



Carefully to Carry

Hold cleaning: bulk cargoes - preparing a ship for grain

Surveyors inspection/requirements

Prior to loading grain, all ships are usually subject to a survey by an approved independent surveyor. The surveyor will require the vessels particulars and details of at least the last three cargoes carried. He will then inspect the holds for cleanliness and infestation, or the presence of any material which could lead to infestation.

When the surveyor is satisfied with the condition of the hold, he will issue the ship with a certificate stating which holds are fit to load grain.

Purpose: to ensure cargo holds are prepared to receive the next cargo

Large claims have arisen when cargo holds have not been cleaned sufficiently to prevent cargo contamination. The requirements for cleaning the holds are dependent upon the previous cargo carried, the next cargo to be carried, charterers' requirements, the requirements of shippers and/or the authorities at the port of loading and the receivers. It is becoming common practice for receivers to have an inspector at the load port.

General

Regardless of the previous cargo, all holds should be thoroughly cleaned by sweeping, scraping and high-pressure sea water washing to remove all previous cargo residues and any loose scale or paint, paying particular attention to any that may be trapped behind beams, ledges, pipe guards, or other fittings in the holds.

If the ship has been carrying DRI (direct reduced iron), the dust created by this particular cargo during loading or discharging, will be carried to all areas of the ships structure and the reaction between iron, oxygen and salt will create an aggressive effect wherever the dust may settle. This is particularly noticeable on painted superstructures. (The IMO Bulk Cargo Code contains guidelines). Whenever salt water washing is used to clean hatches, the relevant holds should always be rinsed with fresh water to minimise the effects of corrosion and to prevent salt contamination of future cargoes. In this respect, arrangements should be made in good time to ensure sufficient fresh water is available for this operation.

Before undertaking a fresh water rinse, the supply line (normally the deck fire main or similar) will need to be flushed through to remove any residual salt water. Accordingly, it is suggested that fresh water rinsing of the holds is left until the end of hold cleaning operations to minimise the amount of fresh water required.



"The carrier shall properly and carefully load, handle, stow, carry, keep, care for and discharge the goods carried."

Hague Rules, Articles iii, Rule 2

Carefully to Carry Advisory Committee

This report was produced by the Carefully to Carry Committee – the UK P&I Club's advisory committee on cargo matters. The aim of the Carefully to Carry Committee is to reduce claims through contemporaneous advice to the Club's Members through the most efficient means available.

The committee was established in 1961 and has produced many articles on cargoes that cause claims and other cargo related issues such as hold washing, cargo securing, and ventilation.

The quality of advice given has established Carefully to Carry as a key source of guidance for shipowners and ships' officers. In addition, the articles have frequently been the source of expertise in negotiations over the settlement of claims and have also been relied on in court hearings.

In 2002 all articles were revised and published in book form as well as on disk. All articles are also available to Members on the Club website. Visit the Carefully to Carry section in the Loss Prevention area of the Club website www.ukpandi.com for more information, or contact the Loss Prevention Department.

Cargo hold, coal sticking and discharging salt



Grain preparation and safe carriage

One of the most difficult hold cleaning tasks is to prepare a ship for a grain cargo after discharging a dirty or dusty cargo such as coal or iron ore, particularly if the last cargo has left 'oily' stains on the paintwork or other deposits stubbornly adhering to the steel surfaces. Greasy deposits which remain Cargo hold, coal sticking and discharging salt. on the bulkheads will require a 'degreasing chemical wash' and a fresh water rinse in order to pass a grain inspection. The degreasing chemical used should be environmentally acceptable for marine use, and safe to apply by ships staff, who have had no special training and do not require any specialised protective equipment. Product safety data sheets of the chemical should be read, understood and followed by all persons involved with the environmentally friendly degreasing chemical.

To avoid taint problems, fresh paint should not be used in the holds or under the hatch lids at anytime during the hold preparation, unless there is sufficient time for the paint to cure and be free of odour as per the manufacturer's instructions. Most marine coatings require at least seven days for the paint to be fully cured and odour free. All paint used in the holds and underside of the hatchcovers should be certified grain compatible and a certificate confirming this should be available onboard. Freshly painted hatches or hatchcovers will normally result in instant failure during the grain inspection, unless the paint has had time to cure.

Example: Portable high-pressure fresh water guns from Stromme.



