



Manufactured in Germany

Trapping & Degrading Organics

MICRO TRAPP

TWO-STEP Rapid Adsorption/Photo Degradation

Rapid Removal of Organics Micropollutants from Drinking Water by a Titansorb Carbon Block.

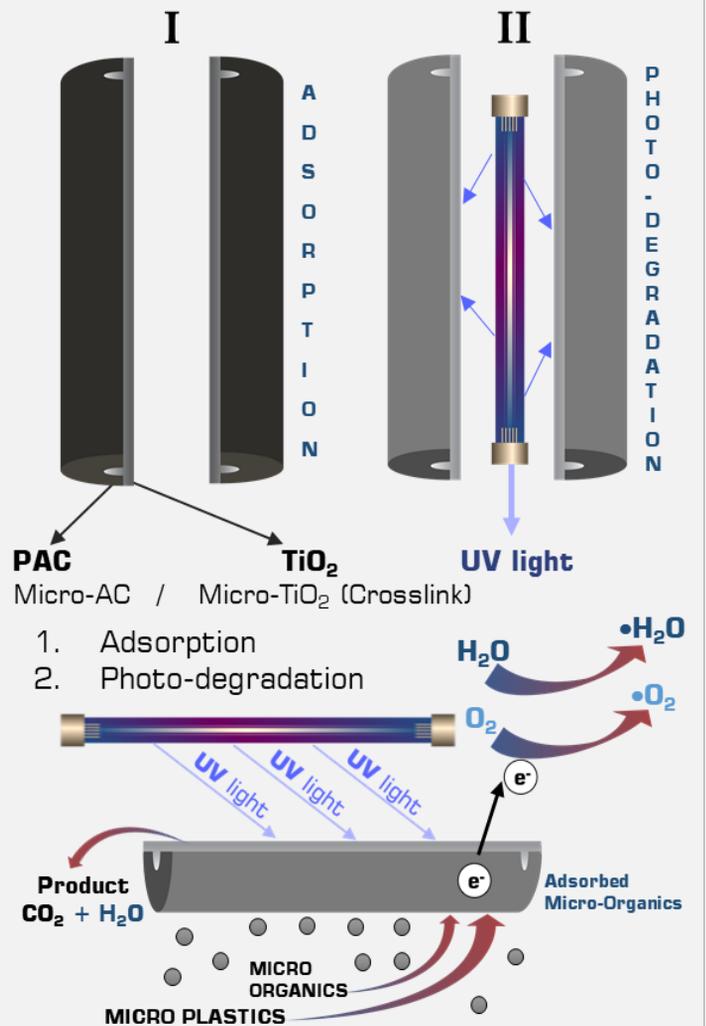
The global occurrence in water resources of Heavy metals, **Radionuclides** and **Organic Micro** pollutants such as micro plastics, Pharmaceuticals has raised concerns about potential negative effects on human health.

Activated carbon blocks (Cartridges) are the most widespread **Adsorbent Filter's** used to remove organic pollutants up-take and very poor removal of many relatively **hydrophilic** micro pollutants. Furthermore, these blocks cannot be regenerated.

Insoluble structure of **Titansorb-P** is inexpensive and sustainable produced product. Macro surfaces of titanium is best known Adsorber for removing **Heavy metals** and micro pollutants from water by means of adsorption. **Watch Water**[®] has cross linked **Titansorb-P** with **Powder Activated Carbon**, providing a high-surface-area, mesoporous mixture of crosslink Carbon block rapidly sequesters (Trapp) almost **100% of Heavy metals** and organic micro pollutants with constant adsorption rate.

50 to 200 times greater than those of conventional carbon blocks. In addition, the cartridge can be regenerated continuously for very long time using a **UV lamp** (Light) in carbon blocks with no loss in performance. Finally, the **Titansorb-P** outperformed a leading **Activated Carbon block** for rapid, flow – through water treatment.

