



Friday 14th December 2012

## **Bulletin 859 - 12/12 - Iron Ore fines that may contain DRI (C) - International Group of P&I Club's recommendations**

### **BACKGROUND**

The process of manufacturing Direct Reduced Iron (DRI) from iron ore and the subsequent hot briquetting procedures generate unwanted by-products in the form of dust and broken chips during most of the stages. Some manufacturers recover these materials and offer them for shipment. Historically, such cargoes have mainly originated from Venezuela and Trinidad, although shipments have also been made from the US, Mexico and Libya. This cargo has been responsible for a number of casualties in the past, most notably the MV YTHAN in 2004, in which six crewmembers lost their lives during explosions that occurred in four of her five cargo holds and which also resulted in the loss of the vessel.

This cargo was not specifically included in previous editions of the Bulk Cargo Codes. Following extensive discussion, a new schedule was drafted to encompass this material and was included in the 2009 edition of the IMSBC Code, which became mandatory on 1 January 2011 (the latest version of the Code was issued this year). The entry is **DIRECT REDUCED IRON (C) (By-product fines)**, and the definition of the material is based only on its production, particle size and density, without reference to the metallic iron or moisture content.

Despite extensive publicity, cargoes are still being offered and shipped that do not have DRI in their descriptions, but which in fact are blends that contain a significant proportion of DRI (C) fines. Descriptions have included re-oxidised iron fines, iron fines (blend), iron ore pellet chips, oxide fines, pond fines, sludge fines, remets, clarifier slush and dust, spent iron fines and lodos. Other similar cargoes include DRI in the description, but are offered on the basis that they are not DRI (C) and therefore do not need to be carried in accordance with the DRI (C) Schedule of the Code. Members should also be aware that, even if the cargo offered is not DRI (C), in some instances stockpiles are adjacent and non DRI cargo can become contaminated with DRI fines. This circular provides guidance to Shipowners, Masters and Charterers on the information to be requested to assist in the identification of DRI cargoes and the correct, safe practices for carriage.

For the avoidance of doubt, it is the position of the International Group of P&I Clubs (IG) that cargoes with DRI in their descriptions should be declared using the appropriate Bulk Cargo Shipping Name (BCSN) for a DRI (C) cargo and prepared, loaded and carried in accordance with the provisions of the IMSBC Code.

## INFORMATION TO BE OBTAINED

### Before Loading:

Cargo blends containing DRI (C) can be identified by their chemical composition, details of which must be requested. The chemical composition must include the total iron content (Fe), the metallic (or free) iron content (Fe<sup>0</sup>) and the moisture content. This information should preferably be supported by a certificate from an independent testing laboratory and must relate to the cargo that is being offered for shipment: in other words, a “generic” analysis is not acceptable. The certificate should state the method and standards that have been followed when obtaining the samples that have been tested (preferably ISO 10835: 2000) and the standards that have been followed to determine the metallic iron content (preferably BS ISO 5416: 2006). The date on which the sampling took place should also be checked to ensure relevance.

The iron in a cargo of iron ore is chemically bound with other elements and therefore it contains no metallic (or free) iron. If the cargo contains any metallic iron (Fe<sup>0</sup>), then it must be a DRI derivative: DRI (A) and (B) cargoes typically contain about 85% metallic iron, whereas in blends containing DRI (C) it can be as low as 1% or 2%. Such blended cargoes should be regarded as the hazardous commodity DRI (C) and be carried in accordance with the provisions of the Code. If in doubt, Members should consult their Association.

