



REPUBLIC OF THE UNION OF MYANMAR
MINISTRY OF TRANSPORT AND COMMUNICATIONS
DEPARTMENT OF MARINE ADMINISTRATION

NO.363/421, CORNER OF MERCHANT & THEINBYU ROAD,
BOTATAUNG TOWNSHIP, YANGON, MYANMAR

P.O BOX 194, Fax: +95 1 397641,

E-mail: dgdma@myanmar.com.mm

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Directive (15/2016)

Safe Carriage of Maritime Dangerous Goods in Packaged Form

Applicable to : All Ship - owners, ship Operators, Flag State Surveyors, Recognized Organizations, Masters and Officers of Myanmar Flagged Ships

Reference:

- (a) SOLAS 74, as Amended Reg VII/1.1
- (b) IMO Res.MSC.372(93)
- (c) IMO Res.MSC.354 (92)
- (d) IMO Res.MSC.328(90)

1. The Department of Marine Administration circulates this directive in the exercise of the power of Section 294(B), paragraph (b) of Myanmar Merchant Shipping Act 1923, as amended.
2. This directive applies to all ships to which SOLAS applies and which are carrying dangerous goods as defined in SOLAS Chapter VII Part A/1.2.
3. The parties concerned shall comply with the requirements of IMDG code, especially in specific details as follows but not be limited to;
 - Section 1.3.1 - Training of shore-side personnel - establishment of the period of time for keeping records of training
 - Section 1.5.2 - Radiation protection programme - role of Competent Authority
 - Section 1.5.3 - Management system - role of Competent Authority
 - Chapter 3.3 - Approval of metal hydride storage systems installed in vehicles, vessels or aircrafts or in completed components or intended to be installed in vehicles, vessels or aircrafts
 - Chapter 4.1 - Approval of packagings as referred to in the Chapter-role of Competent Authority
 - Section 5.1.5 - General provisions for class 7 - role of Competent Authority
 - Section 5.4.1 - Information required in addition to the dangerous goods description-role of the competent authority

- Chapter 5.5 - Determining the period between fumigant application and loading of fumigated cargo transport unit on board the ship
- Chapter 6.2 - Approval of pressure receptacles, aerosol dispensers, small receptacles containing gas and fuel cell cartridges containing liquefied flammable gas- role of Competent Authority
- Section 6.2.2.6.2- General provisions - role of Competent Authority
- Section 6.2.3 - The marking of salvage pressure receptacles - determination by the competent authority
- Section 6.3.2 - Quality assurance programme-role of Competent Authority
- Section 6.3.5 - Procedures for performance and frequency of tests-role of Competent Authority
- Chapter 6.4 - Approval of package design and materials for class 7-role of Competent Authority
- Section 6.5.4 - Testing, certification and inspection - role of Competent Authority
- Chapter 6.6 - Provisions for the construction and testing of large packagings-role of Competent Authority
- Chapter 6.7 - Provisions for the design, construction, inspection and testing of portable tanks and multiple-element gas containers-role of Competent Authority
- Chapter 6.8 - Provisions for road tank vehicles-role of Competent Authority
- Section 7.1.4.5 - Stowage of goods of class 7-role of Competent Authority
- Chapter 7.9 - Exemptions, approvals and certificates-notifying IMO and recognition of approvals and certificates

4. A ship which carries such dangerous goods shall have a special list, manifest and stowage plan in accordance with the relevant provisions of the IMDG Code. These documents are to be made available before ship departure to the person or organization designated by the Department of Marine Administration.

5. The Department of Administration or recognized organization shall issue a Document of Compliance for ship carrying dangerous goods which shall comply with all relevant requirements of SOLAS 1974, as amended Reg: II-2/19.4.

6. National Guidance for the survey and issuance of certificate for the Safe Carriage of Dangerous Goods is set up by Department of Marine Administration to fulfill with the requirements of the IMDG code and IMSBC code.



Maung Maung Oo
Director General
Department of Marine Administration



Department of Marine Administration
Ministry of Transport and Communications
Republic of the Union of Myanmar

NATIONAL GUIDANCE FOR THE SURVEY & ISSUANCE OF CERTIFICATES FOR THE SAFE CARRIAGE OF DANGEROUS GOOD

2016



**FOR THE CARRIAGE OF DANGEROUS GOODS
IN COMPLIANCE WITH THE IMDG CODE
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Introduction

The objective of the safe carriage of Maritime Dangerous Goods is to:

- Enhance the safe transport of dangerous goods
- Protect the marine environment
- Facilitate the free unrestricted movement of dangerous goods

The IMO has developed two international conventions to address these issues:

- The SOLAS Convention (covering safety of life at sea)
- The MARPOL Convention (covering pollution prevention)

To supplement the principles laid down in the SOLAS and MARPOL Conventions, the IMO developed the International Maritime Dangerous Goods (IMDG) Code & the International Maritime Solid Bulk Cargoes (IMSBC) Code.

These codes contain detailed technical specifications to enable dangerous goods to be transported safely by sea.

These Codes are based on an internationally agreed system which:

- Groups dangerous goods together based on the hazards they present in transport (classification).
- Contains the dangerous goods in packaging/tanks which are of appropriate strength and which will prevent the goods escaping.
- Uses hazard warning labels and other identifying marks to identify dangerous goods in transport.
- Requires standard documentation to be provided when dangerous goods are being transported.
- Lays down principles for ensuring that dangerous goods which will react dangerously together are kept apart.
- Lays down principles for where to place dangerous goods onboard ship to ensure safe transport.
- Provides emergency response advice for dangerous goods involved in a fire or spillage on board ship.

The documents of compliance (DOC) for carrying dangerous goods onboard in various forms

Documents required before loading packaged dangerous goods or marine pollutants onboard a cargo ship include a Document of Compliance with the special requirements for ships carrying dangerous goods as required by SOLAS 74Reg54.3 or SOLAS 74 its Protocol of 1988 RegII-2/19.4 applies to:

- passenger ships built on or after 1 September 1984;
- cargo ships of 500gt or over built on or after 1 September 1984; and
- cargo ships of less than 500gt built on or after 1 February 1992.

This Guidance provides that no. packaged goods or solid dangerous goods in bulk may be taken on board or accepted for carriage on any ship to which regulation 54 (19) applies unless the spaces in which they are to be carried or are carried, as the case may be, comply with the provisions of regulation 19.3 of Chapter II-2 of SOLAS, whether or not the ship is engaged on international voyages. (Chapter II-2 of SOLAS deals with Construction - Fire protection, fire detection and fire extinction. Regulation II-2/19.3 concerns Special requirements for ships carrying dangerous goods and contains requirements relating to water supplies, sources of ignition, detection system, ventilation, bilge pumping, personnel protection, portable fire extinguishers, insulation of machinery spaces and water spray system. Regulation II-2/19.4 provides that ***the flag State Administration shall provide the ship with a “document of compliance” as evidence complying of construction and equipment with the requirements of regulation19.***

Regulation 19.4 provides that in the case of ships to which regulation 19 applies engaged on international voyages, no packaged goods or solid dangerous goods in bulk may be taken on board or carried unless the ship has on board a Document of Compliance issued by DMA or on behalf of the DMA or the competent authority of the flag State.

SECTION (1)

GENERAL REQUIREMENTS

1.1. Scope

1.1.1 The application of in this section is considered to satisfy the requirements of SOLAS Reg.II-2/19 in respect of carriage of dangerous goods in packaged form.

