WATCH WATER USA
A Water Company

MANUFACTURED IN GERMANY

KATALOX LIGHT

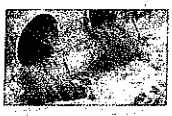
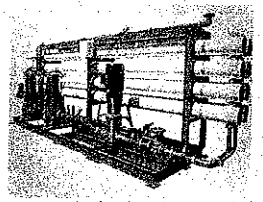
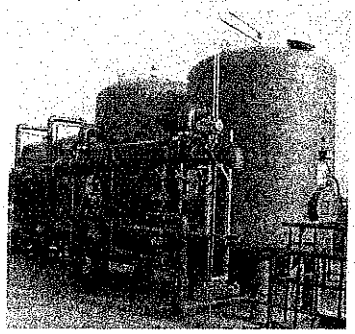
ADVANCED FILTRATION MEDIA

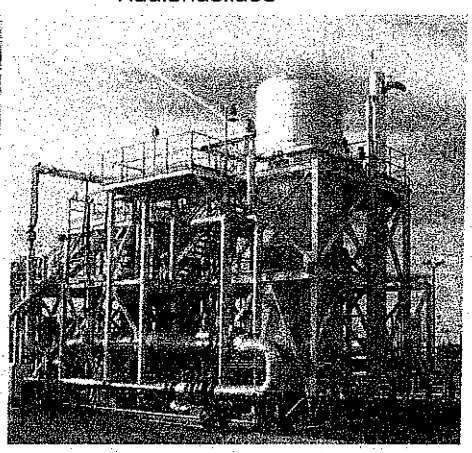
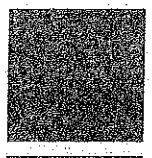
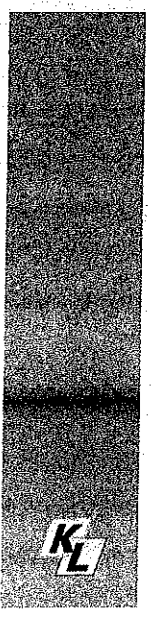
Filtration of

- Suspended solids
- Sediments
- Turbidity
- Organics
- Color
- Odor

Removal of

- Iron
- Manganese
- Hydrogen Sulfide
- Arsenic
- Radium
- Heavy Metals
- Radionuclides

Water Quality Association C USA NSF Green Technology

www.watchwater.com

Watch Water® USA
A Water Company

PRODUCT INFORMATION

KATALOX - LIGHT®

ANSI/NSF 61 Certified

From

WATCH WATER

Water Quality Association

C USA

NSF

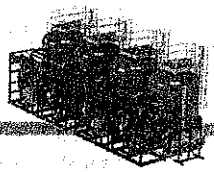
Green Technology

February 2014

Watch Water® USA
9171 128th Ave Largo
Florida 33773
USA

Web: www.watchwater.com
email: bp@watchwaterproducts.com
Telephone: (+1) 866-961-1366
Telefax: (+1) 727-392-7261

KL Systems



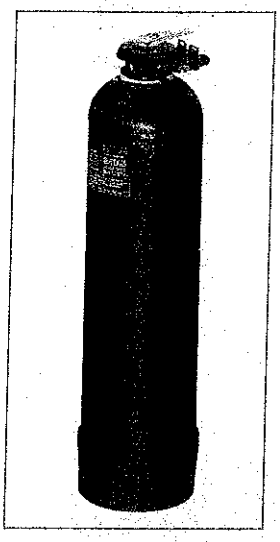
WATCH WATER, USA
A Water Company

Watch® **Katalox Light®** systems offer a new technology with advanced catalytic filtration available in water treatment industry. All systems have been engineered keeping both professionals and consumers in mind. Systems are available with different models and customized for manual backwash without using electricity or it can be made fully-automatic. System can be used in a variety of applications including residential, commercial and any process water applications for food and beverage industry.

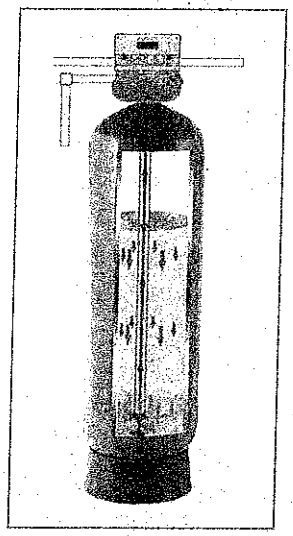
Standard systems are designed with a filtration velocity of 20 m/h (8.2 gpm/ft^2) to provide a good filtration. This value may differ for advanced application like Arsenic, Radium, Uranium and other Heavy Metal removal where co-precipitation process requires higher contact time thus lower filtration velocity. Running the system at higher velocity may compromise the filtration performance.

