

Specification for

# Mild steel and tinplate drums (light duty: fixed ends)

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## Co-operating organizations

The Packaging Standards Committee, under whose authority this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

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 British Paper and Board Industry Federation  
 British Paper Bag Federation  
 British Paper Box Federation  
 British Plastics Federation  
 British Tin Box Manufacturers' Federation\*  
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 Department of Trade and Industry  
 Ministry of Defence, Navy Department  
 Society of British Aerospace Companies Ltd.  
 Wrought Hollow-ware Trade Employers' Association

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### Amendments issued since publication

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## Foreword

This British Standard has been prepared under the authority of the Packaging Standards Committee. It was first published in 1938 and revised in 1950 and 1961.

The number of drum varieties has been reduced and light duty mild steel drums with nominal capacities from 25 litres to 120 litres have been provided for. Lightweight tinsplate drums with a nominal capacity of 25 litres are now also included in the standard. Nominal capacities are used for identification purposes and maximum and minimum volumetric capacities are specified as an aid to filling calculations.

Drums of a given capacity are classified according to the thickness of sheet material from which they are manufactured. Seven classes of drum are now specified and three additional (lower) thicknesses of material have been introduced.

Attention is drawn particularly to the *reversal*, compared with the previous edition of this British Standard, of the relationship between drum class and metal sheet thickness. In the present standard, the higher the class number of a drum of given capacity the thinner the sheet from which the drum is made. There is currently a trend towards the use of drums made of thinner sheets. The present class designation will permit the addition of further classes of drums made from even thinner sheets.

Drum handles are now specified in terms of a performance requirement in place of the previous materials specification.

Minimum ullage is no longer specified expressly, although allowance for ullage is implicit in the specification of both nominal and volumetric capacities.

Certain alternative requirements are permitted in this standard and purchasers should give full information concerning their requirements when ordering. For their guidance Appendix B lists those items on which purchasers' preferences, if any, should be stated.

*Certification.* Attention is drawn to the certification facilities described on the inside back cover of this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

## 1 Scope

This British Standard specifies requirements for light duty mild steel (coated or uncoated) drums with fixed ends with nominal capacities from 25 litres to 120 litres.

Lightweight tinplate drums of 25 litres nominal capacity are included.

Appendix A gives approximate Birmingham Gauge equivalents for thicknesses and Appendix B lists the information to be supplied by the purchaser when ordering.

## 2 References

The titles of the British Standards referred to in this standard are listed on the inside back cover.

## 3 Materials (body and ends)

**3.1 Quality.** The drums shall be made from annealed low carbon mild steel sheets<sup>1)</sup>. If so specified by the purchaser the sheets shall be tin coated (see BS 2920), galvanized (see BS 2989) or otherwise treated.

**3.2 Thickness.** The thickness of the sheet metal used for the body and ends shall comply with the values given in Table 1. Variations in thickness shall comply with the limits specified in BS 1449-1, BS 2920 and BS 2989, as appropriate.

## 4 Construction

**4.1 Body.** The body of the drum shall be made from a single sheet of metal.

When a drum is made from uncoated mild steel sheet the longitudinal seam shall be welded.

When a drum is made from tinplate, galvanized or otherwise treated steel sheet the longitudinal seam shall be folded, locked and soldered; alternatively, the seam shall be welded and, if required, suitably recoated internally and externally.

**4.2 Drums with plain or corrugated bodies.** Drums of 25 litres and 50 litres capacity may have a plain or corrugated body.

**4.3 Drums with pressed out rolling hoops.** Drums of 120 litres capacity shall have two pressed rolling hoops projecting beyond the surface of the body.

The rolling hoops shall be approximately equidistant from the ends and shall have  $280 \pm 3$  mm between centres. If required by the purchaser shallow corrugations may be formed between the rolling hoops and the drum ends.

**4.4 Ends.** The ends shall be pressings suitably formed to fit the body of the drum. Normally the ends shall be of the recessed type, but in the case of drums of 25 litres and 50 litres capacity one end may have an interrupted chimb (sometimes referred to as "chimbless").

When the tops of 25 litre and 50 litre drums have one of the several designs of interrupted chimb or dome type top they shall conform to the values and dimensions shown in Table 1 except for depth of top chimb. Internal height shall be measured from the base of the drum to the underside of the filling orifice.

Drums of 25 litres and 50 litres capacity shall have the heads reduced in diameter in order to make it possible to stack the drums with the heads nesting into the recesses of the bottoms of adjacent drums of like diameter.

When a drum is made from uncoated mild steel sheet the circumferential end seam shall be either double seamed and compound sealed, or double seamed and welded.

When a drum is made from tinplate, galvanized or otherwise treated steel sheet the circumferential end seam shall be either double seamed and compound sealed, or double seamed and soldered.

