Procedure No:001

THE PROCEDURE OF LOADING AND UNLOADING SOLID BULK CARGOES

1. PURPOSE:

The purpose of this procedure is the explanation of how solid bulk cargoes to be loaded or unloaded from Bagfaş Bandırma Gübre Fabrikası ports will be handled within the scope of the International Maritime Solid Bulk Code, and the activities to be carried out in accordance with the code and the rules to be applied in case of any emergency.

2. SCOPE:

The procedure covers product managers of Bagfaş, masters of the ships to carry solid bulk cargoes, port manager, seaferers and persons within the scope of sending cargoes of IMSBC Code from Bagfaş Bandırma port.

3. DEFINITIONS:

BLU Code: Code of Practice for Safe Loading and Unloading of Bulk Carriers,

Bulk Cargo: Substances in solid, liquid and gaseous state that are the structural part of the ship or are in a tank or hold permanently fixed in or on the ship, intended to be transported directly without containment,

Ship: Ships covered by the legislation or international agreements to which Turkey is a contract party,

Authorized Ship manager: Owner, operator, charterer, master or agents, and natural or legal persons authorized to represent the ship owner,

IMSBC Code: International Maritime Solid Bulk Cargoes Code, 05-19 Amendments

Coastal facility: A port, quay, pier, berth, fuel, liquefied gas or chemical pipeline buoy or platform, including storage areas, where ships or marine vehicles can safely take their cargo or take shelter,

Moisture content (MC): The amount of water, ice or other liquids expressed as a percentage of the total liquid mass of the solid bulk sample

Transportable moisture limit (TML): The maximum amount of moisture that a liquefiable solid bulk cargo carried on ships that do not have the characteristics specified in IMSBC Code Section 7.3.2, so as not to interfere with its safe transportation,

Carrier: Actual carrier, broker, ship owner, freight forwarder, freight forwarder, shipping agency, who receives, submits, or accepts offers for the transportation of all kinds of dangerous goods on his own behalf or on behalf of third parties, together with, natural and legal persons carrying out the transportation by road or railway,by sea within the scope of combined transportation.

Dangerous goods;

1) Petroleum and petroleum products included in the International Convention for the Prevention of Pollution of the Seas by Ships (MARPOL) 73/78 Annex I, Attachment 1,

2) Packaged goods and objects given in IMDG Code Chapter 3,

3) Among the cargoes given in IMSBC Code Attachment 1, the bulk cargoes with "B" and "A and B" inscriptions in the group box in the characteristic table,

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4) Liquid substances with the phrase "S" or "S/P" in the "d" column titled "hazards" of the table given in Chapter 17 of the IBC Code,

5) Gaseous substances given in IGC Code Chapter 19,

TYUB: The Coastal Facility Dangerous Goods Conformity Certificate, which is issued by the Administration and must be obtained by the coastal facilities that handle packaged or bulk dangerous goods,

Loading safety: Safe tying and stacking of the cargo transport unit or cargo loaded into the ship's hold or on the ship's deck, and the safe binding and stacking of the loads to be loaded into the cargo transport unit,

Shipper: Refers to the sender, receiver, representative or organizer of the transport works of the dangerous cargo.

4. GENERAL REQUIREMENTS ON INTERNATIONAL MARITIME SOLID BULK CARGOES CODE:

4.1. Carrying solid bulk cargoes involves serious risks, which must be managed carefully to safeguard the crew and the ship. These risks include reduced ship stability, and even capsizing, due to cargo liquefaction; fire or explosion due to chemical hazards; and damage to ship structures due to poor loading procedures. The main legislation governing safe carriage of solid bulk cargoes is the International Maritime Solid Bulk Cargoes (IMSBC) Code, which became mandatory on January 1, 2011, under the SOLAS Convention .

4.2. Regardless of the substance, carried as solid bulk cargo, it is divided into groups A, B and C. Each group has its own rules and will be explained later in the procedure.

4.3. Before you can accept a cargo for shipment, the shipper must provide the Master with valid, up-to-date information about the cargo's physical and chemical properties. The exact information and documentation they must provide is listed in the Code under 'Assessment of acceptability of consignments for safe shipment; Provision of Information', and includes the correct Bulk Cargo Shipping Name and a declaration that the cargo information is correct .

