Ecomix®

ADVANCED SOFTENING MATERIAL
for problem water

SIMPLE SOLUTION
FOR 5 PROBLEMS

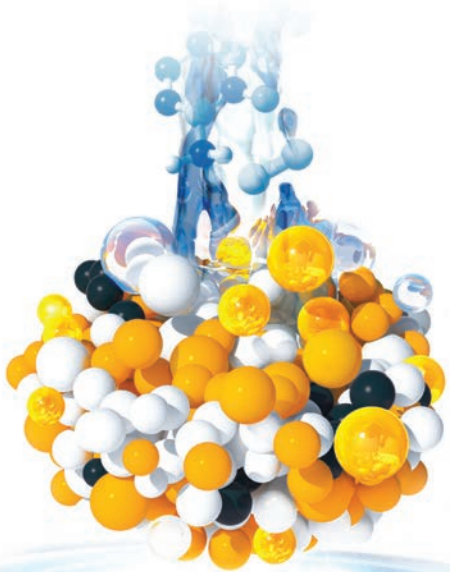
- hardness
- iron
- manganese
- natural organic matter
- ammonium

Used by water treatment companies globally since 1998

WHAT ECOMIX® IS

Filtration material for problem water with iron compounds.
Contains five ingredients of various origin, including two patented materials

6 patents



82
materials researched

1998
developing and patenting Ecomix®

Ecomix® purifies water from:

- hardness
- iron
- manganese
- natural organic matter (including tannins)
- ammonium

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

HOW ECOMIX® WORKS

- **Delivered and loaded as homogeneous media**
- **Classifies in five strata on first regeneration**
- **Regenerates with common softener salt**

Inert layer
removes oxidized iron

FerroSorb
removes iron and manganese compounds

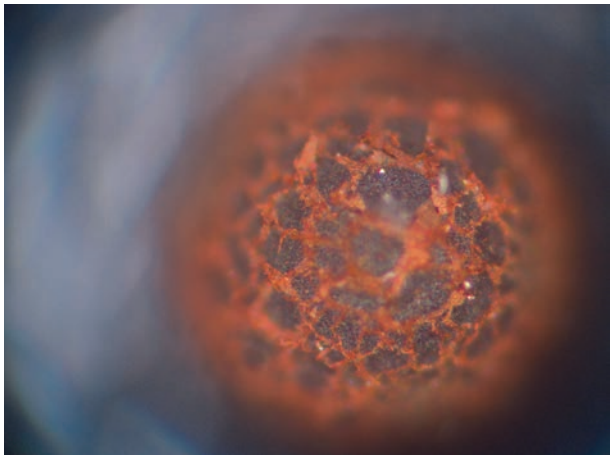
HumiSorb
removes natural organic matter and metalorganic impurities

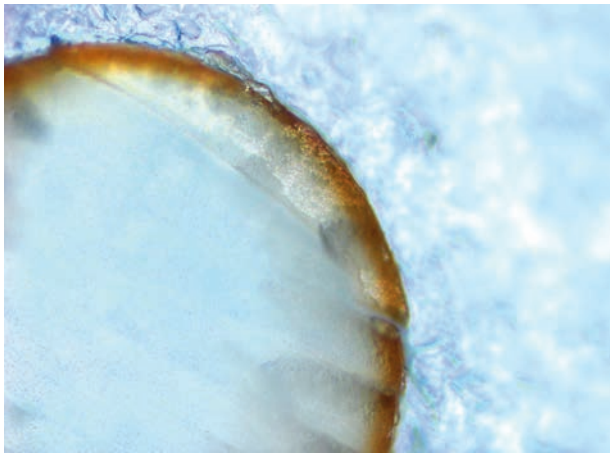
Cation exchange resin
softens water

Quartz sand
ensures uniform flow across the vessel

REMOVING IRON AND MANGANESE

FerroSorb is a proprietary sorption material for iron and manganese removal





Dissected FerroSorb bead

Mechanism of iron removal

ADSORPTION – OXIDATION – ACTIVE LAYER FORMATION – AUTOCATALYTIC OXIDATION

This chain works to remove iron in dissolved, oxide, organic, and colloid forms.

Surface layer of FerroSorb contains active sites for sorption of manganese.