## 5 Handles

**5.1** Drums of 25 litres and 50 litres capacity may be fitted with a strap handle or wire drop handle. The strap handle, or the wire drop handle in the down position, shall not project above the chimb.

<sup>1)</sup> BS 1449-1 includes sheets of suitable grades.

The design and construction shall be such that a load of 50 kg, distributed evenly across the effective carrying width of the handle, is supported without permanent distortion or disruption of the handle or the seat of the handle. Figure 1 illustrates a hook attachment that can be used to achieve an even distribution of load across the carrying width of the handle.

5.2 The handle or handle retaining lugs shall be either riveted or welded in position.

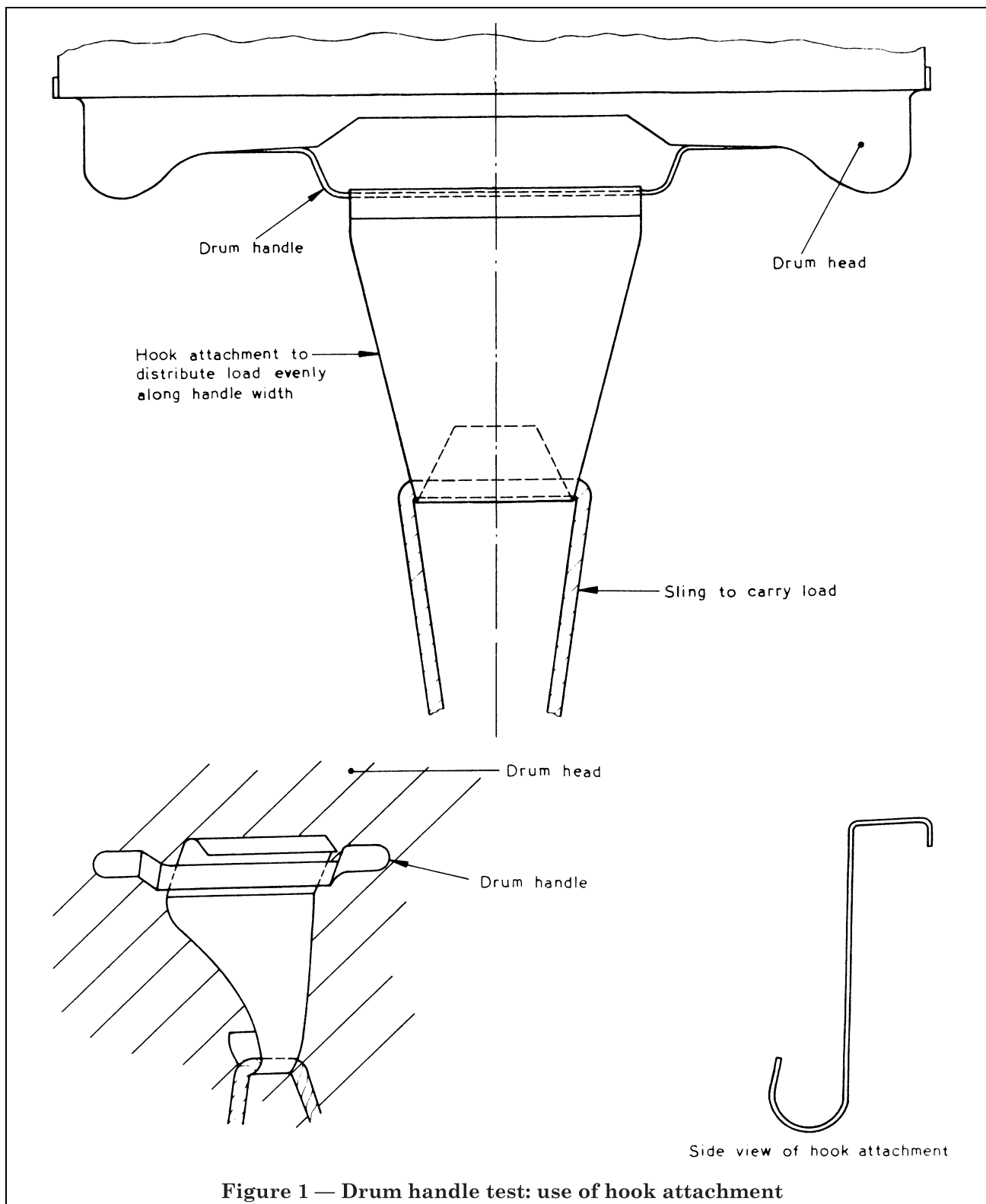


Figure 1 — Drum handle test: use of hook attachment

## 6 Size and class

Drums shall be designated by the appropriate nominal capacity and class specified in Table 1.

