

## fumados® SG super-concentrate

Liquid Antiscalant and Stabilizer for Reverse Osmosis and Nano-filtration

**fumados® antiscalant super concentrate effectively controls membrane scaling from inorganic scale, metals and colloids**

- High-performance control of inorganic scale, metals colloids
- Ready to use and compatible with all membrane types
- Inherently stable at extreme pHs and temperatures
- Super-concentrate version cuts shipping volume
- No phosphates or phosphate derivatives
- ANSI/NSF Standard 60

### General

fumados SG liquid antiscalant is a high-performance chemical pretreatment that controls inorganic scale, metals and colloids in RO feedwaters.

Its unique performance characteristics provide users with more complete control over system feedwater chemistry, reducing membrane scaling tendencies and minimizing membrane cleaning requirements. fumados SG is compatible with all membrane types and system components.

fumados SG maintain performance integrity at extreme pHs and temperatures. They are also stable in the presence of multivalent ions such as iron. Neither product contains phosphates or phosphate derivatives so they do not contribute to metal precipitation or biological growth in tanks, piping, or the RO.

fumados SG is typically dosed into feedwaters at the rate of 2-6 ppm. As a liquid, fumados SG is ready to use and may be injected neat or it may be diluted to accommodate any systems size.

fumados SG comply with ANSI/NSF Standard 60 requirements and may be used on potable water systems.



### Dendrimer-Based Chemistry as an alternative to conventional crystal modifiers such as

- Phosphonates, phosphates
- Acrylates, maleic and carboxylic acids

### Dendrimer Architecture

- Highly branched macromolecule
- Precise molecular weight (low polydispersity; Mw/Mn= 1,002)
- 3-dimensionally layered structure
- High structural integrity

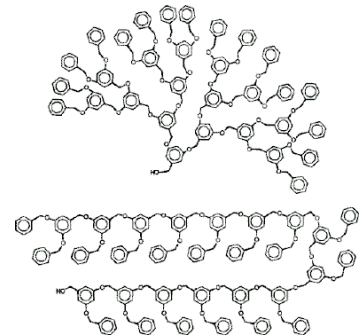


fig.: Dendrimer structure

### Crystal Modification in Reverse Osmosis

- Better solubility, lower viscosity
- Stable at concentrations of 1.000 ppm
- Higher loading capacity
- Lower dosing rates needed
- No fouling even at high overdosing rates
- No phosphates and phosphonates needed
- More rapid nucleation, larger number of nuclei and smaller crystals
- Higher activity even at high TDS range due to lower osmotic pressure
- Stabilises (carbonates, sulfates, phosphates, silica, iron, aluminium,..)
- Compliant with ANSI/NSF Standard 60 (maximum level 10 mg/l)



## Technical Datasheet – fumados SG

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### Stabilization of

- Calcium carbonate
- Calcium sulfate and –phosphate
- Calcium fluoride
- Magnesium hydroxide
- Barium sulfate und Strontium sulfate
- Silica
- Iron and Aluminium
- Colloids

### Properties

- Delivery form: liquid super-concentrate
- Color: clear to light amber
- Storage: store in a dry and dark place at 5°C bis 35°C
- Specific gravity: 1,05 - 1,2 g/l
- pH: 2,2 – 2,5 (fumados SG10-SG50)
- Application area: for all types of membranes

### Dosing

fumados SG is available in 1 liter containers and it may be diluted to accommodate any system.

Transport and storage costs of fumados SG will be reduced to an factor of 11 comparable to other standard products.

fumados SG example for dosing calculation:

Permeate output:	10 m <sup>3</sup> /h	Permeate yield:	85 %
Raw water feed:	11,8 m <sup>3</sup> /h	Recommended dosing rate:	0,4 ppm
Batch volume:	100 liter	1 liter fumados SG	
		99 liter Water	
Dosing pump:	0,38 l/h		
Operating time:	263 h		

### Storage conditions

fumados SG as a super-concentrate is storable up to 3 years. After dilution to the recommended concentration fumados is only temporary storable from now on due to the potential of microbiological infection. Depending on the microbiological stabilisation by silver ions or sodium benzoat, the dilution has to be stored light- and frost-proof and has to be used up to 6 month. Unstabilised and diluted fumados SG should be used within 1 month. The used storage tank for the dilution should be inspected and cleaned several times in a year. The water used for dilution should be microbiological-clean.

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### recommended fumados® dosing rates (BD)

pH < 7,5 Fe, Ba, Sr, F < 0,5 ppm SiO <sub>2</sub> < 10 ppm			
hardness	recommended dosing rate SG	permeate yield	
1	< 7° dH	0,2 ppm	92%
2	< 14°dH	0,3 ppm	88%
3	< 21°dH	0,4 ppm	85%
4	z.B. 40°dH	0,5 ppm	75%

pH-value		
Range of hardness 3 < 10 ppm SiO <sub>2</sub>		
pH value	correction value	permeate yield
< 6,0	BD – 0,05 ppm	85 %
6,1 – 7,0	BD – 0,02 ppm	85 %
7,1 – 7,5	BD	85 %
7,5 – 8,0	BD + 0,03 ppm	80 %
> 8,0		Upon request

Silica		
Range of hardness 3 pH < 7,5		
SiO <sub>2</sub>	correction value	permeate yield
10	BD	85 %
20	BD + 0,02 ppm	85 %
30	BD + 0,03 ppm	85 %
40	BD + 0,05 ppm	85 %
>40		Upon request

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