THE INTERNATIONAL CONVENTION FOR SAFE CONTAINERS (CSC)

By John Alexander
ICHCA INTERNATIONAL LIMITED is an independent, non-political, international membership organisation and is dedicated to the promotion of safety and efficiency in the handling and movement of goods by all modes and during all phases of both the national and international supply chains. Originally established in 1952 and incorporated in 2002, it operates through a series of Local, National and Regional Chapters, Panels, Working Groups and Correspondence Groups and represents the cargo handling world at various international organisations, including the International Maritime Organization (IMO), United Nations Conference on Trade and Development (UNCTAD), International Labour Organization (ILO) and the International Standards Organization (ISO).

Its members included ports, terminals, transport companies and other groups associated with cargo handling and coordination. Members of ICHCA International Panels represent a substantial cross-section of senior experts and professionals from all sectors of the cargo transport industry globally. Members benefit from consulting services and informative publications dealing with technical matters, “best practice” advice and cargo handling news.

For more information on ICHCA International and its services please visit/contact –

ICHCA International Limited  Tel: +44 (0) 1708 735295
Suite 2, 85 Western Road, Fax: +44 (0) 1708 735225
Romford, Essex, RM1 3LS Email: info@ichca.com.
United Kingdom Website: www.ichca.com.

© ICHCA International Limited
The International Safety Panel Briefing Pamphlet series consists of the following subjects:

No. 1  International Labour Office (ILO) Convention No. 152 Occupational Safety and Health in Dockwork (revised)
No. 2  Ships Lifting Plant (revised)
No. 3  The International Maritime Dangerous Goods (IMDG) Code (revised))
No. 4  Classification Societies (revised)
No. 5  Container Terminal Safety (revised)
No. 6  Guidance on the Preparation of Emergency Plans (revised)
No. 7  Safe Cleaning of Freight Containers (revised)
No. 8  Safe Working on Container Ships
No. 9  Safe Use of Flexible Intermediate Bulk Containers (FIBCs) Joint publication with EFIBCA (under further revision)
No. 10 Safe Working at Ro-Ro Terminals
No. 11 The International Convention for Safe Containers (CSC) (revised)
No. 12 Safety Audit System for Ports
No. 13 Loading and Unloading of Solid Bulk Cargoes (revised)
No. 14 The Role of the Independent Marine Surveyor in Assisting Claims Handling (revised)
No. 15 Substance Abuse
No. 16 Safe Use of Textile Slings
No. 17 Linkspans and Walkways (revised)
No. 18 Port State Control
No. 19 Safe Handling of Interlocked Flats (under revision)
No. 20 Unseen Dangers in Containers
No. 21 Stow it right
No. 22 Suspension Trauma
No. 23 Safe Handling of Forest Products
No. 24 Safe use of Road Vehicle Twistlocks
No. 25 An Illustrated Guide to Container Type and Size Codes
No. 26 Safe Handling of Dangerous Bulk Liquids and Gases at the Ship/Shore Interface
No. 27 Safe Working with Pallets
No. 29 Safe Handling of Logs from Water in British Columbia
No. 30 Safe Handling of Tank Containers (joint publication with ITCO)
No. 31 Safe Operation of Passenger Terminals
No. 32 Safe Use of Cargo Strapping for Lifting Purposes
No. 33 Safe Working with Reefer Containers
No. 34 Container Top Safety (in final stages of preparation)
No. 35 Safe Lashing of Deck Containers (in final stages of preparation)
No. 36 Safe Operation of Straddle Carriers (in preparation)

The International Safety Panel Research Paper series consists of the following research papers:

No. 1  Semi-Automatic Twistlocks
No. 2  Fumes in Ships Holds (revised)
No. 3  Health & Safety Assessments in Ports (revised)
No. 4  Container Top Safety, Lashing and Other Related Matters (under revision as BP#34)
No. 5  Port & Terminal Accident Statistics (revised)
No. 6  Safe Handling of Radioactive Materials in Ports and Harbour Areas (revised)
International Safety Panel Briefing Pamphlet No 11

No. 7    Ship Design Considerations for Stevedore Safety (revised)
No. 8    Safe Walkways in Port & Terminal Areas
No. 9    Personal Protective Equipment & Clothing
No. 10   Back Pain
No. 11   Lifting Persons at Work for Cargo Handling Purposes in the Port Industry
No. 12   Whole Body Vibration
No. 13   Lifting of Containers by Rubber Tyred Gantry Cranes
No. 14   Lashing of Deck Containers
No. 15   Terminal Operations in High Winds
No. 16   Crane Driver Ergonomics
No. 17   Terminal Lighting (in final preparation)

The International Safety Panel Technical/Operational Advice series consists of the following:

No. 1    Vertical Tandem Lifting of Freight Containers
No. 1A   Vertical Tandem Lifting – Operations Checklist
No. 2    Container Vessels – Safety aspects of Lashing on Deck 40’ and 45’ containers with particular regard to horizontal lashings
No. 3    Guidelines on the Lifting of Persons for Cargo Handling Purposes

Plasticised Pocket Cards

IIL/1    Dangerous Goods by Sea Documentation
IIL/2    Dangerous Goods by Sea: The IMDG Code Labels, Placards, Marks and Signs
IIL/3    Confined Spaces on Board Dry Cargo Ships
IIL/4    Entry into Freight Containers
IIL/5    Safe slinging
IIL/6    Safe slinging

General Series

No. 1    Guidelines to Shipping Packaged Dangerous Goods by Sea – Advice to Consignors and Shippers
No. 2    Fire Fighting in Ports and on Ships
No. 3    Windstorm (joint publication with TT Club)
No. 4    Gear Stores (in final preparation)
No. 5    Ships’ Crews Coming Ashore at Working Terminals (in final preparation)

Other titles in many of the series are in preparation

This publication is one of a series developed by the International Safety Panel ("Safety Panel") of ICHCA International Limited ("ICHCA"). The series is designed to inform those involved in the cargo-handling field of various practical health and safety issues. ICHCA aims to encourage port safety, the reduction of accidents in port work and the protection of port workers’ health.

ICHCA prepares its publications according to the information available at the time of publication. This publication does not constitute professional advice nor is it an exhaustive summary of the information available on the subject matter to which the publication refers. The publication should always be read in conjunction with the relevant national and international legislation and any applicable regulations, standards and codes of practice. Every effort is made to ensure the accuracy of the

© ICHCA International Limited
information but neither ICHCA nor any member of the Safety Panel is responsible for any loss, damage, costs or expenses incurred (whether or not in negligence) arising from reliance on or interpretation of the publication.

The comments set out in this publication are not necessarily the views of ICHCA or any member of the Safety Panel.

All rights reserved. No part of this publication may be reproduced or copied without ICHCA's prior written permission. For information, contact ICHCA's registered office.
ICHCA International Limited - INTERNATIONAL SAFETY PANEL

The International Safety Panel is composed of safety and training officers and directors, transport consultants, representatives from leading safety and training organisations, enforcement agencies, trade unions, insurance interests, institutions and leading authorities on the subject area from around the world.

Mike Compton (Chairman), Circlechief AP, UK
John Alexander, UK
Meir Amar, Port of Ashdod, ISRAEL
Paul Auston, Checkmate UK Limited, UK
David Avery, Firefly Limited, UK
Peter Bamford, CANADA
Philip Beesemer, ECT, THE NETHERLANDS
Geoff Beesley, Newcastle Stevedores, AUSTRALIA
Didi Ould Biha, SAMMA, MAURITANIA
Jan Boermans, DP World, THE NETHERLANDS
Mike Bohlman, Horizon Lines, USA (Deputy Chairman)
Roy Boneham, UK
Bill Brassington, UK
Jim Chubb, BMT Marine & Offshore Surveys Ltd (incorporating BMT Murray Fenton Limited) UK
Daniele Ciulli, Contshipitalia, Italy
John Crowley, APM Terminals, USA
Johan van Daele, PSA, BELGIUM
Rob Dieda, SSA, USA
Trevor Dixon, WNTI, UK
Steve Durham, Trinity House, UK
Patricia Esquival, OPCS, SPAIN
Margaret Fitzgerald, IRELAND
Pamela Fry, DP World, CANADA
Kirsty Goodwin, SAMSA, SOUTH AFRICA
Fabian Guerra, Fabian Guerra Associates, EQUADOR
Charles Haine, DP World, DUBAI
Harri Halme, Min. of Social Affairs & Health, Dept for Occupational Health & Safety, FINLAND
Trevor Harris, DP World, DUBAI
Les Heather, Drake International, UK
Joseph Hogan, APM Terminals, DUBAI
Geoff Holden, LEEA, UK
Hans Jacobs, APM Terminals, THE NETHERLANDS
Laurence Jones, TT Club, AUSTRALIA
Ryan Jones, APM Terminals, CHINA
Larry Keiman, Matrans Holding BV, THE NETHERLANDS
Gabriel Kierkels, APM Terminals, THE NETHERLANDS
Jose Koning, MARIN, THE NETHERLANDS
Henrik Kristensen, APM Terminals, THE NETHERLANDS
Fer van de Laar, IAPH, THE NETHERLANDS
Shimon Lior, Israel Ports, Development and Assets, ISRAEL
Jerome Marinier, Port of Le Havre, FRANCE
Richard Marks, Royal Haskoning, UK
Joachim Meifort, Hamburger Hafen-u Lagerhaus A-G, GERMANY
Marios Meletiou, ILO, SWITZERLAND

