



BSI Standards Publication

Child care articles — Drinking equipment — Safety requirements and test methods

National foreword

This British Standard is the UK implementation of EN 14350:2020+A1:2023. It supersedes BS EN 14350-1:2004 and BS EN 14350-2:2004, which are withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee CW/1/4, Feeding, drinking and mouthing.

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

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English Version

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Articles de puériculture - Articles pour l'alimentation liquide - Exigences en matière de sécurité et méthodes d'essai

Artikel für Säuglinge und Kleinkinder - Artikel für flüssige Kindernahrung - Sicherheitstechnische Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 14 March 2020 and includes Amendment approved by CEN on 3 May 2023.

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European foreword

This document (EN 14350:2020+A1:2023) has been prepared by Technical Committee CEN/TC 252 “Child 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of an identical text or by endorsement, at the latest by February 2024, and conflicting national standards shall be withdrawn at the latest by August 2024.

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

This document includes Amendment 1 approved by CEN on 3 May 2023.

This document supersedes  EN 14350:2020 .

The start and finish of text introduced or altered by amendment is indicated in the text by tags  .

The main changes compared to the previous edition are listed below:

- The standard has been completely renewed and a new structure was given. The former two parts were joined together into one standard. A whole series of new aspects had to be considered, following changes in the market and the regulatory background.
- Introduction: Completely reworded and references to European regulations were renewed.
- Clause 3: Completely restructured and partly described in more detail. Definitions for completely new parts were added.
- Clause 4: Several completely new parts were added.
- Clause 5: This clause is completely new.
- Clause 6: This clause is completely new.
- Clause 7: The whole clause has been divided into several sub-paragraphs for individual components of drinking equipment and the associated tests to improve the clarity of the sequence. Several paragraphs for new items and their tests were added.
- Clause 8: This clause was completely restructured and subdivided. The requirements and test conditions have been set with the consideration of the likely chemical exposure: food contact, mouthing or ingestion. Chemical requirements and test methods were set for materials (like rubber, silicon, TPE, metal, glass) and exposures (mouthing and swallowing) which are recently not covered by harmonised legislations. Requirements for substances (e.g. Phthalates and BPA) covered by harmonised regulation (like REACH, (EU) 10/2011 or its amendments) have not been included.
- Clause 10: Revised and partly reworded.
- Clause 11: This clause on Test report is completely new.
- Annex A: This normative annex with translations of warnings into 24 languages is completely new.

- Annex B: This informative annex with rationales is completely new.
- Annex C: This informative annex on Method for the determination of 2-mercaptobenzothiazole (MBT) and antioxidants specified in Table 7 was revised and enlarged.
- Annex E: This informative annex on good practice for visibility and legibility is completely new.

A1 This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website. **A1**

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

Introduction

This document harmonises minimum safety requirements and test methods for children's drinking equipment. Some of the provisions have been taken from other existing national and European Standards and for these provisions the Technical Committee has relied on previous validation.

A significant choking hazard can arise if the component parts of drinking equipment become separated during use. This hazard is addressed in this document by the inclusion of a security test. However, as the fixing of such products to the container is user-dependent, the risk of an accident cannot be completely eliminated. This document sets out labelling requirements stating that parents or carers should not leave children unattended whilst being fed with a product containing a feeding teat or using a container made of glass and that children should not be allowed to use feeding teats as a soother.

The Technical Committee considered the possibility of standardizing both sizes of feeding teats and ranges of flow rates. However, it was decided that the many combinations of container systems precluded being standardized. It is recommended that all container and drinking accessory combinations are matched components. Providing meaningful flow rate information is difficult because of several factors including hole diameter, teat thickness, hole shape/type of feed, and also how individual infants suck the teat. Accordingly, it was decided not to include a test for flow rate but to recommend that manufacturers provide information on flow rate and hole size that is appropriate to their particular product.

This document sets chemical requirements and test methods for materials (like rubber, silicon, TPE etc) and exposures (mouthing and swallowing) not covered by harmonised legislations. Where this document sets migration limits for substances also covered by legislation, the requirements of this document with stated test conditions must be regarded as additional.

Materials and chemical risks included in the standard (Table 3) do not present a definitive list but the considered opinion of the Technical Committee based on current knowledge of likely risks.

All food contact materials and articles are regulated by Regulation (EC) No 1935/2004 [1], Regulation (EC) No 2023/2006 [39] and relevant implementation measures, at European or national level.

All plastics components of drinking equipment intended to come into contact with food are specifically regulated by the Regulation (EU) 10/2011 [2] on plastic materials and articles intended to come into contact with food and its amendments.

Therefore, for example the Bisphenol A - requirement has not been included in this document. [40]

Phthalates in childcare articles are restricted by Annex XVII of the REACH Regulation [3] and have not been included in this document.

Latex protein allergy risk has not been included in this document. There is no published information that sensitization is caused by feeding teats and there is an extremely low incidence of latex protein allergy among young children and babies. Nevertheless, provision for packaging information for feeding teats made from natural rubber latex has been included in this document.

It is recommended that manufacturers and suppliers operate to EN ISO 9001 standard for quality management systems [4]. It is also recommended that laboratories operate to EN ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories [5].