Virtually there is no flow rate limitations for KL systems as KL units can be configured in parallel to address industrial high flow requirements.

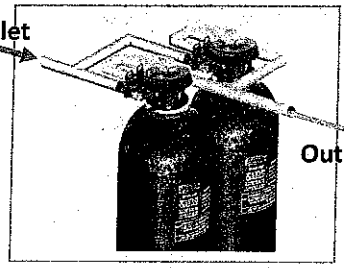
KL System with simple Manual Control



KL System with fully Automatic Control



Parallel configuration for Higher Flow rates



Example:
2 parallel KL 1465-Mn would have a total flow of 2 x 3000 lph = 6000 lph (26.2 gpm)

Standard Pressure Vessel Listing for KL Systems (Manual/Automatic)

Pressure Vessel			KL media amount			Service flow rate				Backwash	
			volume		Bed Height	Standard		Maximum			
Vessel Model	Area	Freeboard				flow-rate		flow-rate		flow-rate	
	m^2	%	liters	ft^3	mm	m^3/h	gpm	m^3/h	gpm	m^3/h	gpm
08x44	0.03	30	24	0.8	725.3	0.6	2.9	1.0	4.3	0.8	3.6
10x54	0.05	30	42	1.5	838.6	1.0	4.5	1.5	6.7	1.3	5.6
12x52	0.07	30	56	2.0	767.5	1.5	6.4	2.2	9.6	1.8	8.0
14x65	0.10	30	98	3.5	986.8	2.0	8.7	3.0	13.1	2.5	10.9
16x65	0.13	30	126	4.5	971.3	2.5	11.4	3.9	17.1	3.2	14.3
18x65	0.16	30	170	6.0	1035.5	3.5	15.5	4.9	21.7	4.1	18.1
21x60	0.22	30	224	8.0	1002.4	4.5	19.7	6.7	29.5	5.6	24.6
24x69	0.29	30	308	11.0	1055.3	6.0	26.3	8.8	38.6	7.3	32.1
30x72	0.46	30	510	18.0	1118.3	10.0	44.2	13.7	60.2	11.4	50.2
36x72	0.66	30	764	27.0	1163.4	15.0	66.0	19.7	86.7	16.4	72.3
42x78	0.89	30	935	33.0	1046.1	20.0	86.6	26.8	118.1	22.3	98.4
48x82	1.17	30	1300	46.0	1113.5	25.0	110.0	35.0	154.2	29.2	128.5

Katalox-Light®

Recommended System Operating Conditions:

Inlet water pH		5.8 - 10.5
Min. Bed Depth	US	29.5 inches
	SI	75 cm
Optimal Bed. Depth	US	47 inches
	SI	120 cm
Service flow	US	6 - 12 gpm/ ft²
	SI	15 - 30 m/h
Backwash velocity	US	8 - 10 gpm/ ft²
	SI	20 - 25 m/h
Backwash time		5 -10 minutes
Rinse time		1 - 2 minutes
ORP (min)		Negative 170 mV

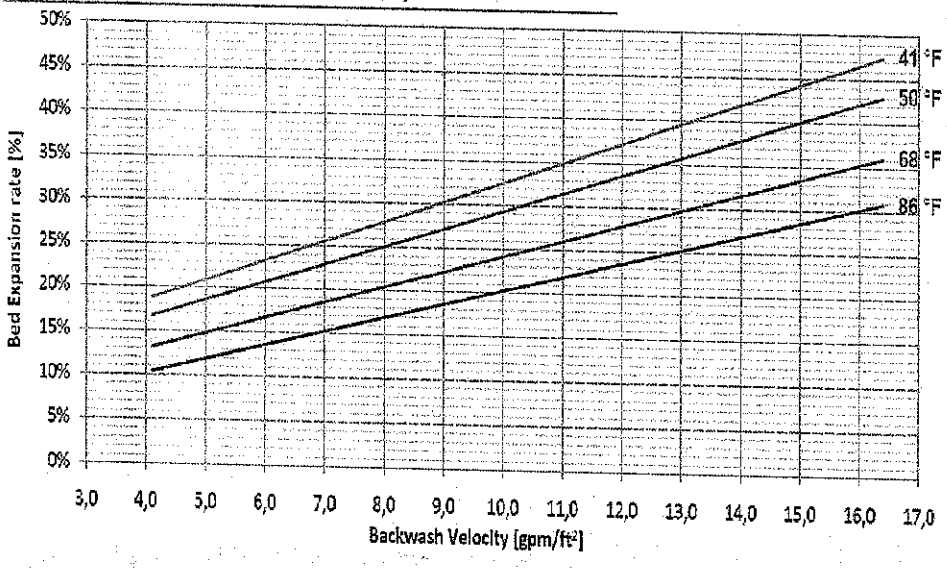
Requirements:

