of the sling to the carer and instructions for the adjustment of the sling to the child.
- Regular inspection of the sling for any signs of wear and damage.
- Keep this sling away from children when it is not in use.

Annex A
(normative)

Requirements and test methods which can be used to assess the safety of children's slings

A.1 Chemical hazards

A.1.1 General

The migration of elements from materials shall not exceed the limits listed below when tested in accordance with EN 71-3.

Element	mg/kg
Aluminium	70 000
Antimony	560
Arsenic	47
Barium	18 750
Boron	15 000
Cadmium	17
Chromium (III)	460
Chromium (VI)	0,2
Cobalt	130
Copper	7 700
Lead	160
Manganese	15 000
Mercury	94
Nickel	930
Selenium	460
Strontium	56 000
Tin	180 000
Organic Tin	12
Zinc	46 000

A.1.2 Test methods for determining levels of chemicals in coatings and finishes

The above limits should be checked according to the test method described in EN 71-3.

A.1.3 Requirements and test methods for formaldehyde

When tested in accordance with EN ISO 14184-1, textile components of the product shall not contain free or hydrolysed formaldehyde in excess of 30 mg/kg.

A.2 Thermal hazards

A.2.1 Requirements and test method for flammability

When tested in accordance with EN 71-2:2011+A1:2014, 5.4, the maximum rate of the spread of flame should not exceed 50 mm/s.

A.2.2 Requirements and test method for surface flash

When tested in accordance with EN 1103, there should be no surface flash.

A.3 Choking and ingestion hazards

A.3.1 Requirements for small components

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

Any components not intended to be detachable but which become detached when tested in accordance with A.3.2 should not fit wholly within the small parts cylinder (Figure A.1).

A.3.2 Test methods and equipment

A.3.2.1 General

The cylinder should have the main dimensions given in Figure A.1.

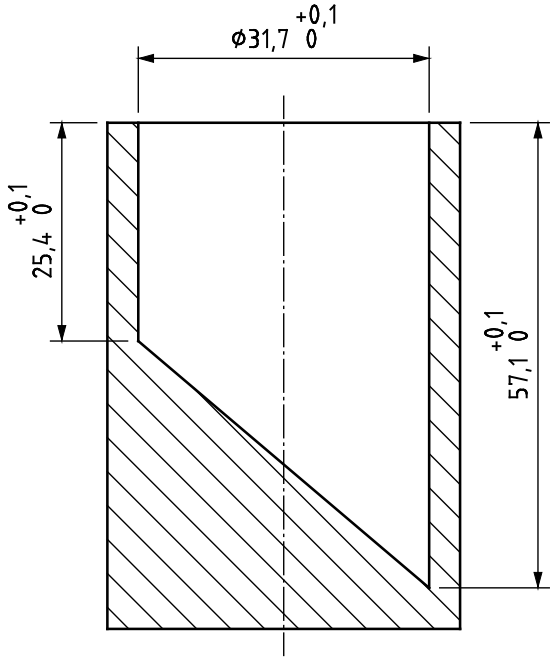

Figure A.1 — Small parts cylinder

A.3.2.2 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, it should be possible to insert the feeler gauge (see Figure A.2) for at least 2 mm using a force of (10 ± 1) N between the component and the underlying layer of the component.

Dimensions in millimetres

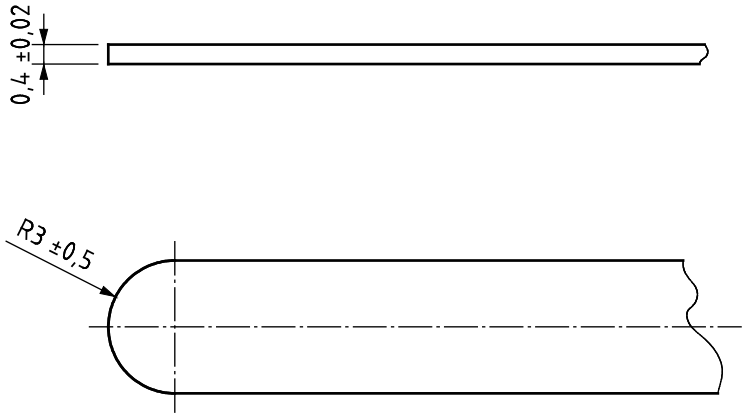

Figure A.2 — Feeler gauge

A.3.2.3 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

b) 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.

