

# BioMate\*

## CUSTOMER BENEFITS

### Biocides for membrane systems

#### Features

- Highly effective in reducing bacterial growth and slime build-up
- EPA registered, non-oxidizing biocides
- Specifically formulated to be compatible with thin film polyamide, polysulfone and PVDF membranes
- May be fed continuously, intermittently or in a clean-in-place mode
- RO performance is enhanced when using BioMate\* with Kleen\* MCT membrane cleaners.

BioMate MBC781 is an EPA-registered, non-oxidizing biocide used to sanitize reverse osmosis (RO) systems and membranes. BioMate MBC781 is fed continuously to the feedwater of these systems. A treatment program that includes BioMate MBC781 with other cleaning formulations from Veolia results in more effective membrane cleaning and decreased cleaning frequencies.

BioMate MBC881 is an EPA-registered, broad-spectrum biocontrol agent used as an intermittent treatment to reduce slime build-up in RO membranes. For optimal results, the system should be cleaned with Kleen MCT882 and Kleen MCT511, or Kleen MCT442 and Kleen MCT411 prior to the start of the BioMate MBC881 treatment.

BioMate MBC2881 is an EPA-registered, non-oxidizing biocide used to sanitize RO systems and membranes. BioMate MBC2881 may be used as an intermittent treatment to the feedwater of these systems.

BioMate MBC2881 is applied by injection into the feed stream during operation of the membrane plant while permeate is discharged to the drain. Normal dosage time is 30 minutes per application.

#### Biogrowth Control Program

Biofouling is one of the most costly problems facing the water treatment industry. The colonization of naturally occurring microorganisms on membrane surfaces shortens membrane element life and inflates operating costs. Combating and eliminating biofouling is essential for optimal membrane performance.

The Biogrowth Control Program can assist in controlling microbiological activity in a few simple steps:

- Conduct microbiological tests and normalize RO performance data
- Clean with Kleen MCT membrane cleaners
- Sanitize pipework and pretreatment equipment with biocides
- Set up continuous, optimal injection of BioMate biocide dosage and monitor bacteria levels and system performance
- Record and normalize operating data.

The Biogrowth Control Program is highly effective in reducing microorganism growth and slime build-up, resulting in a significant increase in RO system performance.

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# Spiral Wound Membrane Upgrading Packages

## CUSTOMER BENEFITS

WATER TECHNOLOGIES



## Integrated Solutions Benefits with CMS

A comprehensive Reverse Osmosis (RO) or Nanofiltration (NF) element upgrade of other existing technologies with a package of scale/biofouling/dechlorination control and Clean-In-Place (CIP) solution for underperforming systems.

- Offer Fouling Resistant capabilities for less CIP chemicals, less operation cost
- Provide Low Energy/High Flux and Rejection, the combination will support higher flow vs. existing design
- Provide Ultra-Low Energy, when energy saving is a priority among product quality
- Replaces existing softeners with stable operation while removing total hardness
- Offer High temperature membrane elements suitable for separation up to 70°C
- With many elements certified NSF/ANSI/CAN 61 standards
- Available Membrane Series: AG BWRO elements, AK Low-energy BWRO elements, AP Low-pressure BWRO elements, AL Low-energy BWRO elements, HL Water softening NF elements, AE & AD SWRO elements



RO & NF Spiral wound elements

## After sales Services

- Support and manpower for RO CIP
- System audit
- Supply of other spare parts
- Adding Insight\* Asset Performance Management
- Mobile bridge back up for CIP or unplanned outage
- Supply of rental mobile CIP if no CIP present
- Long term Operations & Maintenance (O&M) service contract

## Relevant Chemistry

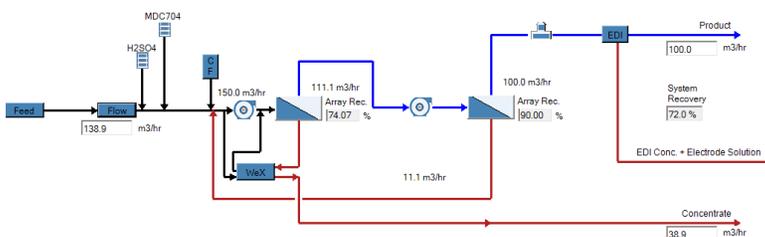
- HyperSpere\* MDC/MSI RO antiscalants
- HyperSpere\* MDC/MSI
- RO antiscalants
- BetzDearborn\*
- Dechlorinating Agents

## Key Advantages

- Plant Availability
- Chemistry Savings
- Resilience

## Contact Information

For more information on Veolia's chemical solutions combined with our available products and systems, contact the CMS Integrated Solutions team.



