

Guidelines for the Safe Carriage of Bagged Rice - Risk Alert 105



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Introduction

An area where the Club continue to see a number of claims is in association with the carriage of rice, which, whilst predominantly carried in bags, can also be carried in bulk. Rice is a hygroscopic cargo, sensitive to temperature and humidity, either of which can have a detrimental impact on the quality of the rice cargo and which can in turn result in claims.



Typical claims can include cargo shortages, contamination and mould damage, which could be due to sweat, water ingress, infestation or for temperature related issues where for example the cargo has been loaded too close to the ship's engine room bulkheads or other sources of heat such as fuel oil tanks with heating arrangements.

This risk alert is intended to address, in a methodical, step-by-step manner, some of the issues associated with the carriage of this sensitive cargo, from the time of receiving instructions to load rice cargo through to the discharging operations. The objective is to provide a greater appreciation of the issues related to and associated with its carriage, and how to prevent and mitigate against them.

Pre Load Planning:

Pre-load planning and preparation is perhaps one of the most important and often overlooked steps when considering the carriage of rice.

The importance of ensuring that cargo holds have been properly prepared in readiness to receive the cargo cannot be understated and hold cleanliness (or lack of) is frequently a contributory cause of claims within this area. Proper planning lays the foundations for a successful, profitable and claim free voyage and should encompass aspects such as robust hold inspections, maintenance, cleaning, security concerns and discharge plans.

Various hold cleaning standards are referenced when setting out the required cargo hold condition. 'Hospital clean', 'Grain clean', 'Normal clean' and 'Shovel clean' are all in common use and are often included in charterparties. It is important to note that there is no universally accepted definition of these terms, and it is therefore imperative that concise and clear language is used when describing the cleaning standard required by a charterparty or voyage order.

Hold preparation is key and should include:

- Preload check lists are undertaken per the vessels SMS procedures.
- Cargo hold cleaning being carried out to the grain standard, requiring that, prior to loading, the holds be swept to remove residue of previous cargo, lashing material, loose rust scale and paint flakes, etc. then washed down and rinsed with fresh water, dried and well ventilated, and that they be free of insects and any odor. Light atmospheric rusting of exposed steel may be acceptable but loose scale or paint, such that it may become detached and mix with the cargo, is not. Special attention is required for the areas which are difficult to reach such as those areas behind sounding or air pipes, cable guard plates or high up on brackets where there is the chance previous cargoes may have been missed and become dislodged.
- Cargo hold bilges are to be thoroughly cleaned, dry and free of odour. The entire bilge system to be fully functional tested and maintained as per the PMS, this is to include testing of non-return valves and bilge alarms (where fitted). Similarly, for the ballast water system a documented hydrostatic test is to be completed to verify structural integrity and watertightness of the ballast tanks and to confirm that the ballast system is tested and fully operational.
- Ensuring that any sounding and vent pipes for the bilges, ballast or fuel tanks that pass through a cargo hold are not damaged and are free of any obstructions, with appropriate closing arrangements in place.
- Manhole covers and openings located within, or leading to the cargo holds are to be properly secured, sealed and checked to prevent possible water or fuel ingress.
- Watertightness of hatch covers & sealing arrangements – Water ingress into the cargo holds in adverse weather conditions can result in wetting damage claims and therefore cargo hold hatch covers must be inspected. The inspection shall involve checking of hatch coamings, ensuring that drain channels are clear of debris and non-return valves are in good working order. Compression bars should be smooth, free of rust and not distorted, and hatch cover rubber seals and their landing pads (bearing pads) are to be in good condition. Securing devices, including cleats and cross joint wedges, should be fully operational and properly adjusted, and engaged before sailing. The club recommends that UltraSonic Testing (UST) of hatch covers be undertaken to better ensure that the hatch covers are weathertight prior to the commencement of loading operation.
- Hold ventilation system tested as per SMS procedures, ensuring that it is fully functional and capable of being securely closed in the event of any adverse weather condition or in the event of an emergency.

