

RESOLUTION MSC.393(95) (adopted on 11 June 2015)
AMENDMENTS TO THE INTERNATIONAL MARITIME
SOLID BULK CARGOES (IMSBC) CODE

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THE MARITIME SAFETY COMMITTEE,

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

NOTING resolution MSC.268(85) by which it adopted the International Maritime Solid Bulk Cargoes Code ("the IMSBC Code"), which has become mandatory under chapter VI of the International Convention for the Safety of Life at Sea, 1974, as amended ("the Convention"),

NOTING ALSO article VIII(b) and regulation VII/1.1 of the Convention concerning amendment procedure for amending the IMSBC Code,

HAVING CONSIDERED, at its ninety-fifth session, amendments to the IMSBC Code, proposed and circulated in accordance with article VIII(b)(i) of the Convention,

1 ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the IMSBC Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the said amendments shall be deemed to have been accepted on 1 July 2016, unless prior to that date, more than one third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet, have notified their objections to the amendments;

3 INVITES Contracting Governments to the Convention to note that, in accordance with article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force on 1 January 2017 upon their acceptance in accordance with paragraph 2 above;

4 AGREES that Contracting Governments to the Convention may apply the aforementioned amendments in whole or in part on a voluntary basis as from 1 January 2016;

5 REQUESTS the Secretary-General, for the purpose of article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Contracting Governments to the Convention; and

6 FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization, which are not Contracting Governments to the Convention.

ANNEX

AMENDMENTS TO THE INTERNATIONAL MARITIME SOLID BULK CARGOES (IMSBC) CODE

Contents

- 1 At the end, a new entry "appendix 5" is added with the following:
- "Appendix 5** Bulk Cargo Shipping Names in three languages (English, Spanish and French)"

Section 1 General provisions

1.4 Application and implementation of this Code

- 2 In paragraph 1.4.2, the following entries are inserted in the corresponding order:
- "Paragraph 4.2.2.2;"
- "Section 14 Prevention of pollution by cargo residues from ships;"
- 3 In the existing paragraph 1.4.2, the line for "Appendices other than appendix 1 Individual schedules of solid bulk cargoes; and" is replaced with the following:
- "Appendices other than appendix 1 (Individual schedules of solid bulk cargoes) and appendix 5 (Bulk Cargo Shipping Names in three languages (English, Spanish and French)); and"

1.6 Conventions

- 4 In the body of paragraph 1.6, at the end of the first sentence, the words "are reproduced in full" are replaced by the words "the relevant parts are reproduced below".

Chapter VI Carriage of cargoes

- 5 The title of chapter VI is replaced by the following:
- "Carriage of cargoes and oil fuels"**

Part A *General provisions*

Regulation 1 Application

- 6 At the beginning of paragraph 1, the words "Unless expressly provided otherwise," are added and the existing word "This" is replaced by the word "this".

1.7 Definitions

7 In the definition for "*Manual of Tests and Criteria*", replace the words (ST/SG/AC.10/11/Rev.5/Amendment 1) by the words "(ST/SG/AC.10/11/Rev.5/Amendment 2)".

Section 3 *Safety of personnel and ship*

3.1 General requirements

8 After the existing paragraph 3.1.1, insert a new paragraph 3.1.2 with the following:

"3.1.2 Routine on board operational fire safety risk assessments shall be carried out by the ship's crew for cargo handling areas on self-unloading bulk carriers featuring internally installed conveyor systems within the ship's structure. Due consideration shall be given to fire prevention and the effective operation of fire detection systems, containment and suppression under all anticipated operating conditions and cargoes. The fire safety risk assessments shall be detailed in the ship's Safety Management System (SMS) together with a recommended timing to provide regular assessments."

and the existing paragraph 3.1.2 is renumbered as 3.1.3.

Section 4 *Assessment of acceptability of consignments for safe shipment*

4.2 Provision of information

9 The existing paragraph 4.2.2 is renumbered as "4.2.2.1" and the following new paragraph "4.2.2.2" is added:

"4.2.2.2 The cargo information should include whether or not the cargo is harmful to the marine environment*."

10 In paragraph 4.2.3, in the "Form for cargo information for Solid Bulk Cargoes", after the row for that describes Group of the cargo, the following rows are inserted:

"

Classification relating to MARPOL Annex V

- ☐ harmful to the marine environment
- ☐ not harmful to the marine environment

"

Section 7

Cargoes that may liquefy

7.3 Provisions for cargoes that may liquefy

7.3.1 General

11 The existing paragraphs 7.3.1.1 to 7.3.1.4 are replaced by the following:

"7.3.1.1 Concentrates or other cargoes which may liquefy shall only be accepted for loading when the actual moisture content of the cargo is less than its TML. Notwithstanding this provision, cargoes having moisture content in excess of the TML may be carried on a specially constructed or fitted cargo ship for confining cargo shift specified in paragraph 7.3.2.

7.3.1.2 Notwithstanding the provisions in section 1.4 of this Code, the requirements in sections 4.2.2.9, 4.2.2.10, 4.3.2 to 4.3.5, 4.5, 4.6 and 8 of this Code need not apply to a cargo which may liquefy provided that the cargo is carried on a specially constructed or fitted cargo ship for confining cargo shift specified in paragraph 7.3.2 or on a specially constructed ship for dry powdery cargoes specified in paragraph 7.3.3.

7.3.1.3 Cargoes which contain liquids other than packaged canned goods or the like shall not be stowed in the same cargo space above or adjacent to these solid bulk cargoes.

7.3.1.4 Adequate measures shall be taken to prevent liquids entering the cargo space in which these solid bulk cargoes are stowed during the voyage.

7.3.1.5 Masters shall be cautioned about the possible danger of using water to cool these cargoes while the ship is at sea. Introducing water may bring the moisture content of these cargoes to a flow state. When necessary, due regard shall be paid to apply water in the form of spray."

7.3.2 Specially constructed or fitted cargo ships

12 The existing subsection 7.3.2 is replaced by the following:

"7.3.2 Specially constructed or fitted cargo ships for confining cargo shift

7.3.2.1 Specially constructed cargo ships for confining cargo shift shall have permanent structural boundaries, so arranged as to confine any shift of cargo to an acceptable limit. The ship concerned shall carry evidence of approval by the Administration.

7.3.2.2 Specially fitted cargo ships for confining cargo shift shall be fitted with specially designed portable divisions to confine any shift of cargo to an acceptable limit. Specially fitted cargo ships shall be in compliance with the following requirements:

- .1 The design and positioning of such special arrangements shall adequately provide not only the restraint of the immense forces generated by the flow movement of high-density bulk cargoes, but also for the need to reduce to an acceptable safe level the potential heeling movements arising out of a transverse cargo flow across the

cargo space. Divisions provided to meet these requirements shall not be constructed of wood.

- .2 The elements of the ship's structure bounding such cargo shall be strengthened, as necessary.
- .3 The plan of special arrangements and details of the stability conditions on which the design has been based shall have been approved by the Administration. The ship concerned shall carry evidence of approval by the Administration.

7.3.2.3 A submission made to an Administration for approval of such a ship shall include:

- .1 relevant structural drawings, including scaled longitudinal and transverse sections;
- .2 stability calculations, taking into account loading arrangements and possible cargo shift, showing the distribution of cargo and liquids in tanks, and of cargo which may become fluid; and
- .3 any other information which may assist the Administration in the assessment of the submission."

13 Add the following new subsection 7.3.3:

"7.3.3 Specially constructed cargo ships for dry powdery cargoes

7.3.3.1 Specially constructed cargo ships for dry powdery cargoes shall be designed and constructed to:

- .1 carry solely dry powdery cargoes; and
- .2 handle cargoes by means of closed type systems using pneumatic equipment which prevent the cargo from the exposure to weather.

7.3.3.2 The ship concerned shall carry evidence of approval by the Administration."

Section 8

Test procedures for cargoes that may liquefy

8.1 General

14 In the end of paragraph "8.1", the words "unless the cargo is carried in a specially constructed or fitted ship" are deleted.

Section 9

Materials possessing chemical hazards

9.2.3. Materials hazardous only in bulk (MHB)

9.2.3.1 General

15 After the existing paragraph 9.2.3.1.3, two new paragraphs 9.2.3.1.4 and 9.2.3.1.5 are added with the following:

"9.2.3.1.4 Although the chemical hazards are intended to be closely defined in order to establish a uniform approach to MHB classification, where human experience or other factors indicate the need to consider other chemical hazards, these shall always be taken into account. Where deviations from the chemical hazards described in 9.2.3.2 to 9.2.3.7, have been recognized (Other hazards (OH)), they shall be properly recorded with justifications. Other hazards are to be included in the section for "Hazard" in the individual schedule.

9.2.3.1.5 A notational reference shall accompany the MHB designation in the "Class" cell of the Characteristics table for each individual schedule for cargoes classified as MHB. When a material possesses one or more of the chemical hazards as defined below, the notational reference for each hazard shall be included in the "Class" cell. A summary of the notational references is presented in the table below:

| Chemical Hazard | Notational Reference |
|---|----------------------|
| Combustible solids | CB |
| Self-heating solids | SH |
| Solids that evolve flammable gas when wet | WF |
| Solids that evolve toxic gas when wet | WT |
| Toxic solids | TX |
| Corrosive solids | CR |
| Other hazards | OH |

"

and amend the following subsection headings under 9.2.3 as follows:

"9.2.3.2 Combustible solids: MHB (CB)

9.2.3.3 Self-heating solids: MHB (SH)

9.2.3.4 Solids that evolve flammable gas when wet: MHB (WF)

9.2.3.5 Solids that evolve toxic gas when wet: MHB (WT)

9.2.3.6 Toxic solids: MHB (TX)

9.2.3.7 Corrosive solids: MHB (CR)"

9.2.3.7 Corrosive solids

16 In paragraph 9.2.3.7.3, replace the reference "ISO 3574:199" by the reference "ISO 3574:1999".

9.3 Stowage and segregation requirements

9.3.3 Segregation between bulk materials possessing chemical hazards and dangerous goods in packaged form

17 The second paragraph of the existing paragraph 9.3.3.1, before the table, is numbered as "9.3.3.2".

Section 13 References to related information and recommendations

13.1 General

18 In paragraph 13.1, after the words "IMO Instruments", insert the words "and other international standards (such as ISO, IEC)".

13.2 Reference list

19 In paragraph 13.2, after the words "IMO Instruments", in the first sentence, insert the words "or standard"; and, in the third sentence of the paragraph, after the words "IMO Instruments", insert the words "or reference standard".

20 In the heading of the table, in column "Reference to the relevant IMO instruments (2)", add the words "or standard" after the words "IMO instruments".

13.2.3 Fire-extinguishing arrangements

21 Under section 13.2.3 of the table, insert a new second row with the following:

| | | |
|-----------------|--------------------|--------------------------------------|
| General Group B | FSS Code chapter 5 | Fixed Gas Fire-Extinguishing Systems |
|-----------------|--------------------|--------------------------------------|

and under section 13.2.3 of the table, in the column "Reference to the relevant IMO instruments (2)", for entry "Groups A, B and C", replace the text with "MSC/Circ.1395/Rev.2; and, in the column "Subject (3)", after the words "may be exempted", add the words "or for which a fixed gas fire-extinguishing system is ineffective".

13.2.4 Ventilation

22 Under section 13.2.4 of the table, at the end of the section, insert three new rows with the following:

| | | |
|-----------------|-----------------|---|
| General Group B | MSC.1/Circ.1434 | Unified Interpretation of SOLAS II-2/19.3.4 |
| General Group B | MSC.1/Circ.1120 | Unified Interpretation of SOLAS including II-2 /19.3.2, 19.3.4 and 19.3.4.2 |
| General Group B | IEC 60092-506 | Electrical standards for equipment safe for use in an explosive atmosphere |

13.2.6 *Gas detection*

23 Under section 13.2.6 of the table, in the column "Reference to the relevant IMO instruments (2)", the words "section 3" are replaced by "as amended by MSC.1/Circ.1396",

and, at the end of the section, insert a new row with the following:

"

| | | |
|---------|---------------|--|
| General | IEC 60092-506 | Electrical standards for equipment safe for use in an explosive atmosphere |
|---------|---------------|--|

"

13.2.10 *Segregation*

24 Under section 13.2.10 of the table, at the end of the section, insert a new row with the following:

"

| | | |
|---------|---------------|---|
| Group B | IEC 60092-352 | Standards for electrical cable penetrations in boundaries |
|---------|---------------|---|

"

13.2.12 *Entering enclosed spaces*

25 Under section 13.2.12 of the table, in the column "Reference to the relevant IMO instruments (2)", amend the text to read "resolution A.1050(27), 30 November 2011"; and in the column "Subject (3)", amend the title to read "Revised recommendations for entering enclosed spaces aboard ships".

13.2.13 *Avoidance of excessive stresses*

26 Under section 13.2.13 of the table, at the end of the section, insert two new rows with the following:

"

| | | |
|-------|----------------------------------|---|
| 2.1.2 | Resolution A.862(20), as amended | Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code) |
| 2.1.2 | MSC.1/Circ.1357 | Additional Considerations for the Safe Loading of Bulk Carriers |

"

27 A new "Section 14" is added with the following texts:

"Section 14 Prevention of pollution by cargo residues from ships

14.1 The provisions of this section address the management of residues of solid bulk cargoes, in relation to the *2012 Guidelines for the implementation of MARPOL Annex V* (resolution MEPC.219(63), as amended) (the Guidelines). In accordance with MARPOL Annex V, the management of the residues of solid bulk cargoes depends primarily on the classification of a solid bulk cargo as to whether it is harmful to the marine environment (HME) or non-HME. The responsibility for classifying and declaring, whether a solid bulk cargo is HME or non-HME, lies with the shipper as per section 3.4 of the Guidelines. The information in this section is provided in order to assist users of the IMSBC Code.

