

ECOMIX®

ADVANCED SOFTENING MATERIAL FOR PROBLEM WATER

SIMPLE SOLUTION FOR 5 PROBLEMS

- hardness
- iron
- manganese
- natural organic matter
- ammonium

Used by water treatment companies globally since 1998

EUROPE

WHAT ECOMIX® IS

▶ ECOMIX® is a scientifically grounded technology, confirmed by 6 patents and service world-wide since 1998.

ECOMIX® works effectively in well water and municipal water within the allowable concentrations of iron and manganese, hardness and natural organic matter.

ECOMIX® consists of five ingredients, including two patented materials.



82
materials researched

1998
developing and
patenting Ecomix®

6 patents



Ecomix® purifies water from:

- ▶ hardness
- ▶ iron
- ▶ manganese
- ▶ natural organic matter
- ▶ ammonium



Certified in compliance with the
NSF/ANSI 44/61/372 standards

HOW ECOMIX® WORKS

▶ Delivered and loaded as homogeneous media

▶ Stratifies into five layers after regeneration

▶ Regenerates with softener plain salt*

Do not use resin cleaner salt or chemicals

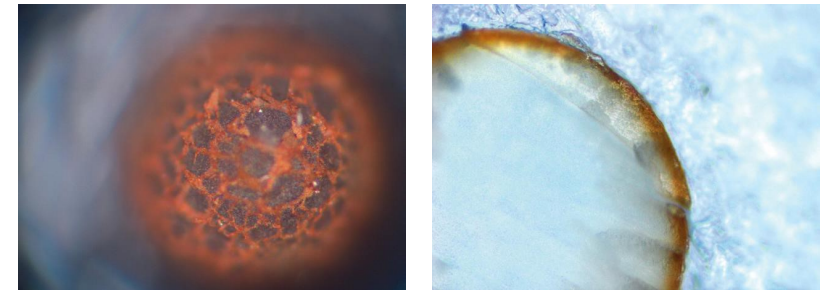
* Potassium chloride at a higher dosage can also be used



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REDUCING IRON AND MANGANESE

▶ FerroSorb is a proprietary sorption material for iron and manganese reduction



Dissected FerroSorb bead

Mechanism of iron and manganese reduction

ADSORPTION – OXIDATION – ACTIVE LAYER FORMATION – AUTOCATALYTIC OXIDATION

This chain works to reduce iron in the dissolved ferrous form (clear water iron).

The surface layer of FerroSorb contains active sites for reduction of manganese.

For best results pre-treat with a sediment filter only.

Aeration and oxidative pre-treatment should be avoided.

Treat iron bacteria before installing ECOMIX®.

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REDUCING ORGANIC MATTER

▶ **HumiSorb is a proprietary sorption material for reduction of natural organic matter (reduces color and chemical oxygen demand)**



Fresh HumiSorb beads



HumiSorb beads after service

Organic compounds and organic iron are reduced due to hydrophobic and electrostatic interactions with HumiSorb.

Check the level of chemical oxygen demand before using ECOMIX® when natural organic matter reduction is desired.

ECOMIX® is intended for the treatment of well water and chlorinated municipal water from tannins.

ECOMIX® is not designed for the treatment of surface water (lakes, ponds, rivers, swamps etc).

Water from a shallow well located close to the surface water should be checked for organic matter concentration and microbiological safety.

Microbiologically unsafe water cannot be treated by ECOMIX®.

ECOMIX® REGENERATION

ECOMIX® is regenerated with the same steps as normal softeners: backwash, brine, rinse.



Calcium and magnesium ions are displaced from the **cation exchange resin** matrix with sodium ions.

Iron and manganese compounds are removed by surface friction of FerroSorb beads in fluidized bed during backwash.

HumiSorb exhibits a reversible mechanism of sorption of organic molecules, and is regenerated with chloride ions.

ECOMIX® EFFICIENCY AND LIMITATIONS

▶ Raw water quality requirements and efficiency of purification



	Influent limitations	Max. efficiency, %	
		Type C	Type A
Hardness	750 ppm CaCO ₃	97	
Iron	15 ppm	98	
Manganese	3 ppm	98	
TOC*	17 ppm C	80	50
Ammonium	4 ppm	90	

*TOC (total organic carbon) is used as a measure of natural organic matter

OPERATING CONDITIONS:

pH 5–9

No limits on influent hydrogen sulfide or anion content

Active chlorine ≤ 1 ppm

TDS ≤ 4000 ppm

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ECOMIX® TECHNICAL SPECIFICATIONS

▶ When designing ECOMIX® units, refer to the following figures:

Visit Ecomix

ecosoft.com/ecomix/



Parameter	Value
Service flow rate	20-25 m/h
Backwash flow rate	10-15 m/h!!!
Brine (slow rinse) flow rate	3-5 m/h
Minimum bed depth	500 mm
Recommended bed depth	800 mm
Freeboard	40% or more
Salt consumption	100 g/L
Brine concentration	8-10%
Water consumption perregeneration	under 10L/L

Rust removal, resin cleaner salt, and chemicals will affect ECOMIX® performance.

If using potassium chloride increase salt dosage to 145 g/L.

ECOMIX® does not affect pH.