Veolia Winflows Membrane System Design Software can provide membrane & chemistry projections and can be accessed online:  
<https://www.watertechnologies.com/resources/winflows>

# Membrane Chemicals

## CAPABILITY PROFILE

### Chemicals for your seawater reverse osmosis plant

Reverse osmosis (RO) membrane performance can be negatively impacted by impurities that build up on the membrane surface during operations. Suspended solids, microorganisms, and mineral scale can foul membrane elements. These deposits can cause loss in output and/or rejection levels and reduce total system performance.

Veolia offers a wide array of products to help you improve the performance of your membranes.

#### Pretreatment Coagulants and Flocculants

The SoliSep\* coagulant technology changes the surface charge of the colloidal particles to create agglomerates or larger particles that are easier to settle/float and/or retain in the SWRO pretreatment systems (Clarifiers, Flotators/Hollow fiber filtration/ Media filters). The SoliSep product range includes inorganic, organic, and blended coagulants, which are selected based on raw water quality.

The SoliSep product range includes products that can be used in potable water applications.

##### Benefits to You

- Decreases particulate loading on the RO system
- Extends cartridge filter and membrane element life
- Reduces RO cleaning
- Improves overall operation of filtration system and clarifiers

#### Antiscalants

The Hypersperse\* pretreatment program from Veolia is designed to eliminate scale and reduce fouling in membrane systems for SWRO systems.

The narrow feed water channel in spiral wound and hollow fiber elements accentuates scaling and fouling. Veolia's Hypersperse pretreatment program is designed to eliminate scale build-up and reduce fouling in membrane systems, regardless of the feed water source.

The Hypersperse product range includes products that can be used in potable water applications.

##### Benefits to You

- Operate at higher recovery rates due to reduced scale potential
- Reduce the downtime caused by frequent membrane cleaning
- Prevent the need to replace expensive membranes prematurely
- Produce less concentrate

#### Dechlorination

Veolia's pretreatment line of dechlorination products includes a convenient, ready-to-use formulation which is NSF approved for potable applications and an economic dry formulation for on-site preparation.

The DCL series is designed to remove free and combined chlorine from RO and UF feedwater.

##### Benefits to You

- No organic material or carbon fines added to RO or UF feed water

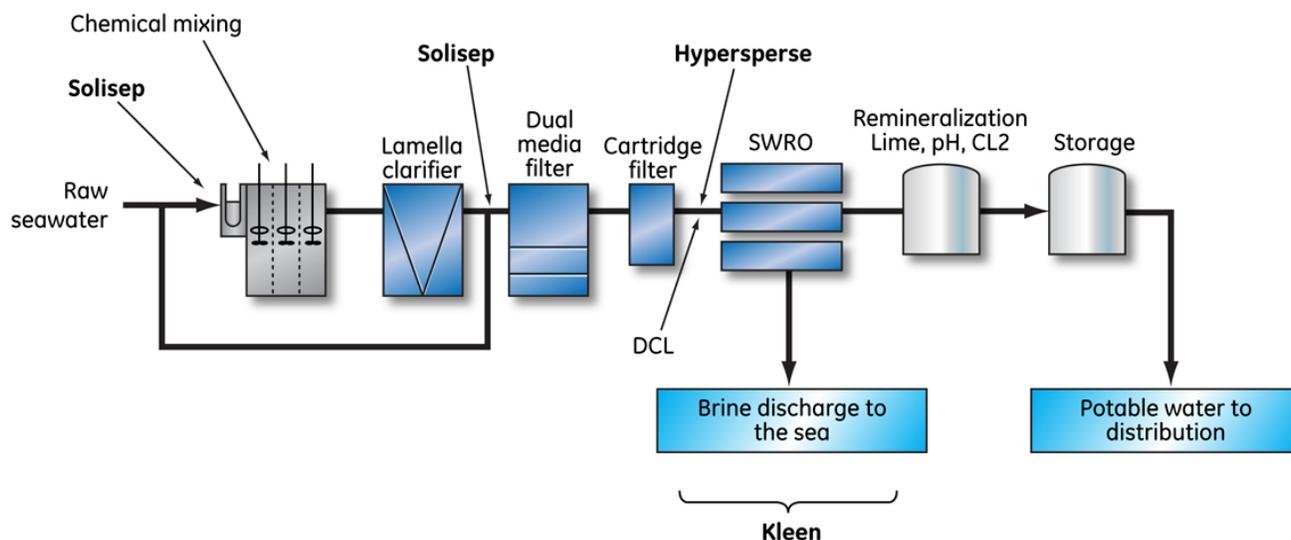
- Maintain optimum feed water conditions to and from your membrane system
- No added footprint from large filters
- Prolongs membrane life

## Cleaners

Veolia's Kleen\* line of cleaners is formulated to function on SWRO systems producing potable water. Membrane cleaning is an essential component of any RO, nanofiltration, UF, or microfiltration maintenance program. Successful membrane cleaning relies on both the effectiveness of the cleaning compound and the design and operation of the cleaning equipment. Veolia can offer suggestions on cleaning system design and cleaning procedures to ensure the most effective results.

