



ECOMIX®

ADVANCED SOFTENING MATERIAL FOR PROBLEM WATER

Reduces:

- HARDNESS
- IRON
- MANGANESE
- NATURAL ORGANIC MATTER
- AMMONIUM

Since 1998

SIMPLE SOLUTION FOR 5 PROBLEMS

ECOMIX® is a multi-component, complex filter material for softening and removing major contaminants from well or municipal water.

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



01

Hardness

ECOMIX® softens water with hardness up to 45 gpg (750 mg/L CaCO₃).



02

Iron

ECOMIX® reduces common types of iron: ferrous, organic, and colloidal. Influent iron concentration must not exceed 15 mg/L.



Ecomix A material is tested and certified by WQA against NSF/ANSI 44 and NSF/ANSI/CAN 61 for materials safety only and against NSF/ANSI 372 for low lead. Only certified if the volume of the media per volume of water ratio is < 1600 g/L.



03

Manganese

ECOMIX® is one of the most reliable means for manganese removal. Influent manganese concentration must not exceed 3 mg/L.



04

Natural organic matter

ECOMIX® is a proven technology to remove tannins and other natural organic compounds. Maximum allowed influent Chemical Oxygen Demand concentration is 20 mg/L O₂.



05

Ammonium

Maximum allowed ammonium concentration is 4 mg/L.

STANDARDS OF QUALITY

ECOMIX® is certified according to the requirements of the American NSF standards.

The **Gold Seal** certificate confirms the compliance of certified products with the most stringent requirements of the American standards NSF/ANSI/CAN. Namely:

NSF/ANSI 44:2021 Residential Cation Exchange Water Softeners;

NSF/ANSI 61:2022 Drinking Water System Components — Health Effects;

NSF/ANSI/CAN 372:2020 Drinking Water System Components — Lead Content.



REDUCING OF IRON AND MANGANESE

FerroSorb is a proprietary sorption material for iron and manganese removal



FERROSORB MECHANISM OF ACTION

Iron And Manganese Reduction

Mechanism of iron and manganese reduction: Adsorption > Oxidation > Active Layer Formation > Autocatalytic Oxidation. Due to this process, FerroSorb removes most common species of iron in raw water: ferrous, ferric, organic, and colloidal. Active layer of Ferrosorb contains active sites for manganese removal.

Alternative To Aeration And Chlorination

Best efficiency of ECOMIX® is achieved when raw water is fed directly to Ecomix® softener. Do not use oxidative pre-treatment before the Ecomix® system.

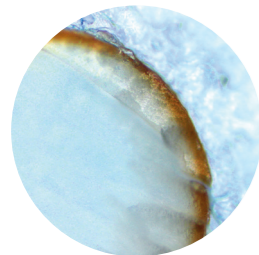
ECOMIX® REGENERATION

Regenerated As A Softener

ECOMIX® is regenerated with the same steps as normal softeners: backwash, brine, rinse, fill. Calcium and magnesium ions are displaced from the cation exchange resin matrix with sodium ions.

Regeneration of FerroSorb

Iron and manganese are removed during backwash stage by surface scour mechanism in fluidized bed.



REMOVING NATURAL ORGANIC MATTER

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



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.

