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TECHNICAL DATA SHEET

BIOTAL GW 3000

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Biotal GW 3000 is a liquid treatment containing application-specific bacteria strains capable of degrading a wide range of organic waste, combined with a natural sulphide control to help prevent malodours, solids build-up and corrosion in grey water storage systems.

Product Description

Biotal GW 3000 is a totally different approach to the problems of grey water storage; via regular dosing of small volumes it reduces solids build-up, fatty acid production and most importantly, prevents hydrogen sulphide production. Biotal GW 3000 is an eco-benign® liquid product containing billions of application-specific bacteria to maintain grey water waste storage areas. The non toxic micro-organisms have been selected specifically by the Biotal Marine Research and Development team for their ability to produce extra-cellular enzymes to break down materials associated with the grey water waste, such as cellulose, proteins, starches, and in particular fats, oils and grease. When the product is used according to the application instructions, waste materials within the grey water are converted to carbon dioxide and water. The formulation also contains a naturally occurring alternative oxygen donor, this material is toxic to the strictly anaerobic sulphate reducing bacteria and they cannot grow, therefore hydrogen sulphide production is prevented at source. The bacteria within the Biotal GW3000 are also able to use the oxygen donor to carry out rapid degradation of fats, oils and grease and other solids in the waste, reducing both fatty deposits and sludge within the tank, keeping the tank cleaner and removing the areas where anaerobic bacteria would otherwise thrive.

When dosed regularly into grey water storage tanks, Biotal GW 3000 will ensure that the build-up of solids and fatty deposits are reduced in an effective and environmentally friendly manner. The treatment also removes areas where anaerobic bacteria can accumulate, and actively controls the levels of hydrogen sulphide and other odours coming from the tanks.

Regular dosing with Biotal GW 3000 into grey water storage tanks will have huge benefits in terms of prolonging the life of tanks and eliminating foul and potentially hazardous odours.

Application Area

Grey water waste comes from the galley, baths, sinks, showers and laundries and on certain vessels it is often stored in tanks prior to discharge or treatment, even though older vessels may not have tanks designed specifically for this purpose. Fat residues coming from both galley waste and human body fats from showers and bathrooms can build up on the inner surfaces of storage tanks. The fats can form a thick, greasy coating on the inside of the tank and become a haven for anaerobic bacteria. As these bacteria break down the fat and other waste materials, short chain fatty acids are formed within the deposit, leading to localied areas of very low pH, which can then cause severe corrosion of the tank walls.

Even if the tanks have been lined to prolong the life of the tank, the effects of the low pH can result in failure of the lining – even high grade epoxy tank linings. The first indication of problems can be failure of the tank itself, and to replace a failed lining or ruptured tank is an extremely costly and difficult exercise.

Amongst the bacteria that develop as oxygen levels fall are ones known as sulphate reducing bacteria. In anaerobic conditions these organisms convert sulphate present in the waste water into hydrogen sulphide. Hydrogen sulphide not only smells unpleasant (like bad eggs), it is toxic and workplace exposure limits are in place for it. If grey water storage is resulting in hydrogen sulphide production, then the crew may be at risk. Although fresh grey water does not smell unpleasant, as the oxygen levels become depleted during storage and the system becomes anaerobic (also known as septic conditions) the combination of volatile fatty acids and hydrogen sulphide can make the storage tank extremely foul smelling. Traditional approaches to this problem include periodic use of powdered biological products to degrade the waste build up in the storage tank, ideally involving the installation of heaters and aeration systems within the tank. These treatments do nothing for the degradation products that are already present in the tanks prior to treatment, meaning the clean out process itself can generate significant odours.

Regulatory Environment

Many people believe that grey water, i.e. that coming from the galley, baths, sinks, showers and laundries is unregulated under the International Convention for the Prevention of Pollution from Ships (MARPOL). However, the issue of grey water is being considered actively by the Marine Environment Protection Committee (MEPC) and at the 63rd Session in 2012 for example, several preliminary conclusions were made suggesting that Annex IV should be interpreted to cover waste waters of all types, including grey water. Thus a future proof and 100% compliant interpretation of Annex IV is that grey water should be treated like sewage as 'waste water' and if not treated or comminuted and disinfected it must be discharged at a distance of more than 12 nautical miles from the nearest land.

Newer legislation such as the stringent limits regarding cruise ship discharges in Alaska introduced in 2000 under 33CFR159 sub-part E and the 'Special Area' status under the Annex IV MEPC 62 revision adopted in January 2013, also have an influence on grey water handling.

Depending on the type of vessel and the routes sailed, temporary on board storage of grey water prior to treatment or discharge may be required.

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Biotal GW 3000: Features and Benefits

Features

- Contains our own proprietary application-specific bacteria strains specially selected for fats, oils and grease and other organic waste biodegradation
- Bacteria strains have been selected to work at low temperatures that may be found in storage tanks towards the outside of the ship
- Bacteria can rapidly degrade grease and other solids utilising the natural oxygen donor within the product
- Removal of fatty deposits and solids prevents formation of low pH regions due to action of anaerobic bacteria
- Natural oxygen donor inhibits sulphate reducing bacteria for active control of hydrogen sulphide formation
- Suitable for manual or automated dosing
- Long product shelf life

Benefits

- Prevents build-up of deposits that can become anaerobic and lower pH
- Maintains the integrity of grey water storage tanks
- Removes need for hazardous manual tank cleaning
- Prevents hydrogen sulphide production
- Easy and convenient to use compared to powdered biological products
- Provides continuous prevention of both solids build-up and odours rather than periodic cure

Application/directions for use

It is recommended to dose the product regularly into the grey water storage tank, preferably with a timer controlled peristaltic pump or similar.

We recommend addition of 25ml of Biotal GW 3000 per m^3 of tank volume, to be added daily. If the grey water is to be stored for prolonged periods, with no new additions, it is preferable to circulate the grey water or transfer it between tanks to provide mixing, but it is not necessary to aerate or heat the water for the product to be effective.

Packaging

Biotal GW 3000 is supplied in 10 litre drums as standard. Other packaging options may be available on request.

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