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Tight 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 1601:1994** is replaced with this Standard.

This Standard has been made based on **ISO 15750-2:2002**, *Packaging—Steel drums—Part 2: Non-removable head (tight head) drums with a minimum total capacity of 212 l, 216.5 l and 230 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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Tight head steel drums

Introduction This Japanese Industrial Standard has been prepared based on the first edition of **ISO 15750-2 Packaging—Steel drums—Part 2: Non-removable head (tight head) drums with a minimum total capacity of 212 l, 216.5 l and 230 l** published in 2002 with some modifications of the technical contents.

The portions given 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 explanation is shown in Annex 3 (informative).

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

This Standard gives uniform specifications for three main types of drums for use in international trade and the preferred target option drum is drum type A (see table 1). On the other hand, drum type C is mainly used in Japan for transport and storage containers of liquid dangerous and non-dangerous goods. 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 meeting the requirements of :

- 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 non-removable head (tight head) drums, manufactured from steel sheet, having a total capacity of 212 L, 216.5 L, 230 L (hereafter referred to as “drums”). It also specifies methods for measuring the total capacity and brimful capacity, a draining test method, methods of test and inspection, acceptance criteria, and method of 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 15750-2:2002 *Packaging—Steel drums—Part 2: Non-removable head (tight head) drums with a minimum total capacity of 212 l, 216.5 l and 230 l (MOD)*

2 The dangerous goods in this Standard refer to those to which the following Japanese Laws, international recommendations, technical instructions or 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) Aviation 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 as 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 of the standards (including amendments) indicated below shall be applied.

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 4305 Cold-rolled stainless steel plate, sheet 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 purpose of this Standard, the following terms and definitions apply.

3.1 non-removable head (tight head) steel drum cylindrical packaging made of steel, the top end and bottom end of which are permanently fixed to the body, with openings for filling, emptying and venting in the head

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 is used to represent a generic name of drum 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 and fitted with the closures

NOTE : Annex A specifies the measuring method.

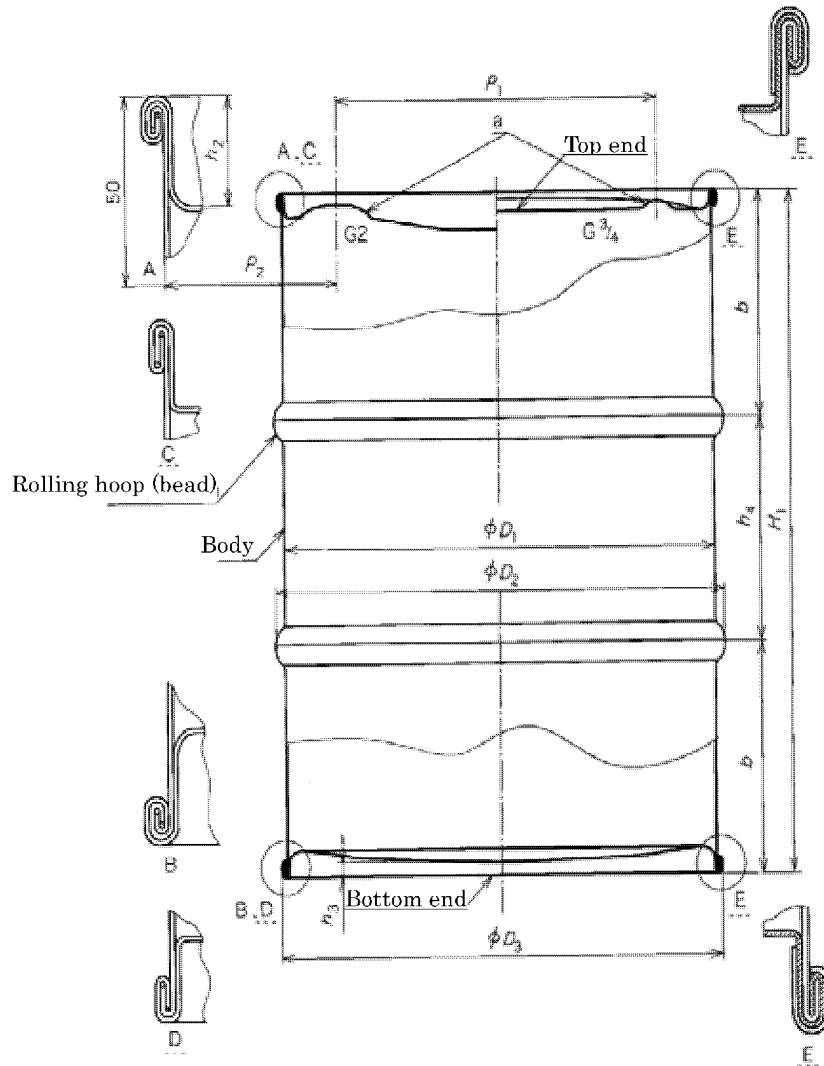
3.6 total capacity: TC volume of water, in litres, held by the drum when filled completely, and fitted with drum closures, i.e. following the removal of any air trapped in the drum