1 Scope

This document specifies safety requirements relating to the materials, construction, performance, packaging and product information for drinking equipment intended for children of 0 to 48 months (see B.2) of age:

- Re-usable containers and re-usable drinking accessories;
- Single-use containers and drinking accessories sold with these containers;
- Single-use feeding teats;
- Ready to use feeding teats.

This document does not include requirements for the cleanliness of ready to use and single use products.

This document does not apply to products designed for specialist clinical medical applications, e.g. those relating to cleft lip palates.

This document does not apply to drinking equipment made from ceramics.

This document does not apply to bags intended for storage only.

This document does not apply to drinking equipment which is supplied with fluids or food when purchased and to feeding accessories fixed to it.

This document is not applicable to soothers. Safety requirements and test methods for soothers are specified in EN 1400 [6].

This document is not applicable for cutlery and other feeding utensils. Safety requirements and test methods for Cutlery and other feeding equipment are specified in EN 14372 [7].

For drinking equipment excluded from the scope, consider the applicable requirements of this document whenever possible.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 71-3:2019+A1:2021 ^{A1}, *Safety of toys — Part 3: Migration of certain elements*

EN 71-11:2005, *Safety of toys — Part 11: Organic chemical compounds — Methods of analysis* ^{A1}

EN 12868:2017 ^{A1}, *Child use and care articles — Method for determining the release of N-nitrosamines and N-nitrosatable substances from elastomer or rubber teats and soothers*

EN 60454-2:2007 ^{A1}, *Pressure-sensitive adhesive tapes for electrical purposes — Part 2: Methods of test (IEC 60454-2:2007)*

EN ISO 3696:1995, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)* ^{A1}

ISO 188:2011, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/ui>

3.1

matched components

components which are intended to be used together whilst feeding a child

Note 1 to entry: Their dimensions are matched to fit together and fulfil the relevant safety requirements.

Note 2 to entry: See definitions 3.2 to 3.9.

3.2

drinking accessory

device fitted to a container which permits a child to obtain fluid from it

3.2.1

feeding teat

elastic drinking accessory other than a straw

Note 1 to entry: there is no accepted scientific definition for the word “elastic”. The Technical Committee intended to describe by “elastic” products made of silicone rubber, latex rubber, etc.

3.2.2

drinking spout

non-elastic drinking accessory other than a straw

3.2.3

push-pull valve

drinking accessory equipped with a valve designed to be manually operated by a push-pull, twist or similar action

Note 1 to entry: A push-pull valve is also known as a “sports cup spout”.

3.2.4

straw

drinking accessory consisting of a cylindrical hollow tube which is in contact with the mouth and through which fluid is sucked

3.2.5

protruding part

drinking accessory when assembled for its intended use on a container

3.3

container

feeding bottle, drinking cup or feeding bag

3.3.1

feeding bottle

container which is capable of holding fluid incorporating a graduated scale suitable for visual measurement and is intended for feeding a child through a suitable drinking accessory

3.3.2

drinking cup

container other than a feeding bottle or feeding bag capable of holding a fluid intended for feeding a child

Note 1 to entry: Drinking cups are also known as “beakers” in the English language

3.3.3

feeding bag

bag capable of holding fluid and designed to be used with drinking accessories

Note 1 to entry: Feeding bags are also known as feeding liners.

3.3.4

feeding bag holder

support for a feeding bag

Note 1 to entry: see Figure 4 No 8.

3.4

locking ring

component used to secure a drinking accessory to a container

3.5

sealing disc

component used to create a seal between the container and the locking ring

3.6

protective cover

component to cover a drinking accessory

3.6.1

detachable protective cover

cover or parts of it intended to be detached when drinking or for cleaning

Note 1 to entry: After being detached they can be reassembled in the original state.

3.6.2

permanent protective cover

cover or parts of it intended to stay attached to the product during use/drinking

Note 1 to entry: It can only be detached by using a tool or force and is not intended to be reassembled afterwards.

3.7

handle

component designed to assist the handling of a container during drinking

3.8**clip**

component designed to assist the attachment of a container onto garments

3.9**cord or loop**

flexible component designed to assist the handling of a container

3.10**graduations**

markings which indicate the volume of fluid within the container, numbered or unnumbered

3.11**single-use product**

product intended to be disposed of after first use

3.12**re-usable product**

product intended to be used again after first use

3.13**ready to use product**

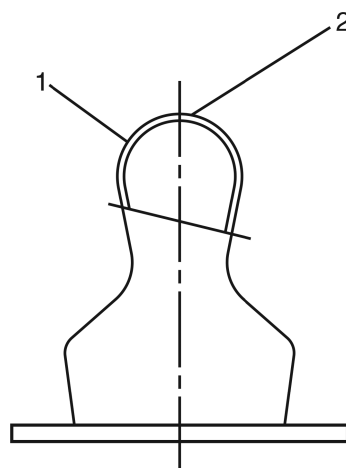
product intended to be used without the need to clean before first use

3.14**outer packaging**

any packaging used for storage of the product by a retailer, not including the packaging intended for the consumer

4 Description

Figures 1 to 10 illustrate typical examples of different items of drinking equipment and their design features.

