

Freight containers —

Part 2: Specification and testing of series 1 freight containers —

Section 2.1 General cargo containers for general purposes

ICS 55.180.10

National foreword

This British Standard is the UK implementation of ISO 1496-1:1990+A5:2006. It supersedes BS 3951-2.1:1991 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the amendment. For example, text altered by ISO amendment 1 is indicated in the text by **A1** **A1**.

The UK participation in its preparation was entrusted to Technical Committee TW/1, Freight containers and swap bodies.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Introduction

The following grouping of container types is used for specification purposes in ISO 1496:

Part 1	
General purposes	00 to 09
Specific purposes	
— closed, vented/ventilated	10 to 19
— open top	50 to 59
Part 2	
Thermal	30 to 49
Part 3	
Tank	70 to 79
Bulk, pressurized	85 to 89
Part 4	
Bulk, non-pressurized (box type)	20 to 24
Bulk, non-pressurized (hopper type)	80 to 84
Part 5	
Platform (container)	60
Platform-based with incomplete superstructure and fixed ends	61 and 62
Platform-based with incomplete superstructure and folding ends	63 and 64
Platform-based with complete superstructure	65 to 69

NOTE Container types 90 to 99 are reserved for air/surface containers: see ISO 8323.

1 Scope

1.1 This part of ISO 1496 specifies the basic specifications and testing requirements for ISO series 1 freight containers of the totally enclosed general purpose types and certain specific purpose types (closed, vented, ventilated or open top) which are suitable for international exchange and for conveyance by road, rail and sea, including interchange between these forms of transport.

1.2 The container types covered by this part of ISO 1496 are given in Table 1.

Table 1 — Container types

Type code designation ^a	Type
00 to 04	Closed, including opening roof
10, 11	Closed, vented
13, 15, 17	Closed, ventilated
50 to 53	Open-top

^a In accordance with ISO 6346.

This part of ISO 1496 does not cover ventilation arrangements, either vented or ventilated.

1.3 The marking requirements for these containers are given in ISO 6346.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1496. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 1496 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

[A₄] ISO 668:1995, *Series 1 freight containers — Classification, dimensions and ratings*.

ISO 830:1999, *Freight containers — Vocabulary*.

ISO 1161:1984, *Series 1 freight containers — Corner fittings — Specification*.

ISO 6346:1995, *Freight containers — Coding, identification and marking*. **[A₄]**

[A₅] ISO PAS 17712:2003, *Freight containers — Mechanical seals*. **[A₅]**

3 Definitions

For the purposes of this part of ISO 1496, the definitions given in ISO 830 apply.

4 Dimensions and ratings

4.1 External dimensions

The overall external dimensions and tolerances of the freight containers covered by this part of ISO 1496 shall be those established in ISO 668 except that open-top containers may be of reduced height, in which case they shall be designated 1AX, 1BX, 1CX and 1DX. No part of the container shall project beyond these specified overall external dimensions.

4.2 Internal dimensions

Internal dimensions of containers shall be as large as possible, but, in any case:

- closed containers type 00 shall comply with the requirements for minimum internal length, width and height given in 4.3;
- containers type 02, having partial opening(s) in the side(s), shall comply with the requirements for minimum internal length and height given in 4.3;
- containers type 03, having an opening roof, shall comply with the requirements for minimum internal length and width given in 4.3;
- containers types 01 and 04, having openings in the side(s) and/or roof, shall comply with the requirements for minimum internal length given in 4.3;
- closed, vented containers types 10 and 11 shall comply with the requirements for minimum internal length, width and height given in 4.3;
- closed, ventilated containers type 13 shall comply with the requirements for minimum internal length, width and height given in 4.3.

4.3 Minimum internal dimensions

The minimum internal dimensions for ISO series 1 general purpose cargo containers are specified in Table 2.

The dimensions apply when measured at a temperature of 20 °C (68 °F). Measurements taken at other temperatures shall be adjusted accordingly.

Where a top corner fitting projects into the internal space specified by Table 2, that part of the corner fitting projecting into the container shall not be considered as reducing the size of the container.

4.4 Ratings

The values of the rating *R*, being the gross mass of the container, are those given in ISO 668.

5 Design requirements

5.1 General

All containers shall be capable of fulfilling the following requirements.

The strength requirements for containers are given in diagrammatic form in Annex A (these requirements are applicable to all containers except where otherwise stated). They apply to containers as complete units. The strength requirements for corner fittings (see also 5.2) are given in ISO 1161.

