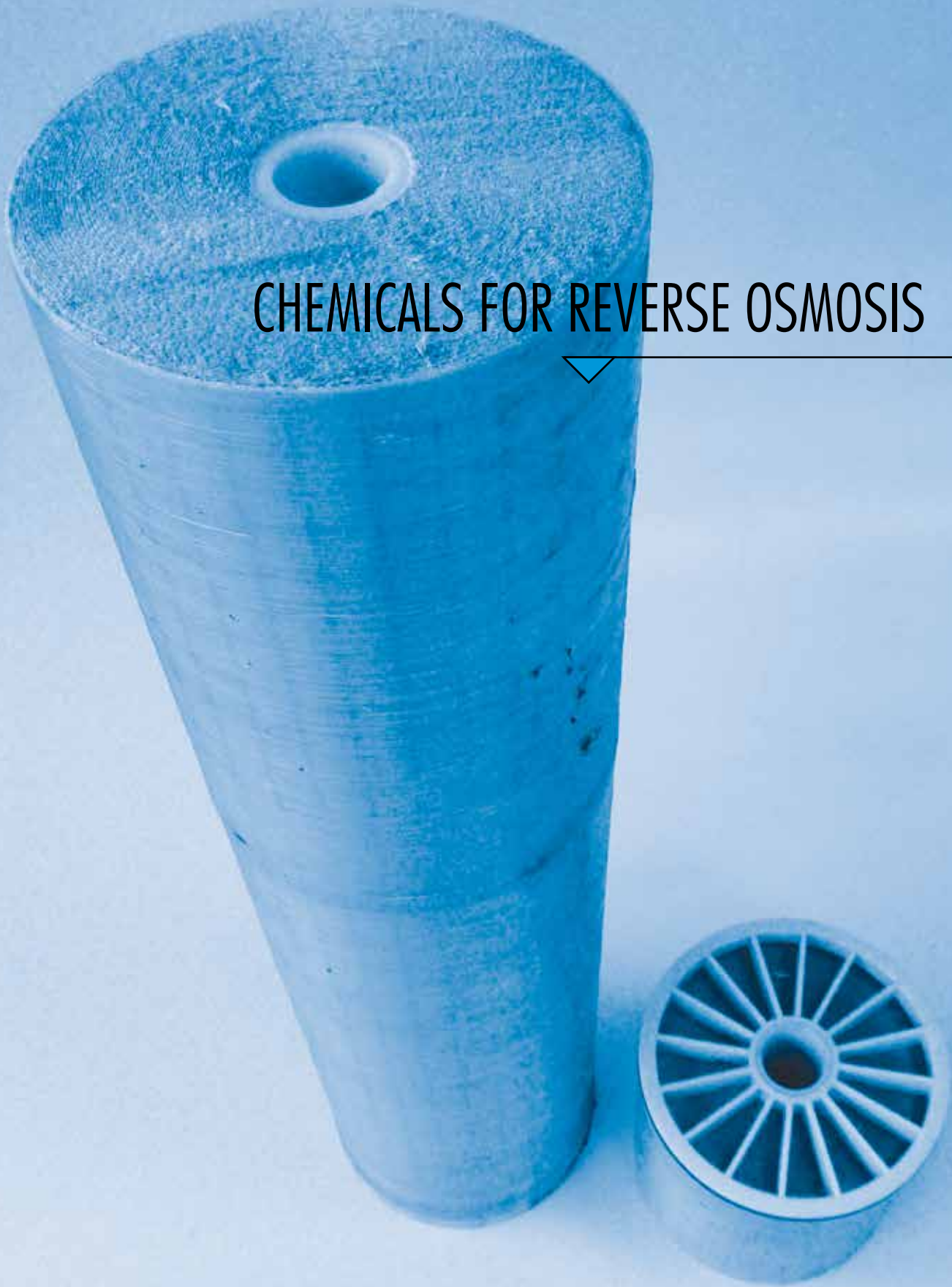


CHEMICALS FOR REVERSE OSMOSIS



ANTISCALANTS

The antiscalants NYTRA CHEMICAL have been formulated to prevent the formation of mineral scale and organic and inorganic fouling in the membranes of reverse osmosis plants. The use of antiscalant NYTRA CHEMICAL allows OEMs to project systems with higher recovery rates, reducing water consumption, saving construction costs and management. These have been tested on major market brands of membranes for reverse osmosis and nano-filtration and have shown good performance and excellent compatibility.

