WATCHER®
WATCH WATER
a Water Company

FILTERSORB
FILTRATION
ADSORPTION
INSTANT PRODUCTS
OXY TREATMENT
SYSTEMS

CATALYTIC CARBON®

ADSORPTION AND DESORPTION MEDIA

DESCRIPTION OF CATALYTIC CARBON®

- **CATALYTIC CARBON®** is Coconut carbon
- **CATALYTIC CARBON®** is tested to meet NSF 61 Standard
- **CATALYTIC CARBON®** 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 **CATALYTIC CARBON®** ranging from 2000 m^2/g to 2500 m^2/g

Iron Particles coated inside and outside the micro-pores of **CATALYTIC CARBON®** eliminates the need of expensive Ion- Exchange and Membrane Process.

APPLICATIONS

- Drinking Water Purification
- Point of Use (POU) / Point of Entry(POE)
- Municipal Drinking Water
- Beverage Production
- Protection Ion Exchange
- Municipal Wastewater Treatment
- Industrial Wastewater Treatment and Reuse
- Swimming Pools
- Aquarium Filters
- Process Water and Ultra Pure Water

REMOVAL OF

- Humic Substances
- Chloramines
- Color and Odor
- Trihalomethanes
- Tannins and Lignins
- Phenols as p-nitro phenol
- Cyanides
- Heavy Metals: Arsenic, Boron, Bromides, Chromium, Copper, Lead, Mercury

Catalytic Activation

High Capacity Adsorption

NSF/ ANSI / CAN 61

MEMBER Water Quality ASSOCIATION

PREMIUM QUALITY
MADE IN GERMANY

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

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. CATALYTIC CARBON® from Watch Water® can remove tannins, humic substances and can be regenerated (adsorption) for next effective treatment process. Regeneration cycle is short and very easy.

Watch Water® CATALYTIC CARBON® is made of coconut shells. Carbon from coconut shell is the most effective form. Activated Carbon used in CATALYTIC CARBON® systems is a **Granulated Activated Carbon (GAC).** Advanced Carbon technology (Catalyzed Carbon by Watch Water® is highly activated) by coating a positive (+) charge which enhances the adsoprtion of contaminants that have negative charge. CATALYTIC CARBON® made by Watch Water® is an advanced Activated Carbon product designed to adsorb very high level of chloramines. Chloramines replace chlorine in the disinfection process and form Trihalomethanes (THMs) – a cancer causing substance.

Chlorine → Chloramines → THMs → CANCER

HOW DOES THE CATALYTIC CARBON® WORK?

CATALYTIC CARBON® offers better than any applied conventional method a way to remove humic substances which generates a large volume of wastewater. Using Watch Water® CATALYTIC CARBON® coated with iron-hydroxide, has huge capacity for humic substances, phosphates, copper and many other heavy metals (read on page one). Humic substances are negatively charged at circumneutral pH conditions due to prevalence of carboxyl and phenol groups on their surface. Adsorption of humic substances, however is possible on surface chemistry, surface modification of activated carbon with iron-hydroxide coating that generates very strong positively charged CATALYTIC CARBON® – leading to the most favorable surface interactions between them.

FEATURES

- Removal of multiple contaminants
- Regenerable (OXYDES®-P)
- Long life time (2 to 5 years)
- Higher adsorption

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SURFACE CHEMISTRY

High oxygen on the surface of Activated Carbon is the most important factor which influence its surface characteristics. To achieve these, the surface has to be treated in a very special way. The larger oxygen content the higher the hydrophilic character of the carbon surface. **Watch Water®** treatment gives an activated carbon a unique acid-base characteristique.

INCREASE OF ACTIVITY

In a heterogeneous **CATALYTIC CARBON®**, many reactions proceed on the surface of the Catalyst. To increase the catalytic efficiency, it is essential to make the surface area as large as possible. When iron-oxide is used as catalyst it is coated from 20 to 50 nm and distributed on the porous supports with a pore structure and the largest surface area for reaction, and this increases the catalytic activity per unit weight.

RENEGERABLE CARBON FOR MULTIPLE USE

TECHNICAL SPECIFICATIONS

Appearance		Red-Black Coarse Granules
Particle Size	SI	0.6-2.4 mm
Mesh size	US	8 x 30
Surface area (BET)		2000 – 2500 m^2/g
Bulk Density	SI US	630 – 640 kg/m^3 39.2 - 40.0 lb/ft^3
Moisture Content		5 % (max.)
Ball Pen Hardness		98% (Min.)
pH		9.5
Expected service life		2 – 5 years*
Multiple regeneration		Yes **

** Depending on the contamination load and regeneration frequency*
*** CATALYTIC CARBON® can be regenerated using OXYDES-P depending on the loaded contaminants*

SYSTEM DESIGN WITH WATCH WATER® CATALYTIC CARBON®

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 constituen.