1.1.2 For potentially hazardous bulk cargoes not subject to the SOLAS requirements mentioned in 1.1.1 the requirements are considered to meet the recommendation given in IMO's "International Maritime Solid Bulk Cargoes Code - IMSBC Code" with respect to ships construction and equipment.

Guidance note:

When authorized by the government of the flag state, the Society can issue a Document of Compliance, certifying that the construction and equipment are in compliance with SOLAS Reg. II-2/19.

1.1.3 It is assumed that the operational requirements of SOLAS Chapter VII, Part A as well as those of the International Maritime Dangerous Goods Code, IMDG Code (IMO Resolution A.81(IV)) or the "International Maritime Solid Bulk Cargoes Code", as applicable, are complied with.

1.1.3.1 If dangerous goods in packaged form, i.e. substances for well stimulation, carried on board i.e. a supply vessel, are discharged, then other codes, resolutions, etc., shall be considered, i.e. "Guidelines for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk on offshore support vessels (Resolution A673(16) as amended)".

1.2 Classification

Ships complying with requirements to carry the dangerous goods may be given the class notation **DG**, appended by one of the qualifiers **B** or **P** as described in Table A1.

Table A1			
Notation	Description	Qualifier	
DG	Ship intended for carriage of dangerous goods	B	Intended for carriage of dangerous solid bulk cargoes
		P	Intended for carriage of dangerous goods in package form

1.3. Definitions

1.3.1 Classes of dangerous goods

Classes of dangerous goods according to SOLAS, Chapter VII, Part A, the IMSBC-Code are as follows:

Class 1: Explosives

Division 1.1: Substances and articles which have a mass explosion hazard

Division 1.2: Substances and articles which have a projection hazard but not a mass explosion hazard

Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard

Division 1.4: Substances and articles which present no significant hazard

Guidance note:

Substances and articles in this division are in compatibility group S if they are so packaged or designed that any hazardous effects arising from the accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder fire-fighting or other emergency response efforts in the immediate vicinity of the package

Division 1.5: Very insensitive substances which have a mass explosion hazard

Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard

Class 2: Gases

Class 2.1: Flammable gases

Class 2.2: Non-flammable, non-toxic gases

Class 2.3: Toxic gases

Class 3: Flammable liquids

Class 4: Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water, emit flammable gases

Class 4.1: Flammable solids, self-reactive substances and desensitized explosives

Class 4.2: Substances liable to spontaneous combustion

Class 4.3: Substances which, in contact with water, emit flammable gases

Class 5: Oxidizing substances and organic peroxides

Class 5.1: Oxidizing substances

Class 5.2: Organic peroxides

Class 6: Toxic and infectious substances

Class 6.1: Toxic substances

Class 6.2: Infectious substances

Class 7: Radioactive material

Class 8: Corrosive substances

Class 9: Miscellaneous dangerous substances and articles

1.3.2 “A-60” class divisions are smoke and fire resistant divisions formed by insulated steel bulkheads and decks complying with the SOLAS standard fire test criteria for 60 minutes exposure. They shall be insulated with non-combustible materials such that the average temperature of the unexposed side will not rise more than 140°C above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180°C above the original temperature, within 60 minutes.

(SOLAS Reg. II-2/3.2.3)

1.3.3 Cargo spaces are all spaces used for cargo and trunks to such spaces.

(SOLAS Reg. II-2/3.8)

1.3.4 *Ro-ro cargo spaces* are spaces not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which goods (packaged or in bulk, in or on rail or road cars, vehicles, trailers, containers, pallets, demountable tanks or in or on similar stowage units or other receptacles) can be loaded and unloaded normally in a horizontal direction.(SOLAS Reg. II-2/3.41)

1.3.5 *Open ro-ro spaces* are ro-ro spaces either open at both ends or open at one end, and provided with adequate natural ventilation effective over their entire length through permanent openings distributed in the side plating or deck- head or from above, having a total area of at least 10% of the total area of the space sides.(SOLAS Reg. II-2/3.35)

1.3.5 *Closed ro-ro cargo spaces* are ro-ro cargo spaces which are neither open ro-ro cargo spaces nor weather decks.(SOLAS Reg. II-2/3.12)

1.3.6 *Weather deck* is a deck which is completely exposed to the weather from above and from at least two sides.(SOLAS Reg. II-2/3.50)

1.3.7 *An open deck extending into a ro-ro cargo space* not having sufficient openings to be considered “open” does not fall under the definition weather deck in the context of dangerous goods.

1.3.8 *Hazardous area*(comparable with zone 1 as defined in IEC 60092-502) is an area in which an explosive atmosphere is likely to occur in normal operation. The explosive atmosphere may exist due to gas and or dust.(IEC 60092-506, 3.1)

1.3.9 *Extended hazardous area*(comparable with zone 2 as defined in IEC 60092-502) is an area in which an explosive atmosphere is not likely to occur in normal operation and, if it does occur, is likely to do so only infrequently and will exist for a short period only.

SECTION (2)
REQUIREMENTS FOR CARRIAGE OF DANGEROUS GOODS IN
VARIOUS TYPES OF CARGO SPACES

2.1. Application for Requirements

Subsection 2.2 contains all requirements relevant for carriage of dangerous goods. Subsection 2.3 gives the requirements for packaged goods carried in various types of cargo spaces.

2.2. Requirements Applicable For Various Classes of Dangerous Goods

2.2.1 Fire water supply

2.2.1.1 Arrangements shall be made to ensure immediate availability of a supply of water from the fire main at the required pressure either by permanent pressurization or by suitably placed remote starting arrangements for the fire pumps. (SOLAS Reg. II-2/19 3.1.1)

The requirements also apply to pumps for water spray system for cargo spaces, if fitted. If fire water supply pumps arranged for remote starting also serve other purposes, the arrangement must ensure that the pump selected is connected to the fire water system, e.g. by automatic changeover of valves or visual signals for valves' correct positions at the remote starting position.

2.2.1.2 The capacity of the fire pumps shall be sufficient for supplying four (4) jets of water, and the number and position of hydrants shall be such that at least two (2) of the required four (4) jets of water, when supplied by single lengths of hose, may reach any part of the cargo space when empty; and all four (4) jets of water, each supplied by single lengths of hose may reach any part of ro-ro cargo spaces. (SOLAS Reg. II-2/19 3.1.2 and IACS UI SC 168.)

Guidance note:

The length of the water jet is generally not to be taken more than 7 m.

2.2.1.3 Means of effectively cooling the designated under deck cargo space by copious quantities of water, either by a fixed arrangement of spraying nozzles, or flooding the cargo spaces with water shall be provided. If spray nozzles are used

their capacity shall be sufficient for supplying not less than 5 liters/sq-m/min. of the horizontal projected area of the cargo hold.

Hoses may be used for this purpose in small cargo spaces and in small areas of larger cargo spaces at the discretion of the Administration. However, the drainage and pumping arrangements shall be such as to prevent the build-up of free surfaces. The drainage system shall be sized to remove no less than 125% of the combined capacity of both the water spraying system pumps and required number of fire hose nozzles.

The drainage system valves shall be operated from outside the protected space at a position in the vicinity of the extinguishing system controls. Bilge wells shall be of sufficient holding capacity and shall be arranged at side shell of the ship at a distance from each other of not more than 40 m in each watertight compartment. If this is not possible, the adverse effect upon stability of the added weight and free surface of the water shall be taken into account to the extent deemed necessary by the Administration in its approval of the stability information.

