

RO

MF/UF

MMF

PRODUCTS & SERVICES OVERVIEW

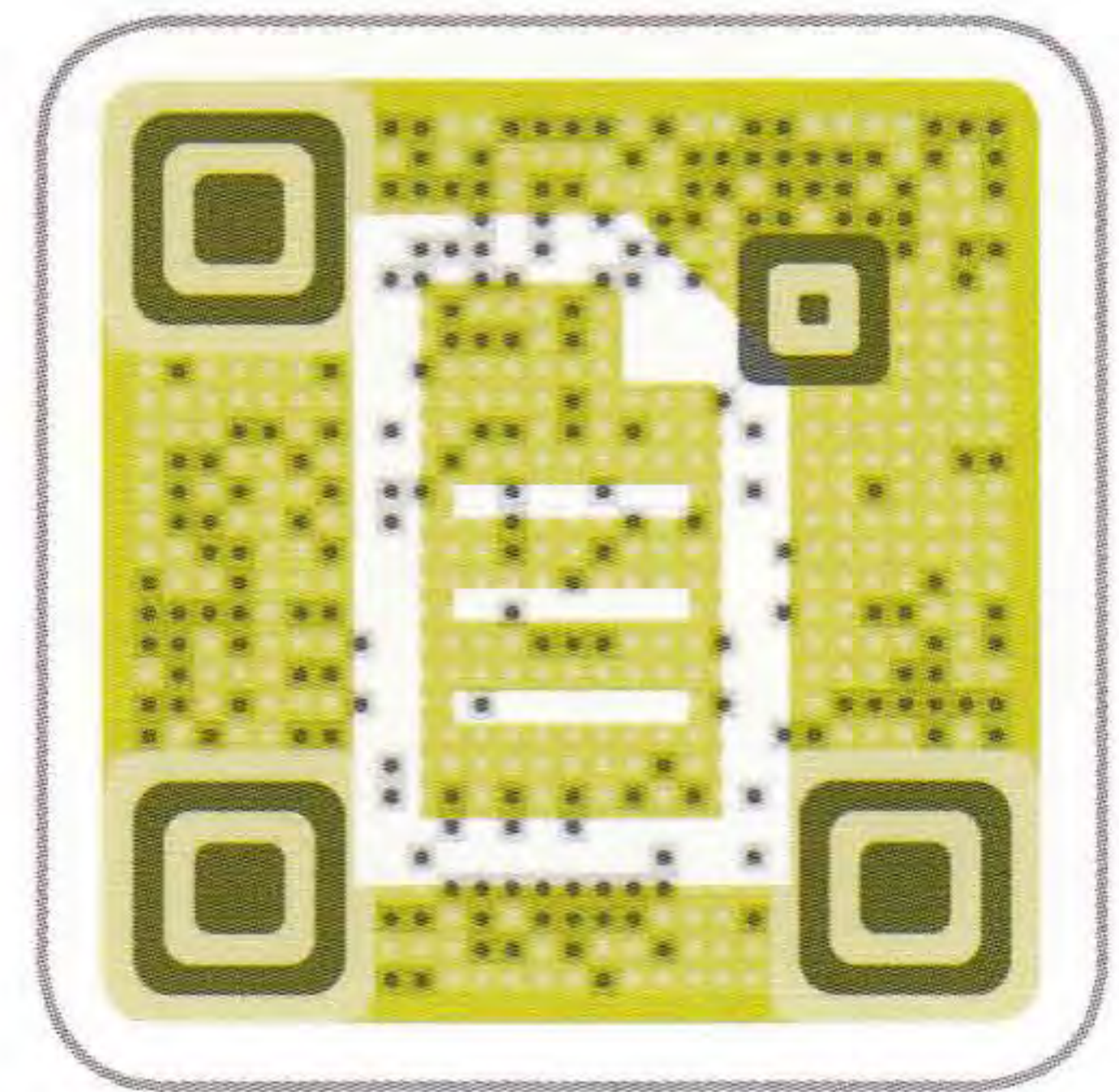


CREATIVE CHEMISTRY. SMART SOLUTIONS.

■ REVERSE OSMOSIS OPTIMIZE YOUR RO SYSTEM

Our integrated approach using advanced diagnostics, expert process support, and high quality product solutions keeps your system operating at peak performance. Avista® RO care products include broad spectrum and targeted antiscalants, cleaners, biocides, and chlorine scavengers. Our chemicals are globally approved and tested for compatibility with membranes from all major manufacturers. All customers have access to our proprietary chemical dosing software, Advisor™Ci, which uses Complex Ion (Ci) Intelligence to predict scale forming compounds in reverse osmosis systems.

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■ MICROFILTRATION/ULTRAFILTRATION INCREASE PARTICLE REMOVAL

Membranes in microfiltration/ultrafiltration (MF/UF) systems require more frequent cleaning than those in reverse osmosis (RO) systems. Generic chemicals are commonly used to mitigate cleaning costs, however when generic cleaners no longer restore a membrane's performance, their impact on operational cost efficiency is lost. This led Avista to develop AvistaClean® MF products, a line of effective cleaners specifically designed to restore MF/UF membrane performance.