**Key**

- 1 mouthpiece
- 2 feeding hole/holes

Figure 1 — Design features of a feeding teat

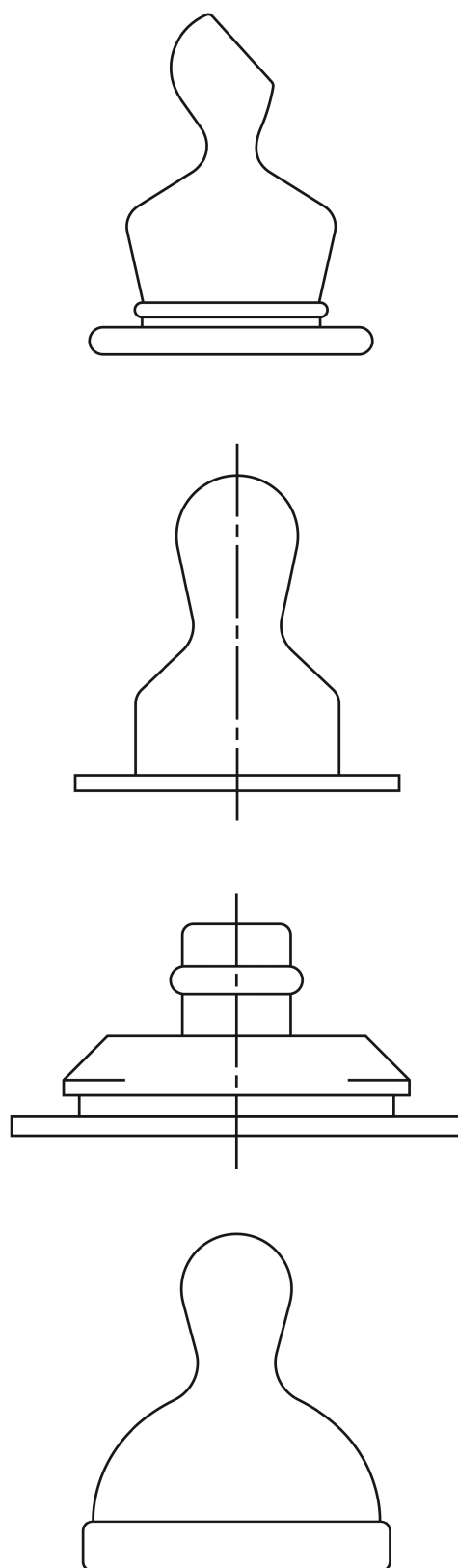
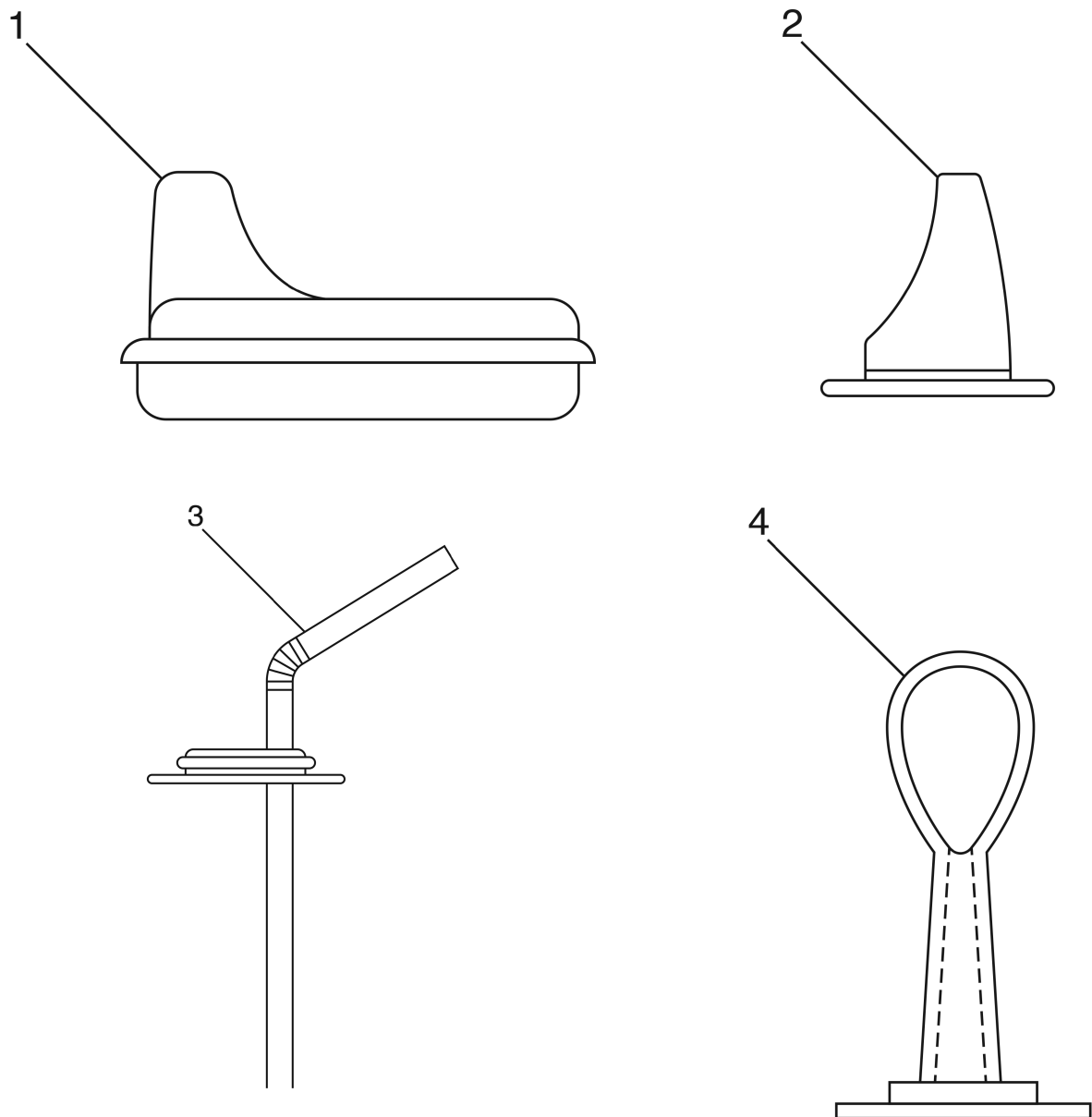


