

## **International Convention for Safe Containers**

### **PREAMBLE**

THE CONTRACTING PARTIES,

RECOGNIZING the need to maintain a high level of safety of human life in the handling, stacking and transporting of containers,

MINDFUL of the need to facilitate international container transport,

RECOGNIZING, in this context, the advantages of formalizing common international safety requirements,

CONSIDERING that this end may best be achieved by the conclusion of a Convention,

HAVE DECIDED to formalize structural requirements to ensure safety in the handling, stacking and transporting of containers in the course of normal operations, and to this end

HAVE AGREED as follows:

### **Article I**

#### **General obligation under the present Convention**

The Contracting Parties undertake to give effect to the provisions of the present Convention and the Annexes hereto, which shall constitute an integral part of the present Convention.

### **Article II**

#### **Definitions**

For the purpose of the present Convention, unless expressly provided otherwise:

1. "Container" means an article of transport equipment:

(a) of a permanent character and accordingly strong enough to be suitable for repeated use;

(b) specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading;

(c) designed to be secured and/or readily handled, having corner fittings for these purposes;

(d) of a size such that the area enclosed by the four outer bottom corners is either:

(i) at least 14 sq. m. (150 sq. ft.) or

(ii) at least 7 sq. m. (75 sq. ft.) if it is fitted with top corner fittings;

the term "container" includes neither vehicles nor packaging; however, containers when carried on chassis are included.

2. "Corner fittings" means an arrangement of apertures and faces at the top and/or bottom of a container for the purposes of handling, stacking and/or securing.

3. "Administration" means the Government of a Contracting Party under whose authority containers are approved.

4. "Approved" means approved by the Administration.

5. "Approval" means the decision by an Administration that a design type or a container is safe within the terms of the present Convention.

6. "International transport" 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.

7. "Cargo" means any goods, wares, merchandise and articles of every kind whatsoever carried in the containers.

8. "New container" means a container the construction of which was commenced on or after the date of entry into force of the present Convention.

9. "Existing container" means a container which is not a new container.

10. "Owner" means the owner as provided for under the national law of the Contracting Party 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 lessee or bailee.

11. "Type of container" means the design type approved by the Administration.

12. "Type-series container" means any container manufactured in accordance with the approved design type.

13. "Prototype" means a container representative of those manufactured or to be manufactured in a design type series.

14. "Maximum Operating Gross Weight or Rating" or "R" means the maximum allowable combined weight of the container and its cargo.

15. "Tare Weight" means the weight of the empty container including permanently affixed ancillary equipment.

16. "Maximum Permissible Payload" or "P" means the difference between maximum operating gross weight or rating and tare weight.

### Article III

#### Application

1. The present Convention applies to new and existing containers used in international transport, excluding containers specially designed for air transport.

2. Each new container shall be approved either in accordance with the provisions for type-testing or for individual testing as contained in Annex I.

3. Every existing container shall be approved in accordance with the relevant provisions for approval or existing containers set out in Annex I within 5 years from the date of entry into force of the present Convention.

### Article IV

#### Testing, inspection, approval and maintenance

1. For the enforcement of the provisions in Annex I every Administration shall establish an effective procedure for the testing, inspection and approval of containers in accordance with the criteria established in the present Convention, provided however that an Administration may entrust such testing, inspection and approval to organizations duly authorized by it.

2. An Administration which entrusts such testing, inspecting and approval to an organization shall inform the Secretary-General of the Inter-Governmental Maritime Consultative Organization (hereinafter referred to as "the Organization") for communication to Contracting Parties.

3. Application for approval may be made to the Administration of any Contracting Party.

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

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

### Article V

#### Acceptance of approval

1. Approved under the authority of a Contracting Party, granted under the terms of the present Convention, shall be accepted by the other Contracting Parties for all purposes covered by the present Convention. It shall be regarded by the other Contracting Parties as having the same force as an approval issued by them.

2. A Contracting Party shall not impose any other structural safety requirements or tests on containers covered by the present Convention, provided however that nothing in the present Convention shall preclude the application of provisions of national regulations or legislation or of international agreements, prescribing additional structural safety requirements or tests for containers specially designed for the transport of dangerous goods, or for those features unique to containers carrying bulk liquids or for containers when carried by air. The term "dangerous goods" shall have that meaning assigned to it by international agreements.

