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How to Avoid Claims for Self-Cooking Soya Beans

North P&I Club has advised its members to be extra vigilant during loading and transport of soya beans to ensure they do not get blamed for cargoes that start 'cooking' at sea. The advices comes in the latest issue of its loss prevention newsletter Signals.(See below)

According to North's loss prevention director Tony Baker, 'We have recently experienced a number of high value claims in China associated with damage to soya beans exported from South America. The damage is caused by excessively warm or moist cargoes starting to self-heat, which leads to the cargo becoming mouldy, caked or discoloured.'

He says China Inspection and Quarantine may test any suspect cargo on arrival but the ship may not necessarily be aware of the results. A cargo damage claim may result with a threat of arrest unless security for a significant sum is provided.

'Though the ship has done nothing to cause the damage, its negotiating position can be weak without detailed evidence from the load port and during the voyage,' says deputy loss prevention director Colin Gillespie. 'Good evidence will significantly strengthen this position.'

He says soya beans generally have a long shelf life provided they remain below 25℃ and contain no more than 11.5% moisture. 'The 40-day voyage between Brazil and China should not be a problem,' says Gillespie. 'If beans are loaded at 25-35℃ and their moisture content is above 11.5% they will potentially start to self-heat after a period as short as 20 days - putting the ship at real commercial risk.'

North says recent cargoes of soya beans loaded in Brazil at over 30℃ and with an average moisture content of 12.6% have self-heated. 'In such situations it is vital for masters to have evidence of the loading conditions, ideally in the form of a load-port certificate of quality from the seller recording actual average moisture content,' says Gillespie.

'Masters should also consider taking their own samples for comparison, as well as a photographic record of the loading. In addition they need to keep temperature and ventilation records throughout the voyage. While ventilation has minimal effect on self-heating, accurate records will help avoid any suggestion that ventilation, or lack of it, was responsible for damaging an already unstable cargo.'

Soya Bean Claims in China Practical Advice

North has experienced a number of high value claims in China associated with damage to soya beans exported from South America. These claims tend to recur on an annual basis associated with the harvest cycle of soya beans. Similar claims can also occur with other grain cargoes.

The purpose of this article is to draw attention to these claims, how they occur and what steps may be taken to protect your interests in the event of a dispute.

The Problem

Grain cargoes in general and soya beans in particular, have a risk of going mouldy on board the ship during the voyage. Most cargoes are loaded in apparent good order and condition but there is an inherent vice - the soya beans have a tendency to deteriorate from self-heating unless cargo loading temperatures are low and average moisture content is low.

There are known limits for temperature and moisture content. Cargoes below these limits are described as **stable** - they can be stored for a long time without self-heating. Cargoes above these limits are **unstable** - they are at risk of damage from self-heating.

The 'Damage' Process

Soya beans are stable below 11.5% moisture and 25℃. Soya bean cargo damage claims are frequent because most cargoes are shipped above 11.5% and are loaded at temperatures of 30℃ or higher. Recent Brazilian cargoes have a reported average moisture content of 12.6% and are loaded in ambient temperatures over 30℃ - this means the risk of self-heating is high.

The table below shows how the risk of self-heating increases with average moisture content and cargo temperature.

Cargo temperature on loading	Average moisture content	Risk	Probable shelf life	Voyage days Brazil to China
25℃ or less	11.5% or less	Low risk - **stable**	Long - over 40 days	40 days
Between 25℃ and 35℃	11.0% or less	Low risk - **stable**	Long - over 40 days	40 days
Between 25℃ and 35℃	11.5% to 14%	High risk - probably **unstable**	About 70 days to 20 days	40 days
Between 25℃ and 35℃	14% or higher	High risk - **unstable**	Probably 20 days or less	40 days

Most cargoes out-turn in apparent good order and condition and are accepted without claim. But many cargoes will self-heat before arrival at the discharge port and there will be cargo damage. If the voyage is delayed this risk increases.

Certificate of Quality

Under the contract of sale, the sellers will usually have taken representative cargo samples on loading. These will be tested for average moisture content and the results are recorded in the load-port **certificate of quality**. Prior to loading, the Master should request a copy of this certificate or get the shippers to state in writing the average moisture content of the cargo.

Loss Prevention at the Load Port

At the load port it might be prudent to take cargo samples under survey with the charterer/shipper/seller's/receiver's representatives. Taking samples during loading might be difficult. Cargo samples from the surface of the cargo on completion of loading might not be representative, but:

- The average moisture content of the sample can be useful to compare with the certified average.
- Further tests can be carried out on the samples in the event of a claim.
- The samples may show that the cargo has not discoloured significantly from loading to discharging.
- North's loss prevention briefing recommends having a local surveyor to obtain samples on loading and to keep a continuous (photographic) record of the loading.

Loss Prevention on the Voyage

Ventilation records must always be kept to avoid suggestions that ventilation is responsible for cargo damage.

For all agricultural cargoes, the three degree rule should be used. It should be noted that ventilation can take place at any time - night or day - when the outside temperature is at least three degrees below the **cargo temperature on loading**.

Always be careful if venting at night to ensure that weather conditions will not lead to water ingress.

It is important to note that:

- Self-heating is completely unaffected by ventilation
- Ventilation can, at best, minimise the extent of ship's sweat/condensation in the top few centimetres of cargo. It will not cause nor prevent self-heating below the surface layer.

Problem at the Discharge Port

If caking, discoloration, and/or visible mould are found at the discharge port China Inspection and Quarantine (CIQ) will take samples for testing. The results are not given to the ship operator.

Chinese lawyers usually seek to settle by negotiation. Requests for large security amounts against threats to arrest and detain the ship are common. Without evidence from the load port and on the voyage the ship's negotiation position is weak - good evidence will strengthen this position.

Cargo temperature on loading should not change much during voyage. An increase in cargo temperature is an indication of self-heating.

Caking from self-heating

Discolouration from self-heating

Visible mould from self heating

Source of Information: North of England P&I Club