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(JSDA/JSA)

Open head steel drums

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Steel Drum Association (JSDA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently JIS Z 1600:1993 is replaced with this Standard.

This Standard has been made based on ISO 15750-1:2002, *Packaging—Steel drums—Part 1: Removable head (open head) drums with a minimum total capacity of 208 l, 210 l and 216.5 l* for the purpose of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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In the event of any doubts arising as to the contents,
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Open head steel drums

Introduction This Japanese Industrial Standard has been prepared based on the first edition of **ISO 15750-1** *Packaging—Steel drums—Part 1: Removable head (open head) drums with a minimum total capacity of 208 l, 210 l and 216.5 l* published in 2002 with some modifications of the technical contents.

The portions given continuous sidelines or dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of the modifications with the explanations is given in Annex 3 (informative).

Throughout the world a large number of steel drum types with different dimensions and characteristics are being used. The differences in location of filling openings and outer dimensions result in differences in filling, handling and transportation.

This Standard gives uniform specifications for four main types of drums for use in international trade, and the preferred target option drum is the drum type A (see table 1). On the other hand, the drums mainly used in Japan for the transport and storage containers of solid dangerous goods, solid non-dangerous goods, liquid dangerous goods and liquid non-dangerous goods are type D. Considering reuse of altered drums, steel sheets with thickness of 1.0 mm to 1.6 mm are widely employed.

Where the drums are intended to use for the transport of dangerous goods, attention is drawn to the regulatory requirements which govern the transport of those goods in the countries concerned, including capseals/overseals fitted in accordance with the certificate. Depending upon the mode of transport, this means that the drums shall meet the following requirements.

- The Ship Safety Law (Law No. 11, 1933)
- Fire Service Law (Law No. 186, 1948)
- Poisonous and Deleterious Substances Control Law (Law No. 303, 1950)
- Aviation Law (Law No. 231, 1952)
- UN (United Nations): Recommendations on the Transport of Dangerous Goods
- ICAO (International Civil Aviation Organization): Technical Instructions for Safe Transport of Dangerous Goods by Air
- IMO (International Maritime Organization): International Maritime Dangerous Goods Code (IMDG Code)

This involves the certification and marking of the drums according to the regulations.

1 Scope This Standard specifies the characteristics and dimensions of removable head (open head) drums, manufactured from steel sheet, having a total capacity of 208 L, 210 L and 216.5 L (hereafter referred to as “drums”). It also specifies methods for measuring the total and brimful capacity, methods for test and inspection, acceptance criteria and methods for marking.

NOTES 1 The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence between the original International Standard and JIS are IDT (identical), MOD (modified) and NEQ (not equivalent) according to ISO/IEC Guide 21.

ISO 15750-1:2002 *Packaging—Steel drums—Part 1:Removable head (open head) drums with a minimum total capacity of 208 l, 210 l and 216.5 l (MOD)*

2 The dangerous goods referred to this Standard are those to which the following Japanese Laws, international recommendations, technical guidelines and regulations are applicable.

- a) The Ship Safety Law (Law No. 11, 1933)
- b) Fire Service Law (Law No. 186, 1948)
- c) Poisonous and Deleterious Substances Control Law (Law No. 303, 1950)
- d) Aircraft Manufacturing Industry Law (Law No. 231, 1952)
- e) UN (United Nations): Recommendations on the Transport of Dangerous Goods
- f) ICAO (International Civil Aviation Organization): Technical Instructions for Safe Transport of Dangerous Goods by Air
- g) IMO (International Maritime Organization): International Maritime Dangerous Goods Code (IMDG Code)

3 The grade of containers specified in this Standard shall be read as follows in accordance with the related laws.

- a) The Ship Safety Law Grade of containers
- b) Fire Service Law Grade of danger
- c) Poisonous and Deleterious Substances Control Law Grade of packages
- d) Aviation Law Grade of containers

2 Normative references The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions (including amendments) of the standards indicated below shall be applied.

JIS G 3101 *Rolled steels for general structure*

JIS G 3131 *Hot-rolled mild steel plates, sheets and strips*

NOTE : ISO 3573:1999 *Hot-rolled carbon steel sheet of commercial and drawing qualities* is equivalent to the said standard.

JIS G 3141 *Cold-reduced carbon steel sheets and strips*

NOTE : ISO 3574:1999 *Cold-reduced carbon steel sheet of commercial and drawing qualities* is equivalent to the said standard.