The container shall be capable of withstanding the loads and loadings detailed in clause 6.

As the effects of loads encountered under any dynamic operating condition should only approach, but not exceed, the effects of the corresponding test loads, it is implicit that the capabilities of containers indicated in Annex A and demonstrated by the test described in clause 6 shall not be exceeded in any mode of operation.

Any closure in a container which, if unsecured, could lead to a hazardous situation, shall be provided with an adequate securing system having external indication of the positive securement of that closure in the appropriate operating position.

In particular, doors should be capable of being securely fastened in the open or closed position.

Any removable roof or roof section shall be fitted with locking devices such that an observer at ground level can check (when the container is on a rail or highway carrying vehicle) that its roof is secured.

All closed containers and all open containers fitted with covers which were designed for them, shall be weatherproof as required by test No. 13 (see 6.13).

5.2 Corner fittings

All containers shall be equipped with top and bottom corner fittings. A_4 1EEE and 1EE units shall also have intermediate fittings in the 1AAA/1AA/1A position, according to ISO 1161. A_4 The upper faces of the top corner fittings shall protrude above the top of the container by a minimum of 6 mm¹⁾ (see 5.3.4). The “top of the container” means the highest level of the cover of the container, for example the level of the top of a soft cover. However, if reinforced zones or doubler plates are provided to afford protection to the roof in the vicinity of the top corner fittings, such plates and their securements shall not protrude above the upper faces of the top corner fittings. These plates shall not extend more than 750 mm¹⁾ from either end of the container but may extend the full width.

5.3 Base structure

5.3.1 All containers shall be capable of being supported by their bottom corner fittings only.

5.3.2 All containers, other than 1D and 1DX, shall also be capable of being supported only by load transfer areas in their base structure.

5.3.2.1 Consequently, these containers shall have end transverse members and sufficient intermediate load transfer areas (or a flat underside) of sufficient strength to permit vertical load transfer to or from the longitudinal member of a carrying vehicle. Such longitudinal members are assumed to lie within the two 250 mm²⁾ wide zones defined by the broken lines in Figure B.1.

A_1 **Table 2 — Minimum internal dimensions**

Freight container designation	Minimum height	Minimum width		Minimum length		
		mm	in	mm	ft	in
A_4 1EEE	Nominal container external height minus 241 mm (9 1/2 in)	2 330	91 3/4	13 542	44	5 5/32 A_4
1AAA				11 998	39	4 3/8
1AA				11 998	39	4 3/8
A_4 1EE				13 542	44	5 5/32 A_4
1A				11 998	39	4 3/8
1BBB				8 931	29	3 5/8
1BB				8 931	29	3 5/8
1B				8 931	29	3 5/8
1CC				5 867	19	3
1C				5 867	19	3
1D				2 802	9	2 5/16

A_1

5.3.2.2 The lower faces of the load transfer areas, including those of the end transverse members, shall be in one plane located

$$12,5 \text{ mm } +5_{-1,5} \text{ mm}^2)$$

above the plane of the bottom faces of the lower corner fittings of the container. Apart from the bottom corner fittings and bottom side rails, no part of the container shall project below this plane.

However, doubler plates may be provided in the vicinity of the bottom corner fittings to afford protection to the understructure.

Such plates shall not extend more than 550 mm²⁾ from the outer end and not more than 470 mm²⁾ from the side faces of the bottom corner fittings, and their lower faces shall be at least 5 mm²⁾ above the lower faces of the bottom corner fittings of the container.

¹⁾ 6 mm = 1/4 in

750 mm = 29 1/4 in

²⁾ 250 mm = 10 in

12,5 mm $+5_{-1,5}$ mm = 1/2 in $+3/16_{-1/16}$ in

550 mm = 22 in

470 mm = 18 1/2 in

5 mm = 3/16 in

1 000 mm = 39 3/8 in

6 mm = 1/4 in

60 mm = 2 3/8 in

25 mm = 1 in

2 134 mm = 7 ft

2 261 mm = 7 ft 5 in

2 286 mm = 7 ft 6 in

5.3.2.3 The transfer of load between the underside of the bottom side rails and carrying vehicles is not envisaged.

The transfer of load between side rails and handling equipment should only occur when provisions have been made in accordance with **5.8.1** and **5.8.2**.

5.3.2.4 Containers having all their intermediate transverse members spaced at 1 000 mm³⁾ apart or less (or having a flat underside) shall be deemed to comply with the requirements laid down in **5.3.2.1**.