Vessel's cranes/derricks and other cargo equipment is to be fully certificated and properly tested to ensure that it is fully operational. Ensure that all the relevant certification is valid and available, and that the register for lifting appliances (i.e Chain Register) is accurately maintained and fully up to date. The same is applicable at any time the ships lifting equipment is to be utilised, at the discharge port for example.

To emphasise, records of any inspections, as well as any repairs are to be properly and diligently documented. These records are important in defending any claims that may be made against the member's vessel by charterers or cargo interests. The chain register for cargo lifting equipment should be complete and up to date.

Additional information regarding hold cleaning can be found at the following links on the Club's website:

- [Intermediate Hold Cleaning - Owners' Duty](#)
- [Hold Cleaning - when is clean, clean enough?](#)
- [Hold Cleaning - Who Bears the Cost?](#)

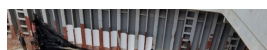
It is recommended that, in preparation for arrival at a load port, Members consult with the local correspondent for an insight into any specific cargo and claims related issues that may be experienced in the region and details of any specific preventative measures that should be considered by the master in this regard.

At the Load Port:

- On tendering NOR (Notice of Readiness) on arrival at the port of loading (POL), a Pre-Load Initial draft survey is carried out in the presence of all concerned parties. It is prudent, prior to loading, to verify the vessel's constant to ensure correct results for the draft surveys and consequently that the correct amount of cargo has been loaded. It is imperative to ensure that, in the presence of all concerned parties, ALL tanks (Ballast / Fuel Oil / FW etc) are accurately sounded, and that any trim/list corrections are correctly applied.
- Cargo holds are to be surveyed by an independent surveyor and "PASS" certificate issued, ideally in the presence of all concerned parties.
- Consider appointing an independent preload cargo surveyor and Tally Clerk for the entire cargo operation. The preload surveyor will help with checking and documenting the cargo quality and quantity and any issues related to mishandling of the cargo by stevedores. They can also provide support where shore weighing scales are used, this can be particularly important at the discharge port where there is the risk of theft/pilferage and cargo shortage claims. The independent surveyor can assist ships staff in recording the apparent condition of the cargo so that, where appropriate, mate's receipts and bills of lading can be correctly **clausured** and would be useful in mitigating against future cargo claims.

Stowage & Protection Materials / Dunnage:

- Any dunnage and other protective materials used during the loading operation should be of good quality, clean, and dry and applied in line with industry standards. Dunnage by means of placing



wooden pallets in the tank top and hoppers is intended to avoid direct contact between the cargo and the vessel steelwork. The pallets are commonly overlaid with craft paper or plastic sheets on both the tank top and the sides of the hold. On completion of loading, the top layer of the cargo should be covered with a layer of plastic sheet or craft paper to protect the cargo from any ship sweat that may form on the vessel structure. Various alternative types of dunnage such as bamboo sticks, Styrofoam or plastic/polythene sheets and craft paper are also common in certain parts of the world. It should be borne in mind that some countries have restrictions on the discharge of certain cargo protection materials in their ports, and this should be a consideration when determining which materials should be employed at the load port. The provision of adequate, appropriate and approved cargo protection /dunnage materials is very important and is to be to the satisfaction of mas



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- It has been determined that in some claims, at the time of loading, the cargo protection material had not been applied in the correct manner. The protection material (kraft paper/plastic sheeting) should be laid in such a way as to assist any "sweat" to run to the bilges, that the sweat is run-off behind the sheets and does not come into contact with the cargo itself.
- The stowage plan should be checked to verify that the cargo is appropriately and properly stowed in relation to the overall volume of cargo to be loaded in the hold. The stowage should allow for proper ventilation channels to facilitate effective circulation of air. Due attention should be given to the structure of the cargo hold including steel frames, pipes and shape of the cargo hold, allowing proper for separation of cargo from the steel structure.
- The loading and discharging of rice bags should be carried out utilising slings and nets which presents a lower risk of cargo damage, although this does involve a lot of manual handling for the correct stowage and discharge of rice bags. Some stevedores use hooks which should be avoided as this can damage the rice bags and result in cargo spillage with the associated potential for shortage claims.

