

# AVISTA™ MEMBRANE CHEMICALS

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## UNITED STATES AND CANADA

All Avista membrane chemicals are fully supported by Avista services and programs, including:

- Avista Advisor™Ci software
- Avista Black Box
- Avista Membrane Autopsy
- Avista OSCAR
- Avista Center of Excellence (CoE)



This Avista membrane chemical overview provides customers with information on **Avista's Global Product Line** (GPL), highlighting products available globally, as well as in the United States and Canada.

You will also find information on **Regional Products** formulated to meet local challenges and regulatory restrictions. Please check with your local Avista chemical representative for product availability.

All products are color coded for easy identification: ■ GLOBAL PRODUCTS ■ REGIONAL PRODUCTS

## INTRODUCTION

Avista™ is a global brand of Kurita focused on membrane treatment solutions for reverse osmosis (RO) systems, microfiltration/ultrafiltration (MF/UF), and multimedia filtration (MMF).

Kurita established the Avista Center of Excellence (CoE), a leadership team located in the United States, Japan, Malaysia, and the United Kingdom to support each region's technical centers and global sales network. The Avista CoE evaluated membrane formulations from both Kurita and Avista Technologies for performance, cost, and dose.

Based on this evaluation, a global line of membrane treatment chemicals was selected to be manufactured worldwide, covering a full spectrum of foulants and scales. This global line of Avista membrane chemicals includes Vitec™ antiscalants, RoClean™ membrane cleaners, Kuriverter™ IK biocides, Kuriverter™ AC chlorine scavengers, and RoQuest™ coagulants.

A regional line of Avista chemicals is available, including AvistaClean™ cleaners, RoCide™ biocides, and AntiChlor chlorine scavengers, among others.

All Avista membrane chemicals are compatibility tested in accordance with key protocols accepted by the industry's leading manufacturers. Our globally expanded technical support and laboratory capabilities include Avista™ Advisor™Ci chemical dosing software, the Avista™ Black Box monitoring device, the Avista™ Membrane Autopsy with Chromatic Elemental Imaging<sup>SM</sup> for both reverse osmosis membranes and ultrafiltration/microfiltration membranes, and Avista™ OSCAR off-site cleaning and restoration.

Avista membrane treatment solutions help to determine the right membrane chemicals to achieve peak system performance and operator confidence.

# VITEC™ ANTISCALANTS

The Avista™ Vitec™ antiscalant line inhibits scale while dispersing colloidal particles. The inhibition and dispersant properties of Vitec products help extend system run times, reduce cleaning frequency, and increase the productive life of RO elements. Vitec antiscalants are highly effective at low dose rates. All formulations are NSF approved.

## Vitec Antiscalant Capabilities

	WIDE SPECTRUM	CARBONATE SCALE	SULFATE SCALE	SILICA SCALE	ALUMINUM SILICATES	PHOSPHATE SCALE	FLUORIDE SCALE	SEAWATER	HIGH METALS IN FEED	SULFATE AND SILICA SCALE	MUNICIPAL WATER	AGRICULTURE	COAGULANT COMPATIBLE
VITEC 3000	●	●	▲					■	■		▲		✓
VITEC 4000				●	●	●	●		●				
VITEC 7000		▲	●				■		▲				✓
VITEC 1400	■	■		▲				■			●		✓
VITEC 1500				●	●	■							
VITEC 1600	■			▲	■				▲		■		
VITEC 3025	▲											●	✓
VITEC 5100	■	▲						●	●		●		✓
VITEC 7400			●	●						●			
*VITEC 8200	■												

▲ GOOD   ■ BETTER   ● OPTIMAL   ✓ YES

\* PHOSPHORUS FREE

ANTISCALANT

### Vitec 3000

- Wide spectrum antiscalant.
- Efficient for semiconductor, power, food and beverage, and oil and gas applications.
- Contains high and low molecular weight components that are proven to handle a variety of applications.
- Compatible with pretreatment coagulants.

ANTISCALANT

### Vitec 4000

- Effective antiscalant to inhibit silica scale, aluminum silicate scaling, and calcium phosphate.
- Effective on waters containing high metals such as iron, aluminum, or manganese.
- Used in a wide variety of applications including municipal wastewater, semiconductor, beverage, and industrial applications.
- Prevents silica scale up to 2.8 times saturation.
- Good for high recovery applications and brine concentrators where silica is the limiting factor.