5.3.2.5 Requirements for containers not having transverse members spaced 1 000 mm³⁾ apart or less (and not having a flat underside) are given in Annex B.

5.3.3 For containers 1D and 1DX, the level of the underside of the base structure is not specified, except in so far as it is implied in **5.3.4**.

5.3.4 For all containers under dynamic conditions, or the static equivalent thereof, with the container having a load uniformly distributed over the floor in such a way that the combined mass of the container and test load is equal to 1,8 *R*, no part of the base of the container shall deflect more than 6 mm³⁾ below the base plane (bottom faces of the lower corner fittings).

5.3.5 The base structure shall be designed to withstand all forces, particularly lateral forces, induced by the cargo in service. This is particularly important where provisions are made for securement of cargo to the base structure of the container.

A4 5.3.6 1EEE and 1EE units shall have recesses longitudinally-outboard of each of their fittings in the 1AAA/1AA/1A position. These recesses shall extend vertically to not less than 76 mm above the plane of the bottom faces of the fittings in the 1AAA/1AA/1A position, shall extend longitudinally from the longitudinally-outboard faces of the fittings in the 1AAA/1AA/1A position outboard to not less than 254 mm from the centrelines of the bottom apertures of the fittings in the 1AAA/1AA/1A position, and shall extend laterally from the external width of the container inboard not less than 154 mm. See Figure 1.

