BRITANNIA LOSS PREVENTION INSIGHT

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CARRIAGE OF GRAIN AND OILSEED CARGOES
AN OVERVIEW FOR THE MARITIME SECTOR

ABOUT OUR PARTNER

CWA SINGAPORE 新加坡

CWA FOOD & AGRICULTURAL COMMODITIES DEPARTMENT

The CWA Food & Agricultural Commodities department provides expert advice on a range of food, feed and other dry agricultural commodities, across the entire supply chain from field to consumer and especially relating to the shipment of these commodities as bulk, break-bulk, bagged, bottled, drummed, refrigerated, frozen and containerised cargoes.

The department applies scientific and commercial expertise to quality management in the international trade of food, feed and other agricultural commodities, with particular regard to damage causation, quantum, food safety and loss prevention. The department also assists in loss mitigation by applying its scientific, operational and commercial experience to advice on cargo utilisation, salvage and disposal.

INTRODUCTION

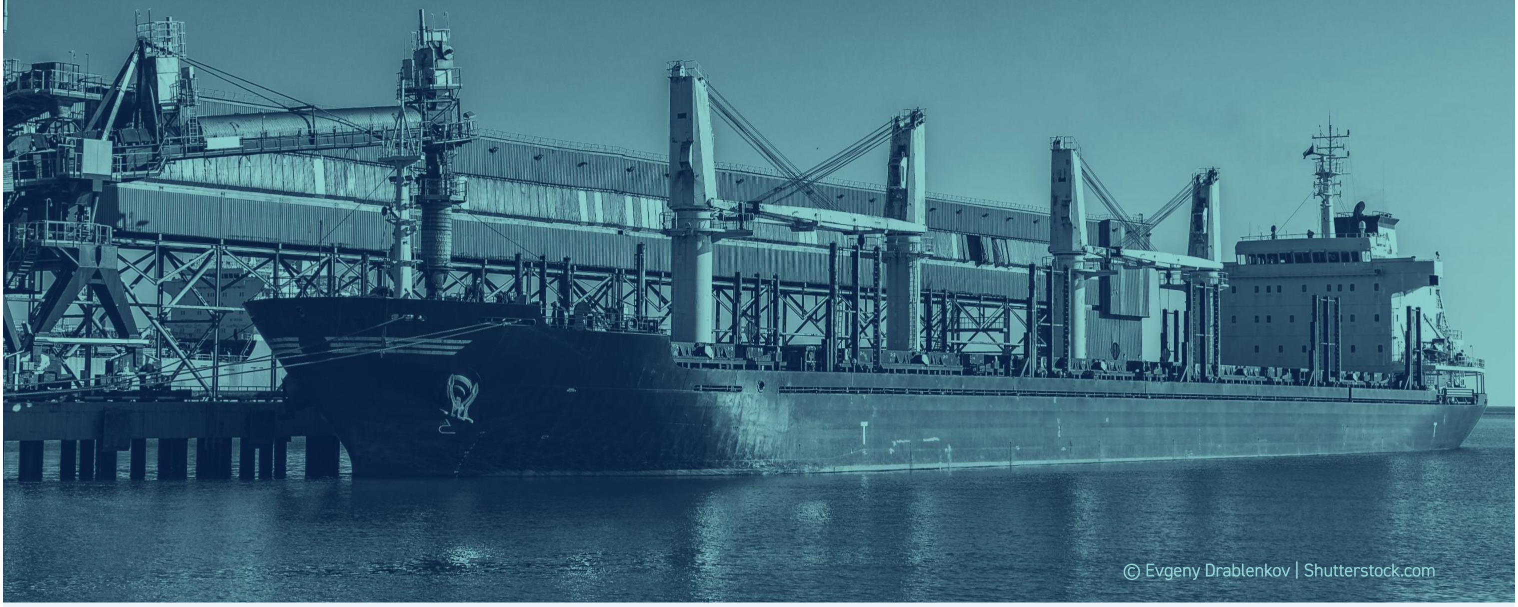
THE GLOBAL TRADE OF BULK GRAINS AND OILSEEDS HAS UNDERGONE CONTINUED EXPANSION RECENTLY. SOYA BEANS IN PARTICULAR HAVE INCREASED SIGNIFICANTLY PARTLY DUE TO THE INCREASING DEMAND IN CHINA FOR VEGETABLE OIL AND ANIMAL FEED. THE MAJOR GRAINS SHIPPED INTERNATIONALLY INCLUDE MAIZE, WHEAT AND RICE, WHILE THE MOST SHIPPED OILSEEDS ARE SOYA BEANS. OTHER OILSEEDS SHIPPED IN LARGE QUANTITY INCLUDE RAPESEEDS, SESAME AND SHEA KERNELS.

The largest grain and soya bean exporters are Brazil and the USA. In terms of soya beans, these two countries account for approximately 80% of the global export market, with China being the largest importer.

There have been a relatively large number of soya bean claims this year, partly related to the bumper 2020/21 soya bean harvest in Brazil. Claims for damage to Brazilian soya beans have been made in Europe, the Middle East and most frequently in China. The high number of claims in the latter are primarily due to the large quantity of beans carried from Brazil to China.

The following report provides some guidance on the main precautions to be considered when carrying bulk grains and oilseeds, points to consider in the event of damage being found at the destination and concludes with a brief case study covering various issues relating to soya bean claims in China.

THE FIRST POINT TO CONSIDER PRIOR TO LOADING A BULK GRAIN OR OILSEED CARGO IS WHETHER THE HOLDS ARE CLEAN AND IN SUITABLE CONDITION TO LOAD THE GRAINS OR OILSEEDS.



