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TECHNICAL PUBLICATION

Containers

guidance

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INTRODUCTION

In the 1960s, there was a rapid increase in the use of freight containers for the consignment of goods by sea and the development of specialized container ships. In 1967, IMO undertook to study the safety of containerization in marine transport. The container itself emerged as the most important aspect to be considered.

IMO, in cooperation with the Economic Commission for Europe, developed a draft convention and in 1972 the finalized Convention was adopted at a conference jointly convened by the United Nations and IMO.

The 1972 Convention for Safe Containers has two goals. One is 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.

The other is to facilitate the international transport of containers by providing uniform international safety regulations, equally applicable to all modes of surface transport. In this way, proliferation of divergent national safety regulations can be avoided.

The requirements of the Convention apply to the great majority of freight containers used internationally, except those designed especially for carriage by air. As it was not intended that all containers or reusable packing boxes should be affected, the scope of the Convention is limited to containers of a prescribed minimum size having corner fittings devices which permit handling, securing or stacking.

TECHNICAL ANNEXES

The Convention includes two Annexes:

- Annex I includes Regulations for the testing, inspection, approval and maintenance of containers; and
- Annex II covers structural safety requirements and tests, including details of test procedures.

Annex I sets out procedures whereby containers used in international transport must be safety

approved by an Administration of a Contracting State or by an organization acting on its behalf.

The Administration or its authorized representative will authorize the manufacturer to affix to approved containers a safety approval plate containing the relevant technical data.

The approval, evidenced by the safety approval plate granted by one Contracting State, should be recognized by other Contracting States. This principle of reciprocal acceptance of safety approved containers is the cornerstone of the Convention; and once approved and plated it is expected that containers will move in international transport with the minimum of safety control formalities.

The subsequent maintenance of a safety approved container is the responsibility of the owner, who is required to have the container periodically examined.

The Convention specifically requires that the container be subjected to various tests which represent a combination of safety requirements of both the inland and maritime modes of transport.

Flexibility is incorporated in the Convention by the provision of a simplified amendment procedures (tacit amendment procedure) which makes it possible to speedily adapt the test procedures to the requirements of international container traffic.

DEFINITIONS

“Container”	<p>an article of transport equipment:</p> <p>(a) of a permanent character and accordingly strong enough to be suitable for repeated use;</p> <p>(b) specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading;</p> <p>(c) designed to be secured and/or readily handled, having corner fittings for these purposes;</p> <p>(d) of a size such that the area enclosed by the four outer bottom corners is either:</p> <p>(i) at least 14 m² (150 sq. ft) or</p> <p>(ii) at least 7 m² (75 sq. ft) if it is fitted with top corner fittings.</p> <p>The term “container” includes neither vehicles or packaging; however, containers when carried on chassis are included.</p>
“Corner fittings”	<p>an arrangement of apertures and faces at the top and/or bottom of a container for the purposes of handling, stacking and/or securing.</p>
“International transport”	<p>means transport between points of departure and destination situated in the territory of two countries to at least one of which the present Convention applies. The present Convention shall also apply when part of a transport operation between two countries takes place in the territory of a country to which the present Convention applies.</p>
“Cargo”	<p>means any goods, wares, merchandise and articles of every kind whatsoever carried in the containers.</p>
“New container”	<p>means a container the construction of which was commenced on or after the date of entry into force of the present Convention.</p>
“Existing container”	<p>means a container which is not a new container.</p>
“Owner”	<p>means the owner as provided for under the national law of the country of approval or the lessee or bailee, if an agreement between the parties provides for the exercise of the owner’s responsibility for maintenance and examination of the container by such lessee or bailee.</p>
“Type of container”	<p>means the design type approved by the Dromon.</p>
“Type-series container”	<p>means any container manufactured in accordance with the approved design type.</p>
“Prototype”	<p>means a container representative of those manufactured or to be manufactured in a design type series.</p>
“Maximum operating gross mass or Rating or R”	<p>means the maximum allowable sum of the mass of the container and its cargo. The letter R is expressed in units of mass. Where the annexes are based on gravitational forces derived from this value, that force, which is an inertial force, is indicated as R_g.</p>
“Maximum operating	<p>means the maximum allowable combined weight of the container and its cargo.</p>

gross weight” or
“rating” or “R”

“Tare” means the mass of the empty container, including permanently affixed ancillary equipment.