## Article VI

### Control

1. Every container which has been approved under Article III shall be subject to control in the territory of the Contracting Parties by officers duly authorized by such Contracting Parties. This control shall be limited to verifying that the container carries a valid Safety Approval Plate as required by the present Convention, unless there is significant evidence for believing that the condition of the container is such as to create an obvious risk to safety. In that case the officer carrying out the control shall only exercise it in so far as it may be necessary to ensure that the container is restored to a safe condition before it continues in service.

2. Where the container appears to have become unsafe as a result of a defect which may have existed when the container was approved, the Administration responsible for that approval shall be informed by the Contracting Party which detected the defect.

## Article VII

### Signature, ratification, acceptance, approval and accession

1. The present Convention shall be open for signature until 15 January 1973 at the Office of the United Nations at Geneva and subsequently from 1 February 1973 until 31 December 1973 inclusive at the Headquarters of the Organization at London by all States Members of the United Nations or Members of any of the Specialized Agencies or of the International Atomic Energy Agency or Parties to the Statute of the International Court of Justice, and by any other State invited by the General Assembly of the United Nations to become a Party to the present Convention.

2. The present Convention is subject to ratification, acceptance or approval by States which have signed it.

3. The present Convention shall remain open for accession by any State referred to in paragraph 1.

4. Instruments of ratification, acceptance, approval or accession shall be deposited with the Secretary-General of the Organization (hereinafter referred to as "the Secretary-General").

## Article VIII

### Entry into force

1. The present Convention shall enter into force twelve months from the date of the deposit of the tenth instrument of ratification, acceptance, approval or accession.

2. For each State ratifying, accepting, approving or acceding to the present Convention after the deposit of the tenth instrument of ratification, acceptance, approval or accession, the present Convention shall enter into force twelve months after the date of the deposit by such State of its instrument of ratification, acceptance, approval or accession.

3. Any State which becomes a Party to the present Convention after the entry into force of an amendment shall, failing an expression of a different intention by that State,

(a) be considered as a Party to the Convention as amended; and

(b) be considered as a Party to the unamended Convention in relation to any Party to the Convention not bound by the amendment.

## Article IX

### Procedure for amending any part or parts of the present Convention

1. The present Convention may be amended upon the proposal of a Contracting Party by any of the procedures specified in this Article.

2. Amendment after consideration in the Organization:

(a) Upon the request of a Contracting Party, any amendment proposed by it to the present Convention shall be considered in the Organization. If adopted by a majority of two-thirds of those present and voting in the Maritime Safety Committee of the Organization, to which all Contracting Parties shall have been invited to participate and vote, such amendment shall be communicated to all Members of the Organization and all Contracting Parties at least six months prior to its consideration by the Assembly of the Organization. Any Contracting Party which is not a Member of the Organization shall be entitled to participate and vote when the amendment is considered by the Assembly.

(b) If adopted by a two-thirds majority of those present and voting in the Assembly, and if such majority includes a two-thirds majority of the Contracting Parties present and voting, the amendment shall be communicated by the Secretary-General to all Contracting Parties for their acceptance.

(c) Such amendment shall come into force twelve months after the date on which it is accepted by two-thirds of the Contracting Parties. The amendment shall come into force with respect to all Contracting Parties except those which, before it comes into force, make a declaration that they do not accept the amendment.

3. Amendment by a Conference:

Upon the request of a Contracting Party, concurred in by at least one-third of the Contracting Parties, a Conference to which the States referred to in Article VII shall be invited will be convened by the Secretary-General.