Freeboard	25% - 35%
Backwash pump	No

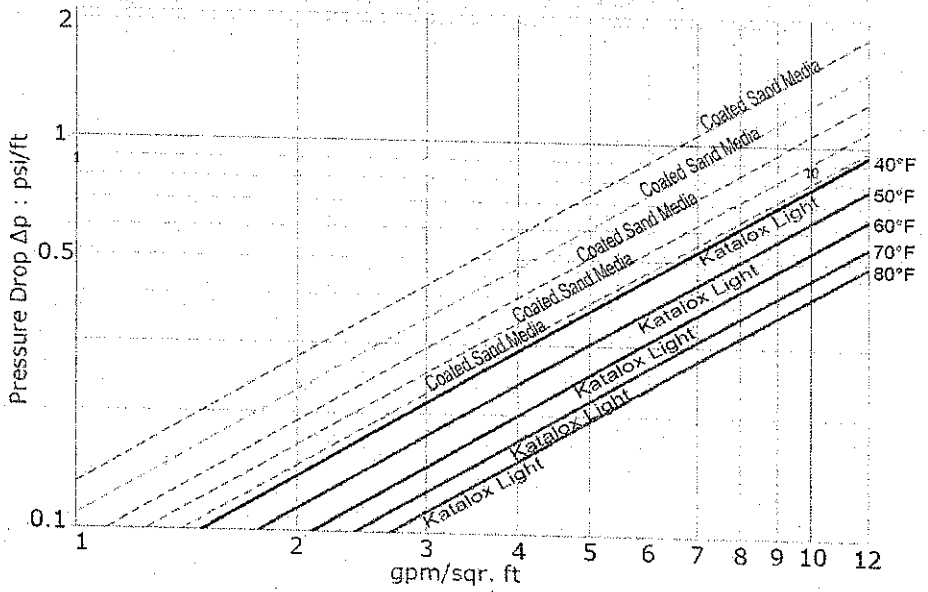
Physical Properties:

Appearance		Granular black beads
Odor		none
Mesh size	US	14 x 30
	SI	0.6 - 1.4 mm
Uniformity Coefficient		≤ 1.75
Bulk density	US	66 lb/ft³
	SI	1060 kg/m³

Backwash Velocity [m/h] vs. Bed Expansion [%]:



Pressure Drop

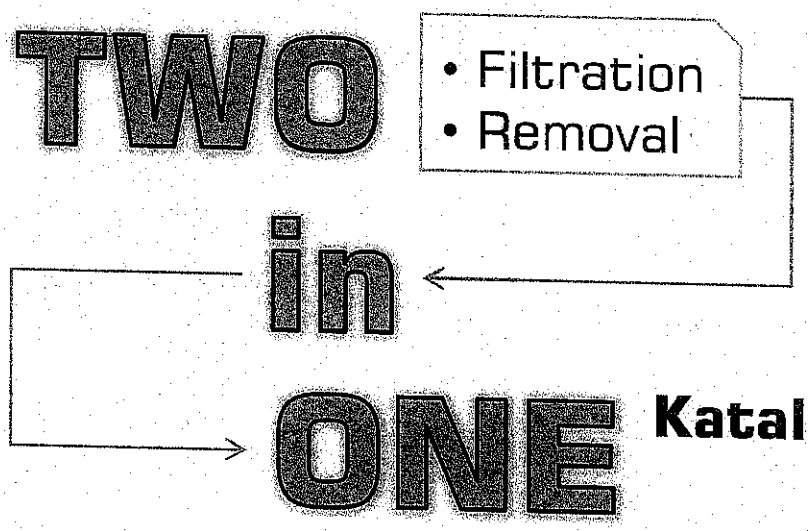


KL, PI

Watch Water USA
A Water Company

Few of Many Advantages

- NSF/ANSI Standard 61 Certified
- No chemicals required if ORP Negative 170 mV
- No chemical regeneration is required
- 7 to 10 years service life
- Only media with Filtration and Removal in one



Backwashing

Katalox Light® systems can be backwashed. During backwashing the water flow direction of water through Katalox Light® filter is reversed, cleaning out trapped metals and solids. Three factors can be used to assess when a filter needs backwashing.