14.2 The Guidelines assist with the implementation of requirements in MARPOL Annex V. The text of the Guidelines, relevant to residues of solid bulk cargoes is reproduced below. The Guidelines may be amended after the adoption of this version of the IMSBC Code, and the latest version of the Guidelines should always be referred to.

"2012 GUIDELINES FOR THE IMPLEMENTATION OF MARPOL ANNEX V

PREFACE

(Not reproduced.)

1 INTRODUCTION

1.1 The revised MARPOL Annex V with an entry into force date of 1 January 2013, prohibits the discharge of all types of garbage into the sea unless explicitly permitted under the Annex. These guidelines have been developed taking into account the regulations set forth in Annex V, as amended, of the International Convention for the Prevention of Pollution from Ships, (MARPOL) (hereinafter referred to as the "Convention"). The purpose of these guidelines is to provide guidance to governments, shipowners, ship operators, ships' crews, cargo owners, port reception facility operators and equipment manufacturers. The guidelines are divided into the following six sections that provide a general framework upon which governments can formulate programmes:

- Introduction;
- Garbage management;
- Management of cargo residues of solid bulk cargoes;
- Training, education and information;
- Port reception facilities for garbage; and
- Enhancement of compliance with MARPOL Annex V.

1.2 Under the revised MARPOL Annex V, discharge of all garbage is now prohibited, except as specifically permitted in regulations 3, 4, 5 and 6 of MARPOL Annex V. MARPOL Annex V reverses the historical presumption that garbage may be discharged into the sea based on the nature of the garbage and defined distances from shore. Regulation 7 provides limited exceptions to these regulations in emergency and non-routine situations. Generally, discharge is restricted to food wastes, identified cargo residues, animal carcasses, and identified cleaning agents and additives and cargo residues entrained in wash water which are not harmful to the marine environment. It is recommended that ships use port reception facilities as the primary means of discharge for all garbage.

1.3 Recognizing that the MARPOL Annex V regulations continue to restrict the discharge of garbage into the sea, require garbage management for ships, and that garbage management technology continues to evolve, it is recommended that governments and the Organization continue to gather information and review these guidelines periodically.

1.4 (Not reproduced.)

1.5 (Not reproduced.)

1.6 Definitions

(Not reproduced.)

1.7 Application

1.7.1 This section provides clarification as to what should and should not be considered garbage under MARPOL Annex V.

1.7.2 (Not reproduced.)

1.7.3 (Not reproduced.)

1.7.4 While cleaning agents and additives contained in hold washwater, and deck and external surface washwater are considered "operational wastes" and thus "garbage" under Annex V, these cleaning agents and additives may be discharged into the sea so long as they are not harmful to the marine environment.

1.7.5 A cleaning agent or additive is considered not harmful to the marine environment if it:

- .1 is not a "harmful substance" in accordance with the criteria in MARPOL Annex III; and
- .2 does not contain any components which are known to be carcinogenic, mutagenic or reprotoxic (CMR).

1.7.6 The ship's record should contain evidence provided by the producer of the cleaning agent or additive that the product meets the criteria for not being harmful to the marine environment. To provide an assurance of compliance, a dated and signed statement to this effect from the product supplier would be adequate for the purposes of a ship's record. This might form part of a Safety Data Sheet or be a stand-alone document but this should be left to the discretion of the producer concerned.

1.7.7 (Not reproduced.)

1.7.8 (Not reproduced.)

2 GARBAGE MANAGEMENT

2.1 Waste Minimization

2.1.1 All shipowners and operators should minimize taking on board material that could become garbage. Ship-specific garbage minimization procedures should be included in the Garbage Management Plan. It is recommended that manufacturers, cargo owners, ports and terminals, shipowners and operators and governments consider the management of garbage associated with ships' supplies, provisions, and cargoes as needed to minimize the generation of garbage in all forms.

2.1.2 (Not reproduced.)

2.1.3 (Not reproduced.)

2.1.4 (Not reproduced.)

2.2 Fishing gear

(Not reproduced.)

2.3 Shipboard garbage handling (collection, processing, storage, discharge)

2.3.1 Regulation 3 of MARPOL Annex V provides that the discharge of garbage into the sea is prohibited, with limited exceptions, as summarized in table 1. Under certain conditions discharge into the sea of food wastes, animal carcasses, cleaning agents and additives contained in hold washwater, deck and external surface washwater and cargo residues which are not considered to be harmful to the marine environment is permitted.

TABLE 1 – SUMMARY OF RESTRICTIONS TO THE DISCHARGE OF GARBAGE INTO THE SEA UNDER REGULATIONS 4, 5 AND 6 OF MARPOL ANNEX V (Not fully reproduced)

(Note: Table 1 is intended as a summary reference. The provisions in MARPOL Annex V, not table 1, prevail.)

| Garbage type ¹ | All ships except platforms ⁴ | | Offshore platforms located more than 12 nm from nearest land and ships when alongside or within 500 metres of such platforms ⁴ Regulation 5 |
|--|--|--|---|
| | Outside special areas Regulation 4 (Distances are from the nearest land) | Within special areas Regulation 6 (Distances are from nearest land or nearest ice-shelf) | |
| Cargo residues ^{5, 6} not contained in washwater | ≥ 12 nm, en route and as far as practicable | Discharge prohibited | Discharge prohibited |
| Cargo residues ^{5, 6} contained in washwater | | ≥ 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2) | |
| Cleaning agents and additives ⁶ contained in cargo hold washwater | Discharge permitted | ≥ 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2) | Discharge prohibited |
| Cleaning agents and additives ⁶ in deck and external surfaces washwater | | Discharge permitted | |

¹ When garbage is mixed with or contaminated by other harmful substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.

⁴ (not reproduced).

⁵ Cargo residues means only those cargo residues that cannot be recovered using commonly available methods for unloading.

⁶ These substances must not be harmful to the marine environment.

2.3.2 (Not reproduced.)

2.3.3 (Not reproduced.)

2.3.4 (Not reproduced.)

2.4 Collection

(Not reproduced.)

2.5 Processing

(Not reproduced.)

2.6 Storage

(Not reproduced.)

2.7 Discharge

(Not reproduced.)

2.8 Shipboard equipment for processing garbage

(Not reproduced.)

2.9 Grinding or comminution

(Not reproduced.)

2.10 Compaction

(Not reproduced.)

2.11 Incineration

(Not reproduced.)

2.12 Treatment of animal carcasses

(Not reproduced.)

2.13 Discharge of fish carried as a cargo

(Not reproduced.)

3 MANAGEMENT OF CARGO RESIDUES OF SOLID BULK CARGOES

3.1 Cargo residues are included in the definition of garbage within the meaning of MARPOL Annex V, regulation 1.9 and may be discharged in accordance with regulations 4.1.3 and 6.1.2. However, cargo material contained in the cargo hold bilge water should not be treated as cargo residues if the cargo material is not harmful to the marine environment and the bilge water is discharged from a loaded hold through the ship's fixed piping bilge drainage system.

3.2 Cargo residues are considered harmful to the marine environment and subject to regulations 4.1.3 and 6.1.2.1 of the MARPOL Annex V if they are residues of solid bulk substances which are classified according to the criteria of the United Nations Globally Harmonized System for Classification and Labelling of Chemicals (UN GHS) meeting the following parameters¹:

- .1 Acute Aquatic Toxicity Category 1; and/or
- .2 Chronic Aquatic Toxicity Category 1 or 2; and/or
- .3 Carcinogenicity² Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or
- .4 Mutagenicity² Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or

- .5 Reproductive Toxicity² Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or
- .6 Specific Target Organ Toxicity Repeated Exposure² Category 1 combined with not being rapidly degradable and having high bioaccumulation; and/or
- .7 Solid bulk cargoes containing or consisting of synthetic polymers, rubber, plastics, or plastic feedstock pellets (this includes materials that are shredded, milled, chopped or macerated or similar materials).

Notes:

- 1) The criteria are based on UN GHS, fourth revised edition (2011). For specific products (e.g. metals and inorganic metal compounds) guidance available in UN GHS, annexes 9 and 10 are essential for proper interpretation of the criteria and classification and should be followed.
- 2) Products that are classified for Carcinogenicity, Mutagenicity, Reproductive toxicity or Specific Target Organ Toxicity Repeated Exposure for oral and dermal hazards or without specification of the exposure route in the hazard statement.

3.3 Cargo residues that are harmful to the marine environment may require special handling not normally provided by reception facilities. Ports and terminals receiving such cargoes should have adequate reception facilities for all relevant residues, including when contained in washwater.

3.4 Solid bulk cargoes should be classified and declared by the shipper as to whether or not they are harmful to the marine environment. Such declaration should be included in the information required in section 4.2 of the IMSBC Code.

3.5 Ports, terminals and ship operators should consider cargo loading, unloading and onboard handling practices¹ in order to minimize production of cargo residues. Cargo residues are created through inefficiencies in loading, unloading, onboard handling. Options that should be considered to decrease the amount of such garbage include the following:

- .1 ensuring ships are suitable to carry the intended cargo and also suitable for unloading the same cargo using conventional unloading methods;
- .2 unloading cargo as efficiently as possible, utilizing all appropriate safety precautions to prevent injury or ship and equipment damage and to avoid or minimize cargo residues; and
- .3 minimizing spillage of the cargo during transfer operations by carefully controlling cargo transfer operations, both on board and from dockside. This should include effective measures to enable immediate communications between relevant ship and shore-based personnel during the transfer operations and when feasible, enclosure of conveyance devices such as conveyor belts. Since this spillage typically occurs in port, it should be completely cleaned up immediately following the loading and unloading event and handled as cargo; delivering it into the intended cargo space or into the appropriate unloading holding area.

3.6 When the master, based on the information received from the relevant port authorities, determines that there are no adequate reception facilities at either the port of departure or the port of destination in the case where both ports are situated within the same special area, the condition under regulation 6.1.2.3 should be considered satisfied.

3.7 MARPOL Annex V, regulation 6.1.2 also applies when the "port of departure" and the "next port of destination" is the same port. To discharge cargo hold washwater in this situation, the ship must be en route and the discharge must take place not less than 12 miles from the nearest land.

4 TRAINING, EDUCATION AND INFORMATION

(Not reproduced.)

5 PORT RECEPTION FACILITIES FOR GARBAGE

(Not reproduced.)

6 ENHANCEMENT OF COMPLIANCE WITH MARPOL ANNEX V

(Not reproduced.)

APPENDIX 1

Individual schedules of solid bulk cargoes

Amendments to existing individual schedules

ALFALFA

28 In the individual schedule for "ALFALFA", under the section for "Loading", in the first sentence, replace the words "of the Code" by the words "of this Code".

ALUMINA HYDRATE

29 In the individual schedule for "ALUMINA HYDRATE", under the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted.

CLINKER ASH, WET

30 In the bulk cargo shipping name, the word "WET", is deleted. Under the section for "Description", the third sentence "Insoluble in water." is replaced by the following:

"This cargo can be classified into wet type, which is taken out using water, and dry type, which is taken out under dry condition."

and under the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted. After the reference "7.3.2", insert the words "or a ship complying with the requirements in subsection 7.3.3".

COAL

31 In the individual schedule for "COAL", under the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted

COAL SLURRY

32 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted.

COKE BREEZE

33 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted.

FLUORSPAR

34 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are replaced by the word "a".

FLY ASH, WET

35 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are replaced by the word "a".

ILMENITE CLAY

36 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are replaced by the word "a".

ILMENITE (UPGRADED)

37 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted.

IRON ORE

38 Replace the existing individual schedule for "IRON ORE" by the following:

"IRON ORE"

The provisions of this schedule shall apply to iron ore cargoes:

- .1 containing either:
 - .1 less than 10% of fine particles less than 1 mm ($D_{10} > 1$ mm); or
 - .2 less than 50% of particles less than 10 mm ($D_{50} > 10$ mm); or
 - .3 both; or
- .2 iron ore fines where the total goethite content is 35% or more by mass, provided the master receives from the shipper a declaration of the goethite content of the cargo which has been determined according to internationally or nationally accepted standard procedures.

Description

Iron ore varies in colour from dark grey to rusty red. It varies in iron content from haematite, (high grade ore) to ironstone of the lower commercial ranges. Mineral Concentrates are different cargoes (see IRON CONCENTRATE).

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|-----------------|-----------------------------------|------------------------------------|
| Not applicable | 1,250 to 3,500 | 0.29 to 0.80 |
| Size | Class | Group |
| Up to 250 mm | Not applicable | C |

Hazard

No special hazards.

This cargo is non-combustible or has a low fire-risk.

Iron ore cargoes may affect magnetic compasses.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

No special requirement.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code. When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Loading rates of this cargo are normally very high. Due consideration shall be given to the ballasting operation to develop the loading plan required by SOLAS regulation VI/7.3. Bilge wells shall be clean, dry and protected as appropriate to prevent ingress of the cargo.

Ventilation

No special requirements.

Carriage

No special requirements.

Discharge

No special requirements.

Clean-up

No special requirements."

IRON ORE PELLETS

39 In the individual schedule for "IRON ORE PELLETS", under "Precautions", delete the words "No special requirements".

METAL SULPHIDE CONCENTRATES

40 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are replaced by the word "a".

MINERAL CONCENTRATES

41 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are replaced by the word "a".

NICKEL ORE

42 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted.

PEAT MOSS

43 In the section for "Loading", the words "specially fitted or constructed ships (see subsection 7.3.2)" are replaced by the words "a ship complying with the requirements in subsection 7.3.2 of this Code".