Cargo Documents :

- All relevant cargo documentation is to be provided to the master, this should include the Cargo Quality Certificate and any Shippers instructions for the safe carriage of the cargo.
- The average moisture content for rice should not exceed 14% and would be stated in the Cargo Quality Certificate. A moisture level above 14% would present an inherent risk of damage and therefore appropriate steps to protect against potential cargo damage claims at the discharge port should include rejecting cargo of a high moisture content.
- The vessel should have onboard appropriate publications to guide on the stowage and care of rice cargo onboard vessels. The vessel should comply with the approved CSM (cargo securing manual) for the safe stowage and securing of the cargo and to also ensure that adequate stability is maintained for the entire voyage.
- Dunnage Certificate : Phytosanitary certificate requirements vary from country -to- country and are intended to protect the country against any harmful and detrimental species being introduced into the local environment. Disposal of dunnage on completion of discharge might be challenging without the appropriate certification.

Cargo operations & Stevedore Handling :

- It is a good practise to have a pre cargo operation and toolbox meeting between all concern parties prior to the commencement of the initial cargo operations and at the start of each day thereafter. With many companies incorporating this practise into their SMS procedures.
- Handling issues can result in damage to bagged rice cargo and members should be aware of this potential for damage during cargo operations (loading and discharging). Multiple handling of bagged rice cargo, such as the loading from or discharging to barges may exacerbate the possibility of damage.
- Stevedores handling of cargo must be effectively and constantly monitored and, where mishandling has occurred, Letters of Protest (LOP) should be issued on each occurrence. When issuing LOPs, members should include as much detail as possible with the objective of making it easier to defend any subsequent claims should they arise.
- Most bagged rice cargoes are loaded and discharged using slings and nets as stated above. This reduces the risk of damage while allowing multiple bags to be lifted at the same time. The dragging of slings is to be avoided, and slings that are used should be of an approved type, be clean and have the relevant certification readily available.
- The risk of other physical damage during cargo operations also exists, and that include the spillage of drinks and in some cases urinating on cargo by the stevedores. The tallying should be monitored by the crew and the independent preload cargo surveyor.
- Maintaining a constant record of the temperature of the cargo during the loading operation is essential, with future decisions regarding ventilating of the holds during the course of the voyage being based on the average cargo temperature during loading. The ship's crew should continuously monitor for rain during the loading process, ensuring timely closure of hatch covers to prevent wetting damage to the cargo. A detailed record of any rain occurring during the time of cargo operations must be documented in the rain log.
- To prevent damage to the rice bags the use of hooks and any other sharp objects should be avoided, and this should be discussed during pre-cargo operations toolbox talks. In the event of damage to the rice bags any spillage should be collected and tallied separately to minimise any potential shortage claims. Any deviations from the arrangements (as agreed in the pre-cargo operations meeting) should be recorded and LOP issued with detailed explanation.
- It is good practise for the ship's officers to carry out an "intermittent internal draft survey" at the end of each stevedoring shift, this assists in assessing the quantity loaded onboard and can serve as a counter check with the Tally, reducing the chance of ambiguities in the quantity of cargo loaded or discharged.
- Mate's receipts (MRs) are to be issued as and when necessary, stating the actual condition of cargo loaded onboard and becoming part of the B/Ls. The preload surveyor should assist in the issuance of these documents.
- Cargo holds where no cargo operations are in progress should be kept closed and this applies to both loading and discharge cargo operations.
- On completion of final cargo loading, the cargo holds are to be closed and battened down and, in the presence of all concerned parties, the hatch cover and hatch access seals applied. A hatch sealing certificate should be provided to certify that the hatches covers and accesses hatches have been sealed. This activity is to be documented, and the same is recorded in the deck logbook with details of the seals.
- On completion of cargo operations, and in the presence of all concerned parties, a Final Draft survey is to be carried out, the final loading figures agreed, and the Bills of Lading (B/Ls) are issued. All of these activities are to be properly and diligently, logged and filed onboard.