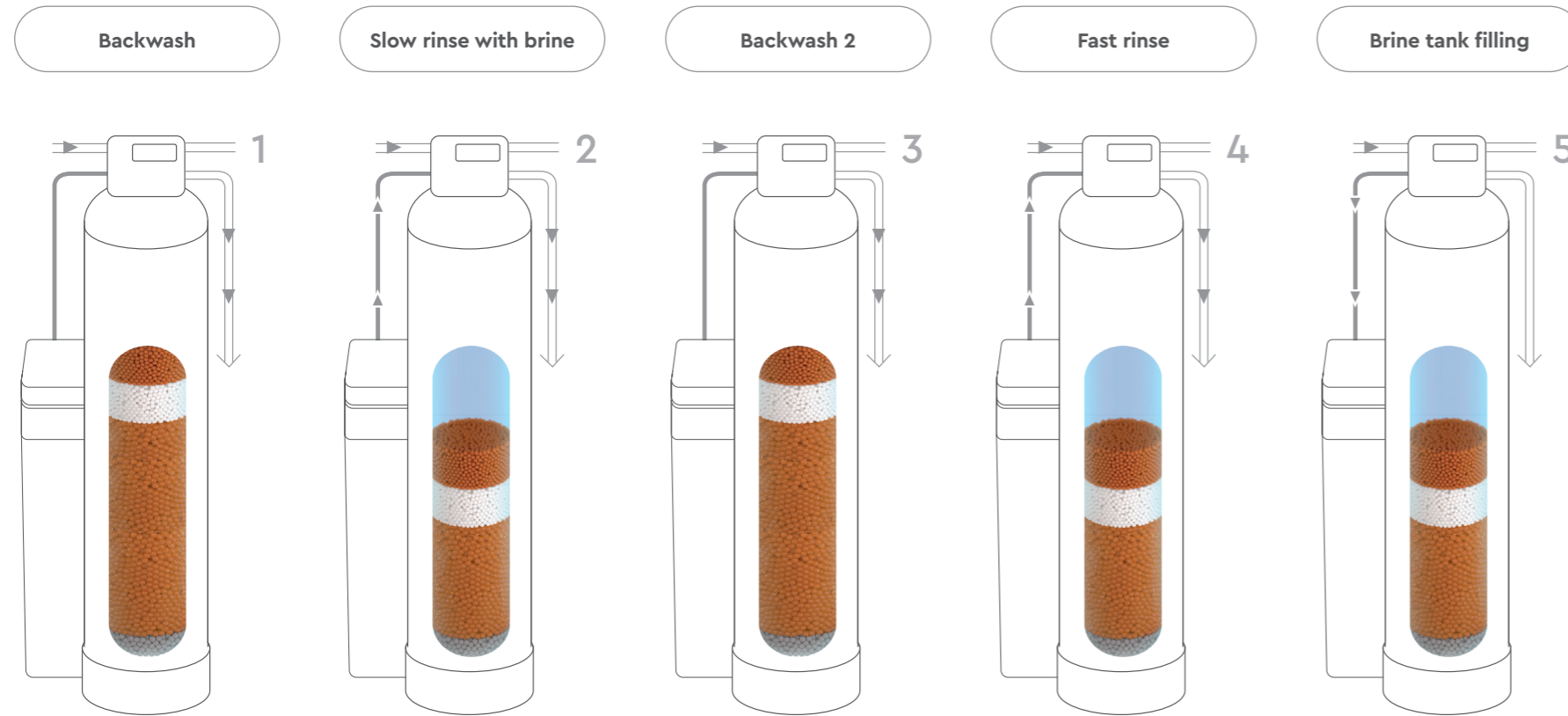
ECOMIX® is intended for the treatment of well water and municipal water.

ECOMIX® is not intended for surface water treatment (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®.

HOW WORKS



🕒 10 ... 12 min

⚠️ apply the correct flow restrictor

🕒 60 min

⚠️ apply the correct injector

🕒 none, or 1 min

⚠️ apply the correct DLFC

🕒 8 ... 10 min

⚠️ apply the correct flow restrictor

🕒 8 ... 10 min

is filled depending on the amount of salt for the next regeneration

Use the ECOMIX® calculator to select the correct injector and DLFC.

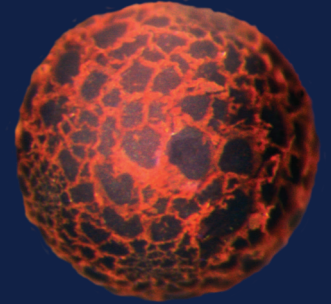
* For pressure tanks larger than 1665, typical duration of each stage should be 20...30% longer.

ECOMIX® REGENERATION

AS A STANDARD SOFTENER

ECOMIX® IS REGENERATED WITH THE SAME STEPS AS NORMAL SOFTENERS:

- BACKWASH
- BRINE RINSING
- FAST RINSING

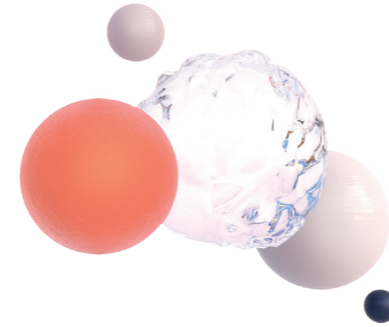


Calcium and magnesium ions are displaced from the cation exchange resin matrix with sodium ions. Iron and manganese compounds are removed by surface friction of **FerroSorb** beads in fluidized bed during backwash. **HumiSorb** exhibits a reversible mechanism of sorption of organic molecules, and is regenerated with chloride ions.