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PRECAUTIONS

PRELOADING

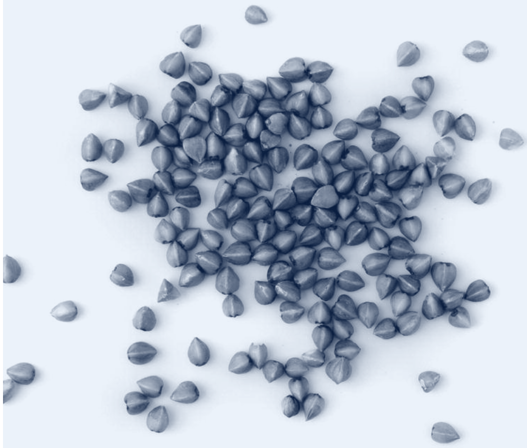
THE FIRST POINT TO CONSIDER PRIOR TO LOADING A BULK GRAIN OR OILSEED CARGO IS WHETHER THE HOLDS ARE CLEAN AND IN SUITABLE CONDITION TO LOAD THE GRAINS OR OILSEEDS.

The holds should be cleaned after discharge of the previous cargo. Charterparties for most grains and oilseed cargoes, including soya beans, will usually indicate that the holds must be at *'grain clean'* standard prior to the commencement of loading.

It is recommended that owners appoint a local surveyor prior to loading. The surveyor can take part in inspections, where particular attention should be paid to hold cleanliness and the bilge boxes and ballast tank manhole covers, ensuring they are clean and dry, as these are a frequent source of wet damage claims. Owners should also regularly check to ensure that the bilges are free from obstruction and draining efficiently.

Vessels loading grains or oilseeds in the USA will usually undergo a stowage examination by United States Department of Agriculture (USDA) Federal Grain Inspection Service (FGIS) to ensure the cargo space is clean. The purpose of the examination is defined by USDA as: *'A stowage examination is a service performed by official personnel or licensed co-operators who visually inspect an identified carrier or container and determine if the stowage areas are clean; dry; free of infestation, rodents, toxic substances and foreign odor, and otherwise be suitable to store or carry bulk or sacked grain, rice, beans, peas, lentils or processed commodities'*[1].

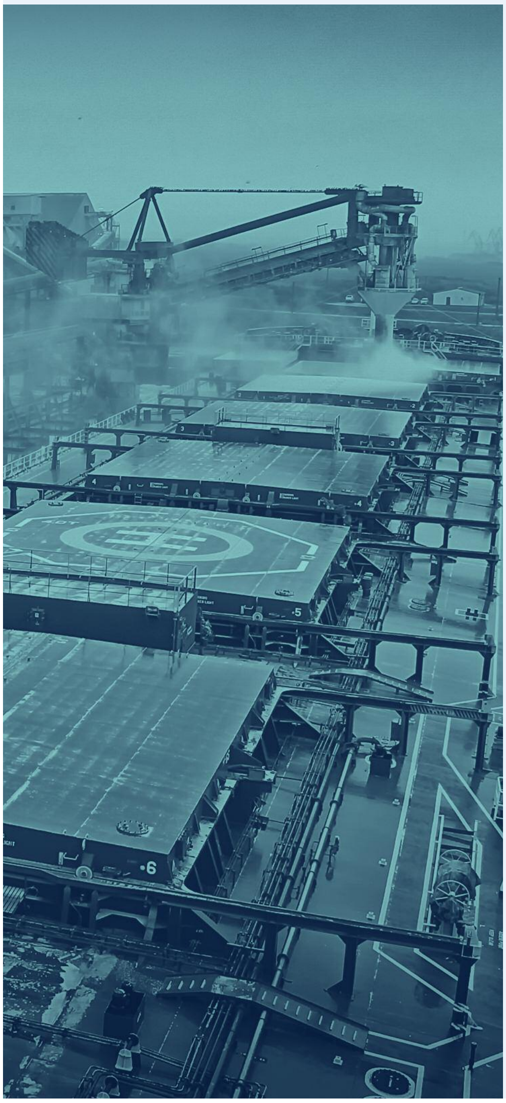
[1] United States Department of Agriculture Grain Inspection, Packers and Stockyards Administration Federal Grain Inspection Service (2009) Directive 9180.48



In major South American exporting countries such as Brazil, hold cleanliness certificates or reports usually list the last three cargoes carried on board the vessel and typically state that the holds were found *'empty, dry, clean and in suitable condition to carry the cargo'* or similar.

The definitions and strictness to which the cleanliness grades are applied vary from country to country, but it is important that the crew maintain their high cleaning standards to prevent delays or contamination events. Failure to comply with cleanliness requirements can result in the rejection of the vessel for loading by the shipper which can lead to costly delays. Alternatively, claims may be made at discharge if the holds are incorrectly accepted and the cargo is found to be contaminated with rust or previous cargo residue.

It is recommended that a hatch cover test is undertaken prior to loading. This can be performed using an ultrasound device or hose test. These tests are important as it enables the crew to make any necessary repairs or adjustments to the hatch covers prior to cargo loading. Furthermore, it provides good supporting evidence against accusations of water ingress through the hatch covers at the discharge port.



The master should also ensure that the cargo being loaded is suitable for the vessel prior to loading. This will involve carefully reviewing any cargo declarations or certificates. A cargo declaration for soya beans typically states the specification of the cargo to be loaded, including moisture and oil content. It is worth noting here that whole grains and soya beans should be loaded according to the Grain Code rather than the IMSBC Code. They do not require a cargo declaration for exemption from the IMSBC Code Seed Cake schedules. The Seed Cake schedules apply to the processed products of oil-bearing seeds or vegetables which can include cargoes such as soya bean meal, corn gluten feed and rapeseed meal. The cargo documentation for such seed cake cargoes should state the oil and moisture content of the cargo and whether the requirements of any relevant exemptions have been met.

