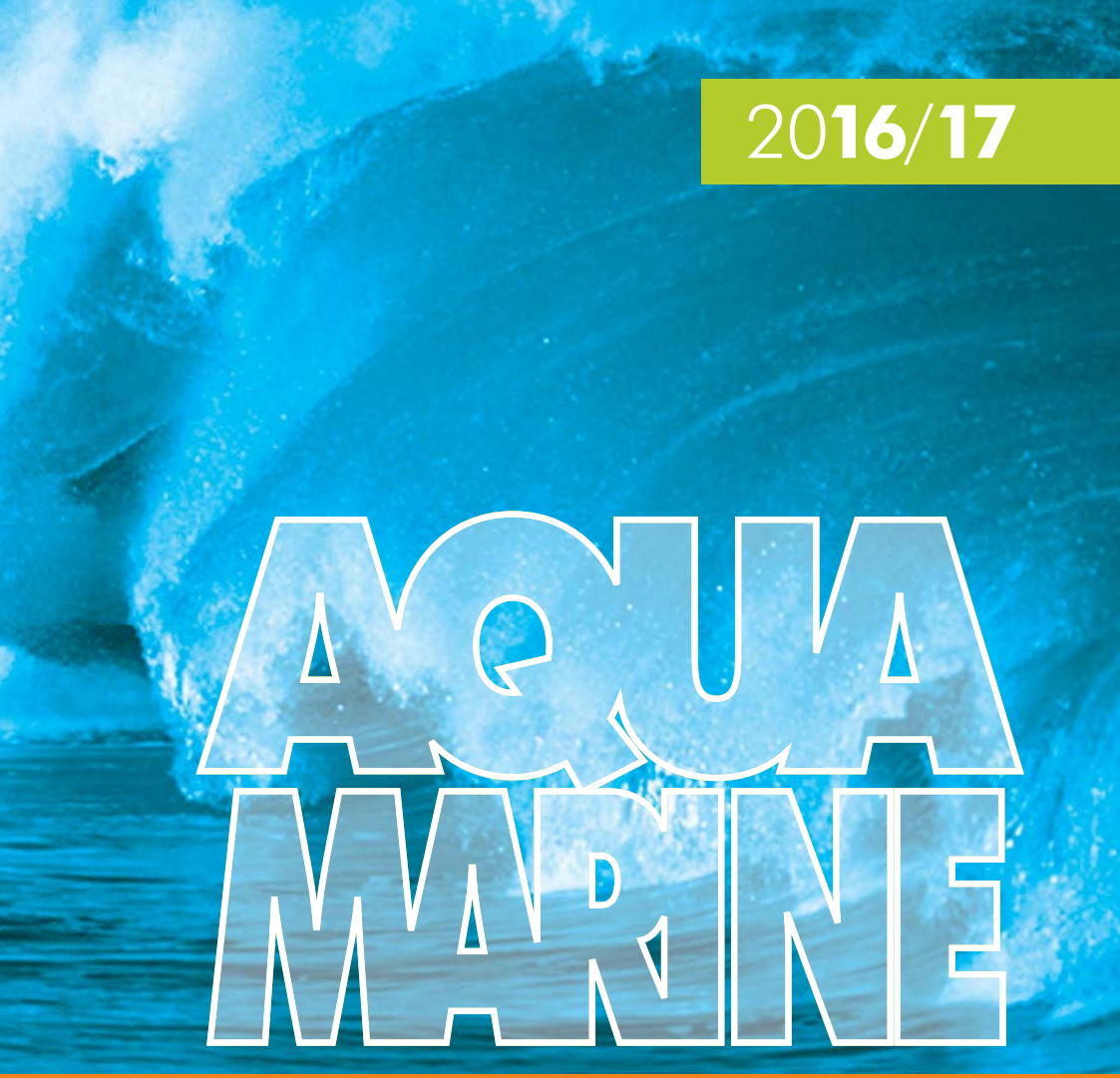

2016/17

AQUA MARINE

SHIPCARE

a division of Bayer-Wood Technologies Limited

unlocking the genius of nature

Aquamarine Chemicals

Aquamarine Chemicals is the marine division of Bayer-Wood Technologies Ltd, a group of British chemical companies. Since 1992.

Our focus is supplying the most environmental products with an ongoing research and development to protect our lives, environment and our oceans.

Contact Details for Sales or Technical Services

Aquamarine Chemicals
A division of Bayer-wood Technologies Limited
2 Duddage Manor Business Park
Twyning, Glos, GL20 6BY

Tel: 01684 290077
Fax: 01684 290608
Email: technical@aquamarinechemicals.com
sales@aquamarinechemicals.com
www.aquamarinechemicals.com

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Boiler Treatments

Liquid Boiler Water Treatment Extra
pH, corrosion, scale and sludge controller for boiler water

Description
Aquamarine Boiler Water Treatment is a combined concentrate liquid alkaline product that inhibits corrosion, controls alkalinity, controls hardness and oxygen. It is easy to use, non-hazardous and effective. It functions by neutralising acid conditions, precipitating salts, sludge conditioning and oxygen scavenging. For additional Oxygen Scavenger please see separate product details.

Use
Boiler water additive for low/medium pressure boilers (up to 250psi).

Application
Aquamarine Boiler Water Treatment is fed into the water feed line by means of a continuous feed dosing pump.

Initial dose: 2.4 litres of Boiler Water Treatment/tonne in the boiler water system.

P. Alkalinity p.p.m. CaC03	0	50	100	150	200	225	300	Above 300 Blow-down
Litres/tonnes Dose BWT	2.4	1.8	1.2	0.6	0	0	0	Required

Please download a boiler water log sheet from the log sheet section on the CD or from our website www.bayer-wood.co.uk. Logs should be submitted monthly for analysis and a report will be sent out by the end of the month in which they are received.

Key parameters are PAlkalinity, Chloride and Sulphite
- Above 200 p.p.m. no dose is required but above 300 PAlkalinity p.p.m. blow down should be implemented
- Sulphite should be kept at 30-50 p.p.m or according to manufacturer's guide-lines
- Chloride content should be controlled below a level of 200 p.p.m. (Above 200 - Blow-Down)

Please ensure that all the test reagents are within the date on the bottle before using.

Feedwater Temperatures - Some typical issues
Temperature of the hotwell is too low. (The temperature should be kept between 70° - 80°C to reduce the oxygen content):

- Return condensate lines and make up line are fitted above the water level. (Tubes to be length under the water level to avoid oxygen intake) Hotwell covers open! (steam cushion left)
- Temperature of hotwell is above the 90°C. (Temperature must be kept maximum 90°C to avoid cavitation)
- Feed pump should be placed on the same level as the hotwell or one deck lower to avoid vapour formation in the pump

Aquamarine BWT test kit is available for accurate system checking. Pack Size 25 Ltr. (see under Test Kits)

NSN J150 6850-99-834-9159 Product Ref. 0003

Visit: www.aquamarinechemicals.com for log sheet downloads.
Email your log sheets to us monthly at: logs@aquamarinechemicals.com

BWT Organic 3

Description

BWT Organic 3 is a liquid blend of neutralised organic acids, corrosion scale and sludge conditioners.

The product is designed for use in low or medium pressure boilers.

Polymer technology protects against scale, alkalinity is added to prevent corrosion and an organic compound is formed throughout the boiler to protect against corrosion.

Continuous dosing using a dosing pump is recommended.

It is also recommended to be used in conjunction with BWT Organic 4 which acts as an effective filming treatment on condensate lines.

BWT Organic 3 and BWT Organic 4 should not be mixed, so two separate dosing systems should be used.

Directions for Use

The boiler water should meet the following conditions

p-Alkalinity 150- 200 ppm CaCO3

Chloride 100 ppm max. for medium pressure boilers

Chloride 300 ppm max. for low pressure boilers

pH 10.5 to 11.0

Conductivity 400-1000 micro Siemens/cm

Initial Dose 0.5 litre/metric tonne of boiler water, then re-check dose to maintain pH and Alkalinity levels. 0.2 litres should be dosed/day to maintain treatment levels when combined with regular blow down.

Product Ref: (Organic 3)

BWT Organic 4

Description

BWT Organic 4 is an environmentally safe oxygen scavenger based on neutralised organic acids and volatile amines.

It removes oxygen from feed-water as well as forming an organic iron compound on steel surfaces. It will also protect copper surfaces.

BWT Organic 4 can be used in low and medium pressure systems.

Directions for Use

BWT Organic 4 should be dosed to give a pH of 9.0-10.0 in the condensate returns.

If hot-well temperatures are maintained above 80°C a condensate pH range of 9.0-9.5 should be sought, if temperatures are lower than this then condensate returns should be maintained at a pH between 9.5-10.

Dose Rate

An initial dose rate of 0.2 Litre/m^3 of boiler water should be used.

This can be increased to 0.7 Litre/m^3 for systems showing signs of corrosion for a few days.

BWT Organic 4 should be dosed continuously via a metering pump directly into the feed system or the exhaust gas economiser circulating pump discharge. BWT Organic 4 MUST NEVER BE SLUG DOSED to a running system via a hot-well or by-pass feeder.

Product Ref: (Organic 4)

Pack Size 25 Litre

Condensate Controller

Description
Aquamarine Condensate Controller is a liquid volatile amine product used as a neutralising agent in condensate and feed water systems of all pressures.

How does it work?
Condensate Controller is an alkaline amine which acts as a neutralising agent which combats acid contamination in condensate and feed water systems. This is most commonly caused by the presence of dissolved carbon dioxide. Condensate Controller neutralises these products and maintains a protective film in the system. The product is recycled as a result of its volatility which causes it to carry over with the steam.

Dosing Instructions
Condensate Controller is best dosed using a metering pump or flow meter. The best dosing points are the condensate pump discharge, hot well or condensate return tank (feed line must be at least 1 metre below surface), or the deaerator storage tank.

- Dosing levels are set to maintain a pH between 8.5-9.2

Take a representative sample of condensate and test it for pH. If the pH is in the target range add a dose of 0.75 litres/day of Condensate Controller. Dosing is based on a system of 10-12m^3. If the pH is below this level increase the dose to 1.0 litre/day for 3 days and retest the pH. If the pH is above the target range decrease the dose to 0.5 litres/day for 3 days and retest the pH. It is important that regular testing is carried out to ensure levels of treatment are correct.

Condensate Samples should always be taken from the drains cooler or condenser. Cool the sample and test immediately.

Pack Size 25 Litres

NSN J150 9140-99-581-5784 Product Ref. 0022

Boiling-Out Compound

BOILING OUT COMPOUND is a powder chemical product used to protect new metals in any type of boiler. It is primarily used for steel boilers when they are new or when a boiler has been re-tubed. It is recommended to use approximately 4-5kg per tonne. It should be added in solution to the boiler water and the temperature elevated to maximum for a minimum of 5 hours.

The boiler should then be drained and flushed and subsequently chemically dosed with the Aquamarine Liquid Boiler Water Treatment according to the product information supplied.

Pack Size 25kg

Product Ref. 0027

Hardness / Phosphate Control

Uses

- This product is a liquid product used for hardness reduction and phosphate control in boiling water systems
- Eliminates calcium scale problems
- Phosphate levels are optimised
- Hardness salt forms are easily removed by blow down
- Can be used in all boiler water systems

This product is formulated to give an optimum phosphate level within boiler water systems. This ensures correct hardness levels at all times.

Dose

A representative sample of boiler water must be regularly obtained and tested for phosphate levels. The use of impure feed water will influence phosphate demand. The liquid should be applied at a ratio of 1 part to 20 parts water and then fed into the boiler system by a by-pass feeder.

NSN J150 6850-99-834-9159 Product Ref. 0054

Phosphate Dosage Chart Litre/10 tonnes Boiler Water Capacity

Phosphate Test p.p.m	Initial dose	0-10	10-20	20-30	30-40	40-50	50-60	60-80	80-100
Water Tube Boiler	0.65	0.6	0.5	0.4	0.3	0.2	No dose	No dose	Blow-down
Double Primary	0.45	0.4	0.3	0.2	← No dose →				Blow-down
Pressure Boiler secondary	0.65	0.6	0.5	0.4	0.3	0.2	No dose	No dose	Blow-down
Exhaust Gas Distilled Water	0.35	0.2	← No dose →						Blow-down
Economiser shore water	0.55	0.5	0.4	0.3	0.2	No dose	No dose	Blow-down	
Boiler Pressure 40-60 Ltr/cm² (570-854 psi)	0.37	0.27	0.17	Satisfactory No dose	Satisfactory No dose	High No dose	Too high Blow-down		
Boiler Pressure 60-68 Ltr/cm² (854-966 psi)	0.37	0.27	0.1	High No dose	High No dose	High No dose	Too high Blow-down		

These are recommended limits for levels of treatment. They are not intended to replace either shipping company instruction or boiler manufacturer's policy.

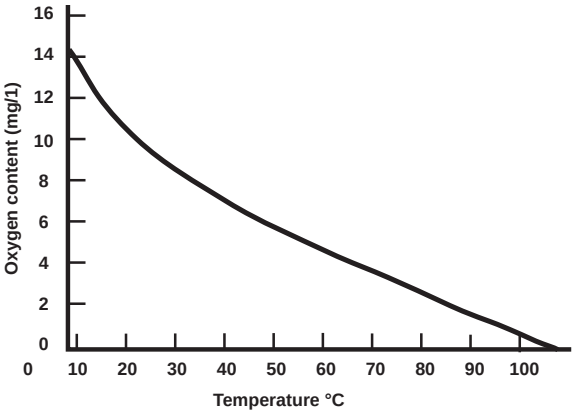
Sulphite Oxygen Controller

SULPHITE OXYGEN CONTROLLER is a liquid sodium sulphite product used for oxygen scavenging in low and medium pressure boilers.

How does it work?
SULPHITE OXYGEN CONTROLLER reacts rapidly with dissolved oxygen in the boiler to form inert sodium sulphate. this prevents damage caused by oxygen pitting (deep and local) and corrosion in the boiler.

Oxygen Scavenger is a concentrated convenient to use liquid oxygen scavenger recommended for the complete removal of oxygen from deaerator heaters, feedwater storage areas, feedwater lines, condensate return lines, boiler internals and closed recirculating water systems.

The product is dosed to give a reservoir level of sodium sulphite in the boiler. If the reserve drops below a minimum level then oxygen corrosion will occur. It is therefore essential to maintain a level at all times. The product is used as part of a boiler water treatment programme.



Results of use
The interior of the boiler is protected from oxygen corrosion attack. However please note that extra solids are produced in the process so additional blow-down will be required.

Dosing and Sampling
A reserve of 30-50ppm sulphite (Aalborg recommend 30-60ppm) should be maintained in the boiler. SULPHITE OXYGEN CONTROLLER should be dosed continuously to the boiler by means of a metering pump into the feed line after the recirculation line. Continuous dosing can also be achieved by dosing into the hotwell to a point as close to the feed water pump suction as possible, although efficiency is adversely affected by low hotwell temperatures. A daily analysis sample should be taken after blow-down, cooled and tested immediately. Always take samples from the same location.

A representative sample of boiler water must be obtained, at an interval set by experience in operation of the boiler. The sample should be taken after the regular blow down and analysed immediately.

The target usage is 30-50ppm of sulphite. The product should be applied separately to CONDENSATE CONTROLLER and should not be mixed with any alkaline treatment.

DOSAGE

18 p.p.m of Oxygen Scavenger are required for each p.p.m of dissolved oxygen, plus a slight excess residual for testing purposes.

Dose per M^3 feed = (18 x p.p.m Oxygen) + (_____65_____)
Boiler concentration factor

This formula will give 30 p.p.m sulphite as Na_2So_3
Where Feed temp = 80°C then p.p.m Oxygen = 2.9 p.p.m

FEEDING

Oxygen Scavenger liquid may be fed directly from the shipping container or diluted with clean condensate in a chemical mix tank. It is compatible with most boiler chemical additives except filming amines. Minimum agitation is suggested to prevent premature activation of the oxygen scavenger with oxygen (air) captured by mechanical action at the solution interface. Covered mix tanks or floating plastic plugs are desirable. It may be dosed in conjunction with Liquid Boiler Water Treatment PLEASE TAKE SPECIAL NOTE: DO NOT ADD NEAT LIQUID BOILER WATER TREATMENT AND SULPHITE OXYGEN SCAVENGER TOGETHER. Typically the neat sulphite Oxygen Scavenger should be added to pre-dilute Liquid Boiler Water Treatment in a mixing tank. A typical mix would be for a 100 litres of pre-mixed treatment: 75 litres water, 25 litres Liquid Boiler Water Treatment and 3 litres of Sulphite Oxygen Scavenger.

TESTING

Oxygen Scavenger is controlled by maintaining a fixed sulphite excess of not less than 30 p.p.m in boilers or 3 p.p.m in feedwater lines, as detectable sulphite using a reagent dropper method or standard titration technique. Aalborg recommendation is 30-60 p.p.m. (for example). Please check specific manufacturer's instructions as they may vary.

HANDLING

Avoid direct contact with skin and eyes to prevent mild irritation. In case of accidental contact, flush area with water, and seek medical attention. Product should not be ingested. Please refer to Material Safety Data Sheets for detailed handling and storage information.

Summary

SULPHITE OXYGEN CONTROLLER is a catalysed sulphite oxygen scavenger used as part of a boiler water treatment programme in low or medium pressure boilers.
Pack Size - 25 litre Drum.

NSN J150-6810-99-378-4863 Product Ref. 0055

Boiler Coagulant

AQUAMARINE BOILER COAGULANT is a liquid sludge conditioner designed to prevent the formation of small amounts of solid and sticky deposits in boilers such as oil deposits.

How does it work?
BOILER COAGULANT is a physical dispersant product. It prevents the formation of large particles in liquid.

- It functions by keeping solids as small particles
- Prevents agglomerations from forming
- Keeps boilers clean
- Keeps sludge dispersed for efficient blow-down

BOILER COAGULANT is primarily used in conjunction with HARDNESS / PHOSPHATE CONTROL. The solids can be removed by the blow down as usual.

In addition BOILER COAGULANT can help to remove small amounts of oil contamination if it arises, by blow down. Oil contamination must of course be stopped if it has arisen.

Results of use
BOILER COAGULANT prevents the formation of adherent deposits and sludges in boilers and thereby reduces clean-downs.

Dosing Instructions
Normal dosage is 20ml daily/tonne of boiler water capacity. Typically this equates to 0.1-0.3 litres/day. This is the recommended initial dose.

BOILER COAGULANT should be dosed directly to the boiler via the bypass pot feeder installed in the boiler feed water line.

25 Litres

Product Ref. 0056

Alkalinity Controller

ALKALINITY CONTROLLER is a concentrated alkaline treatment for pH control in boilers.

How does it work?
ALKALINITY CONTROLLER should be used as part of a coordinated treatment programme in conjunction with other AQUAMARINE B.W.T. products.
ALKALINITY CONTROLLER provides the alkaline conditions that allows HARDNESS/ PHOSPHATE CONTROL to operate effectively. This is done by neutralising any acidic conditions and maintaining alkalinity within optimum limits.
The product is suitable for use with all boiler pressures.

Results of use
ALKALINITY CONTROLLER helps to keep magnesium and calcium salts in suspension and helps in maintaining efficiency and reducing maintenance.

Dosing and Sampling

- For optimum results dose directly into the boiler via the bypass pot feeder installed in the boiler water feed line.
- A representative sample of boiler water must be taken at regular intervals (daily or every 3 days), at a frequency adequate for the type of boiler. The sample should be taken immediately following blow down and should be analysed immediately.
- Follow the AQUAMARINE test kit instructions and record the results on the log sheets provided by AQUAMARINE. These should be returned monthly for review by AQUAMARINE CHEMICALS.
- The results indicate the level of P Alkalinity in the boiler. Use the dosage chart below to adjust the levels of treatment required.

USING THE TABLE: Select the section corresponding to the pressure of the boiler to be treated and read across the table to obtain the level of treatment required.

ALKALINITY CONTROL
DOSAGE - GRAMMES/TONNE FOR DISTILLED WATER

BS1170 Group Boilers	Pressure Range	p-alkalinity test result in p.p.m. (CaCO3)							Standard Range P.Alkalinty	Initial Dose millilitres/ Tonne
		0-60	60-90	90-100	100-110	110-120	120-150	150+		
1	0-17.5 Bar 0258 Psi	180	90	60	Satisfactory No Dose			Blow Down	100-150	225
2	17.5-31 Bar 258-455 Psi	180	90	60	Satisfactory No Dose			Blow Down	100-150	225
3	32-42 Bar 455-618 Psi	150	65	50	Satisfactory No Dose			Blow Down	100-130	200
4	42-60 Bar 618-880 Psi	135	65	Satisfactory No Dose				Blow Down	90-120	180

Normally: 0.18 litre/tonne of ALKALINITY CONTROLLER will raise PAlkalinity by 100 p.p.m. Proper treatment should normally give a pH between 9.5 and 11. These are recommended limits for levels of treatment. They are not intended to replace either shipping company instructions or boiler manufacturer's policy.

Summary - ALKALINITY CONTROLLER is a part of a coordinated programme of Boiler Water Treatment yielding the basic alkalinity upon which successful boiler water treatment depends.

NSN J100-6810-99-513-9403 Product Ref. 0057

Water Treatments

Corrosion Controller CWT

Liquid Engine cooling water corrosion and scale inhibitor

Description
Aquamarine Corrosion Controller is an easy to use liquid that inhibits electrolytic corrosion, cavitational corrosion and controls scale and sludge. It is also compatible with a wide range of hoses, gaskets and seals.

Aquamarine Corrosion Controller passivates metal surfaces and combines with sludges, scale and rust deposits to allow their gradual removal.

Uses:
- Internal combustion engine and compressor cooling systems.
- Heat pump water systems.
- Recirculating cooling water systems.
- Hot water heating systems.
- Suitable for jacket water used in evaporator feed heaters.
- Chilled water systems.
- Hot chilled water systems.
- Ice melting water systems.
- Compatible with Ethylene Glycol used as antifreeze.

Aquamarine Corrosion Controller should be fed directly by the bypass pot feeder to the main circulating line or into the cooling water expansion tank, a dosing pump is available for this.

(For systems using totally de-ionised water raise nitrite levels to 1700 p.p.m. as corrosion is more likely.)

Control is based on nitrite concentration and additions should be made after representative sampling. Aquamarine test kit is available for accurate checking.

Target = 1500 p.p.m. NITRITE				
Nitrite p.p.m.	0	500	1000	1500
Ltrs/1000 Ltrs make up	12.5	8.3	4.2	0
TARGET PARAMETERS				
pH	Between 8.3 and 10			
Nitrite	1500 p.p.m.			
Chloride	Less than 50 p.p.m.			
Total Hardness CaCO3	Less than 100 p.p.m.			

Note: Log sheets should be returned to Aquamarine by fax e.mail or post on a monthly basis for analysis – address details at front of brochure. Log sheets are supplied free of charge. A full report will be forwarded back by return with any comments or recommendations.

Visit: www.aquamarinechemicals.com for log sheet downloads.
Email your log sheets to us monthly at: logs@aquamarinechemicals.com

Corrosion Controller 30 Concentrate

Liquid Engine cooling water corrosion and scale inhibitor

Aquamarine Corrosion Controller is an easy to use concentrated liquid that inhibits electrolytic corrosion, navigational corrosion and controls scale and sludge. It is also compatible with a wide range of hoses, gaskets and seals.
Aquamarine Corrosion Controller passivates metal surfaces and combines with sledges, scale and rust deposits to allow their gradual removal. It is suitable for low, medium and high speed engines.

To clean out a cooling water system which has been treated previously with another chemical or has oil or scale contamination use the Diesel engine cooling water Inline Cleaner (Product No 14).

For oil only contamination use the Aquawash in circulation at a dilution of 0.5 and 7 litres per tonne of cooling water dependant on degree of contamination. Circulate for 1-2 hours, empty and then flush with clean water.

Uses

- Internal combustion engine and compressor cooling systems
- Heat pump water systems
- Re-circulating cooling water systems
- Hot water heating systems
- Suitable for jacket water used in evaporator feed heaters
- Chilled water systems
- Hot chilled water systems
- Ice melting water systems
- Compatible with Ethylene Glycol used as antifreeze.

Aquamarine Corrosion Controller should be fed directly by the bypass pot feeder to the main circulating line or into the cooling water expansion tank.

(For systems using totally de-ionised water raise nitrite levels to 1700 p.p.m. as corrosion is more likely.)

Control is based on nitrite concentration and additions should be made after representative sampling. Aquamarine test kit is supplied for accurate checking. Nitrite Target = 1500 p.p.m				
Nitrite p.p.m	0	500	1000	1500
Chlorides should be less than 50 p.p.m				
PH should be between 8.3 and 10				
Litres / 1000 litres make up / Dose	3.3	2.2	1.1	0

Try to keep Nitrites within the parameters described.
Low Nitrite levels will give rise to an unprotected system and ultimately corrosion problems.
Log sheets should be returned to Aquamarine on a monthly basis for analysis by email or fax. A report will be sent back to you

25 Litre Pack Size

NSN J100 6850-99-239-2381 Product Ref. 004B

Visit: www.aquamarinechemicals.com for log sheet downloads.
Email your log sheets to us monthly at: logs@aquamarinechemicals.com

Diesel Engine Cooling Water Inline Cleaner

Description

Aquamarine Diesel Engine Cooling Water Inline Cleaner is designed to remove rusting, magnesium and calcium scale deposits and to clean and degrease oily residues from cooling water systems.