© ICHCA International Limited
International Safety Panel Briefing Pamphlet No 11

John Miller, Mersey Docks & Harbour Company, UK
Al le Monnier, ILWU, CANADA
Gordon Moir, TÜVReinland, JAPAN
Hannu Oja, Kone Cranes and PEMA, FINLAND
Manuel Ortuno, Lloyds Register, GERMANY
Nic Paines, Gordon, Giles & Coy Ltd, UK
Daan Potters, Merford, THE NETHERLANDS
Irfan Rahim, IMO, UK
Peter Rasmussen, BIMCO, DENMARK
Risto Repo, Accident Investigation Bureau of Finland, FINLAND
Raymond van Rooyan, SAPO, SOUTH AFRICA
Ambroise Sarr, Port of Dakar, SENEGAL
Ron Signorino, The Blueocean Company, Inc., USA
Tom Sims, UK
Ken Smith, USCG, USA
Matt Smurr, Maersk Inc, USA
Armin Steinhoff, Behörde für Arbeit, Hamburg, GERMANY
Peregrine Storrs-Fox, TT Club, UK
Bala Subramaniam, INDIA
Mark Sultana, Malta Freeport Terminals Ltd, MALTA
Chris Symonds, Drake International, UK
Diego Teurelincz, FEPORT, BELGIUM
Markus Theuerholz, German Lashing, GERMANY
David Tozer, Lloyds Register, UK
Gerrit Uitbeijerse, THE NETHERLANDS
Hubert Vanleenhove, BELGIUM
Evert Wijdeveld, Environmental & Safety Affairs, Deltalings, THE NETHERLANDS
(Deputy Chairman)
Bill Williams, Maersk Inc. USA
Dave Wilson, Hutchison Ports (UK) Limited, UK
Jan Zwaan, Transport Canada, CANADA
Beat Zwygart, LASSTEC, FRANCE

OBSERVERS:
John Mace, International Group of P&I Clubs, UK
Capt. Jim McNamara, National Cargo Bureau, Inc., USA
Samuel Ng, Maritime Department, HONG KONG
Pedro J. Roman Nunez, Puertos del Estado, SPAIN
Mick Payze, AUSTRALIA
Charles Visconti, International Cargo Gear Bureau, Inc., USA

AFFILIATED MEMBERS:
OPIG, EUROPE

The above lists those persons who were members of the Panel when the pamphlet was published. However, membership does change and a list of current members can always be obtained from the ICHCA International Secretariat.
SHORT PERSONAL HISTORY OF THE AUTHOR

John Alexander

After obtaining a degree in chemical engineering at Imperial College in London, John Alexander joined HM Factory Inspectorate in 1957. He worked for the Inspectorate and the Health and Safety Executive in England and Scotland until 1995. For the last eight of those years he had a national responsibility for matters relating to the inspection of docks and inland waterways.

Since his retirement from the Health and Safety Executive, he has continued to work with the ports industry as a consultant.

He has been a founder member of the ICHCA International Safety Panel since it was set up in 1990.
## CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>History</td>
</tr>
<tr>
<td>2</td>
<td>Objectives</td>
</tr>
<tr>
<td>3</td>
<td>Scope</td>
</tr>
<tr>
<td>4</td>
<td>Approval and testing of containers</td>
</tr>
<tr>
<td>5</td>
<td>Safety Approval Plate</td>
</tr>
<tr>
<td>6</td>
<td>Maintenance and inspection</td>
</tr>
<tr>
<td></td>
<td>6.1 General</td>
</tr>
<tr>
<td></td>
<td>6.2 Periodic Examination Schemes</td>
</tr>
<tr>
<td></td>
<td>6.3 Approved Continuous Examination Programmes</td>
</tr>
<tr>
<td></td>
<td>6.4 Examination procedure</td>
</tr>
<tr>
<td></td>
<td>6.5 Change of ownership or operator</td>
</tr>
<tr>
<td>7</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>7.1 General principles</td>
</tr>
<tr>
<td></td>
<td>7.2 Unsafe containers</td>
</tr>
<tr>
<td></td>
<td>7.3 Other control action</td>
</tr>
<tr>
<td>8</td>
<td>Disputes</td>
</tr>
<tr>
<td>9</td>
<td>One way trip containers</td>
</tr>
<tr>
<td>10</td>
<td>One door off containers</td>
</tr>
<tr>
<td>11</td>
<td>Offshore containers</td>
</tr>
<tr>
<td>12</td>
<td>Ratification</td>
</tr>
<tr>
<td></td>
<td>Appendix 1 Signatory States to the Convention</td>
</tr>
<tr>
<td></td>
<td>Appendix 2 Main types of containers</td>
</tr>
<tr>
<td></td>
<td>Appendix 3 ISO standards relating to containers</td>
</tr>
<tr>
<td></td>
<td>Appendix 4 Safety Approval Plates</td>
</tr>
<tr>
<td></td>
<td>Appendix 5 Structurally sensitive components of containers</td>
</tr>
<tr>
<td></td>
<td>Appendix 6 Control flow chart for use by authorised Control Officers</td>
</tr>
<tr>
<td></td>
<td>Appendix 7 Approval of offshore containers</td>
</tr>
<tr>
<td></td>
<td>Appendix 8 References</td>
</tr>
</tbody>
</table>

**ISBN:** 978-1-85330-113-1

**First published:** 1997  
**Revised:** 2011  

© ICHCA International Limited
THE INTERNATIONAL CONVENTION FOR SAFE CONTAINERS (CSC)

1 History

1.1 Following the rapid increase of the use of freight containers for the transport of goods by sea in the 1960s, the International Maritime Organization (IMO) agreed to carry out a study of the safety of containerisation in marine transport in 1967. A draft Convention on freight containers was prepared in co-operation with the Economic Commission for Europe (ECE). This was followed in 1972 by the holding of a conference, jointly convened by the United Nations and IMO, to consider the draft. The outcome of the conference was the adoption of the 1972 Convention for Safe Containers (CSC 1972).

1.2 The Convention was amended in 1981, 1983 and 1991. These amendments are now fully in force and the relevant transitional arrangements have expired. The 1996 edition of the Convention, including all the amendments up to 1991, was published by IMO in 1996 in English as IMO publication IA-282E. It is also available in Arabic, Chinese, French, Russian, and Spanish. In addition to the Convention and its two Annexes, the publication also includes a supplement Recommendations on harmonized interpretation and implementation of the International Convention for Safe Containers, 1972, as amended and further 1993 amendments, which have yet to come into force. The Recommendations have since been updated and published as CSC.1/Circ.138.

1.3 The Convention has two annexes:

- Annex I Regulations for the testing, inspection, approval and maintenance of containers; and
- Annex II Structural safety requirements and tests.

1.4 In May 2010 the Convention had been accepted by 78 contracting parties. These are listed in Appendix 1. ‘Contracting party’ is the term used in the Convention but for simplicity the term ‘contracting state’ is used throughout the rest of this guidance.

1.5 Further amendments to the Convention were adopted by IMO as Resolution A.737(18) on 4 November 1993. The changes are minor and of a purely procedural nature. They include the substitution of units of mass for weight. These amendments are not yet in force but will come into force 12 months after the date on which they are accepted by two thirds of the contracting states to the Convention, currently by some 52 states. By December 2010 only nine contracting states had accepted the 1993 amendments. Consequently the Maritime Safety Committee (MSC) of IMO instructed its Dangerous Goods, Solid Cargoes and Containers Sub-Committee (DSC) to consider, at its meeting in September 2011, the option of preparing a new set of amendments to the Annex to the CSC Convention that would make amendment of Article II of the convention unnecessary and could come into force by the existing tacit acceptance procedures.

1.6 In December 2007 MSC agreed that DSC should carry out a review of the operation of the Convention and update the Recommendations on harmonized interpretation and implementation of the requirements of the

©ICHCA International Ltd
Conventions. This work was completed at DSC 14, in September 2009, approved by MSC in May 2010 and published as CSC.1/Circ.138.

1.7 This Briefing Pamphlet is intended to be a plain language summary of the Convention as in force following MSC 87 in May 2010. For more detailed information, particularly relating to the testing of containers, the full text of the Convention, relevant IMO circulars and international and national standards should be consulted.