“Tare weight” means the weight of the empty container including permanently affixed ancillary equipment.

“Maximum permissible payload” or “P” means the difference between maximum operating gross mass or rating and tare. The letter P is expressed in units of mass. Where the annexes are based on the gravitational forces derived from this value, that force, which is an inertial force, is indicated as Pg.

“g” means the standard acceleration of gravity; g equals 9.8 m/s².

“load” when used to describe a physical quantity to which units may be ascribed, signifies mass.

“depot” means a repair or storage facility or location.

“structurally sensitive components” means those container components that are significant in allowing the container to be safely used in transportation.

APPLICATION

This publication applies to new and existing containers used in international transport, excluding containers specially designed for air transport.

Every new container shall be approved in accordance with the provisions either for type-testing or for individual testing as contained in Annex I of the CSC Convention. Every existing container shall be approved in accordance with the relevant provisions for approval of existing containers set out in Annex I of the CSC Convention.

SWAP BODIES/DEMOUNTABLES

The CSC does not have to be applied to containers known as swap bodies/demountables and designed and used for carriage by road only or by rail and road only and which are without stacking capability and top lift facilities.

The CSC does not have to be applied to such swap bodies/ demountables transported by sea on condition that they are mounted on a road vehicle or rail wagon. However, CSC does apply to swap bodies/demountables used in transoceanic services.

OFFSHORE CONTAINERS

The CSC does not necessarily apply to offshore containers that are handled in open seas. Offshore containers are subject to different design, handling and testing parameters. Offshore containers may be approved under the provisions of the CSC Convention provided the containers meet all applicable provisions and requirements of the CSC Convention .

SHIP'S GEAR CARRIERS AND BINS

The CSC does not necessarily apply to ship's gear carriers and bins, as skeletal platform based containers with fixed end posts and associated storage bins used for the storage of twist-locks,

lashing bars, etc., are not used for international transport as defined by this Convention and so are not containers as defined. However, these specialist containers are carried aboard container and other ships and are handled in the same way as all other containers, and therefore present the same risks during loading and discharging from the ship.

These units should be included in a maintenance and examination scheme and subject to periodic inspections.

TESTING, INSPECTION, APPROVAL AND MAINTENANCE

Every container shall be maintained in a safe condition in accordance with the provisions of Annex I of the CSC.

If an approved container does not in fact comply with the requirements of Annexes I and II of the CSC Convention, Dromon shall take such steps as it deems necessary to bring the container into compliance with such requirements or to withdraw the approval.

It is accepted that a visual examination of the exterior of the container will normally be sufficient. However, an examination of the interior should also be performed if reasonably practicable (e.g., if the container is empty at the time). Furthermore, the top and underside of the container, including the underside of the lower corner fittings, should be examined. This may be done either with the container supported on a skeletal chassis or, if the examiner considers it necessary, after the container has been lifted on to other supports.

Containers are subject to a thorough examination in connection with a major repair, refurbishment or on-hire or depot interchange and in no case less than every 30 months.

SAFETY APPROVAL PLATE

The convention requires that any container used for international transport must be fitted with a valid safety approval plate (CSC Plate).

The CSC plate shall be permanently affixed to every approved container at a readily visible place, adjacent to any other approval plate issued for official purposes, where it would not be easily damaged.

Each CSC plate must contain a certain level of information, in either English or French. The words "CSC SAFETY APPROVAL" are prominent on the plate, along with the country of approval and the approval reference.

On each container, all maximum operating gross mass markings shall be consistent with the maximum operating gross mass information on the Safety Approval Plate.