## Article X

## Special procedure for amending the Annexes

1. Any amendment to the Annexes proposed by a Contracting Party shall be considered in the Organization at the request of that Party.
2. If adopted by a two-thirds majority of those present and voting in the Maritime Safety Committee of the Organization to which all Contracting Parties shall have been invited to participate and to vote, and if such majority includes a two-thirds majority of the Contracting Parties present and voting, such amendment shall be communicated by the Secretary-General to all Contracting Parties for their acceptance.
3. Such an amendment shall enter into force on a date to be determined by the Maritime Safety Committee at the time of its adoption, unless by a prior date determined by the Maritime Safety Committee at the same time one-fifth or five of the Contracting Parties, whichever number is less, notify the Secretary-General of their objection to the amendment. Determination by the Maritime Safety Committee of the dates referred to in this paragraph shall be by a two-thirds majority of those present and voting, which majority shall include a two-thirds majority of the Contracting Parties present and voting.
4. On entry into force any amendment shall, for all Contracting Parties which have not objected to the amendment, replace and supersede any previous provision to which the amendment refers; an objection made by a Contracting Party shall not be binding on other Contracting Parties as to acceptance of containers to which the present Convention applies.
5. The Secretary-General shall inform all Contracting Parties and Members of the Organization of any request and communication under this Article and the date on which any amendment enters into force.
6. Where a proposed amendment to the Annexes has been considered but not adopted by the Maritime Safety Committee, any Contracting Party may request the convening of a Conference to which the States referred to in Article VII shall be invited. Upon receipt of notification of concurrence by at least one-third of the other Contracting Parties such a Conference shall be convened by the Secretary-General to consider amendments to the Annexes.

## Article XI

### Denunciation

1. Any Contracting Party may denounce the present Convention by effecting the deposit of an instrument with the Secretary-General. The denunciation shall take effect one year from the date of such deposit with the Secretary-General.
2. A Contracting Party which has communicated an objection to an amendment to the Annexes may denounce the present Convention and such denunciation shall take effect on the date of entry into force of such an amendment.

## Article XII

### Termination

The present Convention shall cease to be in force if the number of Contracting Parties is less than five for any period of twelve consecutive months.

## Articles XIII

### Settlement of disputes

1. Any dispute between two or more Contracting Parties concerning the interpretation or application of the present Convention which cannot be settled by negotiation or other means of settlement shall, at the request of one of them, be referred to an arbitration tribunal composed as follows: each party to the dispute shall appoint an arbitrator and these two arbitrators shall appoint a third arbitrator, who shall be the Chairman. If three months after receipt of a request one of the parties has failed to appoint an arbitrator if the arbitrators shall have failed to elect the Chairman, any of the parties may request the Secretary-General to appoint an arbitrator or the Chairman of the arbitration tribunal.
2. The decision of the arbitration tribunal established under the provisions of paragraph 1 shall be binding on the parties to the dispute.
3. The arbitration tribunal shall determine its own rules of procedure.
4. Decisions of the arbitration tribunal both as to its procedure and its place of meeting and as to any controversy laid before it, shall be taken by majority vote.
5. Any controversy which may arise between the parties to the dispute as regards the interpretation and execution of the award may be submitted by either party for judgment to the arbitration tribunal which made the award.

## Article XIV

### Reservations

1. Reservations to the present Convention shall be permitted, excepting those relating to the provisions of Articles I-VI, XIII, and of the present Article and of those contained in the Annexes, on condition that such reservations are communicated in writing and, if communicated before the deposit of the instrument of ratification, acceptance, approval or accession, are confirmed in that instrument. The Secretary-General shall communicate such reservations to all States referred to in Article VII.
2. Any reservations made in accordance with paragraph 1:
  - (a) modifies for the Contracting Party which made the reservation the provisions of the present Convention to which the reservation relates to the extent of the reservation; and
  - (b) modifies those provisions to the same extent for the other Contracting Parties in their relations with the Contracting Party which entered the reservation.
3. Any Contracting Party which has formulated a reservation under paragraph 1 may withdraw it at any time by notification to the Secretary-General.

## Article XV

## Notification

In addition to the notifications and communications provided for in Articles IX, X and XIV, the Secretary-General shall notify all the States referred to in Article VII of the following:

- (a) signatures, ratifications, acceptances, approvals and accessions, under Article VII;
- (b) the dates of entry into force of the present Convention in accordance with Article VIII;
- (c) the date of entry into force of amendments to the present Convention in accordance with Articles IX and X;
- (d) denunciations under Article XI;
- (e) the termination of the present Convention under Article XII.

## Article XVI

### Authentic texts

The original of the present Convention, of which the Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General, who shall communicate certified true copies to all States referred to in Article VII.

IN WITNESS WHEREOF the undersigned Plenipotentiaries, being duly authorized thereto by their respective Governments, have signed the present Convention.

DONE at Geneva this second day of December, one thousand nine hundred and seventy-two.

