
	<p>HEALTH, SAFETY, ENVIRONMENT AND QUALITY MANAGEMENT SYSTEM</p> <p>29.0 CARGOES WHICH MAY LIQUEFY</p> <p>DRY CARGO MANUAL</p>	<p>Sect : 29.0 Page : 1 of 6 Date : 07-Aug-25 Rev : 10.0 Appr : DPA</p>
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CARGOES WHICH MAY LIQUEFY

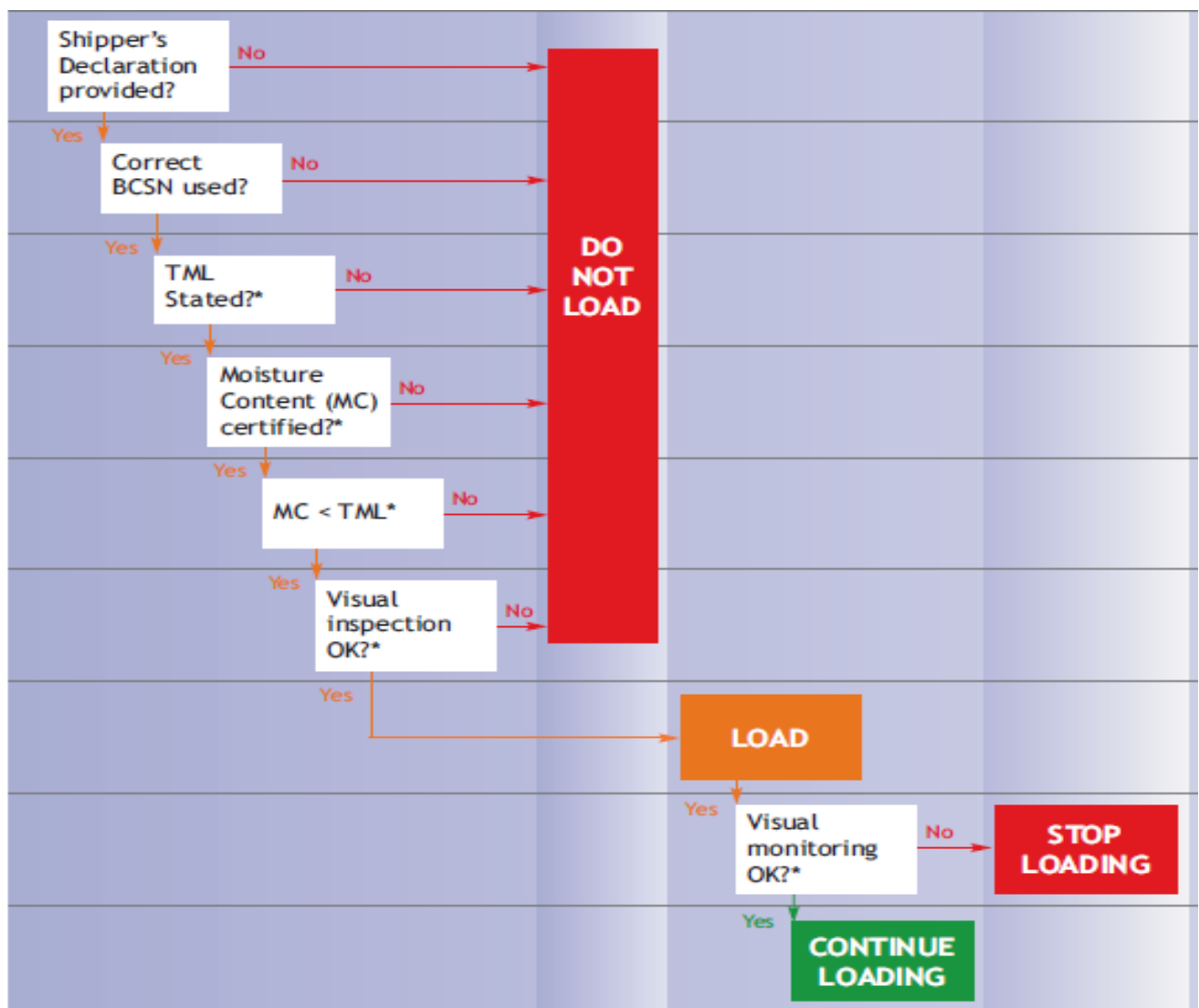
1. GENERAL


Ores and concentrates of some grades and/or from some geographical origin are liable to liquefy and are therefore liable to shift resulting in loss of stability.

There have been liquefaction incidents with nickel ore loaded from Indonesia, Philippines, New Caledonia and iron ore fines loaded from India.

The liquefaction of such cargoes has resulted in the sinking of a number of ships with a loss of many lives.

The following procedures/precautions shall be complied with prior loading ores and concentrates.



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1.1. Shipper's Declaration

It is a legal requirement under the provisions of SOLAS Chapter VI, Regulation 2 and the IMSBC Code Section 4.2 for the shipper to provide appropriate cargo information to the Master. A shipper's declaration must be insisted upon, prior loading, including certificates of moisture content and TML. If these certificates are not available at load port the Master must consider refusing the cargo and immediately notify office for further action.