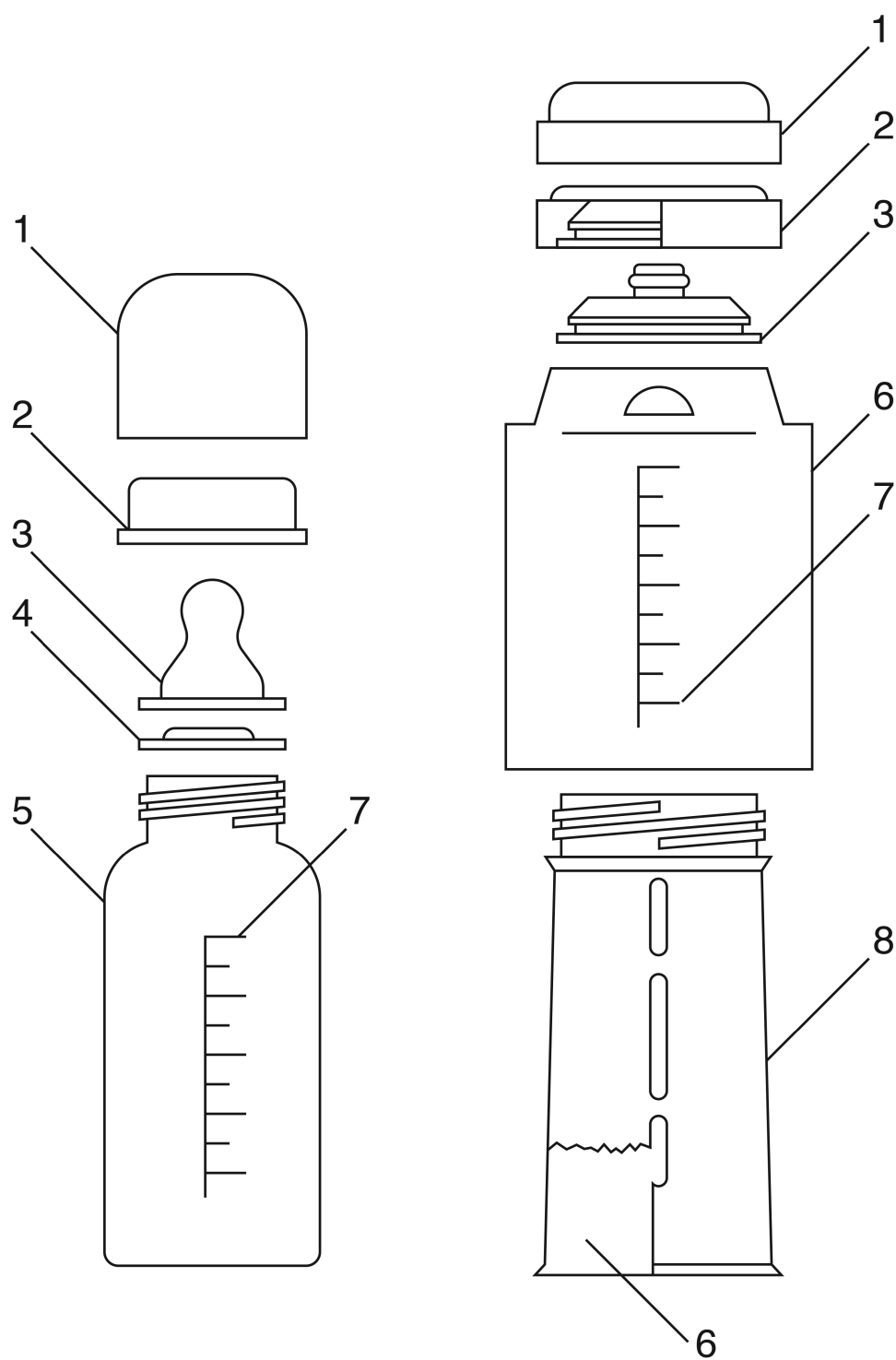
Figure 2 — Examples of feeding teats



Key

- 1 feeding spout including a locking ring
- 2 spout
- 3 straw
- 4 drinking accessory with mouthpiece in form of a spoon