(SOLAS Reg. II-2/19 3.1.3)

2.2.2 *Fixed fire extinguishing*

2.2.2.1 *A ship engaged in the carriage of dangerous goods* in any cargo spaces shall be provided with a fixed carbon dioxide or inert gas fire-extinguishing system complying with the provisions of the Fire Safety Systems Code or with a fire-extinguishing system which, in the opinion of the Administration, gives equivalent protection for the cargoes carried.(SOLAS Reg. II-2/10.7.2)

2.2.2.2 *Each open ro-ro cargo space* having a deck above it and each space deemed to be a closed ro-ro cargo space not capable of being sealed shall be fitted with an approved fixed pressure water-spray system for manual operation which is to protect all parts of any deck and vehicle platform in such space. The capacity of the system shall be sufficiently for providing at least 5 litres/sq-m/min. of the horizontal area of decks and platforms. The use of any other fixed fire-extinguishing system that has been shown by full-scale test to be no less effective may be permitted.

(SOLAS Reg. II-2/19.3.9)

2.2.3 *Electrical installations*

2.2.3.1 *Electrical equipment and wiring* shall not be fitted in hazardous areas and in areas where explosives are stored unless it is essential for the safety and operation of the ship. (IEC 60092-506, 5.1)

2.2.3.2 *The hazardous area* shall be categorized in accordance with IEC 60092-506 Annex B.

Guidance note:

The spaces are categorized as hazardous only when dangerous goods are carried.

2.2.3.3 *Where a space has an opening* into an adjacent hazardous space or area, it may be made into a nonhazardous space in accordance with the following requirements

- A minimum overpressure of 25 Pa (0.25 mbar) with respect to the adjacent hazardous space or area is provided at all points inside the space and its associated ducts at which leaks are liable to occur, all doors and windows being closed.
- Visual and acoustic alarm is provided at a manned position in case of loss of pressure.

2.2.3.4 *The requirements for electrical equipment* in hazardous areas are specified in Table B2 for packaged goods and Table D1 for bulk cargoes. The requirements are additional to those given in Pt.4 Ch.8.

Guidance note:

Reefer containers shall be regarded as electrical equipment.

2.2.3.5 *The electrical equipment* in extended hazardous areas shall either:

- be appropriate for use in the adjacent space in accordance with Table B2 or Table D1, or
- be suitable for zone 2, see Pt.4 Ch.8 Sec.11 C200.

2.2.3.6 *Portable electrical equipment* shall have its own self-contained electrical source of energy, except for intrinsically safe circuits, and shall comply with the requirements of 2.2.3.2 and 2.2.3.3.

2.2.3.7 *If electrical equipment which is not approved* for the use in hazardous areas as specified in 2.2.3.3 or 2.2.3.4 is installed, it must be possible to isolate the equipment completely, and to protect it against unauthorized reconnection. Disconnection shall be made outside the hazardous areas and shall be effected with isolating links or lockable switches. Equipment essential either for the safety of the ship or crew must be approved for the installation in hazardous area and shall not be disconnected.

2.2.3.8 *Cables* shall be either

- a) protected by electrically continuous metal sheathing or metallic wire armour braid or tape, or
- b) enclosed in screwed heavy gauge steel drawn or seam-welded and galvanized conduit.

2.2.3.9 *All metallic protective coverings* of power and lighting cables passing through a hazardous area or connected to equipment in such an area, shall be earthed at least at each end. The metallic covering of all other cables shall be earthed at least at one end.

2.2.3.10 *Cable penetrations of decks and bulkheads* shall be gas tight, and of a recognized make.

2.2.3.11 *Cable joints in cargo spaces* shall be avoided where possible. Where joints are unavoidable, they shall be closed in metal-clad or impact strength plastic junction boxes of certified safe type, or heat shrink or encapsulated crimp sleeve cable joints.

2.2.4 *Fire detection system and fire alarm system*

2.2.4.1 *A fire detection system and a fire alarm* system shall both be in compliance with the requirements in the respective classification rules, and:

- Ro-ro cargo spaces shall be fitted with a fixed fire detection and fire alarm system.
- All other types of cargo spaces except spaces certified for solid bulk cargoes only, shall be fitted with either fixed fire detection and fire

alarm system or a sample extraction smoke detection system. If a sample extraction smoke detection system is fitted, particular attention shall be made to prevent the leakage of toxic fumes into occupied areas. (SOLAS Reg. II-2/19 3.3)

2.2.5 Ventilation of cargo spaces

2.2.5.1 Depending on the type of cargo spaces and the cargoes intended, requirements for ventilation in 2.2.5.2 to 2.2.5.7 apply, as given in Table C2 to Table C4 and in Table D1.

2.2.5.2 Mechanical ventilation

The fan(s) shall be permanently fitted or of a portable type adapted for being permanently fitted prior to loading and during voyage.

The height of ventilation inlets and outlets must satisfy the requirements of the Load Line Convention for openings fitted with closing appliances. The means of closure for fire protection must be fitted.

2.2.5.3 Continuous ventilation

The fan(s) shall be permanently fitted or of a portable type adapted for being permanently fitted prior to loading and during voyage.

Holds intended for the carriage of cargoes for which continuous ventilation is required, shall be provided with ventilation openings which may be kept opened when required. Such openings shall comply with the requirements of the Load Line Convention as amended for openings not fitted with means of closure. The means of closure for fire protection must be fitted in accordance with the respective classification rules.

2.2.5.4 Fan capacity

- a) Cargo holds shall be provided with a minimum of two ventilation fans, giving a minimum of 6 air changes per hour, based on the volume of the empty hold.
- b) Cargo holds shall be provided with a minimum of one ventilation fan, giving a minimum of 6 air changes per hour, based on the volume of the empty hold.

- c) Cargo holds shall be provided with a minimum of one ventilation fan, giving a minimum of 2 air changes per hour, based on the volume of the empty hold.

2.2.5.5 *Natural ventilation*

Natural ventilation with closing appliances to be provided in enclosed cargo spaces, where there is no provision for mechanical ventilation.(SOLAS Reg. II-2/19 3.4.3)

2.2.5.6 *Ventilation outlets*

Ventilation outlets shall be located at a minimum of 3 m away from openings into machinery and or accommodation spaces.

2.2.5.7 *Fans*

The fans shall be of a type that prevents the possibility of the ignition of flammable gas air mixtures.

The exhaust fans shall be fitted with suitable wire mesh guards (maximum 13x13 mm mesh).

(SOLAS Reg. II-2/19 3.4.2 and IACS UI SC 52.)

2.2.5.8 *Spark arresting screens*

The inlet and outlet ventilation openings shall be fitted with spark-arresting screens.

Guidance note:

Suitable wire mesh will be accepted.

