

**AXEON Water Technologies** features a broad range of membrane chemicals formulated to treat a variety of water conditions for commercial and industrial applications. **AXEON Membrane Chemicals** are formulated to be compatible with all brands and types of RO, NF, UF membranes and provide antiscaling and antifouling capabilities while being certified under ANSI/NSF standard 60 for drinking water production. **AXEON Cleaners** and **Support Chemicals** are the ideal choice for prolonging the life of membranes and obtaining a higher level of performance from the elements within the membrane system.



### Antiscalants: S-100, S-200

**AXEON Antiscalants** are a unique polymeric system designed to control a vast range of RO/UF membrane foulants, which maximizes system performance and minimizes membrane cleaning requirements. **AXEON Antiscalants** are environmentally safe and resistant to biological growth, which ensures product integrity and optimum performance.

- Control of scale at up to 100 times saturation values or higher
- A lower cost and maintenance alternative to water softeners
- High system recovery and extended membrane life
- NSF/FDA approved

### Antifoulants: F-25

**AXEON Antifoulants** are specially formulated for feedwaters with high potential for fouling by colloidal particles, organic matter and silt. These **Antifoulants** are designed for sea and brackish surface waters that contain high levels of organic matter.

- Designed to reduce the amount of bacteria and fouling within the membranes
- Can be used as a pre treatment option to control membrane fouling
- Environmentally friendly and food grade

### Membrane Cleaners: C-10, C-20

**AXEON** features a robust offering of membrane cleaners designed to safely and effectively remove membrane foulants from thin film composite or cellulose acetate membranes.

- Ideal for prolonging the life of membranes and obtaining a higher level of performance from the elements
- Formulated to counteract a variety of foulants
- Substantial cost savings on replacement membranes

### Support Chemicals: M-100

**AXEON** also provides a variety of support chemicals to further preserve and protect the life of a system or membrane. Preservative and storage chemicals are ideal for preventing microbiological growth and freezing within membrane elements during storage.

- Protects against microbiological growth
- Protects against freezing
- Non-hazardous, environmentally safe

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# AXEON

## S-100 Antiscalant

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**AXEON S-100 Antiscalant** is a highly effective antiscalant, specially formulated for feedwaters with the highest levels of metal oxides, silica and scale-forming minerals. It is effective over a wide range of concentrations, and does not flocculate dissolved polymers such as residual coagulants, iron or aluminum rich silica. Use of this product is recommended for reducing the operating and capital costs of reverse osmosis (RO), nanofiltration (NF) and ultrafiltration (UF) systems. A special utility is in its application as a substitute for pretreatment with ion exchange beds.



### Product Benefits

- Effective in retarding polymerization and precipitation of silica
- Effectively controls inorganic scales over a large concentration range.
- Certified under ANSI/NSF Standard 60 for drinking water production.
- Compatible with major manufacturer's RO, NF, and UF membranes.
- Does not flocculate dissolved iron/aluminum oxide/silica complexes.
- Effective in controlling calcium carbonate and calcium sulfate scales.
- Effective in feedwaters with pH range 5.0 – 10.0
- Efficacious for controlling aluminum, iron and heavy metal salts.

### Technical Specifications

#### Liquid\*

|                   |                  |
|-------------------|------------------|
| Appearance:       | Clear, colorless |
| pH:               | 1.5 ± 0.8        |
| Specific Gravity: | 1.08 ± 0.05      |

#### Powder\*

|                   |           |
|-------------------|-----------|
| Appearance:       | Colorless |
| pH (1% in water): | 11 – 12   |

#### Dosing Recommendations

**AXEON S-100 Antiscalant** should be injected into the feed-stream prior to the static mixer and cartridge filter. Effective pH range is 5 – 10. If frozen, may be thawed and mixed before use. Stability is excellent, but best used within 12 months.

#### Dosing Recommendations

In the useful dosage range of 1 – 15 mg/L (neat), **S-100** controls a wide range of inorganic scales at up to 100 x saturation values or higher is possible. By monitoring the concentrate stream and trend charts, optimal dosage can be achieved for the control of scales including that from calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate, iron hydroxide, aluminum hydroxide and silica.

#### Packaging

|                       |                 |
|-----------------------|-----------------|
| Liquid:               | Pails and drums |
| Powder (concentrate): | Totes           |

\* MSDS available upon request.

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**AXEON S-200 Antiscalant** is a highly effective antiscalant, specially formulated for feedwater with the highest levels of metal oxides, silica and scale-forming minerals. It is effective over a wide range of concentrations, and does not flocculate dissolved polymers such as residual coagulants, iron or aluminum-rich silica. Use of this product is recommended for reducing the operating and capital costs of reverse osmosis (RO), nanofiltration (NF) and ultrafiltration (UF) systems. It inhibits polymerization of reactive silica, and disperses colloidal (non-reactive) silica.



