

## Cargo Hold Cleaning



Photo courtesy of: Wilhelmsen Ships Service

When cargo holds are presented for loading cargoes in bulk and they are not sufficiently clean for the intended cargo, delays, off-hire and charter party disputes can arise. Insufficient cleaning can also cause cargo contamination and infestation, leading to cargo damage claims from cargo receivers.

Due to the importance of the preparation and cleaning of cargo holds prior to loading, personnel on vessels involved in preparing cargo holds, and also those ashore involved in fixing and operating vessels, should be familiar with the various issues surrounding the cleaning of holds in order to prevent the possibility of delays, disputes and claims. Operational guidance addressing the preparation and cleaning of holds between cargoes should be available to both seagoing and shore based staff.

The extent of the cleaning operation and the steps required

between two dissimilar cargoes will depend on the properties of the previous cargo. When a break bulk cargo such as steel coils has been discharged, the cleaning task may be limited to the removal of old dunnage and lashing materials and a final sweep of the cargo spaces. If a petroleum coke (petcoke) cargo has been carried, the subsequent cleaning operation will be conversely lengthy and involved due to the “dirty” and possibly oily nature of this cargo. External factors beyond the control of the vessel may also limit and hinder a cleaning operation and these will need to be allowed for; there may be a requirement to ballast a hold at the discharge port, or limited time prior to loading the next cargo, or washing down may not be possible due to freezing temperatures.

In general terms holds should be cleaned so that there are no residues of previous cargoes, no loose rust scale, paint flakes or blistering of paint coatings, no evidence of insect or rodent infestation when foodstuffs are to be carried and no odours

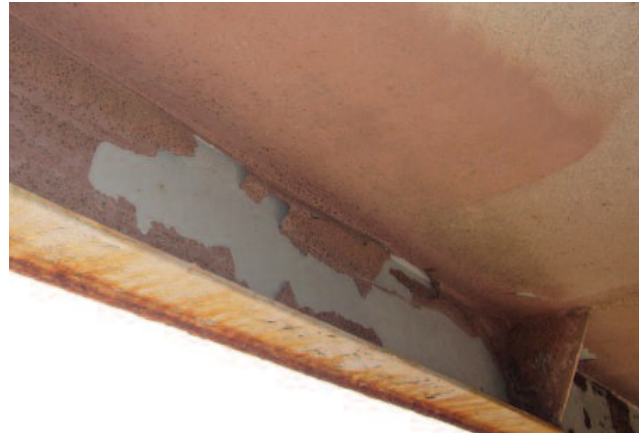


present, including those from cleaning chemicals and paint. Holds should be thoroughly dried prior to loading though some cargoes may be loaded damp from open stockpiles possibly negating this requirement.



Photo courtesy of: CR Cox & Associates

Cargo residues remaining on the framework



Flaking of paint coatings.

Photo courtesy of: CR Cox & Associates

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## Cargo Hold Inspection and Maintenance

Some cargo contamination issues and the failure of holds by surveyors stem from insufficient hold and hatch cover maintenance. It is recommended that regular inspections and preventative maintenance of cargo holds and hatch covers be carried out as part of a documented planned maintenance system, ideally following the discharge of each cargo.

The periodic inspections should be carried out by a responsible officer, ideally the Chief Officer, and cover all structures, surfaces and fixtures and fittings within the holds. The scope of the hold inspection should include underdeck framing, pipework and guards, access ladders and supporting framework, manhole covers, bilges as well as bulkheads, stools, side framing and tanktops. Similarly, hatchcovers, coamings and associated fixtures and fittings should be periodically inspected and repaired as necessary to maintain weathertightness. Areas of loose rust scale which can be removed without chipping should be eliminated. Areas of flaking paint and paint blisters should also be attended to promptly and made good. Consideration should be given to the chipping or high pressure sandblasting of hard rust scale on the tanktop; thick rust scale can be dislodged by the buckets and tracks of bulldozers etc. during discharge, leading to cargo contamination. If the vessel is principally engaged in the carriage of clean cargoes the paintwork should, so far as possible, be kept fully intact.

Where pipework is found corroded and holed it should be cropped and replaced, as temporary repairs will not be accepted by some surveyors. Holed handrails on access ladders and platforms can retain residues of previous cargoes and should also be cropped and renewed.