4.4. The list of individual cargoes contained in the Code is not exhaustive. If a cargo not listed in the Code is presented for shipment, the shipper and the appropriate competent authorities must follow this process:

1. Before loading, the shipper must provide details of the characteristics and properties of the cargo to the competent authority of the port of loading.

2. Based on this information the competent authority of the port of loading will assess the acceptability of the cargo for shipment.

– If the assessment defines the cargo as Group A or B , the competent authorities will set the preliminary suitable conditions for carriage.

– If the cargo is Group C then carriage can be authorised by the port of loading and the competent authorities of the unloading port and flag state will be informed of the authorisation.

3. In both cases, the competent authority of the port of loading will give the Master a certificate stating the characteristics of the cargo and the required conditions for carriage and handling. The competent authority of the port of loading will also provide the same information to the IMO

4.5. Under section 1.5 of the Code, a competent authority (or authorities) can grant an exemption which allows ships to carry a cargo outside the requirements specified in its schedule, provided that equivalent provisions have been put in place.

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5. **LOADİNG:**

In general, before loading a cargo you must inspect and prepare the cargo spaces, checking that:

– bilge wells and strainer plates are prepared to facilitate drainage and prevent cargo entering the bilge system

– bilge lines, sounding pipes and other service lines are in good order

– cargo space fittings are protected from damage

– measures are in place to minimise dust entering living quarters or other interior spaces, or coming into contact with moving parts of deck machinery and external navigational aids, and

– ventilators are in good working order.

6. DISTRIBUTION AND STABILITY:

You must also make sure that cargoes are properly distributed throughout the ship's holds to provide adequate stability and ensure that the ship's structure is never overstressed. Information can be found in the ship's stability information booklet or you can use loading calculators if they are available. The Master will need to calculate the stability for the anticipated worst conditions during the voyage as well as for departure and demonstrate that the stability is adequate.

7. LOADING PLAN:

Before loading or unloading, the Master and the terminal representative must agree a Loading Plan to ensure that the permissible forces and moments on the ship are not exceeded. What this Plan should include is detailed in the Code of Practice for the Safe Loading and Unloading of Bulk Carriers (the BLU Code)

8**. THE GROUPS OF IMSBC CODE:**

8.1. GROUP A: cargoes which may liquefy if shipped at a moisture content exceeding their Transportable Moisture Limit (TML)

8.1.1. Below is the list of Group A Bulk Cargoes:

Aluminum fluoride

Bauxite fines

Calcium Fluoride Calicum Sulphate calcium carbonate mixture

Cement copper / mineral concentrate

Chemical gypsum

Coal slurry

Coke breeze

Copper concentrate (Mineral concentrate)

Copper slag

Fish in bulk

Fly ash, Wet

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Ilmenite (Upgraded)

Ilmenite clay

Ilmenite sand

Iron and steel slag and it's mixture

Iron concentrate (sinter feed)

Iron ore concentrates

Iron ore fines

Iron oxide technical

Lead concentrate

Manganese ore fines

Mineral concentrates

NIckel ore

Olivine sand

Sand, heavy mineral

Scale generated from the iron and steel making process

Spodumene (upgraded)

Synthetic calcium fluoride

Synthetic silicon dioxide

Titanomagnetite sand

Zinc slag

Zircon kyanite concentrate

8.1.2. Liquefaction means that a cargo becomes fluid (liquefies). On ships, this happens when the cargo is compacted by the ship's motion. Cargoes which are prone to liquefaction contain a certain quantity of moisture and small particles, although they may look relatively dry and granular when loaded. Liquefaction can lead to cargo shift and even to the capsize and total loss of the ship, and can occur even when cargoes are cohesive and trimmed level

8.1.3. Example COAL: Coal (bituminous and anthracite) is a natural, solid, combustible material consisting of amorphous carbon and hydrocarbons. It is best known as a Group B cargo due to its flammable and self heating properties, but it can also be classed as Group A because it can liquefy if predominantly fine (i.e., if 75% is made up of particles less than 5mm in size). In these cases, it is classed as both Group A and B.

