

Revised

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 90

HERMETICALLY SEALED METAL FOOD CONTAINERS

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 90, *Hermetically Sealed Metal Food Containers*, was prepared by Technical Committee ISO/TC 52, *Hermetically Sealed Metal Food Containers*, the Secretariat of which is held by the British Standards Institution, (B.S.I.).

The first Draft ISO Recommendation proposed by the Technical Committee was submitted to all the ISO Member Bodies, in March 1952, but part of it proved to be unacceptable and re-consideration was necessary.

On 15 October 1957, a second Draft ISO Recommendation (No. 10) was distributed to all the ISO Member Bodies and approved, subject to some editorial amendments, by the following 21 (out of a total of 39) Member Bodies:

Austria	Israel	Portugal
Belgium	Italy	Spain
Burma	Japan	Sweden
Czechoslovakia	Netherlands	Switzerland
France	New Zealand	United Kingdom
Germany	Pakistan	U.S.S.R.
Hungary	Poland	Yugoslavia

One Member Body opposed the approval of the Draft: Australia.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in March 1959, to accept it as an ISO RECOMMENDATION.

HERMETICALLY SEALED METAL FOOD CONTAINERS

GENERAL DATA

This ISO Recommendation contains the following sections:

1. Determination of capacity,
2. Designation,
3. Marking,
4. Definitions,
5. Procedure for dimensional specification.

1. DETERMINATION OF CAPACITY

It is recommended that the following method be used internationally for determining the capacities of hermetically sealed metal containers:

- 1.1 The bottom is applied to the container by the usual seaming methods.
- 1.2 Two holes, 3 to 4 mm (approximately $\frac{1}{8}$ inch) in diameter and about 5 mm (approximately $\frac{1}{4}$ inch) apart, are drilled in the lid of the can as close as possible to the countersink, from the inside surface outwards. This component is then applied to the can by the usual seaming methods.
- 1.3 The empty container is weighed in grammes to the nearest 1 gramme.
- 1.4 It is then filled with water at a temperature of 20 °C from a narrow water jet through one of the holes, with the container inclined at an angle to the vertical so that the holes are as high as possible. When water first runs out of the second hole, complete filling is ensured by closing the holes with the fingers, gently shaking the can and completing the filling. Any surplus water on the outside of the can is removed with blotting paper.
- 1.5 The filled container is then weighed in grammes to the nearest 1 gramme.
- 1.6 The difference between the weighings plus 0.28 per cent represents the capacity of the container in millilitres.

Note. The density correction of 0.28 ml for each 100 ml of capacity is based essentially on the temperature of the water which is weighed in the can, but also allows for the buoyancy of the can and of the weights in air. It has been assumed that the specific gravity of the water-filled can is unity and that brass weights are used, but some departure from these conditions may be allowed without serious loss of accuracy.

2. DESIGNATION

It is recommended that hermetically sealed metal food containers be designated internationally

by their capacity, expressed in millilitres, and
by their characteristic dimensions, expressed in millimetres,

for example:

for *cans with circular bottom*: by their diameter;

for *cans with rectangular bottom*: by the length and width of the bottom and

for *cans with oval bottom*: by the lengths of the axes of the bottom.

All these designations should be preceded or followed by the letters "ISO".

The marking of these designations on the containers is not obligatory.

3. MARKING

It is recommended to indicate on the can the country in which it is filled. This marking is not obligatory and, if used, may be additional to any mark required by the legislation of the country of filling.

The embossing of marks (letters, figures, signs and their surrounding frame) on the top or the bottom of a metal container can cause oxidation of the metal with a risk of deterioration of the contents. It is thus desirable to reduce these markings to a strict minimum.

This marking, permanent and legible, should be put on the can in a conspicuous position where it is unlikely to be covered by a label.

It is therefore recommended, that the filling country adopts and that the importing country accepts, the following marking: a symbol, consisting of an oval in which appear the letter or letters shown in the annexed lists (pages 6, 7 and 8).

