

INTERNATIONAL CODE FOR THE SAFE CARRIAGE OF GRAIN IN BULK

International Grain Code

1991 Edition

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FOR THE SAFE CARRIAGE
OF GRAIN IN BULK**

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INTERNATIONAL
MARITIME
ORGANIZATION
London, 1991

Published in 1991
by the INTERNATIONAL MARITIME ORGANIZATION
4 Albert Embankment, London SE1 7SR

Printed in the United Kingdom by the International Maritime Organization, London.

12 14 16 18 20 19 17 15 13

ISBN 92-801-1275-9

IMO PUBLICATION
Sales number: I240E

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Foreword

In response to the growing need for broader regulation of the carriage of all cargoes which may pose a hazard to ships or personnel, the Maritime Safety Committee decided to replace the original chapter VI of the 1974 SOLAS Convention, which contained detailed regulations on the carriage of grain in bulk, with requirements of a more general nature and to place the detailed provisions on grain in a mandatory code.

At its fifty-ninth session, the Committee adopted by resolution MSC.22(59) amendments to the 1974 SOLAS Convention including a chapter VI so revised. These amendments are contained in publication IMO-168E.

Part C of the revised chapter VI deals with the carriage of grain, and is supplemented by the International Code for the Safe Carriage of Grain in Bulk, adopted at the same session by the Committee by resolution MSC.23(59) and set out herein. The Code is to take effect on 1 January 1994, the date of entry into force of the amendments to SOLAS chapter VI. For ease of reference, Part C of the revised chapter VI is reproduced in the appendix to this publication.

In adopting resolution MSC.23(59), the Committee recognized that the provisions of the IMO Grain Rules (resolution A.264(VIII)) should remain in effect for ships of those States Parties to the 1960 SOLAS Convention but not to the 1974 SOLAS Convention.

The footnotes to the text of the Code are given for reference only and do not form part of the Code.

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Resolution MSC.23(59)
(adopted on 23 May 1991)

**Adoption of the International Code for the
Safe Carriage of Grain in Bulk**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING part C of revised chapter VI of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74), adopted by resolution MSC.22(59) which, *inter alia*, makes the provisions of the International Code for the Safe Carriage of Grain in Bulk mandatory under that Convention,

HAVING CONSIDERED the text of the proposed Code,

1. ADOPTS the International Code for the Safe Carriage of Grain in Bulk, the text of which is set out in the Annex to the present resolution;
2. DECIDES that the Code shall take effect on 1 January 1994*; and
3. REQUESTS the Secretary-General to transmit to the Members of the Organization and all Contracting Governments to SOLAS 74 certified copies of the present resolution and the Code.

* Date of entry into force of amendments to SOLAS chapter VI.

Annex

International Code for the Safe Carriage of Grain in Bulk

Part A

Specific requirements

1 Application

1.1 This Code applies to ships regardless of size, including those of less than 500 tons gross tonnage, engaged in the carriage of grain in bulk, to which part C of chapter VI of the 1974 SOLAS Convention, as amended, applies.

1.2 For the purpose of this Code, the expression “ships constructed” means “ships the keels of which are laid or which are at a similar stage of construction”.

2 Definitions

2.1 The term *grain* covers wheat, maize (corn), oats, rye, barley, rice, pulses, seeds and processed forms thereof, whose behaviour is similar to that of grain in its natural state.

2.2 The term *filled compartment, trimmed*, refers to any cargo space in which, after loading and trimming as required under A 10.2, the bulk grain is at its highest possible level.

2.3 The term *filled compartment, untrimmed*, refers to a cargo space which is filled to the maximum extent possible in way of the hatch opening but which has not been trimmed outside the periphery of the hatch opening either by the provisions of A 10.3.1 for all ships or A 10.3.2 for specially suitable compartments.

2.4 The term *partly filled compartment* refers to any cargo space wherein the bulk grain is not loaded in the manner prescribed in A 2.2 or A 2.3.

2.5 The term *angle of flooding* (θ_1) means the angle of heel at which openings in the hull, superstructures or deckhouses, which cannot be closed weathertight, immerse. In applying this definition, small openings through which progressive flooding cannot take place need not be considered as open.

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Documents

Document Sharing Hub

2.6 The term *stowage factor*, for the purposes of calculating the grain heeling moment caused by a shift of grain, means the volume per unit weight of the cargo as attested by the loading facility, i.e. no allowance shall be made for lost space when the cargo space is nominally filled.

2.7 The term *specially suitable compartment* refers to a cargo space which is constructed with at least two vertical or sloping, longitudinal, grain-tight divisions which are coincident with the hatch side girders or are so positioned as to limit the effect of any transverse shift of grain. If sloping, the divisions shall have an inclination of not less than 30° to the horizontal.

