



GRANULAR FILTER MEDIA BOOKLET

INTRO MEDIA FILTRATION

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WHAT IS GRANULAR MEDIA FILTRATION

Granular media filtration is a process of passing water through a bed of a granular or powdered medium to remove suspended solids, color, gases and other things from the water. In theory, we consider every particle bigger than 2 microns to be in suspension, while we consider every particle smaller than 2 microns to be in solution.

Synonyms for suspended solids are material in suspension, solid particles, sediment, etc.

We talk about granular media filtration because we will use a medium in the form of a granulate. Media filtration can also be about membrane filtration and filtration with filter cartridges.

The particles treated with granular filtration media are finally divided and may be sand, silt, organic matter coming from plant debris, iron, algae, bacteria and a lot of other materials that you can find in groundwater and surface water. We can treat even particles in solution with this method.. We first will need to transform them from the dissolved form to the oxidized form and will in a second step remove them by the use of a granular filtration medium or a combination of different media. An excellent example is Fe^{2+} that we will transform to Fe^{3+} .

The most common problems are:

- Sediment removal
- Iron removal
- Manganese removal
- Hydrogen sulfide removal
- Removal of organic material
- Removal of chlorine
- Color removal
- pH-correction
- Arsenic removal
- Radium removal

On the same drawing below, you can see that filtration is working in a different field of application than ion exchange:

- Ion exchange is about particles in solution.
- Ion exchange is about removing and adding something at the same time, while filtration only removes and adds nothing instead.

Units of measurement TSS and Turbidity

We can express the total amount of suspended solids present in the water and that we can stop with a 2 micron filter in ppm (or mg/l). This is the TSS of the water. TSS stands for total suspended solids.

Turbidity is also a method to define the clarity of the water. Turbidity and TSS are referring to the same but are not exactly the same. Turbidity measures the clarity or the lack of clarity of the water and is expressed in NTU. NTU stands for Nephelometric Turbidity Units. The turbidity of drinking water needs to be smaller than 5 NTU and in most countries even lower.

Two dominant families of media

There are two important families of granular filtration media that we use widely in domestic and industrial filter applications.

Family 1: Mechanical filtration media.

We use them for the removal of sediment and turbidity. The media belonging to this group are chemically inert.

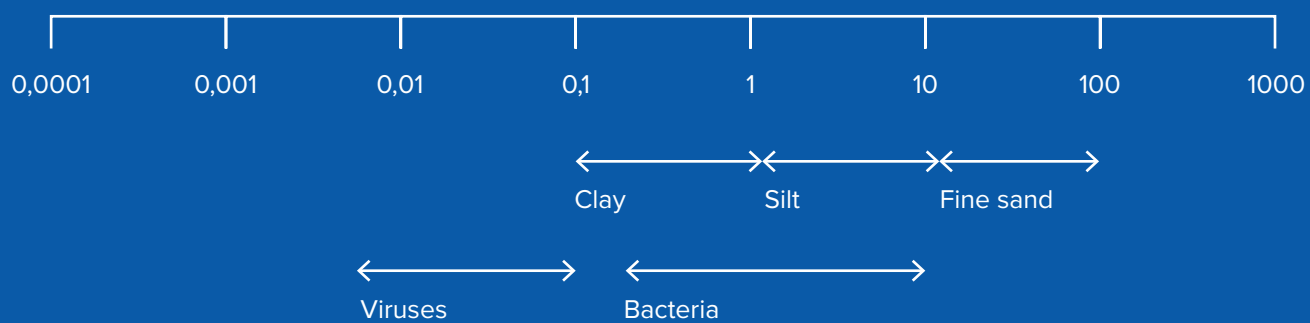
- Sand & silex
- Anthracite

Family 2: Chemically reactive filtration media

We use those media for the removal of sediment and turbidity and for many other problems. In most cases the media in this group are multifunctional, meaning that we can use them for multiple purposes at the same time. We will use them for sediment filtration in combination with other water problems. Chemically reactive means that during the passage through the filter bed a chemical reaction will happen thanks to the composition of the granular filtration media.

Examples of media belonging to that group are:

- Granular activated carbon (GAC)
- Calcite and calcium carbonate
- Greensand Plus
- Media coated with manganese oxides
- Media coated with aluminum silicate



FILTER MEDIA CATEGORIES

The different filter media belong to some bigger groups. We sum up the most common groups in purely alphabetical order and we add a small description. If possible we also give an example or some examples of brands.

Activated alumina

Highly porous and adsorptive treated aluminum ore that we can use for the removal of arsenic, fluoride or selenium. The medium requires periodic cleaning with an appropriate regenerant.

Activated carbon (granular activated carbon)

Bituminous coal or cellulose-based substances such as wood or coconut shell that are first heated to 700°C and secondly at 800°C to 1000°C with oxidizing gases such as steam and carbon dioxide to create a highly porous absorbent material. We can use activated carbon for the removal of chlorine in water. In this application, the carbon will be consumed. We also can use granular activated carbon for the removal of organic materials. After saturation, we will have the possibility to reactivate the activated carbon in a specialized facility. Note that some activated carbons are better for the removal of chlorine and others are better for the removal of organic materials.

Examples: Centaur - AquaSorb 1200/2000/CR

Aluminum Silicate (pumicite)

A mineral coming from volcanic ash that in most circumstances has received a coating with manganese dioxide and that we can use for the removal of iron and manganese.

Examples: Birm - Turbidex

Anthracite

A filter medium produced from crushed anthracite coal and sieved to specific sizes, used for the removal of sediment.

Example: Everzit

Calcium carbonate (calcite)

Medium of very fine particles of marble or limestone, very high in calcium carbonate, used to raise the pH of acidic water or to filter out sediment.

Examples: Calcite - Aqua-Juraperle - Aqua-Semidal

Copper Zinc Alloy (KDF)

A patented medium made of copper and zinc granules used to remove chlorine, H₂S, soluble heavy metals and other inorganic contaminants.

Examples: KDF 55 - KDF 88

Iron oxide

Natural or synthetic oxidizing agents, containing iron, for example ferric oxide (Fe₂O₃). Mainly used for the removal of arsenic.

Example: Bayoxide

Magnesia

Magnesium oxide (MgO) that has been specially processed, and that we apply for the pH-modification of water.

Example: Corosex

Manganese oxides

A group of natural and mainly synthetic oxidizing agents containing a coating with manganese, for example manganese dioxide (MnO₂). Used for iron, manganese and H₂S removal.

Examples: Filox R - Katalox Light - Pyrolox - Pyrolox advantage

Manganese greensand & manganese greensand plus

Manganese greensand was a medium, that offered a mild oxidizing power, that we often used for the oxidation, precipitation and filtration of iron, manganese and H₂S. We regenerated it by solutions of KMNO₄ (potassium permanganate).

Greensand Plus is the newer version of manganese greensand that offers better oxidizing capacities. Another advantage of the Plus version is that beside KMNO₄ we also can use chlorine as a regenerant/oxidizing agent.

Examples: Greensand Plus

Sand, Silex, Silica dioxide

The oldest and most basic filtration medium available in several grades and mainly used for the removal of suspended solids (sediment). Sand & silex are very popular for swimming pool filters, for water purification plants (gravity filters) and for industrial water treatment filters, where we can use sand in combination with coagulants.

Examples: Filter Ag - Sand & silex

Activated glass

AFM® is an inert, amorphous aluminosilicate (glass) manufactured by up-cycling post-consumer green and brown glass bottles and operated specifically for the production of activated glass water filtration media. AFM® is very popular for swimming pool filters, for water purification plants (gravity filters) and for industrial water treatment filters.