Pilot test is recommended for industrial applications, wastewater treatment and other critical waters. The table below to realize the expected water quality from different filtration rate:

Flow rate	Filtration rate	Bed contact time	CC media	Outlet water quality
	40 Bed-Volume/h*	90 seconds	25 liters	Satisfactory
1 m^3/h	**30 Bed-Volume/h****	**120 seconds**	**35 liters**	**Very good**
	≤ 20 Bed-Volume/h	180 seconds	50 liters	Best

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

Flow direction	Can be designed both up-flow (packed bed) and down-flow
System freeboard (down-flow)	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	≥ 90 seconds
Standard packing	30 liters (19.2 kg)/bag & 40 bags/pallet

DESORPTION

REGENERATION OF SPENT CATALYTIC CARBON

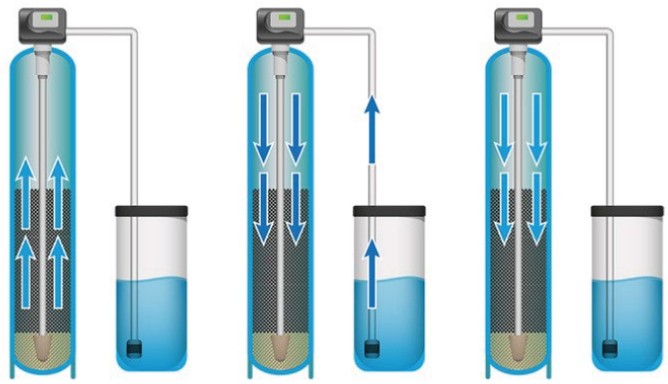
Superoxide System a very simple regeneration with OXYDES®-P (Catalyzed Super Oxide). CATALYTIC CARBON® can be regenerated with a simple control valve which is used for conventional water softener. Simply replace OXYDES®-P with Sodium Chloride with a concentration solution of 1% - OXYDES®-P. For example, to regenerate 100 liters of CATALYTIC CARBON®, you would require 1 kg (OXYDES®-P) to make a 100-liter solution of 1% solution. Catalyzed Super Oxide reactions are based on Fenton's like reaction which generates hydroxyl radicals (•OH). These Hydroxyl radicals are so strong that they oxidize all possible organics from the surface of CATALYTIC CARBON®.

EASY REGENERATION WITH OXYDES®-P

Note: The regeneration is every six month and the solution is prepared fresh just before the regeneration.

CATALYTIC CARBON® is re-activated and is like brand new Carbon the total amount of regeneration is as the following cycles:

1. Backwash – 5 to 10 minutes
2. Suction of regenerant (OXYDES®-P) 15 to 30 minutes
3. Fast rinse – 5 to 10 minutes
4. Back to service



1. Backwash | 2. OXYDES®-P Regeneration | 3. Fast Rinse

Catalytic Carbon Activation (First time Installation):
Activation of corrosion on Catalytic Carbon's surfaces is recommended. For activation 1 tablespoon of salt is required for each bag of Catalytic Carbon (30 liter). During the first installation after loading Catalytic Carbon in vessel, soak the Catalytic Carbon for 45 minutes by adding required amount of table salt. Once the soaking process is finished, perform the backwash for minimum around 20 minutes or until backwash water is clear.

Disclaimer : *The information in this publication is based on reliable data and is provided in good faith, without warranty or performance guarantee, as product use conditions are beyond our control. Watch Water GmbH, Germany, does not offer express or implied warranties, including merchantability or fitness for a specific purpose. Users should assess product suitability and performance with their equipment. Specifications may change without notice. Please note that the filter media in this brochure do not eliminate bacteria. Do not use our products with microbiologically unsafe or unknown-quality water without proper disinfection. Watch Water GmbH, Germany, is not liable for consequential or incidental damages, such as lost profits from product use.*

Standard Packaging

Packaging	Weight of product	Quantity/ pallet	Gross Wt./ pallet	Certification
Bag (30 L)	16 kg	40	665 kg	NSF/ANSI/ CAN 61
Bulk Bag (1000 L)	535 kg	1	560 kg	

★ *Other packaging can be considered on request*

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