4. DEFINITIONS

4.1 Shape of cans

- (a) *Can with circular bottom (round can)*. Cylinder with a circular cross-section.
- (b) *Can with rectangular bottom (rectangular can)*. A straight-sided body with a rectangular cross-section and rounded corners.
- (c) *Can with oval bottom (oval can)*. A straight-sided body with an oval cross-section.
- (d) *Can with D-shaped bottom (D can)*. A straight-sided body with approximately trapezoidal cross-section (D-shaped), the corners and one side being rounded.

4.2 Capacity and dimensions

- Capacity.* The interior volume of the closed can, measured in accordance with the standard method (see Section 1), expressed in millilitres (ml).
- Height.* The overall distance from the lower edge of the bottom to the top of the can after closing, expressed in millimetres (mm).
- Ends.* The dimensions measured across the outside of the countersink of the ends, expressed in millimetres to the nearest millimetre. They correspond to the internal dimensions of the drawing ring in the die.

These dimensions are characterized by the following data.

- (a) *Round can* : diameter.
- (b) *Rectangular can* : length, width and radius of the corners.
- (c) *Oval can* : principal diameters and the radius of the arcs forming the oval.
- Elliptic can* : axes of the ellipse.
- (d) *D can* : the length of the straight of the D, the width of the D, the radii of the corners, the radius of the rounded side of the D.

4.3 Method of closing

- Seamed can* : top and bottom ends both seamed on.
- "A décollage" can* : top end soldered on and the bottom end seamed on.
- Vent hole can* : both top and bottom ends soldered on.
- Solid drawn can* : cover seamed or soldered and drawn bottom.

5. PROCEDURE FOR DIMENSIONAL SPECIFICATION

5.1 Commercial specification of cans

- (a) *Round can* : capacity — internal diameter.
- (b) *Rectangular can* : capacity — length and width of bottoms.
- (c) *Oval can* : capacity — length of the axes of the bottom.
- (d) *D can* : capacity — length of the straight side of the D and width of the D.

5.2 Exact specification of standard cans

- (a) *Round can* : capacity, internal diameter, maximum height.
- (b) *Rectangular can* : capacity, length, width, radius of the corners, maximum height.
- (c) *Oval can* : capacity, length of principal axes, maximum height.
- (d) *D can* : capacity, length of straight side and width of the D, radii of the corners and maximum height of the can.

5.3 Practical control of the dimensions of cans

- Height* by direct measurement.
- Ends* by measurement of the outside of the body of the can, the resulting figure should be reduced by 0.5 mm. Figures should be rounded to the nearest millimetre.

APPENDIX *

ABBREVIATIONS TO BE USED FOR THE MARKING OF CANS

(see Section 3, page 4)

1. List of the abbreviations accepted by the corresponding countries

Country	Symbol	Country	Symbol
Albania	ALB	New Zealand	NZ
Austria	A	Norway	N
Australia	AUS	Pakistan	PAK
Belgium	B	Poland	PL
Brazil	BR	Portugal	PORT
Bulgaria	BG	Angola	P ANG
Burma	BA	Cape Verde Islands	P CVD
Canada	CA	Guinea	P GN
Chile	RCH	Macao	P MAC
Czechoslovakia	CS	Mozambique	P MOC
Denmark	DANMARK	Portuguese India	P IND
Egypt	ET	St. Thomé	P STM
Finland	SF	Timor	P TIM
France	F	Rumania	R
Germany	D	Spain	E
Greece	GR	Sweden	S
Hungary	H	Switzerland	CH
India	IND	Turkey	TR
Ireland	EIR	Union of South Africa	ZA
Israel	IL	Union of Soviet Socialist Republics	SU
Italy	I	United Kingdom	GB
Japan	J	United States of America	USA
Mexico	MEX	Yugoslavia	Y
Netherlands	NL		

*This Appendix will be revised from time to time, in order to take into account any changes that may be made in the accepted or proposed abbreviations, or to indicate the formal acceptance of any proposed abbreviations.