Vessel size	Flow restrictor (DLFC**)	Injector **	
0844	022	C	purple
1054	032	E	white
1252	042	F	blue
1354	053	G	yellow
1465	065	H	green
1665	075	I	orange
2162	130	K	light green

** Injectors and DLFCs are shown for Clack Corporation control valves.

EFFICIENCY AND LIMITATIONS



Footprint

0.4 m²

Економить до **66%** місця

Salt consumption

5 kg

Споживає на **70%** менше солі

Water consumption

0.5 m³

Використовує на **63%** менше води

Cost

\$1800

Дешевше на **50%**

ECOMIX® P Requires stable quality of water

ECOMIX® A Handles seasonal variations in water composition

ECOMIX® C Handles seasonal variations in water composition even with significant changes in raw water quality

Raw water quality requirements and efficiency of purification

	ECOMIX® P	ECOMIX® A	ECOMIX® C
Hardness, ppm CaCO ₃	750	750	750
Iron, mg/L	15	15	15
Manganese, mg/L	3	3	3
Chemical Oxygen Demand, mg/L O ₂	3	20 (Reduces by 50%)	20 (Reduces by 80%)
Ammonium, mg/L	4	4	4
Service life, years	3	5	5

TECHNICAL SPECIFICATIONS

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

Parameter

Service flow rate, m/h	20–25	⚠
Backwash flow rate, m/h	10–15	
Brine (slow rinse) flow rate, m/h	3–5	
Minimum bed depth, mm	500	⚠
Recommended bed depth, mm	800	
Freeboard, %	40 or more	
Salt consumption, g/L*	100	
Brine concentration, %	8–10	
Water consumption per regeneration, L/L	under 10	

*If using potassium chloride increase salt dosage to 150 g/L..

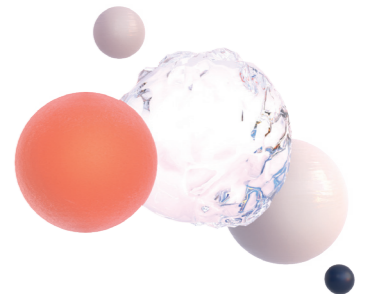


— if the backwash rate is not followed, the iron removal efficiency will be reduced