BENEFITS

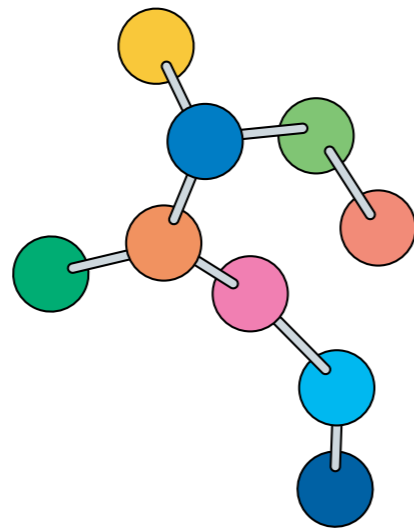
The regular use of antiscalants NYTRA CHEMICAL provides assistance to designers and operators of reverse osmosis and nano-filtration because it:

- Minimizes the need for chemical washing;
- Maximizes the recovery rate of the system;
- Reduces downtime for maintenance;
- Reduces operating costs compared to traditional pretreatment systems or acid dosing.

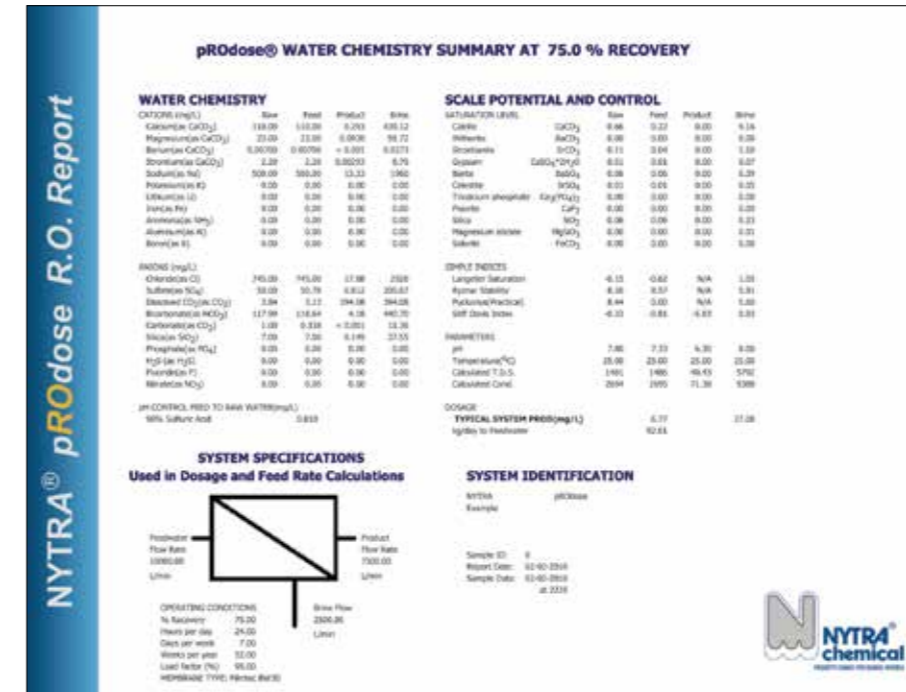
WHICH TO CHOOSE

Selecting the appropriate antiscalant is critical to optimize plant productivity for reverse osmosis. The choice of the product should be made on the basis of the chemical characteristics of the water to be treated, design of the plant and its pretreatment.

NYTRA CHEMICAL antiscalants offer 5 different products that can meet different needs.