ANTISCALANT

### Vitec 7000

- Controls high levels of sulfate.
- Efficient product for well water, mining wastewater, brine concentrator, and recovery RO applications.
- Prevents calcium sulfate (CaSO<sub>4</sub>) scale precipitation, allowing up to 6 times saturation.
- Compatible with pretreatment coagulants.

ANTISCALANT

### Vitec 1400

- Wide spectrum antiscalant.
- Efficient product for municipal and well waters with low metals but elevated silica scale potential.
- Compatible with pretreatment coagulants.
- Prevents silica scale up to 2.0 times saturation.

ANTISCALANT

### Vitec 1500

- Highly concentrated antiscalant that can be used at very low doses to prevent silica scale, aluminum silicates and calcium phosphate.
- Good for wastewater, and well water high in silica.
- Prevents silica scale up to 2.8 times saturation.

ANTISCALANT

### Vitec 1600

- Wide spectrum antiscalant.
- Good for moderate silica and aluminum silicate scaling.
- Prevents silica scale up to 2.0 times saturation.
- Effective for municipal applications with elevated metals in the feedwater.

ANTISCALANT

## Vitec 3025

- Full spectrum antiscalant for high organic and silt waters that have a lower potential for carbonate, sulfate, or silica scale.
- Very effective in agriculture and farming applications.
- Compatible with pretreatment coagulants.

ANTISCALANT

## Vitec 5100

- Wide spectrum antiscalant.
- Effective antiscalant for seawater and municipal applications.
- Very effective in high iron and organic waters.
- Compatible with pretreatment coagulants.

ANTISCALANT

## Vitec 7400

- Unique antiscalant for systems with high silica and sulfate challenges.
- Used successfully in mining, wastewater applications, and high recovery systems.
- Prevents calcium sulfate (CaSO<sub>4</sub>) scale precipitation, allowing up to 6 times saturation, and silica up to 2.8 times saturation.

ANTISCALANT

## Vitec 8200

- Phosphonate-free all-polymer blend antiscalant for systems with brine disposal limitations.
- Effective on surface and well waters with high organics.

## ROCLEAN™ CLEANERS

Avista™ RoClean™ cleaners provide efficient and cost-effective removal of many different foulants and scales. All products are low foaming and membrane compatible. These products come in a variety of pH ranges, and the line contains a liquid and powder product for most foulants and scales. RoClean cleaners are highly buffered and contain a unique blend of ingredients to wet and break up the foulant, suspend the foulant in solution, and disperse the foulant to prevent redeposition. Most formulations are NSF approved.

### High pH Cleaners

CLEANER | HIGH PH | POWDER

## RoClean P111

- Efficient in the removal of biological fouling, organic fouling from humic and fulvic acid, and colloidal fouling.
- Contains chelating agents to remove residual metals on the membrane while removing organics.

CLEANER | HIGH PH | POWDER

## RoClean P112

- Efficient in the removal of silica scale, aluminum silicate scale, and stubborn organics.
- Unique formulation that eliminates the need to clean with hydrofluoric acid, and ammonium bifluoride solutions, which are potentially hazardous.

CLEANER | HIGH PH | POWDER

## RoClean P192

- Superior results in the removal of organics, silica scale, aluminum silicate clay, and carbon fines that can cause high differential pressure and/or low flow.
- Successfully applied to systems operating on seawater, brackish water, and wastewater.

CLEANER | HIGH PH | LIQUID

## RoClean L211

- Efficient in the removal of mild biological fouling.
- Most commonly used high pH cleaner for maintenance cleans.

CLEANER | HIGH PH | LIQUID

## RoClean L212

- Efficient in the removal of humic and fulvic acids, high colloidal fouling, and aluminum silicate scale.
- Unique formulation that reduces differential pressure by removing foulant from feed spacer material.
- Phosphate and EDTA free.

CLEANER | HIGH PH | LIQUID

## RoClean L811

- Efficient in the removal of sulfate scale, carbonate scale, phosphate scale, and calcium complexes.
- Unique formulation that is the preferred cleaner to remove sulfate scale.

CLEANER | HIGH PH | LIQUID

## RoClean L011

- Efficient in the removal of oil and grease that may be found in RO systems used in wastewater reuse applications.

CLEANER | HIGH PH | POWDER

## RoClean P611

- Formulated to dissolve organic foulants such as humic acids, fatty acids, siloxane compounds, fungicides, pesticides, and pharmaceutical compounds often found in wastewater and leachate applications.
- Phosphate and EDTA free.