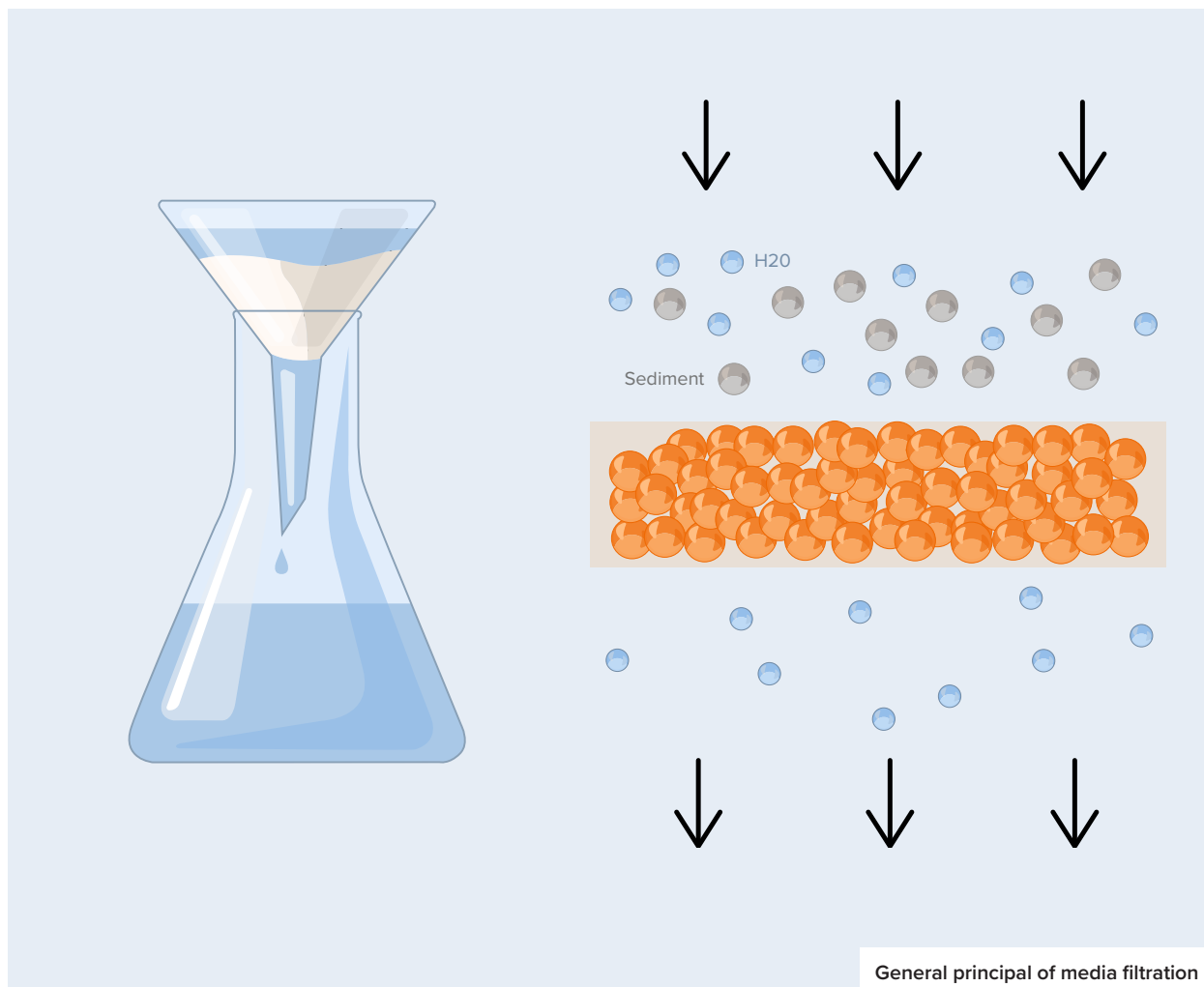
Examples: AFM Ng

PROBLEM SOLVING

The most common problems are removal of iron, manganese, sediment, chlorine and organic material. That's why a lot of media exist for those applications. But we have seen above that also many other problems exist. The different media in this booklet in function of the problem in alphabetical order.

Arsenic removal	Bayoxide	Greensand plus	Pyrolox advantage
Chlorine removal	Centaur	KDF 55	AquaSorb CR
Colour (Organic Material)	AquaSorb 1200/2000	AquaSorb CR	Katalox Light
Hydrogen sulfide removal (H2S)	Centaur	Filox R	Greensand plus
	Katalox light	KDF 85	MAZ
		Pyrolox	Pyrolox Advantage
Iron removal	Birm	Crystal Right	Filox R
	Greensand plus	Katalox light	KDF 85
	MAZ		Pyrolox
	Pyrolox Advantage		
Manganese removal	Crystal Right	Greensand plus	Katalox light
		Pyrolox	Pyrolox Advantage
Odor (see also H2S)	AquaSorb 1200/2000	AquaSorb CR	Katalox light
Ozone removal	AquaSorb CR		
pH-correction	Aqua-Juraperle	Aqua-Semidol	Calcite
	Corosex	Crystal Right 100	
Radium removal	Greensand plus		
Scale prevention	Neutracalc		
Softening	Crystal Right		
Suspended solids wand Turbidity	Anthracite / Everzit (N)	Filter AG	Sand and silex
	Turbidex	AFM NG	

MAIN PRINCIPLES OF MEDIA FILTRATION



If we talk about granular media filtration, we distinguish mainly four distinct types of filtration or a combination of those types:

Surface filtration

For a lot of sediment filters the upper surface of the filter is the most important part. If the surface of the filter doesn't stop the sediment particle, it will go through the filter. A correct calculation of the surface area is very important. The bigger the area the better.

Depth filtration

This means that we will not only use the upper surface, but the whole depth of the filter bed to stop the particles.

Adsorption*

Means that there is an adhesion of the molecules (e.g. organic compounds, chlorine) to the surfaces on the granulate they come in contact with. Adsorption happens at the outside of the granulate. In most cases, adsorption is a reversible process. This means that everything that the filter retains will be released again if we never stop the process.

Absorption*

Is the same as adsorption but happens also at the inside of the filtration medium. The best-known adsorption material is with no doubt granular activated carbon (GAC).

*Typical examples of adsorption/absorption: removal of organic compounds - chlorine removal - color removal - odor removal (H₂S, Ammonia) - bacteria

IMPORTANT PARAMETERS

Read the technical leaflet of the medium

The technical leaflet will give you a detailed description of the medium, it will talk about the benefits (powerful points) but should also enumerate the limits. Is the product made for one specific application or is it multifunctional? What are the maximum levels of the contaminant that we can treat: e.g. a medium treating iron: what is the minimum level of iron and what is the maximum level that the medium can handle? Does the medium need oxidation, regeneration or is cleaning just with water enough? What are the advised flow rates in service, in backwash? What is the advised bed depth and free board? In which field of pH can we apply the medium?

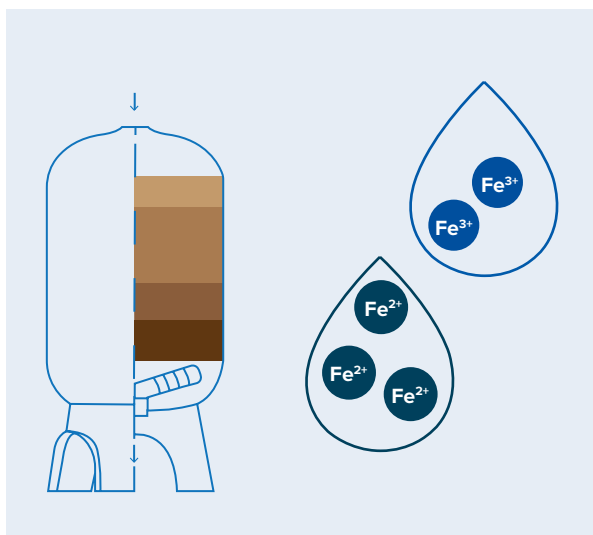
A lot of information that you need to read and interpret correctly.