Uses/Benefits

- Suitable for standard diesel engine applications, gaskets and fittings.

Application

Aquamarine Diesel Engine Cooling Water Inline Cleaner should be used at 5 – 10% dilution depending on severity of scale and or rust and circulated for 1 – 3 hours, until the system is clean. Flush the system before re-dosing with any chemical treatment.

Please consult Aquamarine for further information and technical or chemical advice.

It is not recommended to use whilst the vessel is in service.

Pack Size 25 Litres NSN J100 6850-99-873-4452 Product Ref. 0014

Aluminium Corrosion Controller XLI (extended life inhibitor)

Description
A biostable synthetic corrosion inhibitor that gives high levels of corrosion protection to water systems and possess extremely good scale inhibition.

Aquamarine Aluminium corrosion Controller gives long life corrosion protection to a very wide range of engine metals including aluminium, iron and copper.

Compatible with glycols for protection against freezing it is recommended to change every 5 years or 30000 hours in marine applications.

Recommended dilution rate is 5-10% with a minimum of 5% or as per engine manufacturer's recommendations.

- The correct dosage should be checked using the Aquamarine Coolant Refractometer.
- The engine manufacturer's recommendations for water quality should always be followed.
- Chloride levels should normally be kept below 50ppm.

Aquamarine Aluminium Corrosion Controller has been approved by most major engine manufacturers.

Aluminium Corrosion Controller Test Meter

Available in 20 and 1000 litre (IBC) containers.

NSN J100 6850-99-666-5296 Product Ref. 0005

Visit: www.aquamarinechemicals.com for log sheet downloads.
Email your log sheets to us monthly at: logs@aquamarinechemicals.com

Antifreeze + Test Meter

AQUAMARINE UNIVERSAL ANTIFREEZE

Description
Aquamarine Universal Anti-freeze is an Ethylene Glycol based anti-freeze, which contains inhibitors to protect radiators and engines, including aluminium engines, against rust and corrosion.

The anti-freeze should be left in cooling systems throughout the year and will thus give all year round corrosion protection.

Aquamarine Universal Anti-freeze contains no methanol and has a low flammability. It is biodegradable and does not present an environmental problem.

Note: Whilst ethylene glycol is biodegradable it is TOXIC to animal and human metabolisms.

Uses
- Ethylene Glycol based anti-freeze
- Conforms to requirements of British Standard BS 6580: 1992
- Contains no methanol
- Contains effective inhibitor to give all year round protection against rust and corrosion
- Suitable for all commonly available commercial engine cooling systems including aluminium engines.

Application
A 25% solution (1 part anti-freeze to 3 parts water) will remain fluid down to –14°C. In severe winter conditions, increase to a 33% solution (1 part anti-freeze to 2 parts water) to give protection down to –17°C.

NB: Antifreeze used in engine & most applications should be changed annually to give optimum protection

Testing

Anti-freeze Test Meter

Pack Size 25 litres

NSN J100 6850-99-797-2246 Product Ref. 0006

Evaporator Scale Controller

Uses
- This product is used for scale and foaming control in marine all temperature range evaporators and heat exchangers, and for scale and sludge control in boiler water systems
- Removes existing scale by in-service cleaning
- Prevents scale formation
- Low foam properties reduce evaporator foaming
- Low toxicity

Typical Uses
- To prevent scale and foam formation in marine evaporators
- To control the formation of scale deposits in heat exchangers and boilers
- For scale removal use Aquamarine Descaling Liquid

Dose
When used for treating marine evaporators, the product should be dosed continuously into the sea water feed line where all of the treatment will enter the evaporator. Since Evaporator Scale Controller is highly concentrated it should be pre-mixed with cool distillate in a separate dosing tank and dosed via a flow meter or metering pump.
The recommended daily dose rate is dependent on brine density (S.G.) which should be checked daily with a hydrometer and is normally as indicated below.

Dosage
The standard dosage, applicable to most systems, is 0.01 litres of Evaporator Scale Controller per tonne of distillate produced. This is based on the production capacity of the evaporator. In a standard 25 metric tonne/day evaporator use 25 x 0.010 = 0.25ltrs Evaporator Scale Controller/day.

Setting the Flow Rate
The treatment is added to the dosage tank and mixed with water.
For example: With the 0.25 litres of Evaporator Scale Controller add sufficient water to make up 50 litres of liquid.
Flow rate calculation:

$$\text{Flow rate} = \frac{50 \text{ litres}}{24 \times 60} = 35\text{ml/min setting}$$

This will then last 24 hours.

N.B.
The brine density should not exceed a density of 1.038 (g/cm^3). The scaling potential increases
rapidly over this level. An increase in the amount of Evaporator Scale Controller used will assist in retaining potential scale forming salts in suspension.

For example: If the density rises to 1.050 the dosage should be 0.06 litres/tonne of water produced.

Pack Size 25 Litres

NSN J150 6850-99-149-8932 Product Ref. 0007

Biological Growth Controller - cooling water treatment biocide - enclosed cooling water systems

Description
Aquamarine Biological Growth Controller includes a safe biocide for preventing and controlling marine growth in cooling systems. It also protects against electrolytic and acid corrosion by film formation. Fully biodegradable and non-oil based it does not accumulate in the environment.

Aquamarine Biological Growth Controller is also effective against bacteria and algae in oil and contaminated water.

Uses
- Ballast tank cleaning
- Algae, shellfish and micro-organism controller
- Trim tank cleaning
- Closed circuit cooling system cleaning
- Suitable in systems operating up to 130°C
- Fuel and lube oil decontamination

Application
In water systems dosage should be varied between 1 litre/tonne of water in a mildly contaminated, closed circuit system and up to 10 litres/tonne for severe contamination. In the absence of the availability of Aquabac 80 this product may be used at 6 p.p.m. in the water phase of fuel oil before separation.

Pack Size 25 litres

For specific Fuel Oil Treatment use Aquabac 80 MBC treatment.(see fuel treatments)

Summary
A very strong broad-spectrum product with biocide characteristics for fuel, water or lube oil microbiological contamination.

25 litre Drum

NSN J150 6840-99-433-2417 Product Ref. 0008

Aquamarine CW25B Chilled Water Plant Treatment

Description
Aquamarine CW25B contains sodium nitrite and a copper corrosion inhibitor. It is a very effective corrosion inhibitor for modern air conditioning chilled water systems, and hot water heating boilers. It is compatible with alcohol and glycol anti-freezes.

Aquamarine CW25B is a complete, easily applied, single solution treatment which provides economical waterside protection for mixed metal systems containing copper, brass and ferrous based metals.

A biocide is incorporated in the formulation to prevent bacterial contamination.

Specification

Physical State	Pale Yellow Liquid	SG	1.190

Dosing
5 litre Aquamarine CW25B per cubic metre water in system.

Feeding
AQUAMARINE CW25B is usually added to closed systems by utilising a pot feeder, or by a manually operated chemical injection pump.

Testing and Control
A simple test procedure is available for control of AQUAMARINE CW25B recommended normal concentration level is 800 – 1200 p.p.m of Nitrite.

Handling
Aquamarine CW25B is alkaline and contact with skin, eyes and clothing should be avoided. In case of contact flush with water.

Please refer to material safety data sheet for detailed handling/storage instructions.

Packaging
Aquamarine CW25B treatments are shipped in 25 litre non returnable drums.

NSN J150 6850-99-724-4377 Product Ref. 0036

Marisol ® CW
Cooling Water Scale and Corrosion Inhibitor

MARISIOL CW is a liquid compound, based on nitrite/borate products, improved with active agents, which together protect iron and metal against corrosion, scale and deposits.

MARISOL CW contains no chromates. It can be mixed with ordinary anti-freeze (glycol) or water containing similar cooling water additives. It is not sensitive to moderate over-dosing. Recommended limits should be considered along with engine manufacturers instructions.

MARISIOL CW is developed for use in diesel engines and main and auxiliary cooling water systems, not containing aluminium; MARISOL CW should preferably be used together with evaporated or deionised water with hardness as close to zero as possible. This type of water is chemically clean and forms less deposits. However, it is also more corrosive and contains more oxygen and needs careful chemical treatment. Ordinary tap water would be avoided but could possibly be accepted if no other water is available. The hardness must not exceed 10ppm and the pH shall be such that treated water does not exceed pH 10. MARISOL CW has been approved according to the international, and by engine manufacturers commonly accepted FW method, (Forschungs Vereinigung Verbrennungskraftmashine), Frankfurt. Individual approval is given by New Sulzer Diesel, MAN/B&W, Wärzilä Diesel, etc.

Dose Rate

PH	**8.5 - 10.0**
Nitrite Concentration	1000-2000ppm

Initial Dose
Dose an untreated system with 6 litres MARISOL CW per m³ of cooling water to reach a minimum level of 1000 p.p.m and 9 litres for a medium level of 1500ppm.

If tests show too low concentration ©, an additional dosage of (q) litre/m3 should be made to reach the medium level of 1500 p.p.m: q = 9 – (0.006 x C)

Example
Test figure show 800 p.p.m Nitrite in a 15m3 cooling water system.
q = 9 – (0.006 x 800) = 4.2 litres/m3 = 4.2 x 15 = 63 litres to be added.

Dosage should be performed by a dosing pump or manually in the header tank for 20-30 minutes, providing that at least part of the water is circulating through.

Pack Size: 25 litres

NSN J150 6850-99-192-5292 Product Ref. 0037

Visit: www.aquamarinechemicals.com for log sheet downloads.
Email your log sheets to us monthly at: logs@aquamarinechemicals.com

Cleaning & Maintenance Products

Aquawash

Excellent multi-function water-based degreaser for all cleaning tasks.

Description
Aquamarine Aquawash is a top quality general purpose cleaning and degreasing agent.

Originally developed in Scandinavia this unique combination of surface-active agents, sequestrants and alkaline builders was formulated for performance and economy and was designed to reduce the need for mechanical agitation, it is able to rapidly lift dirt, grime and oil from painted surfaces.

It offers complete safety to the environment and persons handling it, being non-toxic, non-caustic, free from solvents and completely biodegradable. It is a non-flammable, water based cleaner, safe to use on all materials and can be used in non-ventilated areas. The use of advanced wetting agents gives it exceptional solvency power on dirt and oily matters and it splits after cleaning, releasing the oil phase for reclamation.

Uses
- All types of cleaning and degreasing - contains an emulsifier
- Very effective for the removal of coal dust residues
- Tank coating materials, lacquered or painted surfaces, light materials, plastics and textiles
- Excellent for ultrasonic tanks and immersion soak tanks
- Designed to be used offshore
- Removal of oil, sludge, carbon deposits, greases, general dirt and grime
- Cleaner for Engine Room
- Cleaner for cargo tank (after mineral, animal, vegetable and fish oils)
- Cleaner for decks, toilets, bulkhead and galley
- Cleaner for soiled materials, such as covers, mats, rugs, overalls, etc
- Cleaner for hulls, painted surfaces and glass fibre boats
- Very suitable for pressure washing at around 200:1
- IMO approved

Dose Rates
1. It may be used neat or diluted by up to 50 parts of water, according to the amount and type soil to be removed
2. Direct injection method into tank washing machines
   Dose rate: 0.5 - 5 litres per tonne wash water (0.05 - 0.5%)
3. Recirculation method. Dose rate: 0.5 - 7 litres per tonne wash water (0.05 - 0.7%)
4. Spot Cleaning. Hand sprayed neat or diluted up to 1 - 5 parts water and left for about 20 - 30 minutes before washing off with water
5. For removing final coal dust residues, spray on neat, leave for 10 - 20 minutes and then pressure wash with fresh or sea water.
6. Ultrasonic tank cleaning. 50ml : 50 ltrs water (increase as required).
7. Overalls - Washing machine 40°C 200:1 - effectively removes oil.

Pack Size 25 Litre

NSN J200 7930-99-873-9343 Product Ref. 0009

Quickbreak

General oil and grease remover for use with oily water separators (This is a solvent based product - Use Natural Zest for a fast splitting water based product)

Description
Aquamarine Quickbreak is a fast separating cleaner that leaves less than 15 p.p.m. oil in the water after splitting working in conjunction with oily water separators in compliance with current IMO regulations (Marpol 73/78 Annex I) (Marpol Annex V). The composition meets the requirements of not being harmful to the environment and may be discharged into the sea when used to clean cargo holds and external surfaces on ships in conjunction with the regulations.

Uses
- Compatible with all types of oily/water separators and coalescers
- General engine room degreasing
- Cargo Tank Cleaning
- Low Toxicity
- Non Corrosive
- Hydrophobic

Application
Aquamarine Quickbreak can be applied by brushing or soaking. It should not be sprayed, nor should contamination or washing with other cleaners be allowed. Either of these events can drastically reduce the effectiveness of the splitting process.

At least 30 minutes should be allowed between the use of Aquamarine Quickbreak and the operation of the separator. The most common source of contamination is from air side turbocharger washings containing air cooler cleaner type products. It is suggested that the cleaner and washings are prevented from entering the bilge by collecting them from the drain of the air side of the turbocharger.

Quickbreak can be used for cargo tank cleaning of mineral oils and petroleum based chemicals. It is used also for cleaning and degreasing of grease soiled surfaces such as:

1. Oil side of fuel and lube oil heat exchangers
2. Boilers
3. Engine cooling water systems

Pack Size 25 Litres

NSN J150-6850-99-212-8487 Product Ref. 0010

Fast Dry Electrical Cleaner

Description
Aquamarine Fast Dry Electrical Cleaner is a solvent that effectively and quickly dissolves grease, tar, wax and oil from electrical equipment on contact. It dries in seconds and leaves no residue.

Uses
- Removal of oil, grease and carbonaceous deposits from electrical equipment, electrical motors and mechanical parts
- Suitable for engines, electrical motors, generators, switches, contractors, winches, coils and mechanical equipment
- Non toxic
- Non corrosive
- Flash point of greater than 110°C Complies with Montreal Protocol

Application
Aquamarine Fast Dry Electrical Cleaner should be applied undiluted to electrical equipment by soaking, dipping, brushing or wiping with a clean lint-free cloth, or spraying with a hand spray. Adequate ventilation is recommended and excessive over use of the solvent should be avoided.

Pack Size 25 litres or 4 x 5 Litres

Please request a free spray dispenser for easy application.

25 Ltrs	- NSN J200 6850-99-365-6022	Product Ref. 0011
4 x 5 Ltrs	- NSN J200 6850-99-690-7748	Product Ref. 0011

Carbon Remover - combined air cooler cleaner

Description

Aquamarine Carbon Remover combined Air Cooler Cleaner is a carbonaceous residue cleaner and for in service cleaning of air handling systems for turbo charged diesel engines.

CARBON REMOVING

Uses/Benefits

- Non-corrosive, safe on all light metals, including aluminium
- Quickly dissolves deposits containing carbon, resins or varnishes
- Simple and economical to use by soaking or circulation method
- Eliminates need for hard scraping
- Can be recycled for future use
- Non flammable
- Low toxicity
- Low evaporation rate
- No phenols or chlorinated compounds

Application

- Removal of carbon type deposits from burner tips, fuel injectors and all components fouled by carbon, resin or varnishes
- Cleaning oil side of fuel and lube-oil heaters, oil coolers etc
- Removal of carbon based deposits from fuel and lube oil filters
- Direct engine parts such as pistons, piston rings, valve spring, valve cages

Dosage/User Instructions

Soak method: The items to be cleaned are dipped into the solvent; a wire basket can be used for small components. For removal of light deposits or oil, a dilution of up to 1:2 in fresh water may be used. Light deposits will be removed in 1 hour, whereas heavily oxidised deposits may need overnight soaking. After the components have been removed from the soaking bath, remaining solvent is easily removed with water.

Due to a very low evaporation rate, no precautions are necessary to prevent loss of liquid, but adequate ventilation is recommended.

Circulation: Where in-situ cleaning is required, the chemical can be used neat and circulated through the unit in question. Time required for this process will again depend on extent of
fouling and may take up to 20 hours.

1. Before circulation with the cleaner blow compressed air or steam through the system to begin with.
2. to remove as much as possible of the residual oil.
3. Connect up the end of the oil system to a pump, fill the system with the cleaner and circulate.
4. Continue circulating through the system for 4 to 24 hours. Cleaning process will depend on the type of deposits involved.
5. Heating the cleaner will enhance the effectiveness, but temperature should not exceed 60°C.
6. When cleaning is completed, drain out the cleaning solution and flush the system with a petroleum solvent such as gas oil or kerosene.

AIR COOLER CLEANER

Uses/Benefits

- Fouling of air coolers is reduced thus heat transfer and engine efficiency is improved
- Fire hazards from the build up of grease and residues are minimised
- Down time and expense of periodic dismantling of the air handling system for cleaning is eliminated
- Scavenging efficiency is improved by the reduction of deposit build-up around scavenging ports
- Water displacing surfactants incorporated in the chemical form a mono molecular film throughout the air handling system, which protects the metals and reduces the adherence of airborne contaminants

Application

- In service cleaning of diesel engine air coolers and scavenge trunk systems
- For use in soak baths, immersion cleaning systems
- Light carbon removal from machinery parts

Dosage/User Instructions

Aquamarine Carbon Remover combined Air Cooler Cleaner is suitable for all types of diesel engine. The cleaner/fresh water mixture has no flash point and cylinder lubrication is not impaired.

The following table shows our recommendation for initial dosage per air cooler. This is based on one injection every 24 hours. This can be varied based on performance of the pressure drops across the air coolers.

ENGINE PERFORMANCE	DOSAGE PER 24 HOURS	
	Concentrate	Cleaner/Water mixture
5000 - 10000 H.P.	1.0 litre	3.0 litres
10000 - 25000 H.P.	1.5 litres	4.5 litres
OVER 25000 H.P.	2.0 litres	6.0 litres

Product can be applied by injection, immersion or circulation. For immersion and circulation, cleaning time is reduced considerably by heating the chemical to maximum 50°C. If the air coolers are very dirty it may be advisable to use Aquamarine Aquawash to thoroughly clean the system before commencing the injection treatment.

Immersion method: The dismantled parts to be cleaned are laid in a tank specially designed for the purpose and been filled with the cleaning chemical. Movement is achieved by means of compressed air. Cleaning time is estimated to take from 5 - 12 hours.

Circulation method: The equipment to be cleaned like fuel oil pre-heater, oil cooler etc is connected to a pump and a tank by means of tubes. Depending on the degree of fouling, the cleaner is circulated through the equipment for 5 - 15 hours.

Injection method: By means of a special injection system a mixture of the chemical and fresh water in a ratio of 1:2 (observe the mixture ratio exactly) is injected into the air channel
between the turbo blower and the air cooler. This is followed by a second injection of fresh water only.

25 Ltrs - NSN J150 6850-99-562-6222 Product Ref. 0012

ACC Plus

Description
A powerful micro fluid, specifically developed for the removal of heavy grease, tar and grime from machinery, floors, walls and many other hard surfaces including engines and gearboxes. Extensively used as a solvent replacement for ink removal. Also suitable for pressure washing all vehicles, equipment and industrial plant machinery. Being a combination of quality solvents and powerful surfactants ACC Plus offers the benefits of a solvent product with the health and safety considerations of detergents. Its unique properties remove encrusted salt from bodywork and painted surfaces whilst also eliminating any tar spots, insects and bird lime leaving the surface clean and streak free.

Uses/Benefits

- Effective at high dilution
- Easily removes ink, grease, oil dirt and grime
- Does not contain ingredients which accelerate metal corrosion
- Safe on glass, rubber and plastic surfaces
- Ideal for hot or cold presssure wash machines
- Effective in hard and soft waters
- Contains odourless safety solvent
- Effective against bird lime

Application
Plant/Machinery: Use at up to 1 to 200 parts in water via a pressure washer system. Work from bottom to top of equipment under low pressure. Allow a few minutes contact time and then remove with high pressure jet again working from bottom to top.

Hand Washing: Pre-dilute 1:50 in water and apply liberally all over surface to be cleaned. Allow a few minutes contact time, then rinse well. Use neat on any stubborn deposits.

Engine/Gearbox Cleaning: Foam onto area to be cleaned, allow 5 minutes contact time and rinse off. Use of steam at this stage will improve results.

Ink Removal: Use neat with brush or swab. May be diluted and rinsed with water depending on application

25 Ltrs. Product Ref. 012A

Air Cooler Cleaner (ACC)

Description
Air Cooler Cleaner is a solvent based product used for cleaning diesel engine air coolers. Efficient and economical the product has been formulated to remove carbon deposits and oil and grease deposits. Ideal for in service cleaning the product helps to maintain air cooler efficiency.

In service cleaning
A solution of 2 parts fresh water to one part Air Cooler Cleaner should be injected into the air cooler followed by a solution of fresh water to flush out the chemical residues. The solution should be used freshly made up.

Immersion
Air Cooler Cleaner can be used to by flooding the cooler in a bath. After allowing to soak for 2 hours drain off and flush with water. When in water solution the product is non flammable, non explosive and has no flash point.

Aquamarine offers a range of injection systems designed for ease of operation. Air Cooler Cleaner can also be used for carbon removal from machinery parts.

25 litre pack size Product Ref. 012B

Descaling Powder

PLEASE SEE SAFETY NOTES BEFORE COMMENCING WORK WITH THIS PRODUCT.

Scale and rust remover, acidic powder

Description
Aquamarine Descaling Powder is a dry acid cleaner formulated to remove water and rust scale deposits.

Uses/Benefits
- Powder product - safe and easy handling and storage
- Fast and effective scale remover
- Inhibitors protect normal constructional metals
- Contains anti-foam agent
- Colour indicator shows solution strength
- Removal of water scale from boilers
- Descaling of diesel engine cooling systems
- Removal of water scale and rust from condensers, evaporators, calorifiers & heat exchangers.

Dosage/User Instructions
- For large systems or components the most effective descaling is accomplished by circulation.
- In the case of small components, the soak method in an immersion bath can be used.
- If the equipment to be cleaned is contaminated by oil, grease or sludge, then pre-cleaning with Aquamarine Aquawash is necessary. For heavy deposits of carbon residues use Aquamarine Tank Cleaner H.D.
- Aquamarine Descaling Powder should normally be mixed with fresh water to form a solution between 2.5 and 10%, depending on the extent of scaling. At this optimum strength, the solution will be a pink colour. It will change colour to orange when 85% of the acid has been neutralised, and to colourless when all the acid has been neutralised. Whenever possible, the solution should be heated to 60°C.
- Calcium sulphates and heavy iron oxides may need stronger acid solutions. The strength of the acid can be sufficiently enhanced by adding 1 part sodium chloride (common salt) to 20 parts of Descaling Powder. If salt is not available an acceptable alternative is to dissolve Descaling Powder in sea water. After use of Descaling Powder, a neutralising solution of sodium carbonate in fresh water should be circulated for 2.4 hours or until an acceptable pH value is obtained around pH 7. This will neutralise any remaining acidity and passivate steel surfaces.

Descaling Powder should not be used on aluminium, zinc, tin or galvanised surfaces for which a special grade cleaner should be used.

Descaling of boilers

Recirculating cleaning: The most efficient cleaning method is to use a recirculation system, heating the cleaning solution to 60°C throughout the operation. Live steam heating will cause an increase in solution level for which allowance must be made.

1. Open the superheater and boiler drum vents to prevent gas build-up during the cleaning process.
2. Connect a non-collapsible hose from the suction side of a portable pump to the water-drum blow down flange.
3. Connect a steam supply hose to the water-wall header or to the water-drum blow down flange opposite the pump suction connection.
4. Connect a mixing tank to the circulation suction line between the pump and water-drum blow down flange, or arrange to gravity feed the solution directly into the boiler.
5. Connect the delivery side of the pump to the auxiliary feed line so that the circulating solution will flow into the boiler through the economiser to the steam drum, then via the boiler tubes to the water-drum and out through the blow down flange connection.
6. Arrange to check the circulating acid solution for colour and temperature during the cleaning process.
7. When all connections are secure, half fill the boiler with fresh water. Slowly add the calculated amount of Descaling Powder to the mixing tank to make up the 5% - 10% solution in water heated to 60°C.
8. As the cleaner crystals dissolve, start the circulation pump and take a sample of the solution for later colour comparison. The circulation flow rate should be maintained at 30cm/second for between 4 and 8 hours.
9. Apply head (steam) to maintain the cleaning solution at 60°C.
10. If needed, add fresh water until the solution level in the steam drum is 10cm over the tube sheet. Do not cover the tube sheet by more than this amount initially if live steam heating is used, as this may raise the water level considerably during the cleaning process. The solution level should be maintained at ¾ of the upper gauge glass throughout the operation.
11. Check the solution colour periodically against the sample taken when cleaning began. Colour changes towards orange and yellow indicate neutralisation of the solution. In this case add sufficient Descaling Powder to restore the solution to its original colour. Such additions should not be carried out more than twice during the cleaning operation.
12. If, after two cleaner additions, the solution still becomes completely neutralised, it should be drained off. The operation should then be started with fresh solution. This will usually only occur when very severe deposits are present.
13. When the solution retains its colour for 1 hour, the cleaning operation may be considered complete and the solution drained off.
14. Thoroughly flush the boiler with clean, fresh water. An alkaline neutraliser should be added to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose use a solution of sodium carbonate and circulate for 2 to 4 hours or until an acceptable pH value is obtained (minimum pH=7).
15. Remove the circulation system and heating equipment. Refill the boiler with distilled water, test and add the appropriate water treatment chemicals before returning the boiler to service.

