

Australian Standard™

**Freight containers**

**Part 5: Thermal containers**

[Modified and containing the full text of ISO 1496-2:1996]

This Australian Standard was prepared by Committee ME/68, Freight Containers. It was approved on behalf of the Council of Standards Australia on 31 August 1999 and published on 24 January 2000.

---

The following interests are represented on Committee ME/68:

Australasian Railway Association  
Australian Chamber of Shipping  
Australian Maritime Safety Authority  
AUSTROADS  
Department of Defence (Australia)  
Germanischer Lloyd  
National Freight Forwarders Association  
National Road Transport Commission

---

#### **Keeping Standards up-to-date**

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at [www.standards.com.au](http://www.standards.com.au) and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Australian Standard*, has a full listing of revisions and amendments published each month.

We all welcome suggestions for the improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at [mail@standards.com.au](mailto:mail@standards.com.au), or write to the Chief Executive, Standards Australia International Ltd. PO Box 1055, Strathfield., NSW 2135.

---

Australian Standard™

**Freight containers**

**Part 5: Thermal containers**

Originated as AS 1780—1975.  
Final edition AS/NZS 3711.5:1993.  
Revised and designated as AS 3711.5—2000.

**COPYRIGHT**

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd  
PO Box 1055, Strathfield, NSW 2135, Australia

ISBN 0 7337 3196 1

## PREFACE

This Standard was prepared by the Standards Australia Committee ME/68, Freight Containers to supersede AS 3711.5:1993. It modifies has been reproduced from ISO 1496-2:1996, *Series 1 freight containers—Specification and testing*, Part 2: *Thermal containers*.

This Standard is Part 5 of the AS or AS/NZS 3711, *Freight containers* series. The series comprises—

AS 3711.1	Part 1: Classification, dimensions and ratings
AS/NZS 3711.2	Part 2: Terminology
AS/NZS 3711.3	Part 3: Corner fittings
AS/NZS 3711.4	Part 4: General purpose containers
AS 3711.5	Part 5: Thermal containers
AS 3711.6	Part 6: Tank containers
AS/NZS 3711.7	Part 7: Dry bulk containers
AS 3711.8	Part 8: Platform containers
AS 3711.9	Part 9: Coding, identification and marking
AS 3711.10	Part 10: Handling and securing

Changes since the last edition include the following:

- Changes introduced in ISO 1496-2:1996 (see Foreword).
- Addition of test requirements for series R containers.
- Deletion of Australian electrical requirements.

The number of this Standard is not reproduced on each page. Its identity is shown only on the cover and the title page.

The statement expressed in mandatory terms in Note 1 to Figure D1 of Annex D is deemed to be a requirement of this Standard.

For the purposes of this Standard, the text of ISO 1496-2:1995 should be modified as follows:

- Substitute ‘this Australian Standard’ for ‘this part of ISO 1496’ wherever it occurs.
- Substitute a full point (.) for a comma (,) as a decimal marker.
- Variations between ISO 1496-2 and this Standard, for application in Australia only, are set out in Appendix ZZ. These variations are indicated by a marginal bar against each clause, table, figure or part thereof affected.
- Appendices ZA and ZB provide additional requirements for series R freight containers.
- Replace reference to other publications by references to Australian or Australian/New Zealand Standards as follows:

### *Reference to International Standard*

### *Australian or Australian/New Zealand Standard*

ISO		AS	
668	Series 1 freight containers— Classification, dimensions and ratings	3711	Freight containers
		3711.1	Part 1: Classification, dimensions and ratings
130	Freight containers— Terminology	AS/NZS 3711.2	Part 2: Terminology
1161	Series 1 freight containers—Corner fittings—Specification	3711.3	Part 3: Corner fittings

ISO		AS	
6346	Freight containers—Coding, identification and marking	3711.9	Part 9: Coding, identification and marking
10368	Freight thermal containers—Remote condition monitoring	—	
IEC			
947	Low voltage switchgear and controlgear	—	
947-1	Part 1: General rules.		

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

Currently in preview, click buy full version.

## CONTENTS

	<i>Page</i>
<b>1</b> Scope .....	<b>1</b>
<b>2</b> Normative references .....	<b>1</b>
<b>3</b> Definitions .....	<b>1</b>
<b>4</b> Classification .....	<b>2</b>
<b>5</b> Marking .....	<b>2</b>
<b>6</b> Dimensions and ratings .....	<b>2</b>
<b>6.1</b> External dimensions .....	<b>2</b>
<b>6.2</b> Internal dimensions .....	<b>2</b>
<b>6.3</b> Ratings .....	<b>2</b>
<b>7</b> Design requirements .....	<b>4</b>
<b>7.1</b> General .....	<b>4</b>
<b>7.2</b> Corner fittings .....	<b>5</b>
<b>7.3</b> Base structure .....	<b>5</b>
<b>7.4</b> End structure .....	<b>5</b>
<b>7.5</b> Side wall structure .....	<b>5</b>
<b>7.6</b> Walls .....	<b>5</b>
<b>7.7</b> Foot opening .....	<b>5</b>
<b>7.8</b> Sanitary and taint-free requirements .....	<b>6</b>
<b>7.9</b> Requirements for optional features .....	<b>6</b>
<b>8</b> Testing .....	<b>7</b>
<b>8.1</b> General .....	<b>7</b>
<b>8.2</b> Test No. 1 — Stacking .....	<b>7</b>
<b>8.3</b> Test No. 2 — Lifting from the four top corner fittings .....	<b>8</b>
<b>8.4</b> Test No. 3 — Lifting from the four bottom corner fittings .....	<b>8</b>