It should be borne in mind that the type of paint applied may affect the ease with which the holds can be cleaned and epoxy paints are easier to clean than alkyd based paints. Cosmetic touch-up of paintwork over rust may appear an easy short term solution but this is not recommended and may lead to holds being rejected by some hold surveyors as the paint may have, or appear to have, been applied over loose scale. When steel fixtures and fittings within cargo holds are damaged during cargo operations, these should be promptly repaired. In addition to any safety considerations, contamination claims due to pieces of steel from the hold structure coming loose and being found within the cargo may be encountered.

Fixed hold air sampling fire detection systems and fixed CO<sub>2</sub> systems should be periodically blown through with compressed air when the holds are free of cargo as a routine



Photo courtesy of: CR Cox & Associates

Hold components and pipework heavily corroded.

task included in the planned maintenance system, so that any debris is blown out and the pipes remain clear for their intended purpose and debris cannot migrate into the hold.



## Hold Cleanliness Standards and Requirements

Cleaning commences at the discharge port. All cargo residues should be removed so all that remains are those residues which cannot be recovered using normal methods for unloading which comply with MARPOL Annex V requirements and any local regulatory requirements governing the disposal of cargo residues. Since cargo receivers will normally want a maximum outturn of their cargo it is anticipated that a vessel will usually be re-delivered swept clean, rather than shovel clean. However, in some ports the stevedores may need reminding and encouraging to remove as much of the cargo residues as possible.

The cleaning regime to then be used in preparing for the next cargo will depend on a number of factors:

### a) The nature of the previous cargo

The previous cargo may be incompatible with the next cargo and which will necessitate particular care when cleaning the holds. Manganese ore, for example, is rendered worthless by the presence of chrome ore, and even small traces of sugar can affect the properties of subsequent cement cargoes.

### b) Shipper's and / or Charterer's cargo hold cleanliness requirements / contractual hold cleanliness requirements, as specified in the voyage instructions / charter party

Shippers and / or charterers may specify their hold cleanliness requirements or the cleaning regime to be employed to prepare the holds for the next cargo in their voyage instructions / orders. Requirements may also be included in the charter party and it may well be that reference is made to one of a number of industry standard cleanliness requirements, such as:

#### 1. Load on Top

When the same cargo is to be carried on a successive voyage, it may be possible for the next shipment to be "loaded on top" of the cargo residues remaining in the holds following a grab discharge, provided the charterers are happy with this arrangement. Although loading on top will save considerable cleaning time and effort, the presence of cargo residues in the holds will not permit a thorough inspection of the hold steelwork for damage. Efforts should therefore be made to move the residues to one side so that the hold structures can

be inspected. When load on top is utilised, it may still be worthwhile periodically cleaning the holds after a number of cargoes to prevent staining of paintwork (e.g. by coal), or the build-up of hardened residues (e.g. cement), which will make the cleaning process more demanding the longer they are left.

#### 2. Shovel Clean

Typically, the cargo will be removed by grab with the assistance of a bulldozer / wheel loader / bobcat and shovels, and several tonnes of cargo may remain in each hold requiring the crew to dispose of these residues. However, since the need to comply with MARPOL Annex V limits the scope for the discharge of cargo residues overboard, this cleanliness requirement has become less common.

#### 3. Normal Clean

In the event of no specific requirements being advised by the charterer or contained within the charter party, it is recommended that the following steps be taken, as a minimum:

- Cargo residues be removed
- Double sweep the holds clean
- Seawater wash down
- Fresh water rinse
- Allow the holds to thoroughly dry

Typical bulk cargoes requiring normal cleaned holds may include:

- Bauxite
- Coal
- Iron ore
- Petcoke
- Salt

#### 4. Grain Clean / High Cleanliness

This is the most commonly required standard of cleanliness with the holds free of all traces of previous cargo residues and transferable stains, free of loose rust scale, loose paint flakes, paint blisters and any other contaminants, thoroughly dry and without any trace of infestation or strong odour.

Typical bulk cargoes requiring grain clean holds may include:

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- Cement
- Fertilizer
- Grain (corn/maize, barley, soybeans, wheat etc.)
- Mineral concentrates
- Seed cake
- Sugar
- Sulphur

## 5. Hospital Clean / Stringent Cleanliness

The cleaning regime is the same as for grain clean, with the added requirement that the holds have fully intact paintwork on all hold and hatch cover surfaces, including the tank top, and on all fixtures and fittings within the hold. Some inspection regimes may permit a small percentage of the total hold surface area with a non-intact paint coating.

