

**biototal** marine

shipboard solutions

TECHNICAL DATA SHEET

**BIOTAL AR 3000 BW**

## BIOTAL AR 3000 BW

Biototal AR 3000 BW is an advanced acid replacement product that can achieve high levels of removal of black water scale, even whilst the ship remains in operation. The product also provides an alternative to the use of sulphamic acid sachets for routine treatment of black water collection systems.

### Product Description

Inorganic materials such as calcium carbonate or struvite (magnesium ammonium phosphate) build up as scale in marine black water collection systems, especially those using vacuum to reduce water usage. Biototal AR 3000 BW can be used in place of other acidic products, either regularly for prevention of scale build-up, or for periodic remediation of scale problems.

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.

Biototal AR 3000 BW can be used regularly to prevent or reduce black water scale build-up, as a direct replacement for water soluble sulphamic acid sachets but it does not require environmental labelling. Biototal AR 3000 BW dissolves more scale than phosphoric acid but it is not classified as corrosive and is also more effective than citric malic or other organic acids at an equivalent in use concentration. A further advantage of Biototal AR 3000 BW 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 either struggle to remove scale, or require a separate degreasing step before effective descaling can occur.

Biototal AR 3000 BW is a safer alternative to other acids for periodic use to descale toilet and black water systems. Biototal AR 3000 BW product has been successfully used in a program of periodic descaling on a RO-RO ferry, as an alternative to use of a strong mineral acid in dry dock. The system was treated via the cabin toilets working from the top deck downwards, with each toilet being treated with Biototal AR 3000 BW and extra water flushing for seven days on a rolling program, giving results equivalent to a dry dock treatment, but this was carried out whilst the ship was fully operational.

### Application Area

The vacuum toilet systems for sewage collection favoured in larger and more modern ships suffer from the build-up of scale and organic deposits in the black water piping due to limited water usage for flushing and the effects of air flow through the pipes. This build up reduces the internal diameter of piping leading to increased risks of blockages, places unnecessary strain on the vacuum system and causes less efficient flushing increasing the risk of unpleasant odours.

Traditional solutions to the scale problems in black water systems include treatment with dangerous chemicals such as concentrated mineral acids, or even manual replacement of blocked sections of piping which is time consuming, labour intensive and expensive. The use of hydrochloric acid for this application is now mostly restricted to when ships are in dry dock where sections of the scaled up system can be isolated, appropriate safety gear is available and any leaks and spillages can be contained and dealt with.

### Regulatory Environment

A revised Annex IV of the International Convention for the Prevention of Pollution from Ships (MARPOL) entered into force on 1 August 2005 and immediately applied to new ships engaged in international voyages of 400 gross tonnage and above or which are certified to carry more than 15 persons. Existing ships were required to comply with the provisions of the revised Annex IV by 27 September 2008. The Annex requires ships to be equipped with either 1) an approved sewage treatment plant or 2) an approved sewage comminuting and disinfecting system or 3) a sewage holding tank. Thus the management of sewage and sewage systems is one of the many challenges on board today's ships.

### Packaging

Biototal AR 3000 BW is supplied in cases of 2 x 5 litre jerry cans as standard.

## Biototal AR 3000 BW: Features and Benefits

### Features

- More effective than most organic acids (citric, malic) and many mineral acids such as phosphoric acid
- Equivalent activity to sulphamic acid powders
- Contains a powerful degreasing agent within the formulation and is therefore effective in the presence of oil and grease contamination, when other products fail to work or require a separate degreasing step
- Breaks down to natural biomaterials which are totally biodegradable in a sewage treatment plant or in the environment
- Is the only effective eco-benign® product in this sector

### Benefits

- 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
- Can both prevent scale build-up and be used to remove scale
- An easy and convenient alternative to sulphamic acid water soluble sachets for simple maintenance of vacuum toilet and sewage collection systems
- Can be used to manage scale in black water systems in combination with Biototal MDS 3000
- Can also be used for periodic descaling of black water systems, giving results equivalent to dry dock treatment, AND can be carried out when the ship is fully operational

## Application/directions for use

For treatment of scale build-up in vacuum pipe work via the toilet bowl, i.e. as a direct replacement for sulphamic acid in water soluble sachets, dose 100ml of the Biototal AR 3000 BW liquid into the base of each toilet using a suitable bottle top pump dispenser, then immediately flush the toilet to wash the product down into the pipe work. Do not allow the concentrated product to sit for any length of time on the surface of the toilet bowl.

The Biototal AR 3000 BW product has also been successfully used for a program of periodic descaling on a RO-RO ferry with a history of severe scale issues, as an alternative to use of a strong mineral acid in dry dock. The system was treated via the cabin toilets working from the top deck downwards, with each toilet being treated with Biototal AR 3000 BW and extra water flushing for seven days on a rolling program, giving results equivalent to a dry dock treatment, but this was carried out whilst the ship was fully operational. For more information on this application, consult your Biototal Marine representative.