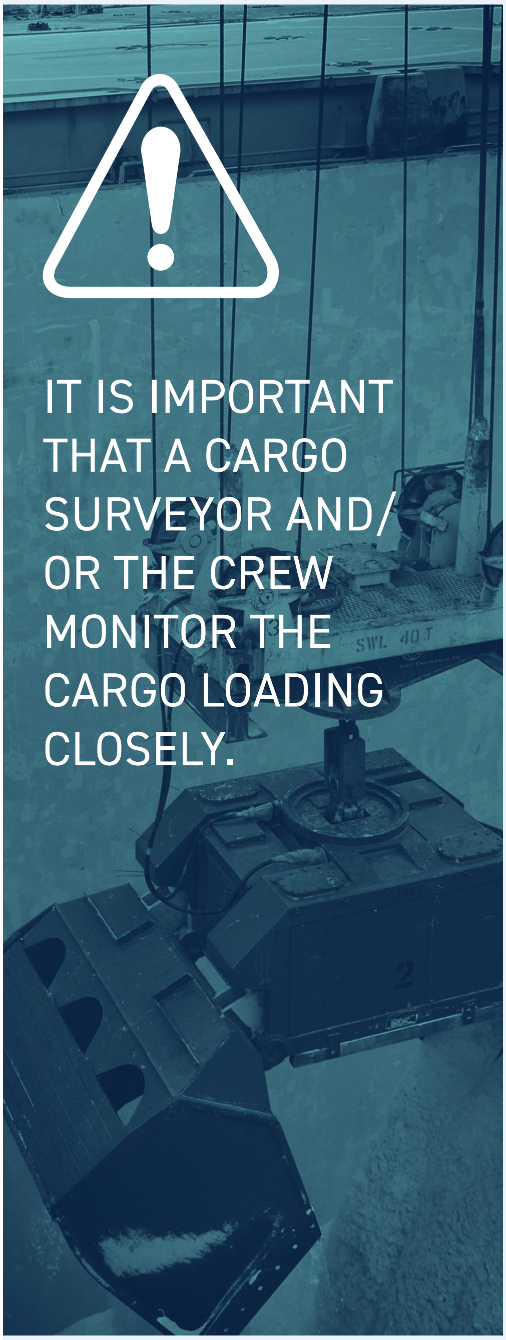
The master/crew should consider the cargo documentation and potential cargo care prior to loading. Any specific cargo care instructions should be requested from charterers and/or shippers. Cargo care should also be considered at the time of the fixture and any concerns discussed with the charterer/shipper: this may include the type of cargo due to be loaded and the potential voyage route, as well as the ventilation and fumigation requirements.

LOADING

BULK GRAIN AND SOYA BEANS LOADED IN LARGE QUANTITIES ARE ASSEMBLED FROM A WIDE GEOGRAPHIC AREA AND OFTEN FROM MULTIPLE LOTS FROM DIFFERENT STORAGE LOCATIONS. Consequently, there can be significant variation in cargo quality between different lots even though the whole cargo may meet the contractual specification. This variation in cargo quality can be interpreted by consignees at discharge as damage which has occurred during a voyage. It is therefore important that a cargo surveyor and/or the crew monitor the cargo loading closely.

A cargo surveyor and/or the crew should pay close attention to the condition of the grain or oilseeds during loading. They should record the colour and odour of the cargo throughout loading and record the cargo temperature at regular intervals using a calibrated temperature probe. In terms of soya beans, the most helpful information to obtain at loading is cargo moisture content and temperature. The reason for measuring the cargo temperature is to assess whether there is variation between lots which may indicate if some lots are already deteriorating and to obtain an average cargo temperature which can be used to assess whether to ventilate the cargo during the voyage.

Clear photographs of the cargo and loading operations are also invaluable. These should include an overview of how the cargo was loaded, the cargo in the holds during loading and, where possible, close-up photographs of the cargo itself. Additionally, a Letter of Protest (LOP) should be issued to all concerned parties if any deteriorated/mouldy/wet cargo is identified. The master has the right to reject the cargo for loading if it is of poor condition.



In such circumstances, it is also recommended that the cargo is representatively sampled according to the sampling methods of the governing body specified in the commercial contract, i.e. the Federation of Oil, Seeds and Fats Associations (FOSFA) for oilseeds such as soya beans. Analysis of representative samples from the load port may become crucial evidence in the event of a claim.

Since grains and oilseeds are heat-sensitive cargo, the master and chief engineer should consider the location of heated Fuel Oil Tanks (FOTs) prior to loading and, if possible, stow cargo away from heated FOTs. Damage to soya bean cargoes from heat transfer from fuel tanks is particularly problematic because as well as direct heat damage to the beans, self-heating can also be initiated which leads to quite severe discolouration in the beans next to the fuel tanks.

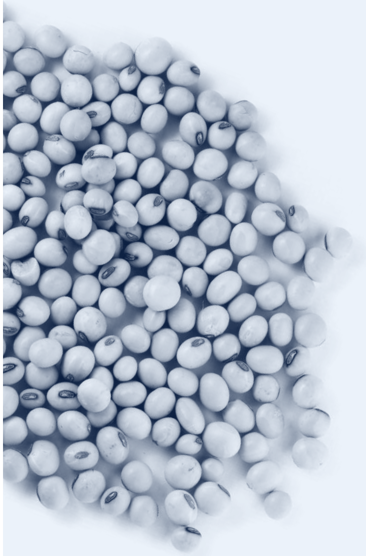
Special consideration should be given to FOT's containing Very Low Sulphur Fuel Oil as these may require additional heating to avoid the formation of wax. If it is necessary to stow grains or soya beans adjacent to the heated FOTs, the chief engineer should be instructed to ensure that fuel oil is heated to the lowest temperature possible to reduce the likelihood of significant heat transfer to the cargo, while retaining the pumpability of the fuel. The temperature will depend on the fuel type but it is recommended that it is not heated above 40°C. The temperature differential between the fuel tank temperature and the cargo itself is also important as this may lead to moisture migration and associated damage elsewhere in the stow. A record of the instruction to heat fuel to the minimum could prove invaluable in defending a claim for over-heating of the fuel oil as well as keeping concise fuel oil temperature records.

FUMIGATION

GRAIN AND OILSEED CARGOES ARE USUALLY FUMIGATED IN-TRANSIT, AFTER THE COMPLETION OF LOADING. Masters should familiarise themselves with the IMSBC Code Supplement **MSC.1/Circ.1264** (27 May 2008) as amended by **MSC.1/Circ.1396** *Recommendations on the Safe Use of Pesticides in Ships Applicable to the Fumigation of Cargo Holds.*

The fumigator should provide the master with documentation describing the type of fumigant, the method of application, dosage and duration of exposure. The quantity of fumigant should be calculated based on the total volume of the hold and not the quantity of the cargo.