3 Document of authorization

3.1 A document of authorization shall be issued for every ship loaded in accordance with the regulations of this Code either by the Administration or an organization recognized by it or by a Contracting Government on behalf of the Administration. It shall be accepted as evidence that the ship is capable of complying with the requirements of these regulations.

3.2 The document shall accompany or be incorporated into the grain loading manual provided to enable the master to meet the requirements of A 7. The manual shall meet the requirements of A 6.3.

3.3 Such a document, grain loading stability data and associated plans may be drawn up in the official language or languages of the issuing country. If the language used is neither English nor French, the text shall include a translation into one of these languages.

3.4 A copy of such a document, grain loading stability data and associated plans shall be placed on board in order that the master, if so required, shall produce them for the inspection of the Contracting Government of the country of the port of loading.

3.5 A ship without such a document of authorization shall not load grain until the master demonstrates to the satisfaction of the Administration, or of the Contracting Government of the port of loading acting on behalf of the Administration, that, in its loaded condition for the intended voyage, the ship complies with the requirements of this Code. See also A 8.3 and A 9.

4 Equivalents

Where an equivalent accepted by the Administration in accordance with regulation I/5 of the International Convention for the Safety of Life at Sea, 1974, as amended, is used, particulars shall be included in the document of authorization or in the grain loading manual.

5 Exemptions for certain voyages

The Administration, or a Contracting Government on behalf of the Administration, may, if it considers that the sheltered nature and conditions of the voyage are such as to render the application of any of the requirements of this Code unreasonable or unnecessary, exempt from those particular requirements individual ships or classes of ships.

6 Information regarding ship's stability and grain loading

6.1 Information in printed booklet form shall be provided to enable the master to ensure that the ship complies with this Code when carrying grain in bulk on an international voyage. This information shall include that which is listed in A 6.2 and A 6.3.

6.2 Information which shall be acceptable to the Administration or to a Contracting Government on behalf of the Administration shall include:

- .1 ship's particulars;
- .2 light-ship displacement and the vertical distance from the intersection of the moulded baseline and midship section to the centre of gravity (KG);
- .3 table of liquid free surface corrections;
- .4 capacities and centres of gravity;
- .5 curve or table of angle of flooding, where less than 40°, at all permissible displacements;
- .6 curves or tables of hydrostatic properties suitable for the range of operating draughts; and
- .7 cross curves of stability which are sufficient for the purpose of the requirements in A 7 and which include curves at 12° and 40°.

6.3 Information which shall be approved by the Administration or by a Contracting Government on behalf of the Administration shall include:

- .1 curves or tables of volumes, vertical centres of volumes, and assumed volumetric heeling moments for every compartment, filled or partly filled, or combination thereof, including the effects of temporary fittings;
- .2 tables or curves of maximum permissible heeling moments for varying displacements and varying vertical centres of gravity to allow the master to demonstrate compliance with the requirements of A 7.1; this requirement shall apply only to ships the keels of which are laid on or after the entry into force of this Code;

- .3 details of the scantlings of any temporary fittings and, where applicable, the provisions necessary to meet the requirements of A 7, A 8 and A 9;
- .4 loading instructions in the form of notes summarizing the requirements of this Code;
- .5 a worked example for the guidance of the master; and
- .6 typical loaded service departure and arrival conditions and where necessary intermediate worst service conditions.*

7 Stability requirements

7.1 The intact stability characteristics of any ship carrying bulk grain shall be shown to meet, throughout the voyage, at least the following criteria after taking into account in the manner described in part B of this Code and, in figure A 7, the heeling moments due to grain shift:

- .1 the angle of heel due to the shift of grain shall not be greater than 12° or in the case of ships constructed on or after 1 January 1994 the angle at which the deck edge is immersed, whichever is the lesser;
- .2 in the statical stability diagram, the net or residual area between the heeling arm curve and the righting arm curve up to the angle of heel of maximum difference between the ordinates of the two curves, or 40° or the angle of flooding (θ_f), whichever is the least, shall in all conditions of loading be not less than 0.075 metre-radians; and
- .3 the initial metacentric height, after correction for the free surface effects of liquids in tanks, shall be not less than 0.30 m.

7.2 Before loading bulk grain the master shall, if so required by the Contracting Government of the country of the port of loading, demonstrate the ability of the ship at all stages of any voyage to comply with the stability criteria required by this section.

