
**Series 1 freight containers —
Specification and testing —
Part 1:
General cargo containers for general
purposes**

iTeh STANDARD PREVIEW
*Conteneurs de la série 1 — Spécifications et essais —
Partie 1: Conteneurs d'usage général pour marchandises diverses*
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 104, *Freight containers*, SC 1, *General purpose containers*.

This sixth edition cancels and replaces the fifth edition (ISO 1496-1:1990), which has been technically revised. It also incorporates the Amendments ISO 1496-1:1990/Amd1:1993, ISO 1496-1:1990/Amd2:1998, ISO 1496-1:1990/Amd3:2005, ISO 1496-1:1990/Amd4:2006, ISO 1496-1:1990/Amd5:2006.

ISO 1496 consists of the following parts, under the general title *Series 1 freight containers — Specification and testing*:

- *Part 1: General cargo containers for general purposes*
- *Part 2: Thermal containers*
- *Part 3: Tank containers for liquids, gases and pressurized dry bulk*
- *Part 4: Non-pressurized containers for dry bulk*
- *Part 5: Platform and platform-based containers*

[Annexes A](#) to F form an integral part of this part of ISO 1496.

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

NOTE 2 The following conversions can be useful when using this part of ISO 1496:

- 5 mm = 3/16 in
- 6 mm = 1/4 in
- $12,5\text{ mm}_{-1,5}^{+5} = 1/2\text{ in}_{-1/13}^{+3/16}$
- 25 mm = 1 in
- 60 mm = 2 3/8 in
- 250 mm = 9 7/8 in
- 470 mm = 18 1/2 in
- 550 mm = 21 5/8 in
- 750 mm = 29 1/2 in
- 1 000 mm = 39 3/8 in

- 2 134 mm = 7 ft
- 2 261 mm = 7 ft 5 in
- 2 286 mm = 7 ft 6 in

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Series 1 freight containers — Specification and testing —

Part 1:

General cargo containers for general purposes

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 (in accordance with ISO 6346:1995, Amd 3:2012, Table E 1)

Code	Type designation	Type group code
G	General purpose container without ventilation	GP
V	General purpose container with ventilation	VH
U	Open-top Container	UT
B	Dry Bulk Cargo non pressurized, box type	BU
S	Named Cargo	SN

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 6346:1995, Amd 3:2012.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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*

ISO 17712, *Freight containers — Mechanical seals*

3 Terms and definitions

For the purposes of this document, the terms and 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 1 AX, 1 BX, 1CX and 1 DX. 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 shall comply with those 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.

Table 2 – Minimum internal dimensions

Freight container designation	Minimum height	Minimum width		Minimum length		
		mm	in	mm	ft	in
1 EEE		13 542	53 3/4	13 542	44	5 5/32
1 EE		13 542	53 3/4	13 542	44	5 5/32
1AAA	Nominal container external height minus 241 mm (9 1/2 in)	2 330	91 3/4	11 998	39	4 3/8
1AA				11 998	39	4 3/8
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

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 [6.14](#)).

5.2 Corner fittings

All containers shall be equipped with top and bottom corner fittings 1EEE and 1EE units shall also have intermediate fittings in the 1 AAA/1 AA/1 A position, according to ISO 1161.

The upper faces of the top corner fittings shall protrude above the top of the container by a minimum of 6 mm (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 mm from either end of the container or on either side of intermediate fittings but may extend the full width.

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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 1 D and 1 DX, 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 mm wide zones defined by the broken lines in Annex B of ISO 668:1995.

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 $12,5^{+5}_{-1,5}$ mm 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 mm from the outer end and not more than 470 mm from the side faces of the bottom corner fittings, and their lower faces shall be at least 5 mm above the lower faces of the bottom corner fittings of the container.

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 mm 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 mm apart or less (and not having a flat underside) are given in Annex B of ISO 668:1995.