Filter-Run Time Controlled:

Time can be adjusted according to use of Filter-Run and the recommendation of Backwashing and cleaning is in interval of 48 hours or max. 72 hours of Filter Operation (i.e. every 2 or 3 days).

Head Loss (loss of pressure):

Head loss is loss of pressure (also known as head) by water flowing through Katalox Light® (Fixed Bed). When water flows through a clogged filter, friction causes the water to lose energy so that the water leaving the filter has lesser pressure than the water entering the Katalox Light® filter. Head loss is displayed on head-loss gauge. Once the head loss within the filter has reached in the range of typical 0.5 bar - 0.7 bar (7 psi - 10 psi), the Katalox Light® media bed should be backwashed.

Backwash Time - 10 minutes:

Backwash should begin slowly. Backwash should continue until the backwash water appears to be clean. The backwash water must have enough velocity (20 - 25 m/h, 8 - 10 gpm/ft^2) and volume to agitate the Katalox Light® media bed and carry away the foreign matters which has been collected there. It's very important to do surface washing after backwash.

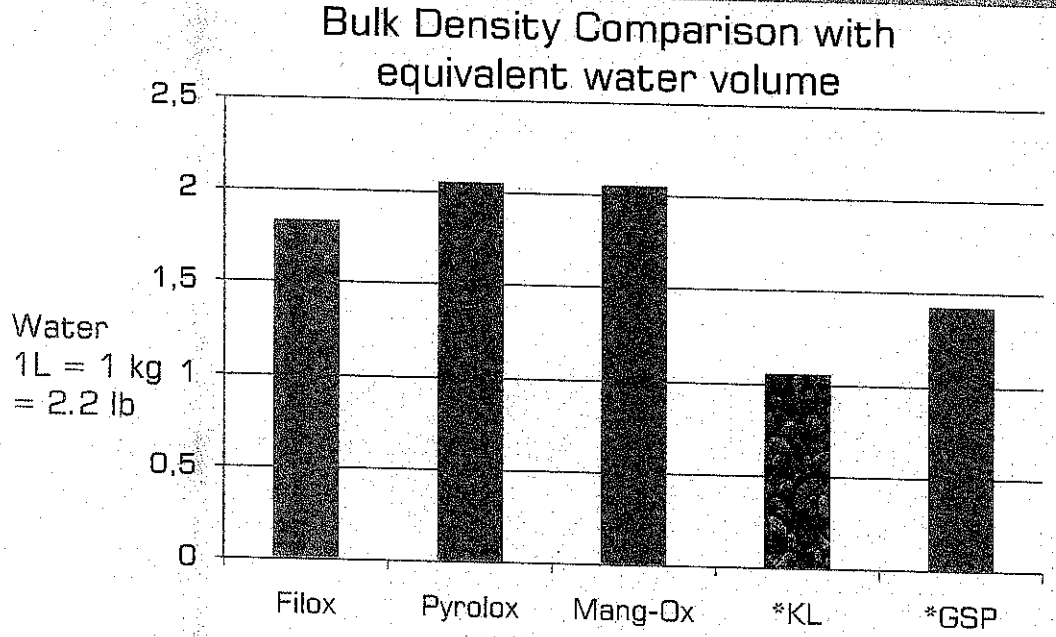
Bottom Surface Washing or Fast Rinse:

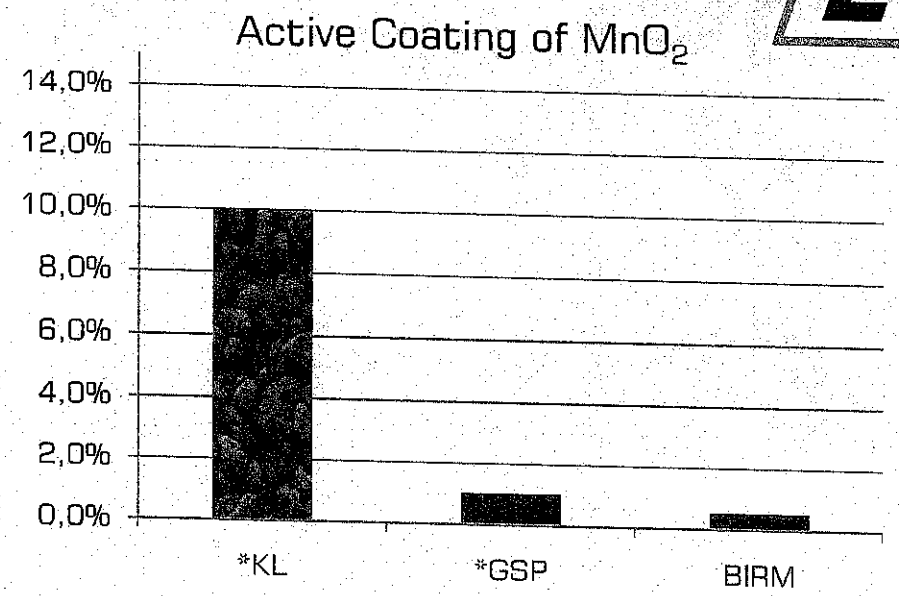
After a good backwash, the bottom surface area of the filter (near bottom distributors) should be washed for minimum 2-5 minutes before going back to service.

Note: Katalox Light® filters are usually operated of a service rate of 15 - 30 m/h (6 - 12 gpm/ft^2) and the recommended backwash rate is 20 - 25 m/h (8 - 10 gpm/ft^2). Wastewater or Water Reuse filters should operate at 7 - 10 m/h (3 - 4 gpm/ft^2) and should be backwashed at 20 -22 m/h (8 - 9 gpm/ft^2).

WATCH®
A Water Company
Fahrlachstrasse 14
D-68165, Mannheim, Germany
Ph: +49-621-37051-61
Fax: +49-621-67051-99
email: info@watchwater.de

"WHY IT IS THE BEST"





KL = Katalox Light
GSP = Greensand Plus

One liter media mass = 1 kilogram is the best weight for any media

*Heavier the media requires higher backwash rates and extra pumps (Energy) to backwash. 30 – 40 gpm/ft^2 Backwash and rinse rate is normal for Heavier medias.

The **Katalox-Light®** systems eliminates Iron, Manganese and Hydrogen sulfide so easy because **KL** filter media has highest coating of Manganese dioxide, an active ingredient. For this reason **KL** works while the other systems fail.

KL, PI

Why Chemical Free?

Not only because of High coating on the surface of ZEOSORB, **KL** media has the highest surface area, this is the reason it is chemical–free and chemicals like chlorine, chlorine dioxide, potassium permanganate are typically not required. Chlorine should not be used for disinfections or when iron bacteria is present.

Whole House System

The Katalox System consists of a pressure vessel, Control valves (fig. 1) and WATCH® **Katalox-Light®** media.

Water flows through the KL Filter media which provides a filtration down to 3 micron.

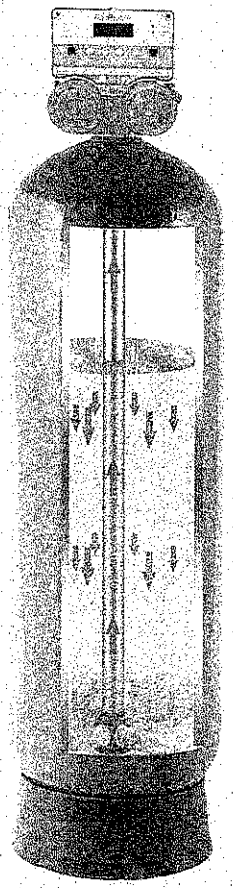


fig. 1

Why Chemical Free?

And as a Katalyst to use the oxygen content of the water to oxidize Iron, Manganese and Hydrogen sulfide. Subsequently these oxidized particles are trapped by the (High Surface) Filter media and removed from any water during the backwash cycle which is very short because of the media's LIGHT WEIGHT. Normal backwash time is 5 to 10 minutes.