## 7 Dimensions and tolerances

**7.1 General.** The drums shall, within the limits of tolerance specified, conform to the dimensions given in Table 1.

**7.2 Tolerances.** The manufacturing tolerances shall be as follows.

Internal diameter:	for 279.4 mm	$\pm 1.0$ mm
	over 279.4 mm	$\pm 1.5$ mm
Internal height:	for 279.4 mm internal diameter	$\pm 1.5$ mm
	over 279.4 mm internal diameter	$\pm 3$ mm
Depth of rolling hoops		+ 0 mm
		- 1.5 mm
Chimb depth		$\pm 1.5$ mm

## 8 Closures

The closure(s) of the drum shall comply with the requirements of the purchaser. When closed the body closure shall not project beyond the rolling hoops (120 litre drums) and the end closure(s) shall not project beyond the chimb or, in the case of a chimbless 25 litre or 50 litre drum, the upper surface of the head.

## 9 Finish

The nature of the internal and external finish required shall be agreed between the purchaser and the manufacturer.

## 10 Cleanliness

Drums as delivered shall be dry, clean and free from rust, scale and foreign matter.

## 11 Testing

**11.1** The drums shall be tested by air pressure and they shall withstand without leakage an air pressure of 20 kPa for sheets of thickness 0.50 mm or less, and 35 kPa for sheets thicker than 0.50 mm.

**11.2** If performance tests are required, the details shall be agreed between the manufacturer and the purchaser, and the manufacturer shall give the purchaser facilities to witness the tests.

## 12 Marking

When agreed between the purchaser and the manufacturer, the drums shall have the following marks embossed on one end, in type of a size appropriate to the sheet thickness, but in no case exceeding 50 mm in height.

- a) The manufacturer's identification mark.
- b) The number of this British Standard and class as "BS 814/.....".
- c) The thickness of the material, the nominal capacity and the date of manufacture in the following manner: 50 25 1/71

This example indicates a drum with body of thickness 0.50 mm, having nominal capacity of 25 litres, made in the first quarter, i.e. January, February, or March of 1971.

## 13 Inspection

The manufacturer shall give the purchaser and/or his representative permission to witness the testing and inspection of drums after manufacture.

Table 1 — Dimensions of British Standard mild steel and tinplate drums (light duty: fixed ends)

Nominal capacity	Volumetric capacity		Internal diameter	Overall diameter (max.)	Internal height	Depth of chimb		Depth of rolling hoops	Thickness of sheet															
						Min.	Max.		mm	mm	Class 1		Class 2		Class 3		Class 4		Class 5		Class 6		Class 7	
											litres	litres	mm	mm	Body	Ends	Body	Ends	Body	Ends	Body	Ends	Body	Ends
25 (See Note 1)	26.2	26.7	279.4	286	435	16	13	—	0.80	0.80	0.625	0.625	0.45	0.45	0.40	0.40	0.35	0.35	0.30	0.30				
50	52.2	53.7	355.6	364	536	16	16	—	1.00	0.80	0.625	0.625	0.50	0.50	—	—	—	—	—	—				
120	124.7	127.4	457.2	492	762	16	16	16	1.25	1.125	1.00	1.00	0.80	0.80	—	—	—	—	—	—				

NOTE 1 Lightweight tinplate drums of 25 litres capacity (classes 4, 5, 6 and 7) may have shallower chimb depths provided that the closure clearance provisions of clause 7 are complied with.



## Appendix A Approximate Birmingham Gauge equivalents for thicknesses given in Table 1

Thickness	Approximate B.G.
mm	
0.35	29
0.40	28
0.45	27
0.50	26
0.625	24
0.80	22
1.00	20
1.125	19
1.25	18

## Appendix B Information to be supplied by the purchaser when ordering

As this standard contains certain alternatives to the requirements for metal drums, the purchaser should state his alternative requirements, if applicable, as follows.

- a) Whether the steel sheets are to be coated (see **3.1**).
- b) Whether the seam of the body is to be folded, locked and soldered or welded (see **4.1**).
- c) Whether drums of 25 litres and 50 litres capacity are to have plain or corrugated bodies (see **4.2**).
- d) Whether drums of 25 litres and 50 litres capacity are to have recessed type or chimbless heads (see **4.4**).
- e) What form of circumferential end seaming is to be used (see **4.4**).
- f) Whether or not a handle is required and, if so, type required (see **5.1**).
- g) Details of closure (see clause **8**).
- h) Details of internal and external finish required (see clause **9**).
- j) Whether marking is required (see clause **10**).
- k) Whether access to testing and inspection is required (see clause **13**).



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## Publications referred to

This standard makes reference to the following British Standards:

BS 1449, *Steel plate, sheet and strip.*

BS 1449-1, *Carbon steel plate, sheet and strip.*

BS 2920, *Cold-reduced tinplate and cold-reduced blackplate.*

BS 2989, *Hot-dip galvanized plain steel sheet and coil.*

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