

BRITISH STANDARD

Hot water bottles manufactured from rubber and PVC – Specification

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard was published by BSI and came into effect on 31 October 2006. It was prepared by Technical Committee PRI/68, *Hot water bottles*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 1970:2001, which is withdrawn.

Information about this document

This new edition represents a full revision of the standard, based on current knowledge and recent research funded by the DTL.

Hot water bottle manufacture has evolved and encompasses new production methods that were not reflected in the requirements of the 2001 edition. This revision has attempted to address these new production techniques by requiring hot water bottles to be tested as products and not the materials they are manufactured from.

The “full thickness” tensile strength and the newly introduced full thickness tear strength are requirements that assess the material, production method and mould design. The aim of this standard is to provide the minimum specification for safe hot water bottles and, in so doing, prevent some of the injuries that might have been a consequence of unsafe products.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

Attention is drawn to the Toys (Safety) Regulations 1995 (UK Statutory Instrument SI 1995 No. 204) which is applicable to hot water bottles that have any play value in the form of toys, or that include toys. Attention is also drawn to BS EN 71-1:2005, *Safety of toys – Specification for mechanical and physical properties*.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for the physical properties and performance of both rubber and PVC hot water bottles, designed for complete or partial filling with hot water by the user.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the reference cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 903-A6, *Physical testing of rubber – Part A6: Method for determination of compression set at ambient, elevated or low temperatures*
[ISO 815]

BS 903-A26, *Physical testing of rubber – Part A26: Method for determination of hardness (hardness between 10 IRHD and 100 IRHD)*
[ISO 48]

BS 2071, *Specifications for Soxhlet extractors*

BS EN 71-1:2005, *Safety of toys – Mechanical and physical properties*

BS EN 71-3:1995, *Safety of toys – Part 3: Specification for migration of certain elements*
[BS 5665-3:1995]

BS EN ISO 527-1, *Plastics – Determination of tensile properties – General principles*
[BS 2782-3:Method 321, ISO 527-1]

BS EN ISO 527-3, *Plastics – Determination of tensile properties – Test conditions for films and sheets*
[BS 2782-3:Method 326E]

BS ISO 34-1, *Rubber, vulcanized or thermoplastic – Determination of tear strength – Part 1: Trouser, angle and crescent test pieces*