Flow rate in service

A filter functions at a well-defined flow rate. This flow rate depends on the medium, the leaflet will give you a linear velocity expressed in meters per hour. This is a very important parameter that you need to respect at all times. Starting with the linear velocity you will calculate the needed surface area in a first step and the diameter of the vessel in a second step.

Backwash flow rate

Probably even more important than the service flow rate will be the flow rate during backwash. To have a proper backwash, the backwash rate will in most cases be much higher than the service flow rate. The aim is to wash out all the dirt to the drain, eliminate preferential channels and loosening the filter bed.



Filter fineness

The filter fineness depends on the flow rate and on the size of the granulated medium that you are using. The finer the medium the finer will be the result of the filtration but the bigger will be the pressure drop. We express the fineness of the filter medium in micron or in mm. For American products, we will receive the same value in mesh.

A 30 micron-filter: means that the filter stops everything bigger than 30 microns during the passage over the filter, but everything smaller than 30 microns will remain in the water after filtration. For some applications 30 microns will be more than ok, but for other applications we will need to get a much lower filter fineness (e.g. 5 microns). You will need to select the correct medium to get the required filter fineness.

Mesh	Micron
8	2380
16	1168
18	1000
20	841
25	707
30	595
35	500
40	420
45	354
50	297

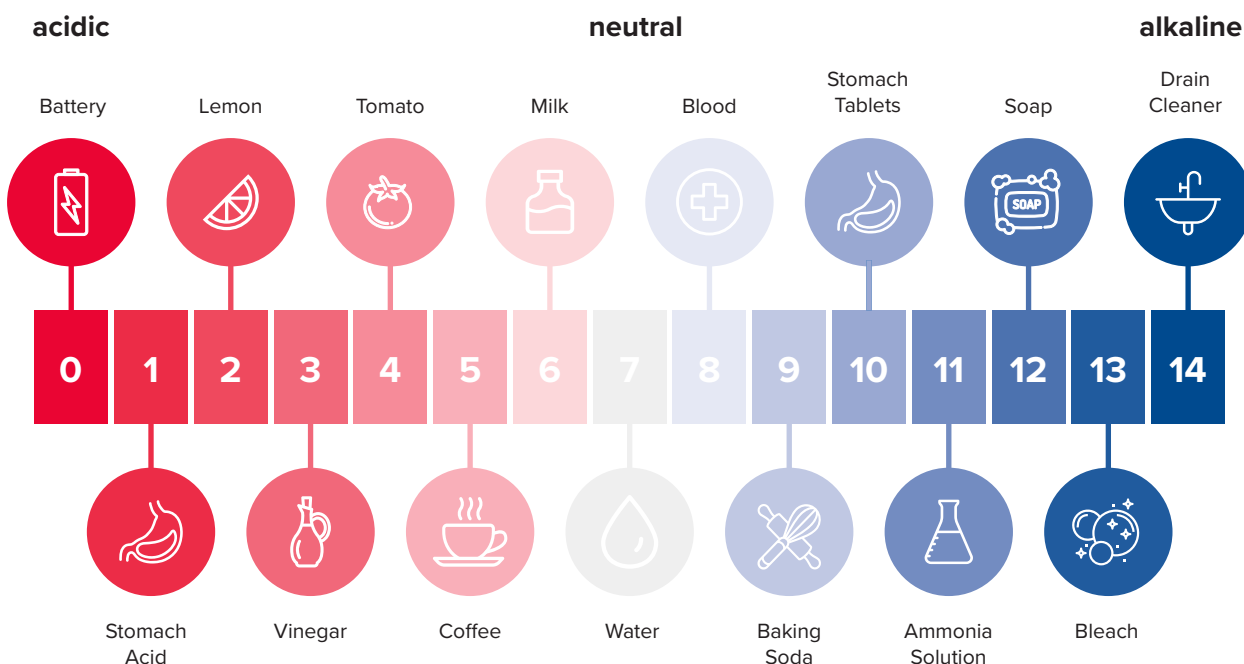
Multilayer filter

A multilayer filters means that the filter contains distinct types of granular filter media. Some media go well together with other media. As sand & silex are inert, they go together with all other media. We use silex or gravel often as a support layer in most filters. E.g. anthracite goes well together with greensand plus as the top layer of a multilayer filter.

Oxidation

Oxidation is a keyword in the world of media filtration. Oxidation means that we will need to transform the contaminant from the non-oxidized form (in solution) to the oxidized form (suspended). The most typical example is that of iron that we will transform from Fe^{2+} to Fe^{3+} . Some filtration media offer catalytic properties. The coating on the media will provoke an oxidation of the contaminants in the water during the passing

IMPORTANT PARAMETERS



of the water. This is very interesting if the levels of the contaminant are not very high. In a lot of cases an additional prior oxidation will be necessary. We can achieve this, by adding an oxidizing agent in the pretreatment line of the filter: oxygen, chlorine, KMNO₄.

Remember sediment filtration is about everything that is bigger than 2 microns. If the particle is smaller or in solution, the filter cannot do what it is made for.

pH

The pH of the water is another key factor. A certain filtration medium functions within a minimum and maximum pH-range. If you don't respect this parameter, the medium will fail. You need to do the measurement of the pH on location. Calibrate the pH-tester from time to time.

Crystal Right

Crystal Right or CR is a very interesting medium. It can treat high amounts of iron, manganese, ammonia & H₂S and correct pH, but it works in a different field of application than the other media. CR works mainly through ion exchange, adsorption and will simultaneously soften the water. Another major advantage of CR is that you can regenerate it with sodium chloride (NaCl), just like a classic water softener. Crystal Right can be disinfected with the usage of the chlorinator.



THE BIG FIVE

The field of application of granular media filtration is very wide, but we give a small description of the 5 most common applications: the big five

Iron

A lot of media exist to treat iron. Iron is the fourth most present element on the crust of the Earth, that's why it is present in a lot of ground waters.

Iron can be present in the dissolved form (Fe^{2+}) or in the oxidized form (Fe^{3+}). Sometimes you will find iron in combination with organic material called tannins.

In each case, the method of treatment will be different. The granular medium will perform much better if they can filter oxidized iron than iron in solution. Some filter media will transform the dissolved iron (Fe^{2+}) into precipitated iron (Fe^{3+}) during the passage over the filter bed. In some circumstances an additional oxidation in the pretreatment line will be necessary.

A correct knowledge of the pH is very important to treat iron successfully.

Manganese

We can consider manganese as the little sister of iron, because if iron is present most times manganese will be present as well but in smaller quantities.

What functions for iron will in most cases function for manganese, but in a higher pH-range.

Organic compounds

Organic matter comes from natural organic compounds coming from the residues of plant and animal life. The chemical element carbon (C) is always present. If those residues come in contact with groundwater or surface water, they will give a color, a taste or an odor to the water.

In most cases, we can treat organic compounds successfully with granular activated carbon. Some types of GAC have been designed especially for the removal of organic material. You can reactivate the activated carbon after exhaustion in special designed installations (never on location).

Chlorine

Chlorine ends up into water as a disinfectant in drinking water or as an oxidizer. Some types of granular activated carbon will remove chlorine successfully.

It is not possible to reactivate the GAC used for this application.

PH-Correction

Water can have a very low pH because of its nature or after it comes from a reverse osmosis installation. All water with a pH lower than 7 is acidic and will in most cases be corrosive and aggressive. Water with a low pH can flow through a filter containing calcium carbonate (CaCO_3) or magnesium oxide (MgO). The pH will raise and the water will gain in minerals.