Having identified the cargo as DRI (C), the IMSBC Code sets out the information that must be provided to the Master. In addition to the general requirements, the entry for DRI (C) specifies the following:

*“Prior to loading the cargo, the shipper shall provide the master with a certificate issued by a competent person recognised by the National Administration of the port of loading stating that the cargo, at the time of loading, is suitable for shipment; that it conforms with the requirements of this Code; that the moisture content is less than 0.3%; and the temperature does not exceed 65°C. The certificate shall state that the cargo meets the loading criteria in regards to ageing and material temperature.”*

*“Prior to shipment, the cargo shall be aged for at least 30 days and a certificate confirming this shall be issued by a competent person recognised by the National Administration of the port of loading.”*

*“Shippers shall provide to the master, prior to loading, comprehensive information on the cargo and safety procedures to be followed in the event of emergency.”*

*“The cargo temperature shall be monitored during loading and recorded in a log detailing the temperature for each lot of cargo loaded, a copy of which shall be provided to the master. After loading, a certificate shall be issued by a competent person recognised by the National Administration of the port of loading confirming that throughout the whole consignment of fines and small particles the moisture content has not exceeded 0.3% and the temperature does not exceed 65°C”.*

## EXEMPTIONS FROM THE REQUIREMENTS OF THE IMSBC CODE

For cargoes that are listed in Appendix 1 of the IMSBC Code, such as DRI (C), Section 1.5 allows a competent authority to authorize any other provision or exemption if satisfied that such alternative provision is at least as effective and safe as that required by the Code. Three competent authorities are recognised: the port State of departure, port State of arrival and the flag State. Prior to any shipment covered by such an exemption, the recipient of the exemption must notify the other competent authorities concerned, who may or may not accept that exemption.

The IG is aware of at least three countries that are offering DRI (C) cargoes with moisture contents up to 12% and with metallic iron contents ranging from 1% to 60% for shipment under exemption certificates issued by the competent authority of the port State of departure, namely Venezuela, Trinidad and Tobago and Mexico. It is not known whether any Tripartite Agreements have been made between any of the other competent authorities (port State of arrival and flag State). However, the IG is aware that at least two flag States do not permit any exemptions from the requirements of the IMSBC Code in respect of the carriage of any form of DRI.

The Association recognises that the Code permits an exemption but strongly advises Members to adhere to the carriage requirements as detailed in the IMSBC entry for DRI (C). If Members choose not to follow this advice, they should satisfy themselves that all of the three competent authorities named above have been notified and have accepted the exemption, that the rules of the flag State Administration are not breached and that the exemption certificate is maintained on board each ship transporting the solid bulk cargoes in accordance with the exemption.

For cargoes that are offered for transport in accordance with an exemption as described above, the loading, carriage and safety procedures must be clearly stated. In particular, the master must be advised of the ventilation rates and durations for each cargo space; the required standard of explosion protection of the ventilation fans; details of the arrangement of ventilation ducts into the holds; the method and frequency of monitoring the hydrogen concentrations in each cargo space; the method and frequency of monitoring the cargo temperatures in each cargo space; the criteria defining an emergency; the procedures to follow in the event of emergency; shipper's contact numbers in the event of emergency; and the procedures to follow before and during discharge.

The IMSBC Code schedule for DRI (C) sets maximum allowable moisture content as 0.3% for carriage. When cargoes are offered with moisture content in excess of this then they are not compliant, and at higher moisture contents they may additionally pose a realistic risk that they may liquefy in a similar manner to certain iron and nickel ore cargoes. Therefore, any Declaration relating to such cargoes must classify the material as Group A and B and the accompanying test certificate(s) must state the Transportable Moisture Limit and actual moisture content of the shipment. The certificate(s) should also refer only to the cargo that is being offered for shipment, i.e. not a generic measure obtained from previous shipments, and the standards that have been followed when obtaining the samples that have been tested.

The IMSBC Code also addresses cargoes that are not listed in Appendix 1 of the IMSBC Code and provides that such cargoes can be carried under conditions which are defined by and subject to a tripartite agreement between the competent authorities of the ports of loading and unloading and the flag State. However, if a cargo is described as iron ore fines, or one of the other descriptions contained in the background section of this circular, and is found to contain any metallic iron content (Fe<sup>0</sup>), then it should be regarded as DRI (C) and be carried in accordance with the provisions of the Code as the tripartite agreement procedure is for cargoes not listed in Appendix 1 of the Code.

**All Clubs in the International Group of P&I Clubs have issued similar circulars.**

**Source of Information:**

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