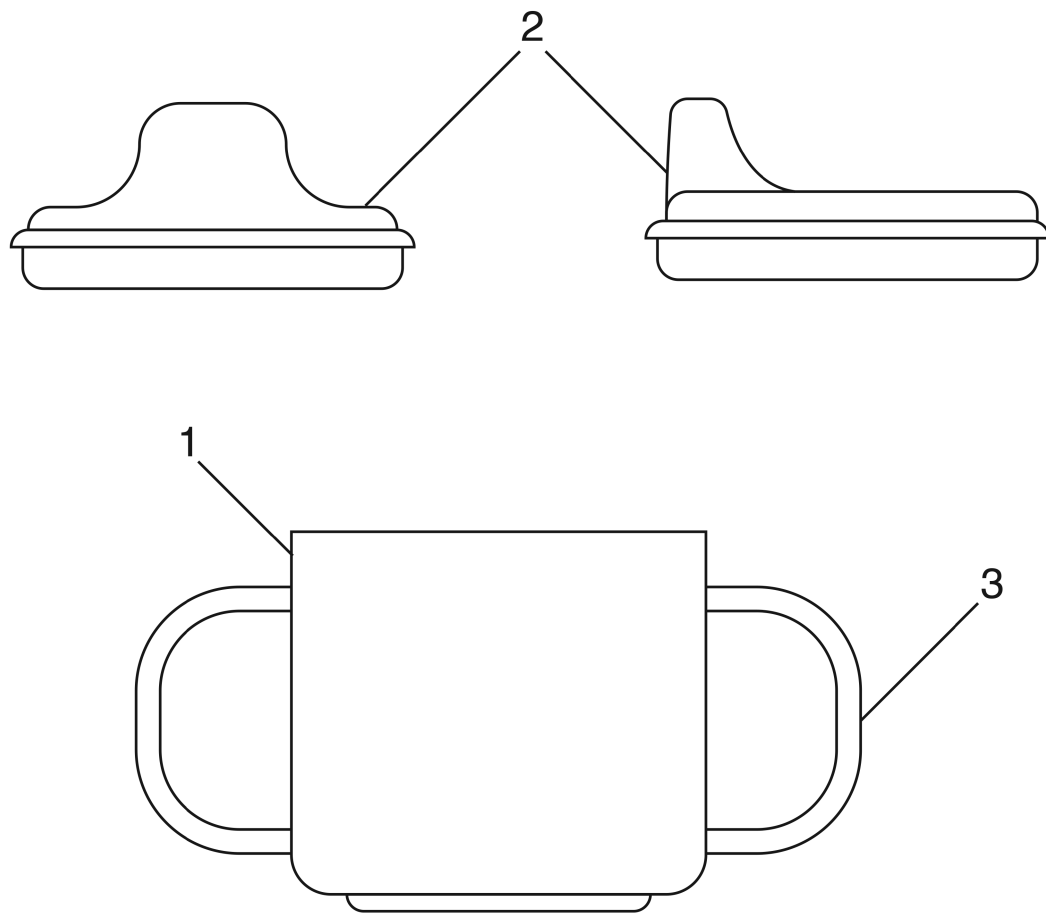
Figure 3 — Examples of other drinking accessories



Key

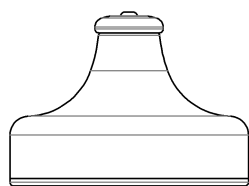
- | | |
|--------------------|----------------------|
| 1 protective cover | 5 feeding bottle |
| 2 locking ring | 6 feeding bag |
| 3 feeding teat | 7 graduations |
| 4 sealing disc | 8 feeding bag holder |

Figure 4 — Examples of containers with feeding teats

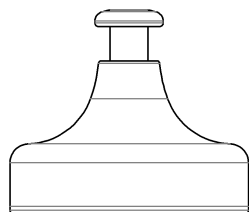
**Key**

- 1 drinking cup
- 2 drinking accessory
- 3 handle

Figure 5 — Example of container with drinking accessory



a)

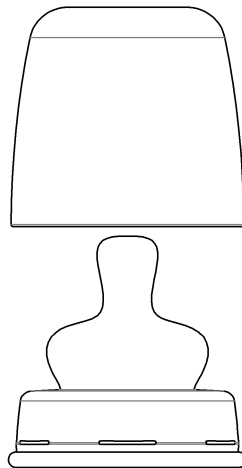


b)

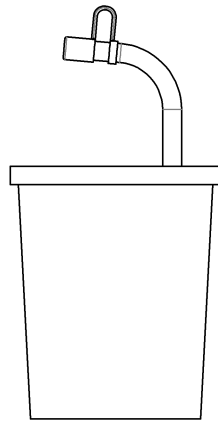
Key

- a closed position
- b open position

Figure 6 — Example of a push-pull valve



a)



b)

Key

- a detachable protective cover in form of a cap
- b permanent protective cover in form of a protective cap for straw