Fumigation :

Rice is a cargo that may be liable to infestation and is therefore required to be fumigated. Fumigation is a process that is intended to prevent insects, pests, and potentially rodents that may be concealed within plant products from infestation of the cargo.

The fumigation of cargo holds is covered by SOLAS Ch. VI – Part A – Regulation 4 – The use of pesticides in ships, which refers to [MSC.1/Circ.1264](#) – Recommendations on the Safe Use of Pesticides in Ships Applicable to the Fumigation of Cargo Holds, which was amended by [MSC.1/Circ.1396](#).

There are three main types of infestation :

1. Introduced –brought on board with plant and animal cargoes.
2. Cross –transfer to other cargoes
3. Residual –left in cargo holds from previous cargoes.

For fumigation of rice cargo the following should be considered :

- Appointing a certified and reputable fumigator -in-charge and team of fumigators.
- Certificate of fumigation and clear guidance from the fumigating company detailing the type of fumigant and quantity used together with clear concise instructions advising the crew when to start ventilating.
- Detailed instructions, training, and equipment for monitoring gas concentrations during the course of the voyage in void spaces and crew accommodation.
- Once fumigation has been undertaken the cargo holds are to be considered an Enclosed Space and NO ENTRY signs are to be posted at all cargo hold access points. There is to be no entry into the cargo holds until such time as the holds have been well ventilated and certified gas free by a competent chemist.

Members are reminded to refer to the recommendations on the safe use of pesticides onboard vessel for further details refer to IMO Circulars [MSC.1-Circ.1264.pdf](#) and its amendment [MSC.1/Circ.1396](#).

Transit passage :

- Upon completion of the final draft survey, and having sealed the cargo holds, the vessel will set sail for port of discharge (POD). As a good practise, where possible and practicable, the condition of the vessel upon arrival at the discharge port should be the same as that upon sailing i.e. ballast and fuel tanks condition, with exceptions being the use of bunkers and other consumables during the course of the passage.
- Unless required for stability reasons, or in the event of an emergency, any transfer of ballast water is to be avoided and should be kept to the minimum.
- Bilges and ballast tanks are to be sounded on a regular basis, ideally daily, and accurate logs maintained.
- The seals of the cargo holds are to be checked frequently. In the event a seal is found to be broken it should be replaced with one of those specifically provided onboard. All parties, including charterers and shippers, should immediately be notified in the event of any broken seals being identified, with the broken seals being retained onboard for inspection at the discharge port. All this activity including seal numbers and photographic evidence should be retained to defend possible claims and should be accurately recorded in the deck logbook.
- The cargo hold weathertightness is to be monitored throughout the course of the passage and appropriate action taken to ensure the continued weathertight integrity of the holds, especially during rough weather conditions. Accurate details of the weather conditions and sea state are to be recorded in the deck logbook.
- The accurate recording of all the above activities is very important when defending any potential cargo damage claim, demonstrating that the carrier has exercised due diligence in meeting their obligation to properly prosecute the voyage, using all available resources and the practice of good seamanship. This may include any alteration to course/speed if the circumstances dictate in order to protect the cargo.
- The ventilation of the cargo holds is to be undertaken as and when appropriate with detailed and accurate records being maintained.

Ventilation :



A significant portion of claims arising for bagged rice cargo originate during the voyage, with the primary hazard being condensation, with the sole purpose of ventilating a hold being to prevent or minimise the formation of condensation. This condensation can occur due to either ship sweat, or cargo sweat.

Ship sweat occurs on the structure of the holds and the underside of hatch covers when the dew point in the hold exceeds the temperature of the steel. This typically happens when a vessel is loaded in warm climates and enters areas of colder climates, which is often the case for bagged rice. Major export countries such as India, Thailand, and Vietnam are in warm climates, while many of the discharge ports, in West Africa for example, are reached by sailing around the Cape of Good Hope, where a considerable temperature difference exists.