Additional Advantages

- High Filtration rate : 4.3 GPM (max.)/ cubic ft. of KL media
- Effective at pH 5.8 – 10.5
- Treats up to 85000 mg of Iron, 42500 mg Manganese and 14000mg of Hydrogen sulfide per cubic. feet. of **KL** media
- Lowest cost on GPM basis
- 7 to 10 years warranty on media
- Contains NO Crystalline Silica, ANSI/NSF 61 Approved

Conclusion

Short summary:

Katalox-Light® media is a high grade, Granular filter media (Coated ZEOSORB) used for removing Iron, Manganese and Hydrogen Sulfide from City Water, Surface water and Well water.

Arsenic, Radium, Uranium removal using **Katalox-Light®** (see page ..)

The **Katalox-Light®** media operates both as a Removal and Filter, working with natural Oxygen in water or an oxidant as a Katalytic media due to its ability to accelerate the reaction between the oxidizing agent and prevalent DISSOLVED OXYGEN in water.

Conclusion

Short summary *(continued)*:

Dissolved Iron, Manganese and Hydrogen sulfide will stay in solution unless the equilibrium is changed. Iron and Manganese that is not oxidized become Katalytically precipitated and then adsorbed directly on the media. **Katalox-Light®** media has very high surface area that immediately stops oxidized or precipitated forms of Iron, Manganese and hydrogen sulfide from passing through the bed.

Law of Filtration:

Higher the surface better the filtration. Most of the Manganese is rapidly removed in the few inches of the media where it is further oxidized to Manganese dioxide (MnO_2).

Thanks for reading!

KATALOX LIGHT®

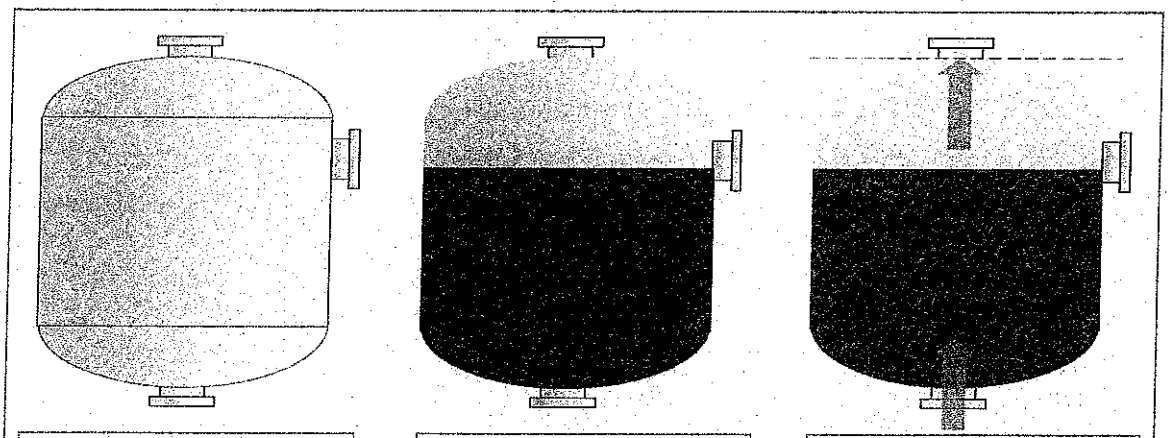
Installation/Operation Manual

Document ID: #140513KL-OPM

Katalox Light® media should to be properly backwashed & rinsed before placing into Service.

Installation Basic (for the first time installation only!):