Descaling of diesel engine cooling system, condensers, evaporators, calorifiers, heat exchangers

Recirculation cleaning: Generally the most efficient method is to use a recirculation system, using 5% - 10% solution heated to 60°C for the duration of the cleaning operation. The process will need sufficient cleaning solution to fill the water side of the heat exchanger plus up to 50 litres for the circulation system.

1. Isolate the heat exchanger from the water circuit and drain.
2. Fit suitable valves in place for the heat exchanger cleaning plugs and drain off any remaining water. If cleaning plugs are not fitted, use the water inlet and outlet connections.
3. Connect the discharge side of an acid proof portable pump to the lower heat exchanger connection and the suction side of the pump to the bottom outlet of a 200 litre open top drum.
4. Complete the circuit by connecting the upper heat exchanger connection to the top of the drum.
5. Arrange an immersion heater in the drum with sufficient capacity to maintain the solution at 60°C throughout the operation.
6. When the connections are secure add the appropriate amount of fresh water to the drum and slowly add the Descaling Powder. When dissolved, start the circulation pump and heating system.
7. Take a sample of the solution for colour comparison later.
8. Maintain the heat and circulation for between 4 and 6 hours, checking the solution colour and temperature regularly. If the solution changes from red-brown to orange or yellow, indicating acid neutralisation, add sufficient Descaling Powder to the solution to return it to its original colour (usually 25g per litre of solution). This solution enhancement should not be carried out more than twice. If after two additions, the acid is still neutralised, the solution should be drained off and the process started again with fresh solution. This will usually only be necessary when dealing with very severe deposits.
9. When the cleaning solution retains its red colour for 1 hour, the cleaning operation may be considered complete and the solution drained off.
10. Thoroughly flush the heat exchanger with fresh water. Add an alkaline neutralising agent to the final rinse to remove any remaining acidity and passivity steel surfaces. For this purpose use a solution of sodium carbonate and circulate until an acceptable pH value is obtained (minimum pH = 7).
11. After rinsing, remove the circulation system, remove the temporary valves, replace the cleaning plugs and reconnect the heat exchanger to the normal water supply.

Soak cleaning: If a recirculation system cannot be arranged, the following hot soak method will produce an acceptable cleaning method.

1. Isolate the heat exchanger from the water circuit and drain.
2. Remove both cleaning plugs. If cleaning plugs are not fitted, use water inlet and outlet connections. Replace the lowest plug with a valve to which a steam hose should be connected, the upper valve must be vented to atmosphere.
3. Using fresh water at 60°C, mix sufficient cleaner at 5% solution to fill the heat exchanger three quarters full. Take a sample for later colour comparison, and then carefully pour the solution into the heat exchanger through the top valve.

4. Use live steam to maintain solution temperature at 60°C. Check the solution regularly by comparing with the original taken before cleaning started.
5. If the cleaner solution turns orange or yellow, add more Descaling Powder at the rate of 25g for every litre of solution to restore the solution to its original colour. This solution enhancement should not be carried out more than twice. If after two additions, the acid is still neutralised, the solution should be drained off and the process started again with fresh solution. This will only be necessary when dealing with very severe deposits.
6. When the solution retains its red colour for at least one hour, the cleaning process may be considered complete and the solution drained off.
7. The heat exchanger must now be thoroughly flushed with fresh water. If possible, add an alkaline neutralising agent to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose, use a solution of sodium carbonate.

   Connect the hose delivering the rinsing solution to the upper heat exchanger valve and remove the steam supply from the lower valve. The water discharging from the lower valve may be drained into the bilges.
8. After rinsing, remove the temporary valves, replace the cleaning plugs and reconnect the heat exchanger to the normal water supply.

Dosage Rates
Aquamarine Descaling Powder should be used at a maximum of 10% solution. Stronger acid solution may be prepared by using 10% solution containing a mixture of 20 parts Descaling Powder and 1 part sodium chloride (common salt).

Safety Notes:
Please note that hydrogen can be produced during the chemical cleaning process.

- It is important to check ventilation arrangements to ensure they are unobstructed during chemical cleaning.
- Boiler ventilation terminals should be fitted during cleaning; the boiler should be tested for the presence of hydrogen.
- The boiler should be emptied and refilled with fresh water, to purge it of gases, before opening the steam drum door.

25 kg NSN J150 6850-99-889-8309 Product Ref. 0013

Diesel Engine Cooling Water Inline Cleaner

Description

Aquamarine Diesel Engine Cooling Water Inline Cleaner is designed to remove rusting, magnesium and calcium scale deposits and to clean and degrease oily residues from cooling water systems.

Uses/Benefits

- Suitable for standard diesel engine applications, gaskets and fittings.

Application

Aquamarine Diesel Engine Cooling Water Inline Cleaner should be used at 5 – 10% dilution depending on severity of scale and or rust and circulated for 1 – 3 hours, until the system is clean. Flush the system before re-dosing with any chemical treatment.

Please consult Aquamarine for further information and technical or chemical advice.

It is not recommended to use whilst the vessel is in service.

Pack Size 25 Litres NSN J100 6850-99-873-4452 Product Ref. 0014

Rust Remover & Purifier Disc Cleaner

A liquid, acid based rust remover and surface brightener

- IMO approved for tank washings.
- For environmental and long term treatments use Aquamarine “Aquatan” or Aquamarine “Aquasteel”

Description
Aquamarine Rust Remover is a liquid blend of surfactants and emulsifying agents in a specially inhibited inorganic acid-based solvent. Aquamarine Rust Remover/Disc Cleaner removes the heavy tenacious deposits which collect in fuel and lube oil centrifugal separators. It is extremely effective at removing these deposits without the necessity of dismounting the disc stacks. It also removes rust, cleans and passivates ferrous surfaces and removes stains from stainless steel, brass and copper.

Uses
- Rust Removing
- Passivating
- Metal surface brightener including aluminium
- Disc cleaning without dismantling disc stacks
- For pickling iron and steel surfaces after a welding repair
- Removes heavy tenacious deposits from steel or ferrous metal parts
- Cleans down to metal surfaces
- Leaves no film or residue
- Improves efficiency of centrifuge installation

Application
Disc Cleaning: Use Aquawash for disc cleaning in Ultrasonic Tank applications.

Aquamarine Purifier Disc Cleaner can be used for cleaning all types of separators and separator discs. It is suitable for cleaning of disassembled unit parts.
Separators can be cleaned by:

- Removing the separator disc stack and soaking in a solution of Rust Remover/Disc Cleaner. Circulating or agitating the solution and heating will enhance the cleaning.
- Removing the separator discs and dismantling the stack, then soaking the discs in a neat solution. Discs can be sprayed if a soaking tank is not available. In some cases scrubbing the discs may be required.
- In-situ cleaning of separators. This product may be used on some types of separators, however Aquawash is recommended as a better solution for most disc cleaning applications except where particular scaling problems occur where THIS product will give better performance. Rust Streak Removal.
- For rust removal the surfaces to be treated should be free from loose materials, flaking paint, dirt or oil. Aquamarine Rust Remover should be diluted with water. Always add acid to water never the opposite - this rule can be applied to all acids. The dilution should be between 1:2 and 1:10 depending on the severity of the staining. The solution can be applied by brushing, spraying or immersion. After 20 - 40 minutes the residues should be rinsed off thoroughly with clean water.
- For use with aluminium use a solution between 10 - 25% and rinse after about 30mins. For best performance on aluminium use Natural Zest Degreaser for degreasing as it has a neutral pH.
- For stainless Steel Disc Cleaning (never use on copper, brass or bronze parts), dilute to 4 - 10 parts water, and immerse from 1 - 3 hours depending on the severity of the job concerned. Cleaning will be accelerated with elevated temperatures up to 60°C and agitation. After cleaning rinse thoroughly with clean water.

Pack Size 25 ltrs NSN J200 6850-99-488-7581 Product Ref. 0015

Natural Zest Cleaner

A completely different heavy duty cleaner

Description
Aquamarine Natural Zest Cleaner is the environmental answer to effective cleaning. Manufactured from natural ingredients, it is environmental and safe. Biodegradable, it is extremely efficient in use and readily water rinseable. The natural pleasant citrus odour is an added bonus. It also forms self-splitting emulsions for ease of disposal.

Uses
- Removal of heavy industrial contaminants
- Engine degreasing
- Hard surface cleaning of decks, bulkheads and paintwork
- May be used with Ultrasonic Cleaning Tanks and Cleaning Machines
- Suitable for Oily Water Separators
- Suitable for synthetic materials, rubber and cured lacquers
- Particularly suitable for cleaning aluminium where a neutral pH is required.
- IMO Approved & Certified

Application
Aquamarine Natural Zest Cleaner is suitable for application by spray, brush, cloth or immersion. It can be used neat or diluted 1:5 with water depending on the degree of soiling.
Aquamarine Natural Zest Cleaner is effective for cleaning oil, grease, grime, animal and vegetable fats. For cleaning interior surfaces or lighter grime, dilution can be increased up to 1:40 in water.
For Ultrasonic baths use at 5-25% solution at 45-70°C for 10-15 minutes. Replace ultrasonic solution regularly. Rinse off all components after cleaning with water.

CAUTION!
The Product should not be used on Asphalt surfaces, also avoid zinc, galvanised metals and magnesium alloys.

Pack Size 25 Litre or 5 Litres

25 Ltrs - NSN J200 6850-99-727-6144	Product Ref. 0020
5 Ltrs - NSN J200 6850-99-783-3948	Product Ref. 0020

Aqua-Potable Water Red Rust Treatment (P.W.T)

Solves the Red Rust problems associated with drinking water on ships.

Description/Uses/Benefits

- Aqua-Potable Water Treatment (PWT) will improve water quality and have no deleterious effects on taste or colour of water
- Treatable problems occurring in potable water include scale formation, iron oxide precipitation, foam generation and corrosion
- PWT is a potable water anti-scale product that is suitable for both hard and soft water and for hot and cold systems. PWT is based on an inorganic phosphate product that is USDA approved for use in potable water systems and will not cause any environmental or health problems
- PWT is efficient and effective and will give complete protection required in the modern potable water system. PWT is cost-effective and will give the best anti-scale inhibition available

Dosage

The product should be used at a rate of 50ml / tonne of water, which should give adequate protection. It should be dosed by means of a chemical pump.
The treatment is proportioned in relationship to the quality and quantity of water to be treated by means of a dispenser or chemical pump.

Pack Size: PWT is packed in 25 litre polydrums

FOR CHLORINATION OF DRINKING WATER SEE CHLORINATION TABLET PRODUCTS

NSN J700 6850-99-180-3598 Product Ref. 0029

Sediment Remover

Dispersant for sludge and silt in ballast tanks

Description
Aquamarine Sediment Remover is a non hazardous product that prevents settling of silt and removes sludge at low rates of dosage. It saves valuable cargo space which can be wasted as heavy ballast deposits. Sediment Remover eliminates the need for time consuming and expensive steel replacement which is often necessary to remove the ballast mud/sediment deposits which is will solidify over a period of stagnation.

Ideally it should be used as a preventative measure as a build up of heavy deposits can only be removed by physical means. If a vessel is trading regularly into ports where sludge is unavoidable then the vessel should be treated regularly with Aquamarine Sediment Remover after being thoroughly cleaned out i.e. after dry-docking. However, it is quite easy to treat sediment build-up in the early stages. I.E. For the removal of less than 4 tonnes sediment/sludge.

Uses
- Ballast tank sediment removal
- Open cooling water system cleaning
- Desludging engine cooling systems
- Desludging the sea water side of heat exchangers

Application
Aquamarine Sediment Remover should be added at a rate of 1 litre/10m^3 of water. Agitation should then be implemented as fully as possible while pumping out.

NON-HAZARDOUS

Product Ref. 0043

Descaling Liquid

A Heavy duty liquid acid descaler

Description
Aquamarine Descaling Liquid is an easy to use acid compound for removing water scale and iron dioxide deposits. It is inhibited to protect metal surfaces. It works by attacking the alkaline earth deposits that can be formed on metal surfaces.

CAUTION: It must not be used on zinc, aluminium, stainless steel, galvanized materials or cast iron.

Uses
For the removal of scale from:
- Boilers
- Condensers
- Evaporators
- Heat exchangers
- Cooling and pipe systems
- For the descaling of mussel and crustacean growth in seawater systems and hulls

Application
A preliminary test should be carried out on samples of the scale or deposit to be cleaned to select the best concentration and conditions.

Aquamarine Descaling Liquid is normally used cold but more effective results are achieved if the solution is raised to 40°C. Most effective descaling is achieved by circulation. (Do not heat to over 40°C as this could lead to liberation of chlorine gas and live steam heating will cause an increase in solution level for which an allowance should be made.

If the surfaces are oily use Aquawash or Natural Zest at 1-1.5% solution for degreasing.

Initially thorough rinsing with water should be carried out.

Aquamarine Descaling Liquid is diluted between 1:4 and 1:9 with water.

Adequate ventilation is essential during cleaning. The cleaning operation can take up to 24 hours depending on the thickness and type of deposit. After cleaning the Aquamarine Descaling Liquid solutions should be drained off and the surfaces thoroughly rinsed before neutralising with Aquamarine Aquawash in a 2% solution.

25 litres

Product Ref. 0044

Oil Spill Dispersant - Type 1

Low toxicity oil spill dispersant

Type I according to and in compliance with LR448 specifications by UK Ministry of Agriculture, Fisheries and Food. Complies with Warren Springs Laboratory for efficiency and toxicity.

Description
Aquamarine Oil spill dispersant is a fully biodegradable dispersant that promotes the dispersion of oil into microscopic droplets so that bacterial degradation of the oil is assisted.

Aquamarine Oil Spill Dispersant also cleans and disperses oil on solid surfaces such as decks.

Uses
General purpose cleaning of oil spillages

Application
1 part Aquamarine Oil Spill dispersant should be applied to 10 parts oil by direct spraying or by hand.

Pack Size: 25 litre

Product Ref. 0045

Approved Type II / III OSD High Performance Oil Spill Dispersant

A high performance, low toxicity oil spill dispersant developed to meet the requirements of Warren Spring Laboratory Specification LR 448(OP). Superdispersant 25 is approved as a Type 2 and Type 3 dispersant under Test Qualification CSR 4600/8902798

Superdispersant 25 has been tested by the Fisheries Laboratory of the Ministry of Agriculture, Fisheries and Food and was found to be of low toxicity to crangon (brown shrimp) and patella vulgata (common limpet). This makes Superdispersant 25 suitable for use at sea, on beaches and rocky shores.

Due to the low toxicity of Superdispersant 25 it has been awarded license MAFF/FEPA 53/98

- Does not contain hydrocarbon solvents
- Completely biodegradable in the marine environment
- Ministry approved product
- Low toxicity

Application
Rate of application should be 1 part to 20 - 30 parts of oil, although this will depend on many factors, which include, type of oil, viscosity, degree of weathering, ambient temperature and prevailing conditions.

In general, the oil should be treated quickly, as weathering increases the viscosity of the oil and this necessitates a subsequent increase in dispersant requirement.

Type II : (water dilutable) Concentrate. Premix at a ratio of 1 part to 10 parts of sea water and spray onto the slick using surface breaker boards or other enhanced agitation techniques to give greater mixing of the dispersant/oil emulsion.

Type III : (undiluted mode) Ready to Use. Use neat with appropriate spraying equipment from aircraft or vessels onto the slick. In all circumstances the Type 3 mode is the preferred method being more efficient in breaking down oil.

We can supply as Type II pre-diluted if required.

Available in 25, 205 and 1000 litre containers

Product Ref. 0046

Tank Cleaner H.D

Heavy duty concentrated solvent emulsion cleaner

Description
Aquamarine Tank Cleaner is especially suited for cleaning residues from mineral oil cargoes. Aquamarine Tank Cleaner can be used neat or diluted at elevated temperatures 65- 8O°C, and is especially effective where mechanical agitation is limited. This is particularly relevant in cleaning areas such as bilges and double bottom tanks.

The dispersant solvents will rapidly penetrate oil residues, breaking them up and freeing them from surfaces. Detergent wetting agents lower liquid surface tension and increase the efficiency of emulsification.

Uses:
- Cleaning residues from bilges, double bottom tanks, fuel oil bunker tanks at sea
- Cleaning and gas freeing of crude and refined mineral oil cargo tanks at sea
- Cleaning oil side of fuel and oil heat exchangers
- Degreasing the engine cooling system
- Upgrading of tanks from BLACK oil to WHITE oil or GRAIN
- General oil and grime cleaning
- May be diluted with kerosene or diesel oil
- Compatible with tank washing machines
- IMO Approved

Application
Aquamarine Tank Cleaner can be used neat by hand, spray or brush application. Direct injection cleaning will require strengths between 0.1% -2% with either fresh or salt water, for cleaning by recirculation use @ between 0.5% and 3%.

Aquamarine Tank Cleaner is compatible with most common metals, epoxy, polyurethane and zinc silicate coatings.

Available 25, 205 litre

Product Ref. 0048

H.D Cement Descaler

Description
H.D. Cement Descaler is a special ship product which has been successful for use in keeping cement storage facilities and handling equipment including decks and cargo areas free of cement build-up. The application is also beneficial for lorries carrying cement cargo.

Directions for use
The product is a strong mineral acid cement remover which should be used with care. Aquamarine H.D. Cement Descaler should be used neat for very stubborn cement, however we recommend using the product diluted between 1:4 and 1:9 with water initially to see if the product is effective. The product should be left in contact for a period adequate to allow break down of the cement to occur.

After applying the product the surface cleaned should be rinsed thoroughly with water. The product being an acid will attack metal surfaces and should always be used as sparingly as possible.

It is absolutely essential that the safety precautions marked on the drum label are followed. This is because this particular product is far more aggressive than the products normally used on board ship. I.E. full chemical eye goggles should be worn. Chemical resistant gloves should be used and suitable impervious footwear and overalls should be worn.

For full SAFETY DATA follow the information given on the Product Safety Data Sheet.

Product Ref. 0051

Fishguard - for fishing vessels

Description
FISHGUARD is a high performance very concentrate fish process hygiene chemical.

FISHGUARD will deal with degreasing of the fish oil, it will clean, sanitise, sterilise and de-odourise contaminated surfaces and decks.

FISHGUARD is very concentrate and extremely effective as a “one product” treatment.

Application
FISHGUARD can be used:-
at 1% by hand, spray or pressure wash.

Avoid contact with skin and follow full Health and Safety Data Sheet Instructions as provided.

4 x 5 Ltrs or 25 Litres

Product Ref. 0053

Graffiti / Rubber Boot Mark / Fender Mark Remover

A pale, low viscosity solvent cleaner containing natural cleaning agents, coalescing solvents and quick split surfactants to aid wash off and subsequent effluent treatment. Ideal as a replacement for traditional kerosene based products, giving greater operator acceptability without any loss in performance. Ideal for use as an operator friendly solvent cleaner when removing paint, wax, inks, pen, grease, bitumen, tyre & shoe marks, oil & chewing gum.

- Very low aromatic content
- Easily removes wax, oil and grease
- Does not contain ethoxylated nonyl phenols
- Pleasant to use – citrus odour
- High flash point
- Forms semi-stable emulsion to assist effluent disposal
- Contains naturally derived solvent
- Low toxicity

Application
General Cleaning: Use neat via brush or swab, allow up to 5 minutes contact time. Then rinse well.

Dip Tank: Place components in wire basket, soak in fluid for up to 5 minutes. Remove, drain and rinse with water.

Graffiti/Tyre Mark, boot mark removal: Apply to a cloth and rub or soak part to be cleaned, and then rinse with water.

Suitable for most metals, concrete, tiled and plastic surfaces. Not suitable for prolonged contact with natural rubber, asphalt or bitumen.

Packed 4 x 5 Litres

NSN J250-6850-99-359-5218 Product Ref. 0067

Heavy Duty Foodsafe Galley Floor & Tile Cleaner

A very strong alkaline cleaner with foam additive and chlorinated sanitising system. Formulated with the food industry where cleanliness and sterilisation are important, both actions being carried out in one operation with this product. Highly successful in Scandinavia at major dairies, brewers and meat preparation factories where standard hygiene flooring and walls are fitted and for traditional ceramic tiled floors.

- Effective at higher dilutions
- Easily removes blood and protein residues
- Instant sanitising effect
- Particularly effective on porous & non porous ceramics
- Stable in hard or soft waters
- Ideal for one step cleaning
- Active chlorine content
- Mixes easily with water

Application
Floor and Wall Cleaning: Dilute in water between 0.5% and 5% depending upon the degree of soiling. Apply by brush, swab, spray or foaming lance. Ideal for dairies, abattoirs and milking parlours, etc. Rinse with water after cleaning operation. Soak all ancillary equipment in a 1% solution. Also available in a non foaming grade. The product may be used neat for a deep clean. Please note the precautions below.

DO NOT ALLOW PROLONGED CONTACT WITH ALUMINIUM

DO NOT MIX WITH OTHER CHEMICALS, ENSURE PRODUCT IS NOT WALKED ONTO CARPETS OR OTHER POROUS OR COLOURED FLOORING OTHERWISE BLEACHING MAY OCCUR.

Packed 4 x 5 litre plastic containers

NSN J250 6850-99-968-6919 Product Ref. 0068

Stainless Steel Wipes - Easy Dispense Tub

A non abrasive smooth cloth wipe for cleaning and maintaining of polished or burnished metal surfaces. Ideal for use in kitchens, breweries, restaurants, hair salons, etc. Easily and quickly removes finger prints, grease or oil splashes and general marking which detract from the appearance of the metal. On drying, leaves behind an ultra light film which resists re-deposition, and allows easy wiping away of any subsequent marking.

- Very effective on most metal surfaces
- Leaves ultra light residual, protective film
- Replaces abrasive pads and/or creams
- Swift action
- Maintains metal appearance as new
- Easy to use
- Leaves surfaces clean and non sticky
- Non tainting

Application
Always wear latex or PVC gloves to avoid drying of the skin.

Pull out one or two sheets from centre of dispenser lid; wipe over surface and allow to dry. For heavy grease deposits, wiping over with a clean dry cloth after cleaning will remove any chance of streaking.

Supplied in centre pull plastic canisters of 200 wipes

NSN J250-7920-99-171-9189 Product Ref. 0069

Ice Machine Cleaner

A solution of very effective biocides formulated to be safe in use and kind to the environment. Suitable for reducing the incidence of unpleasant black mildew by killing bacteria & spores, the usual source of this problem.

Simple maintenance of ice machines, using the ICE MACHINE CLEANER as a sanitizer during will keep systems clean, sterile and taint free.

- Effective at very high dilutions
- Low environmental hazard
- Does not form acid residues
- Universal application
- Effective in hard and soft waters
- Operator safe
- Low odour
- Long term microbial control

Application
Sterilising; Use at 2% with clean water after clean out, allow soaking for at least 1 hour before removal. May be used diluted at 1% for spray/hand cleaning.

DO NOT USE WITH ACIDIC CLEANING PRODUCTS.

The above dilution rates must be adhered to in order to avoid fungal/bacteria spoilage.

Available in PACKS OF 12 X 1 LITRE

RE-ORDER CODE: IMC591

NSN J250 6850-99-323-1105 Product Ref. 0074

Liquid Antifoulant for Seawater Systems

Liquid Anti-Foulant for sea and fresh water cooling systems –a non biocide approach to mollusc and sea growth control.

Description
Liquid Antifoulant has been developed to deal with the recent biological changes in coastal waters primarily evolving because of the substantial reduction in seawater pollution. It is for the treatment of:

- Mussels
- Biological Growth
- Micro Organisms

This is achieved by preventing the adherence of mollusc larvae to ship surfaces because of a build-up of a layer of liquid anti-foul ant in the sea water system.

The treatment is best used from a clean system and existing growth will be unlikely to be removed except by physical removal or decaling (using Aquamarine Descaling Liquid).

Dosing
Always inject the product below the water level. Dose at 6 ppm for one hour per day. Dosing is not necessary in deep sea.

In port when practicable dose the condenser with a solution of 200ppm and allow to stand for 24 hours.

Pack Size 25 Litres

NSN J150 6840-99-988-8249

Product Ref. 0018

G.P. DEGREASER

G.P. DEGREASER is a heavy duty emulsifying solvent based degreaser.