8.1.4. SPECIAL RULES FOR GROUP A SOLID BULK CARGOS: To control the risks of liquefaction, Group A cargoes are tested to determine their Transportable Moisture Limit (TML) and their actual moisture content before they can be shipped. The TML is the maximum moisture content considered safe for carriage. The actual moisture content of the cargo must be

below the TML. The information supplied by the shipper to the Master must include a signed certificate stating the TML, and a signed certificate or declaration of the cargo's actual moisture content.

8.1.4.1. Required information including TML and actual moisture content must be provided by the Shipper

8.1.4.2. Make sure the shipper has supplied the required information, including the TML and the actual moisture content.

8.1.4.3. Only accept the cargo if the actual moisture content is less than its TML.

8.1.4.4. Carry out visual monitoring during loading. If there are any indications of high moisture content, stop loading and seek further advice.

8.1.4.5. Consider trimming the cargo to reduce the likelihood of cargo shift

8.1.4.5. Take measures to prevent water or other liquids entering the cargo space during loading and throughout the voyage.

8.2. GROUP B: – cargoes which possess a chemical hazard which could give rise to a dangerous situation on a ship.

8.2.1. Below is the list of Group A Bulk Cargoes:

Aluminium ferrosilicon powder, UN 1395

Aluminium nitrate UN 1438

Aluminium silicon powder, uncoated UN 1398

Aluminium smelting by-products or Aluminium remelting by-products UN 3170

Ammonium nitrate UN 1942

Ammonium nitrate-based fertilisers UN 2071

Ammonium nitrate-based fertilisers UN No 2067

Amorphous sodium silicate lumps

Barium Nitrate UN 1446

Boric acid

Brown coal briquettes

Calcium nitrate UN 1454

Castor beans or castor meal or castor pomace or castor flake UN 2969

Charcoal

Coal

Coal tar pitch

Copra (dry) UN 1363

Copra cake

Copra expeller pellets

Copra meal

Direct reduced iron (A) - briquettes hot moulded

Direct reduced iron (B) - cold moulded briquettes

Direct reduced iron (C) - (By-product fines)

Ferrophosphorus (including briquettes)

Ferrosilicon UN 1408

Ferrosilicon with at least 25% but less than 30% silicon, or 90% or more silicon

Ferrous metal borings, shavings, turnings or cuttings UN 2793

Fishmeal (fishscrap), stabilized UN 2216 (anti-oxidant treated)

Granulated nickel matte (less than 2% moisture content)

Hominy chop

Iron oxide, spent or iron sponge, spent UN 1376

Lead nitrate UN 1469

Lime (unslaked)

Linted cotton seed

Magnesia (unslaked)

Magnesium nitrate UN 1474

Matte containing copper and lead

Monoammonium phosphate (M.A.P), Mineral Enriched Coating

Petroleum coke (calcined or uncalcined)

Pitch prill (Pencil pitch)

Potassium nitrate UN 1486

Radioactive material low specific activity material (LSA-1) non fissile or fissile-excepted UN 2912

Radioactive material surface contaminated objects (SCO-1), non-fissile or fissile-excepted UN 2913

Sawdust

Seed cake containing vegetable oil UN 1386 (a) type

Seed cake containing vegetable oil UN 1386 (b) type

Seed cake UN 2217

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Seed cakes and other residues of processed oily vegetables (MHB)

Silicomanganese (low carbon)

Sodium nitrate and potassium nitrate mixture UN 1499

Sodium nitrate UN 1498

Solidified fuels recycled from paper and plastics

Sugarcane biomass pellets

Sulphur UN No 1350 (crushed, lump and coarse grained)

Tankage

Timber

Vanadium ore

Wood pellets containing additives and/or binders

Wood pellets NOT containing additives and / or binders

Wood products - General (eg,logs,timber,saw logs, pulp wood, round wood etc)

Wood torrefied

Woodchips

Zinc ashes UN 1435

8.2.2. Group B cargoes are classified in two ways within the Code: 'Dangerous goods in solid form in bulk' (under the International Maritime Dangerous Goods (IMDG) Code; and 'Materials hazardous only in bulk' (MHB). You will find this information in the "characteristics" section of the cargo's schedule. Cargoes classified as dangerous goods in solid form in bulk will also have a 'UN' number in the Bulk Cargoes Shipping Name