### Low pH Cleaners

CLEANER | LOW PH | POWDER

## RoClean P303

- Efficient in the removal of severe calcium carbonate scale, calcium phosphate scale, and moderate metal fouling.
- Synergy between chelating agents and low pH removes metals from the membrane.

CLEANER | LOW PH | POWDER

## RoClean P903

- Efficient in the removal of significant metal fouling and phosphate scale.
- Unique formulation that includes a non-odorous reducing agent to remove high concentrations of iron and manganese.
- EDTA free.

CLEANER | LOW PH | LIQUID

## RoClean L403

- Efficient in the removal of mild metal fouling, calcium carbonate scale, and calcium phosphate scale.
- Most commonly used low pH cleaner for maintenance cleans.

### RoClean Cleaner Capabilities

	METALS	COLLOIDAL MATERIAL	NON-BIOLOGICAL ORGANICS	BIOLOGICAL ORGANICS	SILICA SCALE	ALUMINUM SILICATES	CARBONATE SCALE	SULFATE SCALE	PHOSPHATE SCALE	CALCIUM COMPLEXES	OIL/GREASE	LEACHATE/INDUSTRIAL WASTEWATER APPLICATIONS
ROCLEAN P111		■	■	●								
ROCLEAN P112		■	●	■	●	●						
ROCLEAN P192		●		●	●	●						
ROCLEAN L211		●	●	▲								
*†ROCLEAN L212		●	●	■	■	■						
ROCLEAN L811							■	●	●	●		
ROCLEAN P303	■						●		▲	■		
†ROCLEAN P903	●						▲		●	●		
ROCLEAN L403	▲						●		▲	■		
ROCLEAN L011											●	●
*†ROCLEAN P611		■		●								●

▲ MILD ■ MODERATE ● SEVERE

\* PHOSPHORUS FREE † EDTA FREE

	LOW pH	HIGH pH	LIQUID	POWDER
ROCLEAN P111		●		●
ROCLEAN P112		●		●
ROCLEAN P192		●		●
ROCLEAN L211		●	●	
ROCLEAN L212		●	●	
ROCLEAN L811		●	●	
ROCLEAN P303	●			●
ROCLEAN P903	●			●
ROCLEAN L403	●		●	
ROCLEAN L011		●	●	
ROCLEAN P611		●		●

## ROCIDETM BIOCIDES AND SLIME CONTROL AGENTS

Avista™ RoCide™ biocides and slime control agents compatible with polyamide membranes. Please contact your sales representative for the product offered in your area.

### SLIME CONTROL AGENT

#### RoCide MD100

RoCide MD100 is a liquid slime control agent based on stabilized halogen that inhibits the formation of biofilm caused by bacteria and fungus.

- Deeply penetrates existing biofilm layers and slowly removes it from the membrane system.
- Online removal of biofilm eliminates shutdown time required for cleaning.
- For continuous use only.
- Can be used through entire system to eliminate need for chlorine or bisulfite.
- Compatible with polyamide RO membranes.
- Does not contain Total Organic Carbon (TOC) like organic biocides.
- EPA registered for use in RO and UF/MF systems.
- Product is not suitable for polypiperzine composite nanofiltration membranes.

### BIOCIDES

#### DBNPA

DBNPA is a broad spectrum biocide used to control bacteria, yeast, and algae in water treatment, pulp and paper, reverse osmosis (RO), oil and gas, and metalworking fluid applications.

#### RoCide DB20

- Concentrated, fast-acting, non-oxidizing liquid biocide that provides instant antimicrobial activity.
- Used intermittently as "shock treatment" before cleaning to kill microorganisms for easier removal.
- Degrades rapidly and naturally to comply with strict environmental discharge regulations.
- Compatible with polyamide and cellulose acetate membranes.
- Can be used with other applicable Avista™ chemicals.

### BIOCIDES

#### Isothiazolinone

Isothiazolinone is an antimicrobial preservative that is commonly used to control bacteria, fungi, and algae.

#### RoCide IS2

- Stable biocide for continuous or intermittent injection that kills a wide range of microorganisms.
- Certified by the U.S. Environmental Protection Agency for use in non-potable RO systems.
- Degrades rapidly and naturally to comply with strict environmental discharge regulations.
- Compatible with polyamide and cellulose acetate membranes.
- Can be used with other applicable Avista™ chemicals.
- Can be used on waters with high sulfites/bisulfites.
- Can be used to preserve polyamide membranes.