How does it work?
G.P. DEGREASER contains emulsifiers, surface-active chemicals and petroleum solvents. These three cleaning actions give the product a very wide range of applications. The solvent gives quick penetration, the surfactants attack stubborn grime, the emulsifiers give effective cleaning of mineral based oils and petroleum based chemicals. G.P. DEGREASER is also rapid rinsing with water.

Use/Benefits:
- G.P. DEGREASER can be used for cargo tank cleaning of mineral oils and petroleum based chemicals. It can be used for cleaning oil coolers, fuel oil pre-heaters, lube oil heat exchangers.
- G.P. DEGREASER can be used for cleaning and degreasing of cooling water systems prior to descaling.
- G.P. DEGREASER can be used for degreasing double bottom tanks and bilges.
- G.P. DEGREASER is ideally suited for engine room and machinery cleaning. It can also be used to soak clean parts.
- G.P. DEGREASER can be used for cleaning and degreasing boilers.

Directions for Use
G.P. DEGREASER can be used undiluted for local cleaning operations by brushing, hand spray, immersion or soaking. Simply apply undiluted over the soiled area and allow a contact time of up to 30 minutes before rinsing with water.

For soaking dilute G.P. DEGREASER up to 10 times with water for light soiling, or use neat for heavy soiling.

For spraying apply neat, scrubbing will assist the cleaning operation.

Cleaning/Degreasing of Boilers

Find the source of contamination and rectify this problem before starting the cleaning operation.

The degree of oil contamination will determine the required solution strength. Between 2-10% of G.P. DEGREASER in water is suggested. For heavy contamination, up to 20% solution may be required, e.g. 1% solution is 10 litres per 1000 litres water.

Dose the required amount of solution through the steam drum manhole. Re-secure steam drum manhole cover, vent air valve on steam drum.

Boiler can now be fired for about 4 minutes then shut down for 10-20 minutes. Keep repeating this process until the solution has reached a temperature of 50-60°C. Repeat this operation for 12-18 hours keeping the solution at the optimum temperature which will promote agitation and circulation of liquid to give better cleaning efficiency.

Drain down boiler by opening all drain valves and removing manhole covers. Use a high pressure hose to flush drums, tubes and headers starting at the top. After flushing boilers, secure and refill.

Degreasing Marine Diesel Engine Cooling Water Systems

When diesel engine cooling water systems become contaminated with oil and grease, the system should be cleaned to remove oily deposits as they can interfere with the cooling water corrosion treatment.

In Service Cleaning

This method may be undertaken with engine running at normal speed.

Take 0.25 litre cooling water sample for future comparison and allow it to stand in a clear glass container.

Calculate the amount of G.P. DEGREASER required for a solution of 0.7% i.e. 7 litres per 1000 litres in cooling water system. Drain off similar amount of cooling water from engine if necessary. Slowly and intermittently, add the cleaner to the cooling system via either the expansion or return tank.

After 5 hours, take 0.25 litres of cooling water sample, this should be allowed to stand in a clear glass container until any oil has risen to the top. By comparing the thickness of this oil level with that of the first sample, the progress of the cleaning operation can be gauged. A sample should be take every 5-6 hours to monitor cleaning process.

The cleaner should be left in the engine for a few days until a convenient port is reached.

Drain off the complete engine cooling system and thoroughly flush with clean water prior to re-filling with water of the required quality, to which an appropriate anti-corrosion treatment should be added, such as CORROSION CONTROLLER C.W.T.

Out of Service Cleaning

This method may be used when engine is stopped.

Take a 0.25 litre sample of cooling water for future comparison and allow it to stand in a clear glass container.

Drain the cooling system and flush out with water. Then refill the system.

Calculate the amount of cleaner required for a solution strength of 2% i.e. 20 litres per 1000 litres of cooling water. Drain off similar amount of cooling water from engine if necessary. Add G.P. DEGREASER.

Circulate the solution through the system and heat until the water reaches a temperature of about 60°C.

Continue circulation of the solution through the system for a minimum of 5 hours.

Take sample of cleaning solution and compare with sample taken at the beginning to ascertain that cleaning is completed.

When cleaning is complete, drain off the cooling water system and thoroughly flush with clean water, prior to re-filling and adding an anti-corrosion treatment, such as CORROSION CONTROLLER C.W.T.

Cleaning of the Oil Side of Lube Oil Heat Exchangers

Cleaning is best done by the recirculating method using a heated 20% solution of G.P. DEGREASER.

Isolate the oil supply and disconnect the heat exchanger oil inlet and outlet and drain off any oil remaining.

Connect the discharge side of a portable pump to the lower heat exchanger connection and the suction side of the pump to the bottom outlet of a 200 litre drum.

Complete the circuit by connecting the upper connection to the top of the drum.

Add the required solution to the drum and arrange an immersion heater or live stream within the drum to raise the temperature of the cleaner to 65-75°C and maintain the level throughout the cleaning operation.

If it is not possible to heat the operation will need to be extended.

Use the pump to maintain circulation for 12-15 hours. When the cleaning is completed disconnect the lower heat exchanger and drain out cleaner.

Connect a high pressure fresh water supply to the upper heat exchanger connection and rinse until the water runs clean from the lower connection.

When rinsing is complete disconnect the high pressure water supply and thoroughly drain and dry the heat exchanger.

Cargo Tank Cleaning After Mineral Oils

Direct injection into tank washing machines is recommended. A dose rate of between 0.1-2.0% i.e. 1 litre to 20 litres per tonne wash water. Best results are obtained when water is heated to a temperature between 65-80°C and not less than 50°C. Slops should be constantly stripped from the tank and transferred to a holding tank or pumped ashore to slop tanks.

Recirculation method of cleaning using tank washing machines is recommended at a strength of 0.5-3.0% mixed in tank about to be cleaned. Best results are obtained when water is heated to a temperature between 65-80°C and not less than 50°C. Dose rate and results will vary depending on amount of contamination and number of tanks cleaned with this solution. After cleaning slop water should be pumped ashore or to ship's slop tanks.

For spot cleaning G.P. DEGREASER can be sprayed neat over tank surfaces to be cleaned and left for at least 30 minutes and up to 2 hours if time allows. Wash down tank walls using tank washing machines or high pressure hoses. Best results are achieved with hot water at a temperature between 65-80°C. Keep stripping tank slops and transfer to holding/slop tank.

Slip Coat

New generation intermediate coating against staining, contamination and corrosion on cargo holds.

Discover the difference

- Eco-friendly
- Biodegradable
- Excellent protection
- Wear resistant
- Reduced cleaning time
- Easy to apply

Description

Slip Coat is a wear resistant water based liquid product especially formulated to leave a thin, temporary film on cargo hold surfaces. The film provides a barrier between the cargo and the cargo hold surfaces making the cleaning operation after unloading quicker and easier with an excellent cleaning result.

Advantage

- New generation water based coating
- Wear resistant
- High environmental sustainability
- Reduced cleaning time
- Easy to apply and easy to remove
- Non staining – does not contain any silicones, solvents or phosphates
- Safe to use on all surfaces
- Will not contaminate exposed cargo

Application

Slip Coat is applied to cargo holds to prevent cargoes like cement powder, coal/pet coke, fertilizers, grains, salt/sulphur or iron ores to stick and/ or stain the cargo holds. Resulting in savings: reduced cleaning time, shorter turn-around times and reduced cleaning product consumption.

Directions For Use

Before applying Slip Coat make sure the surface is thoroughly cleaned. When the surface is dry Slip Coat is applied directly from the drum as a ready to use mixture. Spray the liquid on the cargo hold surfaces by use of suitable low-pressure spraying equipment.

As soon as the surface appears wet, a proper film is created.

There is no need to apply more than necessary. Allow the film to dry completely before loading the cargo. Depending on the air temperature and humidity, this will take between 1 - 2 hours.

To remove Slip Coat from the cargo holds, use a 10 % solution of IMO approved Aqua-wash. Spray the solution on the surface and let soak for 20 - 30 minutes, then rinse off with plenty of water.

Coverage / Film Thickness

1 litre of Slip Coat will cover 15 - 20 per m^2.

The coating is supplied ready for use – do not dilute.

Properties

Article number	14303 / 16303
pH	9
Density	1,01 g/cm3
Flashpoint	> 100 °C
Physical state	Liquid

Approvals

All our supplied chemicals are IMO approved & comply with the Marpol

MEPC 63/23/add. 1, Annex 24 resolution MEPC.219(63) – Annex V – 2012 guidelines adopted March 2012.

For detailed information on safety and health, please refer to the Material Safety Data Sheet MSDS and/or product label.

Quat-San 350

Cargo/Reefer Vessel Cleaner, Sanitizer & De-Odoriser

Description

QAC based liquid detergent sanitizer for cleaning and sanitising food contact surfaces and for use as a terminal rinse sanitizer. The product will eliminate most known types of bacterial growth, fungi, slime and moulds.

The product will de-odorise cargo holds and food storage areas.

For a sanitiser-only product against bacteria, infection, moulds and biofilm use Shipsan Spray Sanitizer available in 500ml spray bottles or in bulk packs.

Dosage Instructions

Manual Use: By brush or cloth use at 1% (10ml per litre) in hand hot water. 45-50°C.

Pressure Washer: 0.25% - 0.5% (2.5ml/ltr – 5ml/ltr) at 60-70°C.

For all applications a minimum of 15-minute contact time should be allowed.

Always rinse down after use with fresh water.

(This product originally called Quat-San Hi-Bac).

Shower Head Cleaner Plus

Commercial Grade Viscous Liquid Descaler & Sanitizer for Showers

Description

Shower Head Cleaner Plus is an acid based, ready to use descaling solution encompassing a proprietary biocide.

Shower Head Cleaner Plus has proven efficacy against Legionella. (European Legionella Disinfection Test Standard (1995) for Legionella Pneumophila Serogroup 1 (NTCC 11192) - 30 second contact time for 1:3 dilution).

The product will descale and sanitize showerheads, plumbing fittings and sanitary ware in one operation.

How to Use Shower Head Cleaner Plus

- Use neat for difficult to remove and heavy deposits of scale.
- A solution of 1 part product to 3 parts water can be used for routine cleaning programmes.
- Shower Head Cleaner Plus can be used sparingly on decorative and Chromed finishes.
- On completion of descaling, components should be thoroughly rinsed with fresh mains water before reinstatement of service.

Important Note: Shower Head Cleaner Plus should ***not be*** mixed with other products such as hypochlorite based solutions.

Handling

Shower Head Cleaner Plus is based upon a mild acid, however full safety precautions should be observed.

Avoid direct contact with skin and eyes to prevent mild irritation. In case of accidental contact, flush area with water, if irritation persists get medical attention. Product should not be ingested. Refer to Material safety Data Sheet for full safety data information.

Pack Size: 5 Litre Poly Containers (4x5Litres) or 25 litre non-returnable drums.

Shipsan® Galley Spray Sterilant

- Galley - final stage sterilant
- Hospital
- Sauna
- Laundry Areas
- Shower and Shower Heads
- Hose Couplings
- Air Filters
- Drinking Water Hoses
- Can be added to laundry wash
- Removes bio-film

BSEN 1276 / BSEN 13697 for Food & Water - No Alcohol, kills all known pathogens including Norovirus, Legionella, Salmonella, E.Coli, MRSA, etc. 99.9999% Effective, Fast, Safe - Recommended for ship galley and food areas including for final stage sterilant. It can also be used in specific areas where hygiene is of special importance such as accommodation, sick bays, hospital areas, saunas and showers. Fast acting and economical in use.

For more information see www.shipson.co.uk

Supplied in 500ml fine spray bottles (6 x 500ml per pack).

Product Ref. Steri-500/6

Cargo Tank Cleaning Products

Aquamarine Aquawash T1080A

Suitable for the removal of fatty acids, fish oils and other drying or semi-drying oil deposits.

Usage Instructions

Tank Recirculation Method
Aquamarine Aquawash is added to a mixing tank containing a fresh water quantity of 1% of the capacity of the tank to be cleaned. Using a cleaning solution of 0.2-2% heated to 60-80˚C,wash the tanks by circulation for 2-6 hours, after which the solution can be recycled to the mixing tank for reuse.

One solution can normally be used to wash several tanks.. After circulation rinse thoroughly with water.

Direct Injection Method
Inject 1-2 litres of Aquamarine Aquawash per 100 litres of wash water directly into the tank washing system. Heat to 60-80˚C. After cleaning rinse thoroughly with water.

Product Ref. TC01

Buffer Clean

A gentle cleaner for removing traces of lead and iron stains from zinc silicate coated tank surfaces.

Usage Instructions
Cleaning agent for zinc-silicate coated tank surfaces

1. Suitable for the removal of traces of lead and iron stains from zinc silicate coated tank surfaces after transport of leaded gasoline.
2. Suitable for the removal of traces of chloride and sulphide.
3. Safe buffered pH of 5.5 for application on zinc-silicate coated tank surfaces.
4. Gives a good cleaning result with a reduced cleaning time.

Application
The ordinary cleaning method with a synthetic soap takes a lot of time and is insufficient. A mild complexing acid solution in combination with synthetic soap gives a much better cleaning result.

Aquamarine Buffer Clean is used as a final cleaning procedure when leaded gasoline must be removed or when the tank has to be completely chloride or sulphide free, e.g. for shipping pure chemicals.

Directions of use
After the normal cleaning depending on the nature of the last cargo and subsequent rinsing with water, the cleaning with Aquamarine Buffer Clean can start. Never dilute with river or seawater. Fill a tank for 1/100 part with water and add 5% Aquamarine Buffer Clean at maximum. The solution is heated by means of heating coils in the tanks. The tanks are washed with a loading pump, after which the used solution is recycled to the mixing tank. Usually, one solution is used to wash 2 - 3 tanks.

Aquamarine Buffer Clean is circulated with a limited contact time of 30 - 45 minutes before rinsing at a temperature not to exceed 45°C.

Of essential importance for passing the chloride test is a final rinse with chloride free, if possible hot, water.

If necessary, repeat this cleaning procedure.

Product Ref. TC02

Caustic-Free Alkaline Cleaner

Suitable for the removal of fatty acids, fish oils and other drying or semi-drying oil deposits.

Usage Instructions

Tank Recirculation Method
Aquamarine Caustic-Free Alkaline Cleaner is added to a mixing tank containing a fresh water quantity of 1% of the capacity of the tank to be cleaned. Using a cleaning solution of 0.1-1% heated to 60-80˚C, wash the tanks by circulation for 2-6 hours, after which the solution can be recycled to the mixing tank for reuse.

One solution can normally be used to wash several tanks.
After circulation rinse thoroughly with water.

Direct Injection Method
Inject 0.5- 1 litre of Aquamarine Caustic-Free Alkaline Cleaner per 100 litres of wash water directly into the tank washing system. Heat to 60-80˚C. After cleaning rinse thoroughly with water.

Product Ref. TC03

Neutral HCF

A neutral degreaser for the removal of vegetable, animal oils and fats from zinc silicate coated or aluminium tanks.

Usage instructions

Prewash
First before using Aquamarine Neutral HCF it is necessary to prewash tanks with hot water at 50˚C.

Tank Recirculation Method
Aquamarine Neutral HCF is circulated in a 1-2% solution heated to 20-60˚C depending on the cargo 2-6 hours..

One solution can normally be used to wash several tanks.
After circulation rinse thoroughly with fresh water.

Product Ref. TC04

Natural Zest T1335A

Suitable for the removal of mineral oils and greases, lubricants, asphalt, coal tar, fatty acids, fish oils and other drying or semi-drying oil deposits.

Usage Instructions

Prewash
First before using Aquamarine Natural Zest it is necessary to prewash tanks with hot or cold water as appropriate.

Tank Recirculation Method
Aquamarine Natural Zest is added to a mixing tank containing a fresh water quantity of 1% of the capacity of the tank to be cleaned. Using a cleaning solution of 0.2-1% heated to 20-80˚C depending on the cargo, wash the tanks by circulation for 2-6 hours, after which the solution can be recycled to the mixing tank for reuse.

One solution can normally be used to wash several tanks.
After circulation rinse thoroughly with water.

Direct Injection Method
Inject 0.1-0.2 litres of Aquamarine Natural Zest per 100 litres of wash water directly into the tank washing system. Heat to 20-80˚C. After cleaning rinse thoroughly with fresh warm water.

Product Ref. TC05

Rust and Rust Streak Remover

- Acidic liquid product for the cleaning of aluminium, copper and removal of rust stains on paint work.
- It may be used for the removal of lime staining in tank cleaning operations
- Cleans and brightens aluminium and copper.
- Removes rust stains without risk to paintwork.
- Safe on most common metals.

Usage Instructions for tank cleaning applications

If lime scale stains are present after completion of tank cleaning operations, inject 0.5 litres Aquamarine Rust Remover per 100 litres washing water directly into the automatic washing system for approx. 20 minutes. The recommended temperatur e is 75°C -85°C.

Product Ref. TC06

Strong Alkaline Cleaner T1108A

Suitable for the removal of fatty acids, fish oils and other drying or semi-drying oil deposits.

Usage Instructions

Tank Recirculation Method
Aquamarine Strong Alkaline Cleaner is added to a mixing tank containing a fresh water quantity of 1% of the capacity of the tank to be cleaned. Using a cleaning solution of 0.1-1% heated to 60-80˚C,wash the tanks by circulation for 2-6 hours, after which the solution can be recycled to the mixing tank for reuse.

One solution can normally be used to wash several tanks, after circulation rinse thoroughly with water.

Direct Injection Method
Inject 0.5- 1 litre of Aquamarine Strong Alkaline Cleaner per 100 litres of wash water directly into the tank washing system. Heat to 60-80˚C.
After cleaning rinse thoroughly with water.

Product Ref. TC07

Tank Cleaner HD

Heavy duty concentrated solvent emulsion cleaner.

Usage Instructions

Tank Recirculation Method
Use a solution of 0.5-3% wash water mixed in the tank to be cleaned, 5-30 litres of Tank Cleaner HD per tonne of wash water. The washing solution should be heated to 60˚C.

After cleaning the solution should be pumped ashore or to the ship slop tanks.

Direct Injection Method
Inject 0.1-0.2 litres of Tank Cleaner HD per 100 litres of tank wash water directly into the tank washing system. Allow a cleaning time of 2-6 hours. After cleaning rinse with water.

Product Ref. TC08

H.D Cement Descaler

Description
H.D. Cement Descaler is a special ship product which has been successful for use in keeping cement storage facilities and handling equipment including decks and cargo areas free of cement build-up. The application is also beneficial for lorries carrying cement cargo.

Directions for use
The product is a strong mineral acid cement remover which should be used with care. Aquamarine H.D. Cement Descaler should be used neat for very stubborn cement, however we recommend using the product diluted between 1:4 and 1:9 with water initially to see if the product is effective. The product should be left in contact for a period adequate to allow break down of the cement to occur.

After applying the product the surface cleaned should be rinsed thoroughly with water. The product being an acid will attack metal surfaces and should always be used as sparingly as possible.

It is absolutely essential that the safety precautions marked on the drum label are followed. This is because this particular product is far more aggressive than the products normally used on board ship. I.E. full chemical eye goggles should be worn. Chemical resistant gloves should be used and suitable impervious footwear and overalls should be worn.

For full SAFETY DATA follow the information given on the Product Safety Data Sheet.

Product Ref. 0051

Slip Coat

New generation intermediate coating against staining, contamination and corrosion on cargo holds.

Discover the difference

- Eco-friendly
- Biodegradable
- Excellent protection
- Wear resistant
- Reduced cleaning time
- Easy to apply

Description

Slip Coat is a wear resistant water based liquid product especially formulated to leave a thin, temporary film on cargo hold surfaces. The film provides a barrier between the cargo and the cargo hold surfaces making the cleaning operation after unloading quicker and easier with an excellent cleaning result.

Advantage

- New generation water based coating
- Wear resistant
- High environmental sustainability
- Reduced cleaning time
- Easy to apply and easy to remove
- Non staining – does not contain any silicones, solvents or phosphates
- Safe to use on all surfaces
- Will not contaminate exposed cargo

Application

Slip Coat is applied to cargo holds to prevent cargoes like cement powder, coal/pet coke, fertilizers, grains, salt/sulphur or iron ores to stick and/ or stain the cargo holds. Resulting in savings: reduced cleaning time, shorter turn-around times and reduced cleaning product consumption.

Directions For Use

Before applying Slip Coat make sure the surface is thoroughly cleaned. When the surface is dry Slip Coat is applied directly from the drum as a ready to use mixture. Spray the liquid on the cargo hold surfaces by use of suitable low-pressure spraying equipment.

As soon as the surface appears wet, a proper film is created.

There is no need to apply more than necessary. Allow the film to dry completely before loading the cargo. Depending on the air temperature and humidity, this will take between 1 - 2 hours.

To remove Slip Coat from the cargo holds, use a 10 % solution of IMO approved Aqua-wash. Spray the solution on the surface and let soak for 20 - 30 minutes, then rinse off with plenty of water.

Coverage / Film Thickness

1 litre of Slip Coat will cover 15 - 20 per m^2.

The coating is supplied ready for use – do not dilute.

Properties

Article number	14303 / 16303
pH	9
Density	1,01 g/cm3
Flashpoint	> 100 °C
Physical state	Liquid

Approvals

All our supplied chemicals are IMO approved & comply with the Marpol

MEPC 63/23/add. 1, Annex 24 resolution MEPC.219(63) – Annex V – 2012 guidelines adopted March 2012.

For detailed information on safety and health, please refer to the Material Safety Data Sheet MSDS and/or product label.

Quat-San 350

Cargo/Reefer Vessel Cleaner, Sanitizer & De-Odoriser

Description

QAC based liquid detergent sanitizer for cleaning and sanitising food contact surfaces and for use as a terminal rinse sanitizer. The product will eliminate most known types of bacterial growth, fungi, slime and moulds.

The product will de-odorise cargo holds and food storage areas.

For a sanitiser-only product against bacteria, infection, moulds and biofilm use Shipsan Spray Sanitizer available in 500ml spray bottles or in bulk packs.

Dosage Instructions

Manual Use: By brush or cloth use at 1% (10ml per litre) in hand hot water. 45-50°C.

Pressure Washer: 0.25% - 0.5% (2.5ml/ltr – 5ml/ltr) at 60-70°C.

For all applications a minimum of 15-minute contact time should be allowed.

Always rinse down after use with fresh water.

(This product originally called Quat-San Hi-Bac).

Fuel Treatment Products

Soot Remover Liquid (Powder also available - Product 61)

Aquamarine Soot Remover is a blend of metal nitrates and catalysts in liquid form, formulated to inhibit the build-up of fire-side deposits and reduce existing deposits.

Uses/Benefits

- Easy to use liquid
- Effective soot removal from exhaust gas economiser
- Aids/maintains economiser efficiency
- Minimise exhaust gas particulate matter
- For on-load removal and prevention of fire-side deposits in exhaust gas systems
- Vaporises quickly and is distributed throughout the exhaust gas system impregnating deposits such as soot, bonded vanadium or sulphatic compounds
- Modifies deposits chemically and physically allowing them to be easily removed by soot blowing or manual cleaning
- Existing deposits may be loosened and disintegrate after a few weeks of treatment
- Will maintain the condition of clean exhaust gas systems
- Ideally suited for ballast and other tank protection during ship lay-up periods.

Application

Aquamarine Soot Remover should be applied to the hottest part of the exhaust gas system. Application is via a pressure pot and injection lance operated with compressed air at 50 - 100 p.s.i.. Injection should be as near to the turbocharger outlet as possible.

Dosage

The recommended dosage will vary between 5 - 20 litres per system depending upon the heating surface area.

Following the injection of Aquamarine Soot Remover, 5 litres of fresh water should be injected via the dosing pot in order to keep the injection nozzle clean. If the nozzle becomes blocked cleaning should be effected by immersing the nozzle in hot water. The frequency of Soot Remover addition will depend on the nature and severity of the problem, varying from daily for severe deposition, to weekly as a maintenance dosage. It is not necessary to ease the system loading or interfere in any way with normal operations when using Aquamarine Soot Remover.

Pack Size 25 Litres

NSN J350-6850-99-993-0796 Product Ref. 0017

Emulsion Breaker

EMULSION BREAKER rapidly breaks emulsions of water in oil in all grades of fuel. It aids water removal in the settling tank and fuel centrifuges.

How does it work:
EMULSION BREAKER lowers the surface tension between the oil and water phases in an emulsion. It is completely insoluble in water and remains in the fuel oil phase. It also disperses sludges and any heavy particles into the fuel oil.

Results of use:
EMULSION BREAKER improves centrifugal separation of fines, it helps prevent sludge formation and stabilises fuel viscosity. The fuel filters and lines will be cleaner with less inclination towards blockage.

The main purpose of EMULSION BREAKER is however to rapidly split water in oil emulsions.

Dosing Instructions:
EMULSION BREAKER is dosed to the bunker tank prior or during bunkering. Dosing is based on water content using test results. If none are available an initial dose of 1:4000 should be used.

Water % Vol	0.5 - 1.0	1.0 - 2.00	>2.0
Dose Rate	1:4000	1:2000	1:1000

Summary:
EMULSION BREAKER is an aid to the physical removal of water from all grades of fuel.