Processed grains or grain cargoes that are highly susceptible to discolouration and taint should only be stowed in holds that have the paint covering intact. It is important that there is no bare steel, rust, scale, or any rust staining in the hold.

Dependent upon the quality of the grain to be carried, the charter may require the holds to be fumigated. This may be accomplished on passage with fumigant tablets introduced into the cargo on completion of loading. Fumigation can also be undertaken at the port of loading (or occasionally discharge). The ship will normally be advised how the fumigation is to be carried out and of any special precautions that will have to be taken. In all cases, the preparations (i.e. inspecting the holds and hatchcovers for gas-tight

integrity) and fumigation must be carried out in accordance with the IMO document Recommendation on the Safe Use of Pesticides on Ships. Gas detectors and proper personal protective equipment should be available and relevant ship's officers should receive appropriate training in their use. After introduction of the fumigant, an appropriate period should be allowed (normally 12 hours) for the gas to build up sufficient pressure so that any leaks can be detected: the vessel must not depart from port before this period has expired. The entire process should be certified by a qualified fumigator. The holds must not be ventilated until the minimum fumigation period has expired, and care must be taken to ensure that subsequent ventilation does not endanger the crew.

Alongside the discharge port



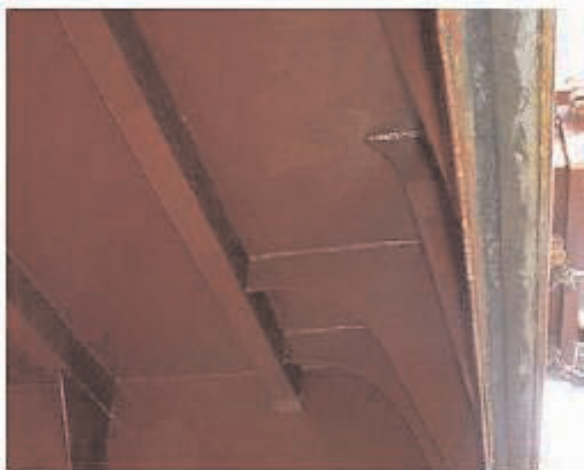
Hatchcover underside and clean hatch rubber



On non-working hatches, remove all cargo remnants, loose scale and flaking paint from the underside of the hatch lids and from all steelwork within the hold, provided safe access can be obtained. Then commence washing the underside of the hatchcovers using liquid soap (such as teepol), followed by a fresh water rinse with a high-pressure water gun.

The hatch rubber seals should also be washed to remove cargo grime. However, caution is required to ensure that the hatch rubber seals are not damaged by the high pressure from the fresh water gun.

After washing, depending on weather conditions, cargo dust may lightly contaminate the underside of the hatch lids; however, the dust particles can easily be removed at a later date using a high-pressure portable fresh water gun.



Hatch undersides and rubber packing

Ballast hold

If the ship has a ballast hold, this should be discharged as soon as possible during the discharge sequence. This will allow ships staff the time to remove all cargo debris and prepare the hold for ballasting.



Shore bulldozer/cocoa beans and shore personnel cleaning holds.

A good working relationship with the stevedores will probably assist the removal of cargo remains from all of the holds using the shore crane or other cargo-handling facilities, which will avoid lengthy difficulties for ships staff during the ballast voyage.

The bilges and strums of the ballast hold should be thoroughly cleaned and all traces of previous cargo removed. The bilge suction should be tested and confirmed as clear prior to any washing out of the cargo holds and the bilge spaces pumped out and secured with the bilge blanks.



Discharging soya meal; tapioca cargo sticking; cargo hold after discharging minerals

To prevent ballast water ingress into the bilge area, it is essential that the rubber joint/gasket is in good condition and all the bilge-blank securing bolts are fitted tightly. The un-seamanlike practice of securing the bilge blank with four bolts is unacceptable and may result in pressurising the bilge line. This must be avoided.



Hold suction arrangement and filter

If time permits, when the cargo has been discharged from respective hatches, all inner hatch coamings should be teepol washed and fresh water rinsed with the fresh water high-pressure gun, because it is more convenient to wash this area in port rather than at sea. If permitted by the port authority, all hatch tops should be dock water washed, ensuring that cargo remains are retained onboard and not washed into the dock. The fitting of plugs to all deck scuppers should help prevent any pollution claims alongside. It is essential that permission is given by the port authority for this washing operation.