## ANNEX I

### REGULATIONS FOR THE TESTING, INSPECTION, APPROVAL AND MAINTENANCE OF CONTAINERS

#### CHAPTER 1

#### REGULATIONS COMMON TO ALL SYSTEMS OF APPROVAL

##### Regulation 1

##### Safety Approval Plate

1. A Safety Approval Plate conforming to the specifications set out in the Appendix to this Annex 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.

2. (a) The Plate shall contain the following information in at least the English or French language:



"CSC SAFETY APPROVAL"

Country of approval and approval reference

Date (month and year) of manufacture

Manufacturer's identification number of the container or, in the case of existing containers for which that number is unknown, the number allotted by the Administration

Maximum operating gross weight (kilogrammes and lbs)

Allowable stacking weight for 1.8 g (kilogrammes and lbs)

Transverse racking test load value (kilogrammes and lbs).

(b) A blank space should be reserved on the Plate for insertion of end and/or side-wall strength values (factors) in accordance with Regulation 1, paragraph 3 and Annex II, texts 6 and 7. A blank space should also be reserved on the Plate for first and subsequent maintenance examination dates (month and year) when used.

3. Where the Administration considers that a new container satisfies the requirements of the present Convention in respect of safety and if, for such container, the end and/or side-wall strength value (factor) are designed to be greater or less than that stipulated in Annex II such value shall be indicated on the Safety Approval Plate.

4. The presence of the Safety Approval Plate does not remove the necessity of displaying such labels or other information as may be required by other regulations which may be in force.

## Regulation 2

### Maintenance

1. The owner of the container shall be responsible for maintaining it in safe condition.

2. The owner of an approved container shall examine the container or have it examined in accordance with the procedure either prescribed or approved by the Contracting Party concerned, at intervals appropriate to operation conditions. The date (month and year) before which a new container shall undergo its first examination shall be marked on the Safety Approval Plate.

3. The date (month and year) before which the container shall be re-examined shall be clearly marked on the container on or as close as practicable to the Safety Approval Plate and in a manner acceptable to that Contracting Party which prescribed or approved the particular maintenance procedure involved.

4. The interval from the date of manufacture to the date of the first examination shall not exceed five years. Subsequent examination of new containers and re-examination of existing containers shall be at intervals of not more than 24 months. All examinations shall determine whether the container has any defects which could place any person in danger.

5. For the purpose of this Regulation "the Contracting Party concerned" is the Contracting Party of the territory in which the owner is domiciled or has his head office.

## CHAPTER II

### REGULATIONS FOR APPROVAL OF NEW CONTAINERS BY DESIGN TYPE

#### Regulation 3

##### Approval of new containers

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

#### Regulation 4

##### Design type approval

In the case of containers for which an application for approval has been submitted, the Administration 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. When satisfied, the Administration shall notify the applicant in writing that the container meets the requirements of the present Convention and this notification shall entitle the manufacturer to affix the Safety Approval Plate to every container of the design type series.

#### Regulation 5

##### Provisions for approval by design type

1. Where the containers are to be manufactured by design type series, application made to an Administration for approval by design type shall be accompanied by drawings, a design specification of the type of container to be approved, and such other data as may be required by the Administration.

2. 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.

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

(a) produce to the Administration such containers of the design type concerned as the Administration may wish to examine;

(b) advise the Administration of any change in the design or specification and await its approval before affixing the Safety Approval Plate to the container;

(c) affix the Safety Approval Plate to each container in the design type series and to no others;

(d) 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.

4. Approval may be granted by the Administration to containers manufactured as modifications of an approved design type if the Administration is satisfied that the modifications do not affect the validity of tests conducted in the course of design type approval.

5. The Administration 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.

#### Regulation 6

##### Examination during production

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

#### Regulation 7

##### Notification of Administration

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

### CHAPTER III

#### REGULATIONS FOR APPROVAL OF NEW CONTAINERS BY INDIVIDUAL APPROVAL

#### Regulation 8

##### Approval of individual containers

Approval of individual containers may be granted where the Administration, after examination and witnessing of tests, is satisfied that the container meets the requirements of the present Convention; the Administration, 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.