CONTENT TABLE FILTER MEDIA

Below you can find an overview of 25 filter media used in the Pollet Water Group. This list is not intended to be complete. Many other media are available as well. We advise to read also carefully the technical leaflet of the manufacturers for more details. Not all grain sizes mentioned in the list are standard available.

Filter Media		Problem Solving	Page
Anthracite / Everzit (N)		suspended solids and turbidity	15 - 16
Aqua-Juraperle		pH-correction	17 - 18
Aqua-Semidol		pH-correction	19 - 20
AquaSorb 1200		organic material, chlorine, colour	21 - 22
AquaSorb CR		organic material, chlorine and ozone	23 - 24
Bayoxide		arsenic removal	25 - 26
Birm		iron and manganese removal	27 - 28
Calcite		pH-correction	29 - 30
Centaur		chlorine and hydrogen sulfide removal	31 - 32
Corosex		pH-correction	33 - 34
Crystal Right 100/200		manganese, iron and ammonia removal, pH-correction and softening	35 - 38
Filox R		iron, hydrogen sulfide and manganese removal	39 - 40
Filter AG		suspended solids removal	41 - 42
Greensand plus		removal of iron, manganese, hydrogen sulfide, arsenic and radium	43 - 44
Katalox light		colour and odour removal, iron, manganese and hydrogen sulfide	45 - 46
KDF 55		chlorine removal	47 - 48
KDF 85		ferrous iron removal and hydrogen sulfide	49 - 50
Manganese greensand		removal of iron, manganese and hydrogen sulfide	51 - 52
Pyrolox		removal of iron, manganese and hydrogen sulfide	53 - 54
Pyrolox advantage		removal of iron, manganese, hydrogen sulfide and arsenic	55 - 56
Sand and silex		suspended solids removal	57 - 58
Turbidex		suspended solids removal	59 - 60
AFM NG		suspended solids removal	61 - 62

Media

ANTHRACITE EVERZIT (N)

GENERAL DESCRIPTION

Anthracite / Everzit N is a natural anthracite filter material mined from a depth of 1500 meters. It is cleaned, crushed and sieved to convert the anthracite to an excellent media for single-layer or multi-layer filters. Anthracite / Everzit N is used to filter water containing suspended solids and turbidity throughout the entire filter bed (depth filtration).

USP'S

- Excellent retention of sediment particles or precipitated particles
- Higher flow rates in service
- Better filtrate quality
- Reduced pressure drop
- Optimum separation of filter layers during backwash
- Good washout of dirt particles with a higher specific weight
- No adhesion of precipitated iron, manganese or calcium

EN12915



ORDER INFORMATION

Article number	0903040001
Description	Hydroanthracit N - Grade I
Quantity per pallet	24 bags
Packaging	Bags of 50L

ANTHRACITE EVERZIT (N)

PHYSICAL CHARACTERISTICS

Color	grey/black
Bulk density	0.7 kg/l
Particle sizes	type I: 0.8 - 1.6 mm (800 - 1600 micron)
	type II: 1.4 - 2.5 mm (1400 - 2500 micron)
	type III: 2.0 - 4.0 mm (2000 - 4000 micron)
Specific density	1.35 - 1.55 kg/l
Chemical composition	+/- 92% carbon
	+/- 5.5% ash
	+/- 8.5% volatile matter

CONDITIONS FOR OPERATION

Recommended service flow rate	up to 30 m/h
Recommended backwash rate	35 – 40 m/h type I
	50 – 60 m/h type II
	80 – 95 m/h type III
pH range	3 - 12
Freeboard	depends on backwash method
Bed depth	500 – 2500 mm (single layer)
	> 300 mm (multi layer)

Anthracite / Everzit N can be backwashed with water only or with water/air in combination or one after the other. Anthracite / Everzit N is very often combined with quartz sand.

MAXIMUM REMOVAL CONCENTRATION

Iron	depends on local situation
Hydrogen Sulfide	depends on local situation
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

AQUA-JURAPERLE

GENERAL DESCRIPTION

Aqua-Juraperle is a granular filtration medium with a purity of 99.1% calcium carbonate. Because of its micro-crystalline structure, it is superior to ordinary limestone. Raise of pH, as free CO₂ is converted to bicarbonate and calcium is dissolved respectively. Aqua-Juraperle also functions as an excellent filter for sediment particles.

The calcium carbonate granulates are consumed in function of free CO₂-level. New Aqua-Juraperle must be added from time to time (e.g. once a year).

USP'S

- pH-adjustment
- Removal of free CO₂
- Removal of oxidized iron/manganese
- Remineralisation of natural soft water and R.O.-water



ORDER INFORMATION

Article number	0904015907 ¹
	0904010001 ²
Description	Aqua-Juraperle (1 - 2 mm) ¹
	Aqua-Juraperle (2 - 3 mm) ²
Quantity per pallet	40 bags
Packaging	Bags of 25kg



AQUA-JURAPERLE

PHYSICAL CHARACTERISTICS

Color	white/grey irregular granulates
Bulk density	1.60 kg/l
Particle sizes	0.5 - 1.2 mm (500 - 1200 micron)
	1.0 - 2.0 mm (1000 - 2000 micron)
	2.0 - 3.0 mm (2000 - 3000 micron)
	3.0 - 4.0 mm (3000 - 4000 micron)
	4.0 - 6.0 mm (4000 - 6000 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	12 m/h
Recommended backwash rate	24 m/h
pH range	acidic water
Density	1.5 kg/l
Freeboard	30%
Bed depth	450 - 800 mm

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓*
Manganese removal	✓*
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	✓
Arsenic removal	
Radium removal	
Softening	

* Please check the requirements to use the medium for this application

Media

AQUA-SEMIDOL

GENERAL DESCRIPTION

Aqua-Semidol is produced from pure dolomite. It is composed of 23 – 28% MgO and 72 – 77% CaCO₃. It is successfully used to raise the pH of water by binding carbon dioxide (CO₂) and adding calcium and magnesium to the water.

Aqua-Semidol will dissolve (1.2 – 1.3 gram per gram CO₂) and needs to be replenished from time to time. The filter media is to be used in continuous flow systems only, to prevent possible cementing of the filter bed.

In systems where the flow is too low, the pH will be overcorrected.

USP'S

- Highly reactive
- Can treat water with a very low pH



ORDER INFORMATION

Article number	0904010002 ¹
	0904010003 ²
Description	Aqua Semidol (2.5 - 5.0 mm) ¹
	Aqua Semidol (0.5 - 1.25 mm) ²
Quantity per pallet	40 bags
Packaging	Bags of 25kg

AQUA- SEMIDOL

PHYSICAL CHARACTERISTICS

Color	white
Bulk density	+/- 1.1 kg/l
Particle sizes	0.5 - 1.25 mm (500 - 1250 micron)
	0.5 - 2.5 mm (500 - 2500 micron)
	2.5 - 5.0 mm (2500 - 5000 micron)
Chemical composition	MgO: 23 - 28%
	CaCO ₃ : 72 - 77%

CONDITIONS FOR OPERATION

Recommended service flow	12 - 15 m/h
Recommended backwash rate	25 - 30 m/h
pH range	4.5 - 6.0
Freeboard	50% of bed depth (min.)
Bed depth	600 - 770 mm

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	✓
Arsenic removal	
Radium removal	
Softening	

Media

AQUASORB 1200

GENERAL DESCRIPTION

AquaSorb 1200 is a granular activated carbon (GAC) coming from bituminous coal and manufactured by steam activation. AquaSorb 1200 is very effective for the removal of organic substances with a low or medium molecular weight. AquaSorb 1200 will produce potable water from well water or surface water but can also be used to treat city water.

