

Biological fouling of reverse osmosis membranes is one of the most challenging issues faced by operators of membrane separation systems. This is primarily due to the fact that effective biocides must be non-oxidizing in order to avoid permanent damage of the polyamide RO membrane layer.

The Avista biocides are broad-spectrum formulations for use against microbiological contaminants including bacteria, fungi, and algae organisms. They are applied via intermittent or continuous injection or periodic addition of the biocide into the CIP system. Our technical personnel can provide assistance in selecting the most appropriate product and dosing regime.

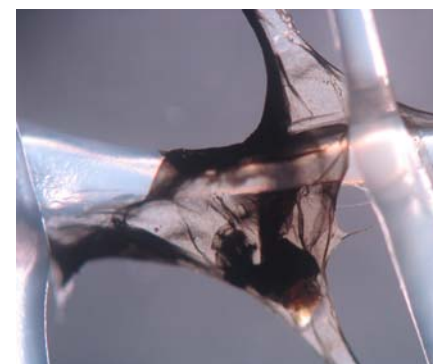
Avista provides two primary biocides for use in reverse osmosis systems, RoCide® DB20 and RoCide® IS2. Both formulations are non-oxidizing and registered by the EPA specifically for use in membrane systems. They are compatible with both polyamide and cellulose acetate membranes. They have outstanding environmental properties, degrading rapidly and naturally. This benefit has made them the chemicals of choice, particularly in systems operating under strict environmental and discharge regulations. These products though are not certified for on-line use in systems producing potable water.

Shock Treatment and RO Cleaning Applications:

RoCide® DB20 and DB5 are used as either an intermittent injection into the feedstream for "shock treatment" control or added as a 'pre-treat' solution to the CIP (clean-in-place) system.

Continuous Injection Biocide:

RoCide® IS2 is designed for continuous injection into the RO feed stream to provide constant biological control. However, it can also be used as a preservative for short or long term membrane storage or dosed intermittently as needed.



| Product Name | Effective Against | | | Method of Use | | | Membrane Compatible | EPA Registered |
|--------------|-------------------|-------|-------|---------------|-------------------|-----------------|---------------------|----------------|
| | Bacteria | Fungi | Algae | CIP | Continuous Dosing | Shock Treatment | | |
| RoCide® DB5 | X | X | X | X | | X | X | |
| RoCide® DB20 | X | X | X | X | | X | X | X |
| RoCide® IS2 | X | X | X | | X | | X | X |

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