

A HIGH-RESOLUTION

**Redox**

FILTERSORB  
FILTRATION

ADSORPTION

INSTANT PRODUCTS

OXY TREATMENT

SYSTEMS

# AQUA Redox

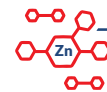
ADVANCED MOF FOR CHEMICAL-FREE WATER DISINFECTION

## A NEW ERA IN WATER TREATMENT

### INTRODUCTION

**AQUARedox** is the world's first High-Redox Technology, a next-generation granular filtration media that revolutionizes water treatment by **Advanced Oxidation-Reduction (Redox)** processes.

**AQUARedox** is uniquely engineered using two specialized carbon-based adsorbers:



Zn-Mesoporous Metal Organic Framework incorporated with Copper ions on Modified Activated Carbon

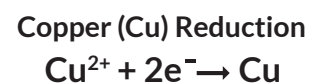
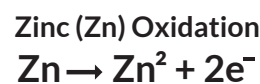
### HOW AQUAREDOX WORKS

#### THE REDOX MECHANISM

**AQUARedox** is a dual-function granular filtration media that integrates:

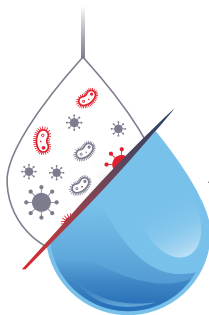
- Zinc-Coated Activated Carbon as an Anode (Electron Donor)
- Copper-Coated Activated Carbon as a Cathode (Electron Acceptor)

As water flows through the **AQUARedox** filtration media, it undergoes a continuous electro chemical reaction, where the zinc-coated carbon donates electrons (Oxidation) and the copper-coated carbon accepts electrons (Reduction). This controlled redox environment destroys organic contaminants, reduces heavy metals, and neutralizes harmful microorganisms.



70%

Copper-Coated  
Activated Carbon  
(Cathode)



30%

Zinc-Coated  
Activated Carbon  
(Anode)

Together, these two highly conductive, regenerable carbons create an electrochemical Redox reaction that eliminates at an atomic level. This self-sustaining redox cycle ensures superior oxidation, disinfection, and organics removal, including heavy metals, setting a new standard in water treatment efficiency.

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## ADVANCED OXIDATION-REDUCTION

This reaction produces highly active Hydroxyl Radicals (OH<sup>•</sup>), Sulfate Radicals (SO<sub>4</sub><sup>•-</sup>), Superoxide Radicals (O<sub>2</sub><sup>•-</sup>) Making **AQUARedox** one of the **most powerful non-toxic oxidizers** available.

### ✓ ELIMINATES 99.9% OF

Glyphosate, Heptachlor/Heptachlor Epoxide, Hexachloro benzene, Methoxy chlor, Methylene chloride, Pentachlorophenol, Polychlorinated Biphenyls (PCBs), Pyrethroids, Toxaphene.

*All these contaminants have serious health effects.*

### ✓ KILLS BACTERIA & VIRUSES

Biofilm, Legionella, E. Coli, Salmonella, Pseudomonas

### ✓ NEUTRALIZES ALL DISINFECTION BYPRODUCTS

No Chlorine, No Halogenated by products (HBPs) These are very toxic. No Trihalomethanes (THMs: mainly Chloroform) and No Haloacetic Acids (HAAs), with Smaller amounts of Haloaldehydes, Haloacetonitriles and Haloketones.

### ✓ ELIMINATES PHARMACEUTICALS

Scientists have demonstrated the presence of pharmaceuticals in drinking water is a major concern all over the world. **AQUARedox** is the first media that eliminates all pharmaceuticals.



## WORLD'S FIRST HIGH-REDOX TECHNOLOGY

### ✓ ELIMINATES ORGANIC POLLUTANTS

Pesticides, Insecticides, Herbicides, Rodenticides, and Fungicides.

### ✓ REMOVES HEAVY METALS

**Lead, Mercury, and Chromium** are big concerns for the health

### ✓ ELIMINATES

2,4-Dichlorophenoxyacetic Acid (2,4-D), Aldrin/Dieldrin, Atrazine, Chlordane, Chlordecone, DDT, UDE, DDD, Endosulfan and Endrin.

#### Lead can cause serious health problems

If too much enters your body from drinking water. It can cause damage to the **Brain and Kidneys** and can interfere with the production of **red blood cells** that carry oxygen to all parts of your body.