Cargo sweat, on the other hand, occurs when the dew point of the hold is higher than the temperature of the cargo, and the warm moist air condenses upon contact with the cooler cargo.

This situation arises when the vessel is loaded in cold climates and discharges in warmer climates. Therefore, constant monitoring of temperature and ventilation is crucial.

The basic principle for avoiding the formation of sweat is to maintain the dew point of the air within the cargo hold below the temperature of the hold structure and the cargo to prevent the formation of ship and cargo sweat. Ventilation aims to replace warm, moist air in the hold with cooler and drier air. Two prominent methods for ventilation are the 'Dew Point Rule' and the 'Three Degrees Rule'.

The 'Dew Point Rule' involves comparing the dry and wet bulb temperatures inside the cargo hold with the dew point outside. This is usually done using a handheld whirling psychrometer or by placing a dry and wet bulb hygrometer inside the hold. If the dew point inside the hold is higher than the dew point outside, ventilation is needed. However, where entry into the cargo hold is not possible, the 'Three Degrees Rule' is used. In this rule, the dry bulb temperature of the outside air is compared with the average cargo temperature at the time of loading, and ventilation is required if the outside air is three degrees cooler than the average loading temperature.

The determination of when to ventilate can also be dependent upon the weather conditions, as during rough weather conditions any ventilation activity could lead to cargo damage, it is therefore important that the master consider very carefully when, and where, the ventilation of cargo holds might be undertaken. A ventilation log should be maintained, including clear reasons for days when ventilation was not conducted, supported by photographic evidence of the prevailing weather conditions. Alongside the ventilation log, regular soundings of bilges should be undertaken, and a record of bilge soundings must be maintained. Temperature monitoring and appropriate ventilation should be implemented until such time as the vessel reaches the berth and the discharging operation commences. This is particularly important during periods of extended anchoring or waiting periods, and it is imperative that such monitoring continues without interruption.

The determination of when to ventilate in order to maintain the dew point at an acceptable level, and avoiding ["The Problem of Sweat"](#) is explained in detail in the Club's Risk Alert 06.

Ship's sweat combined with rust, for example from the undersides of hatch covers, may result in rice bags becoming tainted. While the cargo inside the bags may not be damaged the discolouration on the rice bags may be sufficient for the receiver to claim damage with consequential rejection of the affected cargo.

Rust stains or stains from ship's sweat mixed with ship's rust (especially from undersides of hatch covers) have been observed on the rice bags at the port of discharge. While the cargo inside may not be damaged the discolouration on the rice bags is enough for rejection at times. The determination of when to ventilate in order to maintain the dew point at an acceptable level, and avoiding ["The Problem of Sweat"](#) is explained in detail in the Club's Risk Alert 06.

As with all cargo activities accurate record keeping is essential. The successful defence of any claim can hinge upon the quality and detail of the records that are being maintained. Ventilation logs for example can play a crucial role in defending the actions taken by the crew when caring for the cargo on passage. As a minimum, the following items of information should be recorded in the ship's ventilation log:

- Ship's name / voyage number
- Date & time
- Dry & wet bulb temperature of air (for various periods throughout the day)
- Cargo hold number
- Relative humidity
- Dew point
- Cargo hold temperature reading
- Sea water temperature
- Venting (Yes/ No)
- Time of venting operations (From / To)
- Vessels position at start of venting and at completion of venting
- Sea and weather conditions at the time of ventilation
- Remarks – For example an explanation if ventilation was not carried out

At the Discharge Port:

Upon arrival at the discharge port it is prudent, and a good practise, for ship staff to undertake their own draft survey in order to verify that the cargo quantity onboard tallies with the departure figures. The following are to be considered –