The Owner of the container shall remove the Safety Approval Plate on the container if:

- the container has been modified in a manner which would void the original approval and the information found on the Safety Approval Plate, or
- the container is removed from service and is not being maintained in accordance with the CSC Convention, or
- if the approval has been withdrawn by Dromon.

Where the stacking or racking values are less than 192,000 kg or 150 kN, respectively, the container shall be considered as having limited stacking or racking capacity and shall be conspicuously marked, as required by the relevant standards , at or before their next scheduled examination or before any other date approved by Dromon.

A container, the construction of which was completed prior 1 July 2014, may retain the Safety Approval Plate as permitted by the Convention prior to that date as long as no structural modifications occur to that container.

[Annex I](#) of this publication, gives an example of a Safety Approval Plate along with proper dimensions to be created.

A single approval number may be assigned to each Owner for all existing containers in a single application

for approval which shall be entered on line 1 of the plate, as shown an Annex 1 of this publication.

The manufacturer's serial number shall be used as the identification number on the Safety Approval Plate.

A blank space shall be reserved on the plate for insertion of end-wall and/or side-wall strength values in accordance with Annex II of this publication. Where end-wall or side-wall strength is required to be marked on the Safety Approval Plate, this shall be indicated as follows:

- END-WALL STRENGTH
- SIDE-WALL STRENGTH

In cases where a higher or lower wall strength is to be marked on the Safety Approval Plate, this can be done briefly by referring to the formula related to the payload P (i.e. SIDE-WALL STRENGTH 0.5P).

UNSAFE CONTAINERS

Surveyors who find a container that is in a condition that creates an obvious risk to safety should stop the container until it can be ensured that it is in a safe condition to continue in service.

All containers with serious structural deficiencies in structurally sensitive components should be considered to be in a condition that creates an obvious risk to safety.

Surveyors should notify the container Owner whenever a container is placed under control.

Surveyors may permit the onward movement of a container that has been stopped to its ultimate destination providing that it is not lifted from its current means of transport.

Empty containers with serious structural deficiencies to structurally sensitive components are also deemed to place a person in danger. Empty containers are typically repositioned for repair at an Owners elected depot provided they can be safely moved; this can involve either a domestic or an international move. Any damaged container being so repositioned should be handled and transported with due regard to its structural deficiency. Clear signage should be placed on all sides and the top of the damaged container to indicate it is being moved for repairs only.

Empty containers with severe damage that prevents safe lifting of the container, e.g., damaged, misplaced or missing corner fittings or a failure of the connection between side walls and bottom side rails, should only be moved when carried on a platform-based container, such as a flatrack.

Major damage may be the result of significant impact which could have been caused by improper handling of the container or other containers, or significant movement of the cargo within the container. Therefore, special attention should be given to signs of recent impact damage.

Damage to a container may appear serious without creating an obvious risk to safety. Some damage, such as holes, may infringe customs requirements but may not be structurally significant.

Structurally sensitive components and definition of serious deficiencies for consideration by Surveyors only. The structurally sensitive components of a container that should be examined for

serious deficiencies are the top rail; bottom rail; header; sill; corner posts; corner and intermediate fittings; understructure; and locking rods.

The following criteria should be used to make immediate out-of-service determinations by the Surveyor. The deficiencies listed below are not exhaustive for all types of containers or all possible deficiencies or combination of deficiencies.

Structurally Sensitive Component	Serious Structural Deficiency
Top rail	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. ¹
Bottom rail	Local deformation perpendicular to the rail in excess of 100 mm or separation or cracks or tears in the rail's material in excess of 75 mm in length.
Header	Local deformation to the header in excess of 80 mm or cracks or tears in excess of 80 mm in length.
Sill	Local deformation to the sill in excess of 100 mm or cracks or tears in excess of 100 mm in length.
Corner posts	Local deformation to the post exceeding 50 mm or tears or cracks in excess of 50 mm in length.
Corner and intermediate fittings (Castings)	Missing corner fittings, 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 beyond 5 mm from its original plane, any aperture width greater than 66.0 mm, any aperture length greater than 127.0 mm, any reduction in thickness of the plate containing the top aperture that makes it less than 23.0 mm thick or 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. ²
Locking rods	One or more inner locking rods are nonfunctional. ³

When the Surveyor is concerned that a container is found to be approaching the limit of a serious structural deficiency the Surveyor should advise the Owner to take precautions as necessary to allow container movement.