Typical bulk cargoes requiring hospital clean holds may include:

- Barytes
- Chrome ore
- Fertilizer
- Fluorspar
- Mineral sands
- Rice in bulk
- Soda ash
- Wood pulp

## c) Exporting / importing country mandatory requirements

Some exporting and importing countries have detailed hold cleanliness requirements for certain commodities. Australia has particularly strict requirements for the inspection and cleanliness of holds prior to loading fertilizer, as any foreign pests or diseases affecting the cargo could be directly introduced when the fertilizer is applied to the soil. If a single grain of a foreign cargo is found in the fertilizer at an Australian discharge port, this could be sufficient for the entire shipment of fertilizer to be condemned and an order imposed that it be re-exported.

## d) International Maritime Solid Bulk Cargo (IMSBC) Code “Hold Cleanliness” requirements

When determining the cleaning requirements for the next cargo the “Hold cleanliness” requirements in the applicable IMSBC Code schedule should also be considered, as compliance with IMSBC Code requirements is mandatory under SOLAS. Many cargo schedules either specify “No special requirements” or “Clean and dry as relevant to the hazards of the cargo”. However, some cargoes have more detailed cleanliness requirements, for example holds being prepared for sulphur UN1350 should be “Clean and dry as relevant to the hazards of the cargo and should be thoroughly clean and washed with fresh water”, and for Direct Reduced Iron (A) the Code advises “The cargo spaces shall be clean, dry and free from salt and residues of previous cargoes” and “Prior to loading, wooden fixtures such as battens, loose dunnage, debris and combustible materials shall be removed”.

## Cleaning Regime

The steps taken on the ballast voyage to clean the holds will depend on the foregoing cleanliness standards and requirements. The cleaning requirements should be realistic, as, for example, it will take considerable time, effort and resources to prepare a bulk carrier that has been employed in the log trade ready to load a cargo of mineral sand. Where a Master is any doubt as to the capability of the vessel to prepare the holds to the required standard in the timescale available, they should contact their managers at the earliest opportunity.

Cargo hold cleaning will normally consist of one or more of the following steps:

1. Removal of dunnage, lashing material and / or cargo residues
2. Holds swept down
3. Holds swept down a second time (double swept)
4. Cargo residues that have set hard removed
5. Cleaning chemicals applied to hold surfaces and allowed to penetrate / react with stains prior to being washed off
6. Holds sea water washed down
7. Holds washed down with detergents mixed in fresh water
8. Holds fresh water rinsed to remove all traces of chlorides and detergents



9. Bilge wells and plates / strainers cleaned
10. Holds air dried
11. Loose paint flakes, loose rust scale and paint blisters removed
12. Paintwork touched-up
13. The application of a barrier coat

Some vessels are equipped with fixed cargo hold washing machines, however, these vessels are in a minority and most vessels carrying solid bulk cargoes will need to manually wash the cargo holds. Where fixed washing machines are used, manual cleaning of shadow sectors within the holds may still be required.

Whilst carrying out the foregoing cleaning tasks, the following points should be considered:

### a) Cleaning Equipment

1. Sufficient stocks of manual cleaning tools, including shovels, trowels / hand shovels, brushes, bamboo or

aluminium poles to dislodge residues, squeegees and mops should be maintained on board.

2. A mucking davit and winch should be provided to lower tools into the holds and to remove sweepings and debris. Containers should not be overloaded and the use of the davit and winch should be safely managed.
3. On smaller vessels, or where not especially dirty cargo residues are to be removed, the water pressure available from the deck fire main may be sufficient for hold washing duties. However, only dedicated washing hoses and nozzles should be used, on no account should firefighting appliances be used for washing down.
4. For larger vessels, high pressure washing guns / nozzles powered by compressed air are available. With a throw sufficient to reach the upper areas of the holds, the use of this equipment often removes the need for means of direct access to the upper reaches of a hold. These guns, usually mounted on a tripod, can deliver wash water at considerable pressure and have the option of drawing in cleaning chemicals / detergents into the wash water via a



Cherry pickers for access to the upper reaches of the hold.

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cargo hold cleaning lance, used in conjunction with a foam nozzle to ensure sufficient soaking time of the wash solution on the cargo hold steelwork.