Figure 7 — Examples of protective covers

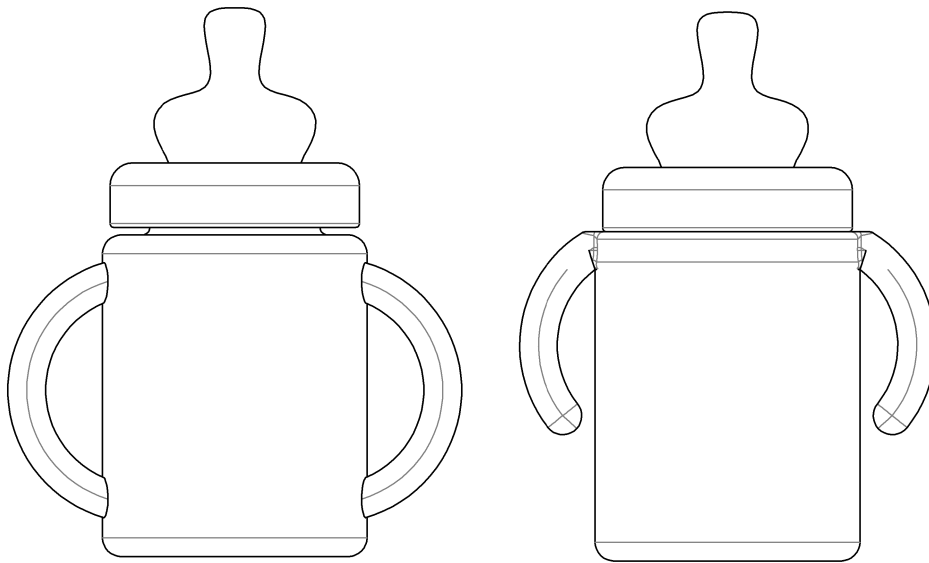


Figure 8 — Examples of handles

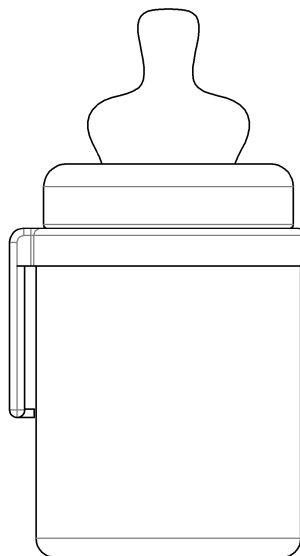


Figure 9 — Example of a clip

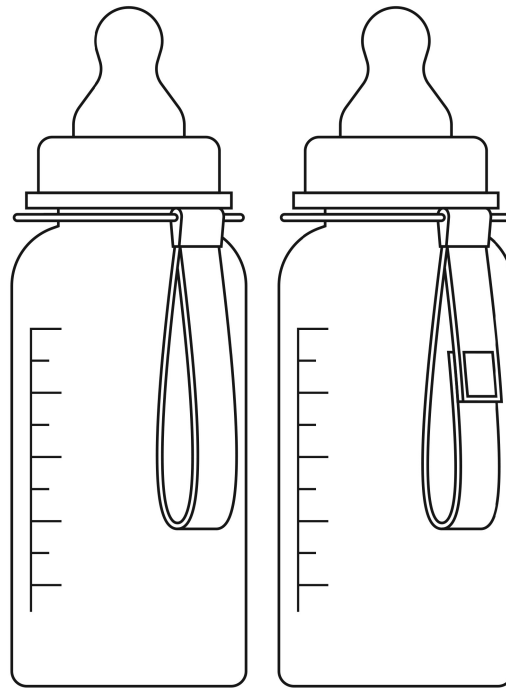


Figure 10 — Examples of loops

5 Test equipment and tolerances

5.1 Small parts cylinder

Dimensions in millimetres

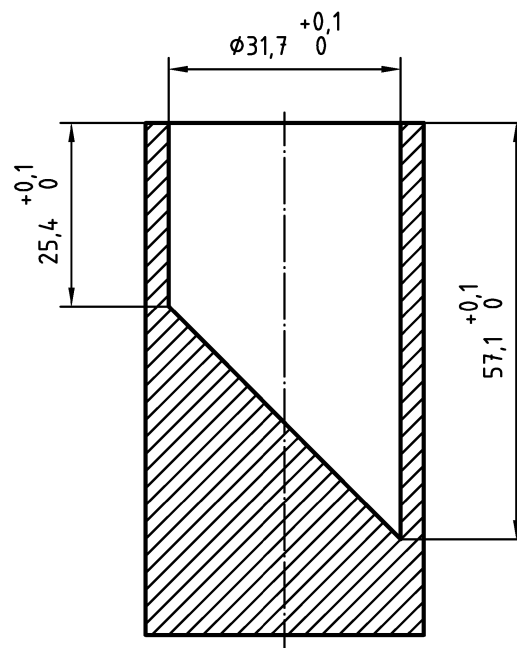
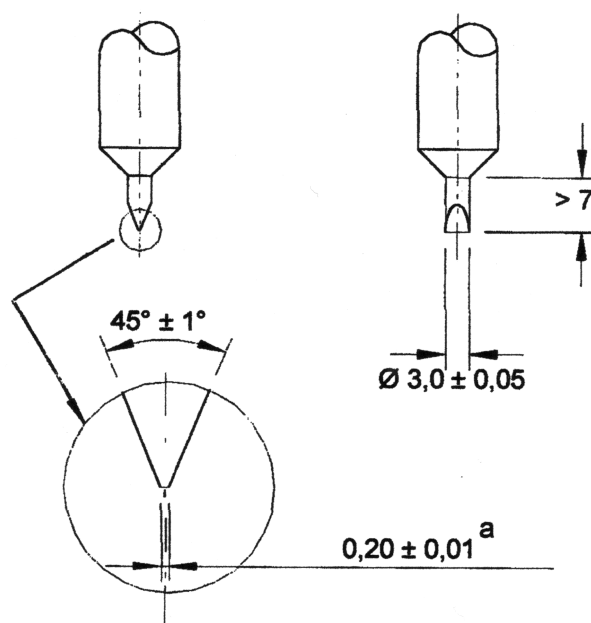