The effect of two or more items of damage in the same structurally sensitive component, even though each is less than that specified in the above table, could be equal to, or greater than, the effect of a single item of damage listed in the table. In such circumstances, the Surveyor may stop

¹ On some designs of tank containers the top rail is not a structurally significant component.

² If onward transportation is permitted, it is essential that detached cross members are precluded from falling free.

³ Some containers are designed and approved (and so recorded on the CSC Plate) to operate with one door open or removed.

the container and seek further guidance from Dromon Head Office. For tank containers, the attachment of the shell to the container frame should also be examined for any readily visible serious structural deficiency comparable to that specified in the above table. If any such serious structural deficiency is found in any of these attachments, the Surveyor should stop the container.

The end frame locking mechanism of platform containers with folding end frames and the hinge pins about which the end frame rotates are structurally sensitive components and should also be inspected for significant damage. Containers with folding end walls that cannot be locked in the erect position should not be moved with the end walls erect.

MODIFICATIONS OF EXISTING CONTAINERS

Owners for approval of existing containers may be required to certify that any modifications previously carried out do not adversely affect safety or the relevance to those containers of the information presented with the application in accordance with Annex I, regulation 9, paragraph 1(d)(ii) and (iii) of the CSC Convention. Alternatively, applicants may submit details of the modification for consideration.

The removal of a door of a container to enable "one door operation" is considered to be a modification that may adversely affect the safety of the container. Consequently it requires specific approval by Dromon and appropriate markings on the CSC Plate, which must remain on the container after the door has been removed.

Containers that have been subjected to a modification should retain the original date of manufacture on the Safety Approval Plate and add an additional line showing the date when the modification was carried out.

APPLICATION FOR CONTAINERS ACEP

Owners applying for container approval to Dromon must submit the Application for continuous approved programme (ACEP).

Upon results of consideration of the continuous examination programme submitted to Dromon for approval and of the audit to evaluate that all the provisions of ACEP are fulfilled, Dromon shall:

1. issue the Freight Containers Certificate; and
2. inform the container Owner of their ACEP registration number which includes:
 - the letters ACEP;
 - identification of the country of approval; and
 - the assigned number.

REGULATIONS FOR APPROVAL OF NEW CONTAINERS BY DESIGN TYPE

To qualify for approval for safety purposes under the present Convention all new containers shall comply with the requirements set out in Annex II of this publication.

In the case of containers for which an application for approval has been submitted, Dromon will examine designs and witness testing of a prototype container to ensure that the containers will conform with the requirements set out in Annex II of this publication. When satisfied, Dromon shall notify the applicant in writing that the container meets the requirements of the Convention and this notification shall entitle the manufacturer to affix the Safety Approval Plate to every container of the design type series.

Where the containers are to be manufactured by design type series, application made to Dromon for approval by design type shall be accompanied by drawings, a design specification of the type of container to be approved.

The applicant shall state the identification symbols which will be assigned by the manufacturer to the type of container to which the application for approval relates.

The application shall also be accompanied by an assurance from the manufacturer that he will:

1. produce to Dromon such containers of the design type concerned as Dromon may wish to examine;
2. advise Dromon of any change in the design or specification and await its approval before affixing the Safety Approval Plate to the container;
3. affix the Safety Approval Plate to each container in the design type series and to no others;
4. keep a record of containers manufactured to the approved design type. This record shall at least contain the manufacturer's identification numbers, dates of delivery and names and addresses of customers to whom the containers are delivered.