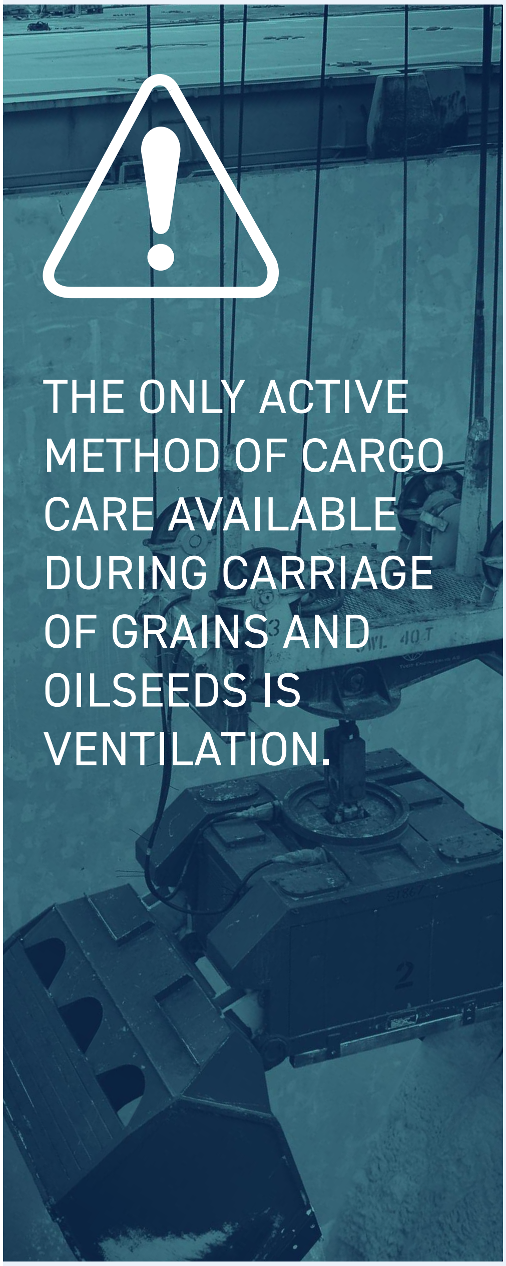
In addition to this information, appropriate safety equipment and instructions should be provided to the master relating to crew safety during fumigation. This should include the ventilation requirements to ensure the holds are gas-free prior to discharge.



The most common fumigant used for bulk grain and oilseed cargoes is aluminium phosphide. When exposed to air, aluminium phosphide reacts with moisture to produce phosphine gas. The fumigant is applied in tablet or pellet form. It may be applied in packaging to allow easy removal of the fumigant residue before discharge. The crew should document the fumigant application from a safe distance and ensure that the fumigators are applying the fumigant to the method stated on the fumigation documentation.

The most frequently seen fumigation exposure period for bulk grains and soya beans is ten days. In some instances, the master may be advised not to ventilate the holds for significantly longer and occasionally for the entire voyage. If this is the case, owners are recommended to contact their charterer immediately, as a long fumigation exposure period does not take into account changes in environmental conditions that might result in condensation issues relating to a lack of ventilation. As noted above, it would be helpful to clarify details of fumigation at the time of fixture and well before the fumigation is carried out. This can ensure that an appropriate fumigation method and exposure period is agreed in advance to avoid fumigation associated risks such as phosphine explosions, cargo infestation and condensation damage.

Following the completion of the exposure period, the holds should be ventilated in accordance with the fumigation instructions to ensure that any remaining fumigant gas is dispersed. This typically takes place just before commencement of discharge.
A fumigation company should be appointed wherever the hatch covers are opened (typically the discharge port) in order to check the fumigant gas levels and issue a Gas Free Certificate. No personnel should ever enter a cargo hold which has not been confirmed as gas free and safe to enter after fumigation.



VOYAGE

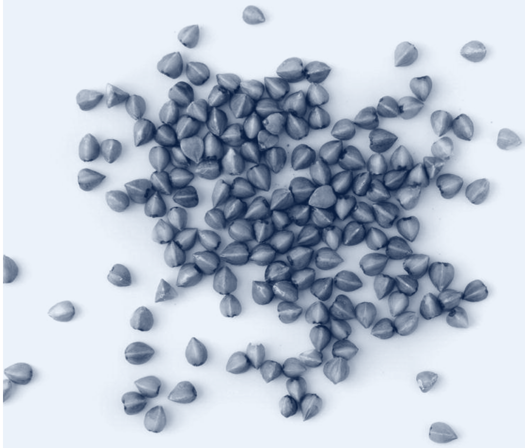
THE ONLY ACTIVE METHOD OF CARGO CARE AVAILABLE DURING CARRIAGE OF GRAINS AND OILSEEDS IS VENTILATION.

The purpose of ventilation is to reduce the risk of condensation during a voyage. To demonstrate cargo monitoring, hold temperatures can also be measured via the hold sounding pipes. This will provide a general oversight of whether cargo temperatures may be changing within the holds, but is also influenced by the ambient conditions and should not be considered as a direct measurement of cargo temperature. Condensation can result in a localised increase in the cargo moisture content. This places the affected cargo at risk of accelerated decomposition and mould growth with an associated rise in temperature.

When ventilating bulk hygroscopic cargoes such as grains and oilseeds, it is recommended that the Three Degree Rule is followed. The rule prescribes that ventilation should occur when the outside ambient temperature is more than 3°C below the temperature of the cargo at loading and the weather conditions are suitable.

