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TECHNICAL DATA SHEET

BIOTAL AR 3000 PE

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Biotal Marine AR 3000 PE is an advanced acid replacement formulation for manual and cleaning in place (CIP) descaling operations of a variety of on-board process equipment which become scaled during use, such as plate heat exchangers, evaporators, coolers and fresh water generators. Includes degreasing surfactants to improve scale removal so there is no need for a separate degreaser treatment.

Product Description

Biotal AR 3000 PE performs like sulphamic acid but does not require environmental labelling; it dissolves more scale than phosphoric acid but is not classified as corrosive and is much more effective than citric or other organic acids at an equivalent in-use concentration.

A further advantage of Biotal AR 3000 PE is that it contains a powerful degreasing capability within the formulation and can therefore operate in the presence of oil and grease contamination, when other products require a separate degreasing step before descaling can begin.

The product also contains a colour indicator so the operator can monitor the pH during a long descaling operation: with all descalers the pH rises as the alkaline scale is dissolved and the descaling efficiency reduces at the same time. By following the colour of the descaling solution the process can be optimised by adding further Biotal AR 3000 PE product.

Application Area

Scale occurs in a wide range of marine process equipment such as plate heat exchangers, evaporators, coolers and fresh water generators.

Strong mineral acids such as hydrochloric are effective at removing scale but are also very corrosive towards metals and require high levels of training, extensive planning and high grade personal protective equipment before use, as it causes severe burns in contact with skin.

Thus, solutions of weaker acids such as sulphamic, citric and phosphoric acid are now more routinely used on board operating ships, but these are significantly less effective than hydrochloric acid and in the case of sulphamic acid, a product containing any significant concentration of this material should also be labelled as harmful to the environment according to EU rules. Solutions of Biotal AR 3000 PE can be used in place of other acidic products for cleaning in place (CIP) of equipment or manual cleaning of scaled up parts.

Regulatory Environment

Although marine descaling processes do not fall directly under any of Annexes of the International Convention for the Prevention of Pollution from Ships (MARPOL), there are regulations that are pertinent to the use of dangerous chemicals such as concentrated mineral acids on board ships. Hydrochloric acid causes severe burns in contact with skin and is also very corrosive towards metals and so it's use requires high levels of training, extensive planning and provision of high grade personal protective equipment.

In certain marine applications such as black water pipe treatment, the use of hydrochloric acid is now mostly done when ships are in dry dock, by very highly trained specialists using the appropriate safety gear, and where any leaks and spillages can be contained and dealt with.

Packaging

Biotal AR 3000 PE is supplied in 20 litre jerry cans as standard.

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Biotal AR 3000 PE: Features and Benefits

Features

- More effective than most organic acids (citric, malic) and many mineral acids such as phosphoric acid
- Contains a powerful degreasing agent
- Contains colour indicator so operator knows when descaling activity is optimal
- Breaks down to natural biomaterials which are totally biodegradable in a sewage treatment plant or in the environment

Benefits

- Wide range of applications including CIP and manual cleaning of process equipment which become scaled during use, such as plate heat exchangers, evaporators, coolers and fresh water generators
- Although the concentrate product requires corrosive labelling due to effects on metals, particularly aluminium, it is only classified as irritant for effects on skin i.e. the effects are reversible, making it much safer to use than phosphoric acid for example
- Not classified as harmful to environment
- It is 100% biodegradable and provides an eco-benign® offering within this sector
- Contains a powerful degreasing capability within the formulation and can therefore be used in the presence of oil and grease contamination, when other products require a separate degreasing step before descaling, therefore saving time and the number of chemicals on board

Application/directions for use

For cleaning in place of scaled process equipment, the required concentration depends on the extent of the scale and the desired time to achieve a result. Guideline - between a 2.5 to 33% solution (i.e. between 1:40 and 1:2 dilution) of Biotal AR 3000 PE may be required. In the absence of any existing CIP experience, we recommend starting with a 1:9 dilution of the product in clean water and circulating this through the equipment for 3-4 hours using a suitable CIP system. Product dilution and contact time may need to be varied depending on initial results. It is also possible to simply replace the current CIP liquid with an equivalent concentration of Biotal AR 3000 PE. Consult your Biotal Marine representative for assistance with this.

Biotal AR 3000 PE also contains a colour indicator: a red or pink colour indicates that the pH is low and the product is working effectively. If this changes to an orange or yellow colour then the descaling efficiency will be very low. It is recommended to remove 2.5 to 33% by volume of the CIP liquid and replace it with fresh Biotal AR 3000 PE product, to return it to the initial concentration that was being used.

Note that the Biotal AR 3000 PE formula has a built in degreaser capability so no separate degreasing step is required even if the scale is contaminated with oil or grease.

At the end of the cleaning operation rinse the equipment thoroughly with clean water to remove any dissolved scale and product residues.

For manual cleaning of scaled parts, also start with a 1:9 dilution in water in a non-metallic container and immerse the scaled parts, leaving them to soak for 3-4 hours, with occasional agitation if possible. The product concentration and contact time can again be modified based on initial results.

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