



Cargo Liquefaction Incident - Ball Clay from Malaysia

An entered vessel recently loaded a full cargo of Ball Clay in bulk at Lumut, Malaysia for discharge at Chittagong, Bangladesh. Two days after sailing the vessel started to list to port after encountering bad weather off the coast of Myanmar. The vessel then rolled heavily the other way, resulting in a 15° list to starboard.

When the cargo holds were checked it was found that that the Ball Clay had liquefied. Fortunately the vessel was not far from land and the master managed to anchor the ship in a sheltered location. The crew then spent several days shifting the cargo in order to reduce the list. Once the Ball Clay had been restowed and the weather had moderated, the vessel resumed passage at slow speed and reached Chittagong safely two days later.

The vessel appears to have had a lucky escape as another ship carrying Ball Clay from Lumut developed a serious list off Thailand the same month and was abandoned with significant loss of life.

Ball Clay

Ball Clay is normally light grey in colour and consists of very fine particles. Many years ago this material was sold in the shape of balls weighing around 15kg each, hence the name. Ball Clay generally contains a high proportion of the mineral Kaolinite and is used in the production of ceramics. It is fairly rare, and Malaysia, United States, United Kingdom, Spain, Turkey and Ukraine account for over 80% of the world's production.

IMSBC Code Requirements

The International Maritime Solid Bulk Cargoes (IMSBC) Code contains a schedule for Clay, describing it as a light to dark grey product which is usually moist but not wet to the touch comprising of 10% soft lumps and 90% soft grains. The entry states that the cargo shall be kept as dry as practicable, that it shall not be handled during precipitation and that the moisture content of the cargo shall be kept as low as practicable to prevent the material from becoming glutinous and difficult to handle.



Bodily shift of cargo to starboard

Although the schedule for Clay classifies it as Group C (ie a material which has no chemical hazards and is not liable to liquefy), this is a generic entry which does not necessarily apply to all clays. For example, the IMSBC Code contains a schedule for Ilmenite Clay which is classified as Group A (ie a material which may liquefy). In November 2000 a vessel carrying Ilmenite Clay was almost lost off the coast of Finland following the liquefaction of such a cargo.

It should also be noted that the Code of Safe Practice for Solid Bulk Cargoes (the predecessor to the IMSBC Code) once contained an entry for Kaolinite Clay which referred to this cargo as having a Transportable Moisture Limit (TML), thus indicating that it could liquefy. The latter observation is particularly important given that Ball Clay is a type of Kaolinite Clay.

Moreover, recent laboratory tests carried out on a spot sample of Ball Clay from Lumut produced a Flow Moisture Point (FMP), indicating that the material was Group A and likely to liquefy if shipped with a moisture content exceeding the TML. The moisture content of the sample tested was almost 9% higher than the TML.

Further Considerations

Although Ball Clay is sometimes carried in bulk, European exporters tend to ship this commodity in jumbo bags or as a palletised cargo, and only when completely dry. The fact that there have been two incidents in quick succession involving



Appearance of the cargo surface after liquefaction



Cargo residues on steelwork inside hold indicating extent of cargo shift

Ball Clay from Malaysia suggests that this may be a new trade or that there may be other factors at play such as more frequent shipments, increased parcel size, stockpiling or storage changes or material sourced from a different location.

Recommendations

Vessels due to load Ball Clay in Malaysia are strongly advised to notify the Managers beforehand so that a local surveyor can be appointed to identify the location of the cargo, check the shipper's cargo documentation and carry out "can" tests on representative samples of the cargo before and during loading.

As with any other dry bulk cargo, loading should not commence until the shippers have provided a cargo declaration as required by the IMSBC Code. Irrespective of the cargo group declared by the shipper, Ball Clay from Malaysia should be regarded as being a Group A cargo and the shipper should be asked to provide test certificates showing that the moisture content of the material is less than the TML.

If the shippers fail to produce the cargo information required by the IMSBC Code, or do not provide test certificates, or if there are any doubts regarding the validity or accuracy of such certificates, or if a "can" test results in the appearance of free moisture or fluid conditions, loading should be halted or postponed as appropriate. In such an event the Managers

should be notified immediately as it may be necessary to draw and send cargo samples to an independent laboratory to verify the TML and moisture content. Additional advice from an expert may also be required.

It should also be remembered that while a sample which remains dry following a "can" test indicates that the moisture content is less than the FMP, the moisture content may still exceed the TML. Determining the latter is only possible in a laboratory.

Members requiring further information should contact the Loss Prevention department.



Discharging operations