### Benefits to You

- Restores flux rates close to that of new membranes
- Prolongs membrane life
- Improves % recovery and % rejection rates
- Protects membranes from irreversible fouling



# BetzDearborn\* DCL30

## FACT SHEET

## Dechlorinating agent for industrial membrane applications

### Description and Features

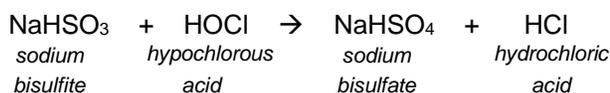
BetzDearborn DCL30 is a very cost-effective product used to remove free and combined chlorine from reverse osmosis and ultrafiltration feedwaters. This liquid product is a high quality solution of sodium bisulfite ( $\text{NaHSO}_3$ ).

Feedwaters to membrane systems often contain chlorine to treat and prevent microbiological growth prior to the membrane separation process. This chlorine, however, can irreversibly damage thin film composite membranes by oxidizing the membrane surface. The sodium bisulfite in BetzDearborn DCL30 quickly deactivates chlorine and protects membranes from damage.

Note: For potable or food-grade applications, BetzDearborn DCL32 should be used. See product fact sheet for maximum use levels and details.

### Chemistry of Dechlorination

Deactivation of chlorine by sodium bisulfite:



### Application

6.00 ppm of BetzDearborn DCL30 are required to remove 1 ppm of chlorine, measured as total chlorine.

BetzDearborn DCL30 application dosages should be limited by the chlorine demand. It has been observed that an excess of sodium bisulfite in the RO

feedwater may increase the incidence of microbiological growth in membrane systems.

Your Veolia representative can assist you with identifying chlorine levels in your process and in defining the dosage requirements for BetzDearborn DCL30.

### Stability

Please refer to the Safety Data Sheet for stability information. The product may be slowly degraded by oxygen after the package is opened; the rate of degradation increases with higher temperatures. When using in an open day tank, do not use agitation and monitor the active concentration on a weekly basis.

The product stability will decrease if diluted; consult with your Veolia representative to determine the optimum dilution concentration and solution stability for your application.

### Packaging Information

BetzDearborn DCL30 is a liquid material, available in a variety of containers and delivery methods. Contact your Veolia representative for details.

### Safety Precautions

A Safety Data Sheet containing detailed information about this product is available upon request.

Corrosion-resistant materials should be used for the storage and handling of this product. Discuss recommended materials of construction with your Veolia representative.

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# Fouling Monitor Sensor

## FACT SHEET

### Descripción y utilización

Fouling Monitor Sensor es una solución innovadora para monitoreo y control in-line de fenómenos de ensuciamiento y deposición en tratamientos de agua (biofilms, scaling).

El monitoreo se basa en principio térmico (MEMS technology) de elevada precisión que permite detectar las etapas iniciales de formación de biofilm/scale.

El sensor puede instalarse en bypass con la corriente de proceso. Debido a su simplicidad de funcionamiento y operación es posible utilizarlo en múltiples aplicaciones:

- Filtración /Clarificación
- Torres de enfriamiento,
- RO,
- Intercambiadores de calor

Dentro de los principales beneficios, es posible enumerar:

- Asegurar eficiencia de tratamiento químico.
- Detectar contaminaciones y/o crecimiento acelerado de biofilms/scale.
- Optimizar consumo de tratamiento químico
- Mitigar riesgos de legionella.