	<i>Page</i>
<b>8.5</b> Test No. 4 — External restraint (longitudinal) .....	<b>9</b>
<b>8.6</b> Test No. 5 — Strength of end walls .....	<b>9</b>
<b>8.7</b> Test No. 6 — Strength of side walls .....	<b>9</b>
<b>8.8</b> Test No. 7 — Strength of the roof .....	<b>10</b>
<b>8.9</b> Test No. 8 — Floor strength .....	<b>10</b>
<b>8.10</b> Test No. 9 — Rigidity (transverse) .....	<b>10</b>
<b>8.11</b> Test No. 10 — Rigidity (longitudinal) .....	<b>11</b>
<b>8.12</b> Test No. 11 — Lifting from fork-lift pockets (where provided) .....	<b>11</b>
<b>8.13</b> Test No. 12 — Weatherproofness .....	<b>11</b>
<b>8.14</b> Test No. 13 — Airtightness test .....	<b>12</b>
<b>8.15</b> Test No. 14 — Heat leakage test .....	<b>12</b>
<b>8.16</b> Test No. 15 a) — Test of the performance of a thermal container under refrigeration by a mechanical refrigeration unit (MRU) .....	<b>13</b>
<b>8.17</b> Test No. 15 b) — Test of the performance of a thermal container with refrigerating equipment which uses a liquid expendable refrigerant (LER) .....	<b>14</b>
<b>8.18</b> Test No. 16 — Strength of mounting devices for removable equipment (where fitted) .....	<b>15</b>
<b>9</b> Electrical aspects of thermal containers .....	<b>16</b>
<b>9.1</b> General .....	<b>16</b>
<b>9.2</b> General requirements for standard voltage equipment .....	<b>17</b>
<b>9.3</b> Remote condition monitoring .....	<b>18</b>
<b>Annexes</b>	
<b>A</b> Diagrammatic representation of capabilities appropriate to all types and sizes of thermal containers, except where otherwise stated .....	<b>19</b>
Details of requirements for load-transfer areas in base structures of containers .....	<b>23</b>
<b>C</b> Dimensions of fork-lift pockets (where provided) .....	<b>29</b>
<b>D</b> Dimensions of gooseneck tunnels (where provided) .....	<b>30</b>
<b>E</b> Cooling water connections .....	<b>31</b>
<b>F</b> Air inlets and outlets .....	<b>34</b>
<b>G</b> Mounting of clip-on units .....	<b>37</b>
<b>H</b> Air temperature measurement points .....	<b>40</b>
<b>J</b> Diagrammatic representation of steady-state conditions for heat leakage test (test No. 14) .....	<b>42</b>
<b>K</b> Phase connections to container plugs and sockets .....	<b>43</b>
<b>L</b> Electric plug and socket, four-pin, 380/440 V, 50/60 Hz, 32 A .....	<b>44</b>
<b>M</b> Electrical power supplies for thermal containers .....	<b>49</b>
<b>N</b> Conversion of SI units to non-SI units .....	<b>50</b>
<b>O</b> Bibliography .....	<b>51</b>

	<i>Page</i>
APPENDICES	
ZZ VARIATIONS TO ISO 1496-2 FOR AUSTRALIA .....	52
ZA DIMENSION FOR GRAPPLER ARM LIFTING AREAS FOR SERIES R CONTAINERS (where provided) .....	5
ZB DIMENSIONS OF STRADDLE LIFTING AREAS FOR SERIES R CONTAINERS .....	56

Currently in preview, click buy full version

## AUSTRALIAN STANDARD

### Freight containers

#### Part 5: Thermal containers

#### 1 Scope

This part of ISO 1496 gives the basic specifications and testing requirements for ISO series 1 thermal containers which are suitable for international exchange and for conveyance of goods by road, rail and sea, including interchange between these forms of transport.

NOTE — For the convenience of users of this part of ISO 1496, the conversion of values expressed in SI units to values expressed in non-SI units is given in annex N.

#### 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.

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

ISO 830:1981, *Freight containers — Terminology*.

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

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

ISO 10368:1992, *Freight thermal containers — Remote condition monitoring*.

IEC 947-1:1988, *Low voltage switchgear and controlgear — Part 1: General rules*.

#### 3 Definitions

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

**3.1 thermal container:** Freight container having insulating walls, doors, floor and roof designed to retard the rate of heat transmission between the inside and the outside of the container.

**3.2 insulated container:** Thermal container having no devices for cooling and/or heating, either permanently installed or attached.

**3.3 refrigerated container (expendable refrigerant):** Thermal container using a means of cooling such as liquefied gases, with or without evaporation control.

NOTE — It is implicit in this definition that such a container requires no external power or fuel supply.