SAND, HEAVY MINERAL

44 In the section for "Weather precautions", in the first paragraph, the words "specially constructed or fitted cargo" are deleted.

WOOD PELLETS

45 The existing individual schedule for "WOOD PELLETS" is deleted.

New individual schedules

46 Insert the following new individual schedules accordingly in alphabetical order:

"ALUMINIUM FLUORIDE

Description

Aluminium fluoride is a fine, white powder, odourless which presents itself dry. The cargo is not cohesive. The moisture content is less than 1%.

Characteristics

| Angle of repose | Bulk density (kg/m³) | Stowage factor (m³/t) |
|------------------------|--|---|
| 32° to 35° | 1,527 | 0.65 |
| Size | Class | Group |
| Fine powder | Not applicable | A |

Hazard

This cargo may liquefy if shipped at a moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code.

The cargo may be slightly irritating to eyes and mucous membranes. In contact with acids, it develops toxic vapours of hydrogen fluoride. If involved in a fire, it may develop toxic fumes of hydrogen fluoride. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in paragraph 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

The appearance of the surface of this cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

Maintain accommodation and equipment protected from dust.

Clean-up

Make sure that decks and holds are shovelled and swept clean before using water."

"AMORPHOUS SODIUM SILICATE LUMPS

This schedule shall apply only to amorphous sodium silicate lumps with molar ratio of silicon dioxide to sodium oxide ($\text{SiO}_2/\text{Na}_2\text{O}$) greater than 3.2.

Description

Lumps. Colorless to green glassy solid.

Characteristics

| Angle of repose | Bulk density (kg/m^3) | Stowage factor (m^3/t) |
|-----------------|----------------------------------|--|
| Not applicable | 1,100 to 1,500 | 0.67 to 0.91 |
| Size | Class | Group |
| Up to 100 mm | MHB (CR) | B |

Hazard

Dust may cause skin and eye irritation.

This cargo is non-combustible or has a low fire-risk. This cargo is hygroscopic and will cake if wet.

Stowage & segregation

No special requirements.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

This cargo shall be kept as dry as practicable. This cargo shall not be handled during precipitation. During handling of this cargo all non-working hatches of the cargo spaces into which this cargo is to be loaded shall be closed.

Loading

During loading, due consideration shall be given to minimize dust generation. Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

Precautions

Bilge wells shall be clean and dry and covered as appropriate to prevent ingress of the cargo.

Persons who may be exposed to the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks. Appropriate precautions shall be taken to protect machinery and accommodation spaces from the dust of the cargo.

Ventilation

The cargo spaces carrying this cargo shall not be ventilated during voyage.

Carriage

No special requirements.

Discharge

During discharge, due consideration shall be given to minimize dust generation. This cargo is hygroscopic and may cake in overhangs, impairing safety during discharge. If this cargo has hardened, it shall be trimmed to avoid the formation of overhangs, as necessary.

Clean-up

No special requirements.

Emergency procedures

| |
|---|
| Special emergency equipment to be carried |
| Nil |
| Emergency procedures |
| Nil |
| Emergency action in the event of fire |
| Nil |
| Medical First Aid |
| Refer to the Medical First Aid Guide (MFAG), as amended |

"

"BORIC ACID

Description

A white free-flowing crystalline powder. Odourless and dry with not more than 1.0% moisture. Water soluble.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|------------------------------|-----------------------------------|------------------------------------|
| Not applicable | 544 to 862 | 1.16 to 1.84 |
| Size | Class | Group |
| Fine crystalline powder, dry | MHB (TX) | B |

Hazard

Mild irritation effects to nose and throat may occur from inhalation. May cause irritation to skin. May cause long-term health effects. This cargo is non-combustible. This cargo is hygroscopic and will cake if wet.

Stowage & segregation

"Separated from" metal hydrides and alkali metals.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

This cargo shall be kept as dry as practicable. This cargo shall not be handled during precipitation. During handling of this cargo, all non-working hatches of the cargo spaces into which this cargo is loaded or to be loaded shall be closed.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

No special requirements.

Discharge

No discharge operations during precipitation.

Boric acid is hygroscopic and may cake in overhangs, impairing safety during discharge. If this cargo has hardened, it shall be trimmed to avoid the formation of overhangs, as necessary.

Clean-up

Thorough dry cleaning to be carried out prior to washing all cargo spaces.

Emergency procedures

| |
|---|
| <p>Special emergency equipment to be carried Nil.</p> |
| <p>Emergency procedures Nil.</p> |
| <p>Emergency action in the event of fire Nil.</p> |
| <p>Medical First Aid Refer to the <i>Medical First Aid Guide (MFAG)</i>, as amended.</p> |

"

"CHEMICAL GYPSUM

Description

Calcium sulphate hydrate generated as a product or by-product in the process of smelter and refinery, and polyaluminum chloride. White or brown powder without smell and insoluble. In use for Gypsum-Board and Cement.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|-----------------|-----------------------------------|------------------------------------|
| Not applicable | 570 to 1,170 | 0.85 to 1.74 |
| Size | Class | Group |
| 40 µm to 1 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at a moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

Precautions

No special requirements.

Ventilation

No special requirements.

Carriage

The appearance of the surface of this cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

Prior to washing out the residues of this cargo, the decks and the cargo spaces shall be shovelled and swept clean, because washing out of this cargo is difficult."

"COPPER SLAG**Description**

Residue generated from copper smelting process. This cargo is highly permeable and pore water of this cargo drains quickly. It is black or red-brown in colour and either granular or lump.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|-----------------|-----------------------------------|------------------------------------|
| Not applicable | 1,500 to 2,500 | 0.40 to 0.67 |
| Size | Class | Group |
| Up to 10 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is abrasive. This cargo is non-combustible and has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

This cargo shall be trimmed to ensure that the height difference between peaks and troughs does not exceed 5% of the ship's breadth and that the cargo slopes uniformly from the hatch boundaries to the bulkheads and no shearing faces remain to collapse during voyage.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Appropriate action shall be taken to protect machinery and accommodation spaces from the dust of the cargo. Bilge wells of the cargo spaces shall be protected from ingress of the cargo. Due consideration shall be given to protect equipment from the dust of the cargo.

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

Bilge water shall be removed regularly during the voyage.

Discharge

No special requirements.

Clean-up

No special requirements."

"GLASS CULLET

Description

Green, brown or uncoloured glass. May have a slight sweet smell. Used to make new glass, glass wool and foam glass.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|-----------------|-----------------------------------|------------------------------------|
| Not applicable | 1,060 to 1,330 | 0.75 to 0.94 |
| Size | Class | Group |
| Up to 50 mm | Not applicable | C |

Hazard

This cargo is non-combustible or has a low fire-risk.

Potential inhalation hazard and skin and eye irritation from cullet dust during handling, placement and transportation.

Potential risk for cuts or punctures during handling and placement.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

No special requirements.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

Precautions

To protect against possible cuts or penetration injuries as well as against exposure of glass dust to skin, ears and eyes, personnel working with glass cullet shall wear long sleeves, pants, gloves, work boots, hard hats, ear protection and eye protection. Shirt sleeves and pant legs can be taped for additional protection.

Personnel can also wear disposable nuisance dust masks to protect against dust inhalation.

Ventilation

No special requirements.

Carriage

No special requirements.

Discharge

No special requirements.

Clean-up

Avoid handling which creates dust.

Wet suppression is an effective measure of dust control."

"IRON AND STEEL SLAG AND ITS MIXTURE

This cargo may contain substances hazardous to human health such as cadmium, lead, hexavalent chromium, boron and fluorine. This individual schedule shall not apply to cargoes that meet the criteria specified in 9.2.2.5 and 9.2.3.6.

Description

The main component of the cargo is a slag arising from iron and steel manufacture, and a slag mixed with one of the following additives or a combination thereof: cement, granulated blast furnace slag and concrete debris.

The cargo is mostly stabilized before transportation by ageing and slaking for the volume and/or chemical stability in practical usages, and physical properties such as the grain size, etc. are controlled for the performance requirement if necessary the cargo is transported at room temperature.

This cargo does not include both slag residue and hot iron and steel slag discharged from iron and steelmaking processes.

The iron and steel slag is a vitrified or crystallized solid formed out of high temperature processes, and it is a mixture of several mineralogical phases.

This cargo may include shaped blocks made of iron and steel slag with a combination of cement and ground granulated blast furnace slag. The colour is in the range from greyish-white to dark grey, and the appearance is in the range from granulated, pebble to blocks. Examples of the application of this cargo are: road construction materials, concrete aggregate, soil improvement, civil engineering materials, raw materials of cement industry and raw materials for fertilizer.

Characteristics

| Angle of repose | Bulk density (kg/m³) | Stowage factor (m³/t) |
|------------------------|--|---|
| Not applicable | 1,200 to 3,000 | 0.33 to 0.83 |
| Size | Class | Group |
| Up to 100 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at a moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is non-combustible and has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept at less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

The appearance of the surface of this cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

No special requirements."

"IRON ORE FINES"

The provisions of this schedule shall apply to iron ore cargoes containing both:

- .1 10% or more of fine particles less than 1 mm ($D_{10} \leq 1$ mm); and
- .2 50% or more of particles less than 10 mm ($D_{50} \leq 10$ mm).

Notwithstanding the above provision, iron ore fines where the total goethite content is 35% or more by mass may be carried in accordance with the individual schedule for "IRON ORE", provided the master receives from the shipper a declaration of the goethite content of the cargo which has been determined according to internationally or nationally accepted standard procedures.

Description

Iron ore fines vary in colour from dark grey, rusty red to yellow and contain hematite, goethite and magnetite with varying iron content.

IRON CONCENTRATE is a different cargo (see individual schedule for "Mineral Concentrates")

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|---|-----------------------------------|------------------------------------|
| Not applicable | 1,500 to 3,500 | 0.29 to 0.67 |
| Size | Class | Group |
| 10% or more of fine particles less than 1 mm and 50% or more of particles less than 10 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its transportable moisture limit (TML). See sections 7 and 8 of this Code.

This cargo may affect magnetic compasses.

This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements

Hold cleanliness

No special requirements

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;

- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Loading rates of this cargo are normally very high. Due consideration shall be given to the ballasting operation in developing the loading plan required by SOLAS regulation VI/7.3. Bilge wells shall be clean, dry and protected as appropriate to prevent ingress of the cargo.

Ventilation

No special requirements

Carriage

Cargo hold bilges shall be sounded at regular intervals and pumped out, as necessary. The appearance of the surface of this cargo shall be checked regularly during voyage, as far as practicable. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

No special requirements."

"IRON OXIDE TECHNICAL

Description

Iron oxide technical is generated as a product or by-product in the manufacture of di-iron trioxide (iron (III) oxide) for the industrial and commercial use. The material is odourless and red in colour.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|-----------------|-----------------------------------|------------------------------------|
| Not applicable | 1,000 | 1.0 |
| Size | Class | Group |
| Fine particles | Not applicable | A |

Hazard

Dust may cause skin and eye irritation. Iron cargoes may affect magnetic compasses.

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements

Hold cleanliness

No special requirements

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions in compliance with sections 4 and 5 of this Code.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo.

Ventilation

No special requirements

Carriage

The appearance of the surface of this cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsizing of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements

Clean-up

After discharge of this cargo, the bilge wells and the scuppers of the cargo spaces shall be checked and any blockage in the bilge wells and the scuppers shall be removed."

"IRON SINTER

Description

The thermally agglomerated substance formed by heating a variable mixture of finely divided coke, iron ore, blast furnace dust, steelmaking dust, mill scale, other miscellaneous iron-bearing materials, limestone, and dolomite at 1315°C to 1482°C.

Characteristics

| Angle of repose | Bulk density (kg/m³) | Stowage factor (m³/t) |
|------------------------|--|---|
| Not applicable | 1,800 to 2,100 | 0.47 to 0.56 |
| Size | Class | Group |
| Up to 200 mm | Not applicable | C |

Hazard

Dust of this cargo is fine and may be irritating to eye and respiratory tract. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

No special requirements.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

As the density of the cargo is extremely high, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be paid to ensure that the tank top is not overstressed during voyage and during loading by a pile of the cargo.

Precautions

Bilge wells of the cargo space shall be protected from ingress of the cargo. Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

Bilge shall be sounded and pumped out as necessary during the voyage.

Discharge

No special requirements.

Clean-up

No special requirements."

"MANGANESE COMPONENT FERROALLOY SLAG

Description

By-product generated in process of manufacturing manganese component ferroalloy. Particles or lumps of green, brownish-red or grayish-black. Moisture: 1.2% to 5.6%.

Characteristics

| Angle of repose | Bulk density (kg/m³) | Stowage factor (m³/t) |
|------------------------|--|---|
| Not applicable | 1,480 to 1,935 | 0.52 to 0.68 |
| Size | Class | Group |
| Up to 200 mm | Not applicable | C |

Hazard

No special hazards.

This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

No special requirements.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that tank top is not overstressed during voyage and during loading by a pile of the cargo.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

No special requirements.

Discharge

No special requirements.

Clean-up

No special requirements."

"MANGANESE ORE FINES

The provisions of this schedule shall apply to manganese ore cargoes containing both:

- .1 10% or more of fine particles less than 1 mm ($D_{10} \leq 1$ mm); and
- .2 50% or more of particles less than 10 mm ($D_{50} \leq 10$ mm).

Notwithstanding the above provisions, manganese ore cargoes which do not exhibit a flow moisture point (FMP) are not liable to liquefy and shall be shipped as a Group C cargo under the provisions of the MANGANESE ORE individual schedule.

This schedule applies to manganese ore cargoes which may liquefy. For manganese ore cargoes not liable to liquefy see the MANGANESE ORE schedule.