Approval may be granted by Dromon to containers manufactured as modifications of an approved

design type if Dromon is satisfied that the modifications do not affect the validity of tests conducted in the course of design type approval.

Dromon shall not confer on a manufacturer authority to affix Safety Approval Plates on the basis of design type approval unless satisfied that the manufacturer has instituted internal production-control features to ensure that the containers produced will conform to the approved prototype.

In order to ensure that containers of the same design type series are manufactured to the approved design, Dromon shall examine or test as many units as it considers necessary, at any stage during production of the design type series concerned.

The manufacturer shall notify Dromon prior to commencement of production of each new series of containers to be manufactured in accordance with an approved design type.

REGULATIONS FOR APPROVAL OF NEW CONTAINERS BY INDIVIDUAL APPROVAL

Approval of individual containers may be granted where Dromon, after examination and witnessing of tests, is satisfied that the container meets the requirements of the Convention; Dromon, when so satisfied, shall notify the applicant in writing of approval and this notification shall entitle him to affix the Safety Approval Plate to such container.

REGULATIONS FOR APPROVAL OF EXISTING CONTAINERS AND NEW CONTAINERS NOT APPROVED AT TIME OF MANUFACTURE

Approval of existing containers

If the owner of an existing container presents the following information to Dromon:

1. date and place of manufacture;
2. manufacturer's identification number of the container if available;
3. maximum operating gross mass capability;
4. evidence that a container of this type has been safely operated in maritime and/or inland transport for a period of at least two years, or
5. evidence to the satisfaction of Dromon that the container was manufactured to a design type

which had been tested and found to comply with the technical conditions set out in annex II of this publication, with the exception of those technical conditions relating to the end-wall and side-wall strength tests, or

6. evidence that the container was constructed to standards which, in the opinion of Dromon, were equivalent to the technical conditions set out in Annex II of this publication, with the exception of those technical conditions relating to the end-wall and side-wall strength tests;
7. allowable stacking load for 1.8 g (kg and lbs); and
8. such other data as required for the Safety Approval Plate; then Dromon, after investigation, shall notify the owner in writing whether approval is granted; and if so, this notification shall entitle the owner to affix the Safety Approval Plate after an examination of the container concerned has been carried out.

Existing containers which do not qualify for approval under the terms of above paragraph, may be presented for approval under the provisions of “Regulations for approval of new containers by design type” and “Regulations for approval of new containers by individual approval” of this document. For such containers the requirements of Annex II of this publication relating to end-wall and/or side-wall strength tests shall not apply. Dromon may, if it is satisfied that the containers in question have been in service, waive such of the requirements in respect of presentation of drawings and testing, other than the lifting and floor-strength tests, as it may deem appropriate.

APPROVAL OF NEW CONTAINERS NOT APPROVED AT TIME OF MANUFACTURE

If the owner of a new container which was not approved at the time of manufacture presents the following information to Dromon:

1. date and place of manufacture;
2. manufacturer's identification number of the container, if available;
3. maximum operating gross weight capability;
4. maximum operating gross mass capability;
5. evidence to the satisfaction of Dromon that the container was manufactured to a design type which has been tested and found to comply with the technical conditions set out in annex II of this publication;
6. allowable stacking load for 1.8 g (kg and lbs); and
7. such other data as required for the Safety Approval Plate; Dromon, after investigation, may

approve the container, notwithstanding the provisions of “Regulations for approval of new containers by design type”. Where approval is granted, such approval shall be notified to the owner in writing, and this notification shall entitle the owner to affix the Safety Approval Plate after an examination of the container concerned has been carried out.

