ADVANCED ADSORPTION TECHNOLOGY

METAL ORGANIC FRAMEWORKS BASED ADSORBER

X1 represents the pinnacle of innovation in water management and Adsorption technology. This cutting-edge product is designed to effectively capture, retain, and purify water, making it an indispensable solution for industries facing challenges related to water scarcity, pollution, and resource management.

TARGETED CONTAMINENTS

NUTRIENTS

- Ammonia (NH3)
- Agricultural Wastewater
- Animal Farming
- Decomposition of Organic Matter

EMERGING CONTAMINANTS

Microplastics
Personal Care Products
Endocrine-Disrupting Chemicals
Nanoparticles
Forever chemicals

HEAVY METALS

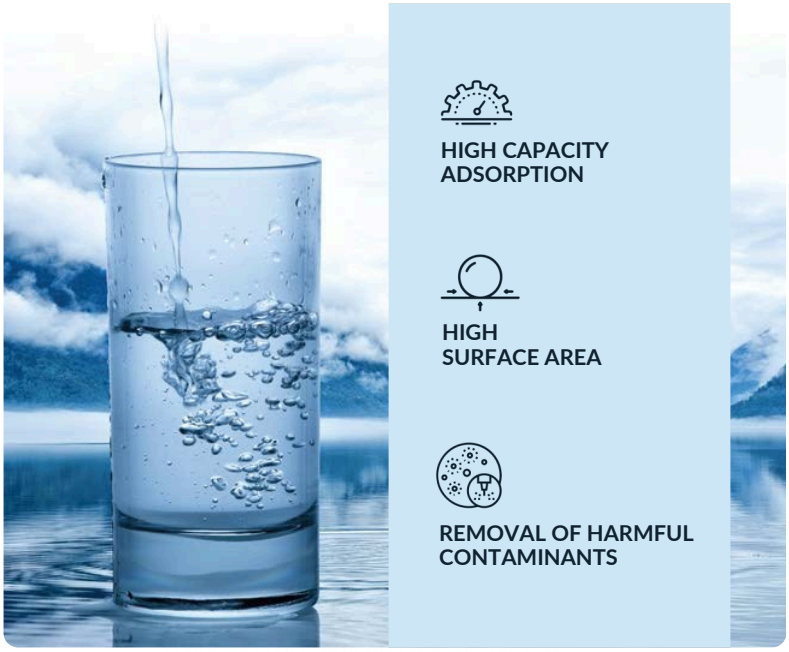
- Lead (Pb)
- Aluminium (Al)
- Mercury (Hg)
- Chromium (Cr)
- Nickel (Ni)
- Copper (Cu)
- Zinc (Zn)

ORGANIC CONTAMINANTS

- Biological Oxygen Demand (BOD)
- Pesticides (e.g. atrazine)
- Glyphosate
- Herbicides
- Pharmaceuticals
- Industrial Chemicals
- Benxene, Toluene, Phenols
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Volatile Organic Compounds (VOCs)
- Detergents

RADIOACTIVE CONTAMINANTS

- Radon (Rn)
- Uranium (U)
- Radium (Ra)



PREMIUM QUALITY

MADE IN GERMANY

MICROBIAL CONTAMINANTS

- Bacteria
- E. Coli
- Salmonella

INORGANIC CONTAMINANTS

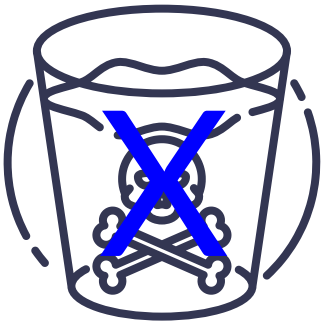
- Fluorides (F−)
- Sulfates (SO42-)
- Chlorides (Cl−)
- Chemical Oxygen Demand (COD)

