



Mark Wittburg, Wilhelmsen Ships Service, Germany, outlines why choosing the right cargo cleaning product comes down to more than just price.

CLEANING HOLDS THE RIGHT WAY, KEEPS THE PAINTBRUSH AT BAY

Poorly maintained cargo holds will, you can rest assured, begin to cause you significant problems sooner or later. They require more resources, more time and, of course, more money to clean, and that is before we factor in revenues lost from the increased downtime. However, all of this is avoidable. Preventative measures, coupled with regular cleaning, help prevent the build-up of stubborn deposits that can, and will, penetrate the coating surface over time, costing time and money.

Preventive measures

Before loading the cargo, the hold coating should ideally, be protected with a temporary barrier film. When applied correctly, this seals the coating pores preventing cargo particles from adhering to the surface. Not only can this reduce the cleaning time

significantly, it can also help reduce the risk of corrosion, wear and tear.

There are two different types of temporary barrier coats; they are either water-resistant or not. If the coat is not water-resistant, it can be washed off after discharge with sea or freshwater only. Barrier coats that are water-resistant will withstand humidity, sulfur and other aggressive 'wet' cargoes when dry/cured completely. The water-resistant version must be cleaned off in most cases with an alkaline cleaning agent.

Choosing the right cleaning product

Obviously, it is important to thoroughly clean your cargo hold, even when loading on top is conducted.

However, before getting started, careful and cautious selection of the cleaning detergent for



Figure 1. Damaged paint coating showing white stains and chalking, typically encountered when sodium hypochlorite is used. In addition, black rust is seen, under-rusting the coating. The only remedy is paint maintenance.



Figure 2. Deteriorated paint coatings provide cargo stains good adhesion to the surface into the pores. It gets progressively more difficult to clean off too.

washing the cargo hold is, in Wilhelmsen Ships Service's opinion, essential.

You want a product that consistently shifts awkward stains with minimum effort, with no need for additional cleaning and which is cost-effective, preferably not costing a small fortune per gallon. That is it.

Well, not quite. Wilhelmsen Ships Service believes that alongside cleaning performance and cost, there should be two more essentials added to one's hold cleaning chemicals wish list: environmental impact and compatibility.

Potentially damaging cargo hold coatings, one wash at a time

Ideally, any cleaning detergents you choose to use should not be harmful to the marine environment (HME). If they are defined as HME under Marpol Annex V, the cargo hold wash water must be captured and transferred to shore reception facilities, which incidentally also adds cost.

In addition, HME chemicals and chemical commodities used for cargo hold cleaning may not only be a risk for the crew's safety and a Marpol

Annex V compliance challenge, they may also be incompatible with the cargo hold coating itself.

Unfortunately, it has become common in the industry to use sodium hypochlorite or sodium hypochlorite-based products. Not only are these chemicals designated as harmful to the marine environment, they can also permanently damage the hold's coatings. For example, the two most prevalent component epoxy coatings for cargo holds are not resistant to sodium hypochlorite.

Safe and effective cleaning, more than just chemicals

However, selecting an appropriate chemical for cleaning is in itself no guarantee of cargo hold cleaning success. An often unmentioned, but very real impediment is the user, typically the crew.

Whether it is using improper mixing ratios or applying chemicals incorrectly, such easy to make manmade errors can cause significant damage to the paint coating.

Not following the manufacturer's instructions correctly or failing to familiarise themselves with the safety data sheets, prior to working with any chemicals, are also unfortunately still fairly common issues.

The misuse of chemicals and lack of knowledge is compounded by frequent routine crew changes and different cleaning equipment and chemicals from various suppliers differing from vessel to vessel. This can lead to underconsumption or overconsumption, resulting in inadequate cleaning results and complaints from the crew. Wilhelmsen Ships Service believes that standardisation is key. Having standardised cleaning equipment and chemicals onboard, which crews know how to use, greatly reduces the crew's risks and optimises cleaning performance.

Tackling irreversible damage head-on

Irrespective of whether you use the right chemicals or not, allocating the time and space to undertake visual inspections is crucial in order to maintain the paint coatings inside cargo holds.