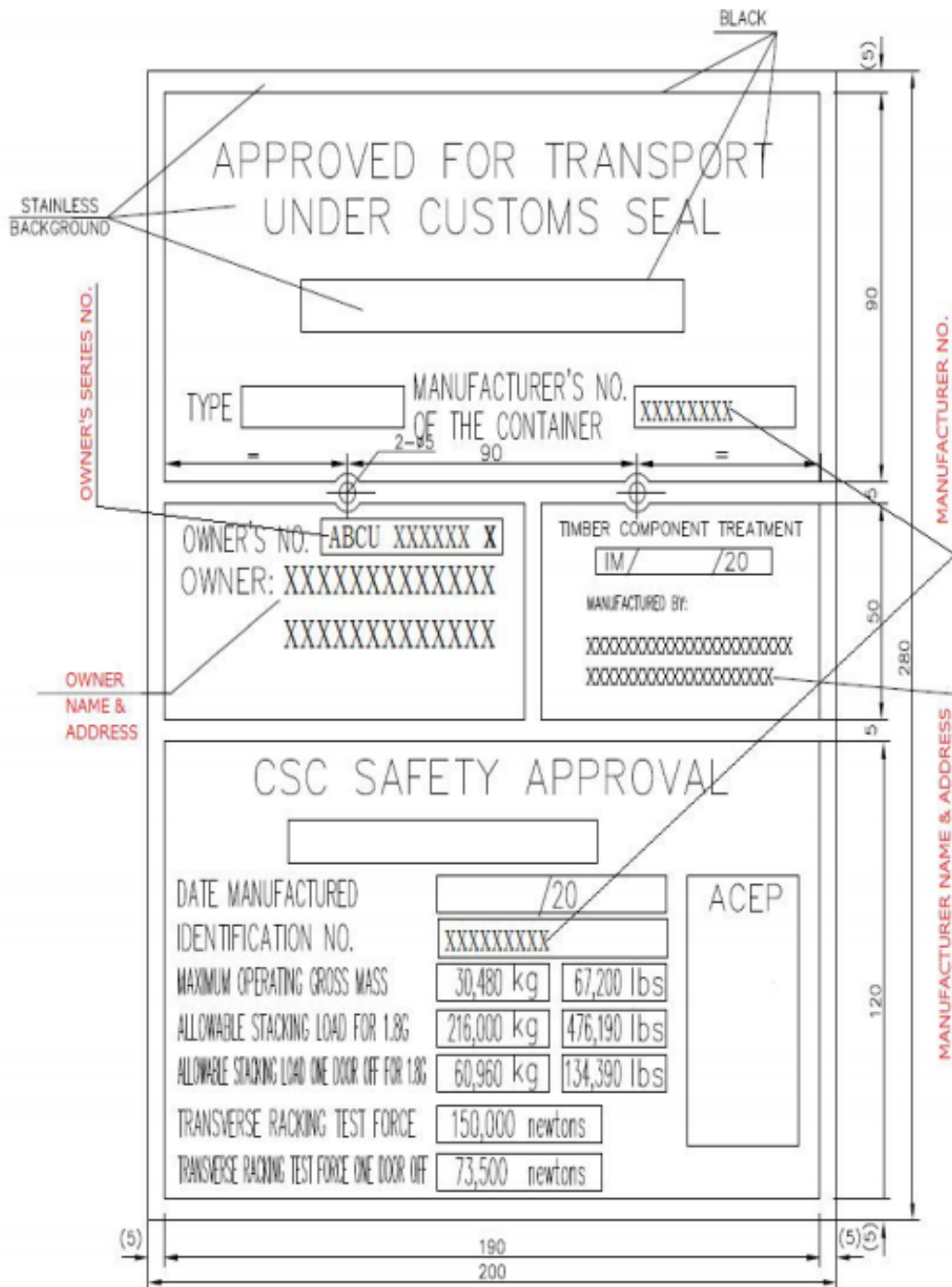
REGULATIONS FOR APPROVAL OF MODIFIED CONTAINERS

The owner of an approved container that has been modified in a manner resulting in structural changes shall notify Dromon of those changes. Dromon may require retesting of the modified container as appropriate prior to recertification.

WITHDRAWAL OF APPROVAL

Dromon has the right to withdrawal the approval. When approval has been withdrawal, Dromon requires the removal of the Safety Approval Plate.

Annex I – Safety Approval Plate



For more information, please send an email to marine@dromon.com

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