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

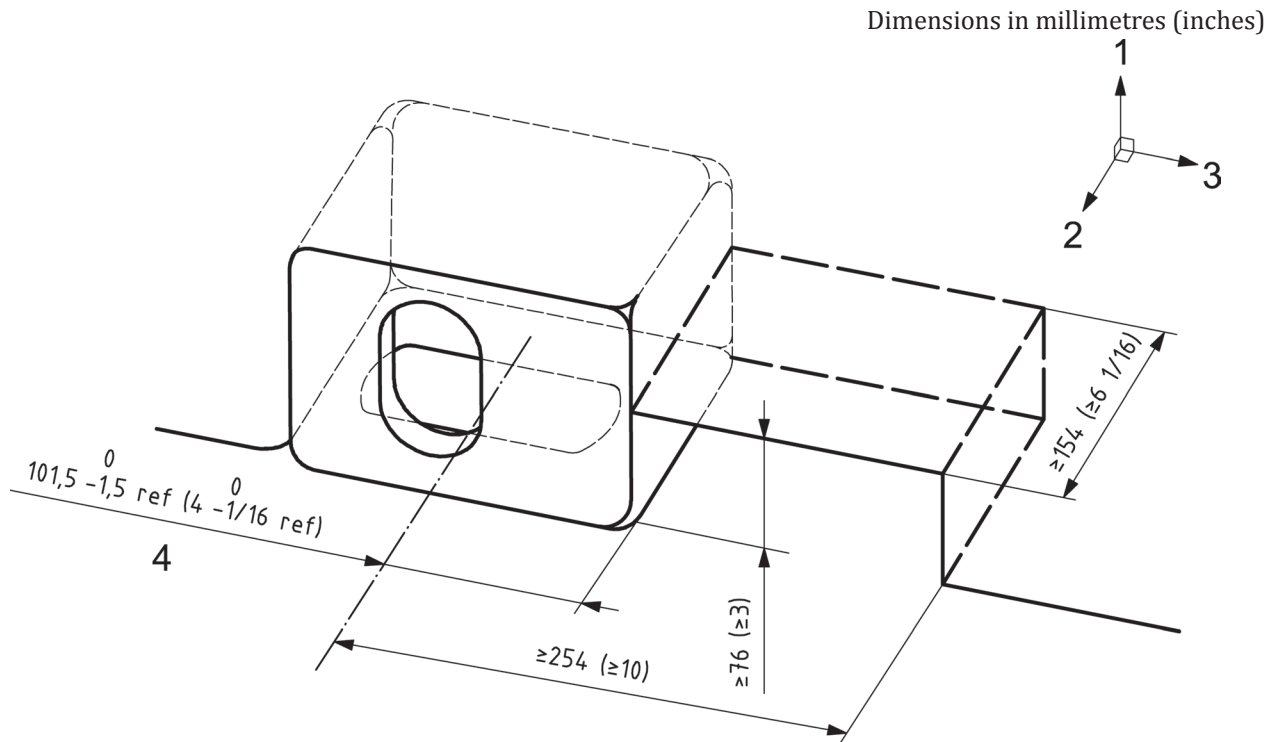
5.3.4 For all containers under dynamic conditions, or the static equivalent thereof, with the container having a load uniformly distributed over the floor in such a way that the combined mass of the container and test load is equal to 1,8 R, no part of the base of the container shall deflect more than 6 mm 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.

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

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**Key**

- 1 UP
- 2 outboard
- 3 end of container
- 4 aperture

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Figure 1 — Lower intermediate fitting recess for 45 foot container

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 mm.

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 mm.

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.

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Closed-type containers designated 1 EEE, 1 AAA, and 1 BBB (Type according ISO 6346:1995, Amd 3:2013, Annex E) 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 2 566 mm high and 2 286 mm wide.

Closed-type containers designated 1 EE, 1 AA, 1 BB and 1 CC (Type according ISO 6346:1995 Amd 3:2013, Annex E) 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 2 261 mm high, and 2 286 mm wide.

Closed-type containers designated 1E, 1B, 1C and 1D (Type according ISO 6346:1995 Amd 3:2012, Annex E) 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 mm high, and 2 286 mm wide.

Container doors should be designed so that entry into the container via either of the doors can be detected by verifying the condition of the seal that has been affixed to the container. All door openings shall be fitted to accept an ISO compliant high security seal (see ISO 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.

A securing plate (also known as “custom plate”) shall be installed on the inside, above the mid-point, of the left door in order to prevent the left door from being opened without first opening the right hand door. This plate shall be painted a contrasting colour so it is readily visible when the right hand door is opened. Other design features that form an “interlock” between the two doors or otherwise preclude manipulation and opening of the unsealed door without breaking the seal are equally acceptable.

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. Hinges pin shall be welded in place or otherwise protected to preclude their removal.

An elongated door handle hub (sometimes referred to as a “security hub”) that extends at least 25mm below the rivet hole or pivot point, shall be used on the right hand door to prevent the handle from being removed even if the rivet is removed.

5.8 Requirements — Optional features

5.8.1 Fork-lift pockets

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

Fork-lift pockets shall not be provided on 1 EEE, 1 EE, 1 AAA, 1 AA, 1A, 1AX, 1 BBB, 1 BB, 1B and 1 BX containers.

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 1 CC, 1C and 1 CX containers for empty handling only.

5.8.1.3 The fork-lift pockets, where provided, shall meet the dimensional requirements specified in [Annex C](#) and shall pass completely through the base structure of the container so that lifting devices may be inserted from either side. It is not necessary for the base of the fork-lift pockets to be the full width of the container but it shall be provided in the vicinity of each end of the fork pockets.

5.8.2 Cargo securing devices

Cargo securing devices may be provided as optional features in all series 1 general purpose containers. The requirements for such devices are specified in [Annex C](#).