2 Objectives
2.1 The objectives of the Convention for Safe Containers are:
- to maintain a high level of safety of human life in the transport and handling of containers by providing generally acceptable test procedures and related strength requirements which have proved to be adequate over the years; and
- to facilitate the international transport of containers by providing uniform international safety regulations, which are equally applicable to all modes of surface transport. This seeks to avoid the proliferation of divergent national safety regulations.

2.2 The first of these objectives has been achieved by setting out requirements to be implemented by the contracting states to the Convention for the safety approval and maintenance of containers and for the relevant data to be included on a Safety Approval Plate on each container. The second is achieved by the reciprocal acceptance of safety-approved containers by other contracting states to enable the containers to move in international transport with minimum safety control formalities.

3 Scope
3.1 The Container Safety Convention applies to all new and existing containers, as defined (see 3.2 and 3.3 below), which are used in international transport other than those which are specially designed for transport by air. Although the Convention does not apply to containers used solely on internal movements within a state, there is no reason why a state cannot apply the Convention to such containers and a number of states have done so.

3.2 A container is defined in the Convention as an article of transport equipment that is:
- of a permanent character and accordingly strong enough to be suitable for repeated use;
- specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading;
- designed to be secured and/or readily handled, having corner fittings for these purposes;
- of a size such that the area enclosed by the four outer bottom corners is either:
  - at least 14 m² (150 sq ft), or,
  - at least 7 m² (75 sq ft) if it is fitted with top corner fittings.

©ICHCA International Ltd
The definition does not include vehicles or packaging. However, containers that are carried on a vehicle or chassis are covered by the Convention.

3.3 The corner fittings referred to in the definition of a container are themselves defined as an arrangement of apertures (openings) and faces at the top and/or bottom of a container for the purposes of handling, stacking and/or securing. This definition is capable of wide interpretation and at least one state has decided to restrict the application of the Convention to containers fitted with ISO corner fittings.

3.4 There are a number of different types of freight containers. The main types are summarised in Appendix 2. ICHCA International Ltd’s Safety Briefing Pamphlet No 25 An illustrated Guide to Container Size and Type Codes illustrates several of the different types and explains how to interpret the code letters and numerals that can typically be seen on the sides of containers. More detailed information is included in the relevant standards of the International Organization for Standardization (ISO). The main ISO standards that relate to freight containers are listed in Appendix 3.

3.5 It has been agreed by IMO that the Convention does not have to be applied to containers known as ‘swap bodies / demountables’ which do not have stacking or top lift facilities and are designed and used only for transport by road or only by road and rail, or that are only transported by sea mounted on a road vehicle or rail wagon. Swap bodies / demountables used in transoceanic services are covered by the Convention but they are generally transported only within the wider continent of Europe.

3.6 It has also been agreed by IMO that the Convention does not apply to offshore containers (see section 11) that are handled in open seas. However, offshore containers that meet the relevant provisions of the Convention may be approved under it. The Convention applies to normal ISO containers that are occasionally handled in open seas whilst being used to transport cargo to or from an offshore installation.

3.7 It has further been agreed by IMO that the Convention does not necessarily apply to ship’s gear carriers and bins as they are not used for international transport as defined in the Convention. However, these specialist containers are carried aboard ships and handled in the same way as all other containers and so present the same risks when they are being handled. Consequently, it is recommended that these gear carriers and bins should be included in a maintenance and examination scheme and subject to periodic inspection.

4 Approval and Testing of Containers

4.1 All containers must be approved by the government of a contracting state to the Convention or by an organisation that has been approved for that purpose by that government. All other contracting states are required to accept an approval of a container by another contracting state.

4.2 To qualify for approval under the Convention, all new containers must comply with the requirements of the Regulations for the testing, inspection, approval and maintenance of containers that are in Annex I to the Convention and to the Structural safety requirements and tests that are set out in Annex II to the
Convention. Containers may be approved on the basis of design type testing, or individually, in accordance with regulation 8 of the Regulations in Annex I to the Convention.

4.3 Existing containers may also be approved in accordance with paragraph 2 of regulation 9 in Annex I to the Convention. Applicants for approval of existing containers may be required to certify that to the best of their knowledge any modifications that have been made to the container do not adversely affect safety or the original design criteria.

4.4 Where necessary, the government of individual contracting states should determine the date on which the construction of a container shall be deemed to have started in order to determine whether a container should be considered to be “new” or “existing”.

4.5 Contracting states may not impose any other structural safety requirements or tests on containers covered by the Convention. However, national regulations or legislation may prescribe additional structural safety requirements or tests for:

- containers specifically designed for the carriage of dangerous goods;
- features unique to containers carrying bulk liquids; and
- containers when carried by air.

4.6 The Governments of contracting states are required to set up effective procedures for the testing, inspection and approval of containers in accordance with the criteria set out in Annex I and Annex II of the Convention. The actual testing, inspection and approval may be carried out by the government itself or by organisations that are authorised for the purpose by that government. Governments are required to notify the Secretary-General of IMO if they approve any organisations for testing, inspection and approval of containers under the Convention so that other contracting states to the Convention can be informed. IMO periodically publishes a list of such organisations in a CSC Circular which is available on the IMO web site, www.imo.org. The circular is updated and reissued from time to time. In July 2010 it was reissued as CSC.1/Circ.139.

4.7 For an organisation to be authorised to carry out testing, inspection or approval of containers, a government needs a basic description of the organisation and evidence of its technical capability. It also needs to be satisfied of the financial well-being of the organisation and that it is free from any undue influence from any container owner, operator, manufacturer, lessor, repairer or other person with a vested interest in the approval of containers. Matters are simplified if persons authorised to carry out testing, inspection or approval of containers by one contracting state are also authorised by other contracting states. Such persons could be classification societies or other competent organisations authorised by governments.

4.8 In setting structural safety requirements for a container, the Convention assumes that the container will be restrained and that the cargo in it will be stowed in accordance with recommended practices, so that the container will not be subjected to forces that are greater than those for which it was
designed. The relevant recommendations are the *IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTU’s)*, which were published by IMO in 2007 as IMO IB284E and were also available in the 2006 edition of the Supplement to The International Dangerous Goods Code, IMO IF 210E. The Guidelines are also available in French and Spanish. In May 2010 agreed that the Guidelines should be updated in agreement with ILO and UN ECE. Guidance is also provided in ICHCA International Ltd’s Briefing Pamphlet number 21, *Stow It Right*.

4.9 The structural safety requirements and tests in Annex II to the Convention relate to:

- lifting from the top and bottom corner fittings;
- lifting by any other additional method;
- stacking;
- concentrated loads;
- transverse and longitudinal racking;
- static longitudinal restraint;
- end-walls; and
- side-walls.

4.10 These requirements are also covered by international standard ISO 1496 *Series 1 freight containers - Specification and testing*. Containers tested in accordance with ISO 1496 are considered to have been tested in accordance with the Convention. ISO 1496 does not permit tank containers to be fitted with fork lift pockets. However, any non-ISO tank containers fitted with fork pockets should be additionally tested in accordance with test 1(B)(i) of Annex II of the Convention. It should be noted that not all containers approved under the CSC meet the ISO standards for stacking, lifting racking or wall strength.

4.11 Lifting by any other additional method includes lifting from fork pockets, from grappler arm positions and by other methods. However, some lifting methods are not suitable for all containers. For example, ISO 1496 only permits forklift pockets to be provided on specified types of containers. Fork lift pockets should not be provided on tank containers. The transport of tank containers by forklifts is considered dangerous because of stability problems with loaded or partly loaded tanks and the danger of impact damage to tanks from the forks of forklift trucks. ISO 3874 *Series 1 freight containers - Handling and securing* contains standards for specified methods for lifting containers. It does not allow the top lifting of loaded containers by angled slings, except for 10 ft containers.

4.12 Approval of the design of a container should be shown by the inclusion of the approval reference number on the first line of the Safety Approval Plate fixed to the container.

4.13 If an approved container is modified in a manner that results in structural changes, the owner of the container is required to notify the approving body of the changes. The approving body may then require further testing of the container. Containers that have been modified should retain the original date of manufacture on their Safety Approval Plate and add an additional line...
showing the date of the modification. Information on approvals of the modification should be included on the Safety Approval Plate or affixed as close as practicable to it. An example of such modifications to containers is the removal of a door to permit ‘one door off’ operation (see section 10).

4.14 If it is found that an approved container does not comply with the requirements in Annex I and II to the Convention, the approval may be withdrawn but this may only be done by the government that issued the approval. If an approval is withdrawn, the government should require the removal of the Safety Approval Plates from all the containers covered by the approval.

5 Safety Approval Plate

5.1 Every approved container must carry a permanently affixed Safety Approval Plate in a readily visible place where it will not be easily damaged. On a closed container this is normally on one of its doors. The Safety Approval Plate should be adjacent to any other approval plate issued for official purposes. All official approval or data plates may be grouped on a single base plate.