TASTE & ODOR COMPOUNDS

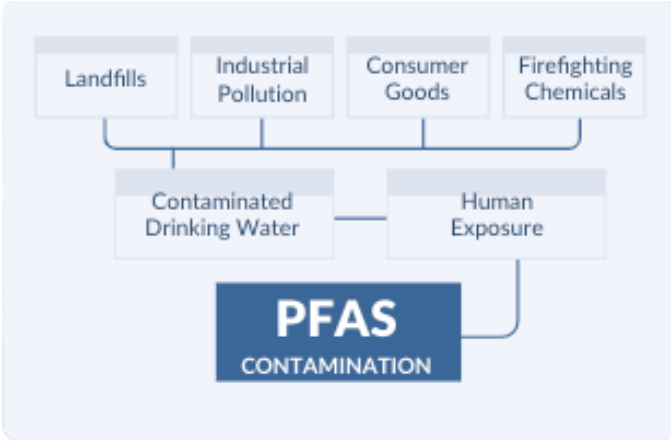
- Hydrogen Sulfide (H2S)
- Methylisoborneol (MIB)
- Chlorinated Solvents
- Tricholoethylene (TCE)
- Perchloroethylene (PCE)

THE X1 ADSORPTION CONCEPT

The clean surface of X1 is “Hydrophilic” or "Water Loving". It has a strong attraction for Organic Compounds & other Non-Polar contaminants and adsorbs them onto the surface of X1, where they are bound by very strong VanderWaals forces. Adsorption is the primary strength and mechanism by which X1 works, and the primary reason it is widely used to reduce organic pollutants, inorganic pollutants, taste & odor compounds, heavy metals, radioactive contaminants, nutrients and microbial contaminants. It is also widely used to improve the safety of drinking water by effectively removing all disinfection byproducts, chlorinated solvents, pesticides, industrial pollutants, and the most dangerous forever contaminants like PFOAs & PFASs. The list of PFASs includes six biggest types of troublemakers in water, i.e. PFOS, PFOA, PFNA, PFBS, PFHxS, and GenX. The latest limits in drinking water make it an absolute necessity to install X1 water systems.



X1 is produced with a unique pore structure consisting of Positive as well as Negative micro-pores, mesopores, and macro-pores. X1 adsorber has 90% Macro-Pores making it absolutely unique with a surface area of about 6000-6500 m^2 to remove large organic pollutants. X1 has the capacity to remove so many pollutants, thanks to its extra-large surface area. A single gram of X1 has a surface area exceeding 6000 m^2.



KEY FEATURES & BENEFITS OF HYDROSORB

Superior Adsorption Capacity

X1 utilizes advanced Covalent-Organic Frameworks (COFs) and Metal-Organic Frameworks (MOFs) to achieve unparalleled adsorption rates, allowing for efficient water capture and retention.

Innovative Technology

Our proprietary synthesis techniques and state-of-the-art manufacturing processes allow us to create highly pours and tunable frameworks with exceptional stability and functionality. With X quality is not a benchmark; it is a core value. Our rigorous quality control measures ensure that every product meets the highest standards of performance and reliability. We are committed to sustainable practices, utilizing eco-friendly materials and processes to minimize our environmental footprint. While maximizing the impact of our innovations.

Highly Selective

Engineered to selectively adsorb contaminants, X1 purifies water by targeting specific pollutants, ensuring cleaner and safer water for various applications.

Eco-Friendly Solution

Committed to sustainability, X1 is made from environmentally friendly materials and processes, contributing to a greener future while addressing pressing water-related challenges.

Versatile Applications

Ideal for use in all drinking water applications, industrial processes, all wastewater applications and environmental remediation, X1 adapts to a wide range of settings, helping municipalities maximize water efficiency and minimize waste.

Why Choose X1?

X1 embodies our commitment to innovation, quality, and sustainability. By leveraging our expertise in advanced materials, we provide a solution that not only meets the demand of "Most Modern Water Management" but also contributes to a sustainable future.

A NEW ERA IN WATER TREATMENT

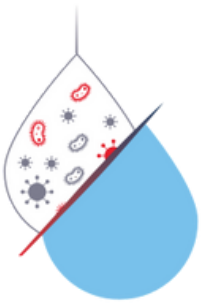
INTRODUCTION

X2 Is the world's first **High-Redox Technology**, a next generation granular filtration media that revolutionizes water treatment by **Advanced Oxidation-Reduction (Redox)** processes

X2 is uniquely engineered using two specialized carbon-based adsorbers:

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.**

PREMIUM QUALITY

MADE IN GERMANY

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

HOW X2 WORKS

THE REDOX MECHANISM

X2 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 X2 **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**.