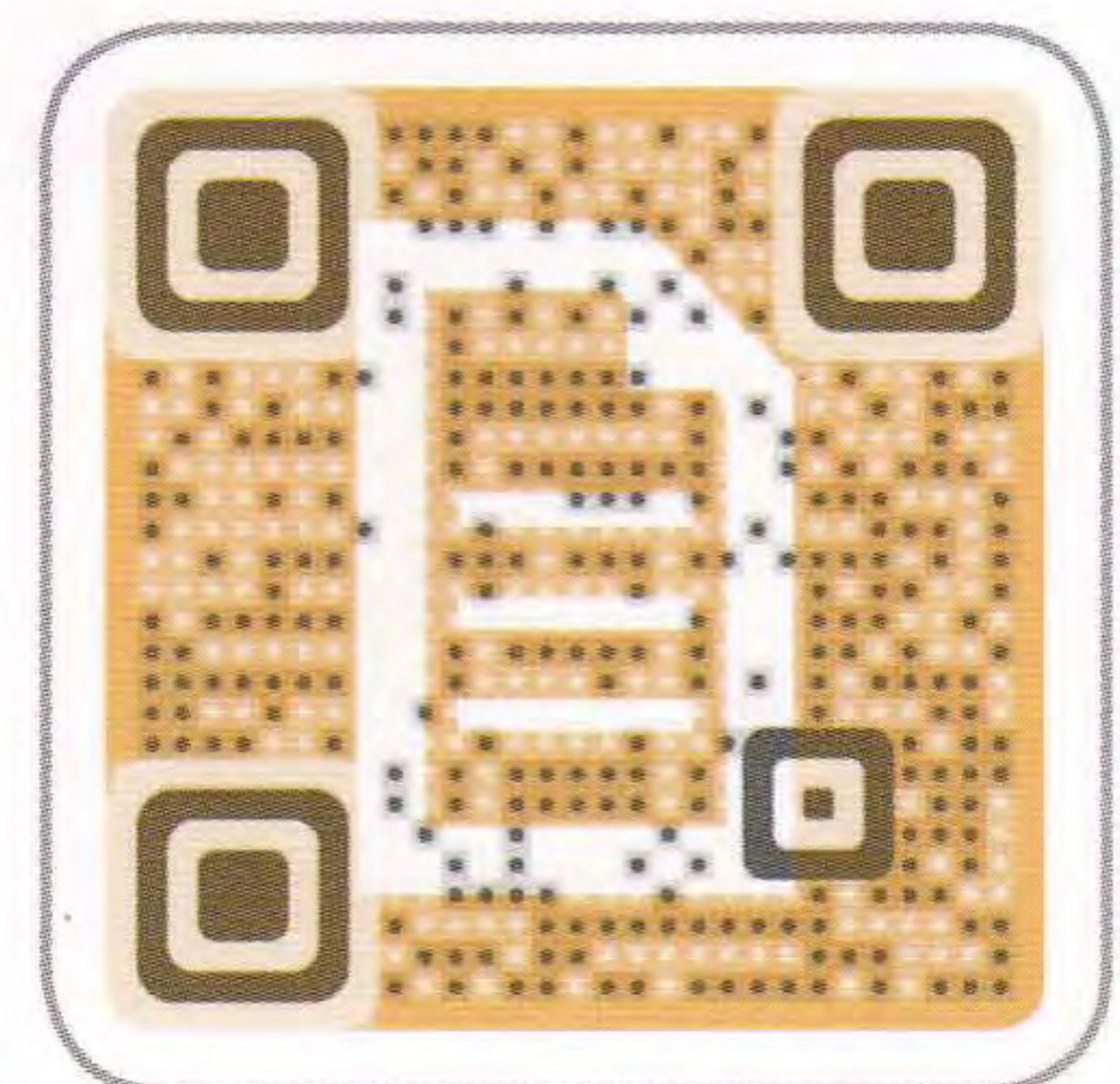
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■ MULTIMEDIA FILTRATION OPERATIONAL COST EFFICIENCY

Colloids and silt fouling are major causes of performance loss in membrane systems, which is why many system designs include upstream Multimedia Filtration (MMF) to target particle removal. Better quality filtrate can reduce cleaning frequencies and increase system run times. Studies prove that MMF equipment without coagulant addition will remove approximately 35-50% of particulates. A nominal dosage of a RoQuest® coagulant may allow MMF equipment to remove over 97% of particulates. In addition to MMF products, we also offer lab services, analytical tools, field services and chemical application recommendations to keep MMF equipment in top form.

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REVERSE OSMOSIS

Vitec® | ANTISCALANTS

Our Vitec antiscalants inhibit scale while also dispersing colloidal particles, helping to extend system run times, reduce cleaning frequency and increase the productive life of RO elements. Our high performing Green Chemicals line is specially formulated for sites with discharge restrictions.