### Product Benefits

- Effective in retarding polymerization and precipitation of silica
- Effectively controls inorganic scales over a large concentration range.
- Certified under ANSI/NSF Standard 60 for drinking water production.
- Compatible with major manufacturer's RO, NF, and UF membranes.
- Does not flocculate dissolved iron/aluminum oxide/silicate complexes.
- May be used diluted or undiluted.
- Effective in feedwaters with pH range 5.0 – 10.0
- Particularly efficacious for controlling coagulation of colloidal silica by aluminum, iron and heavy metal salts.

### Technical Specifications

#### Liquid\*

|                   |                  |
|-------------------|------------------|
| Appearance:       | Clear, colorless |
| pH:               | 1.5 ± 0.8        |
| Specific Gravity: | 1.08 ± 0.05      |

#### Powder\*

|                   |           |
|-------------------|-----------|
| Appearance:       | Colorless |
| pH (1% in water): | 11 – 12   |

#### Dosing Recommendations

**AXEON S-200 Antiscalant** should be injected into the feedstream prior to the static mixer and cartridge filter. Effective pH range is 5 – 10. If frozen, may be thawed and mixed before use. Stability is excellent, but best used within 12 months.

#### Dosing Recommendations

In the useful dosage range of 1 – 50 ppm, **S-200** controls a wide range of inorganic scales along with reactive and nonreactive silica at high levels. By monitoring the concentrate stream and trend charts, optimal dosage can be achieved for the control of silica gels and scales, which form chemically linked foulants prone to flocculation with organic materials.

#### Packaging

|                       |                 |
|-----------------------|-----------------|
| Liquid:               | Pails and drums |
| Powder (concentrate): | Totes           |

\* MSDS available upon request.

# AXEON

## F-25 Antifoulant

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**AXEON F-25 Antifoulant** is a highly effective anticoagulant and antifoulant for all membrane systems treating feedwaters with high potentials for fouling by silt, organics, colloids and fine particulates. It is effective over a wide range of concentrations, and does not flocculate dissolved polymers such as residual coagulants, iron or aluminum-rich silica. A special utility of **AXEON F-25 Antifoulant** is in its application as an anti-deposition agent for colloidal matter in sea and brackish surface waters, and industrial and municipal wastewaters. It prevents the coagulation and subsequent membrane fouling by colloidal organic matter which includes humic acid, lignin, tannin, microorganisms, polysaccharides, lipids, proteins, cellular debris and organic polymers from water treatment and inorganic colloids including silica, clay, silt, sulfur and various microcrystalline precipitates.



### Product Benefits

- Inhibits coagulation and deposition of organic and inorganic colloidal particles.
- Reduces requirements for membrane cleaning by decreasing the rate of membrane fouling.
- Effectively reduces membrane fouling when processing waters with high SDI values.
- Certified under ANSI/NSF Standard 60 for drinking water production.
- Eliminates the need for additional expensive pretreatment equipment and chemicals to control feedwaters with high SDI values.
- Compatible with major manufacturers' RO, NF, and UF membranes.
- Compatible with simultaneous administration of antiscalants into feedwaters.

### Technical Specifications

#### Liquid\*

|                   |                    |
|-------------------|--------------------|
| Appearance:       | Amber clear liquid |
| pH:               | 7 – 9              |
| Specific Gravity: | 1.02 ± 0.15        |

#### Powder\*

|                   |                    |
|-------------------|--------------------|
| Appearance:       | Tan colored powder |
| pH (1% in water): | Approx. 7          |

#### Dosing Recommendations

**F-25 Antifoulant** should be injected into the feed-stream prior to the static mixer and cartridge filter. Effective pH range is 2 – 14. If frozen, may be thawed and mixed before use. Stability is excellent, but best used within 12 months.

#### Dosing Recommendations

In the useful dosage range of 1 – 100 ppm neat (liquid), and 0.3 – 33ppm (powder), the liquid being 33% w/w of the powder in water. By monitoring the concentrate stream and trend charts, optimal dosage can be achieved for the control of colloidal particles in feedwater of microbial, plant or inorganic origins, and organic compounds in industrial process or waste streams.

#### Packaging

|         |                                     |
|---------|-------------------------------------|
| Powder: | Custom sizes, 50 lbs, 100 lbs.      |
| Liquid: | Custom sizes, 5 gallons, 55 gallons |

\* MSDS available upon request.