The crew should assess conditions throughout the voyage to check whether ventilation is required. Ideally, the crew should check the ambient temperature and compare to the average cargo temperature at loading on each watch, particularly on voyage routes which might experience a large daily temperature differential. A ventilation log should be maintained which records the rule followed: when, why and how long ventilation was performed. It should also include any reason why ventilation was not performed, which might include rough seas and poor weather conditions. Ventilation is often required overnight since this is when the ambient temperature is likely to be cooler compared to the cargo loading temperature. However, vessels often do not ventilate overnight due to the more limited availability of crew and potential risks of sudden changes in weather and or sea conditions. Where possible, the cargo should be ventilated according to the Three Degree Rule on a 24-hour basis. If ventilation is not performed overnight, this should be recorded with the reason why clearly stated.

If the vessel experiences a significant delay prior to discharge it may be possible to inspect the cargo surface and re-measure the cargo temperatures at this stage to inform the continued cargo care regime.



DISCHARGE

IN MOST CIRCUMSTANCES, DISCHARGE OF BULK GRAINS AND OILSEEDS PROCEEDS WITHOUT INCIDENT. In the event of damage at discharge, it is important that the position of damage in the hold(s) is accurately recorded – for instance the location, depth/height above the tank top and the area. This will assist in determining the cause of damage. The crew should closely monitor discharge and any segregation activities. A local surveyor should be appointed to document cargo condition, inspect the damage and, where relevant, obtain a cargo temperature profile throughout discharge.

A Grain and Feed Trade Association (GAFTA) or FOSFA approved superintendent should also be appointed to take representative samples of the cargo during discharge in accordance with GAFTA Sampling Rules no. 124 or FOSFA sampling guidelines. Ideally, the sampling should be performed on a joint basis with other interested parties. The representative samples obtained should represent the cargo as a whole and any segregated categories (i.e. additional representative samples should be obtained for cargo considered sound and damaged).

COMMON RISKS/CLAIMS EXPERIENCED WITH CARRIAGE OF GRAINS AND OILSEEDS

SHIP'S SWEAT AND CARGO SWEAT

SHIP'S SWEAT AND CARGO SWEAT ARE TYPES OF CONDENSATION THAT FORM DUE TO DIFFERENCES BETWEEN CONDITIONS IN THE HOLD AND THE EXTERNAL ENVIRONMENTAL CONDITIONS. Condensation can result in a localised increase in the cargo moisture content. This places the affected cargo at risk of accelerated decomposition and mould growth with an associated rise in temperature as discussed above (see *Voyage* section).

Ship's sweat forms when the steelwork of the vessel is cooler than the dew point of the air within the headspace. This typically occurs when a vessel sails to a cooler climate and the lower external ambient temperature cools the steelwork.

Figure 1: Mould residue on the hatch coaming from condensation wetting in a cargo of maize. Black, mould-damaged grains can be seen rolling down the cargo slope from beneath the deck areas where moisture condensed and wet the cargo. Cargo compaction/caking in the centre was due to prolonged stowage on board during a delayed voyage.
Reproduced with kind permission of CWA

Warm air has an increased capacity to hold more water vapour than cooler air. As the temperature within the headspace cools, the air reaches saturation point and begins to release moisture. This moisture condenses on the cooled steel work. The condensation will then drip onto the cargo surface and/or run down the frames of the hold. This damage is characterised by wetting and associated mould damage visible as a regularly repeating pattern across the surface of the cargo reflecting the frames or features of the hatch covers directly above.

Repeated wetting due to the prolonged formation of ship's sweat can result in damage extending deeper into the stow. The main source of moisture in the hold is the cargo itself where it is present in a significant quantity. The formation of ship's sweat can be influenced by the cargo moisture content itself through moisture migration and respiration of the grains/oilseeds. When moisture reaches the relatively cooler steel structure it condenses and then drips onto the cargo causing localised damage.

Cargo sweat, conversely, forms when the cargo temperature is lower than the dew point of the air in the headspace. This normally occurs in situations where cold or relatively cooler cargo is loaded and warmer air is subsequently introduced into the headspace by incorrect ventilation during a voyage or when a cold cargo is discharged in a significantly warmer destination. In this case, the condensation forms directly on the surface of the cargo itself. This damage would be characterised by mould growth at the surface of the stow without the distinctive grid pattern seen with ship's sweat.

Cargo sweat can also occasionally occur when there is prolonged ventilation of the holds with air that is far lower than the cargo temperature. This can reduce the cargo temperature of the immediate surface layer. If there is a subsequent delay in discharge, moisture from the bulk of the stow may rise and condense against the cooled cargo at the surface.

Figure 2: Cargo of wheat contaminated with a localised area of foreign material comprised of sand and stones. It is difficult to assess such contamination during loading due to the levels of dust and colour of foreign material.
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Figure 3: Small column of caked soya beans positioned directly below a hatch cover ventilation window.
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Figure 4: Column/area of wet damaged cargo positioned beneath the hatch cover joint.
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CARGO CONTAMINATION

THE CREW SHOULD CLOSELY MONITOR THE CARGO DURING LOADING TO ENSURE IT IS NOT EXCESSIVELY CONTAMINATED WITH FOREIGN MATERIALS. There have been cases where cargoes of grain are loaded co-mingled with large quantities of sand, concrete debris, plastic and fabric bags. Due to loading methods which raise large amounts of dust, it is often only at discharge that localised accumulations of such foreign material contamination are found. Other sources of contamination are previous cargo residues and rust flakes from the interior hold surfaces. The holds should always be inspected and confirmed suitable for receiving grain/oilseed cargo before loading.

WATER INGRESS

ANOTHER ISSUE WHICH CAN OCCUR DURING VOYAGES IS THE INGRESS OF WATER THROUGH LEAKING HATCH COVERS. When this occurs it commonly presents in the form of obvious columns of mould damage and caked pillars of cargo where the water has leaked directly down towards the tank top from the point of entry (see Figures 3 and 4).

The only preventative measure is to ensure that all hatch covers, and manholes on deck, are inspected and maintained on a regular basis to ensure weather tightness. The condition of the steel compression bars and rubber hatch cover seals should be regularly checked and maintained accordingly. The crew should ensure that a Hatch Cover Test is performed prior to the voyage and that a certificate or report is produced.

