



Insight Article

Cargo liquefaction

The most widely-known cargoes of this type are mineral concentrates, although many other cargoes can also liquefy, such as fluorspar, certain grades of coal, pyrites, millscale, sinter/pellet feed, etc. Of particular concern is the large number of cargoes of nickel ore loaded in Indonesia and the Philippines in respect of which there are doubts as to the accuracy of the shippers' declarations and certificates.

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Although they often look dry in appearance at the time of loading, these cargoes contain moisture in the spaces between the particles. During ocean transport, cargoes are exposed to agitation in the form of engine vibrations, ship's motions and wave impact, resulting in compaction of the cargo. The effect of this process can be a transition from a solid state to a viscous fluid state in which all or part of the cargo can flatten to form a fluid surface.

Despite the fact that the IMSBC Code prescribes the testing and certification requirements designed to ensure that cargoes are loaded only if the moisture content is sufficiently low to avoid liquefaction occurring during the voyage, inaccurate declarations and certificates from shippers still appear to be at the heart of the problem.

Gard material on cargo liquefaction

<u>Liquefaction of chromite ore from South Africa (24 June 2024)</u>
<u>Beware cargoes which may liquefy not listed in the IMSBC Code (July 2023)</u>
<u>Gard warns Members to remain vigilant about liquefaction risk (26 April 2022)</u>
<u>Reminder – danger of liquefaction in iron ore fines loaded in Sierra Leone (13 January 2022)</u>
<u>Member Circular No. 6/2021: Sierra Leone - Carriage of Iron Ore Fines Cargoes - Liquefaction Risk (13 September 2021)</u>
<u>Bauxite liquefaction risk in Guyana (16 June 2021)</u>
<u>Bauxite - new Group A and revised Group C IMSBC Code schedules are now mandatory</u>
<u>Loading nickel ore in the Philippines or Indonesia (11 June 2019)</u>
<u>Philippines – inaccurate test certificates for nickel ore pose serious risk (21 April 2017)</u>
<u>Surigao, Philippines – increasing concerns about possible liquefaction of nickel ore cargoes</u>
<u>Member Circular No. 22/2013: Iron Ore Fines/Iron Ore Cargoes – Early Implementation of recent changes to the IMSBC Code – Australia and Brazil</u>
<u>Member Circular No. 5/2012: Dangers of carrying Nickel Ore from Indonesia and the Philippines - Mandatory Notification Requirements</u>
<u>Member Circular No. 23/2010: Indonesia and the Philippines - Safe Carriage of Nickel Ore Cargoes</u>
<u>Member Circular No. 16/2010: India - Safe Shipment of Iron Ore Fines from Indian ports</u>
<u>Loss Prevention Compilation (2014): Cargo liquefaction - Nickel and iron ores</u>

Other Featured Resources

[International Maritime Organization \(IMO\)](#)

The IMO is the United Nations' specialised agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships.

The IMO's International Maritime Solid Bulk Cargoes Code (IMSBC Code) replaces the Code of Safe Practice for Solid Bulk Cargoes (BC Code) and became mandatory on 1 January 2011 under the provisions of the International Convention for the Safety of Life at Sea (SOLAS). The IMSBC Code facilitates the safe stowage and shipment of solid bulk cargoes by providing information on the dangers associated with the shipment of certain types of solid bulk cargoes and instructions on the procedures to be adopted when the shipment of solid bulk cargoes is contemplated.

The IMO sub-committees on Dangerous Goods, Solid Cargoes and Containers (DSC) deals with cargo related issues and proposes amendments to the IMSBC Code including evaluation of properties of solid bulk cargoes. For an overview of the work ongoing within this sub-committee, click [here](#) .

Amendment 02-13 to the IMSBC Code was adopted by [Res.MSC.354\(92\)](#) and entered into force from 1 January 2015.

<u>MSC.1/Circ.1453/Rev.2</u> - Guidelines for the submission of information and completion of the format for the properties of cargoes not listed in the International Maritime Solid Bulk Cargoes (IMSBC) Code and their conditions of carriage
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<u>MSC.1/Circ.1454/Rev. 2</u> - Guidelines for developing and approving procedures for sampling, testing and controlling the moisture content for solid bulk cargoes which may liquefy or undergo dynamic separation
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<u>DSC.1&/Circ.71</u> - Early implementation of draft amendments to the IMSBC Code related to the carriage and testing of iron ore fines (part of amendment 03-15)
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<u>CCC.1/Circ.2/Rev. 1</u> Carriage of bauxite which may liquefy - draft test procedure for determining the TML for bauxite

[International Association of Dry Cargo Shipowners \(INTERCARGO\)](#)

Intercargo's main role is to work with its members, regulators and other shipping associations to ensure that shipping operates safely, efficiently, environmentally and profitably. To do this, they actively participate in the development of global legislation through the International Maritime Organization and other similar bodies. Intercargo's members operate predominantly bulk carriers in the international dry bulk trades, such as coal, grain, iron ore and other bulk commodities. All issues related to "[Cargoes](#)" are found under *Industry Issues* on their website and a "[Guide for the Safe Loading of Nickel Ore](#)" was published in February 2012. (Membership required for full access to available information).

[Baltic and International Maritime Council \(BIMCO\)](#)

BIMCO's main objective is to protect its global membership through the provision of quality information and advice, while promoting fair business practices, and facilitating harmonisation and standardisation of commercial shipping practices and contracts. A number of featured articles and cargo alerts related to the carriage of solid dry cargoes in bulk, and liquefaction issues in particular, are available. A special service concerning cargoes, containing a "[Solid Cargo Database](#)", is included. (Membership required for full access to available information).

[International Group of P&I Clubs \(IGP&I\)](#)

IGP&I consist of thirteen principal underwriting member clubs; between them they provide liability cover (protection and indemnity) for approximately 90% of the world's ocean-going tonnage. IGP&I provide a useful forum for sharing information on matters of concern to clubs and their members. These include general issues such as oil pollution and personal injury as well as current issues such as maritime security, places of refuge for ships in distress, the carriage of particular cargoes etc.