Projections, parts or assemblies that are rigidly mounted on an accessible rod or shaft designed to rotate together with the projections, parts or assemblies shall be tested with the rod or shaft clamped to prevent rotation.

If a component, which is attached by a screw thread, becomes loosened during the application of the required torque, continue to apply the torque 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.

Place the component without compressing it an in any orientation in the small parts cylinder.

A.3.2.4 Tensile test

Attach a suitable clamp to the component assessed as being grippable in accordance with A.3.2.2 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 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 Figure A.1.

A.4 Entrapment hazards for fingers in mesh

A.4.1 General

There should be no openings in mesh that allow the finger probe in Figure A.3 to penetrate to the 7 mm diameter section.

A.4.2 Test method

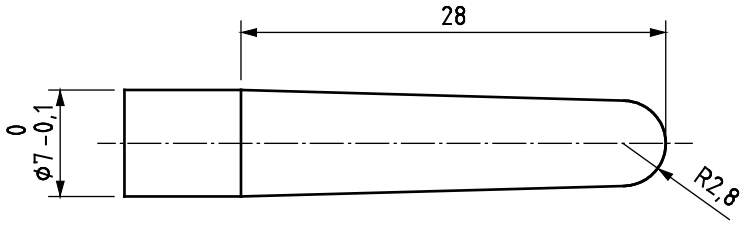

Figure A.3 — Test probe for mesh

Check whether the finger probe for mesh (Figure A.3), with an applied force of up to 30 N, penetrates openings in the mesh to the 7 mm diameter section.

A.5 Entanglement hazards

A.5.1 Requirements for entanglement hazards

Cords, ribbons and similar parts should have a maximum free length of 220 mm when tested in accordance with A.5.2. Where cords, ribbons and similar parts are attached to the sling either together or within 80 mm of each other any single cord should have a maximum free length of 220 mm and the combined length from one loose end to the end of another should be a maximum of 360 mm.

Loops should have a maximum peripheral dimension of 360 mm when tested in accordance with A.5.2.

Cords, ribbons and similar parts that are used to secure the sling on to the carer’s torso are excluded from these requirements.

A.5.2 Test methods for entanglement hazards

The length of the cord, ribbon or similar part should be measured from the fixing point on the sling to the free end of the cord, ribbon or similar part when stretched by a force of 25 N.

The peripheral dimension should be measured while a tensile force of 25 N is applied.

