

# **Closed Loop Water Treatment Lab Results and Recommendations**

**To:  
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## **Initial Lab Result Summary and Recommendations**

### **MD-002 -- 1 each Chill Water Loop, 1 each Hot Water Loop**

#### **Lab Results**

**Chill Loop** - Detected 15% Ethylene glycol in system. No filming corrosion inhibitor is present in the system. Iron residual is extremely high in the system this may be from corrosion and corrosion bi-products in the system.

**Hot Water Loop** – Hot water loop has a low pH, this needs to be buffered about 9.0 to give superior corrosion protection. No filming corrosion inhibitor is present in the system. Iron residual is high in the system this may be from corrosion and corrosion bi-products in the system.

#### **Recommendations (for both loops)**

- Add and maintain sufficient corrosion inhibitor protection. This is highly recommended to slow down increased iron residual in the system and alleviate excessive corrosion on all copper and steel piping.
- Add a cartridge filtration housing and change filters on a quarterly basis. This will extract iron, improve system efficiency and continue to decrease corrosion on a continual basis.
- A chemical bypass feeder exists on each loop in order to properly add corrosion inhibitor.
- Continue to monitor Propylene glycol reserve alkalinity and orthophosphate levels to ensure glycol does not break down.

### **MD-003 -- 1 each Hot Water Loop**

#### **Lab Results**

**Hot Water Loop** – pH is slightly low for superior corrosion protection. No filming corrosion inhibitor is present in the system. Iron residual is high in the system this may be from corrosion and corrosion bi-products in the system.

## **Recommendations**

- Add and maintain sufficient corrosion inhibitor protection. This is highly recommended to slow down increased iron residual in the system and alleviate excessive corrosion on all copper and steel piping.
- Add a cartridge filtration housing and change filters on a quarterly basis. This will extract iron, improve system efficiency and continue to decrease corrosion on a continual basis.
- No chemical bypass feeder exists in order to properly add corrosion inhibitor, this is recommended to be piped in by a licensed plumber if possible.

## **MD-019 -- 1 each Chill Water Loop, 1 each Hot Water Loop**

### **Lab Results**

**Chill Loop** - Detected 16% Propylene glycol in system. No filming corrosion inhibitor is present in the system. Iron residual is extremely high in the system this may be from corrosion and corrosion bi-products in the system. Copper levels are also high and may cause more corrosion, recommend filtration and corrosion inhibition.

**Hot Water Loop** – No filming corrosion inhibitor is present in the system. Iron residual is moderately high in the system this may be from corrosion and corrosion bi-products in the system.

### **Recommendations (for both loops)**

- Add and maintain sufficient corrosion inhibitor protection. This is highly recommended to slow down increased iron and copper residuals in the system and alleviate excessive corrosion on all copper and steel piping.
  - High copper and iron residuals are most often linked directly to corrosion of copper and steel pipe. This is a good indication that aggressive corrosion is occurring in the system.
- Add a cartridge filtration housing and change filters on a quarterly basis. This will extract iron, improve system efficiency and continue to decrease corrosion on a continual basis.
- A chemical bypass feeder exists on each loop in order to properly add corrosion inhibitor to each loop.
- Continue to monitor Propylene glycol reserve alkalinity and orthophosphate levels to ensure glycol does not break down.

## **DE-007 -- 1 each Chill Water Loop, 1 each Hot Water Loop**

### **Lab Results**

**Chill Loop** - Detected 29% Propylene glycol in system. No filming corrosion inhibitor is present in the system. Iron residual is high in the system this may be from corrosion and corrosion bi-products in the system.

**Hot Water Loop** – Detected 27% Propylene glycol in system. No filming corrosion inhibitor is present in the system. Iron residual is slightly high in the system this may be from corrosion and corrosion bi-products in the system. Copper levels are also high and may cause more corrosion, recommend filtration and corrosion inhibition.

### **Recommendations**

- Add and maintain sufficient corrosion inhibitor protection. This is highly recommended to slow down increased iron residuals in the system and alleviate excessive corrosion on all copper and steel piping.
- Add a cartridge filtration housing and change filters on a quarterly basis. This will extract iron and copper, improve system efficiency and continue to decrease corrosion on a continual basis.
- A chemical bypass feeder exists on each loop in order to properly add corrosion inhibitor to each loop.
- Continue to monitor Propylene glycol reserve alkalinity and orthophosphate levels to ensure glycol does not break down.

## **DE-001 -- 1 each Hot Water Loop**

### **Lab Results**

**Hot Water Loop** – pH is low for superior corrosion protection. No filming corrosion inhibitor is present in the system. Iron residual is extremely high in the system this may be from corrosion and corrosion bi-products in the system.

- Add and maintain sufficient corrosion inhibitor protection. This is highly recommended to slow down increased iron residual in the system and alleviate excessive corrosion on all copper and steel piping.
- Add a cartridge filtration housing and change filters on a quarterly basis. This will extract iron, improve system efficiency and continue to decrease corrosion on a continual basis. Recommend a licensed plumber to install this.

- If filtration is not an option, system should be flushed at a minimum in order to lower the iron concentration in the loop.
- No chemical bypass feeder exists in order to properly add corrosion inhibitor, this is recommended to be piped in by a licensed plumber.

#### **DE-002 -- 1 each Hot Water Loop**

##### **Lab Results**

**Hot Water Loop** – pH is slightly low for superior corrosion protection. A small amount of filming corrosion inhibitor is present in the system.

- Add and maintain sufficient corrosion inhibitor protection. This is highly recommended to slow down increased iron residual in the system and alleviate excessive corrosion on all copper and steel piping.
- Add a cartridge filtration housing and change filters on a quarterly basis. This will extract iron, improve system efficiency and continue to decrease corrosion on a continual basis. Recommend a licensed plumber to install this.
- No chemical bypass feeder exists in order to properly add corrosion inhibitor, this is recommended to be piped in by a licensed plumber.