USP'S

- Excellent adsorption capacity
- High activity
- High hardness and mechanical strength



ORDER INFORMATION

Article number	0905100001 ¹
	0905100004 ²
Description	AquaSorb 1200 8x30 ¹
	AquaSorb 1200 12x40 ²
Quantity per pallet	40 bags
Packaging	Bags of 25 kg



STD 61

EN12915

AQUASORB 1200

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	+/- 0.54 kg/l
Particle sizes	8 x 18 mesh (1180 - 2360 micron)
	8 x 30 mesh (600 - 2360 micron)
	10 x 20 mesh (850 - 2000 micron)
	12 x 40 mesh (430 - 1700 micron)
	20 x 40 mesh (430 - 825 micron)
Iodine adsorption	920 mg/g
BET-surface area	950 m ² /g
Ball-pan hardness	96%
Ash content	15% max.

CONDITIONS FOR OPERATION

Recommended service flow rate (depending on applicaton)	5 - 30 m/h
Recommended backwash rate (depending on applicaton)	10 - 40 m/h
Freeboard	> 30% of bed depth
Bed depth	> 750 mm

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	
Adsorption	✓
Ion-exchange	

APPLICATIONS

Sediment removal	
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	✓
Removal of chlorine	
Color removal	✓
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

AQUASORB CR

GENERAL DESCRIPTION

AquaSorb CR is a medium activity granular activated carbon manufactured by steam activation of coconut shell charcoal. It is very effective for the removal of oxidizing agents such as chlorine and ozone.

AquaSorb CR possesses a superior mechanical hardness in combination with an excellent de-dusting operation resulting in very clean water after treatment..

USP'S

- Rapid dechlorination
- Very large pore structure
- Low dust and turbidity
- Excellent adsorption capacity



ORDER INFORMATION

Article number	0905100008 ¹
	0905104900 ²
Description	AquaSorb CR 8x30 mesh ¹
	AquaSorb CR 12x40 mesh ²
Quantity per pallet	40 bags
Packaging	Bags of 25 kg



STD 61

EN12915

AQUASORB CR

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	+/- 0.47 kg/l
Particle sizes	20 x 50 mesh (300 - 800 micron)
	12 x 40 mesh (400 - 1680 micron)
	8 x 30 mesh (600 - 2380 micron)
	8 x 16 mesh (1200 - 2380 micron)
	6 x 12 mesh (350 - 1700 micron)
Iodine number	min. 900 mg/g
BET-surface area	950 m ² /g
Ball-pan hardness	98% min.
Ash content	4% max.
CTC-activity	min 45%
pH	9 - 11

CONDITIONS FOR OPERATION

Recommended service flow rate (depending on application)	10 - 30 m/h
Recommended backwash rate (depending on application)	10 - 40 m/h
Freeboard	> 30 % of bed depth
Bed depth	> 750 mm

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	
Adsorption	✓
Ion-exchange	
Sediment removal	
Iron removal	
Manganese removal	
Hydrogen sulfide removal	✓
Removal of organic material	✓
Removal of chlorine	✓
Color removal	✓
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

BAYOXIDE

GENERAL DESCRIPTION

Bayoxide E33 is a synthetic iron oxide (Fe_2O_3) media mainly used for the removal of arsenic. The ferric oxide works through absorption and will reduce arsenic levels to below $4\mu\text{g/L}$.



USP'S

- Removes both As (III) and As (IV) below $4\mu\text{g/L}$
- No chemicals needed for regeneration, periodic backwashing with water is enough
- Higher capacity than other filtration media used for the same purpose
- Very high abrasion stability
- Delivered as dry material

ORDER INFORMATION

Article number	0900010003
Description	Bayoxide E33
Quantity per pallet	20 boxes
Packaging	Box of 20kg / 40L



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BAYOXIDE

PHYSICAL CHARACTERISTICS

Color	amber
Bulk density	0.5 kg/l
Particle sizes	10 x 35 mesh (500 - 2000 microns)
Specific surface area	120 - 200 m ² /g
Composition	> 70% Fe ₂ O ₃
Estimated media life	2 - 3 years*

* Depends on size. Bayoxide will be removed over time and every installation needs to be filled up again.

CONDITIONS FOR OPERATION

Arsenic concentration range	10 - 100 µg/l
Removal efficiency	up to 99%
Recommended service flow rate	max 20 m/h
Recommended backwash rate	25 m/h
pH-range	5.5 - 8.5
Freeboard	30%
Bed depth	> 600 mm
Contact time	3 - 5 minutes

Other max. levels in feed water (iron < 0.3 mg/l, manganese < 0.05 mg/l, phosphate < 0.5 mg/l, silica < 30 mg/l, sulfate < 100 mg/l, TSS < 5 mg/l, Fluoride < 1 mg/l; hardness: < 300 mg/l; turbidity: 5 NTU (max.).

Before each implementation, pilot testing with a scale model is recommended. Bayoxide is to be used with a gravel bed support.

* For concentration higher than 50 µg/l size your filter one size bigger to generate extra contact time

TECHNIQUES

Filtration	
Adsorption	✓
Ion-exchange	

APPLICATIONS

Removal of heavy metals	
Sediment removal	
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	✓
Radium removal	
Softening	

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

Media

BIRM

GENERAL DESCRIPTION

Birm is a filter media for the removal of iron and manganese. It is an aluminium silicate coated with manganese dioxide. Under the proper conditions no chemicals but an air pocket is needed. In that case Birm only needs to be backwashed from time to time with water. Birm acts as a catalyst to enhance the reaction between dissolved oxygen and the iron compounds, changing the Fe²⁺ into Fe³⁺ and form ferric hydroxide that precipitates and may be easily filtered.

USP'S

- No use of chemicals under proper conditions. Easy to handle, easy to service.
- Birm is insoluble, long life time
- Only backwash with water in ideal conditions
- Wide temperature range



ORDER INFORMATION

Article number	0906015190
Description	Birm
Quantity per pallet	40 bags
Packaging	Bags of 1 cft*

* 1 cuft = bag of 28.3 l = 19.8 kg

We recommend you to use BIRM® with an Evolve Air Filter System.



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BIRM

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	0,56 - 0,64 kg/l
Particle sizes	10 x 40 mesh (400 - 2000 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	12 m/h
Recommended backwash rate	24 m/h
pH sensitive	6.8 - 9.0
pH range for removal	7.5 - 9.0 for iron 8.2 - 9.0 for manganese < 8.5 for iron and manganese
Freeboard	30%
Bed depth	770 - 910 mm
Max water temperature	38 °C
Free chlorine level	< 0.5 mg/l
Organic matter	< 4 - 5 mg/l
H ₂ S level	none present
Oil	none present
Polyphosphates	none present

Dissolved oxygen (D.O.) content: at least 15% of the iron (or iron and manganese) content. Water having a too low D.O.-content may be pretreated by aeration.

MAXIMUM REMOVAL CONCENTRATION

Iron	< 4 mg/l
Hydrogen Sulfide	not applicable
Manganese	< 3 ppm

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

CALCITE

GENERAL DESCRIPTION

Calcite is the most common form of naturally occurring calcium carbonate (white marble) which is crushed and screened. It is used to neutralise acidic water. Depending on pH and other parameters Calcite will be exhausted after some time and needs to be replenished.

USP'S

- Calcite does not overcorrect the pH under normal conditions
- Calcite (low flow) can be combined with Corosex (high flow)
- Periodic backwashing with water is enough
- Inexpensive



ORDER INFORMATION

Article number	0904020001
Description	Calcite
Quantity per pallet	49 bags
Packaging	Bags of 0.55 cft*

* 0.55 cft = 15.6 L = 22.5 kg



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CALCITE

PHYSICAL CHARACTERISTICS

Color	near white
Bulk density	1.43 kg/l
Particle sizes	16 x 40 mesh (400 - 1200 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	7.33 - 14.7 m/h
Recommended backwash rate	19.6 - 29.3 m/h
pH range	5.0 - 7.0
Freeboard	50% of bed depth (min.)
Bed depth	600 - 770 mm

A gravel support bed is recommended.
Maybe combined with Corosex.