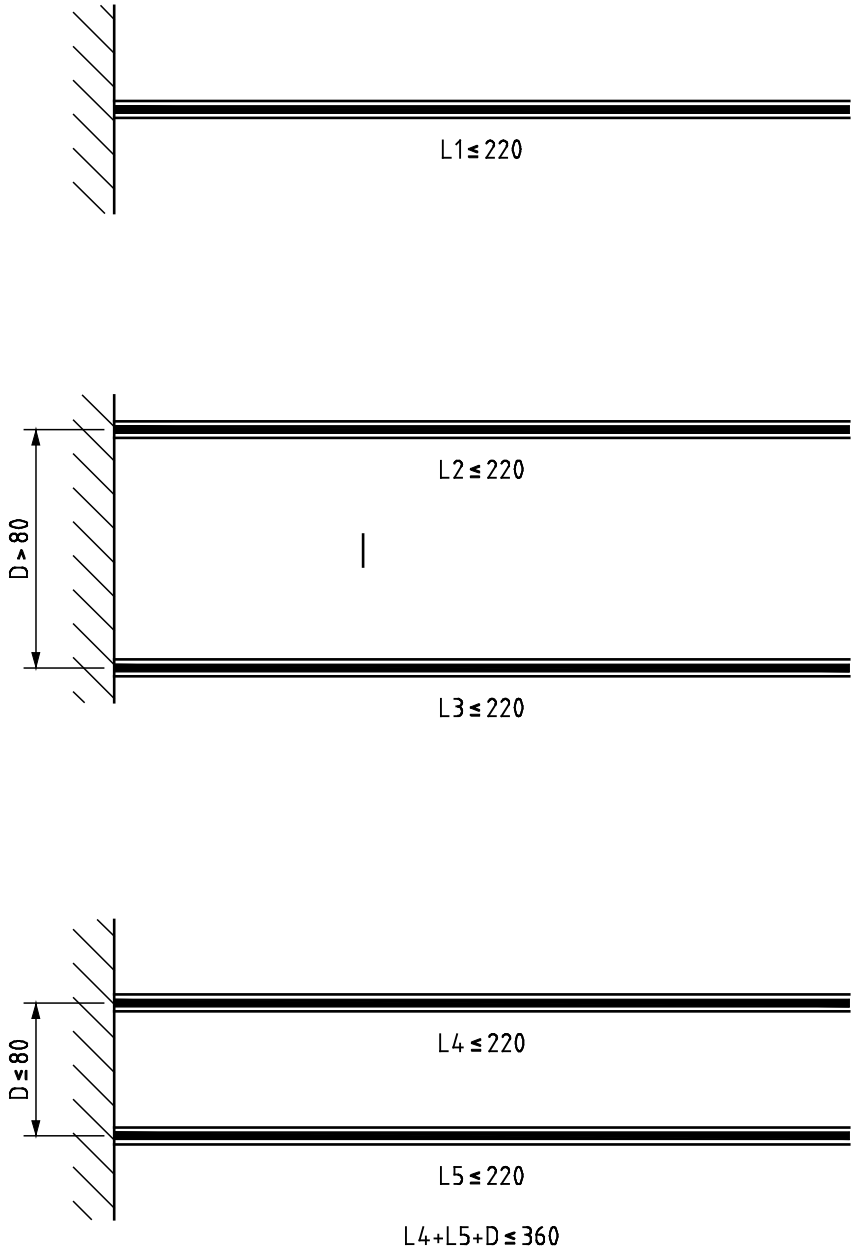

Figure A.4 — Examples of measuring cords, ribbons or parts used as a tie

A.6 Suffocation hazards — Requirements for packaging

Any plastic covering used as packaging that does not fulfil the requirements of EN 71-1 shall be conspicuously marked in the official language(s) of the country where the sling is sold with the following statement:

'TO AVOID DANGER OF SUFFOCATION, REMOVE PLASTIC COVER BEFORE USING THIS ARTICLE. THIS COVER SHALL BE DESTROYED OR KEPT AWAY FROM CHILDREN'

NOTE The statement can be expressed in different words provided that they clearly convey the same information.

A.7 Structural integrity

A.7.1 Static strength

A.7.1.1 Requirements

There should be no visible signs of damage and the sling should continue to function as intended when tested in accordance with A.7.2.

A.7.1.2 Test method

Attach the product to the torso (see Figure A.5) and place a bag filled with sand to a total mass of 15 kg or the maximum weight intended in the product for eight hours. Check the sling for any visible signs of damage to any fastening device or the fabric of the sling.

A.7.2 Durability

A.7.2.1 Requirements

When tested in accordance with A.7.2.3, the maximum slippage of any of the carer's attachment straps and any adjuster straps used to secure the child within the sling shall be 20 mm after 90 cycles.

The fasteners of the carer’s attachment system and any fastener or adjuster used to secure the child within the product shall not be released when tested in accordance with A.7.2.3.

A.7.2.2 Test equipment

A.7.2.2.1 Test torso

A rigid test torso with dimensions as specified in Figure A.5 should be fitted on a rigid plate. The plate shall be subjected to an alternating vertical sinusoidal movement through 120 mm (±5 mm) at a frequency of 2 Hz (±10 %).