5. Suitable access equipment; ladders, scaffold towers, scissor lifts and / or cherry pickers should be made available for access to the upper reaches of the hold, where necessary. Working at height operations should be safely managed under the auspices of the vessel's Safety Management System as many means of access to the upper reaches of holds can only be used safely when alongside. If crane baskets are used, then the cranes should be certified for man-riding. Permits to work, where specified for certain activities, should be completed prior to work commencing.

## b) Cleaning Chemicals and Detergents

1. Where cleaning chemicals or detergents are to be used, then sufficient quantities should be available on-board prior to operations commencing.



Photo courtesy of: Wilhelmsen Ships Service

Cleaning chemicals and application equipment.

2. It should be ensured that the vessel is provided with sufficient equipment for applying chemicals and barrier coatings, including lances, spray guns and foaming applicators as applicable.
3. All cleaning chemicals and detergents should only be used after the Material Safety Data Sheet (MSDS) has been carefully read and the hazards fully understood. Personnel Protective Equipment (PPE) should be used as required.
4. Cleaning chemicals and detergents that are disposed of overboard with cargo hold wash water must not be harmful to the marine environment, in accordance with the requirements of MARPOL Annex V. The ship will need to maintain records showing that any cleaning chemical or detergent used was not harmful to the marine environment. The IMO recommends that the supplier provides a signed and dated statement to this effect, either as part of a MSDS or as a stand-alone document.
5. Manufacturers' instructions with regard to the method of application of cleaning chemicals and detergents, their dilution, the pressure of water jets and the duration of cleaning should be closely followed.
6. To avoid likelihood of white stains created by chlorides left on surface it is important to rinse surfaces with freshwater after chemical cleaning and sea water washing.
7. Cleaning chemicals applied neat in line with manufacturers' instructions should not be left on hold surfaces so long that they are allowed to dry, as removal may then be problematic.

## c) Hold Cleaning Guidance

1. Prior to conducting hold cleaning it is recommended that a risk assessment is carried out, areas of risk identified and precautionary measures implemented to reduce the residual risk to an acceptable level.
2. Just prior to cleaning commencing, a tool box talk should be carried out to discuss the work with all involved parties in attendance.
3. All debris, dunnage, lashing materials and cargo residues and detergents contained in hold wash water should be removed from the holds and disposed of in line with MARPOL Annex V requirements and any local regulatory requirements that may be applicable.



4. The discharge of petcoke residues, if permitted by MARPOL Annex V, should be carefully managed as the requirements of MARPOL Annex I may apply, depending on their composition.
5. During stops in cargo operations, crew members may be able to access the top of the cargo to brush and dislodge cargo in the upper reaches of a hold. However, this should only take place where permitted by the port authorities / berth operator and it is found to be safe and practical do so following a risk assessment.
6. Cleaning of hatch covers and adjacent areas on deck should ideally commence prior to departure after the hold concerned has been emptied. The possibility of water migrating into adjacent holds via open hatch lids should be considered and managed, and any local regulatory requirements concerning wash water and cargo residue run off from the main deck complied with; onerous requirements are rigorously enforced in some port states with the imposition of fines and possible delays not being uncommon.
7. Coaming drain channels should be swept out, drains checked to ensure they are clear of debris and coamings swept clean prior to washing down. Compressed air should not be used to blow debris from channels and off coamings. Ideally the hatches should be opened and closed a couple of times to ensure all previous cargo residues and any loose rust has been shaken off.
8. Areas adjacent to the hatches should be cleaned as necessary, including mast houses, cranes, the main deck, and even accommodation ladders, to prevent the migration of the residues of previous cargoes into holds by wind action or by being trod in by personnel who subsequently enter the holds.
9. Care should be taken when holds are to be washed while cargo remains on-board in other holds. The migration of wash water into holds containing cargo via the cargo hold bilge system needs to be considered and bilge lines to holds containing cargo should be isolated.
10. Chemical/Detergent washing, as per most cleaning manufacturers recommendations, should be conducting from bottom to top, commencing with the bilges and tanktops first, moving to the lower hoppers, side shell plating, the upper hoppers and the bulkheads, with the underdeck area, hatchcovers and coamings washed last. The advantage of the bottom to top method is that residues streaking on the vertical surfaces and their redepositing, which is potentially difficult to remove, can be avoided. Additionally, the detergent's contact time is maximized being a key factor in achieving an optimal cleaning result. The rinsing down of the detergent-soaked surface with water is performed in the same manner as the washing processes allowing for the achievement of maximum detergent contact time and the prevention of early dilution.
11. Conventional water washing should be conducted from the top down commencing with the hatchcovers and coamings, moving on to the underdeck area, then the bulkheads along with the upper hoppers, side shell plating and lower hoppers, prior to washing the tanktop and finishing with the bilges.
12. It should be checked that cleaning chemicals are compatible with the paint system in the holds and the next cargo to be carried. The usage of chemicals containing bleach (sodium hypochlorite), classified as harmful to the marine environment, may damage paint coatings which makes it easier for cargo residues to adhere to the cargo hold surfaces. It should also be verified that the hold coatings are compatible with the next cargo. Cargo interests and / or hold surveyors may request to see certification stating the paint system is compatible with foodstuff cargoes.
13. If available, hot or warm water will make the cleaning task easier and should make cleaning chemicals / detergents more effective.
14. When using, fixed cargo hold bilge systems to pump wash water overboard, it needs to be considered that the bilge system (pumps / valves / eductors) may be affected by the nature, size or abrasive properties (sands and cargoes containing fine particles) of the cargo residues entrained in the wash water.
15. Where cargo residues are particularly abrasive, large or problematic, consideration should be given to using air driven double diaphragm pumps to remove wash water from the holds and pump it overboard in line with MARPOL Annex V requirements, Cement, for example, should ideally never be pumped via the fixed bilge system due to the possibility of it settling and hardening.
16. Direct contact of the water jet with all parts of the hold surface is desirable, including both sides of framing, and nozzles and washing guns should be moved around the