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	✓
Arsenic removal	
Radium removal	
Softening	

Media

CENTAUR

GENERAL DESCRIPTION

Centaur is a granular activated carbon (GAC) produced from bituminous coal with excellent catalytic properties. It works via adsorption on the surface of the pores.

Specific applications include chlorine (chloramine) and hydrogen sulfide removal from potable waters. Centaur can be use in POE- and POU filters and dialysis water treatment.

USP'S

- Excellent catalytic properties
- Not impregnated
- Low water soluble ash content



ORDER INFORMATION

Article number	0905070006
Description	Carbon Centaur 12x40
Quantity per pallet	40 bags
Packaging	Bags of 33 lbs = 14.9 kg

We recommend you to use CENTAUR® with an Evolve Air Filter System.



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CENTAUR

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	0.53 kg/l
Particle sizes	12 x 40 (400 - 1680 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	contact time of 1 - 5 minutes depending on the application
pH range	5 - 8
Iodine number	900 mg/g (min.)
Abrasion number	75 (min.)
Moisture	3% (max.)

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	<2 mg/l

TECHNIQUES

Filtration	
Adsorption	✓
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	
Manganese removal	
Hydrogen sulfide removal	✓
Removal of organic material	✓
Removal of chlorine	✓
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

COROSEX

GENERAL DESCRIPTION

Corosex is a highly reactive magnesium oxide, specially processed to treat a low pH by neutralizing the free carbon dioxide in water. Corosex will slowly dissolve and will need to be replenished from time to time. To be used in continuous flow systems.

USP'S

- Corosex is highly reactive and neutralizes five times more acidity per weight than calcium carbonate.



ORDER INFORMATION

Article number	0904026126
Description	Corosex
Quantity per pallet	60 bags
Packaging	Bags of 25kg



STD 60

COROSEX

PHYSICAL CHARACTERISTICS

Color	brownish white
Bulk density	1.20 kg/l
Particle sizes	6 x 16 (1200 - 3300 micron)
Composition	MgO: 97% (min.)

CONDITIONS FOR OPERATION

Recommended service flow rate	12 m/h
Recommended backwash rate	24 m/h
pH range	4.5 - 6.0
Density	1.20 kg/l
Freeboard	50% of bed depth (min.)
Bed depth	600 - 770 mm

- A gravel support bed is recommended
- Backwashing frequently is necessary to prevent possible cementing of the mineral bed as a result of hardness minerals that precipitate out of solution
- In low or intermittent flow conditions, Corosex will overcorrect and create a highly basic pH
- Corosex (high reactivity) can be combined with Calcite (low reactivity) to prevent overcorrection of the pH
- In specified hardness conditions, up flow service is recommended

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	✓
Arsenic removal	
Radium removal	
Softening	

Media

CRYSTAL RIGHT 100

GENERAL DESCRIPTION

Opposite to zeolites (aluminium silicate crystals) that can be found in nature, Crystal Right 100 is a synthetic zeolite without impurities and with predefined grain sizes developed for the treatment of well water.

USP'S

- Removes at the same time iron, manganese and hardness by ion exchange.
- Adsorption of NH_4^+ thanks to the chlorinator.
- Excellent filtration of non-dissolved particles
- Increases pH
- Crystal Right loves chlorine
- Backwash flow rate is lower than service flow
- Can be disinfected without any problems



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ORDER INFORMATION

Article number	5301021559
Description	Crystal-Right Medium CR100 (CFT)
Quantity per pallet	40 bags
Packaging	Bags of 1 cuft*

* 1 cuft = bag of 28.3 l = 22.7 kg

CRYSTAL RIGHT 100

PHYSICAL CHARACTERISTICS

Color	White/opaque granular Crystals
Bulk density	0.8 kg/l
Particle sizes	0.3 - 2.36 mm (300 - 2360 micron)
Water retention	50%

CONDITIONS FOR OPERATION

Recommended service flow rate	20 - 40 m/h
Recommended backwash rate	20 m/h
pH range	6.3 - 11
Freeboard	15 - 20% of bed depth
Bed depth	> 700 mm
Minimum hardness	51 ppm
Minimum TDS	80 ppm

Water needs to be tested on location.

MAXIMUM REMOVAL CONCENTRATION

Iron & Manganese	max. 15 ppm combined (iron needs to be Fe ²⁺)
Hydrogen Sulfide	max 0.5 ppm (without KDF); max. 5 ppm (combined with KDF)

TECHNIQUES

Filtration	✓
Adsorption	✓
Ion-exchange	✓

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	✓
Arsenic removal	
Radium removal	
Softening	✓

Media

CRYSTAL RIGHT 200

GENERAL DESCRIPTION

Opposite to zeolites (aluminium silicate crystals) that can be found in nature, Crystal Right 200 is a synthetic zeolite without impurities and with predefined grain sizes developed for the treatment of well water.

USP'S

- Removes at the same time iron, manganese and hardness by ion exchange.
- Adsorption of NH_4^+ thanks to the chlorinator.
- Excellent filtration of non-dissolved particles
- Crystal Right loves chlorine
- Backwash flow rate is lower than service flow
- Can be disinfected without any problems



STD 61



ORDER INFORMATION

Article number	5301021562
Description	Crystal-Right Medium CR200 (CFT)
Quantity per pallet	40 bags
Packaging	Bags of 1 cuft*

* 1 cuft = bag of 28.3 l = 22.7 kg

CRYSTAL RIGHT 200

PHYSICAL CHARACTERISTICS

Color	grey/white crystals
Bulk density	0.8 kg/l
Particle sizes	0.3 - 2.36 mm (300 - 2360 micron)
Water retention	50%

CONDITIONS FOR OPERATION

Recommended service flow rate	20 - 40 m/h
Recommended backwash rate	15 m/h
pH range	7 - 11
Freeboard	15 - 20% of bed depth
Bed depth	> 700 mm
Minimum hardness	51 ppm
Minimum TDS	80 ppm

Water needs to be tested on location.

MAXIMUM REMOVAL CONCENTRATION

Iron & Manganese	max. 15 ppm combined (iron needs to be Fe ²⁺)
Hydrogen Sulfide	max 0.5 ppm (without KDF); max. 5 ppm (combined with KDF)

TECHNIQUES

Filtration	✓
Adsorption	✓
Ion-exchange	✓

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	✓

Media

FILOX R

GENERAL DESCRIPTION

Filox R is a filter media that consists of 75 – 85% manganese dioxide. As the level of MnO_2 is very high (Birm contains 1% MnO_2 , Greensand contains 3% MnO_2), it is an excellent media to remove iron, manganese and hydrogen sulfide.

In many cases it can be used without additional oxidation, depending on the presence of dissolved oxygen. Thanks to the excellent catalytic properties service flow rates are very high compared to many other media.

Again compared to other media Filox R is very heavy and demands frequent backwashing.

USP'S

- High flow rates in service due to the high content in manganese dioxide. Can be used in smaller filters.
- Can be used in many cases without additional oxidation
- Can be used to treat ground waters, that are lower in pH (5.0 = minimum). Very interesting for ground waters with a pH of +/- 6.5.
- Filox-R is chlorine tolerant
- Excellent media lifespan
- Can be disinfected with the WR ozonator



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ORDER INFORMATION

Article number	0906009403
Description	Filox R
Quantity per pallet	37 bags
Packaging	Bags of 1/2 cft*

* 1/2 cft = 14.15L = 56 lbs = 25.0 kg

We recommend you to use FILOX® with an Evolve Air Filter System.