Scupper plug fitted

Hatchcovers

Prior to closing the hatchcovers, all the hatch track-ways should be swept clean, then carefully hosed down. If a compressed air gun is used, it should be used with caution and suitable safety equipment should be worn to ensure both face and body protection.



Coaming/trackway covered in fertiliser

All hatch corner drains, including the non-return valves, should be proved clean and clear. The blanking caps on the hatch corner drains used to ensure hold air-tightness should be attached by a chain to the drain. These blanking caps or plugs are provided if the drains do not have an approved automatic means of preventing water ingress into the hold.



Hatch drain with cap attached by small chain

Under normal circumstances, when it rains during cargo operations, discoloured water from the decks will flow into the dock and this is normally accepted by the port authority. The washing of cargo debris into the dock is not acceptable.



Cement staining on decks and hatchcovers

In some loading ports, where helicopter operations are used for embarking and disembarking the pilot, it is a normal requirement of the port to wash down the helicopter area and at least one hatch length either side of the helicopter area, ensuring that cargo debris is not washed into the dock.

Preparation at sea

To prevent cargo debris from the main deck being walked into the accommodation and tramped into freshly washed cargo holds, wash down the main decks and accommodation block as soon as possible after clearing the port of discharge, mindful of pollution from the cargo remains.



Ship's main deck covered by previous cargo

Prior to the commencement of the hold-cleaning, a quick safety pre-brief meeting should take place, which should include all the personnel who will be involved in the hold cleaning. During the pre-brief the hold-cleaning schedule should be discussed and the equipment and chemicals to be used must be fully explained and the safety data sheets understood by all involved. Basic safety routines should be established and the wearing of suitable attire throughout the hold cleaning must be of paramount importance.

The wearing of oilskins, safety shoes/safety sea boots, eye protection, hand protection and safety helmets complete with a chin strap, should be made mandatory during the hold cleaning process. The wearing of high visibility waistcoats will help to improve safety in the hold. The 'permit to work' should be completed on a daily basis, as this will help reduce the risk of accidents.

Hold cleaning

Prior to high pressure hold washing, excess cargo residue on the tank top should be removed by hand sweeping and lifted out of the holds via the use of a portable mucking winch. As explained earlier, a good working relationship with the stevedores at the discharge port may help to expedite this operation.

After all excessive cargo residue has been removed then the holds can be washed with salt water using a high-pressure hold cleaning gun, supplemented by the deck air line to provide increased pressure. This is the most commonly used method of hold cleaning, however the hold cleaning



Typical hold cleaning equipment: crew operating a Toby gun and a Toby gun from Stromme

gun normally requires two seamen to safely control the increased water pressure.

Some ships are fitted with fixed hold cleaning equipment, normally fitted under the hatchcovers. This method of hold cleaning is less labour intensive. A flexible high-pressure hose is connected between a flange on the hatchcover and the deck high-pressure hold washing line.



Fixed hold cleaning gun under hatch lids and fixed hold cleaning connection on deck

Other ships have permanent high pressure hold cleaning equipment that can be lowered through a flange on the main deck, turned ninety degrees and bolted to the high-pressure deck wash service line.

All cargo residues washed down must be removed via the hold eductors or mucking winch. Special attention should be given to cargo residues wedged behind pipe brackets, hold ladders, and on the under-deck girders and transversals. Special attention should be paid to ventilators to ensure that remnants of previous cargo have been removed and the area is grain clean. Binoculars are quite useful for spotting cargo remains in high places. Hold bilges and recessed hatboxes should be cleaned out and all cargo remains removed. Bilge suctions must be tested both before and after washing and the results entered in the cargo notebook and/or deck log book.



Hold cleaning equipment in the stowed position above the deck. Note the flange on the deck wash line

Salt water chemical wash and hand scraping

To remove any greasy deposits from the hold steelwork, all the holds should be high-pressure chemical washed using the hold cleaning gun complete with air line booster. The degreasing chemical used, as previously advised, should be environmentally acceptable for marine use, and safe to apply by ships staff, who have had no special training and do not require any specialised protective equipment.

Numerous degreasing chemicals are available (e.g. Sea Shield detergent) and work quite effectively, if they are directly injected into the firemain via the general service pump strainer cover. Manufacturer's instructions must always be followed, but in general the recommended chemical injection rate is approx. 5 litres/min.