5.2 The Safety Approval Plate should be a permanent, non-corrosive, fireproof rectangular plate measuring not less than 200 mm x 100 mm and conforming to the model shown in Appendix 4. The plate should be headed CSC SAFETY APPROVAL in letters at least 8 mm high. All other information on the plate should be in letters or figures at least 5 mm high. The information should be in at least the English or French language. The following information should be included on the Safety Approval Plate:

1 The country of approval and the approval reference. The country of approval should be shown by means of the letters that indicate the country of registration of motor vehicles in international road traffic. The reference may also include the date of the approval but this is not mandatory. A single approval number may be assigned to each owner to cover all existing containers in a single application for approval. An example of an approval reference might be GB-L/749/2/7/2005 where GB is the country (Great Britain and Northern Ireland), L/749 is the approval reference and 2/7/2005 is the date of the approval.

2 The month and year of manufacture of the container.

3 On existing containers, the manufacturer's identification number of the container, or, if that number is unknown, the number allotted to it by the approving government. The owner's ISO alphanumeric identification code may also be used on existing containers providing a record correlating the identification number with the manufacturer's serial number is kept. Only the manufacturer's serial number should be included on the Safety Approval Plates of containers approved after 14 June 2010.

4 The maximum operating gross weight or mass in kg and lb.

5 The allowable stacking weight or mass for 1.8g in kg and lb.
6 The transverse racking test load value in kg and lb.

7 The end-wall strength of the container, unless the end-walls are designed to withstand a load of 0.4 times the maximum permissible payload (0.4P). This may take the form: END-WALL STRENGTH 0.5P in English or RÉSISTANCE DE LA PAROI D’EXTREMITÉ 0.5P in French.

8 The sidewall strength of the container, unless the sidewalls are designed to withstand a load of 0.6 times the maximum permissible payload (0.6P). This may take the form: SIDE-WALL STRENGTH 0.5P in English or RÉSISTANCE DE LA PAROI LATÉRALE 0.5P in French.

9 On new containers the month and year when the first periodic examination of the container will be due and subsequently the month and year when the next periodic examination will be due if the plate is used for this purpose. This will not be required if the container is examined under an approved continuous examination scheme as indicated by a decal on or near the Safety Approval Plate (See 6.3.2).

5.3 Examples of periodic and approved continuous examination scheme Safety Approval Plates are shown in Appendix 4.

5.4 On every container all maximum gross weight or mass markings must be consistent with the information on the maximum gross weight or mass that is marked on the Safety Approval Plate.

5.5 If marking of the strength of the end-wall or side-wall on lines 7 and 8 of the Safety Approval Plate is not required because the strengths are at least 0.4P and 0.6P respectively, a blank space need not be retained on the plate but can be used for other markings such as future examination dates.

5.6 Many containers have a maximum gross weight of 24,000 kg and are tested to allow stacking nine high with a maximum allowable stacking weight of 192,000 kg.

5.7 It is essential that cargo planners, crane drivers, seafarers and others are alerted to containers that have limited allowable static stacking weights or racking strength. Consequently ISO intends to develop appropriate markings to identify containers that have an allowable superimposed static stacking weight of less than 192,000 kg or a permitted transverse racking force of 150 kN. Once these markings have been developed, all such containers should be conspicuously marked in accordance with the additional markings that will be included in the appropriate ISO Standard, ISO 6346.

5.8 For the purposes of the Convention the word ‘weight’ is considered to be equivalent to the word ‘mass’, which may be used on lines 4 and 5 of the Safety Approval Plate on existing containers. However, beginning 14 June 2010 the word ‘Mass’ should replace ‘Weight’ on Safety Approval plates fitted to containers.

5.9 When the 1993 amendments to the Convention come into force lines 4, 5 and
6 of Safety Approval Plates fitted to containers after that date should refer to maximum gross mass, allowable stacking load for 1.8g and transverse racking test force in newtons respectively. It will not be necessary to replace the Safety Approval Plates on containers constructed before that date, so long as no structural modifications are made to the container.

5.10 The owner of a container must remove the Safety Approval Plate from the container if:

- the container is removed from service and it is not being maintained in accordance with the Convention, or,
- the container has been modified in a manner which would invalidate its original approval and the information on its Safety Approval Plate, or,
- the government has withdrawn the container’s approval.

6 Maintenance and Inspection

6.1 General

6.1.1 The owner of every container is responsible for maintaining it in a safe condition. IMO considers that the term “owner” includes the owner’s local representative who should be held accountable to the government of any territory in which a container is being operated for its safe condition.

6.1.2 The safety laws of the state in which a container is being operated should hold the owner of the container accountable to the government of that state for the safe condition of the container. However, the methods by which the safety of the container is ensured should remain the responsibility of the owner. Such methods will include arrangements for examination, repair and maintenance of the container and the selection of competent organisations to carry out such work.

6.1.3 The Convention requires that every container must be examined at intervals that are appropriate to the conditions under which it is operated. The examination procedure followed must be prescribed or approved by the relevant contracting state. This is the state in which the owners live or have their head office. However, if the government of that state has not made arrangements for prescribing or approving an examination scheme, until it does so the owners may use a procedure prescribed or approved by the government of any other contracting state to the Convention that is willing to allow them to do so. Some governments are only prepared to approve examination schemes of organisations that maintain an office in their own state.

6.1.4 If it is permitted by the national law of a contracting state, the owner’s duties may be undertaken by a lessee or bailee in accordance with an agreement between the owner and a lessee or bailee. A lessee is a person who has an interest in a container for a period of time specified in a lease. A bailee is a person to whom the possession of a container is entrusted by the owner without the intention of transferring ownership, e.g. a truck driver.

6.1.5 Containers may be examined under a periodic prescribed or approved examination scheme (PES) or under an approved continuous examination programme (ACEP). Owners need to decide which regime is most suitable
for their operations. Most containers are now examined under an ACEP. The Convention does not require all the containers operated by an owner to be examined under the same regime.

6.1.6 All prescribed or approved examination schemes should be valid for a specified period and reviewed by the issuing government after not more than ten years after they were approved or reapproved. In addition, at least once in every five years, the issuing government should check, by audits or other equivalent means, that the provisions of the approved programme are being fully followed.

6.2 Periodic Examination Schemes

6.2.1 Under a periodic examination scheme a container must be first examined within five years of the date on which it was manufactured and thereafter within 30 months of the date of the last examination. The date before which a container should next be examined must be clearly marked on the Safety Approval Plate of the container or as close as practicable to it. If it is considered necessary by the examiner, this date may be less than 30 months after the date of the last thorough examination. It should be noted that many offshore containers (see section 11) are marked with the date of their last examination and that this could lead to some confusion.

6.2.2 The date before which a container must first be thoroughly examined or next thoroughly examined under a periodic examination scheme must be clearly marked on the Safety Approval Plate or on a decal (adhesive label) on or as close as is practicable to the Safety Approval Plate. The marking must clearly show, in internationally recognisable words or figures, the month and year when the first or next examination of the container will be due. Decals must have a white background with lettering that may be coloured in accordance with the year of the relevant examination as follows:

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>BROWN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLUE</td>
<td>2010</td>
<td>2011</td>
<td>2012</td>
<td>2013</td>
<td>2014</td>
</tr>
<tr>
<td>YELLOW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>BLACK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.2.3 Frequent routine operating inspections should also be carried out to detect any damage or deterioration that might necessitate repair or other corrective action.

6.3 Approved Continuous Examination Programmes (ACEPs)

6.3.1 Under an approved continuous examination programme, a container must undergo thorough examinations in connection with a major repair, refurbishment or on-hire/off-hire interchange. Frequent routine operating inspections should also be carried out to detect any damage or deterioration that might necessitate repair or other corrective action. The first thorough examination of a container under an approved continuous examination programme must be carried out within 30 months of the date on which it was manufactured. Thereafter the intervals between thorough examinations must not exceed 30 months.
6.3.2 A container that is examined under an approved continuous examination programme should carry a decal on or as close as is practicable to the Safety Approval Plate. The decal should show the letters ACEP and the approval identification reference of the Government that granted the approval by means of the letters that indicate the country of residence of motor vehicles in international road traffic. An example of such an approval might be ACEP - NL - 749 where NL is the country (The Netherlands) and 749 is the approval number. The decal does not have to be coloured in accordance with 6.2.2. Many containers have their ACEP approval reference permanently marked on their Safety Approval Plate.