FILOX R

PHYSICAL CHARACTERISTICS

Color	grey/black
Bulk density	1.794 - 1.842 kg/l
Particle sizes	12 x 40 mesh (400 - 1680 micron)
Composition	Manganese dioxide (75 - 85%)

CONDITIONS FOR OPERATION

Recommended service flow rate	22 m/h
Recommended backwash rate	39.1 - 73.3 m/h
pH sensitive	no
pH range for removal	6.8 - 9.0 for iron 7.8 - 9.0 for manganese
Freeboard	30 - 50% of bed depth
Bed depth	> 500 mm

The use of additional oxidizing agents (oxygen, chlorine, ozone, hydrogen peroxide, potassium permanganate) is recommended for a better performance of the filter even if enough dissolved oxygen is present in the groundwater.

Filox R can be used without additional oxidants if the oxidation reduction potential (ORP) of the water is higher than – 170 millivolts. Below – 170 millivolts the use of additional oxidation will be required in all applications.

MAXIMUM REMOVAL CONCENTRATION

(ALWAYS USED WITH ADDITIONAL OXIDATION)

Iron	< 5 ppm
Hydrogen Sulfide	< 3 ppm
Manganese	< 5 ppm

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

FILTER AG

GENERAL DESCRIPTION

Filter AG is a crystalline silica (quartz) used for the reduction of suspended solids. It is an excellent alternative for sand/silex offering many advantages due to the light weight and irregular shapes of the grains. It also can be used to filter oxidized iron after aeration, ozonation or chlorination.

USP'S

- Very low weight
- High surface area
- Allows depth filtration
- Reduces suspended solids down to 20 – 40 micron
- Lower pressure drop compared to sand
- Higher service flow rates and lower backwash flow rates



ORDER INFORMATION

Article number	0902015207
Description	Filter AG
Quantity per pallet	70 bags
Packaging	Bags of 1 cft*

* 1 cft = 28.3L = 25 lbs = 11.25 kg



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FILTER AG

PHYSICAL CHARACTERISTICS

Color	light grey/white
Bulk density	+/- 0.4 kg/l
Particle sizes	12 x 30 mesh (600 - 1700 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	12 m/h (but higher is possible)
Recommended backwash rate	24 m/h
pH range	entire pH range
Freeboard	50% of bed depth (min.)
Bed depth	610 - 914 mm
Hardness	6 Mohs
Water temperature	60°C (max.)

Upon installation allow bed to soak overnight before backwashing.

MAXIMUM REMOVAL CONCENTRATION

Iron	depends on local situation
Hydrogen Sulfide	depends on local situation
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	(✓)
Manganese removal	(✓)
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

GREENSAND PLUS

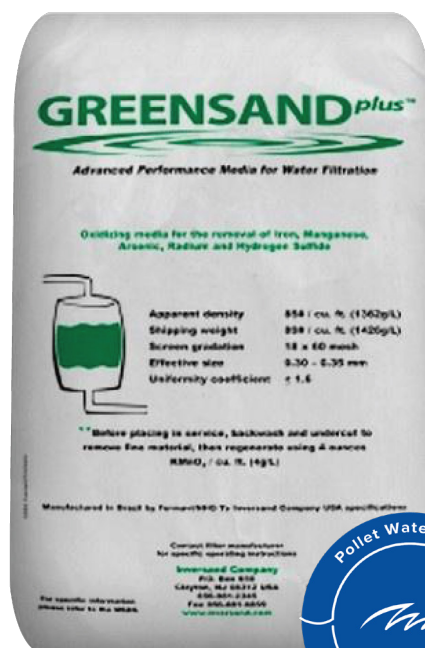
GENERAL DESCRIPTION

Greensand is the newer version of the classic manganese greensand and can be used as a perfect alternative for manganese greensand but with a lot of advantages. The manganese dioxide coated surface acts as an excellent catalyst. Greensand Plus is a black, nodular media that can be used for the removal of soluble iron, manganese, hydrogen sulfide, but also in correctly defined cases for the removal of arsenic and radium.

In most cases where iron removal and manganese are the main objectives a continuous pretreatment with chlorine (or another strong oxidant) is advised. For the removal of arsenic and radium special working conditions need to be respected and pilot plant testing is always necessary.

USP'S

- Compared to classic manganese greensand, Greensand Plus possesses a better oxidation capacity and a higher exchange capacity
- The silica sand core allows to work with waters with very low levels of silica, TDS and hardness
- Effective at very high temperatures
- Can be used successfully in combination with anthracite (on top) in a dual bed filter



ORDER INFORMATION

Article number	0906071354
Description	Greensand Plus
Quantity per pallet	55 bags
Packaging	Bags of ½ cft*

* ½ cft = 14.15 L = 20.25 kg



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GREENSAND PLUS

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	1.4 kg/l
Particle sizes	18 x 60 mesh (250 - 1000 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	5 - 30 m/h
Recommended backwash rate	> 30 m/h
pH range	6.2 - 8.5
Freeboard	50% of bed depth (min.)
Bed depth	> 760 mm
Water Temperature	no limits

MAXIMUM REMOVAL CONCENTRATION

Iron	10 mg/L
Hydrogen Sulfide	5 mg/L
Manganese	10 mg/L

TECHNIQUES

Filtration	✓
Adsorption	(✓)
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	(✓)
Radium removal	(✓)
Softening	

Media

KATALOX LIGHT

GENERAL DESCRIPTION

Katalox light is a combination of the naturally mined Zeosorb that received a coating with 10% MnO₂. The result is an excellent catalyst and a very light weight filtration media with a high filtration surface offering an excellent filter fineness up to 3 micron. Beside sediment filtration and removal of turbidity, It can be used for many purposes, the most important ones being the treatment of iron, manganese, hydrogen sulfide and arsenic.

USP'S

- Offers a high service flow rate (compared to Birm)
- Easy to backwash as it is very light (compared to Filox)
- Can be used without additional oxidation in many applications (depending on ORP)
- Works with most oxidizers (H₂O₂, KMNO₄, Cl)



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ORDER INFORMATION

Article number	0906110001
Description	Katalox Light Packaging
Quantity per pallet	40 bags
Packaging	Bags of 1 cft*

* 1 cft = 28.3 L = 66 lbs = 29.7 kg

KATALOX LIGHT

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	1.06 kg/l
Particle sizes	14 x 30 mesh (600 - 1400 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	20 m/h
Recommended backwash rate	25 - 30 m/h
pH range	5.8 - 10.5
Freeboard	40%
Bed depth	> 750 mm (optimal 1200 mm)

Katalox light needs an overnight soak before the filter is put into service followed by a prolonged backwash.

MAXIMUM REMOVAL CONCENTRATION

Iron	70 mg/l
Hydrogen Sulfide	3 mg/l
Manganese	25 mg/l

TECHNIQUES

Filtration	✓
Adsorption	✓
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	✓
Radium removal	
Softening	

Media

KDF 55

GENERAL DESCRIPTION

KDF 55 and KDF 85 are two process media using copper-zinc granules to remove contaminants in water using an oxidation/reduction (redox) reaction. KDF 55 is used for the removal of chlorine and water-soluble heavy metals (lead, mercury, nickel chromium). It also controls scale, bacteria and algae.

In case of chlorine, the free chlorine is reduced to chloride ions.

Filter cartridges containing granular activated carbon (GAC) based on coconut shell are often used in combination with KDF 55/85 to extend the life of the filter cartridges. Also ion exchange systems use KDF to extend the life time of the resin bed.