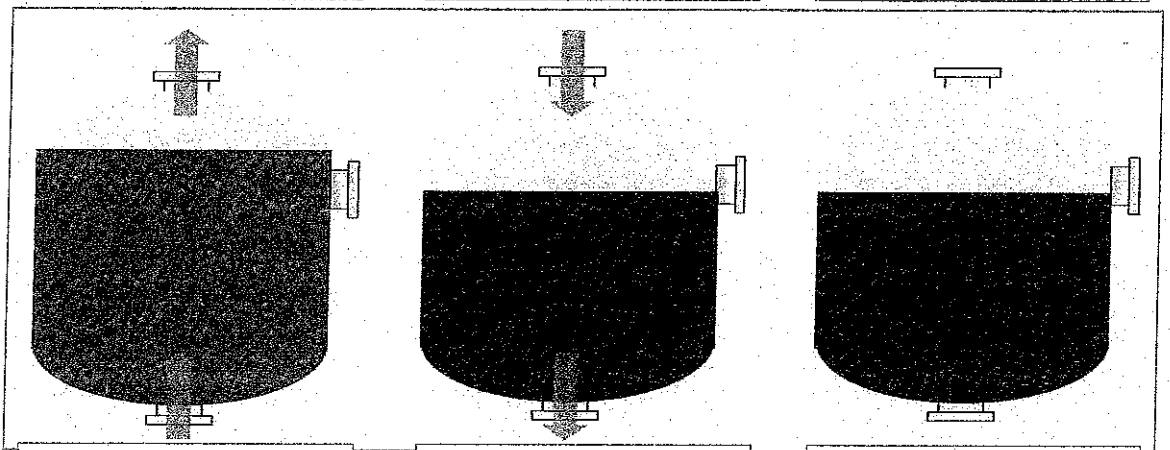
1. Open the bag of fresh Katalox Light® media and put into the Pressure Vessel/container.
2. Fill up the pressure vessel/container with fresh water from bottom to the top (as in Backwash mode).
3. Keep the media soaked in water for at least 35 minutes.
4. Backwash the media for 30 minutes (or if any fines are still visible in the backwash water) at 22 - 25 m/h (9 - 10 gpm/ft²). This backwash time is for the first time installation only.
5. After backwashing, Fast Rinse the media for 15 minutes (for the first time only) @ 20 m/h (8 gpm/ft²)



1. Clean and disinfect the empty Pressure Vessel

2. Pressure Vessel filled with Katalox Light leaving 30 - 35% freeboard

3. Fill up the Vessel slowly from bottom to the top (as in backwash mode) and leave the media soaked for minimum 30 minutes



4. Backwash the media bed @ 22 - 25 m/h [9 - 10 gpm/ft²] until the backwash water appears all clean. Recommended time: 35 minutes or till the back wash water appears clean

5. Fast Rinse the system.

Recommended time: 15 minutes (first time only)

6. The system is ready to go in Service.
Set the regular backwash duration to 10 - 15 minutes @ 20- 25 m/h [8 - 10 gpm/ft²]

WATCH®
A Water Company

Fahrlachstrasse 14
D-68165 Mannheim, Germany
Ph: +49-621-8705 1-51
Fax: +49-621-8705 1-99
email: info@watchwater.de

Troubleshooting:

pH increment: Water pH increment might be observed with newly installed Katalox Light® system which eventually gets neutralized (stabilized to the inlet water pH) with time.

The reasons for this could be various:

- High surface area of the media can help O_2 from the air to stick on its surface (normal when installed for the first time) which immediately increase the water pH
- Katalox Light® media's high catalytic oxidation capability can immediately oxidize some water impurities (that was dissolved in lower pH value) and make the water pH go higher
- If the water is hard (carbonate hardness), it can undergo CO_2 diffusion which would increase the pH

Solution: If there is a noticeable increase in the pH above the normal range, simply repeat points **"3", "4"** & **"5"** from the "Installation Basic" section *(page 1)*. This could vary from system to system and different water constituents.

Note:

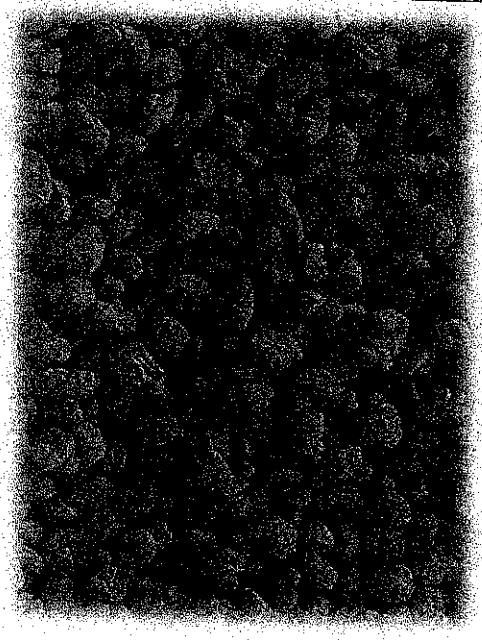
Having water pH near or above 7.0 is already an added advantage for the following