6.3.3 Governments should maintain a list of approved ACEP programmes and make it publicly available.

6.4 Examination procedure

6.4.1 All thorough examinations should be carried out in full accordance with the requirements of the relevant prescribed or approved examination programme. Although IMO does not propose to specify matters to be covered by an examination scheme, individual Governments may do so. However, all examination programmes should cover the:

- methods, scope and criteria to be used during examinations;
- frequency of examinations;
- qualifications of personnel to carry out examinations;
- system of keeping records and documents;
- system for recording and updating the identification numbers of all containers covered by each examination scheme;
- methods and systems for maintenance criteria appropriate to the design characteristics of specific containers;
- provisions for maintaining leased containers if different to those for owned containers; and
- conditions and procedures for adding containers into an existing approved programme.

6.4.2 All examinations should include a detailed visual examination of the container for defects or other safety-related deficiencies or damage that will make the container unsafe and place any person in danger. The exterior, including the top and underside of the container and the apertures in its corner fittings should always be examined. The underside of the containers and the underside of the lower corner fittings may be examined with the container supported on a skeletal trailer or, if the examiner considers it necessary, after the container has been lifted on to other supports. The interior of the container should also be examined whenever it is reasonably practicable. An example of when it might not be reasonably practicable to make a detailed examination of the interior of a container would be during an in service ACEP examination of a loaded container.
6.4.3 All examinations should be carried out by persons having sufficient knowledge and experience of containers to enable them to decide whether a container has any defect that could place a person in danger. When necessary, the person carrying out the examination should use appropriate measuring tools to assess potentially serious defects in structurally sensitive components. Such tools may include rulers and ‘go/no go’ gauges for checking apertures in corner fittings. Examiners should have the necessary authority to require that a more detailed examination of a container is to be carried out if this appears to be necessary in view of its condition.

6.4.5 Owners should keep examination records of all containers. These should include the identification of the container, the date of the last thorough examination and a means of identifying the examiner. If records are kept on a computer, the system should include the ability to validate a record. The records should be made available to the approving government on its request.

6.4.6 Although each container examination scheme or programme under the Convention must be approved by the relevant government, container inspection criteria have also been produced by organisations, such as shipping lines. The Institute of International Container Lessors and the International Chamber of Shipping have published guides for container equipment inspection which contain industry interchange inspection criteria. However, it should be noted that these are NOT safety examination criteria.

6.4.7 The presence of a valid Safety Approval Plate on a container does not necessarily indicate that the container will be in a safe condition when seen. Although the plate will show that the container is subject to an approved examination regime, damage or deterioration may have occurred since its last thorough examination.

6.5 Changes of owner or operator

6.5.1 On change of ownership of a container the new owners become responsible for the maintenance and examination of the container and need to ensure that examinations continue to be carried out under an appropriate prescribed or approved examination programme that is at least as effective as those originally approved. Re-approval and testing of the design of containers is not necessary on change of ownership. The original approval will remain valid unless alterations have been made to the containers that could adversely affect safety.

6.5.2 When a bailee or lessee has agreed with the owner of a container to be responsible for the maintenance and examination of a container that has been subject to a Periodic Examination Scheme and the container is to be operated under the bailee’s or lessee’s Approved Continuous Examination Programme, the next examination date on the Safety Approval Plate should be deleted and the Plate remarked with the bailee’s or lessee’s ACEP reference decal.

6.5.3 When a bailee or lessee has agreed with the owner of a container to be responsible for the maintenance and examination of a container that has been subject to a Approved Continuous Examination Programme and the container is to be operated under the bailee’s or lessee’s Periodic Examination Scheme, the ACEP decal or marking on the Safety Approval Plate should be removed or deleted and the Plate remarked with the date of the next
examination due under the bailee’s or lessee’s Periodic Examination Scheme. If the container is more than five years old, this date may not be more than 30 months after the date when the container was last thoroughly examined.

6.5.4 Approvals issued by a Contracting State that changes its identity remain valid provided that the new State agrees to maintain responsibility for the proper administration of the Convention and the existing approvals. Approvals also remain valid when container ownership changes provided the new owner continues to maintain the container to a standard and under procedures that are at least as effective as those originally approved.

7 Control

7.1 General principles

7.1.1 The movement of containers approved under the Convention should be subject to control by authorised officers of government bodies under national regulations or other legislation of contracting states. Governments should ensure that authorised control officers have received the necessary theoretical and practical training to carry out their duties effectively.

7.1.2 Control of the movement of containers by authorised control officers appointed for the purposes of the Convention should be without prejudice to control under the general duties of national legislation requiring all persons using or handling containers to do so safely and not to handle or lift containers that are in an unsafe condition.

7.1.3 Only containers that have been approved under the Convention are subject to control in the territory of a contracting state. However, most of the main maritime states are contracting states to the Convention (see Appendix 1) and most containers are owned by shipping lines or leasing companies resident in such territories. Containers of states that are not contracting states to the Convention will not have a valid Safety Approval Plate. However, they may be within the scope of national legislation while they are in states that are contracting states to the Convention or to other controls. Many shipping lines require a container that does not have a valid Safety Approval Plate to be subject to an inspection by that line before it can be accepted for shipment.

7.1.4 Control under the Convention should be limited to verifying that containers in the territory of the contracting state carry valid Safety Approval Plates and a valid ACEP or next examination date marking, unless there is significant evidence for believing that the condition of the container creates an obvious risk to safety. In such a case authorised control officers should only exercise their powers of control to the extent that it is necessary to ensure that the container is restored to a safe condition before it continues in service.

7.1.5 An authorised control officer who stops a container should notify the owner of the container or the owner’s local representative.

7.1.6 A container that has been stopped must not be reloaded until any necessary repairs or other necessary remedial actions have been carried out.

7.2 Unsafe Containers

7.2.1 A container, whether loaded or empty, that is found to have one or more
serious structural deficiencies in structurally sensitive components will clearly pose an obvious risk to safety and should be stopped until it can be ensured that the container is in a safe condition to continue in service

7.2.2 The structurally sensitive components of a container are the:

- top rails;
- bottom rails;
- headers;
- sills;
- corner posts;
- corner fittings and any intermediate fittings;
- understructure, particularly cross members; and
- locking rods.

These are shown in Appendix 5.

7.2.3 The serious structural deficiencies in structurally sensitive components that are listed in the table below should be used by authorised control officers to justify the immediate stopping of containers.

<table>
<thead>
<tr>
<th>Structurally sensitive component</th>
<th>Serious structural deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top rail</td>
<td>Local deformation to the rail in excess of 60 mm or separation or cracks or tears in the rail material in excess of 45 mm in length. Note: On some designs of tank containers the top rail is not a structurally significant component.</td>
</tr>
<tr>
<td>Bottom rail</td>
<td>Local deformation perpendicular to the rail in excess of 100 mm or separation or cracks or tears in the rail material in excess of 75 mm in length.</td>
</tr>
<tr>
<td>Header</td>
<td>Local deformation to the header in excess of 80 mm or cracks or tears in excess of 80 mm in length.</td>
</tr>
<tr>
<td>Sill</td>
<td>Local deformation to the sill in excess of 100 mm or cracks or tears in excess of 100 mm in length.</td>
</tr>
<tr>
<td>Corner post</td>
<td>Local deformation to the post exceeding 50 mm or cracks or tears in excess of 50 mm in length.</td>
</tr>
<tr>
<td>Corner and intermediate fitting (Casting)</td>
<td>Any missing corner or intermediate fitting. Any through cracks or tears in the fitting. Any deformation of the fitting that precludes full engagement of securing or lifting fittings. Any deformation of the fitting in excess of 5 mm from its original plane. Any aperture width greater than 66.0 mm. Any aperture length greater than 127.0 mm. Any reduction of thickness of the plate containing</td>
</tr>
</tbody>
</table>
the top aperture to less than 23.0 mm. Any weld separation of adjoining components in excess of 50 mm in length

Understructure
Two or more adjacent cross members missing or detached from the bottom rails. 20% or more of the total number of cross members missing or detached.
Note: If onward transportation is permitted, it is essential that any detached cross members are precluded from falling free.

Locking rod
Any inner locking rod that is non functional.
Note: Some containers are designed and approved (and so recorded on the CSC Plate) to operate with one door open or removed.

Table 1 Serious structural deficiencies of structurally sensitive components

7.2.4 The deficiencies in Table 1 are pass / fail criteria only for the use of authorised control officers to determine whether a container should be immediately stopped or may remain in service. They should not be used as repair and in-service criteria under a CSC ACEP or a periodic examination scheme.

7.2.5 A container that is found by an authorised control officer to have a serious structural deficiency in a structurally sensitive component or any other defect that could place a person in danger should be stopped. Appendix 6 is a flow chart showing the action to be taken by an authorised control officer in connection with containers found to have serious structural deficiencies to structurally sensitive components.

7.2.6 Major damage is often the result heavy impacts caused by the handling of a container or of another container or of the movement of cargo within a container. Consequently, special attention should be given to signs of recent impact damage.