1.2. Correct BCSN

All dry bulk cargoes should be shipped under their correct Bulk Cargo Shipping Name (BCSN).

1.3. TML

As a cargo prone to liquefaction, it is essential that cargoes such as Nickel Ore are classified as "Group A" and the accurate Flow Moisture Point (FMP) must be determined in accordance with the IMSBC Code and the Transportable Moisture Limit (TML) stated in the cargo declaration.

1.4. Moisture Content (MC)


The actual moisture content of the cargo to be loaded must be provided by the shipper in accordance with the IMSBC Code from samples taken no more than seven days prior to loading. If the moisture content of the cargo is likely to have changed since the samples were taken, e.g. due to monsoon rain, further samples should be taken and the moisture content re-certified.

1.5. MC < TM

The actual moisture content must be below the Transportable Moisture Limit. If not the cargo must not be loaded.

1.6. Visual inspection

As far as possible and reasonably practicable, the Master/ ship's crew should visually inspect the cargo stockpiles prior to loading. If such inspections or any associated "can tests" conducted under Section 8 of the IMSBC Code cast doubt on the accuracy of the cargo declaration, then the cargo must not be loaded and further advice sought.

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1.7. Load

The cargo should be loaded in accordance with the provisions of SOLAS Chapter VI, the Code of Practice for the Safe Loading and Unloading of Bulk Carriers (the BLU Code), and the IMSBC Code including trimming requirements under Section 5.

1.8. Visual monitoring

Visual monitoring should be carried out during loading from start to finish (As far as possible and reasonably practicable) and if indications of high moisture content are observed, such as free water or cargo splatter, loading must stop and further advice sought. It is important to ensure that this process is ongoing throughout the loading operation especially as new barges present further cargo to be loaded.

All the special precautions specified for such cargoes in the IMSBC Code must be strictly followed. Whenever there are reasons to believe that the moisture content of the cargo may be higher than the TML for example the cargo appears wet/splatters when loaded or there is suspicion that the cargo has been misrepresented, Company/operators shall be informed. An independent cargo testing to determine the FMP, TML and actual moisture content of the cargo to be loaded should be carried out.


A 'Can Test' may be performed as described in the IMSBC Code. Can Tests may indicate when a cargo has exceeded its FMP – confirming that the cargo should be rejected and independent re-testing carried out. The Can Test cannot demonstrate the cargo moisture content is less than the TML, this can only be determined by laboratory tests. A cargo cannot be accepted for loading based on Can Tests alone.

If the (Can test) result is positive then the Master must immediately inform the Marine Superintendent.

The Master should be extremely careful if required to carry such cargoes and should not hesitate to contact the company and request for local Club correspondents advice/assistance.

The Master has an overriding authority under SOLAS not to load the cargo or to stop the loading of the cargo if he has any concerns that the condition of the cargo might affect the safety of the ship.

The Master should also be aware that there will be an impact vessels P&I / Hull cover on allowing a vessel to sail in circumstances where there has been non-compliance with the IMSBC code, or where there are concerns as to the safety of the cargo for carriage/risk of liquefaction.

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2. COAL CARGO

From 01 Jan 2019, the classification of coal has changed so that all coal is to be treated as both Group A and B, unless otherwise tested. This means that all coal cargoes are to be considered as both liable to liquefy and have a chemical hazard - unless they meet the new criteria as detailed in the IMSBC Code.

Coal cargoes may therefore require the same TML and moisture certification as other Group A cargoes, such as concentrates, nickel ore and iron ore fines.

There are two alternative ways in which shippers may demonstrate that a coal cargo is not Group A:

- i. Coal cargoes are not subject to Group A requirements if they have a particle size distribution such that:

Not more than 10% is less than 1 mm AND not more than 50% is less than 10 mm. It is important to note the use of “AND” in the above, which means that cargoes exceeding either of these limits will not be exempt from Group A requirements. This differs from (and covers a wider range of cargoes than) the equivalent size criteria for iron ore fines.

- ii. Alternatively, the competent authority of the country of loading can specify laboratory criteria to assess whether or not a coal cargo possesses Group A properties. Such criteria would most likely be based on the outcome of the test methods for Group A cargoes in Appendix 2 of the IMSBC Code.


Prior loading coal, the Master shall ensure that the rationale for shippers declaring a cargo as either Group B only, or Group A and B, is clearly stated. The sizing criteria could be included on the cargo declaration, or it could be issued as a separate certificate. If there are no sizing criteria provided, the coal should be assumed to be both Group A and B, and hence require a TML and moisture certification prior to loading.

3. PRECAUTIONARY MEASURES DURING VOYAGE¹

The carriage requirement for the cargo as provided in the voyage orders and IMSBC Code shall be complied with.

Cargo hold bilges shall be sounded at regular intervals and pumped out, as necessary. Lashing of bilge valves in closed position against inadvertent opening, sounding pipes caps in place, ensuring no water ingress from ventilators, hatch access and hatch covers are some of the precautions which are to be observed.

¹ W 33 / 2022

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Weather permitting, the appearance of the surface of this 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 inform company and shall take appropriate actions to prevent cargo shifting and the potential capsize of the ship and give consideration to seeking emergency entry into a place of refuge.