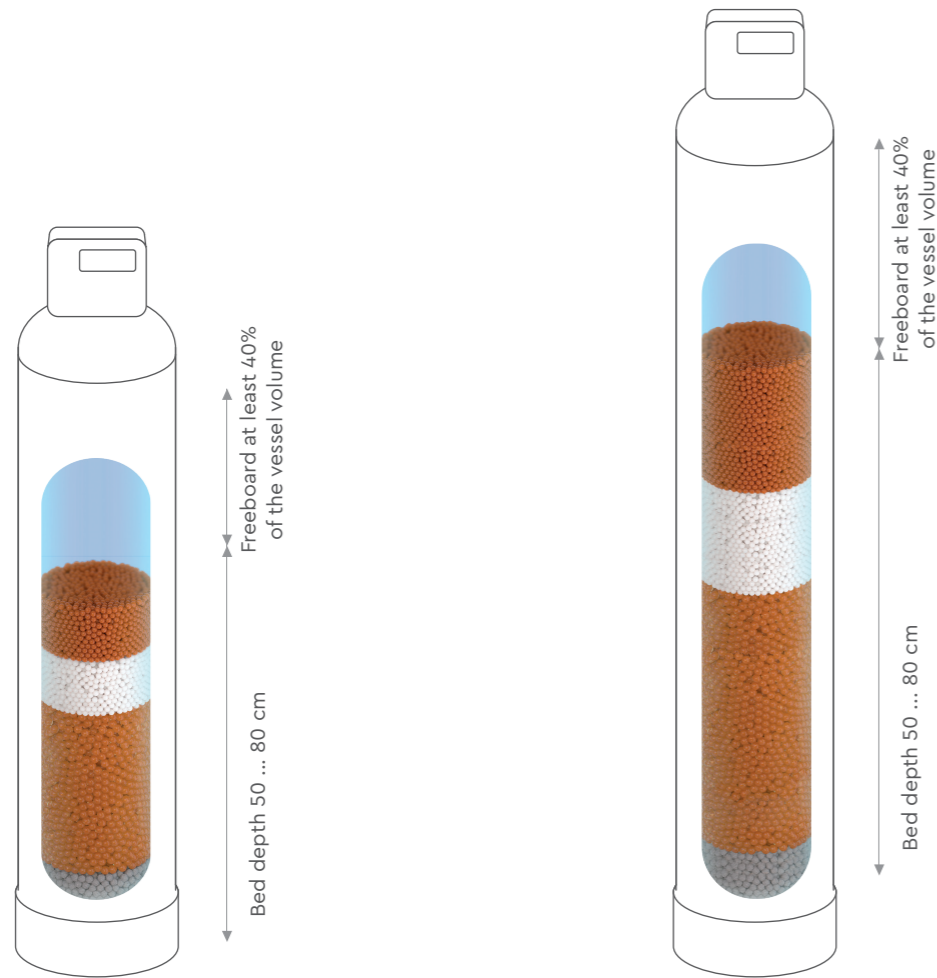


— if the volume of ECOMIX® in the vessel is more than 60%, backwash may not be sufficiently effective

The use of resin cleaner or other harsh regeneration aids will reduce the efficiency of ECOMIX®



ECOMIX® AND BED DEPTH



It is not recommended to use ECOMIX® in filters with a vessel height less than 35"

TECHNICAL SPECIFICATIONS



Size of vessel	1035	1054	1252	1354	1465	1665	2162
Ecomix® volume, L	25	37	50	62	75	100	150
Service flow rate, m ³ /h	1.3	1.3	1.8	2.2	2.5	3.3	5.5
System capacity, kg CaCO ₃ *	15	23	30	37	45	6	90
Salt per regeneration, kg	2.5	3.7	5.0	6.2	7.5	10.0	15.0
Backwash flow rate, m ³ /h	0.6	0.6	0.9	1.1	1.2	1.6	2.7

*The ion exchange capacity ECOMIX® C.
ECOMIX® is supplied in two size types: Bag - 25L and Half bag - 12L.
Visit ecosoft.com or ecomix.us to use the ECOMIX® calculator.

