

BUREAU OF INDIAN STANDARDS

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भारतीय मानक मसौदा

स्टील ड्रम (जस्तीकृत और गैर जस्तीकृत) — विशिष्टि
(IS 2552 का चौथा पुनरीक्षण)

Draft Indian Standard

Steel Drums (Galvanized and Ungalvanized) — Specification

(Fourth Revision of IS 2552)

ICS 55.140

Metal Containers Sectional Committee, PGD 38 Last Date for Comments: **28 July 2024**

FOREWORD

(Formal clauses will be added later.)

This standard was first published in 1963 and was subsequently revised in 1970, 1979 and 1989. In this revision, following changes have been made:

- a) References have been updated.
- b) Amendments have been incorporated.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

STEEL DRUMS (GALVANIZED AND UNGALVANIZED) — SPECIFICATION

(Fourth Revision)

1 SCOPE

This standard specifies the requirements for mild steel (galvanized and ungalvanized) drums with fixed ends of nominal capacity ranging from 3 l to 150 l.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

<i>IS No.</i>	<i>Title</i>
IS 277 : 2018	Galvanized steel strips and sheets (plain and corrugated) — Specification (<i>seventh revision</i>)
IS 513 (Part 1) : 2016	Cold reduced carbon steel sheet and strip: Part 1 Cold forming and drawing purpose (<i>sixth revision</i>)
IS 1079 : 2017	Hot rolled carbon steel sheet, plate and strip — Specification (<i>seventh revision</i>)
IS 1394 : 1984	Glossary of terms relating to metal containers (<i>third revision</i>)
IS 1784 : 2020	Screwed closures for drums — Specification (<i>fourth revision</i>)
PGD 38(24487)	Metal closures for drums (<i>second revision</i> of IS 2474)
IS 3259 : 1966	Methods of sampling of metal containers

3 TERMINOLOGY

For the purpose of this standard, the terms given in IS 1394 shall apply.

4 GRADES

The drums shall be designated by the nominal capacity and Grade A1, A2, B1, B2 and C depending upon the steel thickness (*see 6.2*) and manufacture (*see 7.1.2*).

4.1 Drums of Grade A1 and A2 are recommended for packing petroleum products and other highly inflammable materials with a flash point below 24.5°C which give rise to a fire risk in case of leakage.

4.2 Drums of Grades B1 and B2 are meant for packing less inflammable materials with a flash point above 24.5°C. Grade B1 drums are made of thicker sheets as compared to Grade B2 and are intended to be used as returnable packs.

4.3 Drums of Grade C are meant for packing materials of non-toxic, non-poisonous and non-hazardous nature with flash point above 30°C.

5 CAPACITY AND DIMENSIONS

There shall be 13 sizes of drums with their nominal capacities and internal diameter as given in Table 1. For stackable drums, the diameter at the top or bottom may be suitably recessed to allow easy resting of drums on one another.

Table 1 Sizes and Capacities of Steel Drums
(Clause 5)

Sl No.	Nominal Capacity l	Internal Diameter mm	Gross Capacity l	
			Minimum	Maximum
(1)	(2)	(3)	(4)	(5)
		± 1.5		
1	3	200	3.12	3.22
2	5	200	5.25	5.50
3	10	250	10.50	10.75
4	15	280	15.75	16.15
5	20	280	21.00	21.50
6	25	280	26.25	26.90
7	30	355	31.50	32.25
8	40	355	42.00	43.00
9	50	355	52.50	53.75
10	75	450	78.75	80.65
11	100	450	105.00	107.50
12	125	480	131.25	134.40
13	150	480	157.50	161.25

6 MATERIAL

6.1 The body and the ends of the drums shall be made of mild steel sheets conforming to IS 513 (Part 1) or IS 1079; or galvanized steel sheets conforming to IS 277 as required by the purchaser. The zinc coating of the galvanized steel sheets shall conform to the grades, given in IS 277, as specified by the purchaser.

6.2 Thickness

The thickness of the sheet metal used for the body and the ends shall comply with the values given in Table 2. Variations in thickness shall comply with the limits specified in IS 513 (Part 1), IS 1079 or IS 277.

Table 2 Nominal Thickness of Sheet for Drums
(Clause 6.2)

Sl No.	Nominal Capacity l	Steel Thickness mm									
		Grade A1		Grade A2		Grade B1		Grade B2		Grade C	
		Body	Ends	Body	Ends	Body	Ends	Body	Ends	Body	Ends
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	3 to 10	0.63	0.63	0.50	0.63	0.50	0.63	0.50	0.50	0.40	0.50
2	Over 10, up to and including 30	0.80	0.80	0.63	0.63	0.63	0.63	0.50	0.63	0.50	0.50
3	40 and 50	1.00	1.00	0.80	0.80	0.63	0.80	0.63	0.63	0.50	0.63
4	75 to 150	1.25	1.25	1.00	1.00	0.80	0.80	0.63	0.80	0.63	0.63

7 CONSTRUCTION

7.1 Body

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

7.1.1 When a drum is made from uncoated mild steel sheet, the longitudinal seam shall be welded (*see* Fig. 1A).

7.1.2 For Grade C drums, when a drum is made from tinplate, galvanized or otherwise treated steel sheet, the longitudinal seam shall be folded and locked (*see* Fig. 1B); alternatively, the seam shall be welded and, if required, suitably recoated internally and externally.

