



TEMPERATURE CONTROLLERS... PORTABLE CHILLERS... CENTRAL CHILLERS... PUMP TANK STATIONS... TOWER SYSTEMS...

SUBJECT: WATER QUALITY

FYI #293 1/26/2011

The following are guidelines specific to Advantage chillers with an internal circulation pump and fluid reservoirs.

Long term performance of your chiller will be adversely affect by poor water conditions. The three major problems water treatment must address are:

SCALING



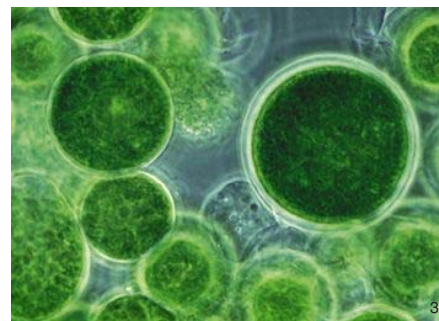
Scaling of the heat transfer surfaces due to minerals can be minimized by proper treatment and filtering of the make-up water. A good quality of water must be used.

CORROSION



Corrosion is usually the result of acidic water (improper PH control). This can be controlled by proper chemical treatment.

ALGAE



Algae (organism growth) can be controlled by the proper use of chemical treatment.

The recommended purity levels are:

- Chlorides..... 25 ppm max
- Sulfates..... 25 ppm max
- Calcium..... 50 ppm max
- Magnesium 50 ppm max
- PH level 8 to 10

Although not mandatory, distilled water would be an excellent choice for filling the system.

Lack of as well as improper water treatment can damage to your equipment. The equipment owner is responsible to prevent equipment damage from foreign material or inadequate water treatment. The services of a competent water treatment specialist should be obtained and his recommendations followed. For small systems, a local swimming pool supply is an excellent source of analysis service and chemical supplies. An alternative is the addition of 20% inhibited propylene glycol. This will inhibit corrosion, algae growth and prevent accidental freeze ups.

Sources For Inhibited Propylene Glycol
Monsanto Chemical 1-800-459-2665
Therminol FS

Dow Chemical 1-800-447-4369
Dowfrost

Small quantities of Dowfrost can be purchased from Advantage Engineering.

FREEZING POINTS FOR WATER/PROPYLENE GLYCOL SOLUTIONS

PERCENTAGE OF GLYCOL* WATER		FREEZE POINT °F °C	
0	100	32	0
10	90	25	-3.9
20	80	10	-12.2
30	70	0	-17.8
40	60	-10	-23.3
50	50	-30	-34.4
60	40	-60	-51.4

*Propylene Glycol
Note: Glycol freeze point must be 25°F below lowest setpoint.

Image Source.
1. <http://conceptosefectivos.com/ceenglishblog/?tag=contamination>
2. <http://www.amtec corrosion.co.uk/copper%20and%20alloys%20guide.html>
3. <http://featured.matternetwork.com/images/matter-featured/algae.jpg>