2.2.6 *Separate bilge pumping system and drainage arrangements for cargo spaces*

2.2.6.1 *The capacity and arrangement of the bilge system* are to meet the requirements depends on the size of the ship

2.2.6.2 *Bilge pumping and drainage system* for cargo spaces shall be arranged outside machinery spaces. If bilge ejectors are used driving water may be taken from a pump in the engine room provided a non-return valve is fitted in the supply line.(SOLAS Reg. II-2/19.3.5.1)

2.2.6.3 *If the bilge drainage system* for cargo space is additional to the system served by pumps in the machinery space, the capacity of the system shall be not less than 10 m³/h per cargo space served. If the additional system is a common system,

the capacity need not exceed 25 m³/h. The additional bilge system need not be arranged with redundancy.(SOLAS Reg. II-2/19.3.5.2)

2.2.6.4 *Whenever flammable or toxic liquids are carried*, the bilge line into the machinery space shall be isolated either by fitting a blank flange or by a closed lockable valve to be located in a readily accessible space outside cargo holds, e.g. in the engine room.(SOLAS Reg. II-2/19.3.5.3)

2.2.6.5 *Enclosed spaces outside machinery* spaces containing bilge pumps serving cargo spaces intended for carriage of flammable or toxic liquids shall be fitted with separate mechanical ventilation giving at least 6 air changes per hour. If the space has access from another enclosed space, the door shall be self-closing.(SOLAS Reg. II-2/19 3.5.4)

2.2.6.6 *If gravity drainage is applied* the discharges to be lead directly overboard, alternatively to a closed collecting tank, located outside the machinery spaces, having a minimum volume sufficient to accumulate 1/3 of the drainage capacity per hour of the largest cargo space. The tank shall be provided with vent pipe to a safe location on the open deck.

Drainage from a cargo space to wells in a lower cargo space is only permitted if the lower cargo space satisfies the same requirements as the cargo space above.

(SOLAS Reg. II-2/19.3.5.5)

Guidance note:

For the purpose of cargo segregation according to the IMDG Code, the two spaces are considered as one cargo space.

2.2.7 *Personnel protection and medical equipment*

2.2.7.1 *Four sets of protective clothing* according to the EmS Guide as given in the IMDG Code Supplement for packaged goods, or in the IMSBC Code for bulk cargoes, shall be provided in addition to the fire fighter's outfits.

(SOLAS Reg II-2.19 3.6.1)

2.2.7.2 *At least two self-contained breathing apparatuses* shall be provided. Two spare charges suitable for use with the breathing apparatus shall be provided for each required apparatus.

Passenger ships carrying not more than 36 passengers and cargo ships that are equipped with suitable located means for fully recharging the air cylinders free from contamination need carry only one spare charge for each required apparatus.(SOLAS Reg II-2/19 3.6.2)

2.2.7.3 *Medical oxygen.*

Guidance note:

Provided that the Administration requires that the guidelines in the MFAG in the IMDG Code supplement with respect to medical oxygen shall be met, the following shall be fulfilled:

A 40 liter/200 bar medical oxygen cylinder shall be mounted in the ship's hospital, assembled for direct use, equipped with one flow-meter unit for supplying oxygen for two persons simultaneously. A complete portable set, ready for use, with a 2 liter/200 bar medical oxygen cylinder and a spare cylinder (also 2 liter/200 bar) shall also be available on board.

The 40 liter/200 bar cylinders shall be stored in fixed supports connected directly to vessels steel structure within the ship's hospital. The cylinders shall be stored within a steel cabinet with natural ventilation to free air. Sign board warning of possible ignition caused by static electricity from clothing or open flame when medical oxygen is used(released) shall be posted on the cabinet.

Alternative arrangements, which in the opinion of the Administration are equivalent, may be accepted.

2.2.8 *Portable fire extinguishers*

2.2.8.1 *Two portable fire extinguishers*, each having a capacity of not less than 6 kg of dry powder or equivalent, should be provided when dangerous goods are carried on the weather deck, in open ro-ro spaces and vehicle spaces, and in cargo spaces as appropriate.(MSC.1/Circ.1275)

These extinguishers are in addition to any portable fire extinguishers required elsewhere in the rules.

Guidance note:

Equivalent to dry powder may be either CO₂ or Foam. 1 kg of dry powder is equal to either 1 kg CO₂ or 1.8 liter Foam.

2.2.9 *Insulation of machinery space boundaries and separation of cargo spaces*

2.2.9.1 *Bulkheads* forming boundaries between cargo spaces and machinery spaces of category A shall be insulated to “A-60” standard, unless the dangerous goods are stowed at least 3 m horizontally away from such bulk heads.

(SOLAS Reg II-2/19 3.8)

Guidance note:

Machinery spaces of category A are those spaces and trunks to such spaces which contain:

- 1) internal combustion machinery used for main propulsion; or
- 2) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of no less than 375 kW; or
- 3) any oil-fired boiler or oil fuel unit.

2.2.9.2 *Decks between cargo spaces and machinery spaces* of category A shall be of “A-60” standard. In the case that a closed or semi-closed cargo space is located partly above a machinery space of category A and the deck is not insulated to “A-60” standard, dangerous goods are prohibited in the whole of that cargo space. If the un-insulated deck above such machinery space is a weather deck, dangerous goods are prohibited only for the portion of the deck located above the machinery space.

2.2.9.3 *In ship having ro-ro cargo spaces*, a separation shall be provided between a closed ro-ro cargo space and an adjacent open ro-ro cargo space. The separation to be such as to minimize the passage of dangerous vapors and liquids between such spaces. Alternatively, such separation need not be provided if the ro-ro cargo space is considered to be a closed cargo space over its entire length and shall fully comply with the relevant special requirements of the regulation.

(SOLAS Reg. II-2/19.3.10.1)

2.2.9.4 *In ship having ro-ro cargo spaces*, a separation to be provided between a closed ro-ro cargo space and the adjacent weather deck. The separation to be such as to minimize the passage of dangerous vapors and liquids between such spaces. Alternatively, a separation need not be provided if the arrangement of the closed ro-ro cargo spaces is in accordance with those required for the dangerous goods carried on the adjacent weather deck.

(SOLAS Reg. II-2/19.3.10.2)

2.2.10 *Self unloading systems for solid bulk cargoes*

2.2.10.1 *Types of self unloading systems:*

Closed: The part of the system located outside the cargo hold is fully enclosed, e.g. pneumatic systems or fully enclosed chain conveyors.

Open: Open type systems, e.g. belt conveyors and bucket conveyors.

2.2.10.2 *For some cargoes the use of self-unloading systems* are not permitted due to hazards involved. For other cargoes only closed systems are permitted. Restrictions on use of self-unloading systems are shown in **TableD1**.

2.2.10.3 *Enclosed spaces containing self-unloading systems* shall be provided with a water flushing system enabling easy cleaning/removal of dust deposits.

2.2.10.4 *Self-unloading systems of the open type* shall be arranged for emergency stop from convenient locations within the cargo handling spaces and on open deck.

2.2.10.5 *Spaces outside cargo holds containing self-unloading systems* shall be fitted with mechanical ventilation giving at least 6 air changes per hour.

2.2.10.6 *Conveyor belts* shall be made from materials not liable to accumulate static electricity.

2.2.11 *Special requirements*

2.2.11.1 *Gas measuring instruments*

When transporting a bulk cargo which is liable to emit a toxic or flammable gas, or cause oxygen depletion in the cargo space, the ship shall be provided with gas measuring instruments as follows:

- a) Instruments for measuring hydrogen gas or methane gas (0-100% LEL).
 - b) Instruments for measuring toxic gases that may be given off from the particular cargo.
 - c) Instruments for measuring oxygen concentration (0-21% by volume).
- (SOLAS Reg. VI/3.1)

The instruments may be portable or fixed.

In case portable gas measuring instruments are provided, suitable sampling connections enabling the checking of atmosphere in holds and cargo handling spaces without need of entry, shall be arranged.

(IMSBC Code, App. 6)

Guidance note:

Sampling points for cargo holds should be located as high as possible, e.g. upper part of hatch coaming. In order to ensure safe access in adverse weather conditions, two sampling points per hold should be provided, preferably one on each side. Fore and aft location may also be accepted if this is deemed more advantageous. Sampling openings must be fitted with means of closure, e.g. threaded plug or cap, ball valve or similar. Appendix 6 of the IMSBC Code gives guidance on arrangements and procedures for gas sampling.