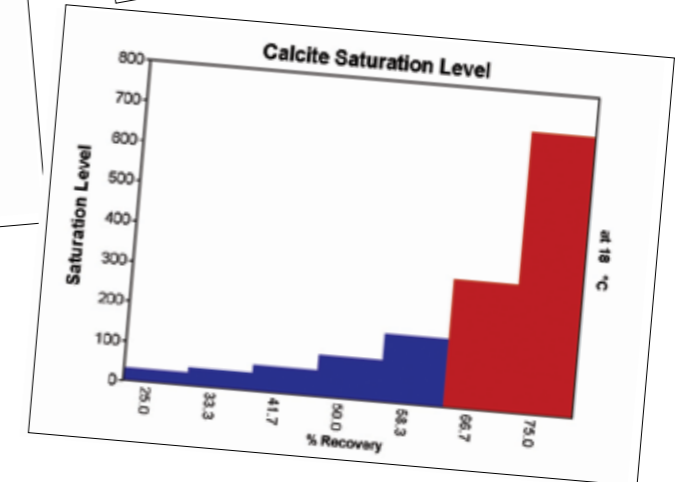
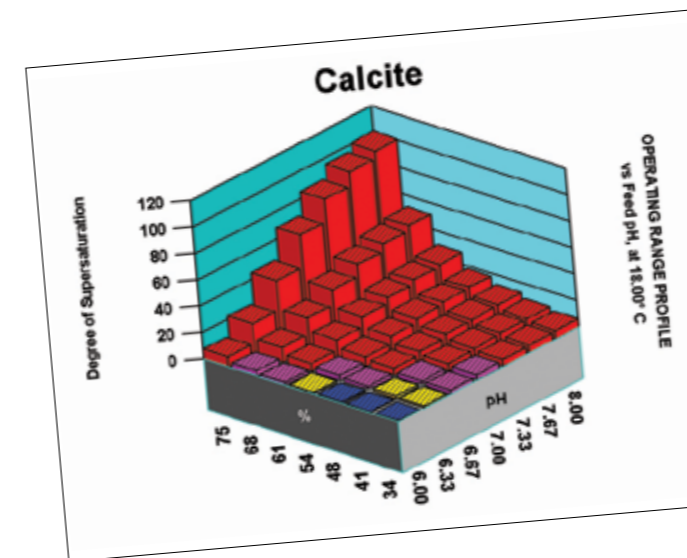


Software for dosage individualization



Through a sophisticated mathematical model, the new NYTRA PRO DOSE SOFTWARE allows the calculation of:

- the saturation level of the possible scaling salts;
- the most appropriate and effective NYTRA CHEMICAL antiscalant;
- the best dosage;
- the improvement of recovery rates in the RO system by reducing the costs of energy and water.



GUIDE TO SELECTION OF ANTISCALANT TABLEAU POUR LE CHOIX DES ANTI-SCALANTS		EXCELLENT	GOOD	ADEQUATE
NYTRA 3000	CALCITE CaCO ₃			
NYTRA 5000	ARAGONITE CaCO ₃			
NYTRA 6000	WITHERITE BaCO ₃			
NYTRA 7000	STRONTIANITE SrCO ₃			
NYTRA 8000	MAGNESITE MgCO ₃			
	ANHYDRITE CaSO ₄			
	GYPSUM CaSO ₄ *2H ₂ O			
	BARITE BaSO ₄			
	CELESTITE SrSO ₄			
	TRICALCIUM PHOSPHATE Ca ₃ (PO ₄) ₄			
	HYDROXYAPATITE Ca ₅ (PO ₄) ₃ (OH)			
	FLUORITE CaF ₂			
	SILICA SiO ₂			
	BRUCITE Mg(OH) ₂			
	MAGNESIUM SILICATE MgSiO ₃			
	FERRIC HYDROXIDE Fe(OH) ₃			
	SIDERITE FeCO ₃			
	STRENGITE FePO ₄			
	ORGANIC SUBSTANCES			

NYTRA RO 3000

BROAD-SPECTRUM ANTISCALANT FOR REVERSE OSMOSIS SYSTEMS
 Multipurpose antiscalant, chelating agent, broad-spectrum dispersant, developed specifically for reverse osmosis (RO) membrane systems. Inhibits the mineral scale of salts such as calcium carbonate, magnesium carbonate, calcium sulfate, barium sulfate, strontium sulfate and calcium fluoride. It is active with water that has moderate amounts of Silica, Iron and Manganese. It is compatible with all types of reverse osmosis membranes and nano-filtration. Recommended for small installations with membranes 2"1/2 and 4".