Description

Manganese ore fines is multicoloured, and usually brown to black. Its colour and texture may vary due to variations of the manganese and gangue minerals present. It is a very heavy cargo with typical moisture content up to 15% by weight.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|---|-----------------------------------|------------------------------------|
| Not applicable | 1,450 to 3,200 | 0.31 to 0.69 |
| Size | Class | Group |
| Typically up to 15 mm with more than 10% finer than 1 mm and more than 50% finer than 10 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code.

The dust of this cargo is irritating to the eyes and mucous membranes.

This cargo is non-combustible or has a low fire-risk. It is stable and non-reactive under normal conditions of use, storage and transport. However, this cargo may ignite in contact with incompatible materials such as acids, alkalis, oxidizing and reducing agents. It may decompose to form toxic manganese oxide particles when heated to decomposition.

Stowage & segregation

Separated from acids, alkalis, oxidizing and reducing agents.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this schedule, during handling of the cargo all non-working hatches of the cargo spaces into which the cargo is loaded, or to be loaded, shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal to or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be paid to ensure that the tank top is not overstressed during voyage and during loading by a pile of the cargo.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo. Bilge system of a cargo space to which this cargo is to be loaded shall be tested to ensure it is working. Appropriate precautions shall be taken to protect machinery and accommodation spaces from the dust of the cargo.

Ventilation

No special requirements.

Carriage

The appearance of the surface of the cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during the voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

No special requirements."

"SCALE GENERATED FROM THE IRON AND STEEL MAKING PROCESS"

Description

This cargo consists mainly of ferric oxide which is collected from various places of iron and steel making process. Mill scale, which is scale collected from water used in hot rolling process and from drainage pits with a small amount of oil which is used for rolling, is a main component of this cargo. This cargo is reused as a raw material for iron.

Shape varies from powder to lumps. Colour is gray, ash brown, ash black green, brown, burnt umber or black. Specific gravity of solids is 3 to 6.

This cargo consists mainly of moisture, oil (less than 1.2%), Wustite (FeO), Magnetite (Fe_3O_4), Hematite (Fe_2O_3), metallic iron and Fayalite (Fe_2SiO_4). It consists of main chemical elements in this cargo except for moisture and oil are in the range of the followings: Fe > 70%, Ca < 0.8%, Si < 0.7%, Al < 0.3%, Cr < 1.5%, Ni < 0.5%, Mn < 1.0%.

Characteristics

| Angle of repose | Bulk density (kg/m^3) | Stowage factor (m^3/t) |
|-----------------|----------------------------------|--|
| Not applicable | 1,300 to 3,300 | 0.30 to 0.77 |
| Size | Class | Group |
| Up to 150 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during voyage and during loading by a pile of the cargo.

Precautions

Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

As this cargo may contain oil less than 1.2%, due consideration shall be given not to discharge bilge directly from the cargo holds.

Ventilation

No special requirements.

Carriage

The appearance of the surface of this cargo shall be checked regularly during voyage. If free water above the cargo or fluid state of the cargo is observed during voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsizing of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

No special requirements."

"SPODUMENE (UPGRADED)

Description

Spodumene (upgraded) is an odourless and tasteless off-white to beige sand containing a mixture of naturally occurring silicates and quartz. It is produced by processing naturally occurring spodumene.

Characteristics

| Angle of repose | Bulk density (kg/m³) | Stowage factor (m³/t) |
|------------------------|--|---|
| 30° to 40° | 1,600 to 2,000 | 0.50 to 0.63 |
| Size | Class | Group |
| Up to 8 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

When this cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo. Bilge system of a cargo space to which this cargo is to be loaded shall be tested to ensure it is working.

Ventilation

No special requirements.

Carriage

The appearance of the surface of the cargo shall be checked regularly during the voyage. If free water above the cargo or fluid state of the cargo is observed during the voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsizing of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

No special requirements."

"WOOD PELLETS CONTAINING ADDITIVES AND/OR BINDERS

Description

The wood pellets covered by this schedule are those containing additives and/or binders. These wood pellets are light blond to dark brown in colour; very hard and cannot be easily squashed; have a typical specific density between 1,100 to 1,700 kg/m³. Wood pellets are

made of sawdust, planer shavings and other wood waste such as bark coming out of the lumber manufacturing processes. The raw material is fragmented, dried and extruded into pellet form using appropriate additives and/or binders. The raw material is compressed approximately 3.5 times and the finished wood pellets typically have a moisture content of 4% to 8%. Wood pellets are used as a fuel in district heating and electrical power generation as well as a fuel for small space heaters such as stoves and fireplaces.

Wood pellets are also used as animal bedding due to the absorption characteristics. Such wood pellets typically have a moisture content of 8% to 10%.

For wood pellets not containing any additives and/or binders see separate schedule.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|--|-----------------------------------|------------------------------------|
| Approximately 30° | 600 to 750 | 1.33 to 1.67 |
| Size | Class | Group |
| Cylindrical with Diameter: 3 mm to 12 mm Length: 10 to 20 mm | MHB (WF) | B |

Hazard

Shipments are subject to oxidation leading to depletion of oxygen and increase of carbon monoxide and carbon dioxide in cargo and communicating spaces (also see Weather precautions).

Swelling if exposed to moisture. Wood pellets may ferment over time if moisture content is over 15%, leading to generation of asphyxiating and flammable gases which may cause spontaneous combustion.

Handling of wood pellets may cause dust to develop. Risk of explosion at high dust concentration.

Stowage & segregation

Segregate as for class 4.1 materials.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

This cargo shall be kept as dry as practicable. This cargo shall not be handled during precipitation. During handling of this cargo, all non-working hatches of the cargo spaces into which this cargo is loaded or to be loaded shall be closed. There is a high risk of renewed oxygen depletion and carbon monoxide formation in previously ventilated adjacent spaces after closure of the hatch covers.

Loading

Trim in accordance with the relevant provisions required under sections 4, 5 and 6 of this Code.

Precautions

Entry of personnel into cargo and adjacent confined spaces shall not be permitted until tests have been carried out and it has been established that the oxygen content and carbon monoxide levels have been restored to the following levels: oxygen 21% and carbon monoxide <100 ppm. If these conditions are not met, additional ventilation shall be applied to the cargo hold or adjacent confined spaces and re-measuring shall be conducted after a suitable interval.

An oxygen and carbon monoxide meter shall be worn and activated by all crew when entering cargo and adjacent enclosed spaces.

Ventilation

Ventilation of enclosed spaces adjacent to a cargo hold before entry may be necessary even if these spaces are apparently sealed from the cargo hold.

Carriage

No special requirements.

Discharge

No special requirements.

Clean-up

No special requirements.

Emergency procedures

| |
|---|
| <p>Special emergency equipment to be carried</p> <p>Self-contained breathing apparatus and combined or individual oxygen and carbon monoxide meters should be available.</p> |
| <p>Emergency procedures</p> <p>Nil</p> <p>Emergency action in the event of fire</p> <p>Batten down; use ship's fixed fire-fighting installation, if fitted. Exclusion of air may be sufficient to control fire. Extinguish fire with carbon dioxide, foam or water.</p> <p>Medical First Aid</p> <p>Refer to the Medical First Aid Guide (MFAG), as amended.</p> |

..

"WOOD PELLETS NOT CONTAINING ANY ADDITIVES AND/OR BINDERS

Description

The wood pellets covered by this schedule are those not containing any additives and/or binders. These wood pellets are light blond to dark brown in colour; very hard and cannot be easily squashed; have a typical specific density between 1,100 to 1,700 kg/m³. The wood pellets are made of sawdust, planer shavings and other wood waste such as bark coming out of the lumber manufacturing processes. The raw material is fragmented, dried and extruded into pellet form. The raw material is compressed approximately 3.5 times and the finished wood pellets typically have a moisture content of 4% to 8%. Wood pellets are used as a fuel in district heating and electrical power generation as well as a fuel for small space heaters such as stoves and fireplaces.

Wood pellets are also used as animal bedding due to the absorption characteristics. Such wood pellets typically have a moisture content of 8% to 10%.

For wood pellets containing additives and/or binders see separate schedule.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|--|-----------------------------------|------------------------------------|
| Approximately 30° | 600 to 750 | 1.33 to 1.67 |
| Size | Class | Group |
| Cylindrical with Diameter: 3 mm to 12 mm Length: 10 to 20 mm | MHB (OH) | B |

Hazard

Shipments are subject to oxidation leading to depletion of oxygen and increase of carbon monoxide and carbon dioxide in cargo and communicating spaces (also see "Weather precautions").

Swelling if exposed to moisture. Wood pellets may ferment over time if moisture content is over 15%, leading to generation of asphyxiating and flammable gases but gas concentrations do not reach flammable levels. This cargo has a low fire-risk.

Handling of wood pellets may cause dust to develop. Risk of explosion at high dust concentration.

Stowage & segregation

Segregate as for class 4.1 materials.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

This cargo shall be kept as dry as practicable. This cargo shall not be handled during precipitation. During handling of this cargo, all non-working hatches of the cargo spaces into which this cargo is loaded or to be loaded shall be closed. There is a high risk of renewed oxygen depletion and carbon monoxide formation in previously ventilated adjacent spaces after such closure.

Loading

Trim in accordance with the relevant provisions required under sections 4, 5 and 6 of this Code.

Precautions

Entry of personnel into cargo and adjacent confined spaces shall not be permitted until tests have been carried out and it has been established that the oxygen content and carbon monoxide levels have been restored to the following levels: oxygen 21% and carbon monoxide <100 ppm. If these conditions are not met, additional ventilation shall be applied to the cargo hold or adjacent confined spaces and remeasuring shall be conducted after a suitable interval.

An oxygen and carbon monoxide meter shall be worn and activated by all crew when entering cargo and adjacent enclosed spaces.

Ventilation

Ventilation of enclosed spaces adjacent to a cargo hold before entry may be necessary even if these spaces are apparently sealed from the cargo hold.

Carriage

No special requirements.

Discharge

No special requirements.

Clean-up

No special requirements.

Emergency procedures

| |
|---|
| <p>Special emergency equipment to be carried</p> <p>Self-contained breathing apparatus and combined or individual oxygen and carbon monoxide meters should be available.</p> |
| <p>Emergency procedures</p> <p>Nil</p> <p>Emergency action in the event of fire</p> <p>Batten down; use ship's fixed fire-fighting installation, if fitted. Exclusion of air may be sufficient to control fire. Extinguish fire with carbon dioxide, foam or water.</p> <p>Medical First Aid</p> <p>Refer to the Medical First Aid Guide (MFAG), as amended.</p> |

"

"ZINC SLAG

Description

Residue generated from zinc smelting process. This cargo is highly permeable and pore water of this cargo drains quickly. It is black or red-brown in colour and either granular or lump.

Characteristics

| Angle of repose | Bulk density (kg/m ³) | Stowage factor (m ³ /t) |
|-----------------|-----------------------------------|------------------------------------|
| Not applicable | 1,500 to 2,500 | 0.40 to 0.67 |
| Size | Class | Group |
| Up to 10 mm | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is abrasive. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

No special requirements.

Weather precautions

When a cargo is carried in a ship other than a ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this individual schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and
- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

This cargo shall be trimmed to ensure that the height difference between peaks and troughs does not exceed 5% of the ship's breadth and that the cargo slopes uniformly from the hatch boundaries to the bulkheads and no shearing faces remain to collapse during voyage.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Appropriate action shall be taken to protect machinery and accommodation spaces from the dust of the cargo. Bilge wells of the cargo spaces shall be protected from ingress of the cargo. Due consideration shall be given to protect equipment from the dust of the cargo. Persons who may be exposed to the dust of the cargo shall wear protective clothing, goggles or other equivalent dust eye-protection and dust filter masks, as necessary.

Ventilation

No special requirements.

Carriage

Bilge water shall be removed regularly during the voyage.

Discharge

No special requirements.

Clean-up

No special requirements."

"ZIRCON KYANITE CONCENTRATE

Description

Zircon kyanite concentrate is an odourless and tasteless off-white to brown mixture of the heavy mineral sand processing waste stream (concentrate) and zircon sand. It is used for upgrading mineral sand products such as zircon and kyanite. It is a very heavy cargo.

Characteristics

| Angle of repose | Bulk density (kg/m³) | Stowage factor (m³/t) |
|------------------------|-----------------------------|------------------------------|
| Not applicable | 2,400 to 3,000 | 0.33 to 0.42 |
| Size | Class | Group |
| Fine particles | Not applicable | A |

Hazard

This cargo may liquefy if shipped at moisture content in excess of its Transportable Moisture Limit (TML). See sections 7 and 8 of this Code. This cargo is non-combustible or has a low fire-risk.

Stowage & segregation

No special requirements.

Hold cleanliness

Clean and dry as relevant to the hazards of the cargo.

Weather precautions

When this cargo is carried in a ship other than a specially constructed or fitted cargo ship complying with the requirements in subsection 7.3.2 of this Code, the following provisions shall be complied with:

- .1 the moisture content of the cargo shall be kept less than its TML during loading operations and the voyage;
- .2 unless expressly provided otherwise in this individual schedule, the cargo shall not be handled during precipitation;
- .3 unless expressly provided otherwise in this schedule, during handling of the cargo, all non-working hatches of the cargo spaces into which the cargo is loaded or to be loaded shall be closed;
- .4 the cargo may be handled during precipitation under the conditions stated in the procedures required in subsection 4.3.3 of this Code; and

- .5 the cargo in a cargo space may be discharged during precipitation provided that the total amount of the cargo in the cargo space is to be discharged in the port.

Loading

Trim in accordance with the relevant provisions required under sections 4 and 5 of this Code.

When the stowage factor of this cargo is equal or less than 0.56 m³/t, the tank top may be overstressed unless the cargo is evenly spread across the tank top to equalize the weight distribution. Due consideration shall be given to ensure that the tank top is not overstressed during the voyage and during loading by a pile of the cargo.