Figure 11 — Small parts cylinder

5.2 Indentor

The indentor is made from H13 high chrome tool steel or equivalent and hardened to a minimum of 50 Rockwell C and shall have dimensions as shown in Figure 12. All dimensions with a tolerance are machined as ISO 1302 [8] to $\sqrt{Ra\ 0,4}$. The larger diameter of the indentor has not been specified, as it should be of a size to fit into the equipment for applying the necessary force specified in the test methods.

Dimensions in millimetres



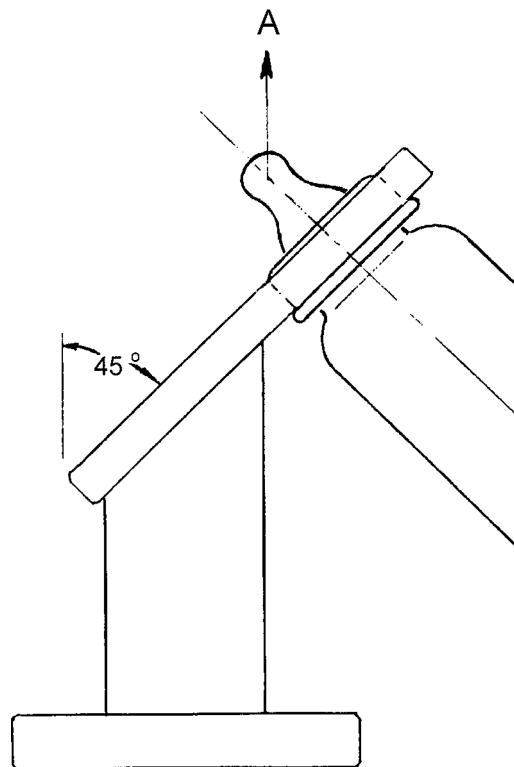
Key

Encircled is the tip of the indentor with the cutting blade.

^a This face is flat and has dimensions of $(3,0 \times 0,20)$ mm.

Figure 12 — Indentor

5.3 Fixture for security/retention test

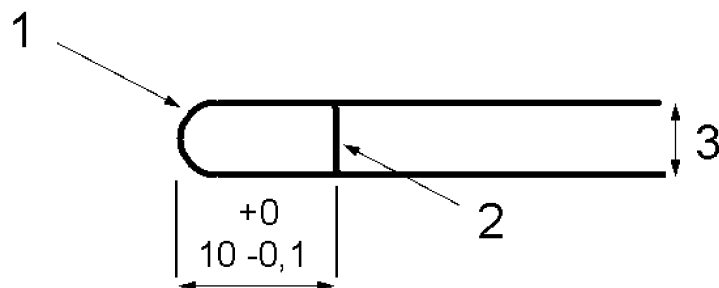


Key

A direction of tensile force

Figure 13 — Fixture for security/retention test

5.4 Probes for holes (finger traps) test



Key

1 tip radius equalling half the probe diameter

2 scribed line

3 diameter of probe 1: $5,5^{+0}_{-0,1}$ mm, diameter of probe 2: $12^{+0,1}_0$ mm