2.2.11.2 *Temperature detection in cargo holds*

Cargo holds shall be fitted with arrangements for detecting temperatures in the cargo.

The temperature sensors shall be either permanently fitted or of portable type. If portable sensors are used the arrangement shall enable measurement of the temperature of the cargo without entry of the hold being necessary.

2.2.11.3 *Inerting of cargo holds*

Cargo holds shall be provided with arrangements for maintaining an inert atmosphere in the loaded hold.

Oxygen content is not to exceed 5% by volume. The arrangement is to enable purging of the space above the cargo with inert gas.

2.2.11.4 *Separation of cargo holds from oil tanks*

Cargo holds are not to have tanks intended for fuel oil and/or lubricating oil located adjacently unless 1106 is complied with.

2.2.11.5 *Separation of cargo from heated surfaces*

Heated oil tanks; double bottom tanks, top wing tanks, deep tanks, hopper tanks, side tanks, etc., adjacent to cargo holds, shall be fitted with permanent temperature indicators or provided with a suitable arrangement for using portable indicators. Temperature limits as specified in the IMSBC Code shall not be exceeded.

Amended January 2013, see page 3 Rules for Ships, July 2012

2.2.11.6 *Tightness testing of oil tanks prior to loading*

Before loading oil tanks adjacent to the cargo hold shall be hydrostatically tested for tightness.

2.2.11.7 *Acidity of bilge water*

Means for testing acidity of water in bilge wells of cargo holds shall be provided.

2.2.11.8 *Procedures for gas monitoring of coal cargoes*

Sampling points for gas monitoring of coal cargoes shall be arranged in the hatch comings. See the IMSBC Code, App. 6.

2.3 **Minimum Requirements for Cargo Spaces Intended for Packaged Goods**

2.3.1 **General**

2.3.1.1 *The minimum requirements* are given in *Tables C1 to C5*, which give reference to the relevant paragraphs in *Section (2)*.

2.3.1.2 *In the case of ships dedicated to transport of goods in special packaging*, e.g. ship borne barges, carriage requirements may be specified upon special considerations in particular cases.

2.3.1.3 *For packaged goods in Class 6.2 and Class 7* there are no specific requirements to ships' design or equipment in SOLAS Reg. II-2/19.

Refer to SOLAS Ch. VII, the IMDG Code and the INF Code when applicable.

Table C1 Weather deck cargo spaces

Applicable requirements	Class of dangerous goods	Fire water supplies	Fire extinguishing	Personal Protection	Insulation of ER boundaries
1.1-1.6		2.2.1.1 2.2.1.2		2.2.7.3	2.2.9.2
1.4S		2.2.1.1 2.2.1.2		2.2.7.3	
2.1		2.2.1.1 2.2.1.2		2.2.7	2.2.9.2
2.2		2.2.1.1 2.2.1.2		2.2.7	2.2.9.2
2.3 Flammable		2.2.1.1 2.2.1.2		2.2.7	2.2.9.2
2.3 non-Flammable		2.2.1.1 2.2.1.2		2.2.7	2.2.9.2
3 FP ¹⁾ < 23°C		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
3 FP ¹⁾ ≥ 23°C and ≤ 60°C		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
4.1		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
4.2		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
4.3 Liquids		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
4.3 Solids		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
5.1		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
5.2		2.2.1.1 2.2.1.2		2.2.7	
6.1 Liquids FP ¹⁾ < 23°C		2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2

Table C1 Weather deck cargo spaces(Continued)

Applicable requirements Class of dangerous goods	Fire water supplies	Fire extinguishing	Personal Protection	Insulation of ER boundaries
6.1 Liquids FP ¹⁾ 23°C and ≤ 60°C	2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
6.1 Liquids FP ¹⁾ > 60°C	2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
6.1 Solids	2.2.1.1 2.2.1.2		2.2.7	
8 Liquids FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
8 Liquids FP ¹⁾ ≥ 23°C and ≤ 60°C	2.2.1.1 2.2.1.2	2.2.8	2.2.7	2.2.9.2
8 Solids	2.2.1.1 2.2.1.2		2.2.7	
9	2.2.1		2.2.7	
1)FP means Flashpoint. 2)As appropriate to the goods being carried. 3) Refer to the International Maritime Dangerous Goods (IMDG) Code for special slowing requirements.				

Table C2 General cargo spaces (Continued)

Applicable requirements Class of dangerous goods	Fire water supplies	Fire extinguishing	Electrical installations	Fire detection	Ventilation	Separate bilge dramage	Personal protection	Insulation of ER boundaries
5.1	2.2.1.1 2.2.1.2	2.2.2.1 2.2.8		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9.1
5.2 ⁴⁾								
6.1 Liquids FP ¹⁾ ≥ 23°C	2.2.1.1 2.2.1.2	2.2.2.1 2.2.8	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7	2.2.6	2.2.7	2.2.9.1
6.1 Liquids FP ¹⁾ ≥ 23°C and ≤ 60 °C	2.2.1.1 2.2.1.2	2.2.2.1 2.2.8		2.2.4	2.2.5.2 2.2.5.4(b)	2.2.6	2.2.7	2.2.9.1
6.1 Liquids FP ¹⁾ > 60°C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4		2.2.6	2.2.7	
6.1 Solids	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)	2.2.6	2.2.7	
8.1 FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.1 2.2.8	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7	2.2.6	2.2.7	2.2.9.1
8 Liquids FP ¹⁾ ≥ 23°C and ≤ 60 °C	2.2.1.1 2.2.1.2	2.2.2.1 2.2.8		2.2.4	B502 B504b	2.2.6	2.2.7	2.2.9.1
8 Liquids FP ¹⁾ < 60°C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4		2.2.6	2.2.7	
8 Solids	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7	
9	2.2.1.1	2.2.2.1	2.2.3		2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7		2.2.7	

- 1) FP means Flashpoint.
- 2) Under the provisions of the IMDG Code, stowage of Class 2.3 having a subsidiary risk Class 2.1 under deck is prohibited.
- 3) Under the provisions of the IMDG Code, stowage of Class 4.3 Liquids having a Flashpoint less than 23°C under deck is prohibited.
- 4) Under the provisions of the IMDG Code, stowage of Class 5.2 under deck is prohibited.
- 5) When “mechanically-ventilated spaces” are required by the IMDG Code.
- 6) Only applicable to dangerous goods having subsidiary risk Class 6.1.
- 7) As appropriate for the goods being carried.
- 8) Refer to the International Maritime Dangerous Goods (IMDG) Code for special stowing requirements.
- 9) Only applicable to dangerous goods listed in the IMDG Code which evolves flammable vapour.