Regeneration





TITANSORB-P BY WATCH WATER[®]

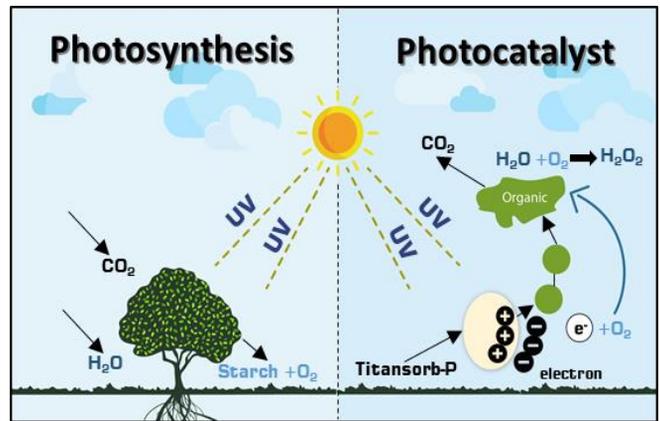
Introduction

Up-to-date **Titansorb** is the most widely used **Adsorber** in the water treatment field mainly because of its **high capacity**, **nontoxicity**, low cost chemical stability and **superior photoactivity** over all other **Adsorbers** in the market. **Watch Water's** new media based on powder of **Titansorb** is called **Titansorb-P**, which has the **highest adsorption capacity of Organics & Heavy Metals**. The main drawback of the **Titansorb powder**: its easily lose during the process of water treatment. Therefore, **Watch Water[®]** has put great efforts to make and improve the reuse efficiency of **Titansorb-P**. The immobilization of **Titansorb Powder (P)** now has a support of **Powder Activated Carbon (PAC)**.

Activated carbon block manufactures is based on **Titansorb-P** are showing increasing attention for the degradation of the following contaminants.

- Humic Acids, Fumic Acids
- All Phenolic Compounds
- Pesticides and Chlorinated Compounds
- All sort of Dyes
- Microplastic Compounds
- Antibiotics & Pharmaceutical
- Pathogenic Bacteria
- Provide a simple, highly effective heavy metal removal mechanism
- Can be used in industrial applications that require part per billion concentration like Arsenic, Uranium, radium, Lead and Chromium.

The Crosslink of both **Powder Activated Carbon (PAC)** and **Titansorb-P** posses high surface area, suitable pore structure and as a consequence, high adsorption capacity. **Powdered Titansorb** facilitates **Photocatalysis** which gives a unique advantage over normal carbon block



Contaminants Removed by PAC

- Crosslinked carbon block filters mechanically remove particles down to **0.5 microns**, including **Giardia** and **Cryptosporidium**, turbidity and particulates.
- PAC/TSP (**Titansorb-P**), remove most of volatile organic chemicals (**VOC'S**), pesticides and herbicides, as well as very large amount of chlorine, chloramines, trihalomethane (**THM's**) compounds, **Radon, Solvents** and hundreds of man-made chemicals found in tap water.

Contaminants Not Removed by Normal PAC

- Normal Powdered Activated Carbon (**PAC**) does not remove sediment/ particulate material and often pretreatment by a sediment filter.
- Not successful at all to remove dissolved Inorganics, Contaminants of Heavy Metals such as Antimony, Arsenic, Asbestos, Barium, Beryllium, Cadmium, Copper, Fluoride, Mercury, Nickel, Lead, Selenium, Sulfate, Thallium and all possible **Radionuclides**.
- **Carbon Block** without **Titansorb-P** is used to remove some organics, chlorine, taste and odor only.