Zinc (Zn) Oxidation	Copper (Cu) Reduction
$Zn \rightarrow Zn^{2} + 2e^{-}$	$Cu2+ + 2e^{-} \rightarrow Cu$

This reaction produces highly active Hydroxyl Radicals (OH•), Sulfate Radicals (SO4•), Superoxide Radicals (O2•) Making X2 one of the **most powerful non-toxic oxidizers available.**

WORLD'S FIRST

HIGH-REDOX TECHNOLOGY

ELIMINATES ORGANIC POLLUTANTS

Pesticides, Insecticides, Herbicides, Rodenticides, and Fungicides.

ELIMINATES

2.4-Dichlorophenoxyacetic Acid (2.4-D), Aldrin/Dieldrin, Atrazine, Chlordane, Chlordecone, DDT, UDE, DDD, Endosulfan and Endrin.

ELIMINATES 99.9% OF

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

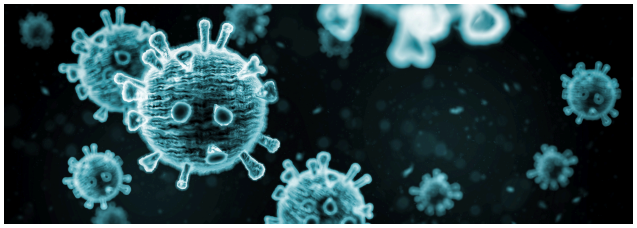
All these contaminants have serious health effects.

ELIMINATES PHARMACEUTICALS

Scientists have demonstrated the presence of pharmaceuti-cals in drinking water is a major concern all over the world. X2 is the first media that eliminates all pharmaceuticals.

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.

REMOVES HEAVY METALS

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

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

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

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

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^3, Cr^6)	99.9%
Microplastics	100%
VOCs	100%
CYSTS and MTBE	100%

ADVANCED TECHNOLOGY FOR CHEMICAL-FREE

WATER DISINFECTION

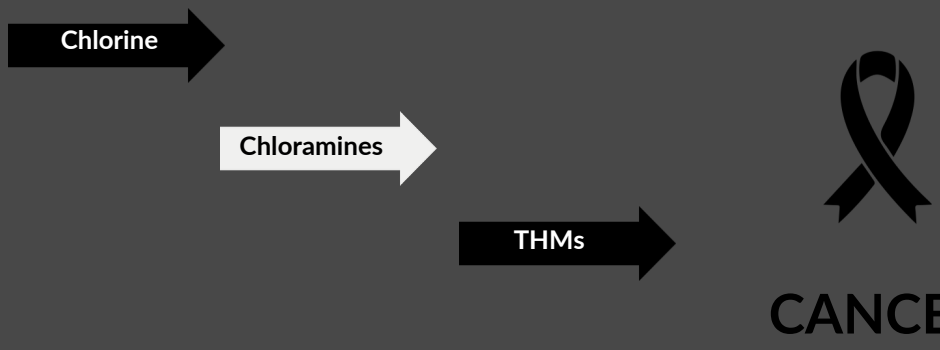
DESCRIPTION OF X3

- **X3** is Coconut carbon
- **X3** is tested to meet NSF 61 Standard
- **X3** is Catalyzed with Iron ("Catalytic Structure")
- Iron Catalyst has the highest Oxidation and Adsorption pores "Inside as well as Outside the Activated Carbon"
- Surface of **X3** ranging from 2000 m2/g to 2500 m2/g

Iron Particles coated inside and outside the micro-pores of X3 eliminates the need of expensive Ion- Exchange and Membrane Process.

REMOVAL OF:

Humic Substances
Chloramines
Color and Odor
Trihalomethanes
Tannins and Lignins
Phenols as p-nitro phenol
Cyanides
Arcenic
Boron
Bromides
Chromium
Copper
Lead
Mercury



FINALLY A SIMPLE AND SAFE METHOD THAT REMOVES CONTAMINANTS FROM ANY KIND OF WATER!

REMOVAL OF TANNINS

Including humic acid, fulvic acid and major constituents of natural organic matters. Humic substances with chlorine produce disinfection by-products such as Trihalomethanes (THMs). Other problems are the transport of hydrophobic organic contaminants and to bind heavy metals with them. A very big problem with organics are bacterial growth In water distribution systems by serving as food source that Induce unpleasant taste and color in drinking water. X3 removes tannins and humic substances. X3 Is made of coconut shells, which Is the most effective form of carbon. Activated carbon used In X3 is a Granulated Activated Carbon (GAC), which Is a technology that Is highly activated by coating a positive charge which enhances the adsorbtion of contaminants that have negative charge designed to adsorb very high level chloramines. Chlorimines replace chlorine In the disinfection process and form Trihalomethanes (THMs), which Is a cancer causing substance.

