

## THE COMPLETE TREATMENT PROGRAM FOR OPEN RECIRCULATING COOLING WATER SYSTEMS. INHIBITS SCALE, CORROSION AND OTHER DEPOSITS AND DISPERSES SILT.

- Ferrous metal corrosion is minimized by patented organic phosphate technology that utilizes both anionic and cationic inhibition principles.
- Contains a polymer to inhibit and prevent the deposition of calcium orthophosphate.
- Contains a synergistic blend of calcium carbonate scale inhibitors that control scale in high mineral content water.
- Disperses iron oxide and minimizes deposition on heat transfer surfaces.
- Prevents both general and localized pitting of copper and copper alloys.
- Can be drip fed or fed straight from the drum.

### Description

Ty-Ion C70 is an all-organic liquid scale, deposit and corrosion inhibitor for use in open recirculating cooling water systems, evaporative condensers and air wash systems. This treatment program is particularly effective in preventing scale deposits in systems which utilize makeup water with high scaling potentials, usually without supplemental acid feed. It is particularly effective in controlling phosphate-based scales through the application of its patented polymer system. This polymer is also very effective in dispersing iron oxide, silt, mud, clay to facilitate removal through the bleed-off.

Ty-Ion C70 also provides corrosion inhibition that is superior to other non-heavy metal programs and is competitive with many heavy metal programs. It provides excellent protection for both the ferrous and non-ferrous metal components of the systems.

### Packaging

5 gallon pail **7597-05**  
15 gallon pail **7597-P3**

## Water Treatment Products

### Ty-Ion® C70



### Method of Feeding

Once the monthly requirement of Ty-Ion C70 is known, a decision can be made as to the method of feed. It can be fed with the CMS Feed Pump (Part No. 4609-1), or the CMS IV Pump/Monitor System. Or it may be introduced through one of the Nu-Calgon drip feeders. Consult the instructions on the next page.

### Directions for Use

Ty-Ion C70 is a complete scale, corrosion and silt dispersant product. To achieve the full benefit of the product as a scale and corrosion inhibitor, it should be used at a residual of 120-150 ppm (mg/L). This level allows full corrosion protection, and does so at a level where fluctuations in treatment rate can be tolerated. For scale and deposit control only, a treatment residual of 45-50 ppm (mg/L) should be maintained in the water.

Use the following chart to identify maximum allowable cycles, bleed in gpm and the monthly requirement of C70 per 50 tons of capacity. As the tonnage on a given job differs from 50 tons, simply change the bleed and monthly requirement of C70 accordingly (i.e., for 150 tons, triple the bleed and triple the monthly requirement of C70).

Make-up Water Total Alkalinity ppm (mg/L)	Problems	Target Residual Ty-Ion C70	Max Allowable Cycles	Bleed off (gpm)	Gal/Mo. Ty-Ion C70**
0-30	corrosion	150 ppm	10	0.20	1.2
30-60	scale/corrosion	50-150 ppm	8	0.22	0.44-1.32
60-80	scale	50 ppm	7	0.25	0.5
80-100	scale	50 ppm	6	0.30	0.6
100-120	scale	50 ppm	5	0.40	0.8
120-150	scale	50 ppm	4	.050	1.0
150-200	scale	50 ppm	3	.075	1.5
200-240	scale	50 ppm	2.50	1.00	2.0
240-300	scale	50 ppm	2	1.50	3.0
Above 300 ppm	scale	Consult Nu-Calgon for recommendations			

\*\*Monthly requirement in gallons of Ty-Ion C70, per 50 tons of capacity, to achieve listed treatment residual. Some of these numbers are very precise (i.e., 0.44); in these cases, round up to a more convenient figure (i.e., take 0.44 to 0.50). Recommendations were based solely on the makeup water alkalinity. It would be more appropriate whenever possible to also factor in the influence of the makeup water's silica and hardness.

### Feeding Ty-Ion C70 with Monitor System

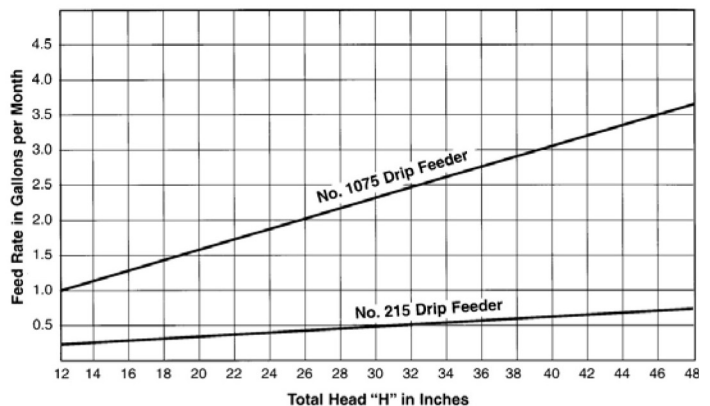
1. Install and wire the CMS IV Monitor according to Instruction Manual.
2. Install the solenoid valve on a bleed line. It is advisable to also install a gate valve to control the rate of flow.
3. Conduct or obtain an analysis of the makeup water serving the system. Of particular interest is the makeup water's alkalinity, silica and CaCO<sub>3</sub> hardness.
4. Based upon the waters analysis, determine the systems maximum cycles of concentration (C). This will be the smaller of: (1) makeup silica value divided into 150, (2) makeup hardness value divided into 1000 or makeup alkalinity divided into 600. This number (C) is the maximum number of times the minerals can be allowed to concentrate in the recirculating water. Under normal conditions, cycles should never be set higher than 10 times.
5. Following the Instruction Manual, set the monitor's conductivity trip point which is the cycles (C) x (makeup conductivity.)
6. Set the gate valve to allow a bleed flow (Bgpm) equal to:

$$B_{gpm} = \frac{0.03}{C-1} \times \text{Tonnage}$$

This is sufficient bleed for full-load conditions. Under normal circumstances, it would be advisable to reduce this bleed slightly, to permit more gradual operation of the monitor.

7. Establish the monthly product requirement of C70 by multiplying the (Bgpm) derived above by C70's appropriate factor which is 0.5. For example, a system using C70 and having a bleed (Bgpm) equal to 2 gpm would require 4 gal/mo of C70 (2.0 x 2). For corrosive waters, you would need to feed C70 at 150 ppm, and this would require you to use a multiplier of "6" times the bleed.
8. Convert the monthly product requirement to a daily requirement, and set the CMS IV Pump/Monitor accordingly. Part of this setting will include the selection of a feed timer mode as offered by the CMS-IV System; follow monitor's instructions.

FEEDING TY-ION C70 WITH DRIP FEEDERS



Read and understand the product's label and Material Safety Data Sheet ("MSDS") for precautionary and first aid information.

The MSDS is available on the Nu-Calgon website at [www.nucalgon.com](http://www.nucalgon.com).