JIS G 3302 *Hot-dip zinc-coated steel sheets and coils*

JIS G 3313 *Electrolytic zinc-coated steel sheets and coils*

JIS G 3505 *Low carbon steel wire rods*

JIS G 4305 *Cold-rolled stainless steel plates, sheets, and strip*

JIS Z 1604 *Plugs and flanges for steel drums*

NOTE : ISO 15750-3:2002 *Packaging—Steel drums—Part 3 : Inserted flange-type closure systems* is equivalent to the said standard.

3 Terms and definitions For the purposes of this Standard, the following terms and definitions apply.

3.1 removable head (open head) steel drum cylindrical packaging made of steel, the bottom end of which is permanently fixed to the body and the top end can be removed as a lid and closed by means of a closing ring (band)

NOTE : The top end may have additional openings for filling and venting.

3.2 double seam seam consisting of five layers of steel

3.3 round seam seam consisting of six or more layers of steel

3.4 nominal capacity capacity, in litres, which by convention is used to represent a class of drums of similar brimful capacities

3.5 brimful capacity volume of water, in litres, held by the drum when filled through the fitted filling orifice to the point of overflowing, the drum being closed and having a lid fitted with closures

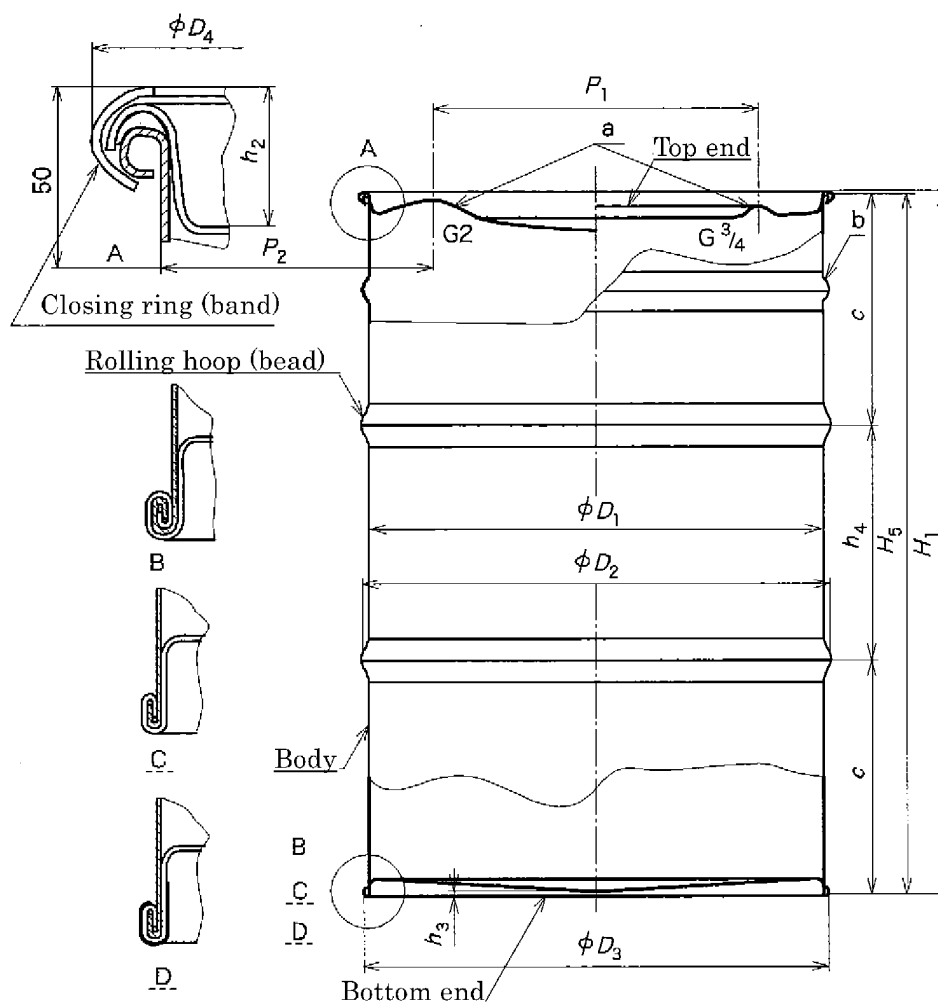
NOTE : Annex A specifies the measuring method.