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hold as required. Where direct application of the water jet to parts of the hold is not physically possible, then it should be ensured that any shadow sectors are washed by the flushing / splash back effect of the jet of water hitting adjacent steelwork.

17. All surfaces within the holds should be cleaned, including hard to reach areas at the top of the hold including framing and brackets on the underside of deck plating and around the hatch coaming. Particular care should be taken of cleaning the blind side of pipework, pipe guards, access ladders, platforms and their supporting brackets, manhole covers and plates. The underside of hatch covers, the inside of vent shafts and hold accesses trunking should not be overlooked and should be cleaned to the required standard.
18. Sufficient fresh water should be available to enable a final thorough fresh water rinse of all holds to remove all traces of chlorides. Salt water residues may lead to failure of the hold cleanliness inspection, contaminate subsequent cargoes either through direct contact or by dripping salt laden sweat, and lead to coating breakdown and corrosion. Where cargo has deteriorated on passage the presence of chlorides detected during silver nitrate tests of moisture in the hold can lead to receivers alleging sea water ingress, making defending the vessel's position more problematic. A complete fresh water rinse is therefore important. Many bulk carriers carry large quantities of fresh water in the aft peak ballast tank for this purpose. The fresh water wash should ideally be carried out before the holds have dried following the sea water wash, to make the removal of salt residues easier. It should be remembered that the fixed water lines will initially contain salt water, which should be flushed out with fresh water prior to commencing the fresh water rinse. In some cases, cargo interests / charterers may advise that a fresh water wash is not necessary.
19. Where manhole lid cover plates are fitted, these should be taken off, all cargo residues removed from the recess and then the recess and lid cleaned to the same standard as the rest of the hold structure.
20. Cargo hold bilge sounding pipes and pipes for the placement of thermocouples should not be neglected from the cleaning regime. These should be blown through either with water or compressed air from main deck level.
21. So far as practical, all puddles of water remaining on the tanktop and in the bilges, should be squeegeed and mopped out. Care should be taken to remove pockets of water remaining in small indentations in the tanktop.
22. Holds and bilge wells should be thoroughly dried prior to commencing loading. Opening the hatch covers, where weather permits and it is safe and practicable to do so, should be considered to aid drying. Hatches opened while underway should be suitably secured, with additional securing devices such as chain blocks utilised where necessary. Hatches should not be opened when the vessel is rolling or moving in a seaway. The use of mechanical ventilators, where fitted, may help speed up the drying process.
23. When loose paint, loose rust scale or paint blisters are removed and paintwork touched-up, the steelwork should be prepared and the paint applied in line with the requirements of the vessel's paint schedule. All new paint should be fully dried and all paint odours removed from the hold prior to loading commencing. It should be considered that the paint may take several days to cure, and if it has not fully hardened by the time the holds are inspected, the holds may be rejected.
24. Once cleaning is completed, all the holds should be inspected by a responsible officer in good time prior to the arrival of the shipper's hold surveyor, so that any areas of concern can be re-cleaned and delays and possibly time off-hire avoided. The scope of the survey should include a visual inspection of all surfaces, ladders and fixtures and fittings in the holds, so far as safe and practicable, with a powerful torch and binoculars as necessary. Any areas of concern should be attended to in good time.
25. If there is a delay between completion of hold cleaning and loading; the condition of the holds should be periodically checked as ship sweat may form, rust blisters may weep and the residues of previous cargoes may vibrate from their hiding places at the top of the hold and appear on the tank top.
26. Consideration should be given to providing a cleaning report, including photos to the managers / charterers prior to arrival for their review and evaluation as to whether the holds are sufficiently clean for the intended cargo.
27. Once cleaning is completed an entry should be made in the deck log book including a brief description of the cleaning regime used.