- The official draft survey is to be carried out in the presence of all parties concerned.
- All concerned parties to verify that the hatch seals are intact and to then witness breaking of seals. All the above activities are to be accurately recorded in the deck logbook.
- Upon first opening of the hatch the condition of cargo is to be witnessed and recorded in the presence of all concerned parties.
- At a pre-discharge meeting all parties to agree upon and implement appropriate cargo handling and security measures to avoid potential cargo losses, theft and pilferage.
- It is recommended to engage the services of both a cargo surveyor a tally clerk in order to protect the member's interests, safe guard against cargo damage and loss, and also assist the master in the execution of safe discharging operations.
- During cargo breaks, cargo discharged is tallied in unison with intermittent own vessel draft surveys in order to verify the quantity of cargo discharged and crosscheck with the Tally figures, allowing for early identification, and potential rectification of any differences in figures.
- The performance of stevedores should be monitored carefully for potential damage to, and mishandling of cargo and ships equipment, with Letters of Protest being issued as appropriate.
- Carry out ballast operations in line with the company's SMS procedure and ensure that the crew remain vigilant to any risk of water ingress into the cargo holds.
- Some ports may insist on the use of shore weigh scales for determining the cargo figures and it is possible that some trucks may try exiting the discharging area and avoid the weigh scales. It is therefore important to ensure that each truck leaving the discharge area with vessel's cargo passes through the weigh scales and the role of an independent cargo surveyor and tally clerk can be key in such circumstances to avoid potential cargo shortage claims.
- On completion of cargo discharging operations the cargo holds are to be checked by the surveyor and other concerned parties to verify that all cargo has been discharged prior to a Final Draft survey being undertaken in the presence of all concerned parties.

- All the above activities are to be accurately and diligently logged and records retained onboard for any future reference .

Claims Management –

In the event of any dispute or a claim, and dependent upon the circumstances an investigation may be undertaken and as part of that process the following documents would be required: –

- Master's Statement .
- Final Stowage Plan
- UST report of hatch covers.
- Photographs of actual cargo damage, mould/torn bags etc
- Copy of pre-load survey report together with photographic evidence .
- Copy of pre discharge survey report with photographic evidence .
- Copy of Post discharge survey report with photographic evidence .
- Copies of logbooks .
- Loading / Discharge time sheet with time of:
 - Arrival/departure
 - Awaiting instructions
 - POB
 - Berthing time
 - First opening and last closing of hatches
- Any notes from the meeting with shore side / cargo interests
- Photographs of hatch seals upon completion of loading
- Photographs of hatch seals prior to breaking for discharge
- Condition of protection material such as Kraft paper, Plastic sheets, dunnage etc.
- Number of cranes working (shore or ship's equipment with any breakdown and delays)
- Delays due to Stevedores , Weather, Cargo ops / breaks .
- Stevedoring damage report to the vessel .
- Weather reports .
- Copies of bills of lading.
- Pre-load draught survey report .
- Final draught survey report at loading port ;
- Copy of ventilation log
- Ship's hydrostatic and stability information may be requested .

Suggested References :

1. [MSC.1/Circ.1264](#) – Recommendations on the Safe Use of Pesticides in Ships Applicable to the Fumigation of Cargo Holds
2. [MSC.1/Circ.1396](#) – Amendment to the Recommendations on the Safe Use of Pesticides in Ships Applicable to the Fumigation of Cargo Holds (MSC.1/Circ.1264)
3. [The Problem of Sweat – Risk Alert 06](#)
4. [Intermediate Hold Cleaning - Owners' Duty](#)
5. [Hold Cleaning - when is clean, clean enough?](#)
6. [Hold Cleaning – Who Bears the Cost?](#)

Finally, a reminder that Members should contact either the Managers' appropriate representatives or the Club's local correspondents for advice in the event of any difficulties being encountered during the course of cargo operations .

For further information please contact the Loss Prevention Department Steamship Insurance Management Services Ltd. Tel: +44 20 7247 5490 Email: loss.prevention@simsl.com