Wetting of cargo can also occur if hatch covers are left open when it is raining or there is spray during loading or discharge. If this occurs at loading, the wetted cargo must be discharged. Failure to discharge wetted cargo at the load port is likely to lead to cargo claims at disport due to visible mould growth. Furthermore, wetting prior to the voyage is likely to result in deterioration that affects other areas of the stow, thereby increasing the quantum of potential damage. To prevent these issues, the master and crew should pay close attention to the weather and be ready to close hatch covers in advance if required.

Additionally, severe weather conditions during the voyage resulting in water on deck can also lead to water ingress to the cargo holds.. In the event that such adverse weather conditions are experienced, a Sea Protest detailing the weather event may also assist in the defence of a claim.

Mould and wet damage found at the lower part of the hold is often attributed to overflowing and poorly maintained bilges.

Figure 5: Partially discharged stow of soya beans with characteristic mouldy crust on the surface due to self-heating within the pile. The dark black discolouration is a drip line due to condensation dripping from the interior steelwork.
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Figure 6: Partially discharged cargo of soya beans. The caking well below the cargo surface is indicative of mould growth between the beans causing them to stick together. The soya beans are only slightly discoloured at this stage.
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Figure 7: A close up of surface mould crust associated with self-heating within the stow of soya beans. Moisture condenses in the relatively cooler upper layer of cargo leading to mould growth which often forms a white layer of mould.
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A surveyor or crew member should closely inspect the condition of the bilges prior to loading the cargo to ensure that waste water can be easily removed.

Localised damage to cargo on the tank top can be attributed to cargo being loaded on a tank top that it still wet. The master and the crew should closely monitor rain events at loading to prevent any wetting of the tank top after the initial surveys confirming the holds to be fit for loading.

Furthermore, the bilge levels should be measured and recorded regularly during the voyage and, if necessary, water pumped out to prevent overflow of the bilges. Once discharge of each hold has been completed, the bilges should be inspected for any signs of water accumulation.

SELF-HEATING

GRAIN AND OILSEED CARGOES CARRIED IN BULK WILL UNDERGO BIOLOGICAL REACTIONS DURING STORAGE. The grains and oilseeds continue to slowly respire, consuming oxygen and generating carbon dioxide, water and heat. Due to the large quantity of cargo within the holds and the high insulation capacity of such cargoes, the grain/oilseed temperature can increase over time.

The degree to which self-heating will manifest itself within a cargo is influenced by the moisture content and temperature of the cargo at loading and the length of the voyage. In some cases, pockets of cargo with a higher moisture content will begin to develop mould, further heating the cargo. If the entire cargo has an inherently high moisture content, the risk of mould growth and self-heating increases significantly.

Carriage of cargoes with a high oil content, or processed feed products with residual oil content, have an additional risk of self-heating due to the breakdown of the oil. As a result, there is a greater risk of soya beans and seed cake cargoes self-heating in comparison to cereal grain cargoes. For example, soya beans have an oil content of 18 to 20%, whereas wheat has an oil content of 1 to 3%. If soya beans have been stored on board for a long time, it is not uncommon for temperatures to exceed 50°C. In severe cases of heating, the beans may severely discolour and even carbonise, rendering them unfit for any useful purpose. The longer a self-heating cargo remains on board, the greater the extent of heat damage and discolouration. Examples of caking and self-heating damage are shown in Figures 5 to 10.

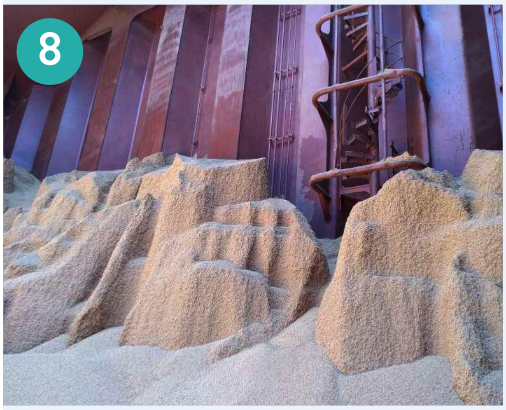

Figure 8: Soya beans caking well below the cargo surface in the lower part of a cargo hold. The caking indicates mould growth between the beans.
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Figure 9: Mould growth between the soya beans in a caked area of beans.
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Figure 10: A severely heat damaged soya bean cargo with heavily blackened and carbonised beans.
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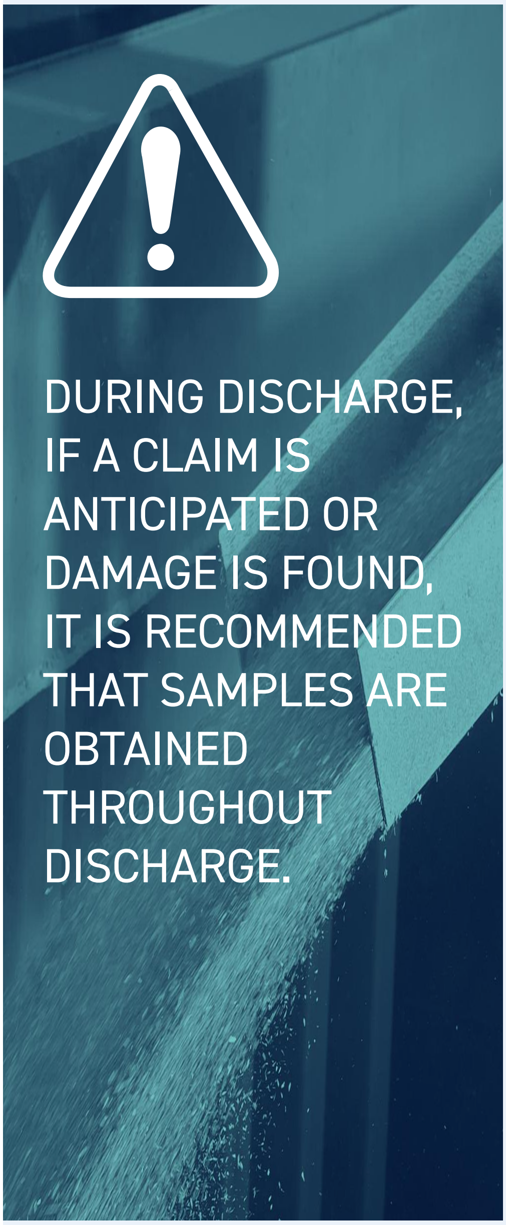
There are several other potential sources which can initiate or exacerbate the self-heating process. A common source of heating is insect infestation. Insects, like other living organisms, generate heat as a by-product of their metabolic processes. A significant insect infestation can lead to rapid increase in temperature and damage to cargo. It should also be noted that the presence of insects will deteriorate the quality and condition of a cargo and that some insects are considered quarantine pests.