### Mercury for Health Concerns

**Elemental mercury**, if inhaled, can cause permanent lung damage and potential brain damage. Inorganic mercury can damage kidneys and cause blood loss.

Organic mercury can damage your central nervous system (**Brain and Spinal cord**). Large amounts of **mercury** or long-term exposure can lead to death if not removed from drinking water.

The Detrimental Impact of Mercury in **Drinking Water** on Worldwide Residents.

### Neurological Disorders



Cardiovascular Problems



Kidney Damage



Mental Health Issues

### Further Reasons to Be Concerned About Mercury in Your Water

- ✘ Damage to the Immune System
- ✘ Potential for Carcinogenic Effects
- ✘ Impact on Wildlife and Ecosystems

**Watch Water®** is one of the largest privately owned **AQUARedox** water media manufacturer in the world. Our focus is to bring health and wellness to every human being who believes they deserve the best quality **drinking water**.

### Eliminate Chromium-6 Out of Your Water by Redox-assisted Adsorption

The Selective Removal of Cr(VI) and Cr(Total). Unlike conventional oxidizers, which are chlorine-based compounds, is jargon to describe certain chlorine-containing substances that are used to disinfect water. The presence of **organic matter** can make them less effective as disinfectants.

They include the following chemicals

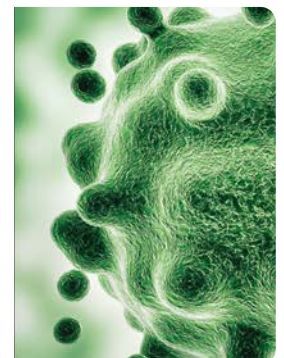
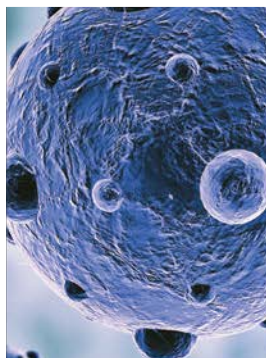
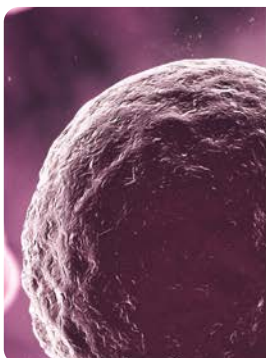
1. Sodium hypochlorite
2. Monochloramine
3. Halazone
4. Chlorine dioxide
5. HOCl (Hypochlorous Acid)



### These chlorine products are used to:

- ✘ Disinfection/Disinfecting water
- ✘ Disinfecting pools
- ✘ Making pesticides

**AQUARedox** is a renewable, long-lasting, non-toxic solution that actively maintains its efficiency



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## KEY FEATURES & ADVANTAGES

### 1 | Granular High-Resolution Redox Media

- ❖ **Dual-Coated Carbon Design** : 70% Copper-Coated Activated Carbon (Cathode) + 30% Zinc-Coated Activated Carbon (Anode)
- ❖ **Self-Sustaining Redox Cycle**: No external power source required
- ❖ **Regenerable & Long-Lasting**: Unlike traditional media, **AQUARedox** can be recharged for continuous use

### 2 | Electrochemical Advanced Oxidation Process (EAOP)

- ❖ Generates **Hydroxyl Radicals (OH•)** and **Sulfate Radicals (SO<sub>4</sub>•<sup>-</sup>)** for unparalleled contaminant breakdown.
- ❖ Provides a continuous source of oxidation without degrading over time.

### 3 | Sustainable & Non-Toxic

- ❖ No Chlorine, Sodium Hypochlorite, Calcium Hypochlorite, Chlorine Dioxide and Chloramines including **HOCl**.
- ❖ Adsorbs THMs & DBPs
- ❖ Removes contaminants without adding harmful chemicals to water.
- ❖ Fully biodegradable & environmentally friendly

### 4 | Multi-Contaminant Removal Efficiency

Bacteria & Viruses	99.9%
Biofilm Removal	99.9%
Pesticides & Herbicides	99.9%
Pharmaceuticals & PPCPs	99%
Lead	99.9%
Mercury	99.9%
Chromium (Cr <sup>3</sup> , Cr <sup>6</sup> )	99.9%
Microplastics	100%
VOCs	100%
CYSTS and MTBE	100%