Precautions

Bilge wells shall be clean, dry and covered as appropriate, to prevent ingress of the cargo. Bilge system of a cargo space to which this cargo is to be loaded shall be tested to ensure it is working.

Ventilation

No special requirements.

Carriage

The appearance of the surface of the cargo shall be checked regularly during the voyage. If free water above the cargo or fluid state of the cargo is observed during the voyage, the master shall take appropriate actions to prevent cargo shifting and potential capsize of the ship, and give consideration to seeking emergency entry into a place of refuge.

Discharge

No special requirements.

Clean-up

No special requirements."

APPENDIX 2

Laboratory test procedures, associated apparatus and standards

1 Test procedures for materials which may liquefy and associated apparatus

47 Add the following new "subsection 1.4":

"1.4 Modified Proctor/Fagerberg test procedure for Iron Ore Fines

1.4.1 Scope

- .1 The test procedure specified in this section (this test) should only be used for determining transportable moisture limit (TML) of Iron Ore Fines. See individual schedule for Iron Ore Fines.

- .2 Iron Ore Fines is iron ore containing both:
 - .1 10% or more of fine particles less than 1 mm, and
 - .2 50% or more of particles less than 10 mm.
 - .3 The TML of Iron Ore Fines is taken as equal to the critical moisture content at 80% degree of saturation according to the modified Proctor/Fagerberg method test.
 - .4 The test procedure is applicable when the degree of saturation corresponding to Optimum Moisture Content (OMC) is 90% or higher.

1.4.2 Modified Proctor/Fagerberg test equipment

- .1 The Proctor apparatus (see figure 1.4.1) consists of a cylindrical iron mould with a removable extension piece (the compaction cylinder) and a compaction tool guided by a pipe open at its lower end (the compaction hammer).
- .2 Scales and weights (see 3.2) and suitable sample containers.
- .3 A drying oven with a controlled temperature interval from 100°C to maximum 105°C.
- .4 A container for hand mixing. Care should be taken to ensure that the mixing process does not reduce the particle size by breakage or increase the particle size by agglomeration or consistency of the test material.
- .5 A gas or water pycnometry equipment to determine the density of the solid material as per a recognized standard (e.g. ASTM D5550, AS1289, etc.)

1.4.3 Temperature and humidity (see 1.1.3)

1.4.4 Procedure

.1 Establishment of a complete compaction curve

A representative sample according to a relevant standard (see section 4.7 of the IMSBC Code) of the test material is partially dried at a temperature of approximately 60°C or less to reduce the samples moisture to suitable starting moisture, if needed. The representative sample for this test should not be fully dried, except in case of moisture content measurement.

The total quantity of the test material should be at least three times as big as required for the complete test sequence. Compaction tests are executed for five to ten different moisture contents (five to ten separate tests). The samples are adjusted in order that partially dry to almost saturated samples are obtained. The required quantity per compaction test is about 2,000 cm³.

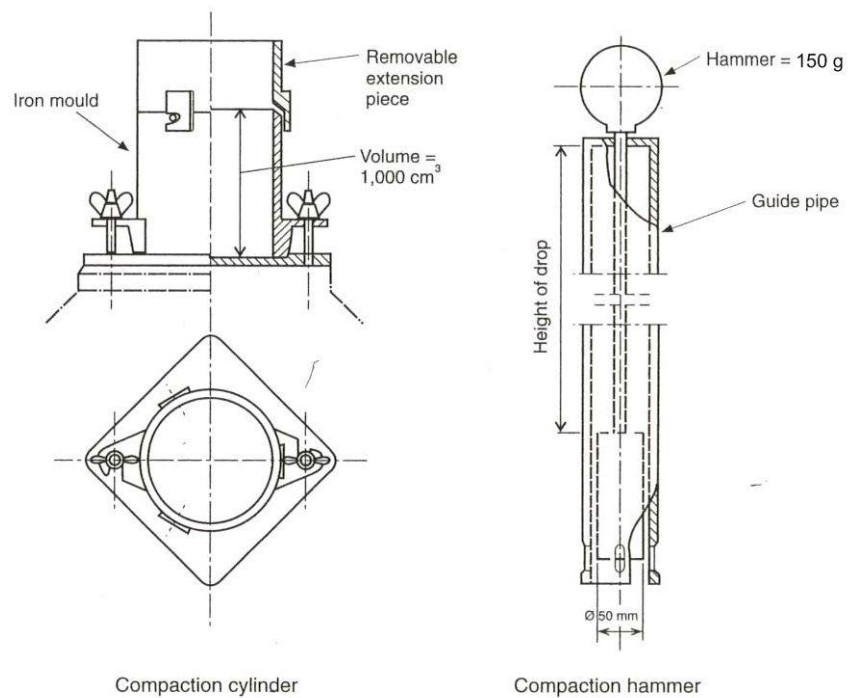


Figure 1.4.1

At each compaction test a suitable amount of water is added to the sample of the test material. The sample material is gently mixed before being allowed to rest and equilibrate. Approximately one fifth of the mixed sample is filled into the mould and levelled and then the increment is tamped uniformly over the surface of the increment. Tamping is executed by dropping a 150 g hammer 25 times through the guide pipe, 0.15 m each time. The performance is repeated for all five layers. When the last layer has been tamped, the extension piece is removed and the sample is levelled off along the brim of the mould with care, ensuring to remove any large particles that may hinder levelling of the sample, replacing them with material contained in the extension piece and re-levelling.

When the weight of the cylinder with the tamped sample has been determined, the cylinder is emptied, the sample is dried at 105°C and the weight is determined. Reference is made to ISO 3087:2011 "Iron ores – Determination of the moisture content of a lot". The test then is repeated for the other samples with different moisture contents.

Density of solid material should be measured using a gas or water pycnometry equipment according to internationally or nationally accepted standard, e.g. ASTM D5550 and AS 1289 (see subsection 1.4.2.5).

.2 Definitions and data for calculations (see figure 1.4.2)

- empty cylinder, mass in grams: A
 - cylinder with tamped sample, mass in grams: B
 - wet sample, mass in grams: C
- $$C = B - A$$
- dry sample, mass in grams: D
 - water, mass in grams (equivalent to volume in cm^3): E

$$E = C - D$$

Volume of cylinder: 1000 cm^3

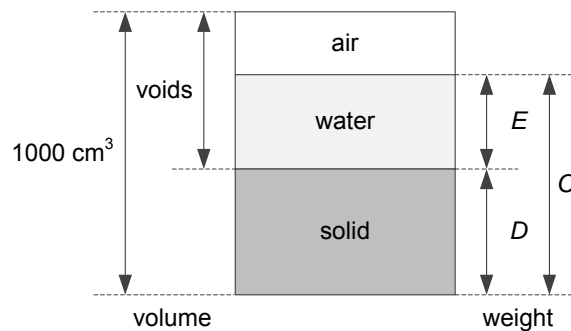


Figure 1.4.2

.3 Calculation of main characteristics

- density of solid material, g/cm^3 (t/m^3): d
- dry bulk density, g/cm^3 (t/m^3): γ

$$\gamma = \frac{D}{1000}$$

- net water content, volume %: e_v

$$e_v = \frac{E}{D} \times 100 \times d$$

- void ratio: e (volume of voids divided by volume of solids)

$$e = \frac{d}{\gamma} - 1$$

- degree of saturation, percentage by volume: S

$$S = \frac{e_v}{e}$$

- gross water content, percentage by mass: W^1

$$W^1 = \frac{E}{C} \times 100$$

- net water content, percentage by mass: W

$$W = \frac{E}{D} \times 100$$

.4 Presentation of the compaction tests

For each compaction test the calculated void ratio (e) value is plotted as the ordinate in a diagram with net water content (e_v) and degree of saturation (S) as the respective abscissa parameters.

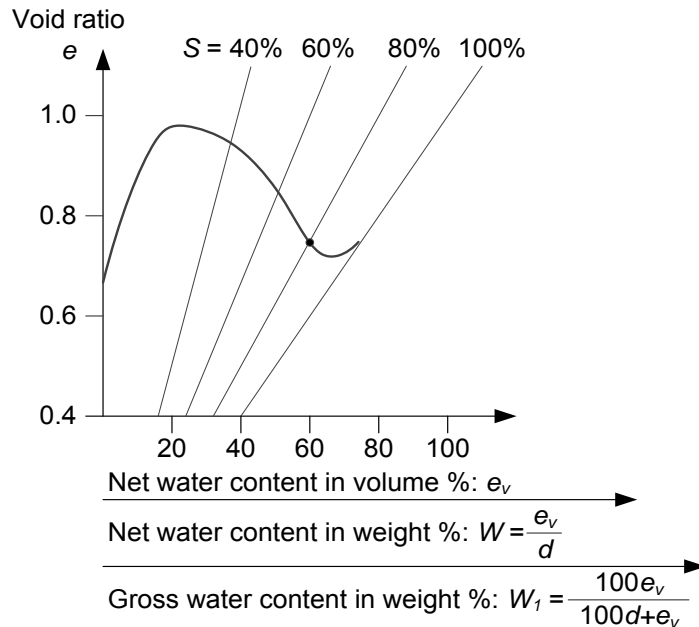


Figure 1.4.3

.5 Compaction curve

The test sequence results in a specific compaction curve (see figure 1.4.3).

The critical moisture content is indicated by the intersection of the compaction curve and the line $S = 80\%$ degree of saturation. The transportable moisture limit (TML) is the critical moisture content.

Optimum Moisture Content (OMC) is the moisture content corresponding to the maximum compaction (maximum dry density) under the specified compaction condition. To check the applicability of this test, the relationship between moisture content and dry density should be evaluated, during this test. Then the OMC and the corresponding degree of saturation should be determined. This test procedure was developed based on the finding that the degree of saturation corresponding to OMC of iron ore fines was 90 to 95%, while such degree of saturation of mineral

concentrates was 70% to 75%. In the case that the degree of saturation corresponding to OMC is less than 90%, the shipper should consult with an appropriate authority, for the reason that this test may not be applicable for the material and the TML determined by this test may be too high."

APPENDIX 3

Properties of solid bulk cargoes

1 Non-cohesive cargoes

1.1 The following cargoes are non-cohesive when dry:

48 In the list, add the following new entries in alphabetical order:

"ALUMINIUM FLUORIDE"
"SPODUMENE (UPGRADED)"
"WOOD PELLETS CONTAINING ADDITIVES AND/OR BINDERS"
"WOOD PELLETS NOT CONTAINING ANY ADDITIVES AND/OR BINDERS"

and the entry for "WOOD PELLETS" is deleted.

APPENDIX 4

INDEX

49 Insert the following new entries in alphabetical order:

"

| Material | Group | References |
|--|-------|------------|
| ALUMINIUM FLUORIDE | A | |
| AMORPHOUS SODIUM SILICATE LUMPS | B | |
| BORIC ACID | B | |
| CHEMICAL GYPSUM | A | |
| COPPER SLAG | A | |
| GLASS CULLET | C | |
| IRON AND STEEL SLAG AND ITS MIXTURE | A | |
| IRON ORE FINES | A | |
| IRON OXIDE TECHNICAL | A | |
| IRON SINTER | C | |
| MANGANESE COMPONENT FERROALLOY SLAG | C | |
| MANGANESE ORE FINES | A | |
| SCALE GENERATED FROM THE IRON AND STEEL MAKING PROCESS | A | |
| SPODUMENE (UPGRADED) | A | |
| WOOD PELLETS CONTAINING ADDITIVES AND/OR BINDERS | B | |
| WOOD PELLETS NOT CONTAINING ANY ADDITIVES AND/OR BINDERS | B | |
| ZINC SLAG | A | |
| ZIRCON KYANITE CONCENTRATE | A | |

"

50 The entry for "WOOD PELLETS" is deleted.

51 In the entry for "CLINKER ASH, WET" the word "WET" is deleted.

APPENDIX 5

Bulk Cargo Shipping Names in three languages (English, Spanish and French)