Product Ref. 0050

Fuel Sludge Control

FUEL SLUDGE CONTROL is a pre-combustion treatment used to physically adjust fuel oils.

How does it work?
FUEL SLUDGE CONTROL helps to improve and clean up fuel oil this prevents feed problems and also improves the combustion properties of the fuel oil.

FUEL SLUDGE CONTROL operates in several different beneficial ways. Firstly it helps to prevent the formation of sludge, and it also disperses existing sludge. Secondly it breaks water in oil emulsions and gives superior separation of water impurities and sediments from the fuel oil. Centrifuges then work more effectively to remove water and sediment contaminants. Thirdly FUEL SLUDGE CONTROL contains a corrosion inhibitor which leaves a thin coating of water repellent film, whilst simultaneously neutralising acid attack.

Results of use
Fuel oil bunker lines remain cleaner and filter blockages are reduced. All system components remain cleaner. Down time of engines and boilers is reduced due to better running. Combustion improves because a cleaner burn is achieved. Fuel system components and tanks have reduced corrosion and longer lives.

Dosing Instructions
FUEL SLUDGE CONTROL can be dosed to the bunker tank, introduced to the settling tank or dosed into the transfer line from storage.

Ideally dosage rates should be determined from fuel analysis tests. If test results are not available an initial dose of 1:3000 is recommended.

SHF = Sediment by Hot Filtration
ASTM SPOT = Modified Spot Compatibility Test

ASTM SPOT	1	2	3	4	5
SHF %	<0.5	0.5	0.1	0.2	>0.5
DOSE	NIL	1:3000	1:1500	1:500	1:200

Secondary Use
FUEL SLUDGE CONTROL can also be used as a cleaner for oil preheaters, burner tips, fuel filters and other components of the fuel system.

SUMMARY
Precombustion bunker treatment to overcome problems with poor quality fuel oil by physically modifying the fuel oil.

PACK SIZE 25 LTR Product Ref. 0058

Fuel Combustion Improver

FUEL COMBUSTION IMPROVER is a catalytic combustion improver which permits the burning of lower cost residual fuel oils.

How does it work?
The catalytic properties of FUEL COMBUSTION IMPROVER allow heavy fuel particles to be successfully consumed during the act of combustion. Ignition temperature is lowered and combustion improved. In addition physical agents decrease or prevent sludge formation and separate emulsified water. The catalytic properties of FUEL COMBUSTION IMPROVER also help to prevent the formation of acidic gases, which typically create sulphuric acid corrosion in the cooler parts of the boiler or engine. These include cylinder liners, valve stems, exhaust trunking and funnel uptakes.

Results of use
Engine and exhaust components are kept cleaner with less maintenance and cleaning required. Less carbon and soot is emitted thereby reducing smoke.

The fuel system has less clogging and better fuel flow, giving better combustion. Acid corrosion is reduced in the cold end of the engine.

Fuel tanks and pipes are left clean and free of sludge.

Dosing Instructions
FUEL COMBUSTION IMPROVER should be fed via a metering pump into the suction side of the booster pump. As a second option it can be added to the settling tank.

Ideally dosage rates should be determined from fuel analysis tests. Alternatively as a general guide a dose of 1:4000 should be applied.

For a regular maintenance programme a dose of 1 litre per 25 tonnes is recommended.
CCR % = Conradson Carbon Residue

CCR %	12	14	16	18	20
DOSE	1:4000	1:3000	1:2500	1:2000	1:1000

SUMMARY
A catalytic combustion treatment which effects combustion to give more successful burning of low grade heavy fuels. It also has some physical properties.

PACK SIZE 25 LTR Product Ref. 0059

Fuel Vanadium Controller

FUEL VANADIUM CONTROLLER modifies fuel ash raising melting and sinter temperatures. The non sticking particles produced are then emitted in the exhaust gases.

How does it work?
FUEL VANADIUM CONTROLLER is a physically modifying product that forms an ash on burning that combines with the vanadium and sodium ash from the fuel oil resulting in a complex ash that has a higher melting temperature than is normally maintained in the engine. The complex ash is consequently unable to attach to the surfaces and is either emitted or loosely attached to turbocharger and exhaust surfaces.

In addition FUEL VANADIUM CONTROLLER helps to prevent the catalytic effect on fuel sulphur of vanadium which increases the formation of the undesirable sulphur trioxide and decreases the formation of sulphur dioxide. In this way FUEL VANADIUM CONTROLLER yields a reduction in acidic corrosion.

Results of use
FUEL VANADIUM CONTROLLER reduces high temperature corrosion on exhaust valve seats and turbocharger components. Valve seating is improved as impacted ash is reduced. Valve and seat lives are extended. Turbocharger and exhaust system fouling is reduced. Problems caused by sodium and vanadium contamination are reduced.
Dosing Instructions
FUEL VANADIUM CONTROLLER should be dosed into the service tank or via a chemical feed pump into the suction side of the booster pump.
Ideally dosing should be set according to fuel analysis. If not available initially dose at a rate of 1:4000 or more depending on the severity of the problem.

Dose rate	Vanadium p.p.m					
Sodium p.p.m	50	100	150	200	300	>400
25	1:4000	1:5000	1:3500	1:2500	1:1500	1:1000
35	1:2500	1:5000	1:3500	1:2500	1:1500	1:1000
50	1:2500	1:4000	1:3000	1:2500	1:1500	1:1000
65	1:2000	1:2500	1:2500	1:2500	1:1500	1:1000
75	1:2000	1:2500	1:2000	1:2500	1:1500	1:1000
85	1:1500	1:2500	1:1500	1:2500	1:1500	1:1000
100	1:1500	1:2500	1:1500	1:2500	1:1500	1:1000

SUMMARY
FUEL VANADIUM CONTROLLER physically adjusts the potential deposits of corrosion causing sodium and vanadium ash by raising their melting point. thereby allowing the potentially damaging deposits to be exhausted.

PACK SIZE 25 LTR Product Ref. 0060

Fuel Soot Remover Powder

FUEL SOOT REMOVER is a powder product. It reduces soot and slag deposits.

How does it work?
FUEL SOOT REMOVER is a catalytically modifying product that reduces the normal ignition temperature of soot from 600°C to 300°C. This means that carbonaceous deposits are more easily ignited and the resultant ash is easily removed from engine exhaust systems.

Results of use
FUEL SOOT REMOVER yields greater fuel efficiency by preventing the build up of soot on heat exchangers. It also reduces acid formation which can cause cold end corrosion in heat exchangers, superheaters and exhausts.

Dosing Instructions
FUEL SOOT REMOVER should be introduced to the exhaust system upstream of the area to be treated.

Boiler Rating		Steam evaporation	Fuel oil consumption	Boiler dose	Diesel fuel consumption	Diesel dose
HP	kw	tonnes/hour	tonnes/day	kg/day	tonnes/day	kg/day
200	150	3	7	1.0	10	1.5
400	300	6	15	2.0	20	3.0
600	450	9	22	3.0	30	3.5
800	600	12	30	3.5	40	4.0
1000	750	15	37	4.0	50	4.5
1500	1100	23	55	4.5		
2000	1500	31	74	5.0		
3000	2200	46	111	5.5		
4000	3000	62	148	6.5		

SUMMARY
FUEL SOOT REMOVER is a powder product that prevents soot deposits by adjusting ignition temperature. SOOT REMOVER LIQUID is also available (See Product 17).

PACK SIZE 25KG KEG Product Ref. 0061

Aquabac 80 Fuel Biocide

Aquabac 80 is a low toxicity biocide developed for use primarily in fuel storage systems and fuel tank.

How does it work?
Aquabac 80 contains a combination of different activity broad-spectrum biocides. These have an immediate effect on both bacteria and fungi.

Aquabac 80 is effective in water, oil and at the interface between oil and water. The microorganisms including sulphate-reducing bacteria are killed by exposure to the biocide and MBC 80 can be used as a preventative measure or to give a quick curative kill. It also contains good anti-corrosive properties.

Results of use
Aquabac 80 prevents the corrosion and blockages caused by high levels of microorganisms in fuel, water or lube oils.

Aquabac 80 is biodegradable at environmental dilutions and no cases of bacteria immunity have been reported.

Dosing Instructions
Aquabac 80
Diesel fuels/heating oils 0.05 - 0.20 l/1000 l diesel/heating oil continuously (50 - 200 p.p.m) (prophylactic treatment)
Diesel fuels/heating oils 0.20 - 0.50 l/1000 l diesel/heating oil (200 - 500 p.p.m) (decontamination of contaminated diesel fuel/heating oil)
Diesel fuels/heating oils 0.5 - 1.0 l/1000 l diesel/heating oil (500 - 1000 p.p.m) (shock dosing)

Summary
A very strong broad-spectrum biocide for fuel, water or lube oil microbiological contamination.

Please request dosing instructions for other applications.

25 LTR

NSN J150-6840-99-889-8504 Product Ref. 0062

Aquaburn Fuel Enhancer

Key benefits of using Aquaburn®

- Dissolves water in fuel permanently
- Improves engine performance
- Reduces fuel consumption
- Permanently dissolves water in carbon, bio & marine fuels
- Reduces maintenance costs
- Enhanced engine performance
- Reduces harmful emmissions
- Greater fuel efficiency
- Cleans filters & injectors
- A solution for new low sulphur fuel problems

Aquaburn® prevents

- Rusting and corrosion of components
- Governor/Metering component failure
- Sticky metering components (both pump and nozzle)
- Injection component wear and seizure
- Bacterial fungus and 'diesel bug'

Why you need Aquaburn®

Diesel fuel attracts water and moisture from the moment it leaves the refinery. Contamination occurs during the delivery process, when transferring the fuel from tanker to storage tanks and through condensation. In marine there is always additional water ingress in fuel storage.

Water in the diesel fuel tank will inhibit engine performance and cause it to run as if being starved of fuel. It will also cause rapid wear and oxidize engine components resulting in injection damage, pitting, corrosion, engine in-efficiency and ultimately, seizure.

About Aquaburn®

Aquaburn® is a non biocide fuel additive that is proven to improve engine performance, reduce emissions and engine wear, and reduce fuel consumption, from between 5 and 10%.

MARINE specific

Water in fuel causes problems, especially with Marine Diesel as it will rapidly wear and oxidize steel components. Because of the environment water is prevalent in Marine fuel not only through the natural process of attracting water while being transferred and transported but also through condensation and water ingress. AQUABURN® is the only additive that dissolves any water in fuel tanks including sea water and bonds it to the fuel to be burned in the normal manner resulting in enhanced engine performance, less emissions and a reduction in fuel consumption.

AQUABURN® prevents bacterial growth, no more diesel bugs.
AQUABURN® reduces maintenance costs.
AQUABURN® Gives you enhanced fuel performance & fuel savings.
AQUABURN® Reduces harmful emissions with greater fuel efficiency.
Water in fuel will lead to the formation of Bacteria and Fungus to grow. Known as 'Diesel Bug' it is a major problem in fuel tanks and systems. It is caused by water attracting Micro Bugs that will thrive on the water surface and live off the bio matter in the fuel. Before

AQUABURN® this would have to be treated by nasty biocides that add to the harmful emissions when being burned through.AQUABURN® is a Bio Static and does not contain Biocides. It permanently dissolves water in fuel so there is nowhere for the micro bugs to exist.
AQUABURN® has already been called the Ultimate Diesel Fuel treatment and is considered by our many customers to be an essential part of any marine vessel's inventory.
AQUABURN® is the only diesel fuel treatment that Dissolves water in diesel fuel permanently. Once mixed with the diesel fuel in your tank, AQUABURN® continues working thus preventing any further water contamination including accidental or storm ingress in your diesel fuel! Unlike other traditional additives that separates the water that has to be drained off and disposed of as contaminated water, AQUABURN® dissolves the water and renders it as usable fuel, AQUABURN® is the only diesel fuel treatment that does this. It doesnt get rid of water in Diesel Fuel; it uses it!
Low Sulfur Regulatory Solutions - IMO RESOLUTION MEPC.176(58) Each low sulfur alternative presents potential operating challenges, such as compatibility, lubricity and biological contamination.

With the addition of the United States and Canada ECA (Emission Control Area) on August 1, 2012, bunker buyers and ship operators must be aware of issues and challenges that may arise when purchasing, handling and burning lower sulfur fuel that is mandated in designated areas. At least two different sulfur limits now exist. In certain zones, IMO regulations require fuels with 1.0% or less sulfur content in geographic regions designated as ECA's. Additionally, in an increasing number of ports, 0.1% sulfur content must be used while at berth. To meet these requirements, bunker suppliers will have different alternatives available depending on what feed-stocks are available locally. These low sulfur fuel oils may be comprised of specially refined residual oil, ultra-low sulfur diesel fuel oil designed for motor vehicles and trains, and biodiesel. Refinery produced ultra-low sulfur fuel may have sulfur content as low as 0.0015%. Biodiesel naturally contains nearly zero sulfur content.

For more specific regulatory information, see IMO RESOLUTION MEPC.176(58). Each low sulfur alternative presents potential operating challenges, such as compatibility, lubricity and biological contamination. These fuel differences must be understood, as they may have a significant impact on engine performance and wear. Fortunately, each challenge can be mitigated by its initial identification, and then designing a solution with Aquamarine's fuel treatment products and services. Your Aquamarine account executive should be your first resource in assuring you the right services and products to minimize any operating problems caused by low sulfur fuels.

For more information on this and other fuel management regulations and on the use of our products, please contact Aquamarine on 01684 290077.

Product Ref. 0080

Enzymes and Biological

Enzyme Effluent Treatment Powder

Description
Aquamarine Enzyme Effluent Treatment Powder keeps tanks and pipes clean and odour free. It keeps the sewage plant fluid and operating at peak efficiency. A liquid solution needs to be made up for initial dose for treating effluent tanks.

Dose

Previously untreated tanks - containing more than 2.5 tonnes effluent

An initial dose of 1kg/tonne of effluent into a non-treated solid effluent tank is recommended. Add 1kg of the powder to 10 litres of warm fresh water (35°C). Leave for 10 minutes for the product to activate. Agitate the tank if possible. Add the liquid and then the balance of the powder required. If the effluent has become solidified or hard then it may take 2 - 3 weeks for a slurry to be achieved. When the tank is emptied ensure that at least 0.25 tonne of effluent is left in order that the enzyme treatment is not completely flushed away. Otherwise re-dosing is required as below.

Previously untreated tanks - empty

Dose at a point when the tank contains at least 0.25 tonnes effluent, this will allow the Enzyme Effluent Treatment Powder to achieve its optimum level of activity and efficiency. Dose 1kg Enzyme Effluent Treatment Powder into the tank pre-mixed with warm water 35°C which has been left for 10 minutes prior to dosing.

- Dosing may be easiest by using the nearest toilet to the proximity of the effluent tank.

Use Aquamarine Enzyme Toilet Cleaner (used conventionally) to keep the enzymes in the effluent tank active, to prevent further slug-dose requirements which can be costly.

Pack Size 10 kg

NSN J150 7930-99-168-4859 Product Ref. 0019

Bio-Vac Enzyme System Cleaner

Description
Aquamarine Bio-Vac is an advanced enzyme based product designed to keep systems clear in vacuum and sizeable toilet systems. The product is especially designed for ships where there are large numbers of crew or personnel for example cruise or military ships. This Product is designed specifically for eliminating the build-up of Uric Acid caused by urine stone and limestone which can cause total pipe blockage and is not removed by conventional enzyme cleaners. It will especially deal with unsightly stains and unpleasant and toxic odours.

Unlike a conventional phosphoric acid for scale treatment it will not cause a “sieve” leakage effect on old systems. Containing a naturally biodegradable surfactant package and a pleasant fragrance, It will work at the scale build-up which will eventually be released by natural flushing of the system over a long period (up to18 months) The important key to the success of the product is to stop the new build-up of scale and uric acid from a clean system.

Application
The product is supplied in pre-dilute form ready-to-use. 10m (may be easily measured by using the bottle dispensing system) of product should be used daily per toilet. This gives a controlled dose, thus ensuring that adequate product is used for maximum protection and at the same time eliminates unnecessary use of the product.

- Bio-vac will gradually release enzymes, which will form a bio-film throughout the system degrading existing build-up and preventing the adhesion of new solids and scale.
- Bio-vac will work on the bowl and pipes of the system. It must be dosed regularly to achieve the required results. Enzymes cause a biological reaction and it is imperative that the system is kept biologically active by continuous dosing.
- Bio-Vac is designed to be used in conjunction with Aquamarine Enzyme Toilet Powder which is especially suitable for Hamworthy and other effluent plant.
- The powder is used specifically to deal with the effluent tank. A separate data sheet is available for this product.

1 Litre (packed 12 x 1Ltr)

NSN J150 6840-99-226-6548 Product Ref. 0021

AQUA-FLOC 1003A Effluent and Waste Treatment Approved Marinol Product

Description
Aqua-Floc 1003A consists of synthetic high molecular weight; water-soluble polyelectrolytes used as flocculants in water and waste treatment applications. They are classified as anionic, cationic or non-ionic depending on their charge. Aqua-Floc 1003A varies in molecular weight and charge to best meet the industrial and marine applications at hand. Available in both liquid and powder form. Aqua-Floc 1003A is a primary inorganic coagulant and is used in clarification of turbid waters and the separation and precipitation of contaminants in effluent waters.

Aqua-Floc 1003A is based on Polymeric Aluminium salts, and is particularly suited to the separation of organic contaminants.

Specification
Physical state Colourless liquid
Specific Gravity 1.19-1.22@20ºC
Aluminium Oxide 9.5-10.5%
Chloride 10.0-12.0%

Advantages
Effective at very low dosages
Performs well over a wide pH range
Easy to feed as liquid
Dissolve rapidly
Non-corrosive and easy to handle
High activity
Do not require second product for pH adjustment

Dosage
This treatment dosage depends on many factors, such as the type and quantity of solids to be separated and the retention of settling time available. Generally, dosages of 0.5 to 50 p.p.m will be required, though the actual dosage required must be determined for each system.

Aqua-Floc 1003A solution should be pumped with a positive displacement pump into the system at a point where good mixing occurs. Addition of the polymer should be made as near as possible to the point where flocculation takes place. Avoid excessive turbulence after floc formation.

Handling
Although most Aquamarine Chemical products are considered non-toxic, care should be exercised when handling these products to avoid excessive skin and eye contact. If contact is made, flush with water. Please refer to the Material Safety Data Sheet for detailed handling and storage information.

Pack Size 25 Litre

NSN J150 6850-99-997-0267 Product Ref. 0024

Enzyme Toilet Cleaner

Description
Aquamarine Enzyme Toilet Cleaner is a biologically active active enzyme formulation that contains scientifically blended strains of bacteria designed to clean toilets, showers, sinks and other waste collection and treatment areas including pipes. It eliminates unpleasant odours and kills bacteria by instigating a chain reaction, which digests 100% of the odour.

Uses
- Cleaning toilet bowls
- Cleaning drains, traps, pipes and lines of grease and slime blockages
- Sinks, wash bowls and urinals
- Shower outlets

Application
The product is dosed by applying to the sink, toilet, shower or receptacle, which needs to be cleaned or treated. Once an initial dose has been applied (several squirts) the dose should be repeated and used conventionally as required. It is supplied in one-litre bottles with directional nozzle for easy application.

Do not use conventional chlorine based toilet cleaners or bleaches as they will impair or destroy the effect of the bacteria both in the system and in the effluent tanks.

The enzymes will be effective in the pipe systems to eliminate biological fouling and smells. The enzymes will also act as a “top-up” to the enzyme powder in the effluent tanks which will speed up and maintain the enzyme digestion.

- FOR HOLDING TANK CLEANING AND MAINTENANCE THE AQUAMARINE ENZYME EFFLUENT POWDER SHOULD BE USED.
- FOR URIC ACID PROBLEMS USE BIO-VAC WHICH IS IDEAL IN VACUUM SYSTEMS.

Packed 12 x l litre bottles

NSN J250 7930-99-517-5383 Product Ref. 0026

Aqua-Antifoam - Vacuum Toilets

Description/Uses/Benefits

- Aqua-Antifoam is for use with vacuum toilet systems where due to the nature of the system unwanted and excessive foam conditions are created.
- On most vacuum systems an antifoam injection-dosing unit is fitted. Where this is the case, then Aquamarine Aqua-Antifoam should be dosed at 0.1% but may need increasing according to the severity of the problem in some cases.
- The product needs to be dosed directly into the flow of the waste water and not directly onto the foam.
- The product may also be used manually by dosing directly into the system via the nearest toilet to the main system.
- Aquamarine is able to offer dosing solutions if your system does not already have a provision for dosing in place.
- Aqua-Antifoam is compatible with Bio-Vac, Enzyme Toilet Cleaner and Enzyme Toilet Powder.

Pack Size: Aqua Antifoam is packed in 25 litre polydrums.

NSN J150 6850-99-939-1195 Product Ref. 0030

Enzyme Descaling Effervescent Sachets for the Descaling of Uric Scale

Description
Aquamarine Enzyme Descaling Sachets will effectively treat pipes, which are under constant attack from uric acid scale. The sachets, which are effervescent, contain one dose of descalant, which is recommended as a weekly maintenance dose for pipes, which are prone to this type of problem.

Compatibility
The sachets are compatible with all types of metal and seals and may be used when the toilets are in service. It is recommended to use Biovac regularly for the prevention of scale from a clean system and for non-vacuum systems to use the Enzyme Toilet Cleaner.

All products are compatible with Hamworthy and similar type effluent plant.

Dosing and Use
The sachet is fully biodegradable and so is dispensed into the toilet bowl by hand. The sachet will start to break down after about 10 seconds contact with water. At this point hands should be kept clear of the solution at all times. The sachet should then be left for a minimum of 20 minutes but preferably overnight.

Dose for treating scaled pipe work and toilets
For fully scaled pipes the sachet should be applied daily for 2 weeks or until the scale has been completely broken down and has gone. This will depend on the thickness of the scale but an effective result may be achieved ultimately.

Dose for maintenance/prevention of scale build-up
2 sachets per week, if the biovac is used as a combined scale preventative/toilet pipe cleaner then there is no need to use the sachets.

1 2 3

1. Place sachet into toilet bowl using gloves
2. Allow to dissolve and then brush around the toilet bowl
3. Leave for a minimum of 20 minutes
4. Flush

RE-ORDER CODE: DTABS100 Packed in 5kg drums

NSN J150 6850-99-749-2240 Product Ref. 0039

Enzyme Grease Trap and Galley Waste Degrader GD20X

Enzyme System Cleaner
For fat and grease deposits in galley application.
GD20X is an enzyme based product designed to keep drains and grease traps clear and free-running which might otherwise get gummed up.

It will digest fats, greases and organic waste materials by dosing from 200ml daily via critical outlet point at a time when the galley has the longest period when not in use thus allowing the enzymes to work for the maximum length of time.

Enzymes produced by bacteria can initiate breakdown and degrade specific foods:
1. Lipase breaks down fat
2. Protease breaks down proteins such as meat & cheese
3. Amylase degrades starches such as potatoes & bread
4. Cellulase breaks down plant fibre from vegetables

Dose for Commercial kitchens
- INITIAL Seeding: 1.5 litre per m3 of trap (directly into the trap)
- Maintenance: with a dosing pump:

NUMBER OF MEALS PER DAY	Maintenance Dosage ml/day
Up to 200	200
200-400	300
400-500	400
600-800	550
800	650
1000	800
1500	1200
2000	1500

Directions of use for GD20X
1. Pump the grease trap out
2. Initial seeding : dose GD20X directly to the trap manhole
3. Maintenance dose : for liquid treatment, place the dosing pump in the kitchen so as to feed the drain
4. Set the timer so as to inject product 1-2 hours after the end of the working hours

Benefits
1. Proactive versus Reactive treatment - reduce grease before problems occur
2. Odour control
3. Reduction of pumping frequency (3-4 fold less)
4. Reduction of back-ups and flooding
5. Real degradation of grease rather than moving grease downstream
6. Prevent blockages
7. Safe for users and environment
8. NON-HAZARDOUS
9. 25 litre drum

Dosing equipment is available from Aquamarine Chemicals if required.

NSN J250-6850-99-512-2014 Product Ref. 0075

Multi Surface Cleaner - 750ml Trigger Spray Bottle (Packed 12 x 750ml)

Natural MSC Multi Surface Cleaner - 750 ml

Unique biologically active liquid formulation containing specialised bacterial strains and biodegradable chemical cleaners. Quickly and efficiently cleans hard surfaces and soft surfaces such as carpet and furnishings.

Triple Action!
1. Cleans
2. Gets rid of smells and odourises
3. Deep cleaning from biological action for removal of urine, food, milk, chocolate syrup, tomato sauce, general traffic marks, etc

Dosage/Cleaning Instructions:
Carpets and upholsters, drapes, laundry, to remove stains of food and other organic wastes: After taking away the solids, spray the carpet with Aqua MSC neat, use a wet sponge to brush, scrub and humidify the surface. Let it stand overnight, if possible, then vacuum. Repeat the operation if necessary.