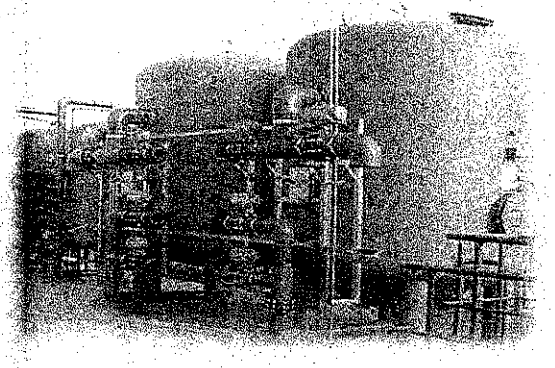
- It provides Anti microbiological effect that prevents the growth of biology in the media bed column
- Readily available pH for efficient iron & manganese removal
- Applications like Cooling Towers, Boilers; Heat Exchangers generally requires water pH above the normal range

www.watchwater.de
WATCH®
A Water Company
Fahrlachstrasse 14
D-68165 Mannheim, Germany
ph: +49-621-67951-51
Fax: +49-621-67951-99
email: info@watchwater.de

Katalox-Light®

Katalox-Light® is a light weight but with a very high content, Granular Katalytic Filter media for a whole house or complete Municipality Systems used for removing





- Iron and Manganese
- Hydrogen sulfide
- Arsenic
- Radium & Uranium Including Selenium

You will learn more about Applications in this Presentation. The **Katalox-Light®** operates both as a chemical-free water treatment for your home or Industrial application anywhere in the world for the "**BEST PRODUCT AVAILABLE**".

WATCH WATER, USA
A Water Company

What is Katalox Light®?

Katalox Light® is a new brand of revolutionary advanced filtration media completely developed in Germany. It's composition simply makes it outstanding against the contemporary filter media available in water treatment industries, like sand, BIRM, Greensand Plus, Manganese Greensand etc. **Katalox Light®** is manufactured in Germany.

Katalox Light® is engineered with unique MnO_2 coating technique on ZEOSORB®, providing it light weight, higher filtration surface, more service life and more reliable performance than any other existing granular filter media.

Katalox Light® is being used in numerous system for residential, commercial, industrial and municipal applications worldwide, for High level filtration, color and odor removal, Iron, Manganese, Hydrogen sulfide removal, efficient reduction of Arsenic, Zinc, Copper, Lead, Radium, Uranium and other radionuclides and heavy metals.

Katalox Light® is ANSI/NSF 61 Certified for drinking water applications and has met the ANSI/NSF 372 Lead free compliance.

Advanced use

High concentration coating of MnO_2 on the **Katalox Light®** surface (10%) is the biggest advantage compared to any similar product available in the market. This makes the oxidation and co-precipitation of contaminants much more effective. For removal of very high concentration of contaminant it's recommended to use H_2O_2 as an oxidizer, which provides accelerated catalytic oxidation on the surface of the media. Conventional oxidizing agents like chlorine or potassium permanganate also could be used if required.

Katalox Light® can be used for Arsenic, Radium, Uranium removal but in these cases there is requirement of Iron in the water. **Katalox Light®** system is designed with special iron dosing technology which has many advantages over Adsorbent media used for Heavy Metal removal.

ADVANTAGES:

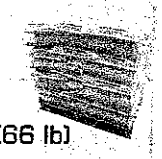
- High content MnO_2 coating (10%)
- Very High Surface Area
- Contains NO Crystalline Silica
- Light Weight - providing significant savings on backwash water
- Higher Filtration rates
- Filtration of sand, sediment and suspended solids
- High efficiency removal capacity of Iron, Manganese and Hydrogen sulfide
- Effective reduction of Arsenic, Zinc, Copper, Lead, Radium, Uranium, radionuclides and other heavy metals
- Media replacement every 7 - 10 years
- No disinfection by-product
- No mandatory $KMnO_4$, chlorine or chlorine dioxide dosing
- Low operational costs
- Unique product, unmatched by our competitors

The Future

The future of water treatment, as we see it, is going to give us more difficult challenges and we all need more advanced and robust products.

In **Watch®**'s vision, **Katalox Light®** can be addressed for advanced concepts like Water Reuse, Controlled Adsorption of Arsenic and Heavy Metals, advanced Membrane pre-treatment, Zero-Discharge Cooling tower etc.

Contact us for information.



Standard Packaging:
1 ft^3 bags (28 Liters); Mass: 30 kg (66 lb)
40 bags on a Pallet
16 Pallets in a container