52 After appendix 4, a new appendix 5 is inserted with the following:

"Bulk Cargo Shipping Names in three languages (English, Spanish and French)"

| ENGLISH | SPANISH | FRENCH |
|---|---|--|
| ALFALFA | ALFALFA | LUZERNE |
| ALUMINA | ALÚMINA | ALUMINE |
| ALUMINA, CALCINED | ALÚMINA CALCINADA | ALUMINE CALCINÉE |
| ALUMINA HYDRATE | HIDRATO DE ALÚMINA | HYDRATE D'ALUMINE |
| ALUMINIUM FLUORIDE | FLUORURO DE ALUMINIO | FLUORURE D'ALUMINIUM |
| Aluminium hydroxide | Hidróxido de aluminio | Hydroxyde d'aluminium |
| ALUMINA SILICA | ALÚMINA SÍLICE | ALUMINE SILICEUSE |
| ALUMINA SILICA, pellets | ALÚMINA SÍLICE, pellets de | ALUMINE SILICEUSE en granules |
| ALUMINIUM DROSS | RESIDUOS DE ALUMINIO | LAITIER D'ALUMINIUM |
| ALUMINIUM FERROSILICON POWDER UN 1395 | ALUMINIO-FERROSILICIO EN POLVO, No ONU 1395 | ALUMINO-FERRO-SILICIUM EN POUDRE UN 1395 |
| ALUMINIUM NITRATE UN 1438 | NITRATO DE ALUMINIO, No ONU 1438 | NITRATE D'ALUMINIUM UN 1438 |
| ALUMINIUM REMELTING BY-PRODUCTS UN 3170 | PRODUCTOS DERIVADOS DE LA REFUNDICIÓN DEL ALUMINIO, No ONU 3170 | SOUS-PRODUITS DE LA REFUSION DE L'ALUMINIUM UN 3170 |
| Aluminium salt slags | ESCORIA DE SALES DE ALUMINIO | SCORIES SALINES D'ALUMINIUM |
| ALUMINIUM SMELTING / REMELTING BY-PRODUCTS, PROCESSED | PRODUCTOS DERIVADOS DE LA FUNDICIÓN DEL ALUMINIO o PRODUCTOS DERIVADOS DE LA REFUNDICIÓN DEL ALUMINIO, TRATADOS | SOUS-PRODUITS DE LA FABRICATION/REFUSION DE L'ALUMINIUM, TRAITÉS |
| ALUMINIUM SILICON POWDER, UNCOATED UN 1398 | ALUMINIO-SILICIO EN POLVO, NO RECUBIERTO, No ONU 1398 | SILICO-ALUMINIUM EN POUDRE NON ENROBÉ UN 1398 |
| ALUMINIUM SKIMMINGS | ESPUMA DE ALUMINIO | CRASSE D'ALUMINIUM |
| ALUMINIUM SMELTING BY-PRODUCTS UN 3170 | PRODUCTOS DERIVADOS DE LA FUNDICIÓN DEL ALUMINIO, No ONU 3170 | SOUS-PRODUITS DE LA FABRICATION DE L'ALUMINIUM UN 3170 |
| AMMONIUM NITRATE UN 1942 | NITRATO AMÓNICO, No ONU 1942 | NITRATE D'AMMONIUM UN 1942 |
| AMMONIUM NITRATE BASED FERTILIZER UN 2067 | ABONOS A BASE DE NITRATO AMÓNICO, No ONU 2067 | ENGRAIS AU NITRATE D'AMMONIUM UN 2067 |

| ENGLISH | SPANISH | FRENCH |
|--|---|--|
| AMMONIUM NITRATE BASED FERTILIZER UN 2071 | ABONOS A BASE DE NITRATO AMÓNICO, No ONU 2071 | ENGRAIS AU NITRATE D'AMMONIUM UN 2071 |
| AMMONIUM NITRATE, BASED FERTILIZER (non-hazardous) | ABONOS A BASE DE NITRATO AMÓNICO (no entrañan riesgos) | ENGRAIS AU NITRATE D'AMMONIUM (non dangereux) |
| AMMONIUM SULPHATE | SULFATO AMÓNICO | SULFATE D'AMMONIUM |
| AMORPHOUS SODIUM SILICATE LUMPS | TERRONES DE SILICATO SÓDICO AMORFO | MORCEAUX DE SILICATE DE SODIUM AMORPHE |
| ANTIMONY ORE AND RESIDUE | ANTIMONIO, MINERAL Y RESIDUOS DE | MINÉRAI D'ANTIMOINE ET RÉSIDU DE MINÉRAI D'ANTIMOINE |
| Bakery materials | Materias de panadería | Produits de boulangerie |
| BARIUM NITRATE UN 1446 | NITRATO DE BARIO, No ONU 1446 | NITRATE DE BARYUM UN 1446 |
| Barley malt pellets | Malta de cebada, pellets de | Malte d'orge en boulettes |
| BARYTES | BARITAS | BARYTINE |
| BAUXITE | BAUXITA | BAUXITE |
| Beet, expelled | Remolacha, prensada | Betterave, triturée |
| Beet, extracted | Remolacha, en extracto | Betterave, sous-produits de l'extraction |
| BIOSLUDGE | FANGOS BIOLÓGICOS | BOUE ACTIVÉE |
| Blende (zinc sulphide) | Blenda (sulfuro de cinc) | Blende (sulfure de zinc) |
| BORAX (PENTAHYDRATE CRUDE) | BÓRAX (CRUDO PENTAHIDRATADO) | BORAX (BRUT PENTAHYDRATÉ) |
| BORAX, ANHYDROUS, crude | BÓRAX ANHIDRO, crudo | BORAX ANHYDRE brut |
| BORAX, ANHYDROUS, refined C | BÓRAX ANHIDRO, refinado | BORAX ANHYDRE raffiné C |
| BORIC ACID | ÁCIDO BÓRICO | ACIDE BORIQUE |
| Bran pellets | Salvado, pellets de | Son en boulettes |
| Brewer's grain pellets | Orujo de cerveza, pellets de | Drêches de brasserie en boulettes |
| BROWN COAL BRIQUETTES | BRIQUETAS DE LIGNITO | CHARBON BRUN EN BRIQUETTES |
| Calcined clay | Arcilla calcinada | Argile calcinée |
| Calcined pyrites | Piritas calcinadas | Pyrites calcinées |
| Calcium fluoride | Fluoruro de calcio | Fluorure de calcium |
| CALCIUM NITRATE | NITRATO CÁLCICO, No ONU 1454 | NITRATE DE CALCIUM |
| CALCIUM NITRATE FERTILIZER | ABONOS A BASE DE NITRATO CÁLCICO | ENGRAIS AU NITRATE DE CALCIUM |
| Calcium oxide | Óxido de calcio | Oxyde de calcium |
| Canola pellets | Píldoras de canola | Canola en boulettes |
| CARBORUNDUM | CARBORUNDO | CARBORUNDUM |
| CASTOR BEANS UN 2969 | SEMILLAS DE RICINO, No ONU 2969 | GRAINES DE RICIN UN 2969 |
| CASTOR FLAKE UN 2969 | ESCAMAS DE RICINO, No ONU 2969 | GRAINES DE RICIN EN FLOCONS UN 2969 |
| CASTOR MEAL UN 2969 | HARINA DE RICINO, No ONU 2969 | FARINES DE RICIN UN 2969 |
| CASTOR POMACE UN 2969 | PULPA DE RICINO, No ONU 2969 | TOURTEAUX DE RICIN UN 2969 |
| CEMENT | CEMENTO | CIMENT |
| CEMENT CLINKERS | CEMENTO, CLINKERS DE | CIMENT, CLINKERS DE |
| CEMENT COPPER | COBRE DE CEMENTACIÓN | CUIVRE CÉMENT |
| Chalcopyrite | Calcopirita | Chalcopyrite |

| ENGLISH | SPANISH | FRENCH |
|--|---|---|
| CHAMOTTE | CHAMOTA | CHAMOTTE |
| CHARCOAL | CARBÓN VEGETAL | CHARBON |
| CHEMICAL GYPSUM | YESO QUÍMICO | GYPSE DE SYNTHÈSE |
| CHOPPED RUBBER AND PLASTIC INSULATION | FRAGMENTOS DE REVESTIMIENTOS AISLANTES DE GOMA Y PLÁSTICO | FRAGMENTS D'ISOLANT EN PLASTIQUE ET EN CAOUTCHOUC |
| Chile saltpetre | Salitre de Chile | Salpêtre du Chili |
| Chilean natural nitrate | Nitrato natural de Chile | Nitrate naturel du Chili |
| Chilean natural potassic nitrate | Nitrato potásico natural de Chile | Nitrate de potassium naturel du Chili |
| Chrome ore | Cromo, mineral de | Minerai de chrome |
| CHROME PELLETS | CROMO, PELLETS DE | CHROME EN PELLETS |
| CHROMITE ORE | CROMITA, MINERAL DE | MINERAI DE CHROMITE |
| Chromium ore | Cromio, mineral de | Minerai de chromium |
| Citrus pulp pellets | Cítricos, pellets de pulpa de | Pulpe d'agrumes en boulettes |
| CLAY | ARCILLA | ARGILE |
| CLINKER ASH | CENIZAS DE CLÍNKER | CENDRES DE MÂCHEFER |
| COAL | CARBÓN | CHARBON |
| COAL SLURRY | FANGOS DE CARBÓN | BOUES DE CHARBON |
| COAL TAR PITCH | BREA DE ALQUITRÁN DE HULLA | BRAI DE GOUDRON DE HOUILLE |
| COARSE CHOPPED TYRES | FRAGMENTOS DE NEUMÁTICOS TRITURADOS | FRAGMENTS DE PNEUS DE GRANDES DIMENSIONS |
| COARSE IRON AND STEEL SLAG AND ITS MIXTURE | ESCORIA GRUESA DE HIERRO Y ACERO Y SU MEZCLA | SCORIES DE FER ET D'ACIER À GROS GRAINS ET LEUR MÉLANGE |
| Coconut | Coco | Noix de coco |
| COKE | COQUE | COKE |
| COKE BREEZE | CISCO DE COQUE | POUSSIER DE COKE |
| COLEMANITE | COLEMANITA | COLÉMANITE |
| COPPER CONCENTRATE | COBRE, CONCENTRADO DE | CONCENTRÉ DE CUIVRE |
| COPPER GRANULES | COBRE, GRÁNULOS DE | CUIVRE EN GRANULES |
| COPPER MATTE | COBRE, MATA DE | MATTE DE CUIVRE |
| Copper nickel | Cuproníquel | Nickel-cuivre |
| COPPER SLAG | COBRE, ESCORIA DE | SCORIES DE CUIVRE |
| Copper ore concentrate | Cobre, concentrado mineral de | Concentré de minerai de cuivre |
| COPPER CONCENTRATE | COBRE, CONCENTRADO DE | CONCENTRÉ DE CUIVRE |
| Copper precipitate | Cobre, precipitado de | Précipités de cuivre |
| CEMENT COPPER | COBRE DE CEMENTACIÓN | CUIVRE CÉMENT |
| COPRA (dry) UN 1363 B | COPRA (seca), No ONU 1363 B | COPRAH (sec) UN 1363 |
| Copra, expelled | Copra, prensada | Coprah, trituré |
| Copra, extracted | Copra, en extracto | Coprah, sous-produit d'extraction |
| Corn gluten | Maíz, gluten de | Gluten de maïs |
| Cotton seed | Semillas de algodón | Graines de cotonnier |
| CRUSHED CARBON ANODES | ÁNODOS DE CARBÓN TRITURADOS | ANODES EN CARBONE CONCASSÉES |

| ENGLISH | SPANISH | FRENCH |
|--|---|--|
| CRYOLITE | CRIOLITA | CRYOLITHE |
| Deadburned magnesite | Magnesita calcinada a muerte | Magnésite calcinée |
| DIAMMONIUM PHOSPHATE | FOSFATO DIAMÓNICO | HYDROGÉNOPHOSPHATE DE DIAMMONIUM |
| DIRECT REDUCED IRON (A) Briquettes, hot-moulded | HIERRO OBTENIDO POR REDUCCIÓN DIRECTA (A) En forma de briquetas moldeadas en caliente | FER OBTENU PAR RÉDUCTION DIRECTE (A) Briquettes moulées à chaud |
| DIRECT REDUCED IRON (B) Lumps, pellets, cold-moulded briquettes | HIERRO OBTENIDO POR REDUCCIÓN DIRECTA (B) Terrones, pellets y briquetas moldeadas en frío | FER OBTENU PAR RÉDUCTION DIRECTE (B) Morceaux, pellets, briquettes moulées à froid et tournures de fer indiennes |
| DIRECT REDUCED IRON (C) By-product fines | HIERRO OBTENIDO POR REDUCCIÓN DIRECTA (C) (Finos obtenidos como productos derivados) | FER OBTENU PAR RÉDUCTION DIRECTE (C) (Fines en tant que sous-produit) |
| DISTILLERS DRIED GRAINS WITH SOLUBLES | GRANOS SECOS DE DESTILERÍA CON SOLUBLES | DISTILLATS SÉCHÉS DE GRAINS AVEC RÉSIDUS SOLUBLES |
| DOLOMITE | DOLOMITA | DOLOMITE |
| Dolomitic quicklime | Cal dolomítica | chaux vive dolomitique |
| D.R.I. | HRD | not applicable in French |
| Expellers | Tortas de presión | Expellers |
| FELSPAR LUMP | FELDESPATO EN TERRONES | FELDSPATH EN MORCEAUX |
| FERROCHROME | FERROCROMO | FERROCHROME |
| FERROCHROME, exothermic | FERROCROMO exotérmico | FERROCHROME, exothermique |
| FERROMANGANESE | FERROMANGANESO | FERROMANGANÈSE |
| Ferromanganese, exothermic | Ferromanganese exotérmico | Ferromanganèse exothermique |
| FERRONICKEL | FERRONÍQUEL | FERRONICKEL |
| FERROPHOSPHORUS | FERROFÓSFORO | FERROPHOSPHORE |
| Ferrophosphorus briquettes | Ferrofósforo, briquetas de | Ferrophosphore en briquettes |
| FERROSILICON UN 1408 | FERROSILICIO, No ONU 1408 | FERROSILICIUM UN 1408 |
| FERROSILICON | FERROSILICIO | FERROSILICIUM |
| FERROUS METAL BORINGS UN 2793 | VIRUTAS DE TALADRADO DE METALES FERROSOS, No ONU 2793 | ROGNURES DE MÉTAUX FERREUX UN 2793 |
| FERROUS METAL CUTTINGS UN 2793 | RECORTES DE METALES FERROSOS, No ONU 2793 | ÉBARBURES DE MÉTAUX FERREUX UN 2793 |
| FERROUS METAL SHAVINGS UN 2793 | RASPADURAS DE METALES FERROSOS, No ONU 2793 | COPEAUX DE MÉTAUX FERREUX UN 2793 |
| FERROUS METAL TURNINGS UN 2793 | VIRUTAS DE TORNEADO DE METALES FERROSOS, No ONU 2793 | TOURNURES DE MÉTAUX FERREUX UN 2793 |
| FERROUS SULPHATE HEPTAHYDRATE | SULFATO FERROSO HEPTAHIDRATADO | SULFATE FERREUX HEPTAHYDRATÉ |
| FERTILIZERS WITHOUT NITRATES | ABONOS SIN NITRATOS (no entrañan riesgos) | ENGRAIS SANS NITRATES |
| FISH (IN BULK) | PESCADO (A GRANEL) | POISSON (EN VRAC) |
| FISHMEAL, STABILIZED UN 2216 | HARINA DE PESCADO ESTABILIZADA, No ONU 2216 | FARINE DE POISSON STABILISÉE UN 2216 |
| FISHSCRAP, STABILIZED UN 2216 | DESECHOS DE PESCADO ESTABILIZADOS, No ONU 2216 | DÉCHETS DE POISSON STABILISÉS UN 2216 |