The most obvious damage to coatings, such as scratches, gouges or dents are caused by shovels and bobcats during cargo operations, and identifying damaged coatings is not difficult. Impact cracks begin to rust or coatings begin to lose their gloss, which may turn whitish and start to chalk. The pores of the coating widen, giving cargo residue an excellent penetration and adhesion base, making the hold harder to clean.

In such cases, the bad news is that paint maintenance is now required. The good news is that touch-up paint coating repairs can typically be performed by the crew. It is not the most technically demanding task, but surface preparation must be done thoroughly.

Paint and prep basics

While Wilhelmsen Ships Service recommends the crew follow the specific paint manufacturer's instructions, there are some key surface and paint prep basics, all crew performing such maintenance should know.

Tips for surface preparation

Degreasing

- Use a suitable cleaning agent for degreasing the areas and work it into the contaminated area with a brush if necessary.
- Follow this with a final rinse of fresh water.

Removal of salt, scale, rust and loose paint

- Use a high pressure machine with at least 500 bar (with a nozzle angle of 45° and a distance of 5 - 10 cm) or combined with a sandblasting option, allowing wet blasting to reach surface standards of up to SA 2.5.
- Use an additional scraper, chipping hammer, jet chisel or other descaling air tool if necessary. Use light strokes to prevent the power tool digging into the steel surface.
- After the removal of loose rust, paint and scale, a rust stain removal product is recommended, as it inhibits further corrosion and gives the paint a good base to adhere to.

Feathering sharp edges, weld splatter and roughening the overlap area

- If necessary, use air tools such as a wire brush, disc sander or grinder to create a smooth transition of approximately 5 - 10 cm from the spot repair to the intact coating.
- Pay attention so as not to polish the steel surface; this will lead to poor paint adhesion.

Removal of dust, debris and vestiges

- Use an air gun, sweeper, wiper or broom to clean off the prepared surface.
- Make sure the dirt particles are disposed of safely and cannot be blown back onto the surface.

Always pay close attention to surface preparation, otherwise it will lead to poor adhesion and the subsequent breakdown of the applied coat.

Tips for painting

Paint preparation

Every paint product must be well stirred by an agitator until the paint is uniform, without lumps and sediments. Strictly follow the correct mixing ratio for each two component paints, recommended by the paint supplier. Thinner paints must generally not be used. If thinning is absolutely necessary, do not exceed 5% of the mixed paint volume.



Figure 3. Newer paint coatings prevent strong adhesion of cargo particles vs older paint coatings. Older coating: upper part; newer coating: lower part. An additional temporary barrier coating enhances efficiency by allowing even less cargo to stick to the surface after washing the holds.

After mixing two component paints it must be used within a certain period. This is called pot life – it is temperature dependent and is shortened the higher the temperature gets. The use of thinner will not prolong the pot life; when the pot life has been exceeded, the paint will have started curing and cannot be used any more.

Paint application

Every coat, including the final one, should be applied in rectangular touch-ups. Always avoid the application of paint on unprepared surfaces.

The first coat of primer should be applied by brush to assist the paint in penetrating the surface.

Every coat of primer shall have another colour to the previous to ensure the correct number of coats.

Between coats, the surface to be painted should be washed regularly (at least daily), in order to avoid new salt contamination on the surface. Each touch-up shall overlap the previous coat by approximately 2 - 3 cm.

The intervals between coats must be strictly obeyed. If the touch-up coats are applied too quickly after one another, running, sagging, solvent retention and insufficient curing of the paint may occur.

Keep in mind that a lower temperature increases the time required between coats.

Conclusion

Wilhelmsen Ships Service continuously develops and improves its wide range of high quality Unitor™ cargo hold cleaning chemicals and equipment. The company's cargo hold cleaning solutions help crews to stay safe, remain compliant and achieve the desired cleaning results, without damaging cargo hold coatings.

Besides cargo hold cleaning, Wilhelmsen Ships Service's comprehensive product range also covers high pressure cleaners with sandblasting options, air tools, accessories, rust removers and inhibitors for the very best surface preparation, whenever and wherever it is required. **DB**