## TECHNICAL DATASHEET

Parameter	Details
Product Name	<b>AQUARedox</b>
Technology Type	High-Resolution Redox-Media
Base Material	High-Class Activated Coconut Carbon
Coating	MOFs (Metal-Organic Frameworks)
Composition	70% Copper-Coating + 30% Zinc-Coating
Appearance	Granular, Dark Grey/Black
Regeneration	Fully regenerable with <b>Oxydes-P</b>
Toxicity	Non-Toxic, Environmentally Safe

## CHEMICAL & PHYSICAL PROPERTIES

Parameter	Value
Oxidation-Reduction Potential (ORP)	+900 to +950 mV
pH Stability Range	6.0 – 9.5
Sulfate Radical Generation	YES
Hydroxyl Radical Formation	YES
Reaction Speed	Very Fast
Chemical-Free	YES
Power-Free	YES
Maintenance-Free	YES
Cost Effective	YES



REGENERABLE, SAFE,  
AND CHEMICAL-FREE DISINFECTION  
FOR A HEALTHIER ENVIRONMENT.



**Made in Germany**  
Engineered for Excellence

## SYSTEM DESIGN FORMULA

### SI Units

$$\text{Flow Rate (lph)} = \text{Bed Volume} \times \text{BV/h}$$

OR

$$\text{Flow Rate (m}^3\text{/h)} = \frac{(\text{Media Volume (Liters)} \times 50)}{1000}$$

### US Units

$$\text{Flow Rate (gpm)} = \frac{\text{Bed Volume} \times \text{BV/h} \times 0.264}{60}$$

### Example:

**Bed Volume (BV)** = Volume of **AQUARedox** media in the system (measured in liters or cubic meters).  
**AQUARedox** = 50 BV/h

### Example Calculation

System contains 1 liter of **AQUARedox** media

$$\text{Flow Rate (lph)} = 1 \text{ liter} \times 50 \text{ BV/h} = 50 \text{ liters/hour}$$

OR

$$\text{Flow Rate (m}^3\text{/h)} = \frac{(1 \text{ liter} \times 50 \text{ BV/h})}{1000} = 0.05 \text{ m}^3\text{/h}$$

$$\text{Flow Rate (gpm)} = \frac{1 \text{ liter} \times 50 \text{ BV/h} \times 0.264}{60} = 0.22 \text{ gpm}$$

System contains 10 liter of **AQUARedox** media

$$\text{Flow Rate (lph)} = 10 \text{ liter} \times 50 \text{ BV/h} = 500 \text{ liters/hour}$$

OR

$$\text{Flow Rate (m}^3\text{/h)} = \frac{(10 \text{ liter} \times 50 \text{ BV/h})}{1000} = 0.5 \text{ m}^3\text{/h}$$

$$\text{Flow Rate (gpm)} = \frac{10 \text{ liter} \times 50 \text{ BV/h} \times 0.264}{60} = 2.2 \text{ gpm}$$

## THE EMPTY BED CONTACT TIME (EBCT)

The Empty Bed Contact Time (EBCT) is calculated using the formula

$$\text{EBCT} = \frac{\text{Volume of the media bed(L)}}{\text{Flow rate(L/S)}}$$

While using US unit,  
Consider 1 gpm = 0.0631 l/s

### Calculation

$$\text{EBCT} = \frac{1\text{L}}{0.01389 \text{ L/S}} = 72 \text{ Seconds}$$

Thus, the **Empty Bed Contact Time (EBCT)** for **AQUARedox** is **72 seconds** per liter of media

### Where

**Volume of the media bed** is the total volume of **AQUARedox** media in the pressure vessel or filter

### Given

- ❖ Flow rate: 50 liters per liter of **AQUARedox** media per hours(L/h)
- ❖ Convert to seconds  
 $50 \text{ L/h} = \frac{50}{3600} \text{ L/S} = 0.01389 \text{ L/S}$
- ❖ Media bed volume : 1 liter(L) (Since EBCT is calculated per liter of media)



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## AQUARedox<sup>®</sup> STANDARD SYSTEMS