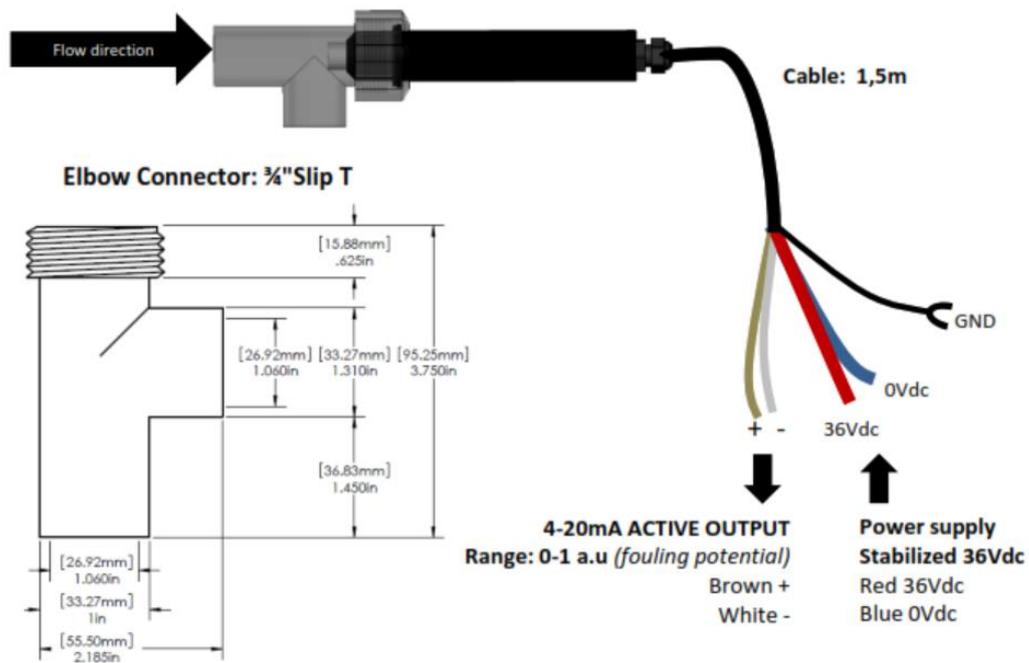
### Características técnicas

- Dimensiones: D28mm x 190mm
- Peso: 150 g
- Conexión: 3/4" Slip T
- Longitud de cable: 1.5m
- Materiales: PVC, AISI 316L
- Power supply: 24VDC, 50mA
- Salida analógica: 1 salida 4-20mA
- Temperatura de trabajo: 0-60°C max
- Presión de trabajo: 5 bars max
- Flujo de trabajo: 350 lts/h min
- Certificación: CE

## Información para solicitud y spare parts

Código SAP	Descripción
3169341	CTRL,FOULING MONITOR SENSOR

## Diseño y vistas



# Hypersperse\*

## FACT SHEET

## Antiscalants/Antifoulants

The Hypersperse pretreatment program is designed to significantly reduce scale formation and fouling in membrane systems. The antiscalants are suitable and effectively used in a range of feedwater sources, including brackish, waste and seawater. The use of Veolia's chemistries improves efficacy against a broad range of scale-forming substances and keeps fouling material in suspension. Common foulants and scalants include calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate, calcium fluoride, iron, colloidal material, silica and other organic contaminants.

Hypersperse MDC series offers protection against scale and colloidal foulants, while the Hypersperse MSI series offers additional control of silica scale.

### Benefits and Features

- Effectively control scales including silica, calcium carbonate, calcium sulfate, barium sulfate, and strontium sulfate
- Compatible with the leading reverse osmosis (RO) and nanofiltration (NF) membranes
- Maintain cleaner membrane surfaces by dispersing particulate foulants
- RO systems can be run at higher recovery rates, which translates to lower operating costs
- Products available with multiple global regulatory approvals
- Non-P products available
- Effective over a wide pH range
- May be fed neat or diluted
- Coagulant compatible products available that can be used with SoliSep\* MPT series products

## Description and Use

Hypersperse antiscalants are highly effective liquid products developed to control scale precipitates and reduce particulate fouling within membrane separation systems.

Excellent results are achieved in membrane separation processes including reverse osmosis, nanofiltration and electrodialysis reversal (EDR).

### Dosing

Typical dosage range is between 0.5 and 4 mg/L. To determine the adequate dose rate for a certain system it is recommended to use the Argo Analyzer\* simulation software. It will provide the appropriate application dosage based on the specific water chemistry and system design.

Argo Analyzer is a tool designed to provide guidance on the best choice of antiscalant treatment for RO systems. This software is very accurate in recommending the best Hypersperse product, the correct dosage and further guidelines for reverse osmosis systems. It also gives information about cleaner selection and cleaning procedures.

Please contact your Veolia sales representative for details.

### The Veolia Solution

Veolia provides a comprehensive solution in projecting scaling potential for major scale-forming ions present in membrane systems. Our package of solutions includes engineering level expertise for antiscalant program optimization, customized solutions and personalized service. Each potential application is evaluated to meet the specific treatment goals of the system.