TARGETED SPECTRUM		BROAD SPECTRUM			ENVIRONMENTALLY SENSITIVE
Vitec 1100	Vitec 1400	Vitec 3000	Vitec 5000	Vitec 7000	Vitec 1000
Vitec 1200	Vitec 1500	Vitec 4000	Vitec 5100		Vitec 8200 <i>Green</i>

All products are approved for use in potable water systems

AvistaClean® and RoClean | CLEANERS

AvistaClean and RoClean formulations are proprietary, membrane compatible cleaners that come in a variety of pH ranges available as liquids or powders. Many are certified for use in potable water systems and are powerful against organic and inorganic foulants. Several cleaners are classified as Green Chemicals to help Avista customers meet strict environmental discharge limits.

LIQUID		POWDER	
AvistaClean L011	RoClean L403	AvistaClean P312	RoClean P911
RoClean L211	RoClean L404 <i>Green</i>	AvistaClean P611 <i>Green</i>	RoClean P303
RoClean L212	RoClean L607	RoClean P111	RoClean P703
RoClean L811		RoClean P112	

RoCide® | BIOCIDES

RoCide is a non-oxidizing, membrane compatible biocide to reduce biological fouling in membrane systems and combat contaminants such as bacteria, fungi and algae. Our biocides may be applied intermittently, via continuous injection or as a periodic addition to your clean-in-place (CIP) system.

RoCide DB5	RoCide DB20	RoCide IS2
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AntiChlor | CHLORINE SCAVENGER

AntiChlor liquid is an extremely economical option for chlorine removal compared to other methods. It's offered in two formulations and both are certified for use in systems producing potable water.

AntiChlor 30	AntiChlor 427
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On-site Supervision

Our highly qualified technical experts are available to provide on-site supervision during membrane cleaning, chemical start-up and other related tasks.



Off-site Application and Lab Services

Avista offers a complete range of laboratory support services to enhance membrane performance, increase efficiency and develop new formulations for unique applications.

- Commissioning Support
- Chemical Dosing
- Chemical Application Recommendations
- Black Box System Troubleshooting Tool
- Pilot Study Support
- System Audit and Training
- CIP Cleaning of Membranes

- Element Autopsy
- Chromatic Elemental Imaging (CEI)
- Laboratory Cleaning Study
- Off-site Cleaning and Restoration (OSCAR)
- Water Analysis
- Filtration Study

Analytical Tools

Avista customers receive the highest level of technical support tools to help ensure consistent and reliable system performance.

Advisor™ Ci Chemical Dosing Software	NormRO Normalization Software
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MICROFILTRATION/ULTRAFILTRATION



AvistaClean® MF | CLEANERS

Avista MF/UF specialty formulations may be applied in place of generic cleaners or as a periodic recovery cleaner between cleanings with generics.

AvistaClean MF 1000

AvistaClean MF 1000A

AvistaClean MF 3000



On-Site Application Services

Our MF/UF Chemical Application Recommendations can determine whether an AvistaClean MF product is more effective as a replacement for a generic cleaner or as a recovery cleaner between generic cleanings.

Chemical Application Recommendations
System Audit and Training



Off-site Application and Lab Services

Avista® offers a complete range of laboratory support services to enhance membrane performance, increase efficiency and develop new formulations for unique applications.

Module Autopsy
Chromatic Elemental Imaging (CEI)
MF/UF Cleaning Study

MULTIMEDIA FILTRATION



RoQuest® | COAGULANTS

RoQuest membrane compatible coagulants improve the efficiency of MMF equipment by increasing particulate removal resulting in a higher quality feedwater to downstream membrane systems.

RoQuest 3000

RoQuest 4000

RoQuest 6000

RoQuest FS



On-Site Application Services

Avista application experts provide on-site services for MMF systems including system audits, training on procedures, chemical dosing and application support.

Pilot Study
System Optimization Audit and Training
Chemical Application Recommendations



Off-site Application and Lab Services

Avista® offers a complete range of laboratory support services to enhance MMF performance, increase efficiency and develop new formulations for unique applications.

Lab Filtration Study
Water Analysis



Analytical Tools

Avista customers receive the highest level of technical support to help ensure consistent and reliable system performance.

Advisor™Ci Chemical Dosing Software



To download product data sheets,
visit www.avistatech.com

Check the product data sheet or consult your local distributor for regional product availability



Creative Chemistry. Smart Solutions.

OPTIMIZE YOUR SYSTEM

As a global company, Avista® Technologies understands the wide variety of reverse osmosis (RO) systems in operation today. We appreciate the challenges posed by unique feedwater sources, regulatory compliance and changing technology, and we're here to help you meet those challenges.

At Avista, we're not just product experts, we're process experts. This unbeatable combination enables us to optimize your RO system using existing or customized products to maximize productivity of new systems or improve the performance and extend membrane life in existing systems. Our solution oriented approach can keep your system operating at peak performance.





Creative Chemistry. Smart Solutions.



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TECHNICAL SUPPORT

Our experienced in-house technical support team is available to provide remote troubleshooting assistance and chemical dosing recommendations.

Visit www.avistatech.com/support



ONLINE RESOURCES

The online resource center includes practical tools for troubleshooting everyday challenges and chemical application best practices.

Visit www.avistatech.com/online-resources