
Specification for

Blow Moulded Polyolefin Containers

Part 1. Containers up to
5 litres capacity

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The following references relate to the work on this standard:
Committee reference P/174 Draft for comment 70/6426

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Department of Trade and Industry	Society of Motor Manufacturers and Traders Ltd
Envelope Makers' and Manufacturing Stationers' Association	Timber Container Confederation

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of the British Pharmaceutical Industry	Ministry of Defence/Ministry of Technology (IPTS-C)
British Closure Manufacturers' Association	National Association of Soft Drinks Manufacturers
British Radio Valve Manufacturers' Association	Oil Companies' Materials Association
British Railways Board	Society of British Aerospace Companies Ltd
British Rubber Manufacturers' Association	Society of Motor Manufacturers and Traders
British Stationery and Office Equipment Association	Toilet Preparations Federation Ltd
Electronic Engineering Association	
Electronic Valve and Semi-Conductor Manufacturers' Association	

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Foreword

This Part of this British Standard has been prepared under the authority of the Packaging Standards Committee at the request of the British Plastics Federation.

Part 1 of this standard covers blow moulded polyolefin containers of up to 5 litres capacity for general purpose use. It is intended that other parts be published dealing with containers of greater capacity.

No attempt has been made to specify shape or styling for the containers as this is considered to be the prerogative of the package designer. Details of closures are not specified, but consideration will be given to including such information in a subsequent revision.

Containers for products classified as dangerous goods are specifically excluded from this Part of this standard because of special carrier requirements and regulations, especially with regard to both performance and ullage allowance of containers.

NOTE: Attention is drawn to certification facilities offered by BSI; see the inside back cover of this standard.

British Standard Specification for

Blow Moulded Polyolefin Containers

Part 1. Containers up to 5 litres capacity

Specification

1. Scope

This Part of this British Standard specifies tolerances on capacities, mass and dimensions for blow moulded containers, made from polyolefins, with capacities up to 5 litres. Methods of measurement and methods of test for certain important properties of the containers are also specified.

A recommended range of nett capacities for stock containers for liquid products is included.

NOTE. This Part of this standard does not cover containers specifically intended for products classified as dangerous goods.

2. Definitions

For the purposes of this Part of this British Standard the following definitions apply:

(1) *Polyolefin*. A thermoplastic material produced by the polymerization or copolymerization of olefins, e.g. high density and low density polyethylene or polypropylene, and their copolymers.

(2) *Blow moulded containers*. A container formed from a parison of heat-softened thermoplastics material by the application of pressure which forces it against the internal walls of a blow mould.

(3) *Part line*. A line on the container corresponding to a parting joint of the blow mould.

(4) *Brimful capacity*. The volume of water held by the container when filled to the point of overflowing.

(5) *Nett capacity*. The volume of liquid the container is intended to hold.

(6) *Ullage*. What the filled and closed container lacks of being truly full. (The air space remaining serves (by its compression) to accommodate thermal expansion of the contents and/or rise in vapour pressure.)

(7) *Container mass*. The mass in grams of a fully finished, printed container, excluding the closure.

(8) *Neck face*. The uppermost surface of the container neck.

(9) *Container height to neck face*. The height to the highest point of the neck face of the finished empty container.

(10) *Container overall height*. The height of the finished empty container at its highest point, excluding the closure.

(11) *Container diameter*. The external diameter of the finished empty container at a specified height, expressed as the mean of two perpendicular diameters, or as the circumference multiplied by 0.318 at the same specified height.

(12) *Neck height*. The perpendicular distance from the highest point of the plane including the neck face to the nearest point of the finished container shoulder along a line passing through:

a. *In the case of screw threaded necks*, the outermost edge of the thread. A feature below the thread of greater diameter than the thread is considered as part of the container's shoulder.

b. *In the case of plain cylindrical necks* the outermost diameter point excluding flash.

c. *In the case of necks having a bead*, or beads only, the outermost point of the bead.

NOTE. A bead is separated from the container shoulder by a region of diameter smaller than that of the bead.

d. As otherwise agreed between the purchaser and the supplier.

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(13) *Neck diameter*. The external diameter of the neck, excluding thread and/or prominences, measured as the mean of two perpendicular diameters avoiding the part line.

(14) *Thread diameter*. The external diameter of the neck thread measured as the mean of two perpendicular diameters avoiding the part line.

(15) *Neck bore*. The diameter of the inner periphery of the neck at a specified depth.

(16) *Neck ovality*. The difference between the maximum and the minimum neck diameters.

3. Capacity

3.1 Nett capacity. A recommended range of nett capacities for stock containers for liquid products, together with the corresponding minimum brimful capacity, is shown in Table 1.

The brimful capacity shall be ascertained by the method described in Appendix A.

Table 1. Recommended range of nett capacities for containers for liquid products

Nett capacity	Minimum brimful capacity
ml	ml
100	108
250	263
500	525
litres	litres
1.0	1.035
2.5	2.563
5.0	5.125

3.2 Manufacturing tolerances on other capacities. Capacities other than those listed in Table 1 may be agreed between the purchaser and the supplier. In these cases the manufacturing tolerance on the brimful capacity shall be as shown in Table 2.

Table 2. Manufacturing tolerances on brimful capacities

Brimful capacity	Tolerance
Up to and including 25 ml	$\pm 10\%$
Over 25 ml up to and including 100 ml	$\pm 5\%$
Over 100 ml up to and including 500 ml	$\pm 2.5\%$
Over 500 ml up to and including 1 litre	$\pm 2\%$
Over 1 litre up to and including 5 litres	$\pm 4\%^*$

* The $\pm 4\%$ tolerance for brimful capacities over 1 litre is necessary because of special manufacturing difficulties due to shrinkage with large containers. Nevertheless, with particular manufacturing methods it may be possible to achieve a $\pm 2\%$ tolerance. The tolerance quoted should be in addition to percentage ullage allowance.

4. Container mass

The tolerances on container mass shall be as shown in Table 3, when measured in accordance with the method described in Appendix B.