Other external heat sources include lights left on within the hold, improperly fitted fumigant recirculation fans inside the hold, and heated FOTs adjacent to the holds. These external heat sources generate localised heating which can initiate the self-heating process and, in some cases, cause combustion.

In the event of self-heating, there is little that can be done to stop the continued increase in temperature. Ventilation only serves to remove water vapour from the headspace atmosphere and does not affect the temperature of cargo within the body of the stow.

The only truly effective method to stop self-heating is to discharge the cargo as soon as possible. Self-heating may continue post-discharge if the cargo is stored in large piles with little ventilation.



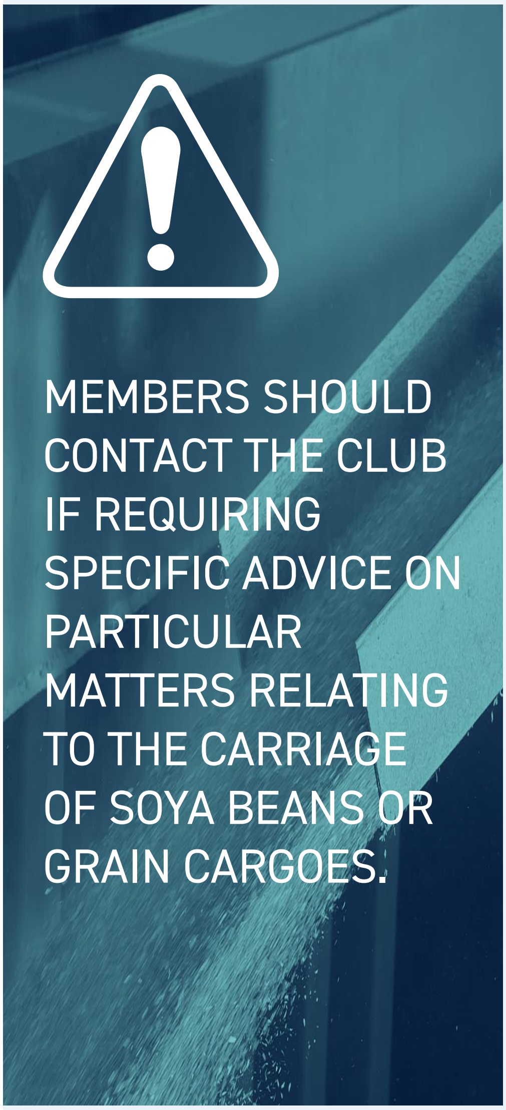
MITIGATION

THE COMMON FORMS OF DAMAGE DESCRIBED ABOVE, AMONG OTHERS, OFTEN GIVE RISE TO CLAIMS FROM VARIOUS PARTIES. It is important to understand that there are a range of mitigation strategies that can be employed to help reduce the scale and severity of damage. Broadly, these can be split into activities performed during and after discharge.

During discharge, if a claim is anticipated or damage is found, it is recommended that representative samples are obtained throughout discharge. With soya beans, the samples must be obtained in accordance with the latest FOFSA sampling method. The same applies for grain cargoes and samples should be taken according to GAFTA Sampling Rules no. 124. Once representative samples are obtained, they can be retained and analysed to investigate a number of factors, such as quality grading and biochemical parameters. It is important to stress that a spot sample (i.e. a sample that is not comprised from multiple incremental samples taken throughout discharge) cannot be considered representative of the cargo. Ideally, a FOSFA or GAFTA accredited superintendent should be appointed to undertake representative sampling, either on a unilateral or joint basis.

Additionally, it is important that an effective segregation operation is put in place. This is usually the responsibility of the receiver, though owners should monitor their plans and assist when possible. If damaged cargo is in a discrete location, as is often the case with water ingress through the hatch covers, it is suitable and effective to segregate damaged cargo by hand. For more widespread damage, typically seen with heavy sweat/condensation related damage on the surface, it may be more appropriate and practical to remove by 'skimming' with a grab or small payloaders. In every instance, care should be taken to ensure that the most effective and practical segregation method is undertaken. The segregated cargo should also be representatively sampled.

Once the cargo has been discharged by the vessel there are several steps that are commonly utilised to help mitigate potential cargo claims. For example, with soya beans which are self-heating and at high temperature at discharge, it is useful to attempt to dissipate this heat. This can be achieved by spreading the affected cargo in a flatbed warehouse to help reduce the temperature of the beans. Care should be taken to avoid piling the cargo in high piles. Storage in silos allows the rotation of the cargo, whether grain or oilseeds, between silos and the use of forced ventilation to alleviate any hotspots which may develop.

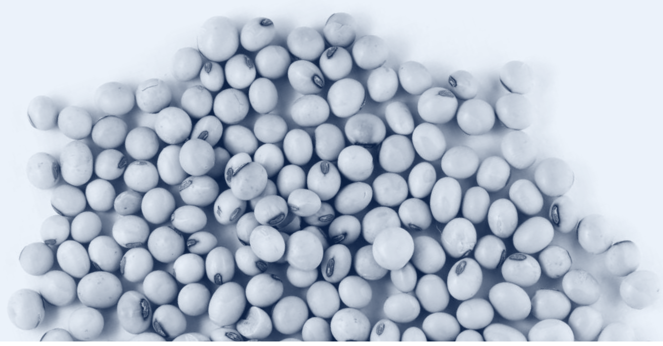


Another method used to mitigate the effects of self-heating damage to soya beans, although this also applies to damaged grain cargoes, is to blend the affected beans with beans of a better quality, often from another vessel. The practice of blending is commonplace at large processing facilities or grain terminals with enough reserves of suitable grains or soya beans that can be blended.