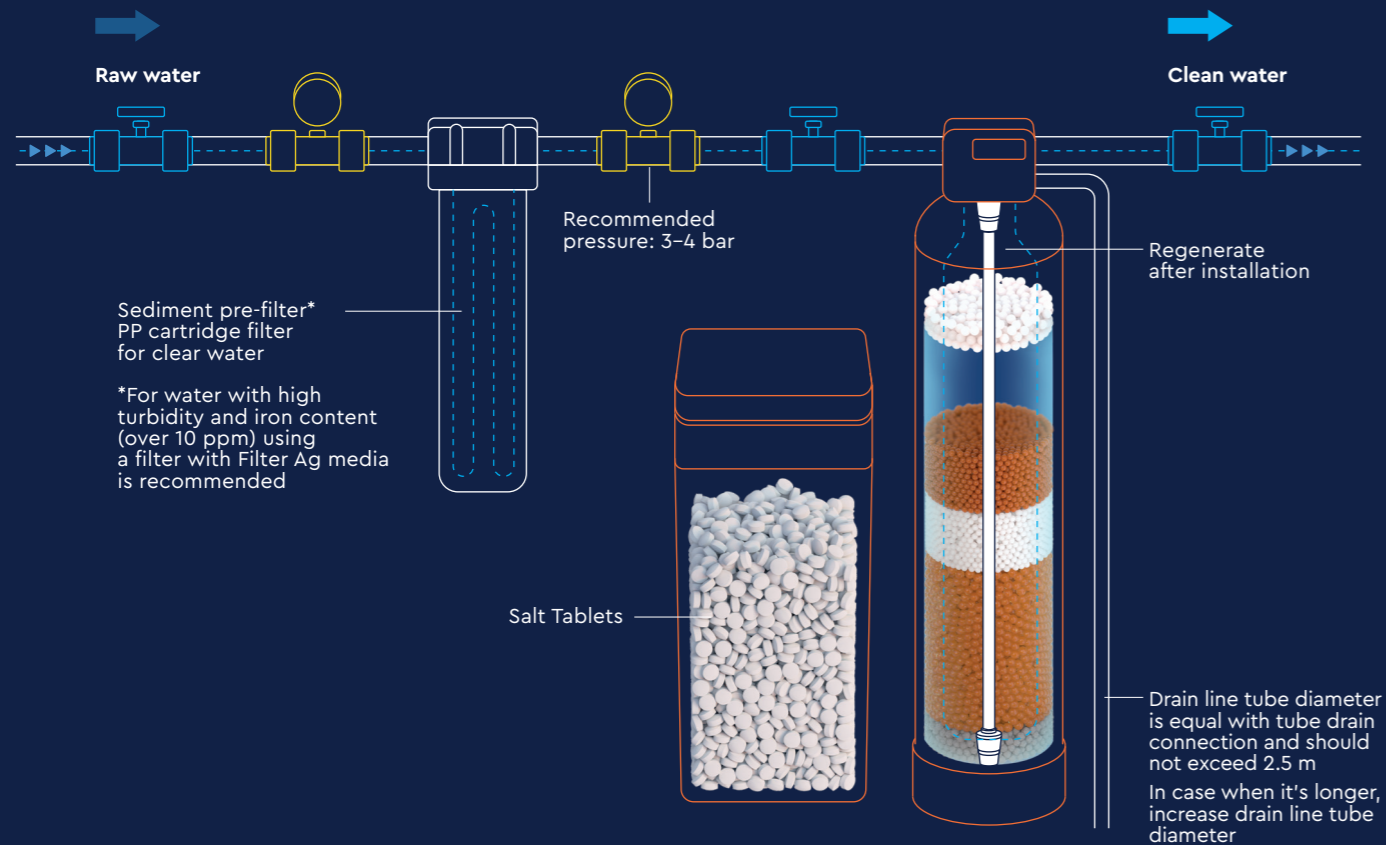
Calculator

ECOMIX®

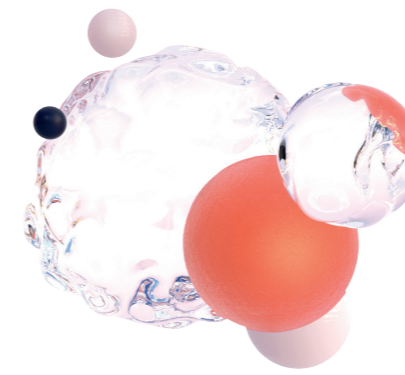


ECOMIX® — THE BEST SOLUTION FOR THE WELL WATER

Filter installation scheme



ECOMIX® is a specially developed material that can be used for treatment of the well water and tap water



ECOMIX® IN HOUSES



Compact solutions:

Model type	Number of bathrooms
FK1035CABCEMIXC	1-2
FK1235CABCEMIXC	2-3

Sediment filter for sand, rust and silt removal



Standard solutions:

Model type	Number of bathrooms
FK1054CEMIXA	1-2
FK1254CEMIXA	2-3
FK1354CEMIXA	3-4

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



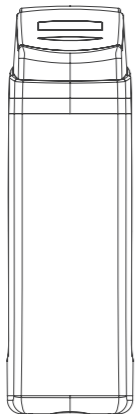
Solutions for large cottages:

Model type	Number of bathrooms
FK1465CEMIXA	3-6
FK1665CEMIXA	5-6

Centaur carbon system for hydrogen sulfide removal



ECOMIX[®] HAS INCREASED EFFICIENCY



Compact system:
Solution with ECOMIX[®]

0.4 m²
FOOTPRINT

Classic system

to remove hardness, iron, manganese, natural organic matter, ammonium

1.7 m²
FOOTPRINT



ECOMIX[®] HAS INCREASED EFFICIENCY



**WITH LESS AREA
AND LESS WATER
DISCHARGE**

3 times
SMALLER AREA

2 times
LESS COST

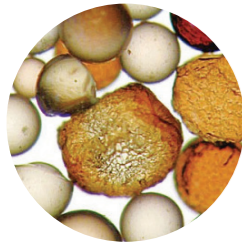
2 times
LESS VALVE
MAINTENANCE

Ha 30%
LESS SALT
CONSUMPTION

2 times
REDUCES OPERATING
WATER COSTS

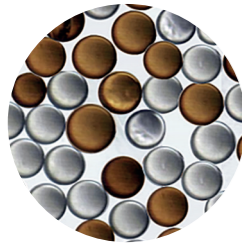
2 times
LESS MAINTENANCE
SPENDING

ECOMIX® VS OTHER COMPLEX MATERIALS



ECOMIX®

The universal solution for most water without special precautions. Simple calculation of the capacity and resource of the filter, which are influenced only by the hardness of water.