Code	Package/Kg	Euro/Kg
N3000-25	25	

Chemical-physical properties

Active ingredients:	blend of phosphonates
Appearance:	clear light amber liquid
pH:	2 - 3 (1% water solution)
Density (at 20°C):	1,20- 1,25 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dosage:	10 - 35 mg/l



EFFECTIVE AGAINST	
●	CALCITE CaCO ₃
●	ARAGONITE CaCO ₃
●	WITHERITE BaCO ₃
●	STRONTIANITE SrCO ₃
●	MAGNESITE MgCO ₃
●	ANHYDRITE CaSO ₄
●	GYPSUM CaSO ₄ ·2H ₂ O
●	BARITE BaSO ₄
●	CELESTINE SrSO ₄
●	TRICALCIUM PHOSPHATE Ca ₃ (PO ₄) ₂
●	HYDROXYAPATITE Ca ₅ (PO ₄) ₃ (OH)
●	FLUORITE CaF ₂
●	SILICA SiO ₂
●	BRUCITE Mg(OH) ₂
●	MAGNESIUM SILICATE MgSiO ₃
●	FERRIC HYDROXIDE Fe(OH) ₃
●	SIDERITE FeCO ₃
●	STRENGITE FePO ₄
●	ORGANIC SUBSTANCES, BIOFOULING

● EXCELLENT ● GOOD ● ADEQUATE
 Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 5000

ANTISCALANT SPECIFIC FOR WATER WITH HIGH SILICA LEVEL
 Antiscalant, chelating agent, dispersant, particularly effective for those reverse osmosis systems with high silica feed waters. It checks and inhibits the depositing of salts such as magnesium silicate (MgSiO₃) and amorphous silica (SiO₂). It is also active with water that has moderate amounts of calcium carbonate, calcium sulphate, calcium phosphate, and is also effective as an inhibitor of ferric oxide. It is compatible with all types of reverse osmosis membranes and nano-filtration. Laboratory studies have verified that the NYTRA 5000 is active over and above 230 mg/l of silica in the concentrate of the membranes (tests made at 25°C, pH7,5).

Code	Package/Kg	Euro/Kg
N5000-25	25	

Chemical-physical properties

Active ingredients:	mixture of polymers acrylic / maleic
Appearance:	clear light amber liquid
pH:	5 - 6 (1% water solution)
Density (at 20°C):	1,20- 1,30 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dosage:	2 - 12 mg/l



EFFECTIVE AGAINST	
●	CALCITE CaCO ₃
●	ARAGONITE CaCO ₃
●	WITHERITE BaCO ₃
●	STRONTIANITE SrCO ₃
●	MAGNESITE MgCO ₃
●	ANHYDRITE CaSO ₄
●	GYPSUM CaSO ₄ ·2H ₂ O
●	BARITE BaSO ₄
●	CELESTINE SrSO ₄
●	TRICALCIUM PHOSPHATE Ca ₃ (PO ₄) ₂
●	HYDROXYAPATITE Ca ₅ (PO ₄) ₃ (OH)
●	FLUORITE CaF ₂
●	SILICA SiO ₂
●	BRUCITE Mg(OH) ₂
●	MAGNESIUM SILICATE MgSiO ₃
●	FERRIC HYDROXIDE Fe(OH) ₃
●	SIDERITE FeCO ₃
●	STRENGITE FePO ₄
●	ORGANIC SUBSTANCES, BIOFOULING

● EXCELLENT ● GOOD ● ADEQUATE
 Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 6000

BROAD SPECTRUM MULTIFUNCTIONAL ANTISCALANT
 Multipurpose antiscalant, chelating agent, broad-spectrum dispersant, developed specifically for reverse osmosis (RO) membrane systems. Effective for the control of the main scaling salts present in the feed waters. Inhibits the mineral scale of salts such as calcium carbonate, magnesium carbonate, calcium sulfate, barium sulfate, strontium sulfate and calcium fluoride and silica in moderate amounts. It even has effect in the presence of small amounts of silt and colloids and is effective in preventing fouling caused by organic substances and biofilms (AOC). It is compatible with all types of membranes for reverse osmosis and nano-filtration.