Table C3 Container cargo spaces

Applicable requirements Class of dangerous goods	Fire water supplies	Fire extinguishing	Electrical installations	Fire detection	Ventilation	Separate bilge dramage	Personal protection	Insulation of ER boundaries
1.1 -1.6	2.2.1.1 2.2.1.2 2.2.1.3	2.2.2.1	2.2.3	2.2.4			2.2.7.3	2.2.9.2
1.4S	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7.3	
2.1	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7		2.2.7	2.2.9.2
2.2	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7	2.2.9.2
2.3 Flammable ²⁾	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3				2.2.7	2.2.9.2
2.3 non-Flammable	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9.2
3 FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7	2.2.6	2.2.7	2.2.9.2
3 FP ¹⁾ ≥ 23°C and ≤ 60 °C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7	2.2.9.2
4.1	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9.2
4.2	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9.2
4.3 Liquids ³⁾	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9.2
4.3 Solids	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9.2

Table C3 Container cargo spaces (Continued)

Applicable requirements Class of dangerous goods	Fire water supplies	Fire extinguishing	Electrical installations	Fire detection	Ventilation	Separate bilge drainage	Personal protection	Insulation of ER boundaries
5.1	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4		2.2.7	2.2.9.2
5.2 ⁴⁾								
6.1 Liquids FP ¹⁾ <23°C	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7	2.2.6	2.2.7	2.2.9.2
6.1 Liquids FP ¹⁾ ≥ 23°C and ≤ 60 °C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)	2.2.6	2.2.7	
6.1 Liquids FP ¹⁾ > 60°C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4		2.2.6	2.2.7	
6.1 Solids	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	
8.1 FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.1 2.2.8	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7	2.2.6	2.2.7	2.2.9.2
8 Liquids FP ¹⁾ ≥ 23°C and ≤ 60 °C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)	2.2.6	2.2.7	2.2.9.2
8 Liquids FP ¹⁾ > 60°C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4		2.2.6	2.2.7	
8 Solids	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7	
9	2.2.1.1	2.2.2.1	2.2.3		2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7		2.2.7	

- 1) FP means Flashpoint.
- 2) Under the provisions of the IMDG Code, stowage of Class 2.3 having a subsidiary risk Class 2.1 under deck is prohibited.
- 3) Under the provisions of the IMDG Code, stowage of Class 4.3 Liquids having a Flashpoint less than 23 degree C under deck is prohibited.
- 4) Under the provisions of the IMDG Code, stowage of Class 5.2 under deck is prohibited.
- 5) When “mechanically-ventilated spaces” are required by the IMDG Code.
- 6) Only applicable to dangerous goods having subsidiary risk Class 6.1.
- 7) As appropriate for the goods being carried.
- 8) Refer to the International Maritime Dangerous Goods (IMDG) Code for special stowing requirements.
- 9) No ventilation required when carried in a closed freight container.
- 10) A ventilation rate of not less than 2 air changes per hour is sufficient when carried in a closed freight container.
- 11) Only applicable to dangerous goods listed in the IMDG Code which evolves flammable vapour.

Table C4 Closed ro-ro cargo spaces

Applicable requirements Class of dangerous goods	Fire water supplies	Fire extinguishing	Electrical installations	Fire detection	Ventilation	Separate bilge dramage	Personal protection	Insulation of ER boundaries
1.1 -1.6	2.2.1.1 2.2.1.2 2.2.1.3	2.2.2.1	2.2.3	2.2.4			2.2.7.3	2.2.9
1.4S	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7.3	
2.1	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7		2.2.7	2.2.9
2.2	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7	2.2.9
2.3 Flammable ²⁾	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3				2.2.7	2.2.9
2.3 non-Flammable	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9
3 FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.1	2.2.3	2.2.4	2.2.5.2 2.2.5.4(b) 2.2.5.6 2.2.5.7	2.2.6	2.2.7	2.2.9
3 FP ¹⁾ ≥ 23°C and ≤ 60 °C	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4			2.2.7	2.2.9
4.1	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9
4.2	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9
4.3 Liquids ³⁾	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9
4.3 Solids	2.2.1.1 2.2.1.2	2.2.2.1		2.2.4	2.2.5.2 2.2.5.4(b)		2.2.7	2.2.9

Table C5 Open (Semi enclosed) ro-ro cargo spaces

Applicable requirements	Fire water supplies	Fire extinguishing	Electrical installations	Personal Protection	Insulation of ER boundaries
Class of dangerous goods					
1.1-1.6	2.2.1.1 2.2.1.2 2.2.1.3	2.2.2.2	2.2.3	2.2.7.3	2.2.9
1.4S	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7.3	
2.1	2.2.1.1 2.2.1.2	2.2.2.2	2.2.3	2.2.7	2.2.9
2.2	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
2.3 Flammable ²⁾	2.2.1.1 2.2.1.2	2.2.2.2	2.2.3	2.2.7	2.2.9
2.3 non-Flammable	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
3 FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.2	2.2.3	2.2.7	2.2.9
3 FP ¹⁾ ≥ 23°C and ≤ 60°C	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
4.1	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
4.2	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
4.3 Liquids ³⁾	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
4.3 Solids	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
5.1	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
5.2 ⁴⁾					
6.1 Liquids FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.2	2.2.3	2.2.7	2.2.9
6.1 Liquids FP ¹⁾ 23°C and ≤ 60°C	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
6.1 Liquids FP ¹⁾ > 60°C	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	
6.1 Solids	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	
8 Liquids FP ¹⁾ < 23°C	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
8 Liquids FP ¹⁾ ≥ 23°C and ≤ 60°C	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	2.2.9
8 Liquids FP ¹⁾ >60°C	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	
8 Solids	2.2.1.1 2.2.1.2	2.2.2.2		2.2.7	
9	2.2.1.1	2.2.2.2	2.2.3	2.2.7	

1)FP means Flashpoint.
 2)Under the provisions of the IMDG Code, stowage of Class 2.3 having a subsidiary risk Class 2.1 under deck is prohibited.
 3)Under the provisions of the IMDG Code, stowage of Class 4.3 Liquid having a Flashpoint less than 23 degrees C under deck is prohibited.
 4)Under the provisions of the IMDG Code, stowage of Class 5.2 under deck is prohibited.
 5)As appropriate to the goods being carried.
 6)Refer to the International Maritime Dangerous Goods (IMDG) Code for special stowage requirements.
 7)Only applicable to dangerous goods listed in the IMDG Code which evolve flammable vapour.

2.4 Minimum Requirements for Cargo Spaces Intended for Solid Bulk Cargoes

2.4.1 General

2.4.1.1 *The minimum requirements* are given in Table D1 that gives reference to the relevant paragraphs of section (2).

2.4.1.2 *For solid bulk cargoes* of hazard class “MHB” the requirements are not mandatory for statutory certification purposes.

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext. in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Aluminium ferrosilicon powder	1395	4.3		2.2.2.1		T2	IIC	I,d,e,p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.7		2.2.7.2 2.2.7.3	2.2.9	Hydrogen phosphine Arsine			
Aluminium nitrate	1438	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7					
Aluminium silicon powder, uncoated	1398	4.3		2.2.2.1		T2	IIC	I,d,e,p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.7		2.2.7.2 2.2.7.3	2.2.9	Hydrogen phosphine Arsine Silane			
Aluminium smelting by-products	3170	4.3		2.2.2.1		T2	IIC	I,d,e,p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.7	2.2.6	2.2.7.2 2.2.7.3	2.2.9	Hydrogen Ammonia Acetylene			
Ammonium nitrate	1942	5.1	2.2.1.1 2.2.1.2	2.2.2.1	Electrical installations to be disconnected in accordance with 2.2.3.7				2.2.5.5 2.2.5.7		2.2.7	2.2.9		Not permitted		2.2.11.4 or 2.2.11.6
Ammonium nitrate based fertilizers, Type A	2067	5.1	2.2.1.1 2.2.1.2	2.2.2.1	Electrical installations to be disconnected in accordance with 2.2.3.7				2.2.5.5 2.2.5.7		2.2.7	2.2.9		Not permitted		2.2.11.4 or 2.2.11.6 2.2.11.5
Ammonium nitrate based fertilizers, Type B	2071	9	2.2.1.1 2.2.1.2	2.2.2.1	Electrical installations to be disconnected in accordance with 2.2.3.7				2.2.5.5 2.2.5.7		2.2.7	2.2.9		Not permitted		2.2.11.5
Barium nitrate	1446	5.1	2.2.1.1 2.2.1.2	2.2.2.1				2.2.7	2.2.5.5		2.2.7					