Figure 14 — Probes for holes (finger traps) test method

5.5 Templates A and B

Dimensions in millimetres

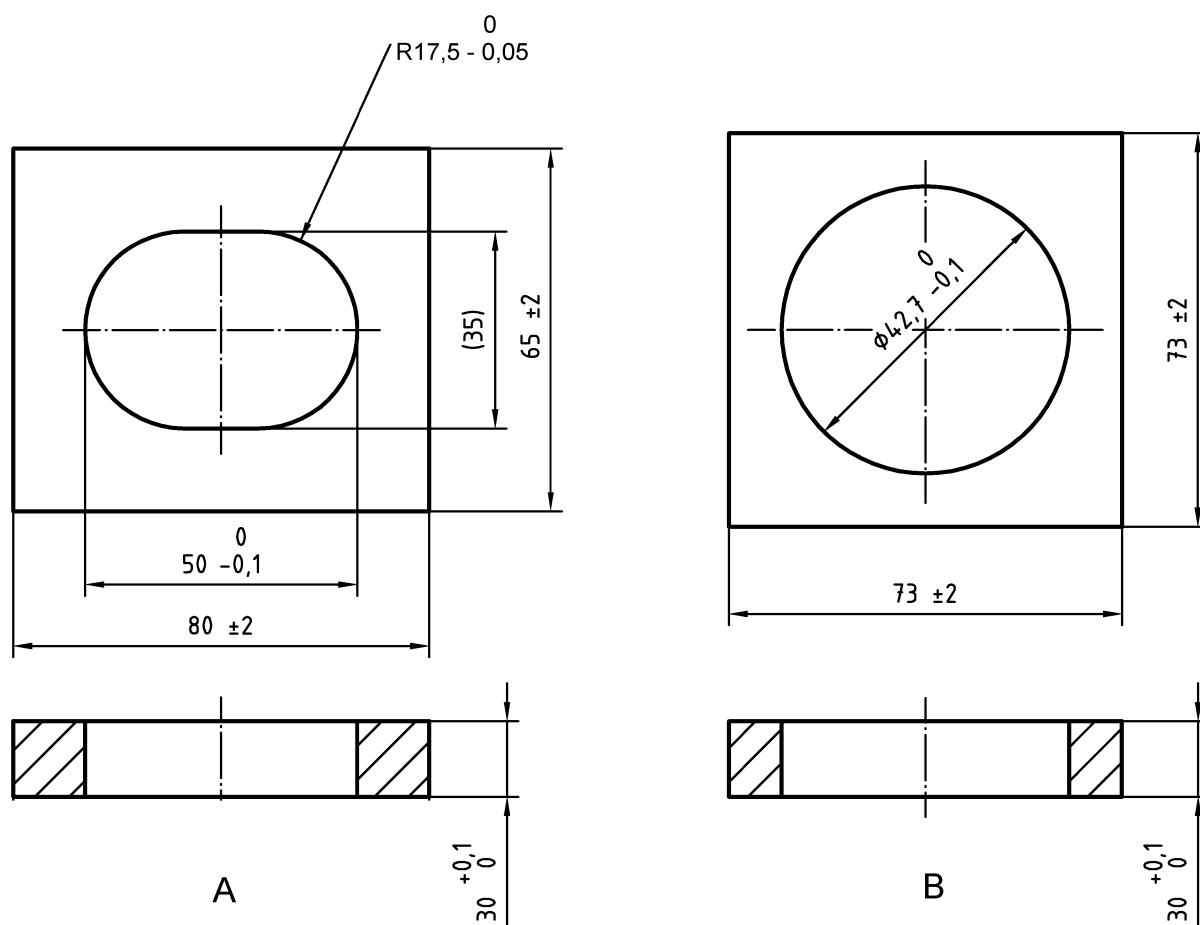


Figure 15 — Template A and B

5.6 Tolerances

Unless otherwise stated, the following tolerances apply:

- Forces: $\pm 5\%$ of the nominal force;
- Masses: $\pm 0,5\%$ of the nominal mass;
- Dimensions: $\pm 1,0$ mm of the nominal dimension;
- Angles: $\pm 2^\circ$ of the nominal angle;
- Duration of forces for durability tests: ± 1 s;
- Duration of forces for static load tests: ± 2 s.

Mechanical tests are often described in terms of the application of forces. Masses can however be used. One kg mass may be used for 10 N force.

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

6 Construction and mechanical properties – General and sample preparation

6.1 Sample preparation for construction and mechanical properties

Samples of single-use products shall be conditioned (6.5) before testing.

Samples of re-usable products shall be boiled (6.4) and conditioned (6.5) before testing.

Samples of any products containing vulcanized rubber shall be pre-treated (6.3) before being submitted to the above sample preparation.

6.2 General

All samples shall be at least 3 days post-production (see B.3).

6.3 Pre-treatment (see B.4)

Parts made of vulcanised rubber (not silicone parts) taken directly from the manufacturer prior to being shipped to a retailer, shall be artificially aged for (7 days) ± 2 h in an oven with forced air circulation by means of a fan and a ventilation of three to ten changes per hour (as described as Method B in ISO 188:2011) at a temperature of (70 ± 2) °C.

6.4 Boiling (see B.5)

All samples, excluding single-use products, shall be disassembled and immersed in boiling water, to the requirements of [EN ISO 3696:1995](#), Grade 3, for (10 ± 1) min without touching the walls of the container and removed. Afterwards allow the samples to cool to room temperature. Then after a maximum of 2 h after boiling place in the conditioning room (see 6.5).

After boiling, there shall be no damage which causes the failure of any subsequent tests, or impairs the assembly for the intended use and no graduation shall have been removed when assessed by visual inspection.

6.5 Conditioning

All samples shall be conditioned for at least 40 h before the tests, at a temperature (23 ± 2) °C, and relative humidity (50 ± 5) %. Samples shall remain in the conditioning atmosphere until the test is carried out. The tests may be carried out in a non-conditioned room.

7 Construction and mechanical requirements and tests

7.1 Order of testing for construction and mechanical properties

The tests for construction and mechanical properties shall be carried out in the order given in Table 1, after treatments according to Clause 6.

New samples, preferably from the same batch, shall be used for each test (i.e. samples used in one test shall not be used in another test) unless otherwise stated.

When tensile tests are applied, clamps or other devices shall hold the components securely during the test without causing damage which results in a test failure. Any failure due to such damage shall be disregarded. If after a number of attempts using different methods secure holding is not possible due to material weakness, the product fails.

NOTE If secure holding of the component causes problems, advice of the manufacturer should be considered.