Code	Package/Kg	Euro/Kg
N6000-25	25	

Chemical-physical properties

Active ingredients:	organic polymers
Appearance:	clear liquid
pH:	7-8 (1% water solution)
Density (at 20°C):	1 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dosage:	2 - 8 mg/l



EFFECTIVE AGAINST	
●	CALCITE CaCO ₃
●	ARAGONITE CaCO ₃
●	WITHERITE BaCO ₃
●	STRONTIANITE SrCO ₃
●	MAGNESITE MgCO ₃
●	ANHYDRITE CaSO ₄
●	GYPSUM CaSO ₄ ·2H ₂ O
●	BARITE BaSO ₄
●	CELESTINE SrSO ₄
●	TRICALCIUM PHOSPHATE Ca ₃ (PO ₄) ₂
●	HYDROXYAPATITE Ca ₅ (PO ₄) ₃ (OH)
●	FLUORITE CaF ₂
●	SILICA SiO ₂
●	BRUCITE Mg(OH) ₂
●	MAGNESIUM SILICATE MgSiO ₃
●	FERRIC HYDROXIDE Fe(OH) ₃
●	SIDERITE FeCO ₃
●	STRENGITE FePO ₄
●	ORGANIC SUBSTANCES, BIOFOULING

● EXCELLENT ● GOOD ● ADEQUATE
 Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 7000

BROAD- SPECTRUM ANTISCALANT FOR WATER WITH A HIGH CONTENT OF SCALING SALTS
 Antiscalant product, chelating agent, broad-spectrum dispersant, suitable for the feed water for reverse osmosis plants. Effective control of the main scaling salts typically present in well water and /or surface and brackish water. It controls and inhibits the depositing of salts such as calcium carbonate, magnesium carbonate, calcium sulfate, barium sulfate, strontium sulfate and calcium fluoride. It is active with water that has moderate amounts of silica, iron and manganese and is effective in preventing fouling caused by organic substances and biofilms (AOC). It is compatible with all types of membranes for reverse osmosis and nano-filtration.

Code	Package/Kg	Euro/Kg
N7000-25	25	

Chemical-physical properties

Active ingredients:	blend of phosphonates
Appearance:	clear light amber liquid
pH:	2 - 3 (1% water solution)
Density (at 20°C):	1,20 - 1,25 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dosage:	2 - 6 mg/l



EFFECTIVE AGAINST	
●	CALCITE CaCO ₃
●	ARAGONITE CaCO ₃
●	WITHERITE BaCO ₃
●	STRONTIANITE SrCO ₃
●	MAGNESITE MgCO ₃
●	ANHYDRITE CaSO ₄
●	GYPSUM CaSO ₄ ·2H ₂ O
●	BARITE BaSO ₄
●	CELESTINE SrSO ₄
●	TRICALCIUM PHOSPHATE Ca ₃ (PO ₄) ₂
●	HYDROXYAPATITE Ca ₅ (PO ₄) ₃ (OH)
●	FLUORITE CaF ₂
●	SILICA SiO ₂
●	BRUCITE Mg(OH) ₂
●	MAGNESIUM SILICATE MgSiO ₃
●	FERRIC HYDROXIDE Fe(OH) ₃
●	SIDERITE FeCO ₃
●	STRENGITE FePO ₄
●	ORGANIC SUBSTANCES, BIOFOULING

● EXCELLENT ● GOOD ● ADEQUATE
 Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 8000

ANTISCALANTS FOR SEA/ BRACKISH WATER

Antiscalant product, chelating agent, broad-spectrum dispersant, suitable for SEA WATER reverse osmosis plants. Efficient in the control of the main scaling salts present in sea water and/or surface water and brackish water assimilated as the former. It checks and inhibits the depositing of salts such as calcium carbonate, carbonate and magnesium hydroxide. It is active with water that has moderate amounts of iron and manganese and it is effective in preventing fouling caused by organic substances and biofilm (AOC). It is compatible with the all types of membranes for reverse osmosis and nano-filtration.

Code	Package/Kg	Euro/Kg
N8000-25	25	

Chemical-physical properties

Active ingredients:	blend of phosphonates
Appearance:	clear light amber liquid
pH:	2 - 3 (1% water solution)
Density (at 20°C):	1,20- 1,25 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dosage:	2 - 6 mg/l



EFFECTIVE AGAINST	
●	CALCITE CaCO ₃
●	ARAGONITE CaCO ₃
●	WITHERITE BaCO ₃
●	STRONTIANITE SrCO ₃
●	MAGNESITE MgCO ₃
●	ANHYDRITE CaSO ₄
●	GYPSUM CaSO ₄ · 2H ₂ O
●	BARITE BaSO ₄
●	CELESTITE SrSO ₄
●	TRICALCIUM PHOSPHATE Ca ₃ (PO ₄) ₂
●	HYDROXYAPATITE Ca ₅ (PO ₄) ₃ (OH)
●	FLUORITE CaF ₂
●	SILICA SiO ₂
●	BRUCITE Mg(OH) ₂
●	MAGNESIUM SILICATE MgSiO ₃
●	FERRIC HYDROXIDE Fe(OH) ₃
●	SIDERITE FeCO ₃
●	STRENGITE FePO ₄
●	ORGANIC SUBSTANCES, BIOFOULING

