

# CARETREAT 4 CONDENSATE

## **An organic oxygen scavenger and corrosion inhibitor for feed, steam and condensate systems**

- \* One of the five Marine Care Water Treatment Program Products.
- \* Environmentally safe, non-toxic product.
- \* Unique single product for control of corrosion throughout the condensate system.
- \* Simple, accurate testing.
- \* Effective under all operating conditions.
- \* Protects boiler surfaces by forming an iron tannate film.

### **Introduction**

Caretreat 4 Condensate is an oxygen scavenger based on neutralized organic acids and a blend of volatile/neutralizing amines. It is normally used only in conjunction with Caretreat 3 Boiler as part of the water treatment program. It removes oxygen efficiently in open feed systems and gives effective corrosion inhibition of boiler/exhaust gas economizer system surfaces by converting  $\text{Fe}_2\text{O}_3$  (rust) to an organic iron compound. It also protects copper based metals. The amines pass over with the steam and have the dual function of elevating the pH of the steam/condensate and putting a protective micro film on the system pipe work. Acidic condensate is the result of carbonic acid ( $\text{H}_2\text{CO}_3$ ) being formed as  $\text{CO}_2$  is released in the steam. The use of Caretreat 4 Condensate prevents corrosion by carbonic acid on live systems. Its filming properties also reduce corrosion on shut down lines, when moisture and oxygen are present.

### **Directions for use**

Caretreat 4 Condensate is dosed at a rate which maintains a pH of 9.0 to 10.0 in the condensate returns. Oxygen entrainment largely depends on Hotwell temperatures and if these are maintained at above  $80^\circ\text{C}$  the condensate pH range of pH 9.0 to 9.5 is adequate. If Hotwell temperature control is erratic and averages less than  $80^\circ\text{C}$ , tighter control is necessary and condensate returns should be kept in the range pH 9.5 to 10.0. It is not necessary to carry out oxygen or product residual tests.

### **Initial dosage**

Caretreat 4 Condensate is initially dosed at  $0,2 \text{ ltr/m}^3$  boiler water. Systems showing signs of corrosion should be dosed at up to  $.07 \text{ ltr/m}^3$  boiler water for the first few days in order to passivate all metal surfaces.

**Daily dosage rates**

After initial dose, start metering at a minimum of 0.4 ltr/24 hours continuously and adjust to obtain correct condensate pH.

**Dosing system**

Caretreat 4 Condensate must be dosed continuously in conjunction with Caretreat 3 Boiler in a metering pump/tank unit, discharging directly into the feed system and/or the exhaust gas economizer circulating pump discharge. It must NEVER be slug dosed to a running system via a Hotwell or by-pass feeder. For further details on dosing equipment refer to the equipment information sheets.

**Properties**

Brown aqueous solution of neutralized organic acids and amines.

Specific gravity (20°C)	: 1.05
Flashpoint PM CC	: none
pH (1% solution)	: 10.8

*For detailed information on safety and health, please refer to Material Safety Data Sheet and / or Product label.*

The details of our products are given completely free of undertaking. Since their application lies outside our control we cannot accept any liability for the results.

## BOILER WATER TREATMENT TEST (CARETREAT 3 BOILER & CARETREAT 4 CONDENSATE)

TEST	TEST METHOD	DOSAGE												
<b>P-ALKALINITY</b>  * (Limit: 100-200ppm)	1. Completely fill the plastic measuring tube with boiler water. Pour the contents of the tube into the mixing bottle. 2. Fill the bottle with distilled water up to 15ml 3. Add 1 phenolphthalein indicator powder pillow to the mixing bottle and mix 4. A pink color will appear (if colorless, P-Alkalinity is zero). Add drop by drop sulphuric acid standard solution counting the number of drops, until the solutions is colorless.	<b>** CARETREAT 3 BOILER **</b>  * Initial dosage: 0.75 ltr/ ton  * Over 200ppm p-Alkalinity - decrease dosage by 25% * p-Alkalinity level between 100-200ppm - satisfactory. * Below 100ppm p-Alkalinity - increase dosage by 25%  ** pH: 10-11,5												
	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Drop:</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">3</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">9</td> <td style="padding: 2px;">12</td> </tr> <tr> <td style="padding: 2px;">PPM:</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">50</td> <td style="padding: 2px;">100</td> <td style="padding: 2px;">150</td> <td style="padding: 2px;">200</td> </tr> </table>	Drop:	0	3	6	9	12	PPM:	0	50	100	150	200	
Drop:	0	3	6	9	12									
PPM:	0	50	100	150	200									
<b>CHLORIDE</b>  * (Limit: up to 300ppm)	1. Completely fill the plastic measuring tube with boiler water. Pour the contents of the tube into the mixing bottle. 2. Fill the bottle with distilled water up to 15ml 3. Add 1 Chloride 2 indicator powder pillow and mix well. 4. Add silver nitrate solution drop by drop to the mixing bottle counting the number of drops, until the solution changes from yellow to red/ brown in color  Amount of drops x 30 = Chloride PPM	*Up to 200ppm: satisfactory  * Over 200ppm: blowdown												
<b>CONDENSATE PH</b>  * (Limit: pH 9-9.5)	1. Take condensate water sample, and immerse pH paper. 2. Read the pH value..	<b>** CARETREAT 4 CONDENSATE **</b>  * Initial dosage: 0.2 ltr/ ton * 0.4 ltr/ 24 hours - normal daily dosage												

\*\*\* TEST KIT 1. TEST SET FOR P-ALKALINITY 2. CHLORIDE TEST KIT 3. PH PAPER \*\*\*