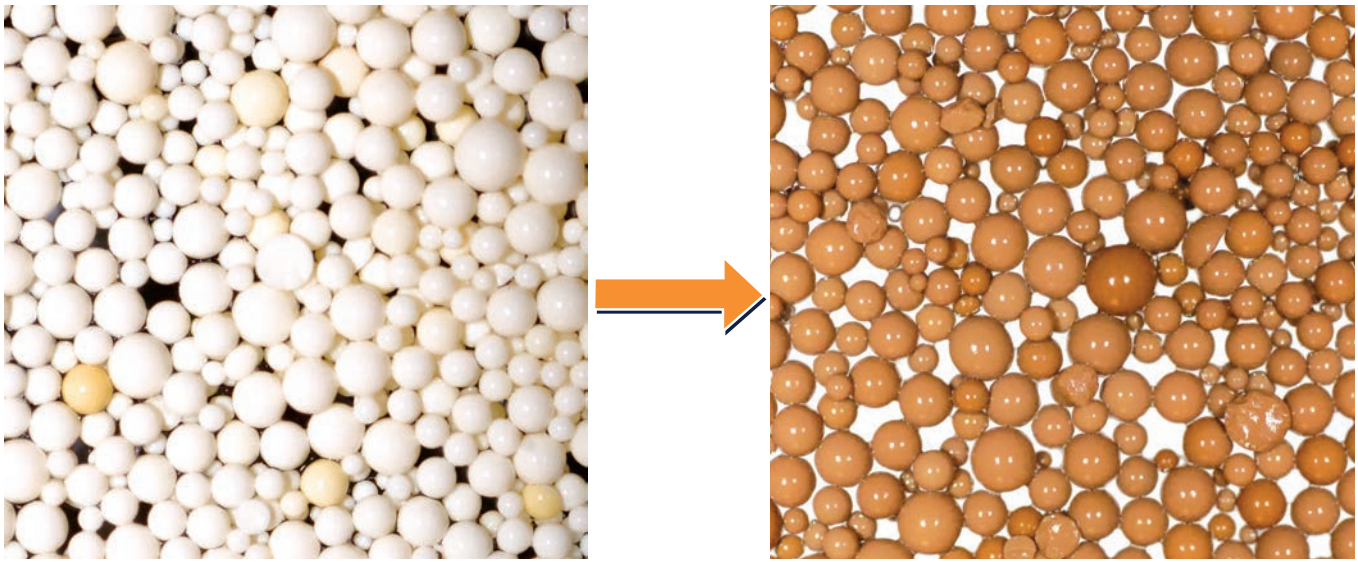
Ecomix works best with raw wellwater supplied directly to Ecomix unit.

Oxidative pre-treatment is unnecessary and should be avoided.

REMOVING ORGANIC MATTER

HumiSorb is a proprietary sorption material for removal of natural organic matter (reduces color and tannins)

Organic compounds are removed by the mechanism of hydrophobic and electrostatic interactions.

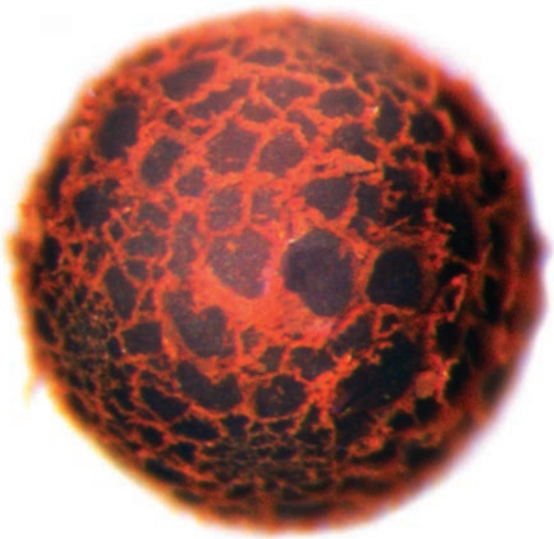


Fresh HumiSorb beads

HumiSorb beads after service

ECOMIX® REGENERATION

Ecomix® regenerates 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

	Raw water limitations	Max. efficiency, %
Hardness	45 gpg	97
Iron	15 ppm	98
Manganese	3 ppm	98
TOC* (including tannins)	17 ppm C	80
Ammonium	4 ppm	90

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

OPERATING CONDITIONS:

pH 5–9

No limits on influent hydrogen sulfide or anion content

Active chlorine ≤ 1 ppm

TDS ≤ 4000 ppm

ECOMIX® TECHNICAL SPECIFICATIONS

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

Ion-exchange capacity of ECOMIX – 13 000 grain/cu.ft.

Parameter	Value
Service flow rate	8-10 gpm/ft^2
Backwash flow rate	4-6 gpm/ft^2
Brine (slow rinse) flow rate	1.2-2.0 gpm/ft^2
Minimum bed depth	20 inches
Recommended bed depth	30 inches
Freeboard	40% or more
Salt consumption	6.3 lbs/ft^3
Brine concentration	8-10%
Water consumption per regeneration	below 75 gallon/ft^3

COMMONLY USED VESSELS

Size of vessel	1035	1054	1252	1354	1465	1665	2162
Ecomix® volume, bags*	1.0	1.5	2.0	2.5	3.0	4.0	6.0
Service flow rate, gpm	5.7	5.7	8.0	10.0	11.0	14.5	24.3
System capacity, grains	11 500	17 000	23 000	28 500	34 500	46 000	69 000
Salt per regeneration, lbs.	5.5	8.4	11.0	13.7	16.5	22.0	33.0
Backwash flow rate, gpm	2.6	2.6	4.0	4.9	5.3	7.1	11.9

*Ecomix is supplied in two size types:

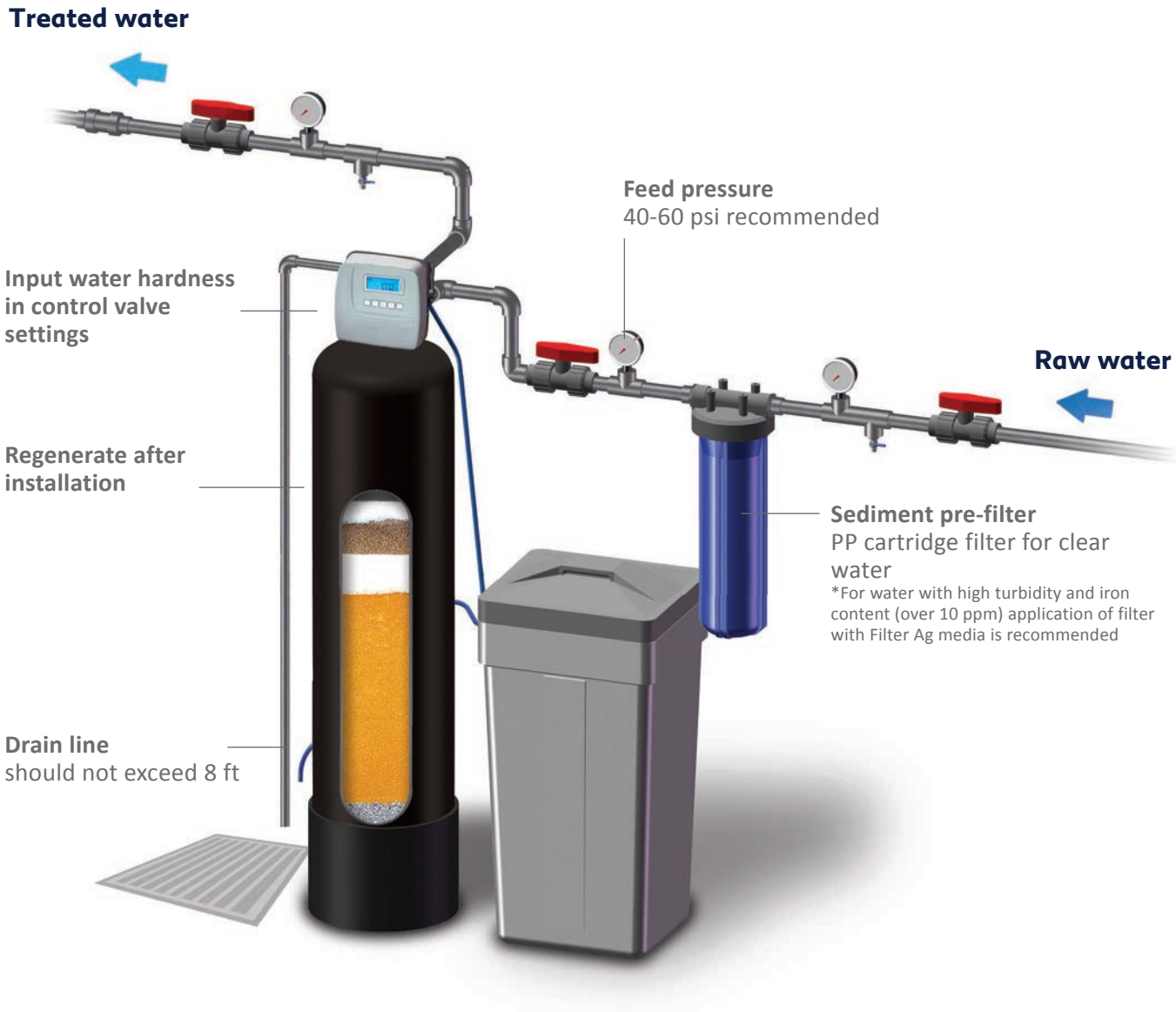
- Bag — 0.88 cu. ft. (25L)
- Half bag — 0.42 cu. ft. (12L)

VOLUME CAPACITY OF ECOMIX® UNIT

Volume capacity can be calculated using just influent hardness and Ecomix system capacity.

$$\text{Volume Capacity, gal} = \frac{\text{System Capacity, grains}}{\text{Raw water Hardness, gpg}}$$

ECOMIX® INSTALLATION SCHEMATIC



ECOMIX® IN RESIDENTIAL ENVIRONMENT

STANDARD 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

MULTISTAGE SOLUTIONS

ECOMIX® IN COMMERCIAL AND INDUSTRIAL APPLICATIONS

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

ECOMIX® PRODUCTION

Ecomix® is manufactured in Germany

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

ECOMIX® SUPREMACY

100 %
success rate

Ecomix® inside

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.

Ecomix®

2015

Ecomix® is certified in compliance with NSF/ANSI standards

2014

2013

2012

2011

Ecomix® is certified in EU by TÜV SÜD

2010

2009

2008

2007

18 years of success

2006

2005

2004

2003

2002

2001

2000

1999

1998

SIMPLE SOLUTION FOR 5 PROBLEMS

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

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Made in Germany

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