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext. in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Brown coal (lignite) briquettes		MHB		2.2.2.1	IP54	T4	IIA	i,d,e,p, m or s			2.2.7.3		Oxygen Methane CO		2.2.2.1 or 2.2.2.2	2.2.11.2 2.2.11.5 2.2.11.7 2.2.11.8
Calcium nitrate	1454	5.1	2.2.1.1 2.2.1.2	2.2.2.1				B505			2.2.7					
Castor beans	2969	9	2.2.1.1 2.2.1.2	2.2.2.1				B505			2.2.7		Closed	2.2.2.1 or 2.2.2.2		
Charcoal		MHB		2.2.2.1							2.2.7.3		Oxygen	2.2.2.1 or 2.2.2.2		
Coal		MHB		2.2.2.1	IP54	T4	IIA	i,d,e,p,m or s	2.2.5.5 2.2.5.6		2.2.7.3		Oxygen Methane CO	2.2.2.1 or 2.2.2.2	2.2.11.2 2.2.11.5 2.2.11.7 2.2.11.8	
Copra (dry)	1363	4.2	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7.3	B900	Oxygen	2.2.2.1 or 2.2.2.2	2.2.11.5	
Direct reduced iron, (A) (briquettes, hot moulded)		MHB		2.2.2.1		T2	IIC	i, d, e, p, m or s	2.2.5.5 2.2.5.6		2.2.7.3		Hydrogen Oxygen			
Direct rduced iron, (B) (lumps, pellets, cold moulded briquettes)		MHB		2.2.2.1		T2	IIC	i, d, e, p, m or s			2.2.7.3		Hydrogen Oxygen		2.2.11.2 2.2.11.3	
Direct reduced iron, (C) (by-product, fines)		MHB		2.2.2.1		T2	IIC	i, d, e, p, m or s			2.2.7.3		Hydrogen Oxygen		2.2.11.2 2.2.11.3	
Ferrophosphourus		MHB		2.2.2.1		T2	IIC	i, d, e, p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.7		2.2.7.2 2.2.7.3		Hydrogen Phoshpine			

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext. in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Ferrosilicon, (30% - 90% Silicon)	1408	4.3		2.2.2.1		T2	IIC	i, d, e, p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.7		2.2.7.2 2.2.7.3	2.2.9	Hydrogen Phosphine Arsine	Closed		
Ferrrosilicon, (25% - 30%, Silicon or > 90% Silicon)		MHB		2.2.2.1		T2	IIC	i, d, e, p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.7	B600	2.2.7.2 2.2.7.3		Hydrogen Phosphine Arsine	Closed		
Ferrous metal borings, shavings, turnings or cuttings	2793	4.2	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7.2 2.2.7.3	2.2.9	Oxygen			2.2.11.2
Fishmeal (fish scrap), stabilized	2216	9	2.2.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7.2 2.2.7.3		Oxygen		2.2.2.1 or 2.2.2.2	2.2.11.2 2.2.11.5
Fluorspar		MHB		2.2.2.1							2.2.7.3			Closed		
Iron oxide, spent or Iron sponge, spent	1376	4.2	2.2.1.1 2.2.1.2	2.2.2.1	IP54	T2	IIA	i, d, e, p, m or s	2.2.5 2.2.6		2.2.7	2.2.9	Oxygen Hydrogen sulphide Sulphur dioxide Hydrogen cyanide Hydrogen Hydrogen			

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext. in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Lead nitrate	1469	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5		2.2.7			Closed		
Lime (unslaked)		MHB		2.2.2.1							2.2.7.3			Closed		
Limed cutton seed		MHB		2.2.2.1							2.2.7.2 2.2.7.3		Oxygen			
Magnesia (unslaked)		MHB		2.2.2.1							2.2.7.3			Closed		
Magnesium nitrate	1474	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5		2.2.7					
Metal sulphide concentrates		MHB		2.2.2.1							2.2.7.2 2.2.7.3		Oxygen Hydrogen sulphide	Closed		
Peat moss		MHB		2.2.2.1					2.2.5		2.2.7.3		Oxygen			
Petroleum coke, caleined or uncaleined		MHB		2.2.2.1							2.2.7					
Pitch prill		MHB		2.2.2.1					2.2.5		2.2.7			Closed		
Potassium nitrate	1486	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7					
Pyrites (caleined)		MHB		2.2.2.1							2.2.7.3					
Radioactive material, LSA-1	2912	7		2.2.2.1							2.2.7			Closed		
Radioactive material, SCO-1	2913	7		2.2.2.1							2.2.7			Closed		
Sawdust		MHB		2.2.2.1					2.2.5.5		2.2.7.3		Oxygen		2.2.2.1	

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext. in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Seed cake, cont vegetable oils(a), mechanically expelled seeds	1386	4.2	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7.2 2.2.7.3	2.2.9	Oxygen		2.2.2.1	2.2.11.2 2.2.11.5
Seed cake, cont vegetable oils(b), solvent extraction and expelled seeds	1386	4.2	2.2.1.1 2.2.1.2	2.2.2.1		T3	IIA	i, d, e, p, m or s	2.2.5.2 2.2.5.4b 2.2.5.6 2.2.5.8		2.2.7.2 2.2.7.3	2.2.9	Oxygen		2.2.2.1	2.2.11.2 2.2.11.5
Seed cake, cont vegetable oil (c), solvent extraction	2217	4.2	2.2.1.1 2.2.1.2	2.2.2.1		T3	IIA	i, d, e, p, m or s	2.2.5.2 2.2.5.4a 2.2.5.6 2.2.5.8		2.2.7.2 2.2.7.3	2.2.9	Oxygen		2.2.2.1	2.2.11.2 2.2.11.5
Silicomanganese		MHB		2.2.2.1		T3	IIA	i, d, e, p, m or s	2.2.5.2 2.2.5.4a 2.2.5.6 2.2.5.8		2.2.7.2 2.2.7.3		Hydrogen Phosphine Arsine			
Sodium nitrate	1498	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7					
Sodium nitrate and Potassium nitrate mixture	1499	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7					
Sulphur	1350	4.1	2.2.1.1 2.2.1.2	2.2.2.1	IP54	T4			2.2.5.5 2.2.5.8		2.2.7.2 2.2.7.3	2.2.9		Not permitted		
Tankage		MHB		2.2.2.1							2.2.7.2 2.2.7.3				2.2.2.1	2.2.11.2