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**AXEON**  
WATER TECHNOLOGIES

MKTF-188

# AXEON

## C-Series Cleaners

**LENNTECH**

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**AXEON C-Series Cleaners** are heavy duty action cleaners that quickly and easily mix with water to make an easy to use cleaning solution that safely and effectively remove a wide range of membrane foulants from polyamide thin film (TF), cellulose acetate (CA) and ultrafiltration (UF) membrane elements.

| AXEON C-Series Cleaners                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | For Removing            | Membrane Types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Solution pH |
| <b>C-10*</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Calcium Carbonate Scale | TFC, CA and UF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2           |
| <b>SYMPTOMS OF CALCIUM CARBONATE SCALE INCLUDE:</b> <ul style="list-style-type: none"> <li>Scale extruding out of the downstream end of the last membranes in the system.</li> <li>All of the scale dissolves when introduced to a dilute hydrochloric acid solution.</li> <li>Poor salt rejection, low flow, and or, high pressure differential on individual membrane test data.</li> <li>8" x 40" Element weight exceeds 45 pounds.</li> <li>Site reports interruption in the antiscalant or acid injection.</li> <li>Site reports scale in the last vessel or piping of the concentrate stream.</li> </ul> |                         | <b>TESTING FOR CALCIUM CARBONATE SCALE:</b> <p>Calcium carbonate scale is not always white. However, a quick test can be conducted to see if the foulant is comprised solely of calcium carbonate.</p> <p>In a glass beaker, make a 1:1 dilution of HCl and DI water. Drop a small sample of the foulant into the solution. If the foulant contains calcium carbonate, it will bubble. Continue adding acid until the bubbling stops or until the scale disappears.</p> <p>If the beaker contains residual material after the bubbling has stopped, then the foulant consists of more than just calcium carbonate.</p> |             |
| <b>C-20*</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Organics                | TFC and UF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11          |
| <b>SYMPTOMS OF BIOLOGICAL FOULING INCLUDE:</b> <ul style="list-style-type: none"> <li>Visible slime on the feed side of the membrane.</li> <li>Site reports slime in the cartridge filter housing and piping.</li> <li>Site reports high pressure differential in the first array.</li> <li>Odor</li> <li>Individual membrane test data reports high pressure differentials.</li> <li>Membranes are telescoped.</li> </ul>                                                                                                                                                                                     |                         | <b>STEPS TO PREVENT BIOLOGICAL FOULING INCLUDE:</b> <ul style="list-style-type: none"> <li>Properly dose sodium bisulfite.</li> <li>Clean and sanitize the pretreatment equipment and piping.</li> <li>Consider an intermittent biocide treatment.</li> <li>Evaluate the necessity of a continuous injection biocide.</li> </ul>                                                                                                                                                                                                                                                                                       |             |

\* MSDS available upon request.

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**AXEON M-100 Membrane Preservative** safely prevents microbiological growth within membrane elements and in membrane systems during long and short-term storage.

| AXEON M-100 Membrane Preservative                                          |                                                         |                                               |              |
|----------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------|--------------|
| For Removing                                                               | Membrane Type                                           | Mixing Ratio                                  | pH           |
| Microbiological growth within membrane elements and systems during storage | Thin film composite, cellulose acetate, ultrafiltration | 1 pound <b>AXEON M-100</b> to 6 gallons water | Medium / Low |

### Product Benefits

**AXEON M-100** safely and effectively prevents microbiological growth within membrane elements and systems during long- and short-term storage. It replaces the use of sodium metabisulphite and other chemicals that are typically used. While sodium bisulfite can be hazardous or unstable, **M-100** is effective long-term and does not create environmental or health risks. **AXEON M-100** is compatible with all membrane types and rinses easily from membranes. **AXEON M-100** is packaged as a dry, stable, nonreactive powder for ease of transportation and storage.

### Procedures

#### In Storage

1. Clean the membranes with **AXEON C10** or **C20 Cleaners** prior to storage. Using good quality water (RO product water), mix at a ratio of one pound **M-100** to 6 gallons of water.
2. Recirculate storage solution at low pressure (less than 60 psig) through membranes for minimum of 15 minutes.
3. After re-circulation, shut system down making sure storage solution does not drain out of membranes.
4. After storage, rinse membranes with good quality water for 30 minutes before system start up.

#### Container Storage

1. Clean membranes with **AXEON C10** or **C20 Cleaners**.
2. Using good quality water (RO product water), mix a ratio of one pound **M-100** to 6 gallons of water. Place membranes in storage container containing **M-100** solution.
3. After storage, place membranes in system and rinse with good quality water for 30 minutes prior to system start-up.

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