



VINYLSORB

VINYL CHLORIDE REMOVAL - "ORGANOSORB APPLICATION"

Water with Vinyl Chloride

All PVC and chlorinated PVC (CPVC) plastic pipes and fittings are used for conveying potable water. In the polymerization process, a lot of **Vinyl Chloride** monomers are retained in the plastic pipe matrix (PVC or CPVC) as a large residue and may be released into the air or water. This residual **Vinyl Chloride** has the ability to migrate from water distribution PVC pipes into the water flowing through them. The extent of leaching is determined by the **Vinyl Chloride** concentration in the pipe material. The amount of **Vinyl Chloride** migrating from rigid PVC pipes into the water was found to be directly proportional to the residual level of **Vinyl Chloride** in the pipe itself. All older PVC pipes have Vinyl Chloride in concentrations up to 500-600 mg/kg and have been shown to leach Vinyl Chloride into **drinking water**.

There is only one solution to address the **Vinyl Chloride** leaching from the pipe, that is to install **VinylSorb System**. This solution is much more economical and sustainable than the replacement of pipes or using drinking water treatment. With the system installed, no Vinyl chloride was released which indicated that **VinylSorb** is the only most effective system available in the water treatment industry.

Important Guidelines

Health Effects of Vinyl Chloride

Vinyl chloride is highly toxic to the central nervous system.

Vinyl Chloride illness

It is also known human carcinogen. According to the EPA, people who drink water containing Vinyl Chloride, well in excess of the maximum contaminant level (MCL) for years have an increased risk of **cancer**.

Maximum contaminant level (MCL) = 0.002 milligrams per liter (mg/L)

Or 2 parts per billion (PPB)

Maximum contaminant level Goals (MCLG) = Zero (Absolute Zero)



Water Treatment for Vinyl Chloride

Municipal Water Filtration plants rely on conventional treatment techniques like

- ❖ Coagulation
- ❖ Sedimentation
- ❖ Filtration
- ❖ Ion Exchange Resins
- ❖ Membrane Technology
- ❖ Chlorination

These systems are ineffective in removing & reducing concentrations of VOCs such as Vinyl chloride in drinking water. The only treatment technology that is effective for the removal of most VOCs in drinking water is **adsorption with OrganoSorb**.

Vinyl Chloride is an **Organochloride with the formula $H_2C=CHCl$** . It is also called **Vinyl Chloride monomer (VCM)** or chloroethene. This colourless compound is an important industrial chemical chiefly used to produce **Polymer Chloride (PVC)**

Note

VinylSorb is a trade name that refers to the application of OrganoSorb, specifically targeting the elimination of vinyl chloride compounds in drinking water.

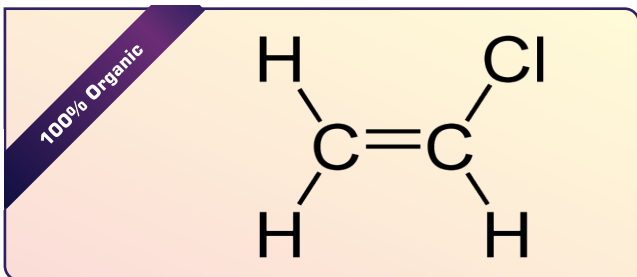


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Vinyl Chloride is among the top twenty largest **petrochemicals** in world production.

Vinyl Compound

Contain the **Hydrocarbon Vinyl group (CH₂=CH-)**. The molecules of a single **Vinyl Compound** can be made to polymerize, that is to join end to end, forming a Polyvinyl compound such as **Polyvinyl chloride**.



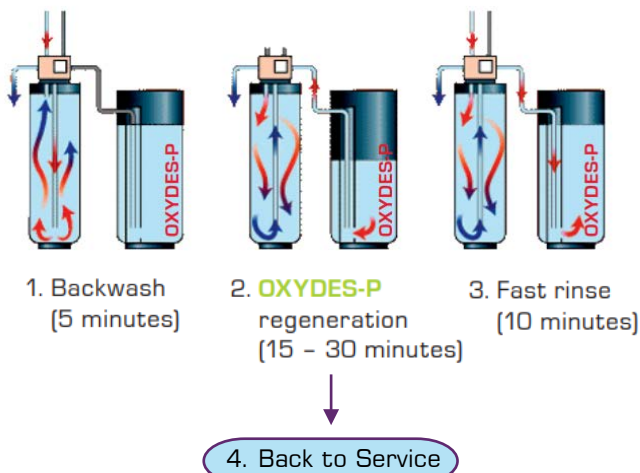
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Vinyl Chloride is removed from **Gas & Water** streams that contain from 5 ppm to 300-mole percent of **Vinyl Chloride** by passing the **gas & water** stream through a bed of **OrganoSorb** media. The exit water stream contains Zero PPM of **Vinyl Chloride**.



The **Vinyl Chloride** saturated **OrganoSorb** is treated with 5% **Oxydes-P** to desorb the **Vinyl Chloride**. The **OrganoSorb** is contacted with **Oxydes-P** for **30 minutes** and then washed for **10 minutes**. The regenerated **OrganoSorb** is then ready for service.

The **Vinyl Chloride** adsorption on the **OrganoSorb** regeneration cycle can be repeated for 5 years without loss of the **adsorptive capacity** of the **OrganoSorb** or formation of **Polyvinyl chloride** scaling on the surface of the **OrganoSorb**.



OrganoSorb Characteristics

Appearance	Coarse granule
Base Material	Carbon
Total Surface Area	1500 – 1600 m ² /g
Apparent Density	610 - 640 gram kg/m ³
Appearance	Black Granules
Particle Size	0.6 - 2.4 mm
Mesh Size (US)	8 x 30
Moisture Content	5 % (max.)
Bulk density	630 – 640 kg/m ³
Expected service life	5 years *
Multiple regeneration	Yes **

**Depending on the contamination load and regeneration frequency.*

***OrganoSorb can be regenerated using OXYDES-P depending on the loaded contaminants*



TECHNICAL DATA

Features & Benefits

- ✓ Coconut Shell based
- ✓ Acidic in Nature
- ✓ Best for VOC removal
- ✓ NSF/ANSI/CAN 61 certified Base Material
- ✓ High surface Area
- ✓ Efficient and Durable
- ✓ Flexible System Design
- ✓ Easy Regeneration
- ✓ Long life

Standard Operating Parameters

Flow Direction	Up flow & Downflow
System Freeboard	25 – 35%
Filtration Rate	10 – 30 Bv/h (max. 40 Bv/h)
Backwash Velocity	10 – 20 m/h
Bed depth	80 – 100 cm (max. 120 cm)
EBCT	≥ 90seconds
Standard Packaging	30 liters (19.2 kg) in a bag, 40 bags on a pallet



For systems using **ORGANOSORB** standard filtration rate is recommended to set at max. 40 BV/hour to provide 90 seconds contact time (recommended minimum) to yield good results. The required filtration rate varies according to the inlet water contaminations. The table below to realize the expected water quality from different filtration rate:

Flow rate	Filtration rate	Contact time	OrganoSorb	Output Water Quality
1 m ³ /h	40 BV/h	90 seconds*	25 liters	Satisfactory
	30 BV/h	120 seconds**	33 liters	Very Good
	≤ 20 BV/h	180 seconds	50 liters	Best

*recommended max. filtration-rate, **recommended standard filtration-rate

For more information on system design, please refer to [Organosorb system design brochure](#).