HOW DOES X3 CATALYTIC CARBON WORK?

X3 offers better than any applied conventional method a way to remove humic substances which generate a large volume of wastwater. using X3 coated with Iroon-hydoxide, has huge capacity for humic substances, phosphates, copper and many other heavy metals. Humic substances are negatively charged at circumneutral pH conditions due to prevalence of carboxyl and phenol groups on their surgace. Adsorptionof humic substances, however Is possible on surface chemastry, surgace modicfication of activated carbon with Iron-hydroxide coating that generates very stron positively charged catalytic carbon leading to the most favorable surface Interactions between them

GREEN TECHNOLOGY

SALT-FREE WATER TREATMENT SYSTEMS

Did you know water softener is polluting the environment? X4 neat and clean chemical free scale prevention media to convert hardness minerals to harmless inactive sub-micron crystals, making X4 truly the effective alternative technology to water softeners for the prevention of scale due to water hardness.
X4 media does not remove healthy minerals or add sodium to the water supply

X4 beads enable the Nucleation site to transform the calcium bicarbonate $Ca(HCO3)2$ into aragonite form of calcium carbonate $CaCO3$ crystals. These crystals are formed through decomposition and Crystallization process forming very stable and harmless crystals that does not adhere to surfaces up to 80°C.
Nucleation Assisted Crystallization is the basis of reliable Scale Prevention capability of X4.
The transformation of water hardness takes place in the following steps:
1. Continuous transformation of water hardness makes the immediate crystal growth possible with unidirectional chemical equilibrium viz.
$Ca(HCO3)2 \rightarrow CaCO3 + CO2 + H2O$
2. The crystals developing on the surface of the X4 bead, grow rapidly and nucleates.
3. After a short time the micro-emulsion of $CO2$ and $CaCO3$ forms colloid particle and leaves the media bead surface in neutral form. The transformation of $CaCO3$ are sub micro-meter scale and are transform into insoluble crystals that prevent scale without any additional chemicals."

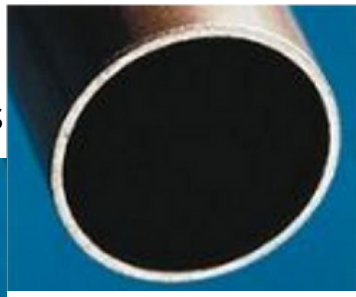
Why is X4 the BEST?

No TDS change: As X4 does not remove or add anything to the water. As no ion-exchange chemistry is used, the TDS of the water remains unchanged before and after the treatment.

No pH change: pH value of the water remains the same. This factor makes the treated water suitable for almost any use where corrosion is concerned

Biocidal effect: The NAC process creates the conditions that water dissolved $CO2$ agglomerate to form micro-bubbles. These CO bubbles actively destroy bacterial membranes acting as a biocide. So
along with the scale prevention X4 also helps to prevent Biofouling.

System eliminates previous scales within a few weeks



- No salt required
- No Brine Tank
- No backwashing required
- No regeneration cycle required
- No increase in sodium content in water
- Removes the previous scales of plumbing
- Catalytic process converts Ca and Mg into harmless micro crystals
- Maintenance free
- No extra cost incurred
- No chemicals required for disinfection
- No electrical connections required
- No drain connections required
- No control valves required
- Very easy to install
- Great savings against conventional salt based water softeners
- Provides the best quality healthy water without the addition of Sodium or Phosphates
- No costly repairs to appliances due to scale

X4 has proven itself in a variety of applications as an alternative to ion exchange softening or other conventional water treatment methods. The maintenance-free characteristics make it especially suited for Foodservice and Commercial applications where equipment maintenance is often overlooked. X4 treated water preserves the essential minerals Calcium and Magnesium, making the water most healthiest drink available.
Home Appliances: Faucets, water pipes, shower heads, shower cabins, toilets. All beverage systems, kitchen machines, dish washers, ice cubes, compact washers and dryers.