3.6 total capacity : TC volume of water, in litres, held by the drum when filled completely, i.e. following the removal of any air trapped in the drum, the drum being closed and having a lid fitted with closures

NOTE : Annex A specifies the measuring method.

4 Dimensions The shape of the drum shall be as shown in figure 1. The dimensions shall be given in table 1.

The steel sheet thickness shall be between 0.6 mm and 1.6 mm, with tolerances according to JIS G 3131, JIS G 3141 or table 3 (normal tolerances). The thickness may be paired as shown in table 2.



NOTE : Figure 1 shows the details of drum types B and D. The shape of the top end is suggested to have three options: convex, flat and concave. The detail A shows that the top end is bound tightly to the body using the closing ring (band) after attaching a gasket to the top end. The details B and C show the configuration of curl seaming. The detail B shows an example of round seam, and the detail C shows an example of double seam. The detail D shows that a cover ring is fitted in the chime.

- a Closures (optional)
- b The third rolling hoop (bead) is optional
- c $(H_5 - h_4)/2$

Figure 1 Shape of steel drum

Table 1 Dimensions of steel drums

Dimension	Description	Drum Type A		Drum Type B		Drum Type C	Drum Type D
(see figure 1)	Total capacity	210 L (min.)	216.5 L (min.)	210 L (min.)	216.5 L (min.)	208 L (min.)	208 L (min.)
D_1	Internal diameter	571.5 ± 2	571.5 ± 2	571.5 ± 2	571.5 ± 2	566 ± 2	566 ± 2
D_2	External diameter over rolling hoops	585 (max.)	585 (max.)	596 (max.)	596 (max.)	585 (max.)	585 (max.)
D_3	Diameter over bottom chime	585 (max.)	585 (max.)	593 (max.)	593 (max.)	585 (max.)	585 (max.)
D_4	Diameter over closing ring	585 (max.) (a)	585 (max.) (a)	610 (max.)	610 (max.)	585 (max.) (a)	620 (max.)
H_1	Total drum height	878 ± 5	888 ± 5	878 ± 5	888 ± 5	890 ± 5	890 ± 5
H_5	Height with cover off	868 ± 5	878 ± 5	868 ± 5	878 ± 5	880 ± 5	880 ± 5
h_2	Depth of top	(b)	(b)	(b)	(b)	(b)	(b)
h_3	Clearance from floor	4 (min.)	4 (min.)	4 (min.)	4 (min.)	4 (min.)	4 (min.)
h_4	Distance between beads	280 ± 3	280 ± 3	280 ± 3	280 ± 3	300 ± 3	300 ± 3
P_1	Centre-to-centre distance of closures	(c)	(c)	(c)	(c)	(c)	(c)
P_2	Location of G2 (50 mm) closure to outside body, measured approximately 50 mm from the top	72 ± 3	72 ± 3	72 ± 3	72 ± 3	94 ± 3	94 ± 3

The total capacity shall be as indicated in table 1 when measured in accordance with Annex A.

Closures are optional. If closures are fitted, the insertion of the closure with the G2 thread specified in JIS Z 1604 shall be such that its centreline is as close as possible to the vertical.

NOTES 1 Of the four drum types shown, types A and C have the optimal outside dimensions required for stacking drums four abreast in ISO containers as per ISO 668 (Series 1 freight containers – Classification, dimensions and ratings).

2 For types A and C, the diameter D_4 is achieved by modification of the top construction. The two approaches in use are as follows.

- Reduction of the drum whereby the closing system (curl, cover, closing ring) maintains the same dimensions as in use for type B and type D. The required inside diameter of the reduced top part of the drum is in this case approx. 545 mm for type A and 536 mm for type C.
- Changing of the closing system (curl, cover and closing ring) so that, while maintaining the inside diameter at 571.5 mm for type A and 566 mm for type C, the total outside diameter is kept within 585 mm.

Notes (a) The diameter over the closing ring (band) shall normally be a maximum of 585 mm but may be slightly larger if measured over the lever section or bolt section of the ring.

(b) If the lid is fitted with closures, the depth of the top shall be such that the closures, capseals and overseals do not protrude above the closing ring.

(c) For the centre-to-centre distance of the closures, the dimensions shall be:

- drum types A and B: $444 \text{ mm} \pm 6 \text{ mm}$ or $451 \text{ mm} \pm 1 \text{ mm}$,
- drum types C and D: $400 \text{ mm} \pm 6 \text{ mm}$.