When attempting to quantify or validate a potential claim that arises following mitigation by blending, it is important to obtain relevant documents and data, such as the blending ratios and quantities, and the quality parameters and results for each lot that is blended with the affected cargo.

CONCLUSIONS

THERE ARE A RANGE OF CONSIDERATIONS FOR THE CREW TO CONSIDER PRIOR TO AND DURING THE CARRIAGE OF GRAIN AND OILSEED CARGOES. It is most important for the crew to document cargo loading and monitor cargo during the voyage to ensure that sufficient useful information is retained to helpfully defend any potential claims at the destination. An understanding of the common issues experienced during the carriage of these cargoes and ways to avoid these issues may well assist in minimising and preventing cargo damage and claims. Therefore, Members should contact the Club if requiring specific advice on particular matters relating to the carriage of soya beans or grain cargoes.

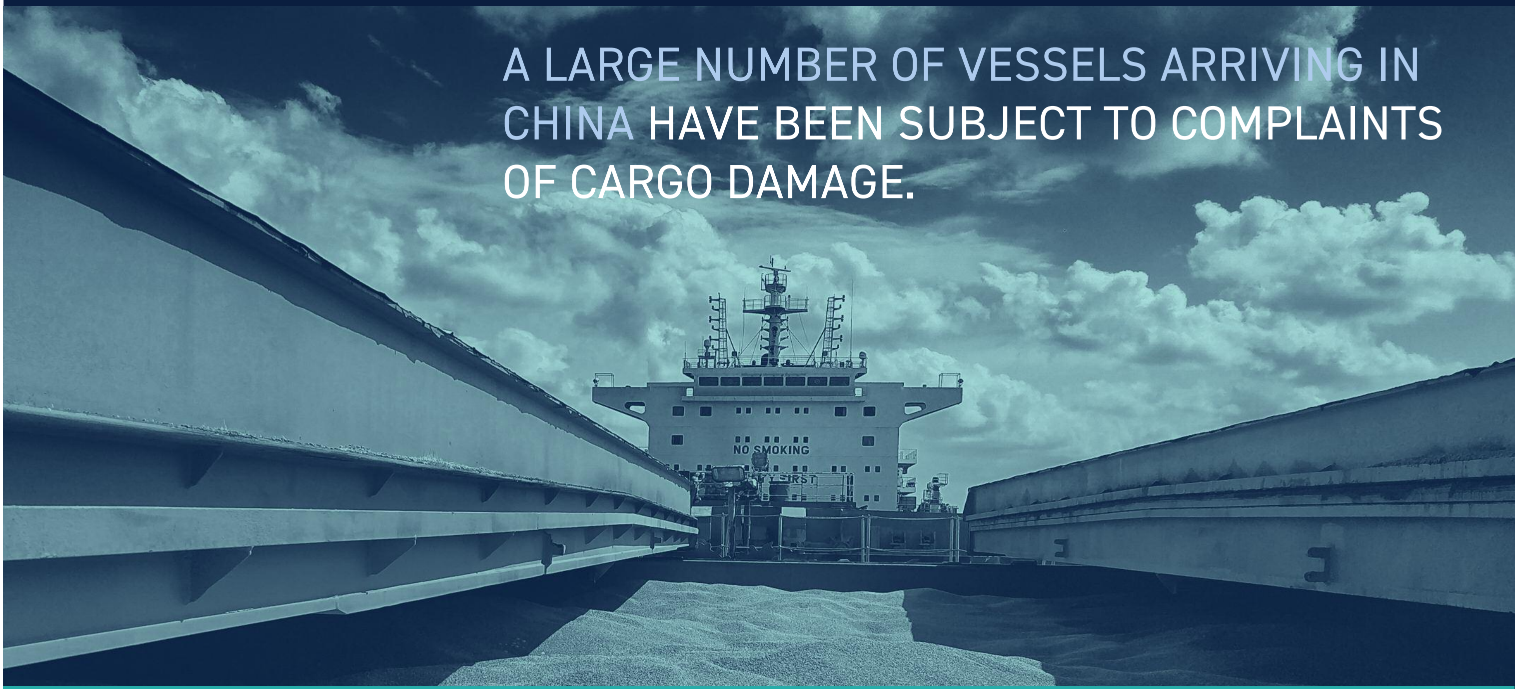


CASE STUDY – FOCUS ON BRAZIL TO CHINA SOYA BEAN TRADE

THE 2020/2021 BRAZILIAN SOYA BEAN HARVEST PRODUCED A BUMPER CROP WITH RECORD QUANTITIES OF EXPORTS BEING SHIPPED IN THE FIRST QUARTER OF 2021. The majority of these exports were to China. In subsequent months a large number of vessels arriving in China have been subject to complaints of cargo damage.

One of the issues with soya bean claims in China is that the assessment of cargo quality in China tends to be based on the Chinese standard for soya beans rather than the Brazilian standard. This is despite the fact that the beans are assessed at loading according to Brazilian definitions for the different types of damage. A major difference between the two standards is with the assessment for heat damaged beans, with the Chinese standard having a much stricter assessment. In addition, the two standards differ in other parameters such as the permissible moisture content, with Brazil permitting a maximum of 14% compared to 13% permitted in China.

Claims are also often based on the quality of the final processed products (i.e. the extracted soya bean oil and residual soya bean meal) rather than the quality of the whole soya beans. Soya bean cargoes arriving in damaged condition are subject to claims for high free fatty acid (FFA) content in the extracted oil and lower protein solubility of the soya bean meal. This is despite the fact that these two parameters, although important to the respective products in China, are not tested on the whole soya beans in Brazil and do not technically form part of the contractual specifications in most instances.



A LARGE NUMBER OF VESSELS ARRIVING IN CHINA HAVE BEEN SUBJECT TO COMPLAINTS OF CARGO DAMAGE.

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