### CHAPTER IV

#### REGULATIONS FOR APPROVAL OF EXISTING CONTAINERS

#### Regulation 9

## Approval of existing containers

1. If, within 5 years from the date of entry into force of the present Convention, the owner of an existing container presents the following information to an Administration:

(a) date and place of manufacture;

(b) manufacturer's identification number of the container if available;

(c) maximum operating gross weight capability;

(d) (i) 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

(ii) evidence to the satisfaction of the Administration 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 with the exception of those technical conditions relating to the end-wall and side-wall strength tests, or

(iii) evidence that the container was constructed to standards which, in the opinion of the Administration, were equivalent to the technical conditions set out in Annex II, with the exception of those technical conditions relating to the end-wall and side-wall strength tests;

(e) allowable stacking weight for 1.8 g (kilogrammes and lbs); and

(f) such other data as required for the Safety Approval Plate, then the Administration, 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 in accordance with Regulation 2.

2. Existing containers which do not qualify for approval under paragraph 1 of this Regulation may be presented for approval under the provisions of Chapter II or Chapter III of this Annex. For such containers the requirements of Annex II relating to end and/or side-wall strength tests shall not apply. The Administration 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.

## APPENDIX

The Safety Approval Plate, conforming to the model reproduced below, shall take the form of a permanent, non-corrosive, fire-proof rectangular plate measuring not less than 200 mm by 100 mm. The words "CSC Safety Approval" of a minimum letter height of 8 mm and all other words and numbers of a minimum height of 5 mm shall be stamped into, embossed on or indicated on its surface in any other permanent and legible way.

## CSC SAFETY APPROVAL

1.....

[GB - L/749/2/7/75]

2.....

DATE MANUFACTURED .....

3.....

IDENTIFICATION No. ....

4.....

MAXIMUM GROSS WEIGHT ..... kg - .....lb

>100

5.....

ALLOWABLE STACKING WEIGHT

mm

FOR 1.8 g ..... kg - .....lb

6.....

RACKING TEST LOAD VALUE .....kg - .....lb

7.....

.....

8.....

.....

9.....

.....

>200 mm

1. Country of Approval and Approval Reference as given in the example on line 1. (The country of Approval should be indicated by means of the distinguishing sign used to indicate country of registration of motor vehicles in international road traffic.)

2. Date (month and year) of manufacture.

3. Manufacturer's identification number of the container or, in the case of existing containers for which that number is unknown, the number allotted by the Administration.

4. Maximum Operating Gross Weight (kilogrammes and lbs).
5. Allowable Stacking Weight for 1.8 g (kilogrammes and lbs).
6. Transverse Racking Test Load Value (kilogrammes and lbs).
7. End Wall Strength to be indicated on plate only if end walls are designed to withstand a load of less or greater than 0.4 times the maximum permissible payload, ie 0.4 P.
8. Side Wall Strength to be indicated on plate only if the side walls are designed to withstand a load of less or greater than 0.6 times the maximum permissible payload, ie 0.6 P.
9. First maintenance examination date (month and year) for new containers and subsequent maintenance examination dates (month and year) if Plate used for this purpose.

## ANNEX II

### STRUCTURAL SAFETY REQUIREMENTS AND TESTS

#### Introduction

In setting the requirements of this Annex, it is implicit that in all phases of the operation of containers the forces as a result of motion, location, stacking and weight of the loaded container and external forces will not exceed the design strength of the container. In particular, the following assumptions have been made:

- (a) the container will so be restrained that it is not subjected to forces in excess of those for which it has been designed;
- (b) the container will have its cargo stowed in accordance with the recommended practices of the trade so that the cargo does not impose upon the container forces in excess of those for which it has been designed.

#### Construction

1. A container made from any suitable material which satisfactorily performs the following tests without sustaining any permanent deformation or abnormality which would render it incapable of being used for its designed purpose, shall be considered safe.
2. The dimensions, positioning and associated tolerances of corner fittings shall be checked having regard to the lifting and securing systems in which they will function.
3. When containers are provided with special fittings for use only when such containers are empty, this restriction shall be marked on the container.

#### Test loads and test procedures

Where appropriate to the design of the container, the following test loads and test procedures shall be applied to all kinds of containers under test:

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## TEST LOADINGS AND APPLIED FORCES TEST PROCEDURES

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### 1. LIFTING

The container, having the prescribed INTERNAL LOADING, shall be lifted in such a way that no significant acceleration forces are applied. After lifting, the container shall be suspended or supported for five minutes and then lowered to the ground.