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# Endcor\* GCC9717

## HOJA DE PRODUCTO

### Inhibidores de Corrosión

#### Generalidades

Inhibidores de corrosión de acero al carbono para sistemas de enfriamiento de un solo paso/suministro de fábrica;

- Compuestos de fosfato y zinc;
- Tratamientos especialmente preparados en un solo tambor.

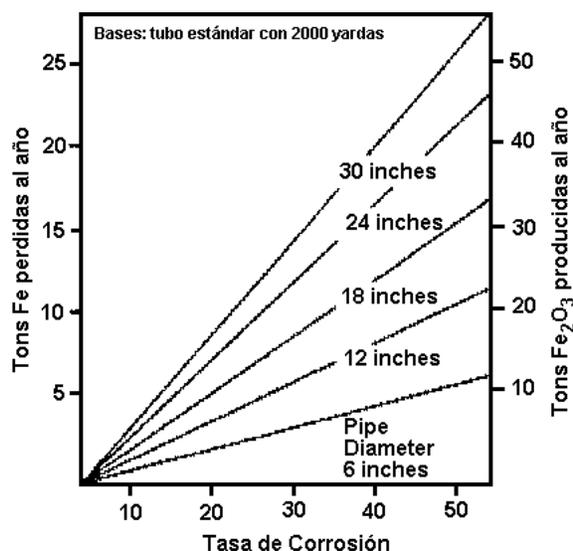
#### Descripción y Usos

Endcor GCC9717 es una mezcla especialmente preparada de fosfato inorgánico y zinc, formulada para inhibir económicamente la corrosión del acero al carbono en sistemas de suministro de agua en fábricas y sistemas de enfriamiento de un solo paso.

La corrosión del acero puede generar cantidades significativas de óxido de hierro, en un volumen 10 veces mayor que el hierro originalmente removido (Vide Figura 1).

Si la corrosión no fuera controlada, los subproductos de hierro introducidos en el sistema pueden conducir a innumerables problemas, inclusive reducción de la transferencia de calor, restricciones en el flujo de agua, depósitos y formación de lodo. Esos problemas pueden interferir seriamente con las operaciones servidas por agua de enfriamiento de un solo paso.

Endcor GCC9717 puede minimizar la formación de productos de corrosión y, en consecuencia, mejorar las condiciones operacionales por toda la planta.



#### Aplicaciones Típicas

Los programas Endcor GCC9717 son diseñados para operar en un extenso rango de temperaturas en sistemas de un solo paso y de suministro de agua para fábricas. El producto puede ser dosificado en una sola ubicación para tratar de todo el sistema, pero pueden ser añadidas dosis complementarias en áreas especialmente problemáticas. Un sistema típico de un solo paso/ suministro de fábrica, consiste de tubería larga y complicada, que sirve áreas críticas del proceso. Antes de recomendar un producto Endcor GCC9717, su especialista Veolia ejecutará una extensa evaluación de su sistema para establecer los parámetros operacionales específicos y las necesidades de tratamiento. Utilizando esas informaciones, el especialista trabajará con los

ingenieros del Departamento de Marketing Técnico-Industrial de Veolia con el objeto de diseñar una fórmula especial para satisfacer las necesidades de su sistema.

## Tratamiento y Dosificación

**Dosificación** - La concentración adecuada de tratamiento Endcor GCC9717 varía de acuerdo a cada sistema. De todos modos, el producto debe ser dosificado de acuerdo a los parámetros de control que Veolia establece para una determinada aplicación. Para protección consistente, se recomienda alimentación continua.

**Dilución** - Endcor GCC9717 debe ser alimentado puro en un punto del sistema de enfriamiento en donde será rápidamente mezclado con el agua. Para aplicaciones en que pueda ser necesario hacer dilución, serán hechas recomendaciones específicas para cada formulación especial.

**Equipo de Dosificación** - Los tanques, bombas, tubería y válvulas deben ser hechos de polietileno o con la mayoría de los plásticos comunes. Pueden ser obtenidas recomendaciones sobre equipo para mezclas específicas mediante solicitud.

**Monitoreo** - Procedimientos específicos de control para cada formulación serán establecidos al iniciarse el tratamiento.

## Almacenaje

Almacenar Endcor GCC9717 en temperaturas moderadas, protegiendo el producto contra congelamiento. Si el producto congelara, descongelarlo completamente y mezclar bien antes de usarlo.

## Seguridad y manejo

Todo producto químico exige precauciones en cuanto a su manejo, almacenaje y desecho. Recomendamos lectura atenta de la Ficha de Seguridad y cumplimiento de las instrucciones contenidas en ella.