7.2.7 The deficiencies listed in Table 1 are not exhaustive for all types of containers or for all possible deficiencies or combinations of deficiencies. The effect of two or more items of damage in the same structurally sensitive component of a container may be equal to, or greater than, the effect of a single item of damage that is listed in the table, even though each item of damage is less than those specified in the table. In such circumstances the authorised control officer may stop the container and seek further guidance from the contracting state.

7.2.8 An authorised control officer finding a serious structural deficiency, that is comparable to those listed in Table 1, in the attachment of the shell of a tank container to the container frame should stop the container.

7.2.9 The end frame locking mechanism of platform containers with folding end frames and the hinge pins about which end frames rotate are structurally sensitive components. An authorised control officer finding serious structural deficiencies in such components should stop the container.

7.2.10 Not all apparently serious damage to a container will be structurally significant and create a significant risk to safety. Some damage, such as holes, may...
infringe customs requirements or be liable to lead to damage of cargo but not be structurally significant.

7.2.11 An authorised control officer who finds a container that has a structural deficiency that is approaching the limits listed in Table 1 should advise the owner or their local representative of the situation in order that appropriate action is taken.

7.2.12 An authorised control officer who finds a container that is marked on or near its Safety Approval Plate with a date for its next examination that is earlier than the date on which the container is seen, should stop the container. Similarly, if a control officer discovers that a container operated under an ACEP programme has not been examined within the preceding thirty months, the container should be stopped.

7.2.13 An authorised control officer who finds a container that has no Safety Approval Plate or one that has been incorrectly completed, should stop the container. However if the container is not defective and evidence can be produced that the container has been approved under the Convention or that it meets the standards of the Convention, it may be permitted to continue to its destination for unloading provided that it will then be correctly plated as soon as it is practicable.

7.3 Other control action

7.3.1 A container that has been stopped may be permitted to continue to its final destination if this is possible without lifting it from its current means of transport.

7.3.2 A container with severe damage that prevents it being lifted safely, should only be moved when it is secured to a platform-based container, such as a flatrack, or other appropriate item of transport equipment. Such damage is likely to be missing, misplaced or damaged corner fittings or failure between side walls and bottom rails or between corner fittings and corner posts or rails.

7.3.3 Containers with folding end walls that cannot be locked in the erect position should only be lifted from the container platform corner fittings. Such containers should not be lifted with the end walls erect.

7.3.4 A container that has been stopped may also be permitted to continue to its final destination or to a place where it can be unloaded, examined or repaired, provided that it will be safe to do so and that the container will then be unloaded, examined or repaired as soon as practicable subject to any conditions the control officer may specify and agreement that any necessary repairs or other appropriate action will be carried out as soon as is practicable. A damaged container should only be handled and transported with due regard to its structural defects. Damaged containers being moved for repair should be clearly signed on their sides and top.

7.3.5 An authorised control officer who permits the owner of a container that has been stopped to safely move it to another state for the necessary corrective action to be carried out should also take such measures as may be reasonably practicable to ensure that the necessary corrective action is in fact taken. In particular the control officer should consider whether it may be
necessary to inform authorised control officers in states through which the container will be moved and in the state of its final destination.

7.3.6 If a container appears to have become unsafe as a result of a defect that may have existed when the design of the container was approved, the government of the state finding the defect should inform the government of the state that is responsible for that approval.

7.3.7 If there is clear evidence that an owner is repeatedly failing to achieve a satisfactory level of safety, the government of the state in which the owners have their head office or live should be asked to ensure that appropriate corrective action is taken.

7.3.8 If a considerable number of containers in one approved series are found to be unsafe as a result of defects that may have existed prior to approval, it may be desirable for governments to notify IMO as well as the contracting state concerned.

8 Disputes

8.1 In the event of a dispute between two or more of the contracting states that cannot be settled by negotiation or other means, the dispute must be referred to an arbitration panel at the request of any of them. The panel will consist of an arbitrator appointed by each of the parties to the dispute and a further chairman appointed by the arbitrators. If any of the parties fail to appoint an arbitrator within three months or the arbitrators fail to appoint a chairman within three months, the Secretary-General of IMO may make the necessary appointments.

8.2 The decision of any arbitration panel appointed will be binding on the parties to the dispute.

9 One Trip Containers

9.1 It is not uncommon for containers approaching the end of their working life to be used for a final one-way trip to another state. Such containers are sometimes referred to as 'one trip' containers. There is an impression in some quarters that lower standards are permissible for containers on such journeys. This is not so. The Convention and national legislation implementing it apply in full to such containers and it is essential that they continue to have a valid Safety Approval Plate and are properly maintained until they have been unloaded at their final destination. The Safety Approval Plate on the container should be removed when the container has been withdrawn from service and is no longer being maintained in accordance with the Convention (see 5.10)

10 “One Door Off” Containers

10.1 Some containers are operated after being modified by having one door removed for the carriage of certain cargoes. This is a structural change that is considered to be a modification that may affect the safety of the container. As such it requires specific approval of the government or authorised organisation that approved the design of the container (see 4.13) and appropriate markings on the Safety Approval Plate. The government or authorised organisation may require further testing to determine permissible stacking and racking limits.
10.2 Containers that have been so modified should retain the original date of manufacture on their Safety Approval Plate and add the date on which the modification was carried out on an additional line. The Safety Approval Plate must remain on the container after the door has been removed, preferably on the door that remains. Containers approved for operation with one door off should have their Safety Approval Plate marked to show ALLOWABLE STACKING MASS FOR 1.8 g (kg and lbs) ONE DOOR OFF and RACKING TEST LOAD VALUE (kg and lbs) ONE DOOR OFF.

10.3 In 2003 the International Association of Classification Societies published IACS Recommendation No. 80 as guidance to facilitate any necessary further approval of ‘one door off’ containers. This includes the fitting of an additional ‘ONE DOOR-OFF OPERATION’ approval plate giving the relevant modified allowable stacking weight and racking test load value. This plate should be affixed as close as practicable to the CSC Safety Approval Plate. Alternatively the additional information may be included in a consolidated Safety Approval Plate. An example of such a consolidated approval plate is included in Appendix 4.

10.4 The operation of a container with one door open imposes the same forces on the container as operating it with one door off. Therefore, any containers that is to be operated with one door open should carry a valid one door off operation approval plate.

11 Offshore Containers

11.1 Although the Convention does not apply to offshore containers that are handled in open seas (see Para 3.6), guidelines on such containers are contained in the Annex to IMO MSC Circular 860 dated 22 May 1998. See Appendix 7. Offshore containers are defined in the Circular as “portable units which are specially designed for repeated use in the transport of goods or equipment to, from or between fixed and / or floating offshore installations and ships”.

11.2 It should be particularly noted that the approval plate on an offshore container should be clearly marked “Offshore Container” and that inspection plates on such containers commonly show the date of the last inspection of the container, unlike Safety Approval Plates on containers subject to CSC which are marked with the date when the first periodic examination is due and, in the case of containers covered by a periodic examination scheme, the date when the next examination is due.

11.3 Offshore containers designed for repeated use offshore are often purpose built for special cargoes. They include open and closed dry cargo units, dry bulk containers and portable tanks. The gross weight and sizes of offshore containers are not standardised. Many offshore containers have a smaller base area than the 7m² limit in the CSC definition of a container (see 3.2 above).

12 Ratification

12.1 When a contracting state ratifies, accepts, approves or accedes to the Convention, the Convention will enter into force in that state twelve months after the date of such ratification. The Convention will then apply fully to any containers built after the date of its coming into force. All existing containers should then be inspected and fitted with Safety Approval Plates within five 17
years of the date of the coming into force of the Convention in that state. Acceptance of the Convention by a succession state does not require replacement of Safety Approval Plates on existing containers, as the approval by the original state remains valid.
APPENDIX 1

SIGNATORY STATES TO THE CONVENTION

On 30 September 2010 there were 78 signatory states to the Convention:

Afghanistan  Jordan
Angola        Kazakhstan
Argentina     Kenya
Australia     Latvia
Austria       Lebanon
Bahamas       Liberia
Barbados      Lithuania
Belarus        Luxembourg
Belgium       Marshall Islands
Benin          Mexico
Bolivia       Montenegro
Brazil        Morocco
Bulgaria      Netherlands
Canada         New Zealand
Cape Verde Islands  Nigeria
Chile          Norway
China          Pakistan
Croatia        Peru
Cuba           Poland
Cyprus          Portugal
Czech Republic  Republic of Korea
Democratic People’s Republic of Korea  Romania
Denmark        Russian Federation
Estonia        Saudi Arabia
Finland        Serbia
France          Slovakia
Georgia        Slovenia
Germany        South Africa
Greece          Spain
Guinea          Sweden
Guyana         Syrian Arab Republic
Honduras        Tonga
Hungary         Tunisia
Iceland         Ukraine
India            United Kingdom
Indonesia        United States
Iran (Islamic Republic of)  Vanuatu
Israel            Yemen
Italy            Hong Kong, China
Japan            Macao, China

In February 2011 the Convention was fully in force in 78 Signatory States.