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext, in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Seed cake, cont vegetable oils(a), mechanically expelled seeds	1386	4.2	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7.2 2.2.7.3	2.2.9	Oxygen		2.2.2.1	2.2.11.2 2.2.11.5
Seed cake, cont vegetable oils(b), solvent extraction and expelled seeds	1386	4.2	2.2.1.1 2.2.1.2	2.2.2.1		T3	IIA	i, d, e, p, m or s	2.2.5.2 2.2.5.4b 2.2.5.6 2.2.5.8		2.2.7.2 2.2.7.3	2.2.9	Oxygen		2.2.2.1	2.2.11.2 2.2.11.5
Seed cake, cont vegetable oil (c), solvent extraction	2217	4.2	2.2.1.1 2.2.1.2	2.2.2.1		T3	IIA	i, d, e, p, m or s	2.2.5.2 2.2.5.4a 2.2.5.6 2.2.5.8		2.2.7.2 2.2.7.3	2.2.9	Oxygen		2.2.2.1	2.2.11.2 2.2.11.5
Silicomanganese		MHB		2.2.2.1		T3	IIA	i, d, e, p, m or s	2.2.5.2 2.2.5.4a 2.2.5.6 2.2.5.8		2.2.7.2 2.2.7.3		Hydrogen Phosphine Arsine			
Sodium nitrate	1498	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7					
Sodium nitrate and Potassium nitrate mixture	1499	5.1	2.2.1.1 2.2.1.2	2.2.2.1					2.2.5.5		2.2.7					
Sulphur	1350	4.1	2.2.1.1 2.2.1.2	2.2.2.1	IP54	T4			2.2.5.5 2.2.5.8		2.2.7.2 2.2.7.3	2.2.9		Not permitted		
Tankage		MHB		2.2.2.1							2.2.7.2 2.2.7.3				2.2.2.1	2.2.11.2

Table D1 Requirements for solid bulk cargoes

Cargo	UN no	IMO class	Fire water supply	Fire ext, in cargo spaces	Ingress protection	Temp class	Gas group	Ex-protection Ex-	Vent. of cargo spaces	Separate bilge system	Personnel protection	Insulation of Boundaries	Gas measuring equipment B1101	Self unloading system	Fire ext.in spaces for self unloading systems	Special requirements
Vanadium ore		MHB		2.2.2.1							2.2.7.2 2.2.7.3			Closed		
Woodchips		MHB		2.2.2.1							2.2.7.3		Oxygen			
Wood pellets		MHB		2.2.2.1							2.2.7.3		Oxygen			
Wood products- General		MHB		2.2.2.1							2.2.7.2 2.2.7.3		Oxygen			
Zinc ashes	1435	4.3		2.2.2.1		T3	IIC	i, d,e, p, m or s	2.2.5.3 2.2.5.4a 2.2.5.6 2.2.5.8		2.2.7	2.2.9	Hydrogen			

- 1) Maximum temperature to be 35° Celsius.
- 2) At least 1 air change per hour to be provided.
- 3) Ref Table 1 in the Annex to MSC/Cire 1395 Solid bulk cargoes categorized into Group B in the IMSBC Code for which a fixed gas fire-extinguishing system may be exempted by the flag state.
- 4) Ref Table 1 in the annex to MSC/Cire 1395 Solid bulk cargoes categorized into Group B in the IMSBC Code for which a fixed gas fire-extinguishing system is ineffective and for which a fire-extinguishing system giving equivalent protection shall be available Acc to the Annex in MSC/Cire 1120 water supplies, as defined in B102, is considered as an acceptable system giving equivalent protection. Another system giving equivalent protection is a fixed water spray system giving at least 5.1 m² pr.min.evenly dispersed.
- 5) Ref Table 19.2 SOLAS II-2 19. Only applicable to seedcake containing solvent extractions.

SECTION (3)

SURVEY

3.1 Type of Survey

The Surveys required for the issuance of Document of Compliance for the safe carriage of dangerous goods are as follow:

an **Initial Survey**, and a **Periodical** or **Renewal Survey**.

3.2 Survey Preparations

Upon receipt of a request, the Director shall nominate any available **surveyor(s) to arrange and** conduct the survey.

In case of an Accident, the Director or the Deputy Director General or the Director General may consider to arrange a survey.

In any case, the Director or the Deputy Director General or the Director General may consider arranging a survey at their sole discretion on a certain ground.

If so, the Director shall nominate any available surveyor(s)to arrange and conduct the survey

The Nominated Surveyor shall liaise with the relevant parties to arrange and conduct the survey in accordance with the relevant requirements as reflected in "**1.6. References" of the procedure.**

3.3 Executing Survey

Remarks from previous surveys and outstanding deficiencies must be resolved to the satisfaction of the surveyor before the issue of the Certificates.

The survey is to be carried out using the relevant instructions, procedures and guidance notes which may be found on **Section (2)**. Surveyors should be mindful of their own health and safety during surveys and take account of all guidance as well as their professional judgment in relation to the prevailing circumstances.

Survey is required to confirm that the arrangement of the ship meets the requirements of SOLAS Chapter II-2, VI and VII, or the High Speed Craft Code, relevant to the type and age of ship and the dangerous goods intended to be carried.

The surveyor is responsible for recording and closing out any deficiencies found during the survey

The requirements relating to the issue of certificates, i.e. type, format, issuing authority etc., are given in the MSC.1/Circ.1266 “Document of compliance with the special requirements for ships carrying dangerous goods under the provisions of regulation II-2/19 of SOLAS 74, as amended and paragraph 7.17 of the 2000 HSC Code, as amended”.

On completion of a survey, the surveyor prepares the certificate, following the guidance in Section (4).

On completion of a satisfactory initial or renewal survey, a **Document of Compliance for the Carriage of Dangerous Goods** shall be issued, within the validity of the Safety Equipment Certificate.

Chapter II-2 of SOLAS was revised and reorganized in the 2000 amendments, so there are 2 forms of certificate which make reference to the applicable regulation:

referring to SOLAS II-2 Reg 54 for ships built prior to 1 July 2002; and,
referring to SOLAS II-2 Reg 19 for ships built on or after 1 July 2002.



THE GOVERNMENT OF THE UNION OF MYANMAR
MINISTRY OF TRANSPORT
DEPARTMENT OF MARINE ADMINISTRATION

*Document of Compliance
of Construction and Equipment with the
Special Requirements for Ships
Carrying Dangerous Goods*

*Issued in pursuance of the requirement of Regulation II-2/19.4 of the
International Convention for the Safety of Life at Sea, 1974, as amended, under
the authority of the Government of the Union of Myanmar*

PARTICULARS OF SHIP

Name of Ship:	_____
Distinctive Number or Letters:	_____
Port of Registry:	_____
Gross Tonnage:	_____
IMO Number:	_____
Ship Type:	_____
Date on which keel was laid	_____

THIS IS TO CERTIFY:

1. that the construction and equipment of the above-mentioned ship has been found to comply with the provisions of regulation II-2/19.4 of the International Convention for the Safety of Life at Sea, 1974, as amended; and
2. that the ship is suitable for the carriage of those classes of dangerous goods as specified in the appendix hereto, subject to any provisions in the International Maritime Dangerous Goods (IMDG) Code and the Code of Safe Practice for Solid Bulk Cargoes (BC Code) for individual substances, materials or articles also being complied with.

This certificate is valid until.....

Issued at.....on

Director General
Department of Marine Administration
Yangon

Indication of cargo spaces/ weather decks	Type of cargo spaces/ carriages	Construction and equipment in accordance with Regulation 19.4 of Chapter II-2 of the 1974 Convention as amended	Class of dangerous goods	special requirement
1	2	3	4	5
ALL HATCHES AND WEATHER DECKS		1. FOUR SETS OF FULL PROTECTIVE CLOTHING RESISTANT IN ACCORDANCE WITH REG, 19.4.6.1 2. TWO SETS CONTAINED BREATHING APPRATUS 3. DRY POWDER TYPE PORTABLE FIRE EXTINGUISHER	ALL CLASSES	

Remark: There are no special requirements as expressed in above mentioned Regulation 19 for the carriage of dangerous goods of classes 6.2 and 7 and of dangerous goods in limited quantities of all classes.