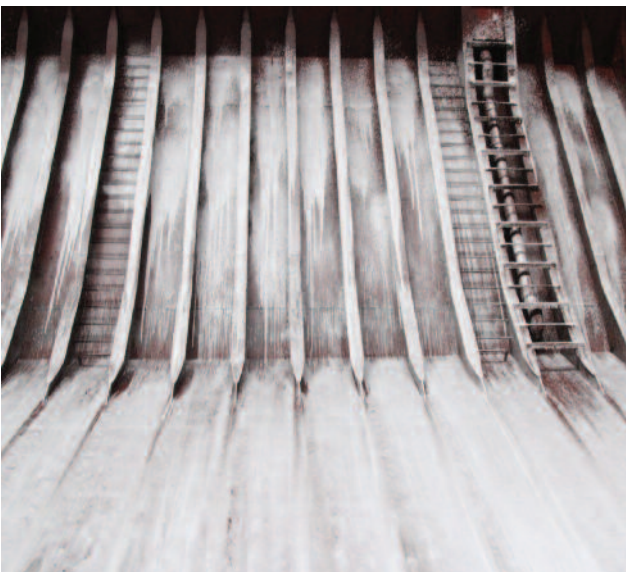


Photo courtesy of: Wilhelmsen Ships Service

Hold cleaning with chemicals.

## a) Bilges

1. Once discharge from a hold is completed, inspect the bilge wells and if cargo is found this should be removed and discharged ashore.
2. While washing down keep bilge plates / strainers in place and Strum / Rose boxes around bilge line suction. These should be periodically cleaned as required during breaks in the cleaning operation.
3. Bilge wells should be cleaned last with bilge plates, strainers and Strum / Rose boxes cleaned of all residues; and the bilge wells thoroughly washed out. If cement wash is applied to the inside of bilge wells, this should be touched up where necessary with a mix of Portland cement and water, made to the consistency of porridge. Where foodstuffs are to be carried the bilge wells and the fixtures and fittings therein should be disinfected.
4. Once holds and bilges are dry, the bilge plates should be covered with hessian / burlap (sacking) as necessary to prevent cargo ingress into the bilge well. The material should be wrapped around the bilge plate and the gap between the bilge plate and surrounding steel sealed with duct tape, Ram-nek tape or the plate can be cemented in place, as long as cement is compatible with the next cargo. The bilge plates should be level with the surrounding tanktop to prevent them being inadvertently dislodged by bulldozers, bobcats etc. during discharge.
5. When the fixed cargo hold bilge system has been used to discharge wash water containing cargo residues, the bilge line non-return and isolation valves should subsequently be inspected as cargo residues may remain in valve seats holding valves open and allowing water to inadvertently migrate into the cargo holds when the bilge system is in use.

## Barrier Coatings

When carrying, cargoes considered dirty (e.g. green delayed petcoke, and to a lesser degree, calcined petcoke, coal and coke), or corrosive (e.g. sulphur and salt), a barrier coating can be applied to the hold steelwork. The coating is applied to a height just above that calculated as the maximum height of the planned cargo in a given hold based on the stowage factor, forming a temporary physical barrier between the cargo and the hold structure that can later be washed off.

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When a “dirty” cargo is to be carried, a number of manufacturers offer hold coating options variously described or marketed under the names of slip-coat or slip coat plus, hold-block or barrier coats. These coatings can protect paintwork and are more easily removed with the aid of dedicated cleaning chemicals / detergents than the residues and cargo stains that would normally remain post discharge. All barrier coatings should be applied and removed in line with the manufacturers’ instructions. Care should be taken that areas where paintwork has broken down, and the tanktop in particular are well coated with the barrier coating, it should also be ensured that fixtures and fittings within the holds are also fully coated.

