

MIOX—Johnson Matthey

# MIOX Water Quality Guidelines

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## Water Quality Guidelines

Knowing what to look for when sizing a system will help remove hidden surprises after installation. Most of the items on the following list will be below the limits but should be checked nonetheless.

Concentrations or measurements in brine feed water and/or treated water that are less than the stated limits are not anticipated to have the stated effect. These factors can affect the oxidant demand of each individual water system, the oxidant production of the MIOX system, or the life of the cell itself. It is important to use “worst case” measures since water quality can vary from season to season.

|   | MEASURE                 | LIMIT                    | WHAT IS IMPACTED |                     |           |
|---|-------------------------|--------------------------|------------------|---------------------|-----------|
|   |                         |                          | Oxidant Demand   | Chlorine Production | Cell Life |
| <b>Total Hardness **</b>                      | grains/gal<br>(or mg/L) | <1 grain<br>(<17.1 mg/L) |                  | •                   | •         |
| <b>Iron (Fe) **†</b>                          | mg/L                    | <1 mg/L **               | •                |                     | •         |
| <b>Manganese (Mn)</b>                         | µg/L                    | <50 µg/L **              | •                | •                   | •         |
| <b>Fluoride (F)</b>                           | mg/L                    | <1 mg/L                  |                  |                     | •         |
| <b>Silica (SiO<sub>2</sub>)</b>               | mg/L                    | <20 mg/L                 |                  | •                   | •         |
| <b>Bromide</b>                                | mg/L                    | <50 mg/L                 |                  |                     | •         |
| <b>Cyanide</b>                                | mg/L                    | <1 mg/L                  |                  |                     | •         |
| <b>Lead (Pb)</b>                              | mg/L                    | <2 mg/L                  |                  |                     | •         |
| <b>Dissolved Sulfides (as H<sub>2</sub>S)</b> | mg/L                    | ***                      | •                |                     |           |
| <b>Ammonia Nitrogen (NH<sub>3</sub>-N)</b>    | mg/L                    | ***                      | •                |                     |           |
| <b>Organic Nitrogen (Org-N)</b>               | mg/L                    | ***                      | •                |                     |           |
| <b>Total Organic Carbon (TOC)</b>             | mg/L                    | ***                      | •                |                     |           |
| <b>pH</b>                                     | -                       | 5-9                      |                  | •                   | •         |
| <b>Water Temperature Range ^</b>              | °F (or °C)              | 55-80 °F<br>(12-27°C)    |                  | •                   | •         |

\*\*Caution: water softeners will remove these components up to a limit. See references to maximum ferrous iron and manganese in water softener documentation. Total hardness affects cell life only in that higher hardness requires acid washing to remove carbonate deposits from the cell. Use of water softened to < 1 grain hardness should not require acid washing of the cell.

\*\*\* Oxidant demand is affected by any level of H<sub>2</sub>S, ammonia or organic nitrogen, or TOC.

† Iron may deposit Fe(OH)<sub>3</sub> on the anode, causing an electrical “blind”, which would increase the brine proportion pump signal voltage (brine proportion pump speed) needed for the system to reach the operating window. Chlorine production would remain the same, but salt conversion efficiency will decrease. The same effect is true of silica on the cathode.

^ The system will operate with water temperatures outside this range; however, there will be a performance change. Follow the system specifications for absolute limits.