For hard surfaces - spray and wipe!

a) Accommodation and general cleaning:
Use from 50 ml up to 500 ml to half a bucket of hand hot water, depending on the surface to clean and the deposition, for cleaning decks, showers, floors, sinks, tiled areas etc

To deodorise a large surface use the product as a normal carpet cleaner in carpet shampoo equipment diluted 1:10 with water. For odour control on these surfaces spray diluted 1:2 with hand hot water. Wait as long as possible and rinse.

b) For carpet machine:
To deodorise a large surface use the product as a normal carpet cleaner in carpet shampoo equipment diluted 1:10 with water. For odour control on these surfaces spray diluted 1:2 with hand hot water. Wait as long as possible and rinse

c) Pipe cleaning and deodorising:
A nightly squirt into galley and bathroom sinks will keep drain pipes clean and clear of organic residual wastes and overcome unpleasant drain odours.

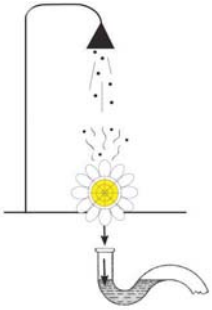
Pack Size 750 ml (trigger spray bottle) Product Ref. 0076

Power Flower

Brighten your day with a fresh invigorating shower! Keep your drains clear and free of toxic odours at the same time ..... NEW!! 3-in-1 action - it really does what it says!!

The unique action of Powerflower will remove hair blockages, eliminate bad odours and fill your shower with exciting fragrances. Active ingredients released with every shower will clean away hair, scum and slime from the shower outlet.

Easy to use:
Place the Powerflower in the bottom of the shower tray with the water soluble tablet in the water flow from the shower



The tablet will dissolve slowly over a period of 1 - 3 months depending on your frequency of showering. After 3 months the tablet will become ineffective and should be discarded

Replace the tablet with a Powerflower refill when it has dissolved away by lifting out the central cap, rinse away any residue and replace with a new tablet. Replace the cap and reposition in the base of the shower tray

Everytime you shower a small amount is dissolved which keeps the shower outlet in tip top condition

Powerflower is completely non hazardous to use.

Power-flower

Double Refill Pack

Power-Flower (Blackleaf Mint)bulk pack 10 + 10	- NSN J250-7930-99-553-4085
Power-Flower (Lemon and Lyme) bulk pack 10 + 10	- NSN J250-7930-99-752-0142
Power-Flower (Lavender) bulk pack 10+10	- NSN J250-7930-99-958-6104
Power-Flower Refill (Blackleaf Mint) x 20	- NSN J250-7930-99-254-7941
Power-Flower Refill (Lemon and Lyme) x 20	- NSN J250-7930-99-428-8347
Power-Flower Refill (Lavender) x 20	- NSN J250-7930-99-301-1986

Product Ref. 0077

Total Enzyme Drain Unblocker

For use where drains become suddenly blocked usually due to organic waste build up. This is designed for a fast acting solution without the use of traditional acid products.

How to Use
Take 1 litre and dilute it with 2 litres of warm water – leaving to stand for 10 minutes and then allowing to soak down the drain whether it be blocked or semi-blocked, it may take between 1 and 3 applications to work and clear the line. This product is totally safe and environmental and safe to use within the Effluent Plant.

Where to Use
Recommended for use in Galleys, scuppers, any effluent or waste pipe-work.

Supplied in 4 x 5 Litre per box

Product Ref
TEDU5 (4X5 LITRES)

NSN J250-6850-99-737-5545 Product Ref. 0078

Aquamarine Bilge Buster®

A new approach to reducing oil discharges/residues in marine bilges

Oil Bioremediation – stops toxic smells, gets rid of waste oil and grease in the bilge.

Saves money on disposal costs, changes waste oil and hydrocarbons into H2O and CO2! Each Aquamarine Bilge Buster® contains a blend of class I (Between Class 1 and 4, class 1 being the safest type) oil digesting bacteria. The pillow immediately absorbs any free oil within the surface water and is capable of absorbing up to 14 times its weight in oil - the equivalent to 9 litres. Over a 4 month period each standard size pillow has an estimated potential to change 18 kgs of oil into CO2 and water Aquamarine Bilge Buster® floats on the surface absorbing and digesting oil, reducing discharges, BOD and COD. After use each pillow should be disposed of as hazardous waste since hydrocarbon deposits may still be present although the oil should be reduced to carbon Dioxide and water.

Benefits

- Complies with the European Standard EN 858 (European oily discharge limits) Will allow easy reclamation and disposal of the water allowing the clean water to be pumped back to sea
- Easily placed in the surface layer of a bilge to remove surface oil. Tie to any convenient fixing point
- Once in place, Aquamarine Bilge Buster® requires no maintenance other than periodic replacement approximately every 6 months
- Once the oil bacteria start growing, each pillow is capable of degrading in excess of 1.5 kg of oil per week
- Non-toxic, contains no hazardous materials
- Supports function of natural bacterial flora to digest oil and grease
- Significantly reduces the volume of free oil in a Bilge
- Tough, resilient and very durable
- Pillow contents can be optimized to degrade contamination from specific sources of waste oil and hydrocarbon waste
- Aquamarine Bilge Buster® is safe and requires no haz-chem labelling
- Special treatment repels water to give maximum oil absorption

To Use

- Use 1 Aquamarine Bilge Buster® per 2000 litre of bilge volume on average
- Replace Aquamarine Bilge Buster® unit every 4 to 6 months depending on the difficulty of the problem
- Prior to use, if on a ship, the separator should be emptied

Recommended Procedures
Aquamarine Bilge Buster® is suitable for use in all bilge areas or waste tanks receiving continuous run off of oily water. Place Aquamarine Bilge Buster® on the surface of the layer of oil to be treated and tie in place, allowing the pillow to break the surface layer. Replace as necessary to ensure continued natural bacterial action. Normal replacement interval is approx six months.

Storage & Handling

- Store in a cool dry place
- Avoid prolonged exposure to temperatures exceeding 40°C
- Avoid eye contact
- Wash hands thoroughly with warm soapy water after handling

Non Hazardous
Pack Size: 1 per pack

NSN J200-4235-99-507-3683 Product Ref. 0079

Aquamarine Bio-Card
- Effluent & Sanitary odour & bacteria treatment

Aquamarine Bio-card is for use in Sanitary Units, Waste Bins, Commerical Food Waste Bins, wheeley bins, medical waste bins

Additional uses: Protection from moth infestations, de-odourising of sewage tanks, can be used to de-dorising cargo tanks.

Bio-Card is the latest concept for germicidal sanitary unit products

How does the Bio-Card work?

It is based on our patented, natural vapour technology and tested to ensure activity throughout the unit for the duration of a service.

The main active components are based on our unique blend of volatile, natural plant extracts such as cinnamon tree bark.

The first noticeable effect of the Bio-Card is the immediate fragrancing action which creates a pleasant cinnamon aroma in the surrounding area.

During this process the natural anti-microbial vapours permeate the whole unit and continue to be effective even when the unit is full.

The active carrier has been specifically developed to release the natural based germicide in a controlled manner to ensure total natural anti-microbial coverage throughout the duration of the service.

Bio card specification

* Active throughout a sanitary unit for 4 weeks
* Unique testing regime to confirm product efficacy
* Tested in actual sanitary units
* Product testing demonstrates high level of efficacy against broad range of bacteria
* The active ingredient in Bio-Card is proven to be effective against Hep B, Hep C and HIV
* The active ingredient in Bio-Card is used as an effective fungicide and insecticide
* Highly effective odour control working through the unique vapour action
* Pleasant natural fragrance released to the surrounding area when unit is used
* Active ingredient made from unique plant extract formula
* Product carrier is made from totally biodegradable material
* Carrier sourced from a renewable resource
* Extremely effective in lined and unlined bins
* 1 Bio-Card per dose ensures cost effective accurate dosing
* Very easy to use little training for operators required
* Compact packaging reduces shipping costs
* Patented technology
* For use in closed/bin applications
* Urinal odour control

Bio-Card vapour eradicates 99.999% of bacteria and remains effective throughout the life of the service.

Bio-Card - The natural anti microbial solution Bio-Card is a natural anti microbial product this means that it will eradicate bacteria that enter and grow in a sanitary unit or waste disposal bin or tank. Not recommended for use in food areas.

This method of control effectively protects operators and clients from any pathogenic bacteria and prevents any offensive odours developing at source.

Why treat sanitary waste?

Sanitary waste units and waste bins (particularly food) are a breeding ground for micro organisms, leading to the development of mal odours in washrooms, galleys and waste storage areas.

Offensive odours in washrooms leads to a poor perception of service levels by visitors and staff

The growth of potentially pathogenic micro organisms.

Protection of both operators and clients is a major priority if infections are to be avoided.

Many service companies use products which simply try to mask the malodour and offer no protection to their operators or clients.

The Bio-Card is foil packed so it cannot degrade.

Biodegradability

The Bio-Card carrier has been specifically selected for its low lignin content resulting in greater biodegradability over a shorter time frame. The entire bio-card will biodegrade when disposed of at the end of a service.

The Bio-Card is derived from sustainable materials that safeguard the protection of our environment

The active ingredients derived from plant extracts combined with the natural carrier provides the user with a totally safe solution for treatment of sanitary and waste applications.

How to use

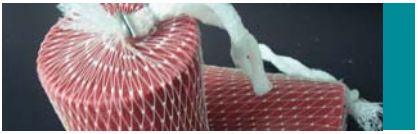
1. Use gloves when handling the product.
2. Remove from foil.
3. Place one unit in area/bin to be deodorised. In toilet areas place on a shelf or suspend in well pierced foil.
4. Replace monthly.

Packed in sealed pack of 200 units.

The Bio-Card will have a shelf life of approximately 12 months if the pack is unopened.

Product Ref. 0081

Aquamarine Bio-Brick™



Bio-brick™ is a unique solid format product, combining a high bacterial count with slow release technology, to dose bacteria into waste water and effluent handling facilities

Overview

Bio-brick™ provides a way of dosing high numbers of active waste degrading bacteria into grease trap applications without the need to install a pump or make electrical connections as with liquid products. Performance is improved over manual product dosing as there are no missed doses, and the release of bacteria is continuous rather than a small number of times per day as with a manual dose.

Bio-brick™ will gradually dissolve over a 30 to 90 day period depending on the application and the effluent flow. The naturally occurring bacteria contained in the Bio-brick™ will reduce odour, sludge, fats, oils and grease build-up.

Technical features of bio-brick™

- A highly effective product that is based on biological as opposed to chemical action
- Very high bacteria specification for maximum effectiveness in this tough environment
- Specifically selected highly effective bacteria multi strain formula for Production of a wide range of enzymes for organic waste degradation, including lipase to cleave fats, cellulose for fibre and general solids, amylase for starch and protease and for proteins
- Product contains 100% spore form for:
  - Extended product life
  - Product stability
  - Maintenance of original product specification
- Unique slow release solid format
- Simple format will not require additional dosing systems e.g. pumps and electrical Installations
- Slow release technology facilitates continuous dosing throughout the life of the product
- One size enables a wide range of effluent volumes to be treated

Product size and dosing information

- 0.5 kg Bio-brick™ will treat effluent flows of between 1 to more than 100 cubic meters per day (m3/day)
- 1 kg Bio-brick™ will treat effluent flows of between 100 to more than 800 cubic meters per day (m3/day)
- 5kg Bio-brick™ will treat effluent flows of between 725 to more than 4,000 cubic meters per day (m3/day)

Applications

- o Grease Traps - Galley
- o Lagoons
- o Wet wells
- o Holding tanks
- o Pumping stations
- o Effluent treatment plants
- o Effluent Handling Facilities

How to use and typical results

1) Simply suspend the Bio-brick™ into the treatment area, placing the Bio-brick just away from the highest flow areas.
2) For best results position Bio-brick™ half into water when water level is at the lowest.
3) The Bio-brick™ must be in the water at all times, and not allowed to dry out.
4) The Bio-brick™ will dissolve as the waste water flows over it. Install new Bio-brick every four to six weeks.

Benefits

- Continuous operation rather than individual doses
- Easy to install- no special equipment required making it very cost effective
- Improved performance compared to manually dosed system – no missed doses
- Effectively breaks down fat and grease build up
- Enhances COD/BOD removal
- Reduces sludge build up
- Eliminated odours at source by reducing anaerobic bacteria activity
- Needs little storage space, easy and safe to handle
- No liquids to handle, health and safety friendly

For high through-put situations we recommend our liquid GD20X Grease Degrader.

Pack Sizes: Available 0.5kg x 12, 5 x 1kg, 4 x 5kg

Product Ref. 0082

Rust Converters

Aquatan Environmental Rust Treatment

Rust converter to treat rusted steel as passivator and long-term rust inhibiting Treatment

Description / Uses

- Neutralises the corrosion process
- Reacts quickly with the rust and transforms iron oxides into stable insoluble blue-black metallo-organic complex inert surface
- Effects a thorough chemical passivation of substrate making it a sound base for application of subsequent coating systems
- Gives a water insoluble hydrophobic film
- Is an excellent adhesion promoter for subsequent paint or coating systems
- NON-TOXIC, NON-HAZARDOUS, NON-FLAMMABLE, DRY FILM IS FIRE RESISTANT
- Only minimum surface preparation required. Degrease, remove loose rust flakes/scales with brush or sandpaper, etc. Wash off salt, oil and chemicals
- Can be easily applied by brush, roller or spray. 1 Litre covers approximately 20 sq mtrs
- Reaction time required - 3 hours
- To be applied to damp rusted surfaces
- Gives you cost-effective corrosion control and long-term protection qualities
- Aquatan is compatible with most usual paint types and coating systems, alkyd systems, modified alkyds, epoxies, chlorinated rubber, polyurethanes, vinyls and the new water-based paint systems
- Has proven particularly effective for treatment and protection of military tank decks where it is ineffective to use a conventional coating. Due to its penetrative properties it will achieve particularly deep and long term results.

For a rust converter which includes a primer use Aquasteel - see Product No. 28

Available 25 litres & 5 litres (packed 4 x 5)

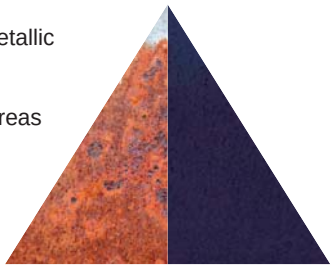
NSN J200 6850-99-212-8492 Product Ref. 0025

Aqua-Steel - Rust Converter & Primer - all-in-one

Aqua-Steel rust convertor
.....unlock the chemistry of nature... practical, lasting and economical in use.

Suitable for use in numerous steel applications - use on bare metal and badly rusted surfaces including oil rigs, steel hull boats & ships, metal constructions, pontoons, deck touch-ups for scupper outlets, hatches, window ledges, bridges, automotive and domestic applications, tank voids including ballast & cargo, internal and external surfaces of sea legs.

- Aqua-Steel is a non-hazardous acrylic co-polymer emulsion for treatment of rusted or raw steel. It is a metal treatment and rust converter.
- Passivates and primes steelwork prior to painting.
- Converts partially or totally rusted areas to organic metallic steel condition.
- Easy to apply by spray, brush or roller.
- Advantageous where voids, tanks and inaccessible areas would inhibit normal metal blasting processes.
- Non-hazardous.
- Minimum preparation thus time and labour-saving.
- Inhibits re-formation of rust outbreaks.
- 1 litre covers 12m^2.
- May be used on damp (not totally wet) steel.
- ***Will extend the life of the paint by up to 3 years.***



Preparation for Salt Water application
Minimum Preparation is required. Wash down any surfaces previously exposed to salt water conditions. Wash down using Aquamarine Aquawash degreaser ensuring the removal of oil dirt and grease. Remove all loose rust flakes, using a wire brush. Wet blasting of extreme rusted conditions is highly recommended.

Directions for Use
Stir before use. Apply the film at a DFT of 25 micron. This will give 12m² coverage per litre. A coating comb may be used to check the coating thickness. For badly corroded surfaces the coverage will be reduced accordingly. The product may be applied in damp and humid conditions which is useful in ship and coastal applications.

Background
Aquasteel is a unique corrosion control system developed by Bayer-Wood Technologies for use on rusted ferrous metal surfaces. The ferrous surface to be protected is converted on contact to a complex organic iron compound by the unique deoxygenating agent incorporated in the **Aquasteel** converter. This black, corrosion-resistant layer is formed by utilizing all the surface moisture and oxygen during the reduction reaction. The special copolymer latex emulsion system dries to form an impermeable barrier to oxygen and moisture.

Aquasteel is water based and solvent free. It contains no harsh phosphoric or hydrofluoric acids, making it safer for employees and for the environment.

Storage
Between 5°C (40°F) and 30°C (86°F).

Shelf Life
12 months (once opened)

Average coverage
1Litre: One coat applied at a wet thickness of 80-100 microns covers 12m^2 producing a dry film thickness of 25 - 40 microns.

Spraying guide
Airless II thou tip on 30:1 pump.
Air assisted GFG @ 60 psi gravity or pressure fed.

Application Temperatures
Should not be applied to cold metal at or below the dew point or hot metal above 40°C (105°F). The coating gives excellent protection at temperatures between -50°C (-60°F) and 50°C (112°F) continuous use.

Surface Preparation
Remove loose scale, flaky rust, all old paint and dirt with wire brush etc. Salt-water deposits must be removed with high-pressure clean water blasting. Reduce any high peaks of rust. **IMPORTANT** - high peaks must be adequately covered by **Aquasteel**. Alkali, grease, oil, salt and chemicals must be removed with detergent (Aquamarine Aquawash) /water wash and then rinse surface with cold clean water. Paintwork blistered by rust must be scraped down to the hard rust surface. **DO NOT REMOVE ALL TRACES OF RUST. RUST IS NECESSARY FOR THE COMPLETE REACTION OF AQUASTEEL TO TAKE PLACE. AQUASTEEL MAY BE APPLIED T0 DAMP RUSTED SURFACES**. Work areas of deep pitting - AQUASTEEL well using brush.

NOTE: CONTAMINATION OF Aquasteel
To avoid the transfer of rust particles into **Aquasteel** container do **NOT** pour unused portion back into original **Aquasteel** container. Clean brushes/equipment with cold water or detergent wash. This also applies to any spillage that may occur.

Application:
- For inland applications - 2 coats are recommended for conversion and protection.
- Highly corrosive environments, i.e. salt water/marine, desert sand, chemical environments/tanks etc. apply 3 coats of **Aquasteel**.

Aquasteel is self-priming and will accept most paints for over coating, for extended life or for cosmetic finish. Overcoat paint must be tested for compatibility with **Aquasteel** before full-scale painting. Chemical liquid tanks or shipping applications, below the 'water line', overcoat with epoxy etc. and leave 7 days before immersion.

Drying/Re-Coating time
Each coat (approximately) touch dry - 15mins – 4 hours dependent on temperature and humidity. Over coating of water based products can be carried out after 4-8 hours. For solvent based products then a full 24 hours should be allowed to ensure all pockets of coating are completely dry. Protect from rain during drying. In confined areas, i.e. tanks, cellars etc. high humidity and low temperatures can delay drying time. Continuous warm

air circulation is required to accelerate the drying process. Flash rusting may occur under the following circumstances:

- If Aquasteel is applied too thinly.
- Temperature is below 5°C - drying time delayed.
- Salt deposits not removed from rust. Weld areas - flux salt deposits not removed.

Product Testing
Aquasteel must be left 7 days before physical or chemical testing is carried out.

Adhesion
Cross-hatch over rusted steel GtO, less than 5% removed.

Permeability
20-25g/m/25mm/day.

Chemical resistance
Spillage-resistance to acids and alkali splashes. Not resistant to prolonged contact with aliphatic or aromatic solvents. Prolonged contact with solvent causes softening, which will recover.

Rust elimination and long-term protection
Aquasteel is a unique patented white organic copolymer latex with a specific gravity of 1.2

It dries on rusted surfaces and chemically converts these to a black non-tacky layer in 30 minutes under normal conditions, forming an independent complex iron/iron oxide/organic chemical compound which gives complete protection for the treated surface. The continuous chemical curing of Aquasteel forms a chemical bond with every metal interface, passivating, neutralizing and chemically converting rust.

The black chemical compound layer is completely neutral and can be used as a primer, without further treatment, for standard or synthetic resin lacquers, oil-based paints, two- component lacquers or bitumastic and oil tar-based finishers including micaceous iron-oxide paints. Aquasteel has extremely low toxicity and does not contain phosphoric acid or lead.

Additional Background
Newly formed rust is chemically ferric hydroxide [Fe (OH) 3] or iron, which has reacted with oxygen (air) and moisture. Iron can combine with oxygen to form a variety of oxides depending on conditions of exposure.
One of these oxides is magnetite [Fe 3O 4] or fersoferric oxide, a stable compound, which does not readily change as exposure conditions change.
This stability is the basis for the protection. Aquasteel reduces ferric hydroxide to ferrous oxide, then combines with the ferrous oxide to form an organic fersofenic complex, which, similar to magnetite, is passivated.

When incorporated into a coating system the chemical action of Aquasteel is maintained.

Available in pack sizes:

25 Ltrs - NSN J200 8010-99-859-8059
4x5 Ltrs - NSN J200 8010-99-990-8922

Product Ref. 0028

Hand Cleaner

Aqua Hand Cleaner Plus - 5 litres

Description
A crimson fine beaded, gel skin cleanser that rapidly and effectively removes oil, grease, creosote, typical marine paints, general dirt and grime. Based on proven cleaning agents which easily lifts most soiling. Pleasant odour improves user acceptability. An extremely stable product that has good shelf life.

- Effective and suitable for the heaviest soiling
- Can be used daily because of its mildness
- Works with hot or cold water in hard or soft areas
- Pleasant residual citrus smell on hands after washing
- The massaging action of the polybeads helps remove soiling
- Beads will not cause drain blocking
- Contains skin emollients
- Dispensers available to reduce the risk of cross infection

Application
Hand Cleaning: Use a 5g application onto dry hands. Work well into soil and then rinse with clean water and towel dry.

Do not use on face or sensitive skin; avoid areas of broken or sore skin.

Supplied in 5 ltr dispensing jar.
Jar bracket supplied separately.

Product Ref. 00SSD5

Liquid Skin Cleanser - 500ml
Can be used without water!

Kind on the environment and your skin

A pale amber, slightly viscous liquid skin cleanser with a light citrus fragrance.
It will remove ingrained dirt, grease, oil and garden stains easily from the skin.
It is also suitable for use as a waterless hand cleaner and merely wiped off with a tissue or towel.

- Effective and suitable for both offices and factories
- Can be used daily because of its mildness
- Works with hot or cold water in hard or soft areas
- No residual solvent smell on hands after washing
- Contains emollient to leave the skin soft and supple
- Natural ingredients include coconut oil derivatives
- One cleanser for all staff
- Dispensers available to reduce the risk of cross infection
- Contains no harmful or toxic ingredients

Application
Hand Cleaning: Use up to a 5 gram application onto dry hands. Work well into soil and then rinse with clean water and towel dry. Where water is not readily available rub well into soil and dry using towel or tissue.

Available in 6 x 500ml

Product Ref. 0070

Test Kits and Test Reagents

1(a) Boiler Water Test Kit for Medium & Low Pressure Boiler Systems

Manual and Electronic Log Sheets available

All components within the test kit are Nato Codified
Test reagent replenishments are supplied in packs of 2
(see page 91).

Full easy to follow instructions

Ref: Test Kit BWT

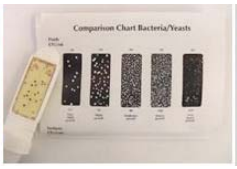
1(b) Engine Cooling Water Test Kit

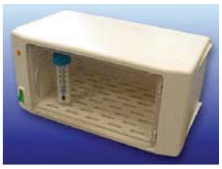
Manual and Electronic Log Sheets available

All components within the test kit are Nato Codified Test Kit replacements are supplied in packs of 2
(see page 91).

Ref: Test Kit CWT

1(c) Dipslides & Incubators for MBC & water tests





Please call for prices - all products ex-stock

Please see website www.aquamarinechemicals.com for dipslide information, MBC information and different applications for dipslides.

SRB Culture tubes - Pack 10	- NSN J150 6640-99-877-1680
RBS Yeast/Mould/Aerobic Dipslide	- NSN J150 6640-99-258-9066
SCT Coliform/Aerobic	- NSN J150 6640-99-316-8071
Dipslide Incubator	- NSN J150 6640-99-365-4664

Test Re-agent Replacements & Test Kit Spares

1(d) TDS/Conductivity Meter (Hand Held)

NSN J150-6640-99-496-6328
(see below under misc spares for replacement batteries)

1(e) PH Meter (Hand Held)

NSN J150-6630-99-380-0925
(see below under misc spares for replacement batteries)

1(f) Ph Papers 7-14

(other ranges available) MND 2061
NSN J150-6640-99-385-7131

1(g) Batteries 1.5 for Hand Held Meters

NSN 0944-6133-01-106-7740

1(h) Aluminium Corrosion Controller Test Meter

NSN

1(i) Antifreeze Test Meter

NSN

Free Chlorine Test Kits

(a) Drinking Water/Potable Water

0-5ppm free chlorine - Drinking Water

(b) Superchlorination

0-250ppm free chlorine - Superchlorination
Suitable for Shipsan and Sodium Hypochlorite

Our test kits are easy to use, with full instructions.