Tank Size	Pressure Vessel			AQUARedox Media Amount	Service Flowrate				Backwash Flowrate	
	Tank Volume (liter)	Tank Height (cm)	Tank Diameter (cm)	Volume (liter)	Standard		Maximum		m <sup>3</sup> /h	gpm
					m <sup>3</sup> /h	gpm	m <sup>3</sup> /h	gpm		
8x44	32.0	111.7	20.3	25	1.0	4.4	1.3	5.5	0.5	2.1
10x44	49.0	111.8	25.4	35	1.4	6.2	1.8	7.7	0.8	3.3
10x54	60.7	137.1	25.4	45	1.8	7.9	2.3	9.9	0.8	3.3
12x52	84.0	132.1	30.48	60	2.4	10.6	3.0	13.2	1.1	4.8
13x54	105.7	137.4	33.0	75	3.0	13.2	3.8	16.5	1.3	5.7
14x65	148.0	183.0	35.6	100	4.0	17.6	5.0	22.0	1.5	6.6
16x65	170.0	183.0	40.6	120	4.8	21	6.0	26.4	1.9	8.6
18x65	257.0	189.0	45.7	180	7.2	32	9.0	40	2.5	10.8
21x60	310.0	177.0	53.3	220	8.8	39	11.0	48	3.4	14.8
24x69	450.0	202.0	61.0	315	12.6	55	15.8	69	4.4	19.3
30x72	640.0	182.8	76.2	450	18.0	79	22.5	99	6.8	30.1
30x78	710.0	207.3	76.2	500	20.0	88	25.0	110	6.8	30.1
36x78	1020.0	236.7	91.4	715	28.6	126	35.8	157	9.9	43.4
42x78	1360.0	209.0	106.7	950	38.0	167	47.5	209	13.4	59.0
48x82	1840.0	213.3	121.9	1300	52.0	229	65.0	286	17.5	77.1

Standard systems are designed for easy and intuitive operation, ensuring a quick understanding of their functionality. For larger or more complex systems, we offer customized solutions tailored to your specific needs. If you require further information or personalized consultation, please feel free to contact Watch Water Germany. Our team will be happy to assist you in finding the best solution for your requirements