● EXCELLENT ● GOOD ● ADEQUATE

Download the technical data on-line: www.idroservice.net/download.aspx

PRODUCTS FOR CLEANING MEMBRANES

Inorganic deposits, scaling, metal oxides, oils and fats, biofouling, bacteria etc. drastically reduce the productivity of the membranes.

The NYTRA RO Clean chemicals allows you to recover not completely damaged membranes bringing them to levels close to new.

BENEFITS

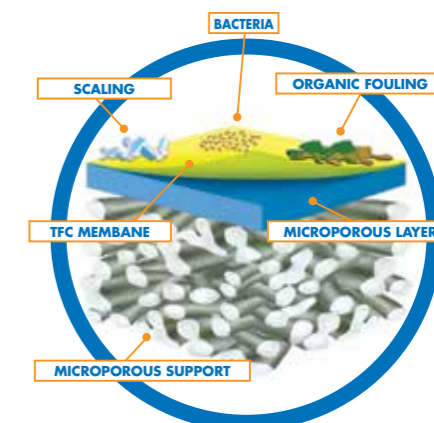
A scheduled membranes cleaning:

- restores the performance of the membranes to levels close to new;
- extends the life of the membranes;
- maintains constant recovery rates and the rates of rejection;
- protects the membranes from irreversible fouling.



CLEANER SELECTION GUIDE

Foulant	NYTRA RoClean 1100	NYTRA RoClean 1200	NYTRA RoClean 1300	NYTRA Ro 1500
Inorganic fouling	-	✓	-	-
Inorganic scaling	-	✓	✓	-
Severe inorganic scaling	-	✓	-	-
Heavy metals	-	✓	✓	-
Organic fouling	✓	-	-	-
Biofilm	✓	-	-	-
Oils, fats	✓	-	-	-
Bacteria, fungi, algae	-	-	-	✓



NYTRA RoClean 1100

ALKALINE CLEANER FOR REVERSE OSMOSIS MEMBRANES

The alkaline detergent contains a special blend of cleaning agents, chelating and active ingredients for removing organic fouling such as organic colloids, colours and biofilm from the reverse osmosis membranes. It restores the proper function of the RO membranes where fouling has reduced the production of the permeate to not more than 15%.

Code	Package/Kg	Euro/Kg
N1100-10	10	

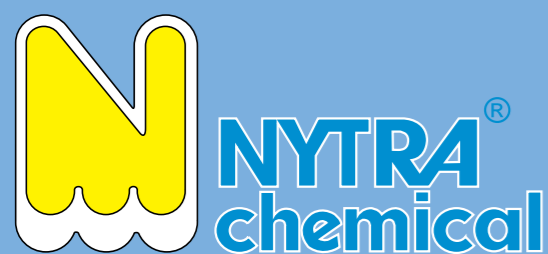
Chemical-physical properties

Appearance:	clear light amber liquid
pH:	11 (5% water sol.)
Density (at 20°C):	1,15- 1,20 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dilution:	10% with demineralised water



- ➔ For organic fouling
- ➔ For colloid deposits
- ➔ For biofilm

Download the technical data on-line: www.idroservice.net/download.aspx



POOL CHEMICALS

More than 30 years experience in producing chemicals is our guarantee

www.nytrachemical.it

NEW PRICE LIST FOR 2015-2016



NEW PRICE LIST FOR 2015-2016

NYTRA RoClean 1200 Shock

ACID CLEANER FOR REVERSE OSMOSIS MEMBRANES
 Acid detergent to remove hard deposits deriving from carbonates and sulphates of calcium and magnesium, iron oxides and metal hydroxides. It contains a special blend of cleaning agents, dispersants, chelating and reducing agents suitable to dissolve the mineral deposits on the membranes TFC spiral wrap. The NYTRA RoClean 1200 Shock should be used only in extreme cases of persistent fouling which require strong descaling of membranes which are partially damaged.