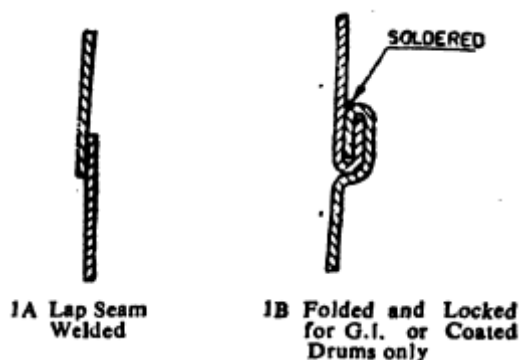


FIG. 1 TYPICAL SIDE SEAM

7.2 Drums with Plain or Corrugated Bodies

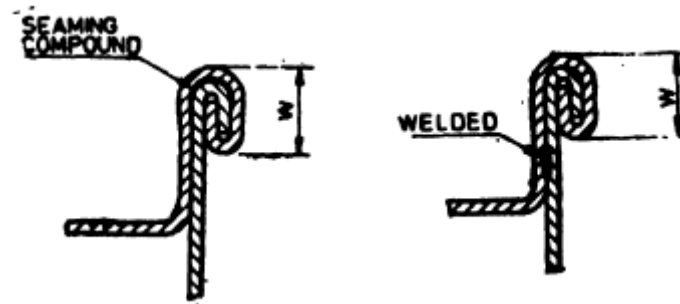
The drums up to 30 l capacity may have plain or corrugated body whereas drums of higher capacity shall have corrugated body only. Drums of 125 l capacity and above shall have two rolling beads projecting beyond the surface of the body.

7.3 Ends

The ends shall be pressings, suitably formed, to fit the body of the drum.

7.3.1 End Seam Construction

Drums of Grade A1 and A2 up to 10 l capacity and grade B1, B2 and C of all capacities made from plain mild steel sheet shall have end seam, double seamed with seaming compound as shown in Fig. 2A. Drums of Grade A1 and A2: of nominal capacity above 10 l shall be double seamed and welded as shown in Fig. 2B. G.I. drums or drums with other coating shall be double seamed and soldered as shown in Fig. 2C.



2A Double Seamed with Seaming Compound for Grade A1, A2 Drums up to 10 l capacity and Grade B1, B2 and C Drums

2B Double Seamed and Welded Grade A1 and A2 Drums of Capacity Above 10 l



2C Double Seamed and Soldered for G.I. Drums only

FIG. 2 TYPICAL END SEAMS (TOP AND BOTTOM)

The drums may be provided with suitable closures as agreed to between the purchaser and the supplier. The Indian Standards PGD 38(24487) and IS 1784 may be referred to for the selection of closures. Plug type closures or lever lid closure [Fig. 1, 2 and 3 of PGD 38(24487)] shall fit tight on the drum neck. Screwed closure of the type shown in Fig. 4 of PGD 38(24487) or IS 1784 shall not be tested for air pressure tests on the drum top but shall be tested separately on a fixture according to 7.2 of PGD 38(24487) and 8.2 of IS 1784.

7.5 Handle

Drums up to 25 l capacity may be fitted with a sheet metal strap handle or wire drop handle. The strap handle or the wire drop handle in the down position, shall not project above the chimb. The design and construction of the handle shall be strong enough to withstand the handle pull test as detailed in 9.3 without any permanent distortion or disruption of the handle or the seat of the handle. The minimum sheet thickness of the strap handle shall be 0.5 mm, nominal and the wire thickness of the wire handle shall be 5.0 mm, nominal. The chimb of the

drum shall protrude at least 1 mm above the closure and the handle, and shall be not less than 10 mm deep.

7.5.1 The handle shall be so designed and dimensioned as to provide for comfortable and easy handling. The handle shall be securely fixed to the drum by spot welding or riveting with flat 5 mm rivets. In the case of fixed handles, the portion of the drum below the handle shall be suitably dished.

