



## FRA2000 Biocide

FRA2000 is a high-performance non-oxidizing biocide specifically applied for reverse osmosis membrane systems. Leveraging targeted molecular technology, it effectively combats biofouling by penetrating microbial cell structures and neutralizing bacteria, fungi, and algae. This action significantly suppresses biofilm formation, ensuring stable membrane flux and permeate quality. With exceptional membrane compatibility and eco-friendly properties, FRA2000 is widely deployed across power generation, chemical processing, electronic ultrapure water, food & beverage, and municipal water sectors — delivering a safe, sustainable microbial control solution that supports long-term system reliability and operational cost efficiency.

### Product Features

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- ❖ **Non-Oxidizing Mechanism:** Generates no oxidative byproducts, eliminating risk of membrane oxidation damage and extending element service life.
- ❖ **Biofilm Removal Capability:** Effectively decomposes and strips adhered biofilms and microbial sludge to restore hydraulic performance.
- ❖ **Universal Membrane Compatibility:** Verified compatibility with all major RO/NF membrane materials including Dow, Hydranautics, Toray, and Koch.
- ❖ **Broad Operational Range:** Maintains high efficacy across wide pH range (4–10), adapting to diverse feedwater conditions.
- ❖ **Eco-Safe & User-Friendly:** Readily biodegradable with no persistent residues; non-flammable, non-volatile formulation ensures safe handling.
- ❖ **Cost-Effective Application:** Achieves broad-spectrum microbial control at low dosing levels, reducing cleaning frequency and total lifecycle costs.

### Physicochemical Properties

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The following are typical properties of FRA2000 for reference only; they are not guaranteed supply specifications.

Item	Index
Appearance	Transparent liquid
pH (neat liquid)	7.0
Density (20°C) (g/cm <sup>3</sup> )	1.02

\*For specialized applications or customized solutions, please contact FFM Inc. directly.

### Instructions for Use



FRA2000 supports three scientifically validated application modes:

❖ **Continuous Low-Dose Dosing (Daily Operation):**

- Continuously inject into RO feed water at 1–5 ppm during normal operation to suppress microbial growth. Ideal for systems with moderate biofouling risk; dosage adjusted per feedwater quality and monitoring data.

❖ **Intermittent Shock Dosing (Preventive Maintenance):**

- Inject at 50–400 ppm for 30–60 minutes, typically once every 1–2 weeks. Controls biofilm formation without interrupting production.

❖ **Shutdown Cleaning (System Restoration):**

For severe biofouling or scheduled maintenance:

- Prepare solution at 400–800 ppm FRA2000 concentration.
- Adjust pH to 4–6 (using citric acid) to protect membranes.
- Recirculate for 45–60 minutes.

Note: Perform standard chemical cleaning first if heavy organic/inorganic fouling is present.

## **Packing and Storage**

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Packaged in 25 kg plastic drums. Store in a cool, dark place at room temperature.

## **Shelf Life**

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10 months.

## **Precautions**

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- ❖ Do not use if feedwater contains residual oxidants (e.g., chlorine, hydrogen peroxide), hydrogen sulfide, or high levels of soluble iron/manganese ions.
- ❖ FRA2000 is mildly corrosive. Wear appropriate PPE; rinse immediately with plenty of water upon skin or eye contact.