Sulphur and salt are both aggressive commodities that can corrode the vessel’s steelwork where paintwork is not intact. In addition sulphur can be contaminated by the black residues of the reaction between the cargo, rust and moisture, and hard rust can stain salt. In order to protect vessels from these corrosive cargoes lime wash has traditionally been applied as a barrier coating to protect both the vessel and also the cargo. The quantity of lime used should be in line with manufacturers’ instructions, but will typically be in the region of 60kg of lime (calcium hydroxide) to 200 litres of warm fresh water. The thicker the lime wash is applied the more protection provided; however, the more difficult it will be to remove. Granulated sugar can be added to the mix, (approximately 2.5kg to 200 litres of fresh water), to make the lime wash easier to remove. Having intact paint coatings will help minimise the quantity of lime wash required, as it can be more sparingly applied in these areas, whereas bare steel will require a much thicker coat to ensure adequate protection. The lime wash should be applied no higher in the hold than absolutely necessary to limit the magnitude of the removal task.

When limewash is utilised as a barrier coating consideration should be given to challenges which can arise in relation to removal, as strong acidic products may need to be applied which can increase the risk to crew when handling such heavy acid based cleaners.

All barrier coatings should be allowed to thoroughly dry prior to loading commencing.

## Hold Inspection

The scope of the hold inspection will depend on the cleanliness requirements for the proposed cargo. Prior to

starting the inspection a surveyor may require a list of the previous three or more cargoes carried, and this should be prepared in advance. The surveyor may be acting on behalf of cargo interests and / or may represent a National Administration for the country of export and / or import; therefore the parties for who the surveyor is working should be ascertained prior to starting the inspection. Upon completion of a successful inspection certification may be issued to the vessel.

Inspections should be carried out in daylight with the hatch covers open. In some circumstances additional high powered lighting will need to be provided and arrangements made to permit access to all parts of the holds. All hold accesses should be open and bilge plates removed to expedite the survey.

The hatch covers will probably be required to be partially or fully closed at some stage of the inspection so their underside can be thoroughly examined.

Where fixtures or fittings hide areas that need to be inspected, such as pipe guards, then these may need to be removed to enable a complete inspection to take place.

A responsible officer, ideally the Chief Officer, along with several crewmembers equipped with rudimentary cleaning tools, for example, a dustpan and brush, dog-leg and long handled scrapers, rags, water and an old paint tin or bucket for residues, should accompany the surveyor so that spot cleaning can be carried out as necessary.

In some cases discolouration of paintwork is sufficient for a hold to fail an inspection, in particular stains remaining after carrying petcoke or coal as these may blister following the formation of ship sweat. Any stain remaining that can be wiped off by a surveyor will normally lead to the hold failing the inspection.

The presence of only a small number of insects, either dead or alive, may be sufficient for a hold to be rejected and for fumigation to be required. The required scope of the fumigation will depend on the magnitude of the infestation and will need to be carried out in accordance with the hold surveyor’s recommendations; local application of insecticide with a hand sprayer may be sufficient for localised infestation, however, full hold fumigation may be required where the problem is more widespread.

Where a hold has failed the inspection, the reasons for the failure, be it the presence of loose rust scale, flaking paint, or infestation etc., will normally be detailed by the surveyor in an



inspection report so that targeted remedial action can be taken prior to a re-inspection.

The guidance contained in this Loss Prevention Bulletin is, by necessity due to the wide variety of cargoes that can be carried, of a general nature intended as best practice guidance for all personnel concerned with and involved in the cleaning of cargo holds for bulk cargoes.

Members requiring additional guidance should contact the [Loss Prevention department](#).

The Club would like to thank Product Marketing Manager Jan Fredrik Bjoerge at [Wilhelmsen Ships Service](#) for assisting with the preparation of this Bulletin.