7.5.2 Drums of higher capacity (above 30 l) may be fitted with or more handles if required by the purchaser.

8 FINISH

8.1 The internal and external finish of the drums shall be as agreed between the purchaser and the manufacturer.

8.2 The drums as delivered shall be dry, clean and free from rust, scale and foreign matter.

9 TESTING

9.1 Air Pressure Test

Each drum of Grade A1 and A2, B1 and B2 and C, when required for packing liquid products, shall be subjected to an internal air pressure of 40 kPa (0.40 kgf/cm²) while fully immersed under water or coated over with soap water. The drum shall show no sign of leakage or drop in the test pressure when observed for at least 10 s.

9.1.1 Air pressure test shall be carried out before the drums are given protective coating.

9.2 Drop Test

The drums of Grade A1 and A2 shall be subjected to the drop tests detailed in **9.2.1** and **9.2.2**.

9.2.1 Fill the drum to 98 percent of its total capacity with water, close the drum properly and keep its diagonal in a vertical position. Drop the drum four times from a height of one metre on a concrete floor, drops arranged in such a manner that the following four points of the drum strike the floor on each drop in turn:

- a) The bottom rim near its junction with the side seam;
- b) The top rim near its junction with the side seam;
- c) The bottom rim diametrically opposite to the position at (a); and
- d) The top rim diametrically opposite to the position at (b).

9.2.2 Empty the drum after the conclusion of the four drops, and subject it to the air pressure test detailed in **9.1**. The drum shall not show any sign of leakage.

9.3 Handle Pull Test

9.3.1 The handle of the drum shall be subjected to the gradual pull as given below, distributed uniformly over the length of the handle for a period of two minutes:

<i>Nominal Capacity of Drums</i>	<i>Pull Load</i>
Up to 10 l	30 kg
Above 10 l	72 kg

Fig. 3 illustrates a hook attachment that can be used to achieve an even distribution of load across the carrying width of the handle.

9.3.2 After removal of the load, no permanent distortion or damage shall be observed on the handle retaining lugs or rivets or welding on the handle seat.

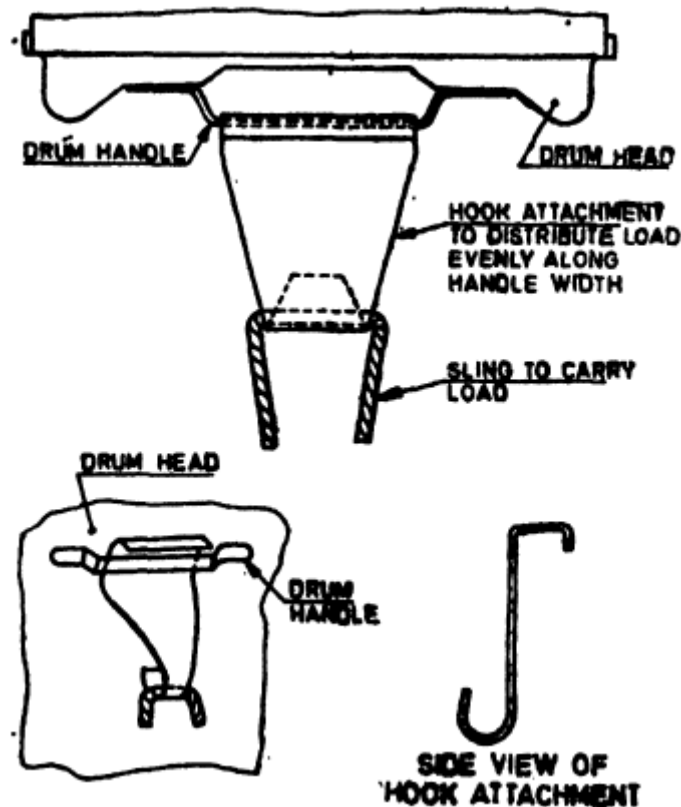


FIG. 3 DRUM HANDLE TEST USE OF HOOK ATTACHMENT

10 MARKING

10.1 The drums shall be marked indelibly or embossed with the following information on top or bottom ends:

- a) Manufacture's name or identification mark,
- b) Grade or the drum, and
- c) Year of manufacture.

10.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed there under, and the product(s) may be marked with the Standard Mark.

11 SAMPLING

Representative samples for test shall be drawn as prescribed in IS 3259.

12 INFORMATION TO BE SUPPLIED BY THE PURCHASER WHEN ORDERING

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

- a) Whether the steel sheets are to be coated (**8.1**);
- b) Whether the seam of the body is to be folded and locked or welded (applicable to Grade C drums only, *see* **7.1.2**);
- c) Whether drums up to 30 l capacity are to have plain or corrugated bodies (**7.2**);
- d) What form of circumferential end seaming is to be used (**7.3.1**);
- e) Whether or not a handle is required and, if so, type required (**7.5**);
- f) Details of closure (**7.4**); and
- g) Details of internal and external finish required (**8**).