Resin mix

Materials based on a mixture of commercially available resins are generally the most affordable. Remove iron, but quickly lose efficiency. Typically, after 20–30 regenerations (about 6 months of operation), such materials lose up to 30% of their capacity..



Zeolites

Zeolite — natural occurring media — used for removal of hardness, iron, manganese, for ammonia reduction and pH correction. They can be poisoned by hydrogen sulphide and organic matter, and also require careful consideration in calculating the size of the filter and filter cycle.

	ECOMIX®	Resin mix	Zeolites
Removed impurities	hardness, iron, manganese, ammonium, organic matter	hardness, iron, manganese	hardness, iron, manganese, ammonium
Capacity	30–40 g CaCO ₃ /L	40–50 g CaCO ₃ /L by hardness and iron salts	25 g CaCO ₃ /L
Service life	ECOMIX® C, A — 5 years ECOMIX® P — 3 years		2–3 years
Salt dose	100 g/L	140–160 g/L	130 g/L
Water consumption per regeneration per 1 liter of material	8–10 L	10–13 L	14–16 L
Restrictions:			
Hardness		No	Hardness must be > 50 ppm CaCO ₃ and TDS > 80 mg/L
Iron	15 mg/L ECOMIX® A, C reduces ferrous and organics iron	10 mg/L (After each regeneration, the filter capacity decreases by 0.7–1.4%). If the iron content is high, the filtration rate must be reduced	10 mg/L. Inorganic iron only
Manganese	3 mg/L	2 mg/L. There may be emissions of manganese in treated water	Fe + Mn < 15 mg/L
Ammonium	4 mg/L	No data	Requires reducing the flow rate 2.5 times
Organic matter	ECOMIX® C reduces by 80%; ECOMIX® A reduces by 50%; ECOMIX® P does not remove	No, they can irreversibly poison resin	No, organic impurities will irreversibly reduce capacity
Regeneration aid chemicals	Not needed, only pelletized salt	Periodic regeneration with special reagents is required	In case of hydrogen sulfide poisoning, regeneration with soda is needed

CALCULATION OF ECOMIX® VOLUME CAPACITY

The volume capacity is calculated in a simple way using only in fluent water hardness and the media's ion exchange capacity as follows:

ECOMIX® C — 30 g CaCO₃/L
ECOMIX® A — 357 g CaCO₃/L
ECOMIX® P — 40 g CaCO₃/L

$$\text{Volume Capacity, m}^3 = \frac{\text{Ecomix}^\circ \text{ volume (L) x Ion-exchange capacity (g CaCO}_3\text{/L)}}{\text{Influent Hardness (ppm CaCO}_3\text{)}}$$

The volume capacity doesn't have to be corrected for the influent iron and manganese levels

Example is given for FK1252 ECOMIX® A:

ECOMIX® A — 35 g CaCO₃/L

25L + 25L

Water test:
 Iron — 8 mg/L;
 Manganese — 0.28 mg/L;
 Hardness — 400 ppm CaCO₃

$$\text{Volume Capacity} = \frac{50 \text{ L} \times 35 \text{ g CaCO}_3\text{/L}}{400 \text{ ppm CaCO}_3} = 4.3 \text{ m}^3$$



ECOMIX® is a specially developed material that can be used for treatment of the well water and tap water

DOES ECOMIX® REALLY WORK SO WELL?

ECOMIX® Type C

Srebrno jezero, Velico Gradište, Serbia

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	676	9
Iron	mg/L	<0.2	9.3	0.18
Manganese	mg/L	<0.05	0.15	<0.05
TOC	mg/L	<5.0	12.7	3.9
Ammonium	mg/L	<0.5	0.45	0.05
TDS	mg/L	<1000	742	870
pH		6.5-8.5	6.9	6.9

ECOMIX® Type P

Kiev, Ukraine

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	525	10
Iron	mg/L	<0.2	2.59	<0.01
Manganese	mg/L	<0.05	0.34	<0.01
TOC	mg/L	<5.0	2.3	2.2
Ammonium	mg/L	<0.5	0.4	0.05
TDS	mg/L	<1000	705	739
pH		6.5-8.5	6.9	6.2