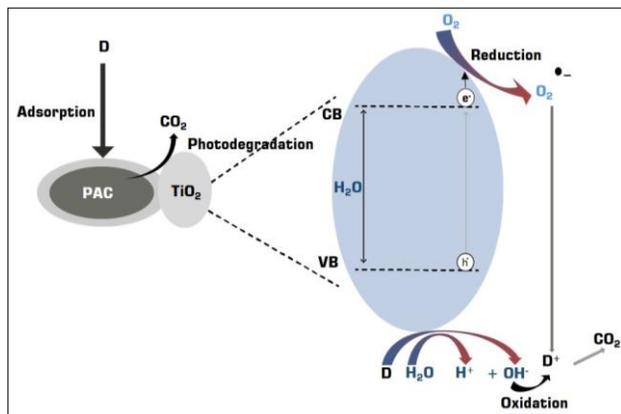
TITANSORB-P BY WATCH WATER[®]

Micro-TiO₂/PAC is a Watch Water[®] INVENTION

Micro-TiO₂/PAC produces cleaner water without energy and no waste or concentrate like all conventional technologies like reverse osmosis or ion Exchange. **Watch Water[®], Microtrapp** changes all organics including reduction of **PFAS** in drinking water with this great treatment technology. Per-and Polyfluorinated substances (**PFAS**) are a group of **Man-Made-Chemicals** that persist in all water's around the globe. These **PFAS** contaminants also dissolve in drinking water through using and handling of **Plastic bottles**.

All traditional drinking water treatment technologies are not able to remove them. **Microtrapp** is a method which work best to remove **PFAS** from **drinking water**. This technology can be used in **drinking water** system's, hospitals, building or even at homes at the **point-of-entry (POE)**, where water enters the home or the **point-of-use (POU)** such as in a kitchen sink or a shower.

Photocatalytic Oxidation; represents the most environmental friendly solution due to completely oxidize organics contaminants to **carbon-dioxide**, water and mineral acids hence it degrades the pollutants than transferring them back to nature. **Titansorb-P** is a well-known **adsorber** and photocatalyst degrade **Organic pollutants** under **ultraviolet irradiation** in water as well as waste water. Carbon dioxide produced from degraded **Organics** changes the chemistry of water, as well as the chemistry of Polluted and contaminated water.



Photodegradation of organics and **adsorption** of inorganics to achieve **Adsorption-Desorption** equilibrium using powder activated carbon as **Catalyst** support the increase of **Photodegradation** rate by progressively allowing an increased quality of substrate to come in contact with **Titansorb** through means of **adsorption** and giving a complete photodegradation process.



**Selective Removal of
 Perfluorooctanoic
 Acid Using Powder
 Activated Carbon with
 Modified Titansorb-Powder.**





MICROTRAPP PHOTOCATALYSIS

For **drinking water** a considerable attention has been served on the safety and efficiency of all water treatment technologies. All conventional water treatment processes such as **Ozonolysis** and **chlorination** create disinfection by-products (DBPs) such as **Bromate** and **Trihalomethanes** respectively, which have health risks as well as the risk of cancer. In order to avoid such problems, **Watch Water®** has focused on **Advanced Oxidation Processes** and one of them is **Photocatalysis**, using **Titansorb-P** and **Powdered Activated Carbon**.

The phytochemicals transformation of a molecule into lower molecular weight fragments, usually in an Oxidation process.

Catalytic reaction involving UV light absorption by a Catalyst or by a substrate.

Titansorb-P is the most effective due to its high photocatalytic activity, chemical stability, nontoxic nature and its highest adsorption capacity.



When **Titansorb-P** is irradiated with sunlight that exceeds its bandgap energy.

3.2eV for Titansorb-P with UV light.

Wavelength <380nm for **Titansorb-P**, electron-hole pairs are created. The electron-hole pairs degrade organic pollutants on the catalyst surface either directly or indirectly in a water solution creating **Hydroxyl** and **SUPEROXIDE RADICALS**.

All the **Titansorb-P** particles are larger than the **Powder Activated Carbon** to avoid any blockage of the pores of activated carbon thus increasing the **adsorption** capacity of the crosslink **PAC/Titansorb-P**.



For Regenerating **Microtrapp** carbon black a UV light required is on 30 min. These 30 minutes can achieve the highest regeneration levels.

Regeneration of Microtrapp

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