#### (A) LIFTING FROM CORNER FITTINGS

Internal loading:

##### (i) Lifting from top corner fittings

A uniformly distributed load such that the combined weight of container and test load is equal to 2R.

Containers greater than 3,000 mm (10 ft) (nominal) in length shall have lifting forces applied vertically at all four top corner fittings.

Containers of 3,000 mm (10 ft) (nominal) in length or less shall have lifting forces applied at all four top corner fittings, in such a way that the angle between each lifting device and the vertical shall be 30°.

Externally applied forces:

##### (ii) Lifting from bottom corner fittings:

Such as to lift the combined weight of 2R in the manner prescribed (under the heading TEST PROCEDURES).

Containers shall have lifting forces applied in such a manner that the lifting devices bear on the bottom corner fittings only. The lifting forces shall be applied at angles to the horizontal of:

30° for containers of length 12,000 mm (40ft) (nominal) or greater;

37° for containers of length 9,000 mm (30 ft) (nominal) and up to but not including 12,000 mm (40 ft) (nominal);

45° for containers of length 6,000 mm (20 ft) (nominal) and up to but not including 9,000 mm (30 ft) (nominal);

60° for containers of less than 6,000 mm (20 ft) (nominal).

#### (B) LIFTING BY ANY OTHER ADDITIONAL METHODS

Internal loading:

(i) Lifting from fork lift pockets:

A uniformly distributed load such that the combined weight of container and test load is equal to 1.25 R.

Externally applied forces:

Such as to lift the combined weight of 1.25 R in the manner prescribed (under the heading TEST PROCEDURES).

The container shall be placed on bars which are in the same horizontal plane, one bar centred within each fork lift pocket which is used for lifting the loaded container. The bars shall be of the same width as the forks intended to be used in the handling, and shall project into the fork pocket 75 per cent of the length of the fork pocket.

Internal loading:

(ii) Lifting from grapple arm positions:

A uniformly distributed load such that the combined weight of containers and test load is equal to 1.25 R.

The container shall be placed on pads in the same horizontal plane, one under each grapple arm position. These pads shall be of the same sizes as the lifting area of the grapple arms intended to be used.

Externally applied forces:

Such as to lift the combined weight of 1.25 R, in the manner prescribed (under the heading TEST PROCEDURES).

(iii) Other methods

Where containers are designed to be lifted in the loaded condition by any method not mentioned in (A) or (B)(i) and (ii) they shall also be tested with the INTERNAL LOADING AND EXTERNALLY APPLIED FORCES representative of the acceleration conditions appropriate to that method.

## 2. STACKING

1. For conditions of international transport where the maximum vertical acceleration forces vary significantly from 1.8 g and when the container is reliably and effectively limited to such conditions of transport, the stacking load may be varied by the appropriate ratio of acceleration forces.

2. On successful completion of this test the container may be rated for the allowable superimposed static stacking weight which should be indicated on the Safety Approval Plate against the heading "Allowable stacking weight for 1.8 g (kilogrammes and lbs)".



Internal loading:

A uniformly distributed load such that the combined weight of container and test load is equal to 1.8 R.

The container, having the prescribed INTERNAL LOADING, shall be placed on four level pads which are in turn supported on a rigid horizontal surface, one under each bottom corner fitting or equivalent corner structure. The pads shall be centralized under the fittings and shall be of approximately the same plan dimensions as the fittings.

Externally applied forces:

Such as to subject each of the four top corner fittings to a vertical downward force equal to  $1/4 \times 1.8 \times$  the allowable superimposed static stacking weight.

Each EXTERNALLY APPLIED FORCE shall be applied to each of the corner fittings through corresponding test corner fitting or through a pad of the same plan dimensions. The test corner fitting or pad shall be offset with respect to the top corner fitting of the container by 25 mm (1 in.) laterally and 38 mm (1 1/2 in.) longitudinally.

### 3. CONCENTRATED LOADS (a) ON ROOF

Internal loading:

None.

Externally applied forces:

A concentrated load of 300 kg (660 lb) uniformly distributed over an area of 600 mm x 300 mm (24 in. x 12 in.)