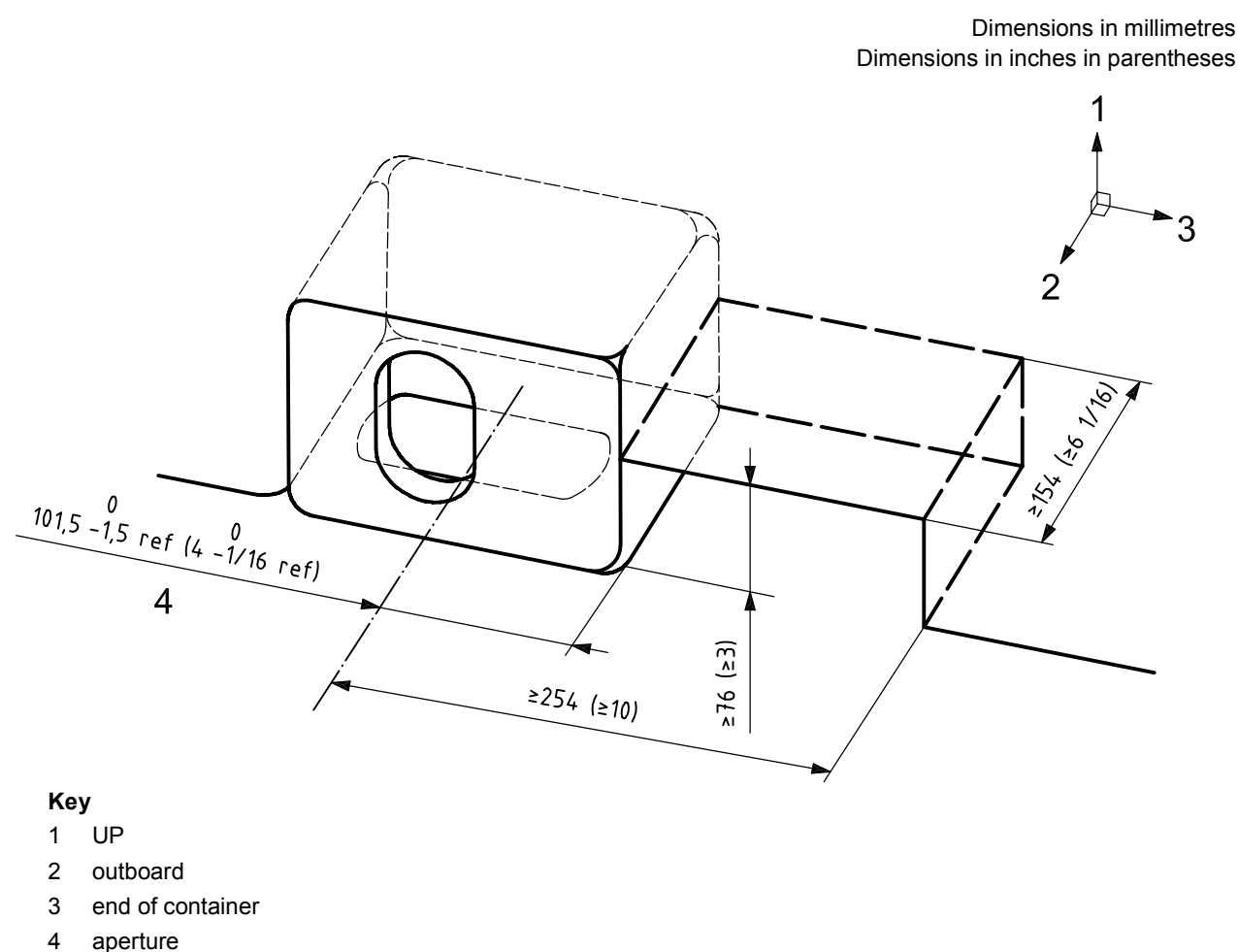


Figure 1 — Lower intermediate fitting recess for 45 foot container **A4**

5.4 End structure

For all containers other than 1D and 1DX, the sideways deflection of the top of the container with respect to the bottom of the container, at the time it is under full transverse rigidity test conditions, shall not cause the sum of the changes in length of the two diagonals to exceed 60 mm³⁾.

5.5 Side structure

For all containers other than 1D and 1DX, the longitudinal deflection of the top of the container with respect to the bottom of the container, at the time it is under full longitudinal rigidity test conditions, shall not exceed 25 mm³⁾.

5.6 Walls

Where openings are provided in end or side walls, the ability of these walls to withstand tests Nos. 5 and 6 shall not be impaired.

5.7 Door opening

Each container shall be provide with a door opening at least at one end.

All door openings and end openings shall be as large as possible.

Closed-type containers designated 1A, 1B, 1C and 1D (types 00 and 02) shall have a door opening, preferably having dimensions equal to those of the internal cross-section of the containers and, in any case, not less than 2 134 mm³⁾ high and 2 286 mm³⁾ wide.

Closed-type containers designated 1AAA $\langle A_2 \rangle$ and 1BBB $\langle A_2 \rangle$ (types 00 and 02) shall have a door opening, preferably having dimensions equal to those of the internal cross-section of the containers, and, in any case, not less than $\langle A_2 \rangle$ 2 566 mm high, and 2 286 mm $\langle A_2 \rangle$ wide.

- $\langle A_5 \rangle$ All door openings shall be fitted to accept an ISO-compliant high security seal (see ISO/PAS 17712) in a manner that precludes opening or gapping of either of the doors without first removing the seal. The design of the container shall be such that the door constrained by the seal must be opened before the other door can be opened. The mechanism in which the seal is fitted shall either be welded to a significant structural member of the container or otherwise be constructed so that the mechanism or seal cannot be removed and the door opened or gapped without first having to break the seal. Seal-affixing mechanisms that do not meet these basic requirements shall not be fitted onto the container. The door hinges shall either be welded to the door panel or, if affixed with fasteners, affixed with TIR-approved fasteners that are further protected from removal by a suitable shield or equivalent design feature. Hinge pins shall be welded in place or otherwise protected to preclude their removal. $\langle A_5 \rangle$

5.8 Requirements — Optional features

5.8.1 Fork-lift pockets

5.8.1.1 Fork-lift pockets used for handling 1CC, 1C, 1CX, 1D and 1DX containers in the loaded or unloaded condition may be provided as optional features.

$\langle A_1 \rangle$ Fork-lift pockets shall not be provided on 1AAA, $\langle A_4 \rangle$ 1EE, $\langle A_4 \rangle$ 1AA, 1A, 1AX, 1BBB, 1BB, 1B and 1BX containers. $\langle A_1 \rangle$

5.8.1.2 Where a set of fork-lift pockets has been fitted as in 5.8.1.1, a second set of fork-lift pockets may, in addition, be provided on 1CC, 1C and 1CX in containers for empty handling only.

³⁾ 250 mm = 10 in
 $12,5 \text{ mm} + 5 \text{ mm} = 1/2 \text{ in} + 3/16 \text{ in}$
 $- 1,5 \text{ mm} = - 1/16 \text{ in}$
 550 mm = 22 in
 470 mm = 18 1/2 in
 5 mm = 3/16 in
 1 000 mm = 39 3/8 in

6 mm = 1/4 in
 60 mm = 2 3/8 in
 25 mm = 1 in
 2 134 mm = 7 ft
 2 261 mm = 7 ft 5 in
 2 286 mm = 7 ft 6 in