NOTE : Annex A specifies the measuring method.

4 Dimensions The shape of 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.

Unit : mm



NOTE : Figure 1 shows three possibilities for the shape of top end: convex, flat and concave. The detail A, B, C and D show the configuration of curl seaming. The detail A and B show an example of round seam, and the detail C and D show an example of double seam. The detail E shows that a cover ring is fitted to the chime.

a The complete closures (plug and capseals/overseals) shall not protrude above the top of chime.

$$b \ (H_l - h_4)/2$$

Figure 1 Shape of drums

Table 1 Dimensions of drums

Unit : mm

Dimension (see figure 1)	Description	Drum Type A		Drum Type B		Drum Type C
	Total capacity	216.5 L (min.)	230 L (min.)	216.5 L (min.)	230 L (min.)	212 L (min.)
D_1	Internal diameter	571.5 ± 2	571.5 ± 2	571.5 ± 2	571.5 ± 2	566 ± 2
D_2	External diameter over rolling hoops	585 (max.)	585 (max.)	596 (max.)	596 (max.)	585 (max.)
D_3	Diameter over bottom chime	585 (max.)	585 (max.)	593 (max.)	593 (max.)	585 (max.)
H_1	Total drum height	878 ± 5	932 ± 5	878 ± 5	932 ± 5	890 ± 5
h_2	Depth of top	(a)	(a)	(a)	(a)	(a)
h_3	Clearance from floor	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
P_1	Centre-to-centre distance of closures	(b)	(b)	(b)	(b)	(b)
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

The total capacity shall be as indicated in table 1 when measured in accordance with Annex A.
The insertion of the closure with the G2 thread as specified **JIS Z 1604** shall be such that its centreline is as close as possible to the vertical.

NOTES 1 For drums produced with a concave top, the total drum height H_1 may be increased by 4 mm in order to reach the specified volume.
2 Of the three drum types shown, types A and C have the optimal outside diameter required for stacking drums four abreast in ISO containers as per **ISO 668** (*Series 1 freight containers – Classification, dimensions and ratings*).

Notes (a) The depth of the top shall be such that the closures and capseals/overseals do not protrude above the chime.
(b) For the centre-to-centre distance of the closures, the dimensions shall be:
– drum type A and B : $444 \text{ mm} \pm 6 \text{ mm}$ or $451 \text{ mm} \pm 1 \text{ mm}$
– drum type C : $400 \text{ mm} \pm 6 \text{ mm}$

Table 2 Steel sheet thickness and mass for drum classes

Class	Thickness mm		Mass kg (min.)
	Top end and bottom end	Drum body	
Class H	1.6	1.6	27.5
Class M	1.2	1.2	20.5
Class LM	1.2	1.0	18.0
Class L	1.0	1.0	17.0

- NOTES 1 Class H of stainless steel drum shall be 1.5 mm in thickness and 25.5 kg (min.) in mass.
2 Inspection for dimensions and mass shall be in accordance with Annex 1.