FRA1400 Scale Inhibitor

FRA1400 Seawater Desalination Membrane Scale Inhibitor is a high-performance scale and dispersant specifically formulated for seawater desalination systems, particularly under high-salinity and high-temperature conditions. This liquid product is based on carboxylic acid compounds and is working effectively control scale formation and particulate fouling in multi-stage flash (MSF) and reverse osmosis (RO) systems. FRA1400 maintains excellent performance even in extreme environments with water temperatures exceeding 100°C. It significantly reduces membrane cleaning frequency, extends membrane life, and enhances system efficiency and cost-effectiveness. FRA1400 is an essential water treatment chemical for ensuring stable and reliable operation in large-scale seawater desalination projects.

Product Features

- Specifically worked for seawater desalination systems, suitable for high-salinity and high-temperature applications including MSF and RO systems.
- Formulated with carboxylic acid-based compounds, offering excellent scale inhibition and dispersion performance.
- Effectively prevents the formation of common scales such as calcium carbonate, calcium sulfate, and barium sulfate.
- Maintains stability and performance under extreme conditions, including water temperatures above 100°C.
- Significantly reduces membrane cleaning frequency and extends membrane element life, lowering operational and maintenance costs.
- Provides full control of particulate fouling and sludge deposition, which is critical for maintaining thermal efficiency at high temperatures.
- Suitable for high-salinity sources such as seawater and brackish water, widely used in large-scale desalination plants and related industrial applications.

Physicochemical Properties

The following are the typical properties of FRA1400, but they should not be regarded as product specifications. Product specifications are on file.

Item	Index
Appearance	Colorless to pale yellow transparent liquid
pH (1% solution)	2.0
Density (21°C) (g/cm³)	1.10–1.20

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

Dosage Instructions

FRA1400 is an aqueous solution of a poly(carboxylic acid). In concentrated form, it is corrosive, so corrosion - resistant dosing equipment must be used. Suitable materials include 316L stainless steel and plastics (e.g., GRP, PVC, PE).The recommended injection point is downstream of all filtration equipment and cartridge filters.It can be mixed with water in any proportion and can be applied either as the neat product or as an aqueous solution. The minimum recommended dosing concentration is 10%.Continuous addition is required, and the dosage should be proportional to the water flow rate to maintain the recommended dosage level. The required dosage depends on the quality of the feed water and the saturation indices of various scale - forming components in the concentrate. Specialized software can be used to calculate scaling indices and optimal system recovery rates.The volume of FRA1400 concentrated solution to be added to the dosing tank can be calculated by the following formula:

$$U = \frac{Q \times a \times V}{1000 \times \rho\_conc \times X \times n}$$

Where:

U — Volume of concentrated solution to be added, liters (L)

Q — Reverse osmosis feed water flow rate, cubic meters per hour (m^3/h)

a — Dosage, milligrams per liter (mg/L or ppm)

V — Effective volume of dosing tank, liters (L)

ρ_conc — Density of scale inhibitor concentrated solution, kilograms per liter (kg/L)

X — Actual output of dosing metering pump, liters per hour (L/h)

n — Concentration factor

Packing and Storage

Packed in 25 kg plastic drums, and can also be packed according to customer requirements. During storage and transportation, stay away from sources of ignition, heat sources, avoid exposure to sunlight, and prevent water ingress and collisions. Store in a cool and well - ventilated place.

Shelf Life

Two years.

Safety and Protection

When operating, pay attention to safty protection, avoid contact with skin, eyes, etc. If contact occurs,rinse with large amounts of water and seek medical attention immediately.