



Bauxite – new Group A and revised Group C IMSBC Code schedules are now mandatory

A need to draw a distinction in the IMSBC Code between bauxite cargoes that may liquefy and those that do not, led to the development of a new cargo schedule for bauxite fines in the Code.

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In January 2015, the vessel BULK JUPITER, carrying bauxite, sank off Vietnam taking the lives of 18 seafarers. At that time, bauxite was classified under the International Maritime Solid Bulk Cargoes (IMSBC) Code as a Group C cargo - a cargo which is neither liable to liquefy (Group A) nor to possess chemical hazards (Group B). Following the tragedy, the IMO formed the Global Bauxite Working Group (GBWG) to conduct research into the behaviour and characteristics of seaborne traded bauxite and to inform the IMO as to the safe shipping of the commodity. The GBWG consists of representatives from various industry stakeholders such as miners, shipowner and operators, and alumina refinery operators.

The GBWG concluded that the BULK JUPITER incident was attributed to the phenomenon of “dynamic separation”. After cargo compaction during the voyage, dynamic separation can lead to the formation of a liquid slurry (water and fine solids) above layers of more solid bauxite. The slurry may lead to a dangerous free surface effect, which in turn can cause vessel instability. A demonstration of this effect can be seen [here](#).

Like liquefaction, the process of dynamic separation can be prevented by ensuring that the bauxite has a limited fines and moisture content, as particle size distribution and moisture content are the main parameters for the occurrence of this phenomenon.

As a result of the investigation, the GBWG saw the need to draw a distinction in the IMSBC Code between bauxite cargoes that may liquefy and those that do not. A new cargo schedule for ‘BAUXITE FINES’ classified as Group A was developed and the existing schedule for ‘BAUXITE’ classified as Group C was revised accordingly. The two schedules are primarily based on a particle size distribution (PSD) criterion, where, in simple terms, bauxite fines are permitted loaded with a larger percentage of fine particles compared to bauxite, although drainage properties also come into consideration.

The new Group A bauxite fines schedule sets out potential hazards and precautions during carriage to avoid liquefaction and dynamic separation, and the following should be noted:

- **Hazard** This cargo may liquefy if shipped at a moisture content in excess of its transportable moisture limit (TML). This cargo may suffer instability due to moisture content resulting in dynamic separation and formation of a liquid slurry (water and fine solids) above the solid material, resulting in a free surface effect which may significantly affect the ship's stability. This cargo is not liable to undergo dynamic separation when the cargo is shipped below its TML. This cargo is non-combustible or has a low fire risk.
- **Carriage** The appearance of the surface of this cargo shall be checked regularly, including at least daily visual inspections where condition permits, during the voyage. If free water or a liquid slurry above the cargo or fluid state of the cargo is observed, including the flattening of the cargo, during voyage, the master shall take appropriate actions to prevent cargo shifting, loss of stability due to free surface effect and potential capsizing of the ship, and give consideration to seeking emergency entry into a place of refuge. Cargo hold bilges shall be sounded at regular intervals and pumped out, as necessary. An atypical motion of the ship (wobbling) may also be indicative of cargo instability and the master shall consider appropriate action.

The new and revised cargo schedules covering bauxite cargoes became mandatory on 1 January 2021 and can be read in their entirety in [IMO Resolution MSC.462\(101\)](#), which contains a consolidated version of the IMSBC Code including Amendments 05-19.

The correct declaration of bauxite is extremely important to avoid compromising the safety of vessel and crew. If the master has reason to doubt that the cargo being loaded is consistent with the shipper's declaration, the master should stop loading and have the shipper verify the properties of the cargo. If necessary, advice should be sought from the competent authority of the country of loading and assistance requested from the vessel's P&I club.

Additional information

[BIMCO reports on new developments affecting the IMSBC Code - Bauxite Cargoes](#)

[Update on Group A Bauxite that can cause vessel instability](#)