8.2.3. Solid Dangerous Bulk Cargoes have 8 different classes according to the IMSBC Code and these classes are as follows:

Class 4.1: Flammable solids

Class 4.2: Substances liable to spontaneous combustion

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

Class 5.1: Oxidizing substances

Class 6.1: Toxic substances

Class 7: Radioactive materials

Class 8: Corrosive substances

Class 9: Miscellaneous dangerous substances and articles

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8.2.4. Materials hazardous only in bulk (MHB) MHB cargoes are materials which possess chemical hazards when transported in bulk that do not meet the criteria for inclusion in the IMDG classes. They present significant risks when carried in bulk and require special precautions. They are described as follows:

Combustible solids: materials which are readily combustible or easily ignitable CB

Self-heating solids: materials that self-heat SH

Solids that evolve into flammable gas when wet: materials that emit flammable gases when in contact with water WF

Solids that evolve toxic gas when wet: materials that emit toxic gases when in contact with water WT

Toxic solids: materials that are acutely toxic to humans if inhaled or brought into contact with skin TX

Corrosive solids: materials that are corrosive to skin, eyes, metals or respiratory sensitisers. CR

Miscallaneous hazards OH

8.2.5. Examples of Group B Solid Bulk Cargoes and the hazards they present: The major hazards of Group B solid bulk cargoes are fire and explosion. In addition, toxic gas release and corrosive effects should be expected. For example Coal; Coal can create flammable atmospheres, self-heat, deplete the oxygen concentration in the environment, and corrode metal structures. Some types of coal can produce carbon monoxide or methane.

8.2.6. Ammonium Nitrate Based Fertilizers (Organic) Ammonium nitrate based fertilizers support combustion by transferring the oxygen they have. It may explode or cause a reaction if heated, contaminated with any substance, or sealed tightly. It can also produce toxic fumes and gases.

8.2.7. **SPECIAL RULES FOR GROUP B BULK CARGOES:**

8.2.7.1. **Information required on board ship for dangerous goods in solid form in bulk** : To carry dangerous goods in solid form in bulk, your ship must have a Document of Compliance for the Carriage of Dangerous Goods, supplied by the ship's flag or classification society. The Master must have a special list, manifest or stowage plan identifying the cargo's location, and there must be instructions on board for emergency response.

8.2.7.2. Segregation: Because of their potential hazards, many Group B cargoes are incompatible and must be segregated. When segregating cargoes, you should take into account any secondary risks they present.

8.2.7.3. Specific risk mitigation measures: The cargo's schedule and the information provided by the shipper will detail the precautions you must take when carrying Group B cargoes. The following are some of the common risk mitigation measures you will employ.

8.3 GROUP C: Cargoes which are neither liable to liquefy (Group A) nor possess chemical hazards (Group B). Cargoes in this group can still be hazardous.

8.3.1. Below is the list of Group C Bulk Cargoes:

Alfalfa

Alumina

Alumina calcined

Alumina silica

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Alumina silica pellets

Ammonium nitrate-based fertilisers (non-hazardous)

Ammonium sulphate

Antimony ore and residue

Barytes

Bauxite

Bauxite fines

Bentonite

Biosludge

Borax (pentahydrate crude)

Borax anhydrous (crude or refined)

Brucite

Calcium nitrate fertiliser

Carborundum

Cement

Cement clinkers

Cement portland

Chamotte

Chlorite

Chopped rubber and plastic insulation

Chrome pellets

Chromite ore

Clay

Coarse chopped tyres

Coarse iron and steel slag and it's mixture

Coke

Colemanite

Copper granules

Copper matte

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Crushed carbon anodes

Cryolite

Diammonium phosphate (D.A.P.)