The Convention will apply to all new containers in future Signatory States from the date of entry into force of the Convention in that state but will not be fully in force for all existing containers of that state until five years after the date of entry into force of the Convention in that state.
APPENDIX 2

MAIN TYPES OF CONTAINERS

1 Series-1 freight containers are defined in ISO 830 as containers designed to ISO standards which are intended for intercontinental freight transport. Most containers are now built to these standards. Series-2 containers were intended to be larger containers for use in both international and domestic traffic but these were found not to be necessary.

2 Freight containers may be general cargo containers or specific cargo containers.

General cargo containers

3 A general cargo container is any type of container that is not intended for use in air mode transport and which is not primarily intended for the carriage of a particular category of cargo, such as cargo requiring temperature control, a liquid or gas cargo, dry solids in bulk, cars or livestock. General cargo containers include the following types:

   GENERAL PURPOSE CONTAINERS: A general purpose container is a container that is totally enclosed and weather-proof, has a rigid roof, rigid side walls, rigid end walls at least one of which is equipped with doors, and a floor. It is intended to be suitable for the transport of cargo in the greatest possible variety. A general purpose container having an opening roof may be used for the same specific purpose as an open top container.

   SPECIFIC PURPOSE CONTAINERS: A specific purpose container is one that has constructional features specifically for the purpose of facilitating packing or emptying the container other than by means of doors at one end of the container, or constructional features for other specific purposes such as ventilation. Closed vented or ventilated containers, open top containers, platform containers and platform-based containers are all types of specific purpose containers.

   Closed vented or ventilated containers: A closed vented or ventilated container is a closed type of container similar to a general-purpose container but that is designed to allow air exchange between its interior and the outside atmosphere. Vented containers are containers that have passive vents at the upper part of their cargo space. Ventilated containers are containers which have a ventilating system designed to accelerate and increase the natural convection of the atmosphere within the container as uniformly as possible, either by non-mechanical vents at both the upper and lower parts of their cargo space, or by internal or external mechanical means.

   Open top containers: An open top container is similar to a general-purpose container in all respects except that it has no rigid roof. It may have a flexible and moveable or removable cover, e.g. of canvas, plastic or reinforced plastic material. The cover is normally supported on movable or removable roof bows. Open top containers may have movable or removable end transverse members (known as removable headers) above their end doors.
Platform containers: A platform container is a loadable platform that has no superstructure whatsoever but is the same length and width as a container of the same series. It is equipped with top and bottom corner fittings that are located in plan view as on series 1 containers so that the same securing and lifting devices can be used.

Platform-based containers: A platform-based container is an open sided container that has no side walls but has a base similar to that of a platform container. It may have a complete superstructure with a permanent fixed longitudinal load-carrying structure between the two ends at the top or it may have an incomplete superstructure without such a longitudinal structure at the top. A platform-based container that incorporates a complete superstructure may have a rigid roof and rigid end walls, an open top and rigid end walls or an open top and open ends (a skeletal container). A platform-based container that incorporates an incomplete superstructure may have fixed ends or folding ends. The latter are often referred to as flatracks.

Specific cargo containers

Specific cargo containers are primarily intended for the carriage of particular categories of cargo. Specific cargo containers include the following types:

THERMAL CONTAINERS: Containers that have insulating walls, doors, floor and roof. Thermal containers may be: insulated – with no device for cooling and/or heating, refrigerated – using expendable refrigerants such as ice, 'dry ice' (solid carbon dioxide), or liquefied gasses, and with no external power or fuel supply. Such containers may be

Mechanically refrigerated – Thermal containers served by a refrigerating appliance such as mechanical compressor unit or an absorption unit. These containers are often known as reefers.

Porthole – Thermal containers refrigerated by cold air from an external source introduced through a porthole.

Heated – Thermal containers served by heat-producing appliances, or,

Refrigerated and heated - Thermal containers served by a refrigerating appliance (mechanical or using an expendable refrigerant) and a heat producing appliance.

TANK CONTAINERS: Containers that include two basic elements, the tank or tanks, and the framework. Most tank containers are designed to carry bulk liquid or gaseous cargoes but some are designed to carry bulk powders or granules.

DRY BULK CONTAINERS: Containers that consists of a cargo carrying structure for the carriage of dry solids in bulk without packaging that is firmly secured within an ISO series 1 framework.

NAMED CARGO CONTAINERS: Containers that are built in general accordance with ISO standards either solely or principally for the carriage of named cargo such as cars or livestock.
Offshore containers

5 Offshore containers are defined in MSC/Circ.860 (see Appendix 7) as 'portable units specially designed for repeated use in the transport of goods or equipment to, from or between fixed and/or floating offshore installations and ships'. They may often be handled in open seas. They are not subject to the Convention. From time to time, conventional ISO containers, which are subject to the Convention, may also be handled in open seas.
## APPENDIX 3

### ISO STANDARDS RELATING TO CONTAINERS

<table>
<thead>
<tr>
<th>ISO Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 668</td>
<td>Series 1 freight containers – Classification, dimensions and ratings.</td>
</tr>
<tr>
<td>ISO 1161</td>
<td>Series 1 freight containers – Corner fittings – Specification.</td>
</tr>
<tr>
<td>ISO 1496</td>
<td>Series 1 freight containers – Specification and testing</td>
</tr>
<tr>
<td></td>
<td>Part 1: General cargo containers for general purposes.</td>
</tr>
<tr>
<td></td>
<td>Part 2: Thermal containers.</td>
</tr>
<tr>
<td></td>
<td>Part 3: Tank containers for liquids, gasses and pressurised dry bulk.</td>
</tr>
<tr>
<td></td>
<td>Part 4: Non-pressurised containers for dry bulk.</td>
</tr>
<tr>
<td></td>
<td>Part 5: Platform and Platform-based containers.</td>
</tr>
<tr>
<td>ISO 2308</td>
<td>Hooks for lifting freight containers of up to 30 tonnes capacity – Basic requirements.</td>
</tr>
<tr>
<td>ISO 3874</td>
<td>Series 1 freight containers – Handling and securing.</td>
</tr>
<tr>
<td>ISO 6346</td>
<td>Freight containers – Coding, identification and marking.</td>
</tr>
<tr>
<td>ISO 8323</td>
<td>Freight containers – Air/surface (intermodal) general purpose containers – Specification and tests.</td>
</tr>
<tr>
<td>ISO 9669</td>
<td>Series 1 freight containers – Interface connections for tank containers.</td>
</tr>
<tr>
<td>ISO 9711</td>
<td>Freight containers – Information related to containers on board vessels.</td>
</tr>
<tr>
<td></td>
<td>Part 1: Bay plan system.</td>
</tr>
<tr>
<td>ISO 9897</td>
<td>Freight containers – Container equipment data exchange (CEDEX) – General communication codes.</td>
</tr>
<tr>
<td>ISO 10368</td>
<td>Freight thermal containers – remote condition monitoring.</td>
</tr>
<tr>
<td>ISO 10374</td>
<td>Freight containers – Automatic identification.</td>
</tr>
<tr>
<td>ISO 14829</td>
<td>Freight containers – Straddle carriers for freight container handling – Calculation of stability.</td>
</tr>
<tr>
<td>ISO/TR 15069</td>
<td>Series 1 freight containers – Handling and securing – Rationale for ISO 3874 Annex A.</td>
</tr>
</tbody>
</table>
ISO/TR 15070  Series 1 freight containers – Rationale for structural test criteria.
ISO 17712  Freight containers – Mechanical seals
ISO 18185-3  Freight Containers – Mechanical seals

Information on the latest edition of ISO standards can be obtained from the International Organization for Standardization, Case Postale 56, CH-1211 Genève 20, Switzerland or from the internet at www.iso.ch.
APPENDIX 4

SAFETY APPROVAL PLATES

<table>
<thead>
<tr>
<th>Format of Safety Approval Plate</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Example of a PES Safety Approval Plate</th>
</tr>
</thead>
</table>

©ICHCA International Ltd
Example of an ACEP Safety Approval Plate

Additional 'One door off' Approval plate

Combined PES and 'One door off' Safety Approval Plate
Example of an ACEP Safety Approval Plate
(grouped with other official plates on a single base plate)
APPENDIX 5

STRUCTURALLY SENSITIVE COMPONENTS OF CONTAINERS

General purpose container

Underside of container
Tank container

Collar tank container
SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS

Control flow chart for use by Authorised Control Officers

START

Is the container damaged?

Yes

Are structurally sensitive components damaged?

Yes

No action required

No

Is the container damaged?

Yes

Is the damage greater than that shown in Table 1?

No

Is the damage approaching the limits shown in Table 1?

No

Advise Owner

Yes

Note:
Contact with the owner may be made through the organisation that has current possession of the container.