| ENGLISH | SPANISH | FRENCH |
|---|--|---|
| FLUORSPAR | ESPA TOFLÚOR | SPATH FLUOR |
| FLY ASH, DRY | CENIZAS VOLANTES SECAS | CENDRES VOLANTES SÈCHES |
| FLY ASH, WET | CENIZAS VOLANTES HÚMEDAS | CENDRES VOLANTES HUMIDES |
| Galena (lead sulphide) | Galena (sulfuro de plomo) | Galène (sulfure de plomb) |
| Garbage tankage | Detritos orgánicos | Détritus organiques |
| GLASS CULLET | DESPERDICIOS DE VIDRIO | CALCIN DE VERRE |
| Gluten pellets | Gluten, pellets de | Gluten en boulettes |
| GRAIN SCREENING PELLETS | PELLETS DE GRANZA DE GRANO | CRIBLURES DE GRAIN EN PELLETS |
| GRANULAR FERROUS SULPHATE | SULFATO FERROSO GRANULAR | SULFATE FERREUX EN GRANULES |
| GRANULATED NICKEL MATTE (LESS THAN 2% MOISTURE CONTENT) | MATA DE NÍQUEL GRANULADA (CONTENIDO DE HUMEDAD INFERIOR A 2 %) | MATTE DE NICKEL EN GRANULES (TENEUR EN HUMIDITÉ INFÉRIEURE À 2 %) |
| GRANULATED SLAG | ESCORIA GRANULADA | SCORIES EN GRAINS |
| GRANULATED TYRE RUBBER | NEUMÁTICO GRANULADO | CAOUTCHOUC DE PNEUS EN GRANULES |
| Ground nuts, meal | Maní (cacahuètes), harina de | Farine d'arachide |
| GYPSUM | YESO | GYPSE |
| Hominy chop | Machacado | Hominy chop |
| GYPSUM GRANULATED | YESO GRANULADO | GYPSE EN GRAINS |
| ILMENITE CLAY | ILMENITA, ARCILLA DE | ARGILE D'ILMÉNITE |
| ILMENITE (ROCK) | ILMENITA (ROCA) | ILMÉNITE (ROCHE) |
| ILMENITE SAND | ILMENITA, ARENA DE | SABLE D'ILMÉNITE |
| ILMENITE (UPGRADED) | ILMENITA (ENRIQUECIDA) | ILMÉNITE VALORISÉE |
| IRON AND STEEL SLAG AND ITS MIXTURE | ESCORIA DE HIERRO Y ACERO Y SU MEZCLA | SCORIES DE FER ET D'ACIER ET LEUR MÉLANGE |
| IRON CONCENTRATE | HIERRO, CONCENTRADO DE | CONCENTRÉ DE FER |
| IRON CONCENTRATE (pellet feed) | HIERRO, CONCENTRADO DE (para pellets) | CONCENTRÉ DE FER (pour pellets) |
| IRON CONCENTRATE (sinter feed) | HIERRO, CONCENTRADO DE (para aglomerados) | CONCENTRÉ DE FER (pour agglomérés) |
| Iron disulphide | Disulfuro de hierro | Disulfure de fer |
| IRON ORE | HIERRO, MINERAL DE | MINÉRAI DE FER |
| Iron ore (concentrate, pellet feed, sinter feed) | Hierro, mineral de (concentrado, aglomerados o pellets) | Minérai de fer (concentré, pour pellets, pour agglomérés) |
| IRON ORE FINES | FINOS DE MINERAL DE HIERRO | FINES DE MINÉRAI DE FER |
| IRON ORE PELLETS | HIERRO, PELLETS DE MINERAL DE | MINÉRAI DE FER EN PELLETS |
| IRON OXIDE, SPENT UN 1376 | ÓXIDO DE HIERRO AGOTADO, No ONU 1376 | OXYDE DE FER RÉSIDUAIRE UN 1376 |
| IRON OXIDE TECHNICAL | ÓXIDO DE HIERRO-GRADO TÉCNICO | OXYDE DE FER DE QUALITÉ TECHNIQUE |
| IRON SINTER | HIERRO SINTERIZADO | AGGLOMÉRÉS DE FER |
| Iron swarf | Hierro, virutas de | copeaux de fer |
| IRON SPONGE, SPENT UN 1376 | ESPONJA DE HIERRO AGOTADA, No ONU 1376 | TOURNURE DE FER RÉSIDUAIRE UN 1376 |
| IRONSTONE | ROCA FERRUGINOSA | ROCHE FERRUGINEUSE |
| LABRADORITE | LABRADORITA | LABRADOR |

| ENGLISH | SPANISH | FRENCH |
|-------------------------------------|---|---|
| LEAD AND ZINC CALCINES (mixed) | PLOMO Y CINC, CALCINADOS DE (en mezclas) | PLOMB ET ZINC CALCINÉS (en mélange) |
| LEAD AND ZINC MIDDINGS | PLOMO Y CINC, MIXTOS DE | MIXTES DE PLOMB ET DE ZINC |
| LEAD CONCENTRATE | PLOMO, CONCENTRADO DE | CONCENTRÉ DE PLOMB |
| LEAD NITRATE UN 1469 | NITRATO DE PLOMO, No ONU 1469 | NITRATE DE PLOMB UN 1469 |
| LEAD ORE | PLOMO, MINERAL DE | MINERAI DE PLOMB |
| Lead ore concentrate | Plomo, concentrado de mineral de | Concentré de minerai de plomb |
| LEAD ORE RESIDUE | PLOMO, RESIDUOS DE MINERAL DE | RÉSIDU DE MINERAI DE PLOMB |
| LEAD SILVER CONCENTRATE | PLOMO Y PLATA, CONCENTRADO DE | CONCENTRÉ DE PLOMB ARGENTIFÈRE |
| Lead silver ore | Plomo y plata, mineral de | Minerai de plomb argentifère |
| Lead sulphide | Sulfuro de plomo | Sulfure de plomb |
| Lead sulphide (galena) | Sulfuro de plomo (galena) | Sulfure de plomb (galène) |
| Lignite | Lignita | Lignite |
| LIME (UNSLAKED) | CAL (VIVA) | CHAUX (VIVE) |
| LIMESTONE | PIEDRA CALIZA | CALCAIRE |
| LINTED COTTON SEED | SEMILLAS DE ALGODÓN DESPEPITADO | GRAINES DE COTONNIER AVEC LINTER |
| Linseed, expelled | Linaza, prensada | Graines de lin, triturées |
| Linseed, extracted | Linaza, en extracto | Graines de lin, sous-produits de l'extraction |
| LOGS | TRONCOS | GRUMES |
| MAGNESIA (DEADBURNED) | MAGNESIA (CALCINADA A MUERTE) | MAGNÉSIE (CALCINÉE) |
| MAGNESIA (UNSLAKED) | MAGNESIA (VIVA) | MAGNÉSIE (VIVE) |
| Magnesia, clinker | Magnesia, clinker de | Magnésie en clinkers |
| Magnesia, electro-fused | Magnesia electrofundida | Magnésie électrofondue |
| Magnesia, lightburned | Magnesia quemada ligeramente | Magnésie calcinée légère |
| Magnesia, calcined | Magnesia calcinada | Magnésie calcinée |
| Magnesia, caustic calcined | Magnesia cáustica calcinada | Magnésie calcinée caustique |
| Magnesite, clinker | Magnesita, clinker de | Magnésite, clinkers de |
| MAGNESITE, natural | MAGNESITA natural | MAGNÉSITE, naturelle |
| Magnesium carbonate | Carbonato de magnesio | Carbonate de magnésium |
| MAGNESIUM NITRATE UN 1474 | NITRATO DE MAGNESIO, No ONU 1474 | NITRATE DE MAGNÉSIUM UN 1474 |
| MAGNESIUM SULPHATE FERTILIZERS | ABONOS DE SULFATO DE MAGNESIO | ENGRAIS AU SULFATE DE MAGNÉSIUM |
| Maize, expelled | Maíz, prensado | Maïs, trituré |
| Maize, extracted | Maíz, en extracto | Maïs, sous-produit de l'extraction |
| MANGANESE COMPONENT FERROALLOY SLAG | ESCORIA DE ALEACIÓN DE HIERRO CON MANGANESO | SCORIES DE FERRO-ALLIAGES DE MANGANÈSE |
| MANGANESE CONCENTRATE | MANGANESO, CONCENTRADO DE | CONCENTRÉ DE MANGANÈSE |
| MANGANESE ORE | MANGANESO, MINERAL DE | MINERAI DE MANGANÈSE |
| MANGANESE ORE FINES | FINOS DE MINERAL DE MANGANESO | FINES DE MINERAI DE MANGANÈSE |
| M.A.P. | FMA | [not applicable in French] |

| ENGLISH | SPANISH | FRENCH |
|-----------------------------|-------------------------------------|--|
| MARBLE CHIPS | MÁRMOL, ASTILLAS DE | ÉCLATS DE MARBRE |
| Meal, oily | Harina oleosa | Farines oléagineuses |
| METAL SULPHIDE CONCENTRATES | SULFUROS METÁLICOS, CONCENTRADOS DE | CONCENTRÉS DE SULFURES MÉTALLIQUES |
| Mill feed pellets | Pensos, pellets de | Sous-produits de meunerie en boulettes |
| Milorganite | Milorganita | Milorganite |
| Mineral Concentrates | Concentrados de minerales | Concentrés de minerais |
| MONOAMMONIUM PHOSPHATE | FOSFATO MONOAMÓNICO | MONOPHOSPHATE D'AMMONIUM |
| Muriate of potash | Muriato de potasa | Muriate de potasse |
| NEFELINE SYENITE (mineral) | SIENITA NEFELÍNICA (mineral) | SYÉNITE NÉPHÉLINIQUE (mineral) |
| NICKEL ORE | MINERAL DE NÍQUEL | MINÉRAI DE NICKEL |
| NICKEL CONCENTRATE | NÍQUEL, CONCENTRADO DE | CONCENTRÉ DE NICKEL |
| Nickel ore concentrate | Níquel, concentrado de mineral de | Concentré de minéral de nickel |
| Niger seed, expelled | Níger, semillas de, prensadas | Graines de niger, triturées |
| Niger seed, extracted | Níger, semillas de, en extracto | Graines de niger, sous-produits de l'extraction |
| Oil cake | Torta oleaginosa | Tourteaux oléagineux |
| Palm kernel, expelled | Nuez de palma, prensada | Amande de palmiste, triturée |
| Palm kernel, extracted | Nuez de palma, en extracto | Amande de palmiste, sous-produit de l'extraction |
| Peanuts, expelled | Cacahuètes (maní), prensados | Cacahuètes, triturées |
| Peanuts, extracted | Cacahuètes (maní), en extracto | Cacahuètes, sous-produits de l'extraction |
| PEANUTS (in shell) | CACAHUETES (con vaina) | CACAHUÈTES (en coques) |
| PEAT MOSS | TURBA FIBROSA | TOURBE HORTICOLE |
| PEBBLES (sea) | CANTOS RODADOS (de mar) | GALETS (de mer) |
| PELLETS (concentrates) | PELLETS (concentrados) | PELLETS (concentrés) |
| Pellets (cereal) | Cereales, pellets de | Céréales en boulettes |
| Pencil pitch | Brea en lápices | Brai en crayons |
| PENTAHYDRATE CRUDE | PENTAHIDRATO EN BRUTO | PENTAHYDRATE BRUT |
| PERLITE ROCK | PERLITA, ROCA DE | ROCHE PERLITE |
| PETROLEUM COKE (calcined) | COQUE DE PETRÓLEO (calcinado) | COKE DE PÉTROLE (calciné) |
| PETROLEUM COKE (uncalcined) | COQUE DE PETRÓLEO (no calcinado) | COKE DE PÉTROLE (non calciné) |
| PHOSPHATE ROCK (calcined) | FOSFATO EN ROCA (calcinado) | ROCHE PHOSPHATÉE (calcinée) |
| PHOSPHATE ROCK (uncalcined) | FOSFATO EN ROCA (no calcinado) | ROCHE PHOSPHATÉE (non calcinée) |
| PHOSPHATE (defluorinated) | FOSFATO (desfluorado) | PHOSPHATE (défluoré) |
| PIG IRON | HIERRO EN LINGOTES | FORGE EN GUEUSES |
| PITCH PRILL | BREA EN BOLITAS | BRAI EN GRAINS |
| Pollard pellets | Trasmochos, pellets de | Recoupette en boulettes |
| POTASH | POTASA | POTASSE |
| Potash muriate | Muriato de potasa | Muriate de potasse |
| POTASSIUM CHLORIDE | CLORURO POTÁSICO | CHLORURE DE POTASSIUM |