The EXTERNALLY APPLIED FORCES shall be applied vertically downwards to the outer surface of the weakest area of the roof of the container.

### 3. CONCENTRATED LOADS (b) ON FLOOR

Internal loading:

Two concentrated loads each of 2,730 kg (6,000 lb) and each applied to the container floor through a contact area of 142 cm<sup>2</sup> (22 sq. in.)

The test should be made with the container resting on four levels supports under its four bottom corners in such a manner that the base structure of the container is free to deflect.

A testing device loaded to a weight of 5,460 kilogrammes (12,000 lbs) that is 2,730 kg (6,000 lbs) on each of two surfaces having, when loaded, a total contact area of 284 cm<sup>2</sup> (44 sq. in.) that is 142 cm<sup>2</sup> (22 sq. in.) on each surface, the surface width being 180 mm (7 in.) spaced 760 mm (30 in.) apart, centre to centre, should be manoeuvred over the entire floor area of the container.

Externally applied forces:

None.

#### 4. TRANSVERSE RACKING

Internal loading:

None.

The container in tare condition shall be placed on four level supports one under each bottom corner and shall be restrained against lateral and vertical movement by means of anchor devices so arranged that the lateral restraint is provided only at the bottom corners diagonally opposite to those at which the forces are applied.

Externally applied forces:

Such as to rack the end structures of the container sideways. The forces shall be equal to those for which the container was designed.

The EXTERNALLY APPLIED FORCE shall be applied either separately or simultaneously to each of the top corner fittings on one side of the container in lines parallel both to the base and to the planes of the ends of the container. The forces shall be applied first towards and then away from the top corner fittings. In the case of containers in which each end is symmetrical about its own vertical centreline, one side only need be tested, but both sides of containers with asymmetric ends shall be tested.

#### 5. LONGITUDINAL RESTRAINT (STATIC TEST)

When designing and constructing containers, it must be borne in mind that containers, when carried by inland modes of transport may sustain accelerations of 2 g applied horizontally in a longitudinal direction.

Internal loading:

A uniformly distributed load, such that the combined weight of a container and test load is equal to the maximum operating gross weight or rating, R.

The container having the prescribed INTERNAL LOADING shall be restrained longitudinally by securing the two bottom corner fittings or equivalent corner structures at one end to suitable anchor points.

Externally applied forces:

Such as to subject each side of the container to longitudinal compressive and tensile forces of magnitude R, that is, a combined force of 2R on the base of the container as a whole.

The EXTERNALLY APPLIED FORCES shall be applied first towards and then away from the anchor points. Each side of the container shall be tested.

## 6. END-WALLS

The end walls should be capable of withstanding a load of not less than 0.4 times the maximum permissible payload. If, however, the end walls are designed to withstand a load of less or greater than 0.4 times the maximum permissible payload such a strength factor shall be indicated on the Safety Approval Plate in accordance with Annex I, Regulation 1.

Internal loading:

Such as to subject the inside of an end-wall to a uniformly distributed load of  $0.4P$  or such other load for which the container may be designed.

The prescribed INTERNAL LOADING shall be applied as follows:

Both ends of container shall be tested except where the ends are identical only one end need be tested. The end-walls of containers which do not have open sides or side doors may be tested separately or simultaneously.

The end-walls of containers which do have open sides or side doors should be tested separately. When the ends are tested separately the reactions to the forces applied to the end-wall shall be confined to the base structure of the container.

Externally applied forces:

None.

## 7. SIDE-WALLS

The side-walls should be capable of withstanding a load of not less than 0.6 times the maximum permissible payload. If, however, the side-walls are designed to withstand a load of less or greater than 0.6 times the maximum permissible payload, such a strength factor should be indicated on the Safety Approval Plate in accordance with Annex I, Regulation 1.

Internal loading:

Such as to subject the inside of a side-wall to a uniformly distributed load of  $0.6P$  or such other load for which the container may be designed.

The prescribed INTERNAL LOADING shall be applied as follows:

Both sides of a container shall be tested except where the sides are identical only one side need be tested. Side-walls shall be tested separately and the reactions to the internal loading shall be confined to the corner fittings or equivalent corner structures. Open topped containers shall be tested in the condition in which they are designed to be operated, for example, with removable top members in position.

Externally applied forces:

None.