

Closed System Labs Inc.

Ensuring longevity with chemistry.

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Monitoring Glycol Deionization In Closed Loops

Deionization Removes Salts, Minerals And Other Charged Molecules

High concentrations of certain ions increase rates of corrosion, scaling and fouling in closed water systems. Deionization is the process by which those and other ions are exchanged for ones naturally found in water. As system glycol flows through deionizing resin, cations such as sodium, calcium and magnesium are exchanged for hydrogen ions, and anions such as carbonate, nitrite and phosphate are exchanged for hydroxyl ions. Glycol molecules are not ionic, and so are unaffected, but the dye used by the glycol manufacturer may be removed, leaving a colorless glycol solution. Dye may be added back.

Since deionization removes both desirable ions (such as phosphate and borate) and undesirable ions (such as sodium and nitrite), once our lab has verified that the glycol is “clean”, it is imperative that the corrosion inhibitor, oxygen scavenger and pH buffer we will provide be added as soon as possible. **The SYSTEM IS NOT PROTECTED until the prescribed chemicals have been added and circulated.**

Acquiring A Deionization Unit

To our knowledge, Culligan is the only nationwide franchise that leases portable deionization units. The units come with fittings that allow it to be attached to any system side-arm. The on-site reclamation process is complete in a matter of hours, yielding clean glycol and pure water. Culligan delivers the unit and provides fresh resin, as needed. Cost varies with fluid volume and quality, but averages \$300 per 1000 gallons of fluid with a TDS of 2000 ppm. Contact Jay McNab at (612) 328-0549 to find the nearest participating dealer.

Monitoring The Process

Two simple tests must be performed on-site to determine when the deionizing process is complete. The supplies necessary for running the tests are enclosed. **Please send a sample to our lab as soon as on-site results yield < 250 ppm TDS and < 500 ppm nitrite.**

Draw Representative Sample

- Select a valve upstream from side-arm serving deionizing tanks.
- Open and close valve 3 times; allow fluid to run 2 seconds each time.
- Open valve again; allow fluid to run until appearance ceases to change.
- Fill sample cup.

Measure TDS Level

- Turn meter on.
- Dip probe into sample and swirl until reading stabilizes.
- Read TDS concentration (if “x10” appears in display, multiply reading by ten: “246 x10” = 2,460 ppm).
- Turn meter off, rinse probe in tap water and recap.

Measure Nitrite Level

- Remove one test strip and immediately reseal test strip container.
- Dip test end of strip into sample, hold for 1 second, then remove.
- Flick away any excess sample from the strip.
- Allow color to develop for 1 minute before comparing to color chart on test strip container.
- Estimate nitrite concentration.

Send Sample For Verification

- Fill in information requested on sample bottle label.
- Select a valve upstream from side-arm serving deionizing tanks.
- Open and close valve 3 times; allow fluid to run 2 seconds each time.
- Open valve again; allow fluid to run until appearance ceases to change.
- Fill sample bottle *all the way to the top*, cap tightly and close system valve.
- Enclose the sample in a mailer, tie strings securely, and post the same day.