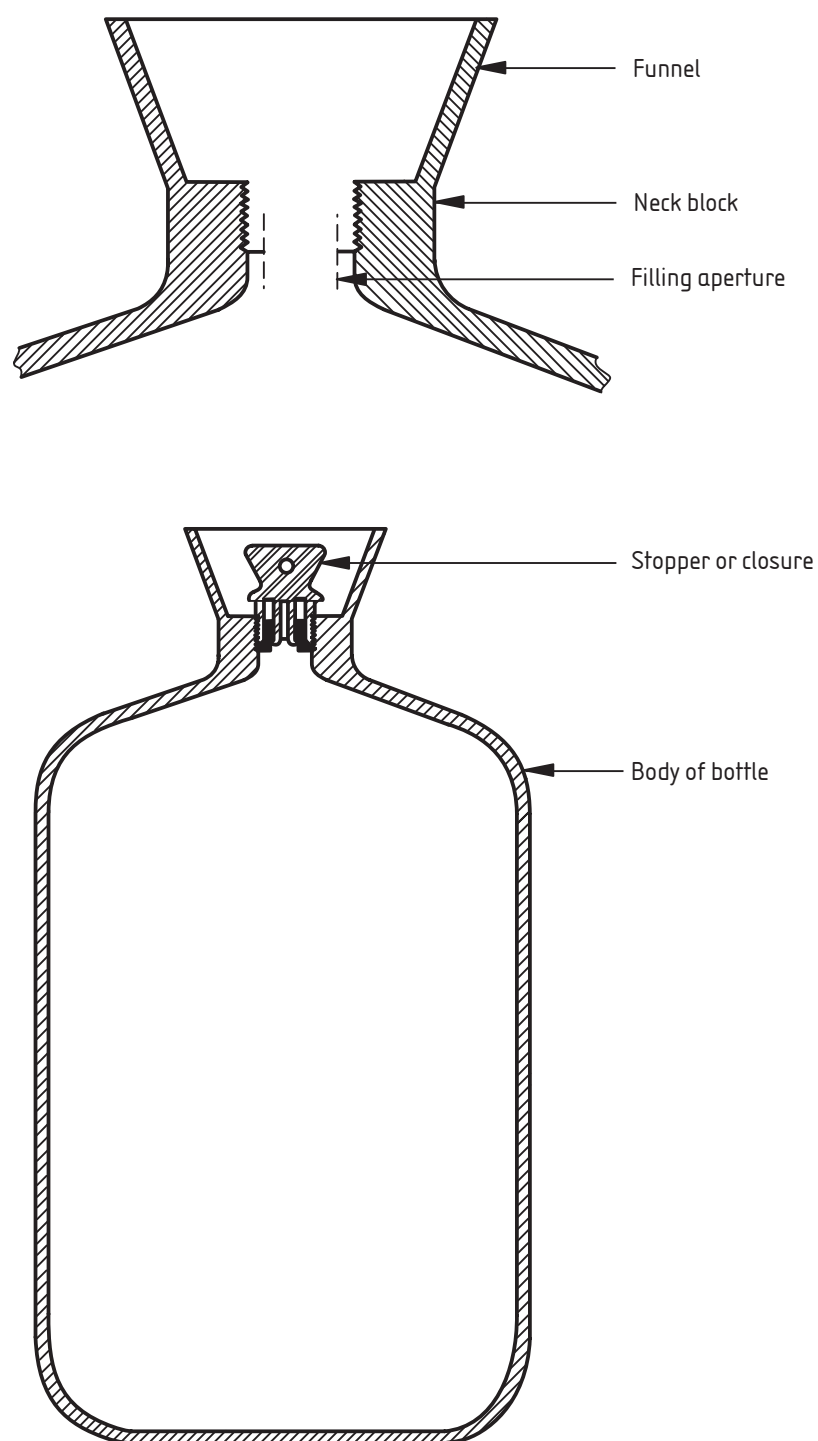
BS ISO 37, *Rubber, vulcanized or thermoplastic – Determination of tensile stress-strain properties*

BS ISO 188, *Rubber, vulcanized or thermoplastic – Accelerated ageing and heat resistance tests*
[BS 903-A19]

BS ISO 2285, *Rubber, vulcanized or thermoplastic – Determination of tension set under constant elongation, and of tension set, elongation and creep under constant tensile load*

BS ISO 23529, *Rubber – General procedures for preparing and conditioning test pieces for physical test methods*

Figure 1 Hot water bottle components



3 Composition

When tested in accordance with BS EN 71-3:1995, the hot water bottle shall not contain proportions (by mass) of migratory elements in excess of the limits in Table 1 of BS EN 71-3:1995.

4 Physical properties

4.1 Visual examination

See Figure 1 for hot water bottle components.

When inspected with the naked eye, the hot water bottle shall not exhibit:

- a) inclusions of foreign matter;
- b) tears, blisters, cuts; or
- c) any other defects that could adversely affect the safe performance of the hot water bottle.

NOTE Attention should be paid to the neck-body intersection where trimming can result in a nick which acts as a stress raiser that weakens the product in this area.

The visual examination shall continue during the preparation of test pieces as the discovery of any of these detrimental defects will constitute failure to conform to this standard.

4.2 Thickness

The hot water bottle shall, at no point on its surface, have a thickness less than that shown in Table 1, according to its capacity and the material of construction.

Thickness shall be determined in accordance with the method in Annex A, and the capacity determined in accordance with the appropriate method in Annex B.

Table 1 Minimum thickness of hot water bottles

Rubber hot water bottles		PVC hot water bottles	
Capacity ml	Minimum thickness mm	Capacity ml	Minimum thickness mm
< 2 000	1.4	< 800	1.5
≥ 2 000	1.5	≥ 800 < 2 000	1.7
		≥ 2 000	1.8

4.3 Filling characteristics

The minimum filling aperture shall not be less than 18 mm diameter.

If the diameter of the filling aperture is less than 20.3 mm, the bottle shall be equipped with an integral filling funnel having a minimum capacity of 60 ml with the stopper fitted, and extending beyond the height of the stopper.