Please see www.tektrak.co.uk/marine/potable-water-treatments/free-chlorine for more information

Potable/Drinking Water Test Kit

Test kit options:

- Conductivity Meter
- pH Meter
- Clorine - Low, Medium, High, Total
- Sampling Bags as required for number of tests
- TVC (HPC & Indicative Coliform) x 40
- Hardness x 100
- Coliform/Ecoli x 30
- Colour
- Taste
- Turbidity
- Temperature Meter
- Incubator
- UV Lamp
- UV Goggles
- *Includes all test equipment required to do all tests & supplied in robust bespoke tesk kit case

Further Options:

- Pseudomonas
- Enterococci
- Legionella
- Copper
- Iron

www.tektrak.co.uk

Tektrak™ Water Safety Plan - electronic and Cloud based system

Tektrak is able to provide each vessel with a unique Water Safety Plan and Potable Water Management System to satisfy the IMO, ILO and WHO current regulations.

Each individual Safety Plan Must assess the specific Parameters that influence risk for each vessel, the Water Safety Plan identifies risks, control measures, points and design, specify operational monitoring limits and incorporate corrective action plans, It will also identify which tests you need and what you need to have in your test kit .

The WSP will give each ship a management system, that covers documentation, validation and verification as well as specifying communication procedures. Contact us for full details here. or call 00 44 (0) 1684 290077.

www.tektrak.co.uk

Test Reagent Replacements	NSN
4.5 Indicator (TA4) code RD1208/RT1103 (2 x 65ml)	J150-6550-99-212-8484
Acetic Acid 20% code RT1100/RT1102 (1 x bottle)	J150-6550-99-670-5166
Acid/Starch Indicator (S1) code RD2701/RT1230 (1 x bottle)	J013-6550-99-458-8236
Calcium Hardness CH3 RD1506 (2x65ml)	J150-6550-99-440-8186
Calcium Hardness Buffer (CH2) code RD1501/RT1143 (2x65ml)	J150-6550-99-212-8480
CC2 Reagent code RD1304 (2x65ml)	J150-6550-99-671-5284
CHIP code RT6142 (x 1)	J150-6550-99-586-4435
THIP RT6146 (x 1)	J150-6630-99-419-5169
H/TH4/CH3 Hardness Titrant code RD1901 (2x65ml)	J150-6550-99-586-4436
N1 Ferroin Indicator code RD2101/RT1150 (2x65ml)	J150-6550-99-849-9605
N2 Nitrate Titrant code RD2102 (2x65ml)	J150-6550-99-269-2286
PA2/TA2 (Alkalinity Titrant) code RD1204 (2x65ml)	J150-6550-99-241-6600
Phenolphthalein Indicator (PA1) code RD1203/RT1101 (2x65ml)	J150-6550-99-362-8126
Potassium Chromate (BC1/CC1) code RD1301/RT1121 (2x65ml)	J150-6550-99-246-6363
S2 (Sulphite Test: Titrant) code RD2702 (2x65ml)	J150-6550-99-568-6053
TA3 Total Alkalinity Titrant code RD1209 (2x65ml)	J150-6550-99-304-5567
TH3 Reagent RD1904 (2x65ml)	J013-6550-99-846-6265
THIP code RT6146/RD6902	J150-6630-99-419-5169
Total Hardness Buffer (TH2) code RD1903/RT1141 (2x65ml)	J150-6630-99-565-2558
Chloride BC1/CC1 RD1301 (2x65ml)	J150-6550-99-246-6363
7-14 pH Test Papers (x100)	J150-6640-99-385-7131
Stirring / Crushing Rod (x1)	J150-6640-99-568-9499
Filter Paper (100 x 2.65cm diam)	J150-6640-99-269-2287
Lab Syringe (2ml)	J150-6640-99-760-9391
Lab Syringe (20ml)	J150-6640-99-407-0460
Screw Top Test Jar 40ml (10ml titration marks)	J150-6640-99-297-7427
Screw Top Test Jar 200ml (25ml titration marks)	J150-6640-99-724-4232
Boiler Water Filter Unit	J150-6640-99-393-4423
For all other reagents please quote the RD or RT reference number with description of Reagent when ordering. If you are unsure which to order please call our Technical Sales 00 44 (0)1684 290077	

Chemical Metering Systems

Air Cooler Cleaner Dosing & T/C Compressor and Intercooler washing & cleaning

Injector

The ACC Injection System forms a complete dosing system for the dosage of a cleaning agent for the charged air inlet of a charge air cooler.

The product is injected by a mist jet nozzle that produces very fine droplets of ± 100 µm at 5 barg. After injecting the cleaning agent, it is to be recommended to flush with water. The system consists of a carbon steel epoxy coated dosing pot with a contents of 2.5 Ltrs, equipped with a filling funnel, air inlet valve, a pre-set pressure relief valve (8,5 barg), drain valve, and two discharge valves.

Fig 1. Liquid System
The system is also equipped with a mounting bracket.

Please ask for full information for this product including installation instructions and for specific applications.

The system is designed to be used with most engine types

Full spec sheets dosing instruction and information available on request.

Supply: The Air Cooler Cleaner Dosing Unit is supplied separatelyy to the dosing injectors. Please specify how may injectors required and the engine details. We will always confim this by order confirmation.

Ref: 2.1. a) Air Cooler Dosing Unit/pot NSN J150-7920-99-553-4055

Ref: 2.1. b) Air Cooler Injector NSN J150-4730-99-958-6080

Please Note: Powder System also available, please state at the time of ordering which you require.

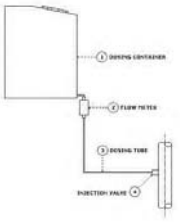
2(a) Boiler Water Dosing Unit

Comprising solenoid driven dosing pump w/ de-aerator,tank,adjustable suction assembly w/float switch, dosing tube, injection valve, valve spring, connector

PUMP, DOSING	solenoid driven: 7.7 litres/hr @ 7 bar: c/w de-aerator: 100-230V, no relay
TANK	pe:60 litre: w/embossed scale:0.750in. drain plug: screw-on lid: pump mount holes
SUCTION ASSEMBLY	adjustable: w/float switch
TUBE	plastics:10000mm lg:dosing:6/4mm
VALVE,INJECTION	plastics:1 bar
VALVE,SPRING	hastelloy:1 bar:foot valve
CONNECTOR	hot water:8mm with 1/2in. BSP adaptor

NSN J150-99-000-4349

2(b) Evaporator Fresh Water Dosing Kit



Dose: When used for treating marine evaporators, the product should be dosed continuously into the sea water feed line where all of the treatment will enter the evaporator. Since Evaporator Scale Controller is highly concentrated it should be pre-mixed with cool distillate in a separate dosing tank and dosed via a flow meter or metering pump.

The recommended daily dose rate is dependent on brine density (S.G.) which should be checked daily with a hydrometer and is normally as indicated below.

Dosage: The standard dosage, applicable to most systems, is 0.01 litres of Evaporator Scale Controller per tonne of distillate produced. This is based on the production capacity of the evaporator. In a standard 25 metre tonne/day evaporator use 25 x 0.010 = 0.25 litres Evaporator Scale Controller/day.

Setting the Flow Rate: The treatment is added to the dosage tank and mixed with water.

For example: With the 0.25 litres of Evaporator Scale Controller add sufficient water to make up 50 litres of liquid.

Flow rate calculation: Flow rate = 50 litres / 24 x 60 = 35ml/min setting.
This will then last 24 hours

N.B: The brine density should not exceed a density of 1.038. The scaling potential increases rapidly over this level. An increase in the amount of Evaporator Scale Controller used will assist in retaining potential scale forming salts in suspension.

For example: If the density rises to 1.050 the dosage should be 0.06 litres/tonne of water produced
NSN J150 6850-99-613-2112

2(c) Liquid Antifoulant seawater dosing unit.

Comprising solenoid driven dosing pump w/o valve spring, tank, adjustable suction assembly w/float switch, dosing tube, injection valve and valve spring Liquid Antifoulant Dosing Unit

DOSING PUMP	solenoid driven: 230VAC:5.3 l/hr at 8 bar: clear cover:supplied w/o valve springs:50/60Hz
TANK	pe:60 litre: w/embossed scale:0.750in. drain plug: screw on lid:pump mount holes
SUCTION ASSEMBLY	adjustable: w/float switch
TUBE	plastics:10000mm lg:dosing:6/4mm
VALVE,INJECTION	plastics:1 bar
VALVE,SPRING	hastelloy:1 barefoot valve

NSN J150 6850-99-700-8669

2(d) Autochlorinator Dosing Kit - Potable/drinking water

LC64 B2 KTCI CZ Series T& Dosing Pump
4.73 Litres P/hr
Complete with 60 litre PE tank with screw-on lid
Adjustable suction assembly with float switch 8 x Tube d 8/5 mm PE

NSN J150-4610-99-460-2631

2(e) Vacuum Pump:

This robust cost effective manual pump action pump is designed for use with all types of chemicals and oils eliminating spillage and skin contact with industrial fluids. The pump is suitable for dispensing from a 25 litre drum dispensing up to 20 litres per minute. For all the standard Aquamarine Chemicals range order the Red Pump.

- Blue Pump - Coolants/Oils
- Red Pump - Chemicals (this covers all chemicals except acids and oils) RE-ORDER CODE SPPPRED
- Green Pump - *Speciality Chemicals

Please ask for full details on any of the above products or see our website www.aquamarinechemicals.com

NSN J150 -4320-99-369-1498

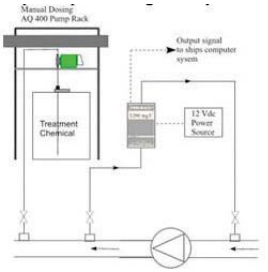
2(f) Nitrite Cooling Water Monitor

Description

The instrument comprises a body fitted with internal (patent applied for) sensing components and a temperature sensor.

6 mm stainless steel couplings are provided so that a sample of the cooling water can pass continuously through the body for analysis of nitrite level.

Results of the analysis are displayed on the LCD display and the data is available externally as a 4-20mA signal for use by a dosing management system for inclusion into a ships engine room management system if required.



Monitor with manual dosing and output signal optionally connected to ships computer management system

Fundamentally the Monitor is fitted in the line for easy checking of the system giving instant results which is particularly useful for when the system is being filled. Manual testing is still recommended although this can be minimised to a weekly check.

Calibration:
The calibration potentiometer is available through the front panel and following a cooling water sample drop test the potentiometer can be used to adjust the LCD to agree with the test results.

The LCD continuously displays the level of Nitrite and the sensor temperature. Power Source: The user provides an external 12-15 V dc power cube.

There are no internal user serviceable parts.

SPECIFICATIONS

Monitor with manual dosing and output signal optionally connected to ships computer management system

Voltage 12 - 15 volts DC @ 250mA
Cables (The unit has 4 wires connections)
Red +12– 15Vdc
Green 0 Vdc
Yellow 4-20mA output
Blue Digital format
Connections Double Ferrule
6mm Stainless compression
Measuring Range 0-4500 mg/l
Accuracy +/- 5% FSD
Temperature 0-60°C
(Requires a cooler for higher temperatures)
Controls Calibration Potentiometer
Flow Rate 0.5—1.5 litres/minute

- 4-20 mA signal 0 –5000 mg/l
- Alarms Instrument status via LCD
- Enclosure Rating IP 65
- Dimensions 130 x 56 x 50 mm
- Environmental
- Operational temperature 5 to 60°C
- Storage temperature 0 to 35°C
- Storage RH 0-95% non condensing

Note: All specifications may be subject to change without notice

NSN J150-6685-99-440-9104 Product Ref. 0002

Plant Products

R.O. Citric Cleaner

Acid Cleaning Product for reverse Osmosis membrane and elements.
For the removal of inorganic deposits.

Description
Aquamarine R.O. Citric Cleaner is a food-grade solution, which removes inorganic fouling from membranes.

Benefits
- No adverse effect with repeated use
- Liquid product, which means less mixing time for the user
- Buffered to maintaining a pH of 2.5 = or 0.5 over a range of dilutions
- Supplied in drums of 25 litres for easy handling

Dosing Instructions
The product should typically be used at a dilution of 10% in proportion to the total volume of the cleaning systems inclusive of cleaning tank, interconnecting pipe-work, filtration and membrane pressure vessels and elements.
Cleaning instructions of the equipment manufacturer should always be maintained.

Pack Size 25 Litres

NSN J150 6840-99-498-9012

Product Ref. 0023

R.O. High pH Cleaner

Membrane cleaning compound for sulphates scales and organic fouling.

Description and Use
RO High is a membrane cleaner based on the sodium salt of EDTA and has been developed to assist in the cleaning of acid insoluble sulphates of calcium, barium and strontium, as well as calcium fluoride.

RO High is also very effective when used in combination with high pH detergent cleaners such as Aquamarine RO Cleaner D to help remove organic substances and microbial slimes.

Product Benefits
- Liquid product for ease of application
- High level of active substance
- Wide range of application

General Specification*
Appearance: Colourless Liquid
pH as Supplied: 13.0

*All figures approximate

Treatment and Dosage Requirements
Cleaning solutions should be made up with free water to give 2.0 - 2.5% solution of RO High. The duration of the cleaning cycle will depend on the severity of the fouling.

When using RO High to remove organic debris or biofilm, RO Cleaner LO should be used after flushing out the RO Cleaner High. Biocides such as Membrane Biocide can also be included at 0.1-0.2% where biofouling exists.

RO High should always be used as recommended by the membrane manufacture in respect to temperature and pH, as compatibility with all membrane types should not be assumed.

25 LITRES

NSN J150-6810-99-133-5949 Product Ref. 0031

R.O. Low pH Cleaner/Sanitiser

Membrane cleaning compound for inorganic salts (not recommended for use with Pall products.)

Description & Use
RO Cleaner Low is a membrane cleaner based on a food grade hydrochloric acid and other additives and is specifically designed to remove calcium carbonate scaling. Ro Cleaner Low should always be used as recommended by the membrane manufacturer or equipment supplier, in respect to cleaning, pH and temperature.

Product Benefits
Liquid product for ease of use
High level of active substance

General Specification*
Appearance: straw coloured liquid

Non Flammable

Treatment and Dosage Requirements
Cleaning solutions should be prepared with chlorine free product water to give a 4% w/w solution, the cleaning solution must be stabilised at pH 2.0 or higher.

The cleaning time depends on the amount of fouling present but is usually completed within three hours. If the cleaning solution becomes red/brown in colour it must be changed as it has become exhausted. The RO Cleaner Low solution should always be discarded after use.

NOTE: NEVER ADD WATER TO ACID ALWAYS ADD ACID TO WATER.

25 Ltr Drum - NSN J150-6550-99-975-0553

Product Ref. 0032

NB. Not recommended for use in PALL PO Plants - use product producer 31 RO Citric Cleaner Instead.

R.O. Membrane Biocide

Membrane cleaning compound and sanitizer.

Description and Use
Aqua Membrane Biocide is a liquid blend of sodium bisulphite specifically designed to clean metal oxides from RO membranes in particular iron oxides. The product also sanitizes the membranes.
Aqua Membrane Biocide must always be used as recommended by the membrane manufacture in respect of temperature and pH. Compatibility with all membrane types must not be assumed.

Product Benefits
Concentrated liquid product for ease of use
Effective cleaner, at low concentrations, for removing iron fouling from membranes.
Has a wide range of applications and compatibility with many other cleaners
General Specifications *

Appearance: Clear liquid
pH of 1.0% solution : 1.0
* All figures approximate

Treatment and Dosing Requirements
Chlorine free product water should be used to make up a 1.0- 2.0% solution of Membrane Biocide. The cleaning solution should be circulated though the elements for one hour at temperature of 30?C and the pH adjusted to 3.5. The flow rate should be as designated by the membrane manufacturer or equipment manufacturer. Soaking the membrane for 1-15 hours to remove iron from the membrane is recommended for severe fouling.

This sequence may have to be repeated in the case of heavily fouled membranes. After the cleaning process the membranes should be rinsed with clean water to remove any residual Membrane Biocide.

25 Ltr - NSN J150 6840-99-359-6037

Product Ref. 0033

R.O. Polysperse 676 - Anti-scalant

Membrane scale controller.

Description and Use
POLYSPERSE 676 is a highly concentrated food grade scale inhibitor. The product works by a threshold effect, which means that minute amounts adsorb specifically to the surface of microcrystals thereby preventing further growth and precipitation of the crystals. The product is a polymeric organic scale inhibitor and is effective in controlling carbonate scaling, sulphate scaling and calcium fluoride scaling.

Product Benefits
- Liquid product for ease of application
- High level of active substance
- Wide range of application

General Specification*

Appearance: Colourless Liquid

Treatment and Dosage Requirements
POLYSPERSE 676 should be dosed to give a concentration of 100ppm in the concentrate stream. The level of dosage into the feed stream will depend upon the recovery of the unit. However if the recovery rate is 75% the dosage into the feed stream would be 25 ppm of POLYSPERSE 676.

The product is normally used by prediluting with water to a level that gives easy addition to the equipment being used and also allows a reasonable period between top up for the intermediate storage vessel.

Typically the product would be diluted to between 5-10% and would run without top up for approximately 1 week in the intermediate dosing tank.

25 LITRE DRUMS

NSN J150 6850-99-958-0904

Product Ref. 0034

Ballast Tanks & Seawater System Protection

Ballast Tank Corrosion Inhibitor

Description
Aquamarine Ballast Tank Corrosion Inhibitor is a liquid, film-forming inhibitor. Aquamarine Ballast Tank Corrosion Inhibitor is a blend of organic and inorganic inhibitors. It contains no chromates and is completely soluble in seawater. It forms a tightly bonded protective film on metal surfaces, which reduces pitting and general corrosion. The film is easily maintained and can be quickly reinforced by subsequent additions of treatment where a decline in continuing effectiveness is detected. Aquamarine Ballast Tank Corrosion Inhibitor provides economical means of corrosion inhibition in ballast tanks, bilges, voids, cofferdams and barges. It will also provide effective inhibition of sulphate and carbonate scales. Aquamarine Ballast Tank Corrosion Inhibitor can be used where sacrificial anodes are in use. Treatment with Aquamarine Ballast Tank Corrosion Inhibitor can be expected to improve the effectiveness of the cathodic protection by enlarging the area protected and to extend the life of the anodes. The cost of the treatment is offset by the reduced costs of anode replacement.

Uses
Effective for use in ballast tanks, cofferdams, barges and voids
Forms tightly bonded protective film on all metal surfaces below water level
Protective film is stable over a wide pH and temperature range
Ideally suited for ballast and other tank protection during ship lay-up periods.

Application
Can be fed neat from the drum. Feeding equipment for the concentrated product should be of stainless steel or plastic. Ideally the product is best fed continuously to the water used to fill the tank or system. Where the system to be treated is already full and draining and refilling is impractical, distribution of the Aquamarine Ballast Tank Corrosion Inhibitor treatment in an open vessel can be achieved by air-agitation or pump circulation. Aquamarine Ballast Tank Corrosion Inhibitor is recommended for systems in which dissolved oxygen is present and the use of air to encourage mixing will not impair corrosion protection.

Dosage
The recommended initial dosage of Aquamarine Ballast Tank Corrosion Inhibitor is 1% (10 Ltr. per tonne of fresh seawater/ballast water). Where there are large amounts of accumulated microbial growth this should ideally be cleaned out first, or treated using Biological Growth Controller or alternatively the tank can be treated with Ballast Tank Corrosion Inhibitor @ 6% or 60 litres per tonne of ballast water. Where the ballast tank is uncoated and dry, Aquasteel may be used to pre-treat the ballast tank.

REF 600BTCI

25 Litre Drum - NSN J150-6850-99-839-8342

Product Ref. 0016

Liquid Antifoulant for Seawater Systems

Liquid Anti-Foulant for sea and fresh water cooling systems –a non biocide approach to mollusc and sea growth control.

Description
Liquid Antifoulant has been developed to deal with the biological changes in coastal waters primarily evolving because of the substantial reduction in seawater pollution. It is for the treatment of:

- Mussels
- Biological Growth
- Micro Organisms

This is achieved by preventing the adherence of mollusc larvae to ship surfaces because of a build-up of a layer of liquid anti-foul ant in the sea water system.

The treatment is best used from a clean system and existing growth will be unlikely to be removed except by physical removal or decaling (using Aquamarine Descaling Liquid).

Dosing
Always inject the product below the water level. Dose at 6 ppm for one hour per day. Dosing is not necessary in deep sea.

In port when practicable dose the condenser with a solution of 200 ppm and allow to stand for 24 hours.

Pack Size 25 Litres

NSN J150 6840-99-988-8249

Product Ref. 0018

Sediment Remover

Dispersant for sludge and silt in ballast tanks

Description
Aquamarine Sediment Remover is a non hazardous product that prevents settling of silt and removes sludge at low rates of dosage. It saves valuable cargo space which can be wasted as heavy ballast deposits. Sediment Remover eliminates the need for time consuming and expensive steel replacement which is often necessary to remove the ballast mud/sediment deposits which is will solidify over a period of stagnation.

Ideally it should be used as a preventative measure as a build up of heavy deposits can only be removed by physical means. If a vessel is trading regularly into ports where sludge is unavoidable then the vessel should be treated regularly with Aquamarine Sediment Remover after being thoroughly cleaned out i.e. after dry-docking. However, it is quite easy to treat sediment build-up in the early stages. I.E. For the removal of less than 4 tonnes sediment/sludge.

Uses
- Ballast tank sediment removal
- Open cooling water system cleaning
- Desludging engine cooling systems
- Desludging the sea water side of heat exchangers

Application
Aquamarine Sediment Remover should be added at a rate of 1 litre/10m^3 of water. Agitation should then be implemented as fully as possible while pumping out.

NON-HAZARDOUS

Product Ref. 0043

Drinking Water Products

Aqua-Potable Red Rust Treatment
- for treatment of “Red Rust” in Potable water systems and Tanks

Solves the Red Rust problems associated with drinking water on ships.

Description/Uses/Benefits

- Aqua-Potable Water Treatment (PWT) will improve water quality and have no deleterious effects on taste or colour of water
- Treatable problems occurring in potable water include scale formation, iron oxide precipitation, foam generation and corrosion
- PWT is a potable water anti-scale product that is suitable for both hard and soft water and for hot and cold systems. PWT is based on an inorganic phosphate product that is USDA approved for use in potable water systems and will not cause any environmental or health problems
- PWT is efficient and effective and will give complete protection required in the modern potable water system. PWT is cost-effective and will give the best anti-scale inhibition available

Dosage

The product should be used at a rate of 50ml / tonne of water, which should give adequate protection. It should be dosed by means of a chemical pump.
The treatment is proportioned in relationship to the quality and quantity of water to be treated by means of a dispenser or chemical pump.

Pack Size: PWT is packed in 25litre polydrums

FOR CHLORINATION OF DRINKING WATER SEE CHLORINATION TABLET PRODUCTS

NSN J700-6850-99180-3598

Product Ref. 0029

Potable Water/Drinking Water Chlorination Tablets

Our drinking water tablets are easier to store than liquid products, easier to handle and dose and will not suffer the normal degrading problem with liquids.

WATER VOLUME IN LITRES FOR TREATMENT AT SPECIFIC CHLORINE LEVELS				
Chlorine p.p.m	At 1 p.p.m	At 2 p.p.m	At 5 p.p.m	At 10 p.p.m
No. Tablets	1	1	1	1
Volume of Water	3000	1200	600	300

- To achieve 0.5ppm in the tank you will require one tablet per 6000 litres of Water. This would typically be expected to yield 0.2ppm at the tap.

If you are unsure of the amount to dose please call Aquamarine for advice.

Potable 3000 Water Purification Tablets are manufactured to an effervescent formulation containing sodium dichloroisocyanurate (NaDCC) - an organic chlorine donor with a superior disinfection capacity to sodium hypochlorite, a near neutral pH and a simple, easy to understand closing system for added safety. The Products are NSF Certified.

Aquamarine Water Purification Tablets kill bacteria, bacterial spores, cysts, algae, fungi, protozoa and virus and are especially lethal to Endamoeba histolytica. The following causative water borne organisms amongst others, are killed by Aquamarine Water Purification Tablets:

- Salmonella typhi
- Shigella sonnei
- Escherichia coli
- Vibro Cholerae
- Streptococcus Faecalis

Pack Size Pack of 6 x 100 tablets (packed in resealable, water-tight containers for safety)

Product Ref. 0073

Shipsan® for Super-chlorination

Super-chlorination using Shipsan® – Spray Method – fast and efficient

- Radically reduces the procedure time
- Huge saving in Disposal Costs
- Saves valuable ship time
- Removes bio-film

It is ideal for use in water hygiene storage tanks and pipe work treatment applications, where it quickly eradicates Legionella, Pseudomonas and other microbes. Available in 25L, 200L, 1,000L IBC's.