Dimensions in millimetres

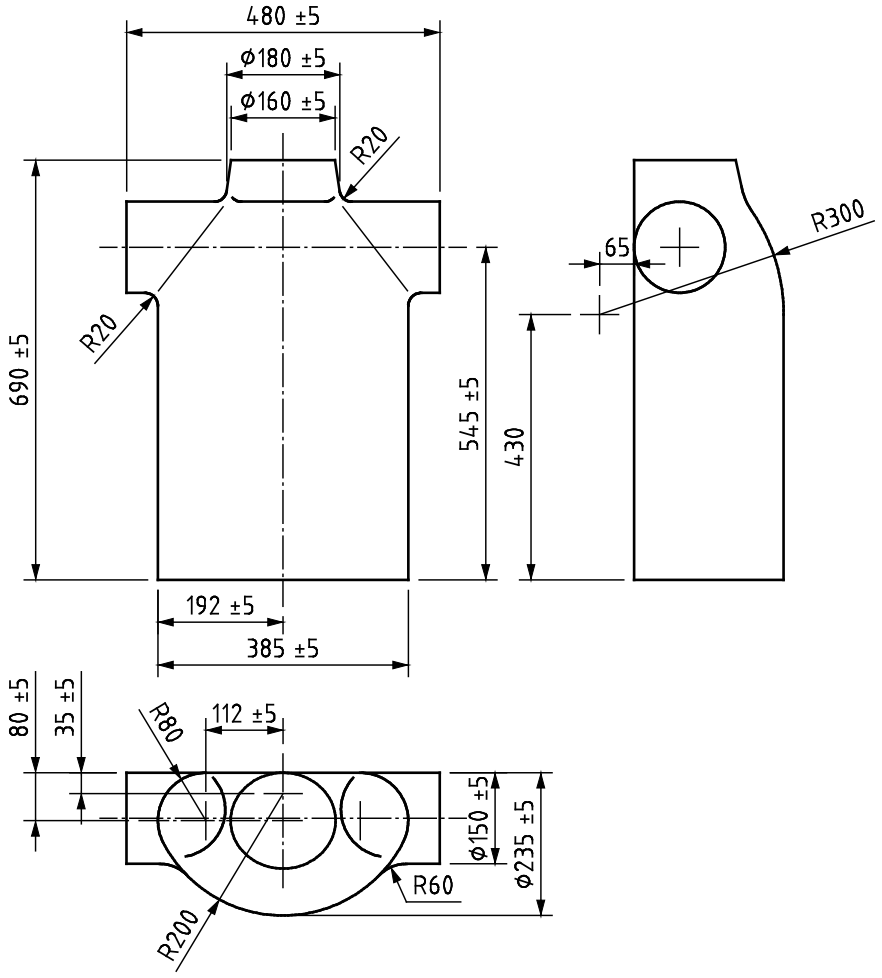

Figure A.5 — Test torso

A.7.2.2.2 Test masses

Test mass A is a bag filled with sand to a total mass of 9 kg, the shape and size of which is adjustable so that it can be firmly restrained by the carrier. This test mass is for use for testing carriers intended for children up to and including 9 kg.

Test mass B is a bag filled with sand to a minimum total mass of 15 kg, the shape and size of which is adjustable so that it can be firmly restrained by the carrier. This test mass is used for carriers intended for children over 9 kg.

If the manufacturer's recommended weight of the child is greater than 15 kg the maximum weight specified by the manufacturer shall be used for test mass B.

A.7.2.3 Test method

Place the carrier on the test torso as specified in A.7.2.2 in accordance with the manufacturer's instructions.

Select either test mass A or test mass B.

Place the appropriate test mass into the carrier and firmly restrain any adjustment system.

Carry out the test for 10 cycles. Mark all straps to enable measurement of slippage of straps in buckles or other devices.

Carry out the test for 90 cycles and measure any slippage. Carry out the test for a further 49 900 cycles.

If the carrier, according to manufacturer's instructions, can be used on both the front and the back of the carer, the test shall be carried out on two samples with one sample completing 50 000 cycles in the front position and the other completing 50 000 cycles on the back position.

Bibliography

[1] EN 71-2:2011+A1:2014, *Safety of toys — Part 2: Flammability*

[2] EN 1103, *Textiles — Fabrics for apparel — Detailed procedure to determine the burning behaviour*

[3] EN 13209-1, *Child use and care articles — Baby carriers — Safety requirements and test methods — Part 1: Framed back carriers*

[4] CEN/TR 13387:2004, *Child use and care articles — Safety guidelines*

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