7.3 After loading, the master shall ensure that the ship is upright before proceeding to sea.

* It is recommended that loading conditions be provided for three representative stowage factors, e.g. 1.25, 1.50, and 1.75 cubic metres per tonne.

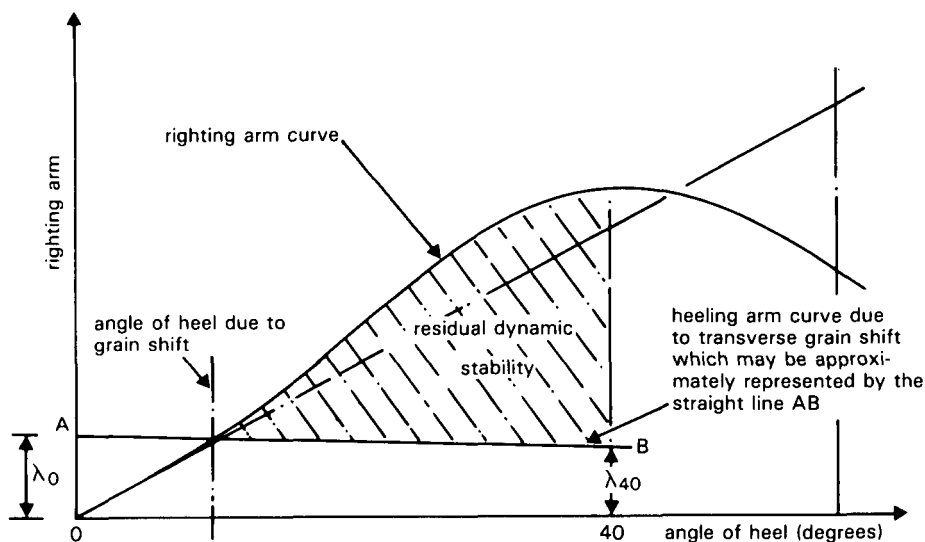


Figure A 7

(1) Where:

$$\lambda_0 = \frac{\text{assumed volumetric heeling moment due to transverse shift}}{\text{stowage factor} \times \text{displacement}};$$

$$\lambda_{40} = 0.8 \times \lambda_0;$$

Stowage factor = volume per unit weight of grain cargo;

Displacement = weight of ship, fuel, fresh water, stores etc. and cargo.

(2) The righting arm curve shall be derived from cross-curves which are sufficient in number to accurately define the curve for the purpose of these requirements and shall include cross-curves at 12° and 40°.

8 Stability requirements for existing ships

8.1 For the purposes of this section the term *existing ship* means a ship, the keel of which is laid before 25 May 1980.

8.2 An existing ship loaded in accordance with documents previously approved under regulation 12 of chapter VI of SOLAS 1960, IMO resolutions A.184(VI) or A.264(VIII) shall be considered to have intact stability characteristics at least equivalent to the requirements of A 7 of this Code. Documents of authorization permitting such loadings shall be accepted for the purposes of A 7.2.

8.3 Existing ships not having on board a document of authorization issued in accordance with A 3 of this Code may apply the provisions of A 9 without limitation on the deadweight which may be used for the carriage of bulk grain.

9 Optional stability requirements for ships without documents of authorization carrying partial cargoes of bulk grain

9.1 A ship not having on board a document of authorization issued in accordance with A 3 of this Code may be permitted to load bulk grain provided that:

- .1 the total weight of the bulk grain shall not exceed one third of the deadweight of the ship;
- .2 all filled compartments, trimmed, shall be fitted with centreline divisions extending, for the full length of such compartments, downwards from the underside of the deck or hatch covers to a distance below the deck line of at least one eighth of the maximum breadth of the compartment or 2.4 m, whichever is the greater, except that saucers constructed in accordance with A 14 may be accepted in lieu of a centreline division in and beneath a hatchway except in the case of linseed and other seeds having similar properties;
- .3 all hatches to filled compartments, trimmed, shall be closed and covers secured in place;
- .4 all free grain surfaces in partly filled cargo space shall be trimmed level and secured in accordance with A 16, A 17 or A 18;
- .5 throughout the voyage the metacentric height after correction for the free surface effects of liquids in tanks shall be 0.3 m or that given by the following formula, whichever is the greater:

$$GM_R = \frac{L B Vd (0.25 B - 0.645 \sqrt{Vd B})}{SF \times \Delta \times 0.0875}$$

Where:

L = total combined length of all full compartments (metres)

B = moulded breadth of the vessel (metres)

SF = stowage factor (cubic metres per tonne)

Vd = calculated average void depth calculated in accordance with B 1 (metres — Note: not millimetres)

Δ = displacement (tonnes); and