| ENGLISH | SPANISH | FRENCH |
|--|--|--|
| POTASSIUM NITRATE UN 1486 | NITRATO POTÁSICO, No ONU 1486 | NITRATE DE POTASSIUM UN 1486 |
| Potassium nitrate/sodium nitrate (mixture) | Nitrato potásico y nitrato sódico, mezclas de | Nitrate de potassium/nitrate de sodium (en mélange) |
| POTASSIUM NITRATE MIXTURE | Nitrato potásico en mezcla | NITRATE DE POTASSIUM EN MÉLANGE |
| POTASSIUM SULPHATE | SULFATO DE POTASIO | SULFATE DE POTASSIUM |
| Prilled coal tar | Alquitrán de hulla en bolitas | Goudron de houille en grains |
| PULP WOOD | MADERA PARA PASTA PAPELERA | BOIS À PÂTE |
| PUMICE | PIEDRA PÓMEZ | PONCE |
| PYRITE (containing copper and iron) | PIRITA (contiene cobre y hierro) | PYRITE (contenant du cuivre et du fer) |
| PYRITES, CALCINED | PIRITAS CALCINADAS | PYRITES CALCINÉES |
| PYRITES | PIRITAS | PYRITES |
| Pyrites (cupreous, fine, flotation, or sulphur) | Piritas (cuprosas, disgregadas, flotación o azufre) | Pyrites (cuivreuses, fines, flottation, soufre) |
| Pyritic ash | Cenizas piríticas | Cendres pyriteuses |
| PYRITIC ASHES (iron) | CENIZAS PIRITOSAS (hierro) | CENDRES PYRITEUSES (fer) |
| PYRITIC CINDERS | ESCORIAS PIRITOSAS | CENDRES PYRITEUSES |
| PYROPHYLLITE | PIROFILITA | PYROPHYLLITE |
| QUARTZ | CUARZO BLANCO | QUARTZ |
| QUARTZITE | CUARCITA | QUARTZITE |
| Quicklime | Cal viva | chaux vive |
| RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY (LSA-I) UN 2912 | MATERIALES RADIATIVOS, DE BAJA ACTIVIDAD ESPECÍFICA (BAE-I), No ONU 2912 | MATIÈRES RADIOACTIVES DE FAIBLE ACTIVITÉ SPÉCIFIQUE (LSA- I) UN 2912 |
| RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECTS (SCO-I) UN 2913 | MATERIALES RADIATIVOS, OBJETOS CONTAMINADOS EN LA SUPERFICIE (OCS-I), No ONU 2913 | MATIÈRES RADIOACTIVES, OBJETS CONTAMINÉS SUPERFICIELLEMENT (SCO-I) UN 2913 |
| Rape seed, expelled | Semillas de colza, prensadas | Graines de colza, triturrées |
| Rape seed, extracted | Semillas de colza, en extracto | Graines de colza, sous-produits de l'extraction |
| RASORITE (ANHYDROUS) | RASORITA (ANHIDRA) | RASORITE (ANHYDRE) |
| Rice bran | Arroz, salvado de | Son de riz |
| Rice broken | Arroz partido | Brisures de riz |
| Rough ammonia tankage | Amonio en bruto, desechos orgánicos de | Déchets organiques ammoniacaux |
| ROUNDWOOD | ROLLIZOS | RONDINS |
| RUTILE SAND | RUTILO, ARENA DE | SABLE DE RUTILE |
| Safflower seed, expelled | Cártamo, semillas de, prensadas | Graines de carthame, triturrées |
| Safflower seed, extracted | Cártamo, semillas de, en extracto | Graines de carthame, sous-produits de l'extraction |
| SALT | SAL | SEL |
| SALT CAKE | SAL, TORTAS DE | PAIN DE SEL |
| SALT ROCK | SAL GEMA | ROCHE SALINE |
| Saltpetre | Salitre | Salpêtre |

| ENGLISH | SPANISH | FRENCH |
|---|---|---|
| SAND | ARENA | SABLE |
| Sand, ilmenite | Arena de ilmenita | Sable, ilménite |
| Sand, zircon | Arena de circonio | Sable, zircon |
| Spodumene | Espodumeno | Spodumène |
| SAND, HEAVY MINERAL | ARENAS DE MINERALES PESADOS | SABLE, MINÉRAUX LOURDS |
| SAWDUST | SERRÍN | SCIURE DE BOIS |
| SAW LOGS | TRONCOS PARA ASERRAR | BOIS DÉBITÉ |
| SCALE GENERATED FROM THE IRON AND STEEL MAKING PROCESS | CASCARILLA GENERADA EN LOS PROCESOS SIDERÚRGICOS | DÉPÔTS PROVENANT DE LA FABRICATION DU FER ET DE L'ACIER |
| SCRAP METAL | CHATARRA | FERRAILLE |
| SEED CAKE, containing vegetable oil UN 1386 (a) mechanically expelled seeds, containing more than 10% of oil or more than 20% of oil and moisture content | TORTA DE SEMILLAS, con una proporción de aceite vegetal, No ONU 1386 a) residuos de semillas prensadas por medios mecánicos, con un contenido de más del 10 % de aceite o más del 20 % de aceite y humedad combinados | TOURTEAUX contenant de l'huile végétale UN 1386 a) Graines triturées par procédé mécanique contenant plus de 10 % d'huile ou plus de 20 % d'huile et d'humidité combinées |
| SEED CAKE, containing vegetable oil UN 1386 (b) solvent extraction and expelled seeds, containing not more than 10% of oil and when the amount of moisture is higher than 10%, not more than 20% of oil and moisture combined | TORTA DE SEMILLAS, con una proporción de aceite vegetal, No ONU 1386 b) residuos de la extracción del aceite de las semillas con disolventes o por prensado, con un contenido de no más del 10 % de aceite o, si el contenido de humedad es superior al 10 %, no más del 20 % de aceite y humedad combinados | TOURTEAUX contenant de l'huile végétale UN 1386 b) Sous-produits de l'extraction au solvant ou graines triturées contenant au maximum 10 % d'huile et, si la teneur en humidité est supérieure à 10 %, pas plus de 20 % d'huile et d'humidité combinées |
| SEED CAKE UN 2217 | TORTA DE SEMILLAS, No ONU 2217 | TOURTEAUX UN 2217 |
| SEED CAKE (non-hazardous) | TORTA DE SEMILLAS (no entraña riesgos) | TOURTEAUX (non dangereux) |
| Seed expellers, oily | Semillas oleosas, torta de presión de | Expellers oléagineux |
| SILICOMANGANESE | SILICOMANGANESO | SILICOMANGANÈSE |
| SILICON SLAG | ESCORIA DE SILICIO | SCORIES DE SILICIUM |
| SILVER LEAD CONCENTRATE | PLATA Y PLOMO, CONCENTRADO DE | CONCENTRÉ DE PLOMB ARGENTIFÈRE |
| Silver lead ore concentrate | Plata y plomo, concentrado de mineral de | Concentré de minerai de plomb argentifère |
| Sinter | Sinterizado | Agglomérés |
| Slag, granulated | Escoria granulada | Scories, en grains |
| SLIG, iron ore | SLIG (mineral de hierro) | SLIG (minerai de fer) |
| SODA ASH | SOSA, CENIZA DE | SOUDE DU COMMERCE |
| SODIUM NITRATE UN 1498 | NITRATO SÓDICO, No ONU 1498 | NITRATE DE SODIUM UN 1498 |
| SODIUM NITRATE AND POTASSIUM NITRATE MIXTURE UN 1499 | NITRATO SÓDICO Y NITRATO POTÁSICO, EN MEZCLA, No ONU 1499 | NITRATE DE SODIUM ET NITRATE DE POTASSIUM EN MÉLANGE UN 1499 |
| Soyabean, expelled | Soja, prensada | Graines de soja, triturées |

| ENGLISH | SPANISH | FRENCH |
|--|---|--|
| Soyabean, extracted | Soja, en extracto | Graines de soja, sous-produits de l'extraction |
| SOLIDIFIED FUELS RECYCLED FROM PAPER AND PLASTICS | COMBUSTIBLES SOLIDIFICADOS REICLADOS DE PAPELES Y PLÁSTICOS | COMBUSTIBLES SOLIDIFIÉS RECYCLÉ À PARTIR DE PAPIER ET DE PLASTIQUE |
| SPENT CATHODES | CÁTODOS AGOTADOS | CATHODES USÉES |
| SPENT POTLINER | CUBAS ELECTROLÍTICAS AGOTADAS | REVÊTEMENT USÉ DES CUVES |
| SPODUMENE (UPGRADED) | ESPODÚMENO (ENRIQUECIDO) | SPODUMÈNE (ENRICHI) |
| STAINLESS STEEL GRINDING DUST | ACERO INOXIDABLE, POLVO DEL RECTIFICADO DE | ACIER INOXYDABLE, POUSSIÈRE DE MEULAGE |
| Steel swarf | Acero, virutas de | Rognures d'acier |
| Stibnite | Estibina | Stibnite |
| STONE CHIPPINGS | GRAVILLA | PIERRES CONCASSÉES |
| Strussa pellets | Strussa, pellets de | Strussa en boulettes |
| SUGAR | AZÚCAR | SUCRE |
| SULPHATE OF POTASH AND MAGNESIUM | SULFATO DE POTASA Y MAGNESIO | SULFATE DE POTASSIUM ET DE MAGNÉSIUM |
| Sulphide concentrates | Sulfuros, concentrados de | Concentrés sulfurés |
| SULPHUR UN 1350 (crushed lump and coarse grained) | AZUFRE, No ONU 1350 (en terrones triturados o en polvo de grano grueso) | SOUFRE UN 1350 (concassé en morceaux et en poudre à gros grains) |
| SULPHUR (formed, solid) | AZUFRE (sólido con forma) | SOUFRE (solide, moulé) |
| Sunflower seed, expelled | Girasol, semillas de, prensadas | Graines de tournesol, triturées |
| Sunflower seed, extracted | Girasol, semillas de, en extracto | Graines de tournesol, sous-produits de l'extraction |
| SUPERPHOSPHATE | SUPERFOSFATO | SUPERPHOSPHATE |
| SUPERPHOSPHATE (triple, granular) | SUPERFOSFATO (triple granular) | SUPERPHOSPHATE (triple, granuleux) |
| Swarf | Virutas | Rognures |
| TACONITE PELLETS | TACONITA, PELLETS DE | TACONITE EN PELLETS |
| TALC | TALCO | TALC |
| TANKAGE | DESECHOS ORGÁNICOS | DÉCHETS ORGANIQUES |
| Tankage fertilizer | Fertilizante orgánico | Engrais à base de déchets organiques |
| TAPIOCA | TAPIOCA | TAPIOCA |
| TIMBER | MADERAJE | BILLES DE BOIS |
| Toasted meals | Harinas tostadas | Farines grillées |
| Triple superphosphate | Superfosfato triple | Superphosphate triple |
| UREA | UREA | URÉE |
| VANADIUM ORE | VANADIO, MINERAL DE | MINERAI DE VANADIUM |
| VERMICULITE | VERMICULITA | VERMICULITE |
| WHITE QUARTZ | CUARZO BLANCO | QUARTZ BLANC |
| WOODCHIPS | MADERA, ASTILLAS DE | COPEAUX DE BOIS |
| WOOD PELLETS CONTAINING ADDITIVES AND/OR BINDERS | PELLETS DE MADERA QUE CONTIENEN ADITIVOS Y/O AGLUTINANTES | GRANULÉS (PELLETS) DE BOIS CONTENANT DES ADDITIFS OU LIANTS |
| WOOD PELLETS NOT CONTAINING ANY ADDITIVES AND/OR BINDERS | PELLETS DE MADERA QUE NO CONTIENEN ADITIVOS NI AGLUTINANTES | GRANULÉS (PELLETS) DE BOIS NE CONTENANT AUCUN ADDITIF OU LIANT |

| ENGLISH | SPANISH | FRENCH |
|--------------------------------------|---|--|
| Wood Products – General | Productos generales de madera | Produits du bois – Généralités |
| WOOD TORREFIED | MADERA TORRADA | BOIS TORRÉFIÉ |
| ZINC AND LEAD CALCINES (mixed) | CINC Y PLOMO, CALCINADOS DE (en mezclas) | ZINC ET PLOMB CALCINÉS (en mélange) |
| ZINC AND LEAD MIDDINGS | CINC Y PLOMO, MIXTOS DE | MIXTES DE ZINC ET DE PLOMB |
| ZINC ASHES UN 1435 | CINC, CENIZAS DE, No ONU 1435 | CENDRES DE ZINC UN 1435 |
| ZINC CONCENTRATE | CINC, CONCENTRADO DE | CONCENTRÉ DE ZINC |
| Zinc, dross, residue or skimmings | Cinc (escoria de, residuos de o espuma de) | Zinc, crasses, résidus, laitier |
| Zinc ore, burnt | Cinc, mineral quemado de | Minerai de zinc, brûlé |
| Zinc ore, calamine | Cinc, mineral de, calamina | Minerai de zinc, calamine |
| Zinc ore, concentrates | Cinc, mineral de, concentrados | Minerai de zinc, concentrés |
| Zinc ore, crude | Cinc, mineral de, bruto | Minerai de zinc, brut |
| ZINC SINTER | CINC SINTERIZADO | AGGLOMÉRÉS DE ZINC |
| ZINC SLAG | CINC, ESCORIA DE | SCORIES DE ZINC |
| ZINC SLUDGE | CINC, FANGOS DE | BOUES DE ZINC |
| Zinc sulphide | Sulfuro de cinc | Sulfure de zinc |
| Zinc sulphide (blende) | Sulfuro de cinc (blenda) | Sulfure de zinc (blende) |
| ZIRCON KYANITE CONCENTRATE | CONCENTRADO DE CIANITA DE CIRCONIO | CONCENTRÉ DE KYANITE ET DE ZIRCON |
| ZIRCONSAND | CIRCONIO, ARENA DE | SABLE DE ZIRCON |

RESOLUTION MSC.393(95) (adopted on 11 June 2015)
AMENDMENTS TO THE INTERNATIONAL MARITIME
SOLID BULK CARGOES (IMSBC) CODE