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COMMONLY USED VESSELS



	1035	1054	1252	1354	1465	1665	2162
Ecomix® volume, L	25	37	50	62	75	100	150
Service flow rate, m³/h	1.3	1.3	1.8	2.2	2.5	3.3	5.5
System capacity, kg, CaCO₃	0,88	1,32	1,7	2,2	2,6	3,5	5,25
Salt per regeneration, kg	2.5	3.8	5.0	6.2	7.5	10.0	15.0
Backwash flow rate, m³/h !!!	0.6	0.6	0.9	1.1	1.2	1.6	2.7

*ECOMIX is supplied in two size types:

- B a g - 0.88 cu. ft. (25L)
- Half b a g - 0.42 cu. ft. (12L)

!!! Pay attention to the backwash flow rate and choose the right drain line flow control (DLFC).

Visit ecosoft.com/ecomix to use the ECOMIX® calculator.

VOLUME CAPACITY OF ECOMIX® UNIT

▶ Volume capacity can be calculated using just influent hardness and ECOMIX® IX capacity.

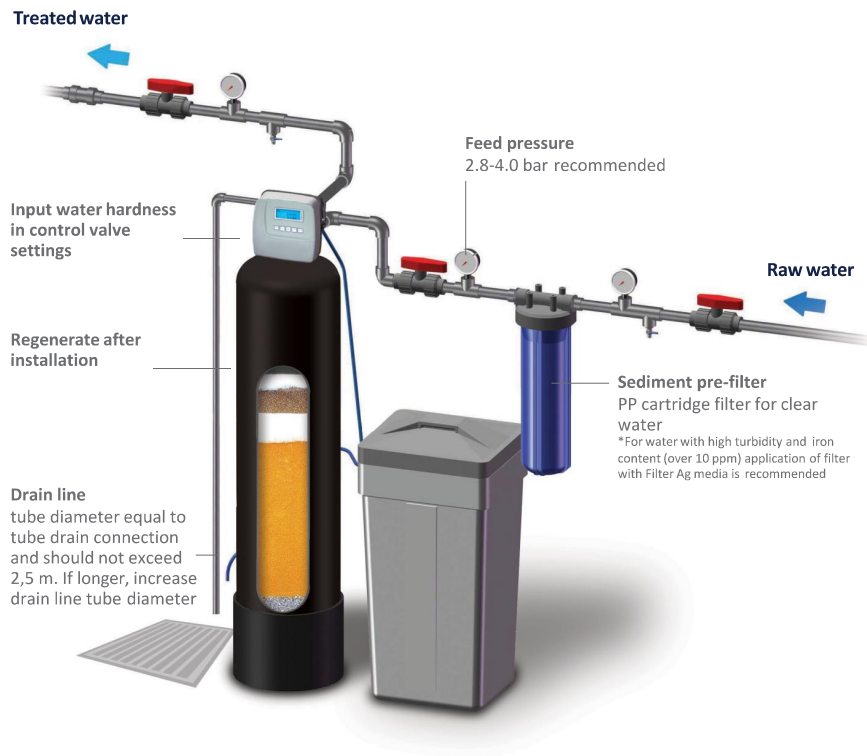
ECOMIX® C - 30 g CaCO₃ / L
ECOMIX® A - 35 g CaCO₃ / L

$$\text{Volume Capacity, m}^3 = \frac{\text{Ecomix volume, L} \times \text{IX Capacity, g CaCO}_3}{\text{Influent Hardness, ppm CaCO}_3}$$



No need to compensate raw water hardness for iron and manganese concentration when calculating volume capacity.

ECOMIX® INSTALLATION SCHEMATIC



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ECOMIX® IN RESIDENTIAL ENVIRONMENT

STANDARD SOLUTIONS



MULTISTAGE SOLUTIONS



1
Sediment filter for sand, rust and silt removal

2
ECOMIX® system for hardness, iron, manganese, natural organic matter & ammonium removal

3
Centaur carbon system for hydrogen sulfide removal

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ECOMIX® IN COMMERCIAL AND INDUSTRIAL APPLICATIONS



ECOMIX® is used to treat raw water supplied to reverse osmosis systems, to soften and reduce iron from boiler feed water, to purify domestic water in hotels, apartment buildings and business centers.

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ECOMIX® PRODUCTION



▶ ECOMIX® is manufactured in Germany

The manufacturing process includes surface activation of FerroSorb and HumiSorb.

Digital control of ingredient mixing ensures consistent quality of finished product across batches.

ECOMIX® is certified in EU for compliance with LFGB requirements for food-contacting materials by TÜV SÜD.

ECOMIX® is certified in compliance with NSF/ANSI standards:

- NSF/ANSI 61 Drinking Water System Components – Health Effects
- NSF/ANSI 44 Residential Cation Exchange Water Softeners
- NSF/ANSI 372 Drinking Water System Components – Lead Content Scheme

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ECOMIX® SUPREMACY

100%
success rate



up to **10** years
service life

Most reliable technology for removal of iron and manganese

Highest permissible concentration of iron and manganese

Smallest regeneration salt requirement

Consistent quality of purified water throughout the material's service life

ECOMIX® is not only a unique water treatment technology. It has been a firm platform for the corporate success of numerous companies around the globe.