A typical 110,000 dwt bulker will require around 100 litres per hold, or 25 litres of degreasing chemical on each bulkhead.

To avoid long lengths of hose delivering chemical, the chemical station should be situated as close as possible to the injection point of the fire and GS pump. The easiest way to control the rate of chemical flow is by fitting a temporary small hand operated valve on top of the strainer cover. An alternative method is to use an eductor system to suck the chemical direct from the drum into the discharge nozzle. The quantity of chemical introduced is controlled by the operator or an assistant, lifting the nozzle clear of the drum. However, this method of educting the chemical from the drum into the discharge nozzle is time consuming and more awkward for the operator and restricts his movement around the hold. In addition it carries a greater risk of an accident or spillage of degreasing chemical because the chemical drums have to be lowered into each and every hold, whereas the first method allows all the degreasing chemical to be situated at one place i.e. by the GS pump.

One degreasing chemical injection station used successfully aboard a vessel consisted of: a transparent container of 120-litre capacity, graduated in 10 litre units; a 5 metre transparent length of reinforced hose with one end fitted with a 40cm long steel uptake branch pipe and the other end open. The branch pipe was inserted into the chemical container and the open end of the transparent reinforced pipe was connected to the hand valve on the pump strainer cover using two jubilee clips. The small hand valve on the strainer cover was used to control the flow of chemical into the fire pump.

Prior to starting the high-pressure sea water chemical wash, all fire hydrants and anchor wash hydrants on deck should be checked and confirmed as fully closed.

The hydrant serving the hold cleaning gun should be opened and the fire and GS pump started.

To avoid unnecessary chemical waste, predetermined times of injecting the chemical into the fire main should be agreed between the hold cleaning party and the person controlling the rate of chemical injection. On a 110,000 dwt bulker it takes approx. 20 minutes to complete a chemical wash in each hatch, after which the chemical should be washed off using high-pressure salt water. Concurrent with the chemical wash the hold should be hand scraped with sharp long handled steel scrapers. All loose scale and flaking paint must be removed.

Fresh water rinse and hold preparation

The final stage of hold washing is the fresh water rinse. A ship preparing for a grain cargo would be advised to carry additional fresh water in a convenient tank. This is often the after peak, which can be pumped into the fire main via a GS pump. A typical 110,000 dwt bulk carrier will require around 30 tonnes of fresh water per hatch. Prior to commencing the fresh water rinse, the fire line is flushed through with the after peak fresh water to remove all traces of salt water. If a GS pump is used, the flushing through takes a few minutes and only uses a few tonnes of fresh water. Once the fire main is clear of salt, all deck fire hydrants and anchor washers should be sighted and confirmed that they are closed.

If a GS pump is to be used for the hold rinse, to prevent possible pump damage, a return line into the after peak should be set up using a hose connected from the fire main into the after peak vent.

On completion of the hold fresh water rinse, all hatch entrances, hatch trunkings and hand ladders should be hand washed and fresh water rinsed using the fresh water high-pressure gun. It is not advisable to rinse and clean the access ladders and hatches before washing the main hold, because splashing from the hold bulkheads will often contaminate the freshly washed ladders. Bulkheads either side of all the hand ladders should be hand cleaned and jet washed as far as one can safely reach, using long handled turks heads. Safety body harnesses and (if required) a bosun's chair should be used when undertaking this task.



Holds drying after washing



When it is safe to open the hatches, all the hatch coamings should be hand washed using long handled turks heads and jet washed with fresh water using the high-pressure fresh water gun. With the hatch lids open, binoculars should be used to sight the holds for any cargo remains.

To prevent possible condensation in the hold, all the recessed hold eductors (if fitted) must be drained of any water residue, be clean dry and odourless. There is usually a small stainless steel drain plug on the underside of the eductor which can be temporarily removed to allow the eductor water to drain into the bilge area. When the eductor is empty the drain plug must be replaced and secured. The eductor hold plate must be secured with all the securing bolts and duct tape should be used to cover both the securing bolts and recessed lid handles.

Hold bilges should be completely dried out, odourless and in a fully operating condition. The surveyor will usually require to sight one bilge in each hold to ensure that they have been cleaned out correctly.

The tank top must be completely dry and any indentations on the tank top must be wiped dry. The hold should be made completely odourless, by maximising hold ventilation. Two layers of clean hessian cloth should be fitted to the bilge strainer plate to further restrict cargo particles entering the bilge area. Duct tape is used to cover the small gap between the bilge strainer and tank top. The hold hydrant area, if fitted, should be cleaned and dried out. The steel cover refitted and secured in place with all its bolts/screws.