ECOMIX® Type A

Zhibek Zholy, Kazakhstan

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	1150	40
Iron	mg/L	<0.2	0.63	0.17
Manganese	mg/L	<0.05	2.13	<0.05
TDS	mg/L	<1000	3730	3767
pH		6.5-8.5	7.45	7.95

West Palm Beach, FL, USA

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	585	15
Iron	mg/L	<0.2	1.9	0.07
Manganese	mg/L	<0.05	0.04	<0.03
TOC	mg/L	<2.0	6.5	0.27
TDS	mg/L	<1000	625	660

Velyka Aleksandrovka, Ukraine

Test description	Units	Requirements	Raw water	Treated water
Odor	Units	<2	0	0
Turbidity	mg/L	<0.58	2.9	0.21
Hardness	ppm CaCO ₃	<350	525	10
Iron	mg/L	<0.2	0.592	<0.01
Nitrates	mg/L	<50	4	3
TDS	mg/L	<1000	701	737

Deerfield, Wisconsin, USA

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	550	17
Iron	mg/L	<0.2	1.8	0.1
Manganese	mg/L	<0.05	1.7	0.01
TDS	mg/L	<1000	615	648
pH		6.5-8.5	7.1	7.2

ECOMIX® Type A

Pancevo, Serbia

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	535	14
Iron	mg/L	<0.2	2.2	0.16
Manganese	mg/L	<0.05	0.05	0.03
Ammonium	mg/L	<2.0	1.3	0.05
TDS	mg/L	<1000	709	783
pH		6.5-8.5	7.7	7.7

Vattenprov, Sweden

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	468	28
Iron	mg/L	<0.2	1.6	0.15
Manganese	mg/L	<0.05	0.65	0.014
Ammonium	mg/L	<0.5	0.84	0.3
pH		6.5-8.5	7.3	7.35

Dormagen, Germany

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	425	20
Iron	mg/L	<0.2	0.396	0.178
Manganese	mg/L	<0.05	4.89	0.043
TOC	mg/L	<5.0	1.4	1.32
Ammonium	mg/L	<0.5	0.4	0.02
pH		6.5-8.5	7.4	7.6

Grammene, Belgium

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	510	25
Iron	mg/L	<0.2	2.9	0.178
Manganese	mg/L	<0.05	0.25	0.043
TOC	mg/L	<5.0	1.6	1.32
Ammonium	mg/L	<0.5	2.8	0.4

Linköping, Sweden

Test description	Units	Requirements	Raw water	Treated water
Hardness	ppm CaCO ₃	<350	159	10
Iron	mg/L	<0.2	0.68	0.17
Manganese	mg/L	<0.05	0.41	0.04
Ammonium	mg/L	<0.5	0.12	0.1
pH		6.5-8.5	7.8	7.9

For more information visit our website



ECOMIX® Q&A

Can I regenerate with untreated water?

Regenerating with untreated or raw water will not affect the performance of ECOMIX®.

Why is the softening capacity of ECOMIX® so low compared to cation softening resin?

The softening capacity is not lower. The capacity of the cation resin component of ECOMIX® is rated lower because a bag of ECOMIX® contains more than just cation resin. Cation softening resin is only one of the five components in ECOMIX®.

Should I use resin cleaners or salt with resin cleaners when I regenerate ECOMIX® system?

No, resin cleaners should not be used with ECOMIX®. There are several reported cases when ECOMIX® efficiency was severely impaired after usage of resin cleaners. Regular softener salt and proper regeneration sequencing will keep ECOMIX® clean.

How will the TDS change after the system with ECOMIX®?

The TDS after the ECOMIX® system will increase by an average of 10% of the original content. This is due to the replacement of hardness cations with harmless sodium cations during ion exchange.

My tank holds a bag and a half of media. Can I use half a bag of ECOMIX® and save the other half for another installation?

Each bag contains 5 separate components in specific amounts. ECOMIX® components are thoroughly mixed during production and there should be no problem using half a bag. If you intend to use just half it is important to shake the bag before loading the vessel. To avoid the trouble, you can order ECOMIX® in full AND half bags. Specify packaging when ordering from your supplier.

Is it possible to use ECOMIX® when iron content in water is higher than the limit of 15 ppm?

There are ECOMIX® units in operation which successfully remove iron in even greater concentrations. However, before doing so you should contact your water treatment specialist with a complete water analysis.

Can I use ECOMIX® if there is aeration or oxidant dosing ahead of the unit?