## AVISTACLEAN™ CLEANERS

The Avista™ AvistaClean™ line is formulated to remove common foulants found on the surfaces and interiors of microfiltration (MF) and ultrafiltration (UF) membranes.

### CLEANER | HIGH PH | POWDER

#### AvistaClean P1200

- Synergistic blend formulated to remove organic and particulate foulants from chlorine tolerant surfaces.

### CLEANER | LOW PH | LIQUID

#### AvistaClean L0381

- Formulated specifically to remove heavy metal fouling such as iron, manganese, and aluminum as well as organic-metal complexes.
- EDTA free.

### CLEANER | LOW PH | POWDER

#### AvistaClean P0327

- Fast acting and designed to remove iron, manganese, aluminum, and metal-organic complexes while also dispersing colloidal material.
- EDTA free.

### CLEANER | HIGH PH | LIQUID

#### AvistaClean L1221

- EDTA and phosphate free cleaner designed to remove humic and fulvic acids, moderate aluminum silicate clay, colloidal silica, and bioslime.

### CLEANER | HIGH PH | LIQUID

#### AvistaClean L1181

- Formulated to remove severe sulfate, phosphate, and moderate carbonate scale, and calcium complexes.

### CLEANER | HIGH PH | POWDER

#### AvistaClean P1219

- Multicomponent cleaner formulated to remove stubborn biological fouling including polysaccharide layers, aluminum silicate clays, colloidal silica, silica complexes, and inert colloidal material.

## AvistaClean Cleaner Capabilities

	METALS	COLLOIDAL MATERIAL	ORGANICS	SILICA COMPLEXES	CARBONATE SCALE	SULFATE SCALE	CALCIUM COMPLEXES
AVISTACLEAN P1200		▲	●				
<sup>†</sup> AVISTACLEAN L0381	■				■		▲
<sup>†</sup> AVISTACLEAN P0327	●				●		■
<sup>*†</sup> AVISTACLEAN L1221		■	■	■			
AVISTACLEAN L1181	▲				■	●	●
AVISTACLEAN P1219		●	●	●			

▲ MILD   ■ MODERATE   ● SEVERE

\* PHOSPHORUS FREE   † EDTA FREE

## CHLORINE SCAVENGERS

CHLORINE SCAVENGER

### Kuriverter AC-427

The Kuriverter™ AC Chlorine Scavenger line offers extremely economical options for chlorine removal compared to other methods.

- Efficient product to remove free and combined chlorine from RO feedwaters.
- Unique odorless formulation that eliminates the pungent off-gassing of regular bisulfite solutions.
- Certified for use in systems producing potable water.

CHLORINE SCAVENGER

### AntiChlor 30

The AntiChlor Chlorine Scavenger line offers extremely economical options for chlorine removal.

- Inject into RO feedwaters to protect polyamide membranes from permanent damage caused by free and combined chlorine.
- Membrane preservative for long-term storage.

# Multimedia Filtration

## ROQUEST™ COAGULANTS

Avista™ RoQuest™ coagulants are membrane compatible and improve the efficiency of MMF equipment. Studies show that MMF equipment without coagulant addition will only remove approximately 35% – 50% of particulates. A nominal dosage of RoQuest coagulant may remove over 97% of particulates on MMF equipment.

### COAGULANT

#### RoQuest 3000

- Unique formulation that is a proprietary blend of organic polymers.
- Injected into the feedstream of multimedia or sand filters, where it enhances filter performance by reducing turbidity and color.
- Produces an improved filtrate that reduces RO and nanofiltration (NF) membrane fouling downstream, decreasing cleaning frequencies, and increasing system run times.
- Enhances filter performance by reducing turbidity and color when injected into the feedstream of multimedia or sand filters.
- Compatible with polyamide RO membranes and many Avista antiscalants.

### COAGULANT

#### RoQuest 4000

- Organic polymer and ferric sulfate blend used to enhance the removal of a broad spectrum of silt, organics, and colloids in multimedia filters.
- Formulated for waters with high organics and turbidities higher than 2.0 NTU.
- Compatible with polyamide RO membranes and many Avista antiscalants.

### COAGULANT

#### RoQuest 6000

- Blend of organic coagulants and ferric sulfate used to reduce turbidity and remove humic, and fulvic acids in multimedia filters.
- Formulated for waters with high color and turbidities higher than 2.0 NTU.
- Compatible with polyamide RO membranes and many Avista antiscalants.

### GLOBAL HEADQUARTERS

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