## REDEFINING WATER TREATMENT WITH **ADVANCED REDOX SYSTEMS**

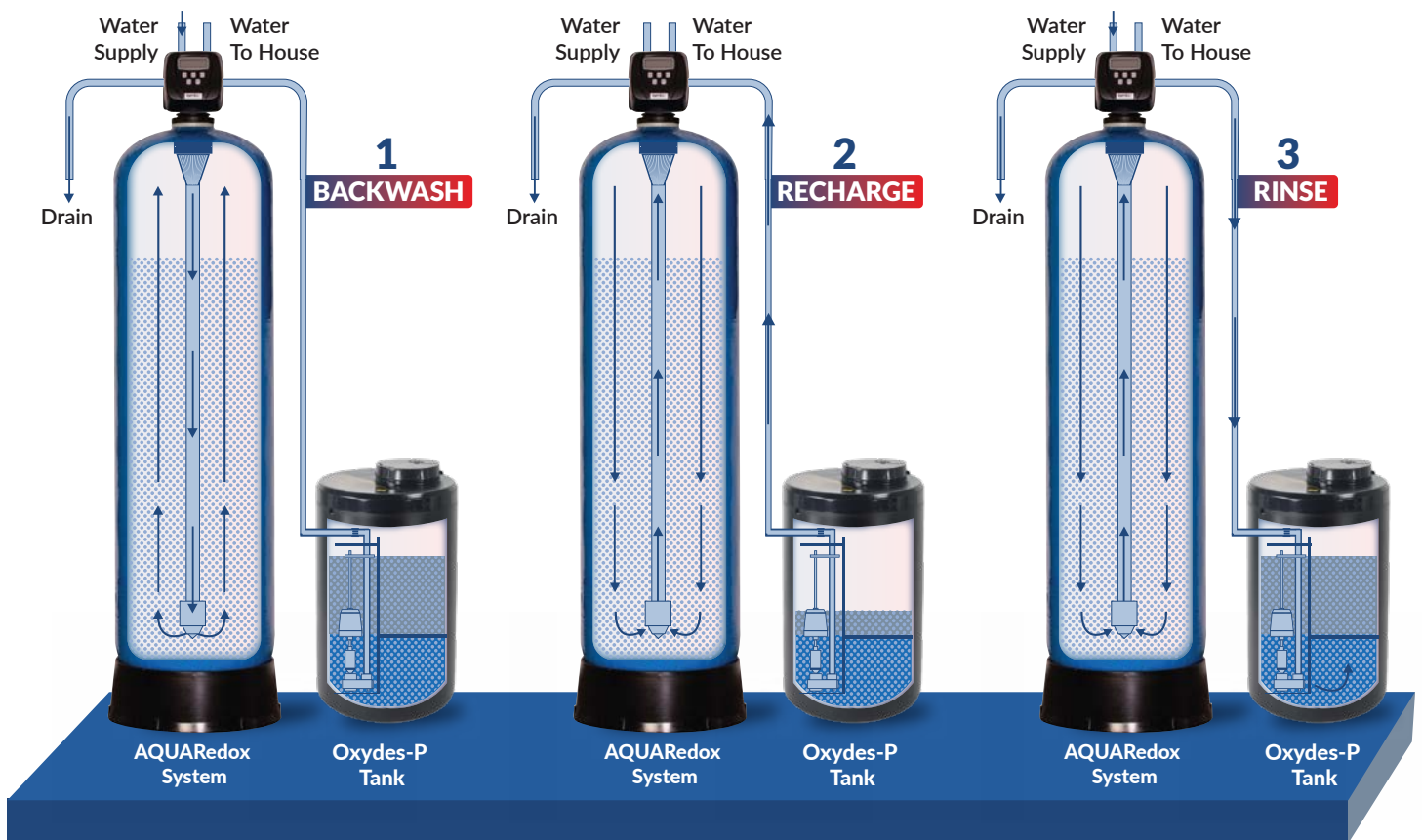
**Polluted & Unsafe**

**FROM TOXIC TO CRYSTAL CLEAR & CONTAMINANT-FREE!  
YOUR SHIELD AGAINST IMPURITIES**

Pesticides | Bacteria | Viruses | Microbes | Pb | Hg | Cr | VOCs | many more



## REGENERATION PROCESS



### REGENERATION STEPS

**STEP 1** The backwash phase removes dirt from the **AQUARedox** pressure vessel (Set 10 Minutes Backwash time).

**STEP 2** Recharging the **AQUARedox** tank with 5% **Oxydes-P** tank Solution removing all dead pathogens, which is then washed down the drain. **Set 30 minutes for Oxydes-P solution to be cycled.**

**STEP 3** The final phase rinses the **AQUARedox** media with fresh water and loads the **Oxydes-P** tank so it's ready for the next regeneration.

- ✦ Rinse with clean water for 10 minutes.

**STEP 4** Media is fully reactivated for reuse.

**Point of use (POU)** disinfection control is used just before the water is delivered to a user. It typically takes the form of a filter that removes the bacteria, viruses, and including Legionella and other waterborne pathogens. For example, a POU disinfection filter may be added to a single faucet or a shower faucet. It is advised to change the filter every six months and doesn't need any regeneration.

**Point of Entry (POE)** needs a pressure vessel, a valve which regenerates the **AQUARedox** using the following steps.

**AQUARedox**   
**WITH SINGLE STEP  
REGENERATION PROCESS.**

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## APPLICATIONS OF AQUAREDOX



### Drinking Water Purification

Municipal, Residential, and Commercial filtration systems.



### Industrial Wastewater Treatment

Removal of heavy metals, organic toxins, & industrial waste compounds.



### Cooling Water Treatment

Controls biofilm, prevents scale and corrosion.



### Reverse Osmosis & Membrane Pretreatment

Reduces biocides completely, reduces biofouling, and improves membrane life.



### Aquaculture & Agriculture

Provides clean safe water, pathogen-free water.

## ADVANCED TECHNOLOGY FOR CHEMICAL-FREE WATER DISINFECTION



## CONCLUSION // AQUARedox The Future of Water Treatment

**AQUARedox** is not just an oxidizer. It is a High-Resolution Redox Media that harnesses Electrochemical Oxidation and Reduction to purify water like never before. By combining Copper-Coated Carbon (Cathode) and Zinc-Coated Carbon (Anode), it creates a Continuous Redox Reaction that Eliminates contaminants at an atomic level.

This revolutionary, regenerable and environmentally friendly media is poised to replace every traditional disinfection and oxidation method, making water treatment safer, more efficient, and more sustainable.

*For more details on pool treatment, please refer to our application-specific professional brochure for **AQUARedox** POOL TREATMENT.*



### Standard Packaging

Packaging	Weight of product	Quantity/ pallet	Gross Wt./ pallet
Bag (30 L)	20 kg	40	825 kg
Big Bag (1000 L)	670 kg	1	695 kg

★ Other packaging can be considered on request