Distillers dried grains with solubles (DDGS)

Dolomite

Felspar lump

Ferro Nickel Slag Granulated

Ferrochrome

Ferrochrome (Exothermic)

Ferromanganese

Ferronickel

Ferrous sulphate heptahydrate

Fertilizers without nitrates (non-hazardous)

Fly ash, Dry

Foam Glass Gravel

Glass cullet

Grain screening pellets

Granular ferrous sulphate

Granulated slag

Granulated tyre rubber

Gypsum

Gypsum granulated

Ilmenite (Rock)

Iron ore

Iron ore fines

Iron ore pellets

Iron sinter

Iron Smelting by-products

Ironstone

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Labradorite

Lead ore

Limestone

Magnesia (deadburned)

Magnesite, natural

Magnesium sulphate fertilizers

Manganese component ferroalloy slag

Manganese ore

Marble chips

Monoammonium phosphate (MAP)

Olivine Granular and Gravel Aggregate Products

Peanuts (in shell)

Pebbles (sea)

Pellets (concentrates)

Perlite rock

Phosphate (defluorinated)

Phosphate Rock (calcined)

Phosphate Rock (uncalcined)

Pig iron

Potash

Potassium chloride

Potassium sulphate

Pumice

Pyrite (containing copper and iron)

Pyrophyllite

Quartz

Quartzite

Rasorite (Anhydrous)

Rutile sand

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Salt

Salt cake

Salt rock

Sand

Scrap metal

Seed cakes and other residues of processed oily vegetables

Silicomanganese (carbo-thermic)

Silicon slag

Soda Ash (dense and light)

Stainless steel grinding dust

Stone chippings

Sugar

Sulphate of potash and magnesium

Sulphur (formed, solid)

Superphosphate

Superphosphate (triple granular)

Taconite pellets

Talc

Tapioca

Urea

Vermiculite

White quartz

Zirconsand

8.3.2. Examples of Group C Solid Bulk Cargoes: High density loads (such as Iron ore); These loads can be extremely heavy and overload the tank. A balanced and equal distribution of the load on the tank while loading so that the tank is not over-stressed can cause a risk during navigation. Iron ore loading rates are normally very high so it is necessary to consider the ship's ballast operations.

Sand and fine-particle materials: Fine-particle materials can be abrasive. Since silica dust is harmful by inhalation, it can cause respiratory diseases. Persons who may be exposed to the dust of the cargo should wear goggles or other equivalent dust eye protection, dust filter masks and protective clothing.

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9. OTHER HAZARDS ASSOCİATED WİTH CARRYİNG SOLİD BULK CARGOES

9.1. Entering enclosed spaces :

Always follow the appropriate procedures before entering an enclosed space, taking into account IMO Resolution A.1050(27) – Revised Recommendations for Entering Enclosed Spaces Aboard Ships. Note: after a cargo space or tank has been tested and generally found to be safe for entry, small areas may exist where oxygen is deficient or toxic fumes are still present. Since 1 January, 2015, mandatory entry and rescue drills have been required every two months in accordance with SOLAS Regulation III/19, as amended by Resolution MSC.350(92). All crew members who have responsibility for entry into, or rescue from, enclosed spaces need to take part in these drills.

9.2. **Pesticides**

The risks of using pesticides include the accumulation of gas in spaces adjacent to the cargo holds being treated or, if it is essential to ventilate the cargo holds, accumulation of fumigant in accommodation and working areas. Fumigants such as Phosphine and Methyl Bromide are poisonous to humans and if they are not handled correctly, they can also represent a fire risk. They should only be used by specialists and not by the ship's crew. Carry out any fumigation in line with the IMO Circular, MSC.1/Circ.1264 – Recommendations on the Safe Use of Pesticides in Ships Applicable to the Fumigation of Cargo Holds, as amended by MSC.1/Circ.1396. This is contained in the supplement to the Code. The ship should carry gas-detection equipment, adequate respiratory protective equipment, a copy of the latest version of the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG), and appropriate medicines and medical equipment

9.3. **Cargo residues deemed harmful to the marine environment**

Cargo residues and cargo hold washings containing such residues are included in the definition of garbage within MARPOL Annex V. Those residues that are considered to be harmful to the marine environment (HME) are subject to MARPOL Annex V Regulations 4.1.3 and 6.1.2.1 and must therefore be discharged to reception facilities.

10. **RESPONSIBILITY**

BAGFAŞ Port Manager is responsible for the implementation of this Procedure.

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