Code	Package/Kg	Euro/Kg
N1200-10	10	

Chemical-physical properties

Appearance:	Clear light amber liquid
pH:	1 (5% water sol.)
Density (at 20°C):	1,15- 1,20 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dilution:	10% with demineralised water



- ➔ for carbonate scales
- ➔ for sulphate scales
- ➔ for iron/mineral scales
- ➔ extremely aggressive

Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RoClean 1300

ACID CLEANER FOR REVERSE OSMOSIS MEMBRANES
 Acid cleaner designed to remove deposits from carbonates and sulphates of calcium and magnesium, iron oxides and metal hydroxides. It contains a special blend of cleaning agents, dispersants, chelating and reducing agents suitable to dissolve the mineral deposits on the membranes TFC spiral wrap. It restores the proper function of RO membranes where the fouling has reduced the production of the permeate to 15%.

Code	Package/Kg	Euro/Kg
N1300-10	10	

Chemical-physical properties

Appearance:	clear light amber liquid
pH:	1 (5% water sol.)
Density (at 20°C):	1,15- 1,20 kg/l
Freezing:	between 0 and 5°C
Solubility in water:	completely soluble
Dilution:	10% with demineralised water



- ➔ for carbonate scales
- ➔ for sulphate scales
- ➔ for iron/mineral scales

Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 1500

BIOCIDE FOR REVERSE OSMOSIS MEMBRANES
 NYTRA RO 1500 is a fast action broad-spectrum antibacterial, non oxidizing biocide, with a base solution of 20% DBNPA (2,2-dibromo-3-nitropropionamide). It effectively destroys algae, bacteria and fungi and is perfectly compatible with TFC membranes and CA (cellulose acetate). Recommended for systems with problems arising from the organic silt. Through the washing procedure the NYTRA RO 1500 restores the proper function of the RO membranes in the event that fouling has cut production by up to 15% of the permeate.

Code	Package/Kg	Euro/Kg
N1500-10	10	

Chemical-physical properties

Appearance:	clear light amber liquid
pH:	2 - 5 (5% water sol.)
Solubility in water:	completely soluble
Dilution:	10% with demineralised water



In the case of water with high bacteria/organic content periodic shock treatment is recommended to avoid the formation of fouling in the membranes.

- ➔ wide range
- ➔ contains DBNPA
- ➔ biodegradable

Download the technical data on-line: www.idroservice.net/download.aspx

MEMBRANES CLEANING SYSTEM

Systems to recirculate the cleaning solutions and to easily carry out the periodic chemical cleaning of reverse osmosis membranes. The LC 20 model is suitable for systems with membranes 2 1/2" and systems with 3/4" membranes of 4". The LC80 model, consists of pump, electrical panel, flow and tank. It is suitable for systems with membranes from 4" and 8".



Codice	Descrizione	Euro
LC20	Chemical cleaning membrane system	
LC80	Chemical cleaning membrane system	

PRODUCTS OF PRE AND POST OSMOSIS TREATMENT

PRE TREATMENT

The incoming water to the membranes must be microbiologically safe to preserve its life. To ensure this it is usually disinfected by means of sodium hypochlorite or other chemical oxidants. However, if the chlorine residue is not neutralized before entering the system the membranes will certainly be irreparably damaged. The NYTRA RO 1400 reduces the residual chlorine of the feed water to zero, if properly dosed.

POST TREATMENT PERMEATE

Permeate of a reverse osmosis system could be excessively acid and/or poor of minerals for some applications. NYTRA CHEMICAL has created 2 products suitable to neutralize and remineralize the permeate.



The NYTRA RO 1600 provides a balanced blend of minerals, thus increasing the osmotic water hardness.

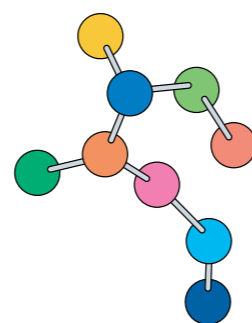
The NYTRA 1700 corrects the pH, leading to permeate values close to 7. Both products are composed of non-hazardous active ingredients and food grade.



NYTRA Ro 1400

CHLORINE REDUCER FOR REVERSE OSMOSIS SYSTEMS

NYTRA RO 1400 is a formulation based on sodium bisulfite it is suitable to remove free and combined chlorine from the feed water of the reverse osmosis systems.



Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 1600

REMINERALIZING FOR OSMOTIC WATER

Product for remineralising water produced by reverse osmosis. Enriches permeate of mineral salts and increases the hardness and T.D.S..

The NYTRA RO 1600 is produced exclusively with food grade ingredients and makes the water produced by the osmosis suitable for drinking water applications.



- ➔ adds salt to permeate
- ➔ food grade ingredients

Download the technical data on-line: www.idroservice.net/download.aspx

NYTRA RO 1700

PH NEUTRALIZING FOR OSMOTIC WATER

Product suitable to raise the pH which is naturally acid in water produced by reverse osmosis. It raises the pH to values close to 7 and enriches permeate with mineral salts.

The NYTRA 1700 is produced with only food grade ingredients and makes the water produced by osmosis suitable for drinking water applications.



- ➔ increase the pH in the permeate
- ➔ food grade ingredients

Download the technical data on-line: www.idroservice.net/download.aspx

Code	Package/Kg	Euro/Kg
N1400-10	10	

Chemical-physical properties

Appearance:	crystal grains
pH:	3.5 - 5 (5% water sol.)
Solubility in water:	470g/l (at 25°C)
Dosage:	0,3 - 2 ppm

Code	Package/Kg	Euro/Kg
N1600-25	25	

Chemical-physical properties

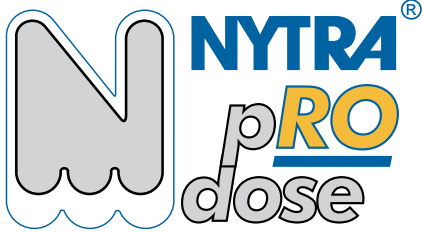
Active ingredients:	mineral salts based on calcium chloride, food grade
Appearance:	white granulates odourless, hygroscopic
pH:	9 - 10,5 (10% water solution)
Density (at 20°C):	0,80 - 0,90 kg/l
Solubility in water:	745 g/l
Dosage:	10 - 220 mg/l

Code	Package/Kg	Euro/Kg
N1700-25	25	

Chemical-physical properties

Active ingredients:	mineral salts based on sodium carbonate, food grade
Appearance:	white granulates odourless, hygroscopic
pH:	11,1 (1% water solution)
Density (at 20°C):	0,90 - 1,10 kg/l
Solubility in water:	210 g/l
Dosage:	10 - 50 mg/l

REVERSE OSMOSIS CHEMICALS



ANALYTICAL DATA SHEET FOR THE CALCULATION OF ANTISCALANT WITH NYTRA PRO DOSE SOFTWARE

→ CHEMICAL ANALYSIS
FEED WATER R. O. SYSTEM

Analysis n.: _____

Date: _____

Lab.: _____

→	Cations	Unit of measure	Value
	Calcium (Ca)	mg/l	
	Magnesium (Mg)	mg/l	
	Barium (Ba)	mg/l	
	Strontium (Sr)	mg/l	
	Potassium (K)	mg/l	
	Lithium (Li)	mg/l	
	Iron (Fe)	mg/l	
	Manganese	mg/l	
	Ammonia (NH ₃)	mg/l	
	Aluminum (Al)	mg/l	
	Boron (B)	mg/l	
→	Anions		
	Chlorides (Cl)	mg/l	
	Sulfates (SO ₄)	mg/l	
	Acidity (CO ₂)	mg/l	
	Alkalinity M (HCO ₃)	mg/l	
	Alkalinity P (CO ₃)	mg/l	
	Silica (SiO ₂)	mg/l	
	Phosphates (PO ₄)	mg/l	
	Hydrogen sulphide (H ₂ S)	mg/l	
	Fluoride (F)	mg/l	
	Nitrate (NO ₃)	mg/l	
→	pH		
	Feed water temperature	°C	
	T.D.S.	mg/l	
	Conductivity	microsiemens	
	Kubel oxidizability	mg/O ₂	
	Total organic matter	mg/l	
→	SPECIFICATIONS FOR REVERSE OSMOSIS SYSTEMS		
	Permeate	m ³ /h	
	Recovery	%	
	Feed water	m ³ /h	
	Pressure	bar	
	Membranes	N°, Marca e tipo	
→	CONFIDENTIAL FOR IDROSERVICE TECHNICAL OFFICE		
	Chemical product recommended:	NYTRA	
	Dose	mg/l	