Hatch undersides

When it is safe to open the hatches all the hatchcover undersides should be hand washed and fresh water jet washed using the high-pressure fresh water gun. If all the hatchcover undersides were hand cleaned at the discharge port, this operation will be completed very quickly and a high-pressure jet wash may suffice.

All loose scale and any flaking paint from the hatchcover undersides must be removed. All ledges on the hatch undersides must be checked to see that they are clean. All hatch rubbers and centre line drain channels should be clean and clear of any cargo remains or other debris.

Hatch watertight integrity

To prevent cargo claims due to water ingress, all hatch seals (both longitudinal and transverse), hold access lids and seals around the hatch sides should be chalk marked and water tested using deck wash hoses.

A more accurate method of testing a hatch for leakage is to use ultrasonic equipment. However this is usually completed by shore personnel who are trained in the use of this equipment.



Hose testing and a typical hose test



Ultrasonic hatch testing for leaks

Faulty or suspect sections of hatch rubber should be replaced in their entirety; localised replacement or 'building up' of hatch rubbers using sealing tape is discouraged.



Poor practice: hatch tape used to build up cross joint. This is discouraged

Grain inspection

Prior to the grain inspection all hatches and access lids must be open and safely secured with all locking pins/bars. All hatches should be checked for loose scale or flaking paint. Invariably there will be a little scale on the tank top, which can quickly be removed. If weather conditions permit during the day, the holds should be opened to allow fresh air to assist the hold drying process. All small pools of water should be mopped dry. All hatch rubbers and centre line seals should be wiped over with a clean dry rag to confirm their cleanliness.

Prior to the inspection, ships staff should lower into the first hold an aluminium ladder together with a small number of clean brooms, scrapers, dustpan and brush, a clean bucket and a few clean white rags. If possible the second hold to be inspected should also be equipped with similar items.



Hold ready to load wheat

The first team to enter the open hold should comprise the grain inspector, a deck officer and a seaman. Under no circumstances should grain inspectors be allowed to inspect the hatches unescorted by a deck officer.

A second team consisting of a deck officer and some crewmembers should be standing by at the top of the hatch being inspected. The second team should have available additional clean brooms, clean mops, scrapers, buckets, clean heaving lines and clean white rags.

The engineers should be on standby to test the bilges (dry sucking only). Radio contact is essential between all three teams to prevent lengthy delays. Any personnel entering the holds should have clean safety shoes or clean safety sea boots. It is essential that any debris on the main deck is not walked into the clean holds. Some ships issue overshoes to personnel entering the hold. If the inspector finds a fault with a hold, if at all possible, the fault should be identified and recorded, and remedial action agreed with the inspector. If possible the fault should be rectified immediately and preferably before the inspector leaves the ship. If this is not possible a time should be agreed for his re-inspection.

Ballast hold

The ballast hold is usually de-ballasted and prepared alongside during the loading period. If the hold and bilges were cleaned at the discharging berth, the ballast hold preparation will be quickly completed.

Loading grain

Hatches not being loaded should be kept closed. All hatches after passing the grain inspection and prior to loading, must be inspected on a daily basis to ensure that they are still completely dry. Hatches containing grain cargo must not be entered due to a possible lack of oxygen. During the load, it is important to keep the grain cargo dry. If the grain is allowed to become wet, high cargo claims will result.

Regular visual checks by ships staff throughout the load should ensure that the grain being loaded is not in a wet condition. These inspections should be recorded in the deck log book.



Loading grain; other hatches closed

During the loading of grain, dust clouds often develop. These are a health hazard and additional safety requirements, such as the wearing of eye protection goggles and dust masks should be observed by all personnel in the vicinity of the dust cloud.



*Grain dust cloud presents a health hazard.
Loading barley (bottom)*

If the master is in any doubt about the condition of the grain during the load, he must issue a note of protest and seek advice from his operators and/or the UK P&I Club.

Completion of a hatch

All holds to be filled must be absolutely full. It is essential that the loading spout, or other mechanism, is directed to all corners, to avoid any void spaces. Time should be allowed for the grain to settle then refill any spaces (such as hatch corners).