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## Cargo Hold Cleaning Checklist

|                                      |  |
|--------------------------------------|--|
| <b>Ship Details</b>                  |  |
| Ship's Name                          |  |
| Date                                 |  |
| Previous Cargo                       |  |
| Next Cargo                           |  |
| Charterer's cleanliness requirements |  |

|                              |  |
|------------------------------|--|
| <b>At the discharge port</b> |  |
| 1.                           | Ensure that as much cargo residue, lashing material and / or dunnage is removed as possible and landed ashore.   |
| 2.                           | Deckheads, framing and bulkheads should be swept down during discharge where permitted and safe and practicable.   |
| 3.                           | Check bilges are free of cargo, if not, clean the bilge wells and have the cargo residues discharged ashore.   |
| 4.                           | Remove all cargo residues from hatches, coamings and drain channels (do not use an air hose; drain channels should be swept clean). These should be washed down if permitted, be aware that some ports having stringent requirements regarding deck water run-off. |

|  |  |
|--|--|
| <b>Prior to commencing hold cleaning</b> |  |
| 5.                                       | <p>Determine the degree of hold cleaning and preparation required by reviewing voyage instructions, the charter party and by consulting with the managers / charterers. The hold cleaning requirements in the IMSBC Code should also be followed. When determining the cleaning requirements the following points should be considered:</p> <ul style="list-style-type: none"> <li>• If the same cargo is to be carried, charterers may require no cleaning / washing and permit loading on top.</li> <li>• If clean cargo, such as steel coils have been carried, little or no cleaning / washing may be necessary.</li> <li>• Is the next cargo incompatible with the previous cargo necessitating extra cleaning?</li> <li>• Are cleaning chemicals / detergents required?</li> <li>• Will a barrier coat need to be applied?</li> <li>• Are sufficient cleaning tools, fresh water, chemicals, and barrier coatings onboard?</li> <li>• Does the loadport and / or discharge port have any specific cleanliness requirement, for example, when carrying foodstuffs or fertiliser?</li> </ul> |



**When the cleaning and washing requirements for the next cargo have been determined, the following points should be considered when preparing the holds:**

|     |  |  |
|-----|--|--|
| 6.  | A risk assessment and tool box talk should be carried out prior to work commencing.  |  |
| 7.  | When working at height on ladders, scaffold towers or other means of access is required; ensure all relevant Permits to Work as required by the vessel's Safety Management System are completed.   |  |
| 8.  | Sweep up or double sweep the holds to remove any remaining cargo residue, paying attention to cargo residue in bilges, on the topside of underdeck framing, and the blind side of ladders, stairs, pipework and fixtures and fittings.       |  |
| 9.  | Where cargo residue has set hard, this should be removed by chipping or scraping.  |  |
| 10. | Dispose of all dry cargo residues, cargo residues in hold wash water, dunnage, lashing materials, cleaning chemicals and detergents in accordance with the requirements of MARPOL Annex V, and any applicable local regulatory requirements. |  |
| 11. | Wash down hatch coamings, drain channels and compression bars, if not completed at the discharge port. Adjacent decks, mast houses and cranes may also need cleaning and must not be overlooked.   |  |
| 12. | Sea water wash all hold surfaces paying particular attention to underdeck framing, the underside of hatch covers, the blind side or ladders, stairs, pipework and pipe guards.   |  |
| 13. | With cargo residue that may set, e.g. cement, ensure copious amounts of wash water are used and the residues are discharged via portable pumps, rather than via the fixed cargo hold bilge system.   |  |
| 14. | After a sea water wash conduct a thorough fresh water rinse of the holds to remove all traces of sea water (chlorides); except where advised by charterers that this will not be necessary.  |  |
| 15. | Wash / blow through cargo hold bilge sounding pipes and thermometer pipes and ensure they are clear.   |  |
| 16. | Clean and disinfect bilge wells when foodstuffs are to be carried.   |  |
| 17. | Mop up / squeegee puddles of water remaining in the holds.   |  |
| 18. | Touch up cement wash in bilge wells if required and fit burlap or hessian to bilge plates when a cargo with fine particles is to be carried.   |  |
| 19. | Loose rust scale, loose paint flakes and paint blisters should be removed, in particular for foodstuff cargoes. Loose rust scale should not be painted over.   |  |
| 20. | Allow the holds to dry thoroughly, using mechanical ventilators where fitted and with consideration given to opening hatches where safe and practicable to do so.  |  |
| 21. | Where cargo hold paintwork has been touched up, ensure the paint is compatible with the planned cargo and painting is completed sufficiently in advance of arrival to allow the paint to thoroughly cure.                                    |  |
| 22. | When required for the next cargo, apply a barrier coating such as lime wash, hold-block or slip-coat in accordance with the manufacturers' instructions; ensuring the coating has fully dried prior to loading.                              |  |