We do not recommend installation of oxidation and/or aeration before the ECOMIX® system. If you have to use aeration or oxidant dosing for any reason we highly recommend pretreatment with a multimedia sediment filter and an activated carbon filter to remove residual active chlorine.

Is ECOMIX® sensitive to H₂S?

ECOMIX® is not sensitive to hydrogen sulfide content in well water and its efficiency will not be affected.

Will ECOMIX® reduce H₂S?

Sometimes ECOMIX® may slightly reduce the rotten odor of H₂S but it is not recommended as a solution.

Can I use ECOMIX® if it was accidentally frozen during storage?

Freezing of ECOMIX® should be avoided as it may cause damage to its components. To avoid freezing, ECOMIX® should be stored in a dry room protected from sunlight at temperatures of 35–80 °F (2–27 °C). If it does freeze, ECOMIX® should be thawed out slowly at room temperature before loading and use. Do not treat frozen ECOMIX® with heat or steam.

Why is a top basket distributor necessary?

This distributor is necessary in order to prevent ECOMIX® from being lost during the backwashing sequence of regeneration.

What happens if I operate the ECOMIX® system without that first regeneration?

The system will not remove the contaminants properly. There are 5 components in one bag of ECOMIX®. For proper filter operation these components need to be «layered». When ECOMIX® is being regenerated, the mixture self-classifies into layers making it becoming ready for usage.

Is it true that ECOMIX® will remove all types of iron, including ferric?

ECOMIX® will not remove ferric or oxidized iron efficiently. In applications where ferric iron is present we recommend to install a sediment filter before the ECOMIX® system to trap ferric iron particulates.

Can I use ECOMIX® in cases of high iron, manganese or tannins content and with low hardness level?

ECOMIX® will operate successfully under these conditions. However, raw water hardness must be used to program the control valve and you must set the «Day Override» to 3 or 4 days. Be sure to contact your water treatment specialist if you have any questions.

My application is a well that is placed close to the surface water (lake, rivers, canals, ponds).

Water in shallow which are close to the surface water may be a mixture of well and surface water and may have higher than normal TOC and color. It could be microbiologically contaminated. In these situations, ECOMIX® is applicable but additional treatment may be required. We recommend paying attention to the color of the water and doing a tannin test. You must strictly follow the test instructions. For example, commonly used LaMotte test kits require a 30-minute wait before the results are indicated. Once complete, please send the water analysis and the tannin test results with a picture of the water in a white bucket to your water treatment specialist.

Is the Ferrosorb an ion exchange based product that is also regenerated by salt?

Ferrosorb is regenerated due to surface scouring mechanism during backwash. This is the reason why we always draw attention on the proper backwash flow rate.

Can I use ECOMIX® to just remove organic matter and tannins?

ECOMIX® should not be used if organic matter reduction is the only purpose of treatment. But ECOMIX® can be used to reduce organic matter (color) and to soften water from well or municipal supply. The unit's capacity should still be rated based on raw water hardness.

I have customers who use surface water (lake, rivers, canals, ponds) rather than well water. Can I use ECOMIX® for this application?

ECOMIX® is intended for well, but not the surface water treatment. Surface water may be microbiologically contaminated, have high levels of TOC (total organic carbons), tannins and color that often exceed ECOMIX® limitations. Surface water can be treated with ECOMIX® only after chlorination and sediment filtration followed by activated carbon filter.

Is ECOMIX® sensitive to active chlorine, pH level or TDS?

ECOMIX® shows stable operation with active chlorine levels below 1 ppm and pH in the range of 5 to 9. ECOMIX® is not affected by the anion composition of the water and is stable with feed water TDS below 4000 ppm.

For more information
visit our website



ECOMIX®

up to 10 years

OF SERVICE LIFE

Simple calculation of the volume capacity using influent water hardness only

High efficiency, which does not depend on water pH level (5 ... 9), presence of H₂S and anionic composition

No acidic, alkaline or deironing chemicals are required for regeneration, only regular tableted salt

No pretreatment with oxidizing agents is required due to remove iron and manganese

INo dumping of iron and manganese even if the service run exceeds the softener's volume capacity

Low salt requirement — 100 g of NaCl per 1 liter of filter loading for one regeneration

Low water consumption for regeneration — 5-10 of filter loading volumes

NSF/ANSI and TÜV SÜD quality certifications

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

ecosoft

ecosoft.com