Grain settling in the cargo hold



Loading grain to all corners

When the loading of a hatch has been completed, the trackways, hatch drains, and channel bars must be swept clean and the hatch closed. Water must not be used to wash down hatch trackways. DRY compressed air is very useful, but crew safe working practices must be observed when using compressed air. Ventilators should be tightly secured.



Hatch vent to secure

If the voyage instructions require hatch sealing tape to be used, as an additional precaution to prevent water ingress, then the hatch surfaces must be scrupulously clean before the sealing tape is applied. In cold climates, some brands of tape will adhere better if warmed in the engine room before they are applied. Foam compound should not be used to ensure hatch watertight integrity.



Do not use foam to seal hatches

To prevent unauthorised access to the oxygen depleted grain holds, and where fumigation in transit is to be undertaken, all the hold access lids should either be padlocked or have steel security seals fitted.



Security seal in place

Loaded voyage

Regular checks of all hatch sealing tape (if fitted) should be completed and damaged or lifting tape immediately replaced. During the voyage, entry into any cargo space must be strictly prohibited.

Ventilation during the voyage will depend on weather conditions and a comparison between the dew point of the air inside the hold and outside the hold. Under no circumstances should hold ventilation be permitted during adverse weather conditions or before fumigation in transit has been completed.

In good weather, basic cargo ventilation rules should be observed. Guidance can be obtained from Bulk Carrier Practice: A Practical Guide (ISBN 928 0114 581).

If the vessel has any oil tanks adjacent to or under the cargo holds, any steam heating to these tanks should be minimised, but in any case carefully monitored and full records maintained to prevent cargo heating and possible cargo damage. This is a point that is often overlooked by ships staff.

Grain cleaning 'operational' checklist

Prior to commencing the grain clean the master should check and confirm the following:

- If the previous cargo is likely to cause problems during the cleaning voyage, the master must advise his operator well in advance, so that sufficient cleaning time, manpower and materials can be planned. A lack of communication between ship and shore may result in difficulties for the ship and costly off hire for the operator.
- As soon as the ship starts cleaning preparations, the master should make regular daily reports of the hatch cleaning progress to his operator.
- If the after-peak is to be used for the carriage of additional fresh water - confirmation that the after-peak tank can be discharged via the deck service line and, if after-peak is 'filled' with fresh water, the ship can still maintain the minimum bow height as per classification rules. (Details in stability book).
- The ship has fully operational mucking winch.
- All bilge sounding pipes and temperature sounding pipes (if fitted) are clear with no 'old' sounding rods or any obstructions or blockages.
- All sounding pipes have a fully operational screw thread and the gasket is in good condition i.e. sounding cap that can be screwed down tightly to prevent water ingress.
- The ship has no ballast tank leaks.
- Advise his operator if there are any problems with the ship's ballast pumps, eductor(s) or general service pumps.
- The ship has a 'grain certified' paint certificate for inside the hatches. (assuming that the hatches were previously painted some months earlier).
- All hatch corner drains and non-return valves are working correctly and are complete in all respects.
- All hatch ladders on fwd and aft bulkheads are in good condition to allow safe access for all personnel.
- All hold bilge plates have all the securing bolts fitted and the ships approved ballast holds have the blanks. This is often a spectacle piece which can be rotated on deck.
- All ballast line hold cover plates have all the bolts fitted and they are all in good condition.
- All hatch access lids can have a hatch seal or padlock fitted after loading, to prevent unauthorised entry into oxygen depleted area.
- No infestation is onboard. This includes all the storerooms, as these areas are also liable to be inspected by grain inspectors.
- Approved grain stability books onboard and the pre-calculated load conditions (using appropriate grain shift moments) have been completed. In some ports, these calculations have to be approved by the local authorities.

- A hold-cleaning schedule using realistic times has been prepared.

The 'simplified' example, below, is not an actual working schedule. Under normal circumstances it often takes one day to clean a hold. This figure of one day per hold is usually acceptable to charterers.

The 'simplified' schedule assumes that the vessel's previous cargo was coal or iron ore. If the vessel's previous cargo was grain, then the chemical wash may not be required, but the holds should still be hand scraped to remove any loose scale and paint.

Simplified schedule.