Tank clean (MGN 397); *"To be opened up, emptied, ventilated and inspected and thoroughly cleaned, recoated as necessary, aired and refilled with clean freshwater chlorinated to a concentration of 0.2ppm free chlorine. The cleaning process should include disinfection."*

1 Clean and rinse the tank and pump out residue.
2 Dilute 1 litre Shipsan to 20 litres of deionised water (200 ppm free-chlorine).
3 Spray all surfaces with Shipsan® (diluted as above) and leave for a few minutes to Superchlorinate/Disinfect.
4 Rinse the surface and pump out residue.
5 When using Shipsan spray method for super-chlorinating the freshwater tanks consideration should be given to the distribution system;

   Hydrophore System: Using a Hydrophore system: The hydrophore tank requires a solution of 200ppm (Measured as Free Chlorine) Shipsan is then used to sanitise the distribution system, operating all outlets to ensure the chlorination is achieved at all points, followed by flushing after 30 minutes. (200ppm Shipsan = 1 Litre Shipsan to 20 Litres de-ionised water).

   Positive Pressure Pump System: Using a positive pressure pump system direct feed from the fresh water tank. After Super-Chlorinating the fresh water tank using Shipsan as above procedure, use a cofferdam to supply the pump inlet pipework should be filled with a solution of 200ppm (Measured as Free Chlorine) Shipsan to be used to sanitise the distribution system, operating all outlets to ensure the chlorination is achieved at all points followed by flushing after 30 minutes. (1 Litre Shipsan to 20 Litres de-ionised water).
6 Refill the tank to achieve typically 0.2ppm – 0.5ppm. (As per the levels indicated in your Water Safety Plan) using Shipsan. Test the water for free chlorine.

Dosage for Drinking Water on board, where an infection has been identified
Using Shipsan to dose ready for drinking instead of Sodium Hypochlorite or Calcium Hypochlorite Liquid or Tablets: Refill the tank to achieve 0.2ppm at the tap or 5ppm in the tank free chlorine using Shipsan®. Sample the water for free chlorine. Shipsan will give a stable free-chlorine level.

Dosage Guide: Dose for drinking Water: You will need to use 125ml of Shipsan per tonne of drinking water, this will give you 0.5ppm in the tank. For drinking water the line should be dosed immediately into the line via a dosing meter prior to distribution point after the storage tanks.

For test kits see page 102.

HOSE Super-chlorination using Shipsan®

It is ideal for use in water hygiene storage tanks and pipe work treatment applications, where it quickly eradicates Legionella, Pseudomonas and other microbes. Available in 25L, 200L, 1,000L IBC's.

FW Hoses (MGN 397); *"FW Hoses. Flush and fill with a chlorine solution and allow to stand for at least an hour before emptying and stowage."*

Minimum 6 Monthly intervals. Using Shipsan;

1 It is recommended that the filling hose is connected to the ship's filling line with internal valves in the shut position.

2 Dilute 1 litre Shipsan to 20 litres of deionised water (200ppm free-chlorine).

3 Sterilization - Fill with Shipsan and allow to stand for a few minutes before discharging.

4 Ensure the fresh water filling connection and hoses are capped before stowing.

Shipsan is an excellent choice for chlorinating the fresh water system components because it does not have the corrosive effect of traditional chlorination products nor does it carry the hazards of use.

For more information on Shipsan Products see www.shipson.co.uk

25 Ltr. Drum

Spill Equipment and Sorbents

Aquamarine supplies complete on-board spill kits and individual items for all oil spill applications, please enquire on 01684 290077 or see our website www.aquamarinechemicals.com

Oil Spill Kit Large Clip Close Bag (44 litres)

Solves the Red Rust problems associated with drinking water on ships.

Code: AOK1L

Contents:
- 20 Pads
- 4 x 8cm x 1.2m Socks
- 2 Disposal Bags & Ties

Size: 43cm (h) x 52cm (w) x 24cm (d)

Absorbs: 44 litres

Weight: 6kg

Oil Spill Kit Bag (45 litres)

Waterproof zip top bag with detachable strap.

- Strong waterproof bag with detachable strap
- Hooks on the back to hang on wall
- Store on the truck for fast response to spillage
- Absorbs up to 62 litres

Code: AOK2

Contents:
- 20 Pads
- 4 x 8cm x 1.2m Socks
- 1 x Large Cushion
- Bags & Ties
- PPE

Size: 42cm(h) x 49cm (w) x 21cm (d)

Absorbs: 45 litres

Code: AOK2REFILL

Contents: Refill Pack. Contents as above

Oil Spill Kit Bag (88 litres)

Suitable for small to medium spills.

- Strong waterproof bag with detachable strap
- Absorbs up to 80 litres

Code: AOK5

Contents:
- 40 Pads
- 4 x 8cm x 1.2m Socks
- 1 x 8cm x 3m Super Sock
- 1 x Medium Cushion
- 1 x large Cushion
- PPE
- 3 Disposal Bags & Ties

Size: 42cm (h) x 59cm (w) x 42cm (d)
Absorbs: 88 litres
Weight: 9kg

Code: AOK5REFILL
Contents: Refill Pack. Contents as above.

240 Oil Spill Kit Wheeled Unit (230 litres)

Wheeled unit designed for larger spills.

- Wheeled unit for quick response
- Use bin after spill to store soiled product
- Complete with loose absorbent
- Absorbs 268 litres

Code: AOK8

Contents:
- 100 Pads
- 10 x 8cm x 1.2m Socks
- 4 x 8cm x 3m Socks
- 1 x Isol8
- 4 x Small Cushions
- 3 large Cushions
- PPE
- 6 Disposal Bags & Ties

Size: 107cm (h) x 58cm (w) x 74cm (d)
Absorbs: 230 litres
Weight: 40.5kg

Code: AOK8REFILL
Contents: Refill Pack. Contents as above.

340 Oil Spill Kit Wheeled Unit (340 litres)

Wheeled unit designed for larger spills. Spill Kits can be tailor made to suit individual requirements and are available with your company logo or text.

Code: AOK9
Contents: 150 Pads, 10 x 8cm x 1.2m Socks, 6 x 8cm x 3m Socks, 2 x small cushions, 2 medium Cushions, 4 Large Cushions, 1 x 1kg Sealing Putty, 1 x 45cm x 65cm Drain Mat, 1 Roll Caution Tape, 5 Bags & Ties, 2 Bags Isol8

Size:107cm (h) x 620 (w) x 860 (d)
Absorbs: 340 litres
Weight: 70kg

Code: AOK9REFILL
Contents: Refill Pack. Contents as above.

660 Oil Spill Kit Wheeled or Non Wheeled Unit (580 litres)

Wheeled unit designed for larger spills. Spill Kits can be tailor made to suit individual requirements and are available with your company logo or text.

Code: AOK10
Contents: 200 Pads, 1 Roll 50cm x 50m, 10 Socks 8cm x 1.2m, 4 Socks 8cm x 3m, 2 Booms 12cm x 3m, 5 Small Cushions, 5 Medium Cushions, 5 Large Cushions, 2 Drain Mats 45 x 65cm, Tub Sealing Putty 1kg, 1 Rolls Caution Tape, 3 Bags Isol8, 3 Sets PPE, 20 Disposal Bags & Ties

Size: 117cm (h) x 1360 (w) x 77cm (d)
Absorbs: 580 litres Weight: 112kg

Code: AOK10REFILL
Contents: Refill Pack. Contents as above.

Oil Only Absorbents

The Oil Only Absorbents will absorb oil whilst repelling water due to the hydrophobic material that they are manufactured from. The products will float indefinitely to full saturation and are manufactured from high tensile strength polypropylene fibre which resist tearing and disintegration. The oil only products act fast decreasing the risk of environmental contamination and are suitable for all fuels and hydrocarbons indoors and out.

a) Oil Only Pads Lightweight

Conveniently sized sheets are ideal for the cleaning of industrial tools, machinery and general spill control.

- Manufactured from hydrophobic material, our pads will absorb oil and hydrocarbon based products whilst repelling water.
- Suitable for both indoor and outdoor use / wet and dry conditions.
- In emergencies it can be rolled up and used as a sock.
- Fast wicking action reduces the spill time and problems associated with oil spills.

Code: OPL200
Type: Lightweight 180gsm
Contents: 200
Size: 40cm x 50cm
Absorbs: 120 litres
Weight: 7kg

b) Oil Only Pads Heavyweight

- Manufactured from hydrophobic material, our pads will absorb oil and hydrocarbon based products whilst repelling water.
- Suitable for both indoor and outdoor use / wet and dry conditions.
- In emergencies it can be rolled up and used as a sock.
- Fast wicking action reduces the spill time and problems associated with oil spills.

Code: OPH100
Type: Heavyweight 360gsm
Contents: 100
Size: 40cm x 50cm
Absorbs: 120 litres
Weight: 7kg

c) Oil Only Drum Tops
For a clean, safe work environment. Also suitable for outdoor use as they will repel rain water.

- Manufactured from hydrophobic materials, our drum toppers will absorb oil and hydrocarbon based products whilst repelling water.
- Keeps your drums and barrels clean whilst protecting the work area.
- Fits drums up to 56cm diameter.
- Fits drums up to 56cm diameter.
- Fast absorbing action

Code: ODT
Contents: 5
Size: 56cm dia
Absorbs: 3.75 litres
Weight: 0.5kg

d) Rip One Oil Only Pads
Convenient pack containing ten perforated sheets. Wall mountable for siting near to areas posing potential hazard.

- Manufactured from hydrophobic materials, our pads will absorb oil and hydrocarbon based products whilst repelling water.
- Perforated top. Rip a pad off as you need it.
- Fixed number of pads per dispenser makes stock levels easy to maintain.
- An ideal solution too many engineering problems.
- Will float on water whilst only absorbing oil.

Code: RO1
Type: 360gsm
Contents: 10
Absorbs: 12 litres
Weight: 0.7kg

e) Oil Only Cushions
Ideal for use with drip pans under leaking / dripping machinery, use with pads / socks for larger spills.

- Manufactured from hydrophobic materials, our cushions will absorb oil and hydrocarbon based products whilst repelling water.
- An extremely versatile product. Use as part of a spill control plan, spill containment or for oil clean up off water.
- Use to skim oil off water.
- Use in conjunction with a drip pan for oil changes, leaky joints, etc.
- Make a wall out of cushions in large spill situations.

Code: OCS
Type: Small
Contents: 25
Size: 23 x 23cm
Absorbs: 57 litres
Weight: 5kg

f) Tubular Knitted Oil Only Socks
Oil only socks, strong tubular knitted outer for extra durability.

- Manufactured from hydrophobic materials, our socks will absorb oil and hydrocarbon based products whilst repelling water.
- Any size manufactured to order.
- Place around leaking machinery to prevent danger in the workplace.
- Use as a temporary bund to protect danger areas such as drains.
- Use in both wet and dry conditions.
- Any size manufactured to order.

Code: OSK12
Contents: 20
Size: 8cm x 1.2m
Absorbs: 76 litres
Weight: 8kg

g) Oil Only Curtain Booms
Combine the efficiency of a standard oil absorbing boom with the added benefit of a weighted skirt to minimise the flow of trapped oil beneath the surface. For removing oil and hydrocarbons from water. Suitable for marinas, rivers, lakes docks etc. Manufactured from strong non woven outer material.

Code: OB4
Contents: 2
Size: 15cm x 3m (Skirt Depth 20cm)
Absorbs: 93.5 litres

h) Oil Only Booms
For removing oil and hydrocarbons from water or land. Suitable for marinas, rivers, lakes, docks etc. Manufactured with a strong polyproplene external net fabric, complete with metal links.

- Manufactured from hydrophobic materials, our booms will absorb oil and hydrocarbon based products whilst repelling water.
- Encased in a tough outer polypropylene netting for long life and durability.
- Suitable for marinas, ponds, waste water areas, harbours and rivers where oil and other hydrocarbon products are located.
- Each boom is lined with strong polypropylene rope giving added strength and durability. This also stops the boom from stretching, which can lead to the boom splitting.
- Fixed with metal hooks to enable barriers to be created out of a number of booms. This is vital in confining oil on water.

Code: OB2
Contents: 4
Size: 12cm x 3m
Absorbs: 120 litres
Weight: 11.5kg

i) Oil Only Rolls Lightweight
To suit most applications. Rolls can be perforated for ease and economy of use.

- Cost effective solution to many problems.
- Can be perforated for economy of use. Use only what is required at the time.
- Can be used in both wet and dry conditions indoor or outdoor.
- Will float on water whilst only absorbing oil.
- Use as a walkway in areas prone to oil spill.
- Suitable for hose down situations.
- Any size manufactured to order.

Code: ORL1
Type: 180gsm
Contents: 1
Size: 50cm x 100m
Absorbs: 150 litres
Weight: 8kg

j) Oil Only Drain Booms
Used for cleaning oil contaminated water from drains, interceptors and bilges. Supplied with a ring and rope for ease of deployment and retrieval.

- Manufactured from hydrophobic materials, our booms will absorb oil and hydrocarbon based products whilst repelling water.
- Encased in a tough outer polypropylene netting for long life and durability.
- Each drain boom is lined with strong polypropylene rope giving added strength and durability. This also stops the drain boom from stretching, which can lead to splitting.
- Helps to reduce the bacteria levels in your tank.
- Manufactured with a retrieval rope for ease of deployment and retrieval for inspection.

Code: OB1
Contents: 10
Size: 20 x 50cm
Absorbs: 125 litres
Weight: 10.5kg

k) Wall Mountable Spill Kit Locker (77 litres)
Polyethylene cabinet with rubber seal and polycarbonate windows. Left or right hinged mounting. Comes with either plastic toggles and lynch pins, OR plastic locks and key compartment with 'break glass' facility. Supplied with 2 keys and 2 clear plates Everything to hand for the first responder.

Code: OK12
Contents: 50 Pads 20cm x50cm, 3 socks 8cm x 1.2m, 2 socks 8cm x 3m / 2 Medium Cushions, 1 Large cushion, PPE, 3 Disposal Bags & Ties

Size: 85cm (h) x 56.5cm (w) 37.5cm (d)
Absorbs: 77 litres
Weight: 21kg

Refill Packs for OK12 Code: OK12R

Oil Spill Products

for liquid and approved oil spill dispersants see product 46 under cleaning and maintenance section

Oil Spill Products are produced using re-cycled materials and thus reducing the amount of waste going to land fill. The products are tried and tested and the oil absorbent products have a high absorbency level. The general products are suitable for use with water, oils, coolants, cutting fluids and mild solvents and chemicals.

m) Recycled General Purpose Pads

For the purpose of absorbing most industrial type fluids including non-aggresive chemicals.

- Manufactured using recycled materials, producing an economical yet highly effective product.
- Constructed using a multi layered design producing a highly absorbent pad.
- In emergencies it can be rolled up and used as a sock.
- Dark coloured top layer camouflages dirt and grime.

Code: GPP1
Type: Recycled 450gsm
Contents: 100
Size: 45cm x 50cm
Absorbs: 80 litres
Weight: 9kg

n) Recycled General Purpose Pads (Blue)

For the purpose of absorbing most industrial type fluids including non-aggresive chemicals.

- Manufactured using recycled materials, producing an economical yet highly effective product.
- Constructed using a multi layered design producing a highly absorbent pad.
- In emergencies it can be rolled up and used as a sock.

Code: GPP1B
Type: Recycled 450gsm
Contents: 100
Size: 45cm x 50cm
Absorbs: 80 litres
Weight: 9kg

p) General Purpose Cushions
Ideal for use with drip pans under leaking / dripping machinery. Used with pads / socks to deal with larger spills.

- Can be used when a pad is not enough.
- Push into tight spaces to retrieve liquids.
- Create a large barrier using a number of cushions.
- Use with a drip pan under drum taps.
- Perfect for hydraulic oil changes or resting hydraulic hoses on.

Code: GCS
Contents: 25
Size: 23 x 23cm
Absorbs: 47 litres
Weight: 5kg

s) General Purpose Socks
Suitable for containing and absorbing larger spills and placing around machinery.

- An extremely economical yet versatile sock, for use within industrial or commercial locations.
- Use to contain a spill or tuck around leaky machinery.
- Any size manufactured to order.

Code: GS12
Contents: 20
Size: 8cm x 1.2m
Absorbs: 70 litres
Weight: 10kg

t) Super Absorbent Socks
Strong tubular knitted structure allows for durability and expansion.

- Highly absorbent polymer fibre traps offending liquids inside. Stops drips when the sock is sodden.
- Knitted outer layer gives the sock the ability to swell as it absorbs.
- Construction of sock produces a fast wicking effect.
- Knitted outer layer gives high tensile strength to sock and makes it highly resistant to tearing.
- Absorbs more than 12 times its own weight.
- Any size manufactured to order.

Code: GSK12
Contents: 20
Size: 8cm x 1.2m
Absorbs: 110 litres
Weight: 9kg

Chlorination & De-Chlorination Products

Sewage Plant Dechlorinator Powder

Please use as per the plant manufacture's guide lines according to size and make of system.

Pack Size 25 kg

NSN J150 6850-99-766-6797

Product Ref. 0038

Slow Release Chlorine Tablets (Effluent Treatment)

Our large slow release chlorine tablets 75mm Diameter x 25 mm designed for use in your Hamworthy or similar system, effluent plant Stage 3.

They are triple packed for safety, individually wrapped, an inner moisture bag and plastic bucket ... think safe ...and remember to store them away from acids and any other aggressive chemicals to avoid chlorine gas.

Other tablets also available please ask.

Drinking Water tablets also supplied: Potable Water tablets
(quick dissolve-smaller tablets) - please ask for details or see Drinking Water section

Pack Size 5kg bucket

NSN J150-6850-99-152-2524 Product Ref. 0072

Potable Water/Drinking Water Chlorination Tablets

Our drinking water tablets are easier to store than liquid products, easier to handle and dose and will not suffer the normal degrading problem with liquids.

WATER VOLUME IN LITRES FOR TREATMENT AT SPECIFIC CHLORINE LEVELS				
Chlorine p.p.m	At 1 p.p.m	At 2 p.p.m	At 5 p.p.m	At 10 p.p.m
No. Tablets	1	1	1	1
Volume of Water	3000	1200	600	300

- To achieve 0.5ppm in the tank you will require one tablet per 6000 litres of Water. This would typically be expected to yield 0.2ppm at the tap.

If you are unsure of the amount to dose please call Aquamarine for advice.

Potable 3000 Water Purification Tablets are manufactured to an effervescent formulation containing sodium dichloroisocyanurate (NaDCC) - an organic chlorine donor with a superior disinfection capacity to sodium hypochlorite, a near neutral pH and a simple, easy to understand closing system for added safety. The Products are NSF Certified.

Aquamarine Water Purification Tablets kill bacteria, bacterial spores, cysts, algae, fungi, protozoa and virus and are especially lethal to Endamoeba histolytica. The following causative water borne organisms amongst others, are killed by Aquamarine Water Purification Tablets:

- Salmonella typhi
- Shigella sonnei
- Escherichia coli
- Vibro Cholerae
- Streptococcus Faecalis

Pack Size Pack of 6 x 100 tablets (packed in resealable, water-tight containers for safety)

Product Ref. 0073

Shipsan® for Super-chlorination

Super-chlorination using Shipsan® – Spray Method – fast and efficient

- Radically reduces the procedure time
- Huge saving in Disposal Costs
- Saves valuable ship time
- Removes bio-film

It is ideal for use in water hygiene storage tanks and pipe work treatment applications, where it quickly eradicates Legionella, Pseudomonas and other microbes. Available in 25L, 200L, 1,000L IBC's.

Tank clean (MGN 397); *"To be opened up, emptied, ventilated and inspected and thoroughly cleaned, recoated as necessary, aired and refilled with clean freshwater chlorinated to a concentration of 0.2ppm free chlorine. The cleaning process should include disinfection."*

1 Clean and rinse the tank and pump out residue.
2 Dilute 1 litre Shipsan to 20 litres of deionised water (200 ppm free-chlorine).
3 Spray all surfaces with Shipsan® (diluted as above) and leave for a few minutes to Superchlorinate/Disinfect.
4 Rinse the surface and pump out residue.
5 When using Shipsan spray method for super-chlorinating the freshwater tanks consideration should be given to the distribution system;

Hydrophore System: Using a Hydrophore system: The hydrophore tank requires a solution of 200ppm (Measured as Free Chlorine) Shipsan is then used to sanitise the distribution system, operating all outlets to ensure the chlorination is achieved at all points, followed by flushing after 30 minutes. (200ppm Shipsan = 1 Litre Shipsan to 20 Litres de-ionised water).

Positive Pressure Pump System: Using a positive pressure pump system direct feed from the fresh water tank. After Super-Chlorinating the fresh water tank using Shipsan as above procedure, use a cofferdam to supply the pump inlet pipework should be filled with a solution of 200ppm (Measured as Free Chlorine) Shipsan to be used to sanitise the distribution system, operating all outlets to ensure the chlorination is achieved at all points followed by flushing after 30 minutes. (1 Litre Shipsan to 20 Litres de-ionised water).

6 Refill the tank to achieve typically 0.2ppm – 0.5ppm. (As per the levels indicated in your Water Safety Plan) using Shipsan. Test the water for free chlorine.

Dosage for Drinking Water on board, where an infection has been identified
Using Shipsan to dose ready for drinking instead of Sodium Hypochlorite or Calcium Hypochlorite Liquid or Tablets: Refill the tank to achieve 0.2ppm at the tap or 5ppm in the tank free chlorine using Shipsan®. Sample the water for free chlorine. Shipsan will give a stable free-chlorine level.

Dosage Guide: Dose for drinking Water: You will need to use 125ml of Shipsan per tonne of drinking water, this will give you 0.5ppm in the tank. For drinking water the line should be dosed immediately into the line via a dosing meter prior to distribution point after the storage tanks.

For test kits see page 102.

HOSE Super-chlorination using Shipsan®

It is ideal for use in water hygiene storage tanks and pipe work treatment applications, where it quickly eradicates Legionella, Pseudomonas and other microbes. Available in 25L, 200L, 1,000L IBC's.

FW Hoses (MGN 397); *"FW Hoses. Flush and fill with a chlorine solution and allow to stand for at least an hour before emptying and stowage."*

Minimum 6 Monthly intervals. Using Shipsan;

1 It is recommended that the filling hose is connected to the ship's filling line with internal valves in the shut position.

2 Dilute 1 litre Shipsan to 20 litres of deionised water (200ppm free-chlorine).

3 Sterilization - Fill with Shipsan and allow to stand for a few minutes before discharging.

4 Ensure the fresh water filling connection and hoses are capped before stowing.

Shipsan is an excellent choice for chlorinating the fresh water system components because it does not have the corrosive effect of traditional chlorination products nor does it carry the hazards of use.

For more information on Shipsan Products see www.shipson.co.uk

25 Ltr. Drum

Marpol MEPC 63 V Amendment

Reference:
MEPC 63/23/Add.1, Annex 24, Resolution MEPC.219(63), Adopted 2.3. 2012

In “2012 GUIDELINES FOR THE IMPLEMEMTATION OF MARPOL ANNEX V” under chapter Garbage Management, P.4, with reference to the following statements:

1.7.4. While cleaning agents and additives contained in hold washwater, and deck and external surface washwater are considered “operational wastes” and thus “garbage” under Annex V, these cleaning agents and additives may be discharged into the sea so long as they are not harmful to the marine environment.

1.7.5 A cleaning agent or additive is considered not harmful to the marine environment if it:

1. Is not a “harmful substance” in accordance with the criteria in MARPOL Annex III: and
2. Does not contain any components which are known to be carcinogenic, mutagenic or reprotoxic (CMR).

1.7.6 The ship’s record should contain evidence provided by the producer of the cleaning agent or additive that the product meets the criteria for not being harmful to the marine environment. To provide an assurance of compliance, a dated and signed statement to this effect from the product supplier would be adequate for the purposes of a ships record. This might form part of a Safety Data Sheet or be a stand-alone document but this should be left to the discretion of the producer concerned.

With reference to the above IMO Guidelines, Aquamarine Chemicals, Division of Bayer-Wood Technologies Ltd, have made the following statement:

We, Aquamarine Chemicals, division of Bayer-Wood Technologies Ltd, hereby declares that the below listed Aquamarine Chemicals cleaning agents manufactured by us meet the criteria for not being harmful to the marine environment as described under Item 1.7.5. We will emphasise that this statement is not valid for chemicals put on the market with identical or similar product names manufactured by others. The name of Aquamarine Chemicals Ltd, must be mentioned on the product label and in the Material Safety Data Sheet.

Aquamarine Cleaning Agents;
Aquawash
Rust Remover
Quickbreak
ACC Plus
Germex
Sediment Remover
Oil Spill Dispersant Concentrate
OSD Ready to use
HD Cement Descaler
Aquamarine Multi Surface Cleaner
Natural Zest
H.D. Foodsafe Foam Cleaner
Descaling Liquid
Descaling Powder

Aquamarine Chemicals
A division of Bayer-wood Technologies Limited
2 Duddage Manor Business Park, Twyning, Glos, GL20 6BY

Tel: 01684 290077 • Fax: 01684 290608
Email: technical@bayer-wood.co.uk / sales@bayer-wood.co.uk

www.aquamarinechemicals.com