Note:
Authorised control officers may permit onward movement following confirmation from the owner that the container will be handled in such a way that the risk of injury is minimised and that the container will be repaired after unloading.

Is the container loaded?

Yes

Does the container need to be lifted?

No

May permit onward movement

No

This container should not be used for the carriage of cargo and only permitted to be moved to a depot for repair

Note:
This may include an overseas depot

Can the container be safely lifted?

Yes

The container should be stopped and the owner advised

No

The container should not be used for the carriage of cargo and only permitted to be moved to a depot for repair

Note:
The container that has damage to cross members, bottom rails or corner fittings should not be lifted.

Table 1 is in 7.2.3 on pages 13 and 14
The Maritime Safety Committee, at its sixty-second session, approved amendments to the Recommendation on Harmonized Interpretation and Implementation of the International Convention for Safe Containers, 1972 (CSC). The revised Recommendation was circulated as CSC/Circ.100 dated 30 June 1993 and has been included as a supplement in the 1996 edition of the CSC.

Paragraph 3.3 of the revised Recommendation on Harmonised Interpretation and Implementation of the CSC states that the Convention does not apply to offshore containers that are handled in open seas. There are several reasons for applying special design and testing parameters to offshore containers:

1. the tests set out in Annex II to the CSC are designed to cover the forces on containers encountered in general marine transport, loading and unloading in ports and in inland transport. However, offshore containers are used to supply offshore installations and are typically shipped on the open deck of purpose-built supply vessels and are lifted onto and off the offshore installation by cranes on the installations. Such operations may often take place in very unfavourable weather and sea conditions;

2. spreader beams, as used for lifting ordinary containers, cannot be used when lifting offshore containers; and

3. the types of offshore containers used are often purpose-built and include closed and open dry cargo containers, dry bulk cargo containers and portable tanks. Offshore containers, unlike ISO containers, are not standardized with regard to sizes or gross mass; many have a smaller base area than the $7.2 \text{ m}$ in the lower limiting definition of a container in the CSC.

Sections 12 and 13 of the General Introduction to the International Maritime Dangerous Goods (IMDG) Code recognize the special nature of offshore containers and portable tanks. These sections state that the design and testing of offshore containers and offshore tank-containers should take into account the dynamic lifting and impact forces that may occur when a container or tank is handled in open seas in adverse weather and sea conditions and that the requirements for such containers and tanks should be determined by the approving competent authority.

For the purposes of these guidelines “offshore containers” should be taken to mean portable units specially designed for repeated use in the transport of goods or equipment to, from or between fixed and/or floating offshore installations and ships. Such units include containers and portable tanks for dangerous goods as defined in section 12 and 13 of the General Introduction to the IMDG Code.
These guidelines are intended to assist approving competent authorities in developing detailed requirements for offshore containers. For the purposes of these guidelines, the “approving competent authority” includes organizations duly authorized by the Administration.

**Approval**

6 Approving competent authorities should base their approval of offshore containers both on calculations and on testing, taking into account the dynamic lifting and impact forces that may occur when handling in open seas.

**Design**

7 Offshore containers should be fitted with special pad eyes, suitable for the attachment of purpose built slings connected with shackles. Where ISO corner fittings are mounted in conjunction with pad eyes, these corner fittings are not intended for lifting offshore.

8 In order to facilitate handling in open seas, offshore containers should be pre-slung. Such slings should be permanently attached to the container and considered to be part of the container. The dynamic forces which occur when handling containers in open seas will be higher than those encountered during normal quayside handling. This should be taken into account when determining the requirements for slings on offshore containers by multiplying the normal safety factor for slings by an additional factor. The fact that light containers will be subject to relatively higher dynamic forces than heavier containers should also be taken into account. Minimum material requirements for impact toughness should be specified when higher strength steel is used e.g. in chains, links and shackles.

9 Since offshore containers may not always be secured on supply vessels, such containers should be designed so as to withstand 30° tilting in any direction when fully loaded. Cargo may normally be assumed to be evenly distributed with the centre of gravity at the half height of the container, but on containers for dedicated transport (e.g. special bottle rack containers for gas bottles in fixed positions) the actual centre of gravity should be used.

10 Protruding parts of an offshore container that may catch on other containers or structures should be avoided. Doors and hatches should be secured against opening during transport and lifting. Hinges and locking devices should be protected against damage from impact loads.

11 Strength calculations should include lifting with the attached lifting sling and any other applicable means of handling (e.g. with fork lift trucks). Impact loads on the side and bottom of containers should also be considered in these calculations and impact properties should be included in the requirements for structural steel materials. However, calculations, including static equivalency of point loads in combination with the tests as set out in paragraph 13 should normally be considered sufficient.

12 Containers are sometimes temporarily used on floating or fixed offshore installations as storage space, laboratories, accommodation or control stations, etc. When used this way, the container will also be subject to the regulations applicable for the offshore installation in addition to transport related requirements based on these guidelines.
Testing

13 At least one offshore container of each design type should be subjected to the following tests:

.1 4-point lifting test

Internal load: a uniformly distributed load such that the total mass of the container and test load is equal to 2.5R, where R is the maximum allowable combined mass of the container and its cargo. The container should be lifted with a lifting sling attached to each of its four pad eyes with an angle to the vertical equal to the design angle.

.2 2-point lifting test

Internal load: a uniformly distributed load such that the total mass of the container and test load is equal to 1.5R. A container fitted with four pad eyes should be lifted from only two pad eyes situated diagonally opposite each other.

.3 Vertical Impact test

Internal load: a uniformly distributed load such that the total mass of the container and test load is equal to R. The container should be suspended at an inclined angle with the lowest corner at least 50mm above a rigid floor. The container should then be quickly released so that it will have a speed of at least 1 m/s on initial impact.

.4 Other tests

Other tests, designed to demonstrate the ability of a container type to withstand other handling and transport forces, such as those described in relevant standards or the CSC, may also be required by the approving competent authority.

14 The tested offshore container should suffer no permanent damage or deformation in any of the tests which would render it incapable of being used for its designed purpose.

15 In order to ensure that offshore containers of the same design type are manufactured to the approved design, the approving competent authority should examine and test as many units as it considers necessary.

16 Offshore containers that have been designed, manufactured, tested and approved according to these guidelines should be clearly marked “Offshore Container” on an approval plate in accordance with the appendix. The details shown in the appendix represent minimum requirements.

Inspection

17 Offshore containers should be inspected at least annually, as deemed appropriate, by the approving competent authority. The date of inspection and the mark of the inspector should be marked on the container, preferably on a plate fitted for this purpose. The inspection plate may be combined with the
approval plate (paragraph 16) and any other official approval or data plates on a single base plate. It should be noted that the inspection plates on offshore containers commonly show the date of the last inspection unlike Safety Approval Plates on containers subject to the CSC which are marked with the date when the first periodic examination is due and in the case of containers covered by a periodic examination scheme (PES), with the date by which the next examination is due.

Standards and rules

18 The following standards and rules on offshore containers, not all of which cover all aspects of the design and testing in these guidelines, are known to exist or be under preparation and should be consulted as appropriate:

- BS 7072: British Standard Code of Practice for Inspection and Repair of Offshore Containers;
- Det Norske Veritas (DNV): Certification Note 2.7-1, Offshore Containers;
- Det Norske Veritas (DNV): Certification Note 2.7-2, Offshore Service Containers; and
- pr EN 12079: Design, construction, testing, inspection and marking (under preparation by the European Committee for Standardization (CEN). *

APPENDIX

<table>
<thead>
<tr>
<th>OFFSHORE CONTAINER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of manufacturer:</td>
</tr>
<tr>
<td>Month/year of manufacture:</td>
</tr>
<tr>
<td>Identification No:</td>
</tr>
<tr>
<td>Maximum gross mass: Kg</td>
</tr>
<tr>
<td>Tare-mass: Kg</td>
</tr>
<tr>
<td>Payload: Kg</td>
</tr>
<tr>
<td>Approval No:</td>
</tr>
</tbody>
</table>

Approval Plate

* Published in 2006 as EN 12079 Offshore containers and associated lifting sets -
  Part 1: Offshore container - Design, manufacture and marking
  Part 2: Lifting sets - Design, manufacture and marking
  Part 3: Periodic inspection, examination and testing
REFERENCES


IMO Circular CSC.1/Circ.139. INTERNATIONAL CONVENTION FOR SAFE CONTAINERS (CSC), 1972. Implementation, testing, inspection and approval. Note by the Secretariat. International Maritime Organization. 11 August 2010. Note: This circular is periodically replaced. Please check for latest circular.


Containers “In One Door Off” Operation. IACS Recommendation No. 80. 2003. International Association of Classification Societies, 6th Floor, 36 Broadway, London SW1H 0AB. Available to download at www.iacs.org.uk.