Order of events	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
(In port) Hatch undersides	X	X					
Wash down decks		X					
HP saltwater wash holds		X	X				
Chemical wash holds – scrape – and SW rinse				X			
FW rinse and hold preparation					X		
Clean hatch lids undersides					X		
Check holds and hatch watertightness					X	X	

Grain cleaning 'equipment' checklist

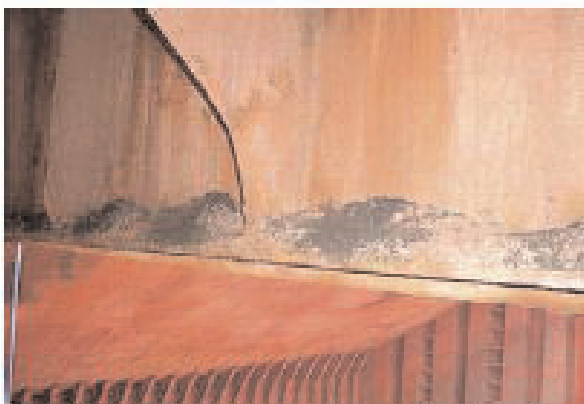
- A fully working high-pressure hold cleaning gun (Toby gun or Semjet or similar) - complete with sufficient deck wash down hoses and air-lines all in good condition.

Fire hoses must not be used as wash down hoses as they are part of the ships safety equipment.

- Ship has a fully operational salvage pump (Wilden pump) and approved spares.
- Sufficient fresh water to complete a high-pressure fresh water rinse of all the holds. It will be more cost effective to over-supply fresh water for hold cleaning than the ship to run out during the hold cleaning. (A typical 100,000dwt bulker requires around 30 tonnes per hatch).
- 1 x portable pressurised fresh water gun, complete with extended handle and 30 metres of pressurised hose.



- 6 x long handle steel scrapers complete with handles.
- 3 x lightweight, strong, aluminium extension poles with capability to extend to approx 5 metres.
- 6 x long handled rubber squeegee complete with 1 metre rubber blades.
- 10 x heavy-duty bass brooms, c/w handles, suitable for hold cleaning.
- 6 x corn brooms c/w with handles.
- 6 x heavy-duty mops, c/w handles.
- 6 x spare mop heads suitable for above.
- 4 x galvanized, roller wringer, mop buckets.
- 6 x turks heads, round head 4 inch, c/w handles.
- 6 x small 6 inch wide, hand shovels, steel, suitable for digging out hold bilges.
- 3 x 25 metre length, lint free soogee cloth, width approx 30cm.
- 1 x 50 metre length burlap, 1 metre wide.
- 10 x rolls of 50 metre length, 10cm wide, grey, industrial strength duct tape.
- 6 x 20 metre length, 'yellow' wash down hoses, duraline, 45mm dia complete with couplings suitable for ship's fire main.
- 4 x plastic jet nozzles, suitable for above hoses.
- 4 x 50 metre lengths, transparent plastic, reinforced garden hose, complete with male and female plastic couplings to join each section.(for use with Kew gun).
- 2 x universal tap connectors for above reinforced transparent plastic garden hose.
- Sufficient hatch sealing tape to comply with operators instructions.
- 4 x 500 watt, portable lightweight halogen lights to illuminate hatches during cleaning. Each lamp to be complete with 50 metres of cable and have a waterproof plug fitted.
- 10 x spare halogen bulbs for above.
- 2 x 50 metre extension cables each complete with three waterproof outlet sockets and a waterproof plug.
- 5 x 20 litre drums concentrated teepol.
- Sufficient drums of de-greasing chemical wash suitable for use with sea water (e.g. Sea Shield detergent cleaner or equivalent).



Typical examples of hold failures

The images to the right, from a vessel which failed a grain survey, would suggest that:

- Ships crew completed a very quick salt water wash.
- No chemical wash was undertaken.
- No hard scraping of the bulkheads was completed.
- Previous hold cleaning had not been supervised (history of the ships cargoes on the stiffeners).

Showing:

- Staining from the previous cargo (coal).
- Cargo dust residues.
- Deposits of previous cargoes in hard to reach places.
- Flaking paint and scale.



References

Bulk Carrier Practice - A Practical Guide. (ISBN 928 0114 581)

Recommendation on the Safe Use of Pesticides on Ships (ISBN 9280111205)

Product Safety Data Sheets - for degreasing chemical used

Bulk Cargo Code - IMO Publication. (ISBN 9280110616)

MARPOL (ISBN 9280114174)

<http://www.stromme.com>