USP'S

- No chemicals used during backwash.
- High service flow rates
- Can be used as a stand alone or as a part of another filter medium



ORDER INFORMATION

Article number	0902011350
Description	KDF 55
Quantity per pallet	24 buckets
Packaging	1/3 cft. bucket



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KDF 55

PHYSICAL CHARACTERISTICS

Color	gold
Bulk density	2.7 kg/L
Particle sizes	10 x 100 mesh (150 - 2000 micron)
Composition	high purity copper/ zinc alloy

CONDITIONS FOR OPERATION

Recommended service flow rate	38 m/h
Recommended backwash rate	76 m/h
pH range	6.5 - 8.5
Freeboard	20%
Bed depth	> 254 mm (6" vessel)
Water temperature	1.5 °C - 100°C

MAXIMUM REMOVAL CONCENTRATION

Chlorine	5 mg/l
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TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	✓
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

KDF 85

GENERAL DESCRIPTION

KDF 55 and KDF 85 are two process media using copper-zinc granules to remove contaminants in water using an oxidation/reduction (redox) reaction. KDF 85 is mainly used for the removal of ferrous iron (Fe^{2+}) and hydrogen sulfide (H_2S). It also controls scale, bacteria and algae.

KDF 85 acts as a catalyst to change soluble ferrous iron (Fe^{2+}) into insoluble ferric hydroxide (Fe^{3+}) which is washed out easily during backwash.

In the case of H_2S , KDF 85 converts the H_2S -gas to insoluble sulfide that is eliminated again during backwash.

USP'S

- No chemicals used during backwash.
- High service flow rates
- Can be used as a stand-alone medium or as a part of another filter medium



ORDER INFORMATION

Article number	0906010004
Description	KDF 85
Quantity per pallet	24 buckets
Packaging	1/3 cft. bucket



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KDF 85

PHYSICAL CHARACTERISTICS

Color	reddish brown
Bulk density	2.7 kg/l
Particle sizes	10 x 100 mesh (150 - 2000 micron)
Composition	high purity copper/ zinc alloy

CONDITIONS FOR OPERATION

Recommended service flow rate	38 m/h
Recommended backwash rate	76 m/h
pH range	6.5 - 8.5
Freeboard	20%
Bed depth	> 254 mm (6" vessel)
Water temperature	1.5 °C - 100°C

MAXIMUM REMOVAL CONCENTRATION

Iron	5 mg/L
Hydrogen Sulfide	5 mg/L
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	
Iron removal	✓
Manganese removal	
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

MANGANESE GREENSAND

GENERAL DESCRIPTION

Manganese Greensand is made from the natural mined glauconite. In nature, glauconite is also defined as greensand because of the greenish color of the mineral. The glauconite mineral receives a special coating of manganese oxide.

Manganese greensand is very effective for the removal of iron, manganese and hydrogen sulfide. The filters require potassium permanganate (or chlorine) to regenerate and clean the filter medium.

The main difference between manganese greensand and greensand plus is the substrate that forms the core of the media (glauconite for manganese greensand and silica sand for greensand plus) and the way of attaching the manganese dioxide to that substrate.

USP'S

- Very effective oxidation of iron, manganese and hydrogen sulfide
- Does not demand continuous regeneration, but intermittent reactivation with KMNO_4
- Long bed life (attrition loss 2% per year)



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REPLACED BY GREENSAND PLUS

MANGANESE GREENSAND

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	1.35 kg/l
Particle sizes	18 x 60 mesh (250 - 1000 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	7.5 - 12.5 m/h
Recommended backwash rate	25 - 30 m/h
pH range	6.2 - 8.5
Freeboard	50% of bed depth (min)
Bed depth	> 760 mm

Operating the bed after exhaustion of the oxidation capacity can cause staining.

MAXIMUM REMOVAL CONCENTRATION

Iron	< 15 mg/l
Hydrogen Sulfide	< 5 mg/l
Manganese	< 15 mg/l

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	(✓)
Radium removal	
Softening	

Media

PYROLOX

GENERAL DESCRIPTION

Pyrolox is a naturally mined ore containing manganese dioxide used for the removal of iron, manganese and hydrogen sulfide. The Pyrolox granular media acts as a catalyst that oxidizes iron, manganese and hydrogen sulfide as soon as they come in contact with the media. An additional pretreatment with air, chlorine, potassium permanganate is recommended in some cases.



USP'S

- Can be used in many cases without additional oxidation
- Very long lifetime
- Works in pH-range of 5 to 9. Ideal 6.5 to 7

ORDER INFORMATION

Article number	0906010001 ¹
	0906100001 ²
Description	Pyrolox 8x20 ¹
	Pyrolox 20x40 ²
Quantity per pallet	50 bags
Packaging	Bags of ½ cft. *

* ½ cft = 14.15 L = 60 lbs = 27.2 kg



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PYROLOX

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	1.90 kg/l
Particle sizes	8 x 20 mesh (840 - 2380 micron)
	20 x 40 mesh (400 - 840 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	12.2 m/h
Recommended backwash rate	61.1 - 73.3 m/h
pH range	6.5 - 9.0
Freeboard	40% of bed depth (min.)
Bed depth	460 mm

Use a silex underbed that is heavier than Pyrolox.
Pyrolox needs to be backwashed every day.

MAXIMUM REMOVAL CONCENTRATION

Iron	10 mg/l (2 mg/l without oxidation)
Hydrogen Sulfide	10 mg/l (2 mg/l without oxidation)
Manganese	8 mg/l (2 mg/l without oxidation)

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

PYROLOX ADVANTAGE

GENERAL DESCRIPTION

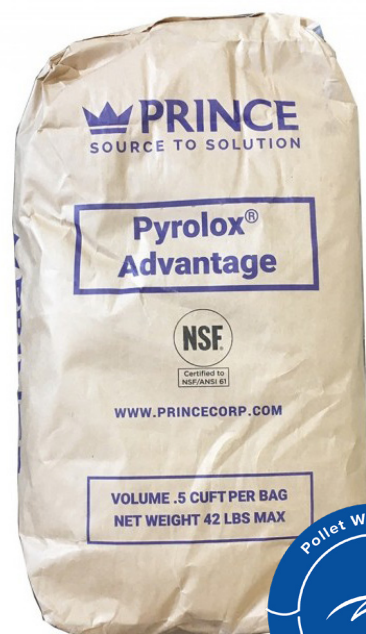
Pyrolox Advantage is the newer and synthetic version of Pyrolox. The granular media has received a 12.5% manganese dioxide coating. In the world of manganese dioxide filter media it can be considered as a light-weight product. The manganese dioxide acts as a catalyst to oxidize, precipitate and remove different contaminants: iron, manganese, hydrogen sulfide and in some specific cases arsenic. The media works at is best when it is continuously regenerated with chlorine, air, ozone or hydrogen peroxide.

USP'S

- High manganese dioxide coating compared with competitive products (Greensand Plus, Katalox Light) resulting in a very effective oxidation capacity
- Light-weight product
- Lower backwash rates (very interesting in case of domestic well pumps)



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ORDER INFORMATION

Article number	0906100002
Description	Pyrolox Advantage
Quantity per pallet	48 bags
Packaging	Bags of ½ cft.*

* ½ cft = 14.15 L = 45 lbs = 20 kg

PYROLOX ADVANTAGE

PHYSICAL CHARACTERISTICS

Color	black
Bulk density	1.33 kg/l
Particle sizes	20 x 40 Mesh (400 - 840 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	5 - 30 m/h
Recommended backwash rate	25 - 50 m/h
pH range	6.4 - 9.5
Freeboard	40%
Bed depth	610 mm (min.)
Water temperature	38°C
Best oxidant	chlorine
Free chlorine level	< 0.5 mg/L

MAXIMUM REMOVAL CONCENTRATION

Iron	5 mg/L
Hydrogen Sulfide	2 mg/L
Manganese	1 mg/L

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	✓
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	(✓)
Radium removal	
Softening	

Media

SAND AND SILEX

GENERAL DESCRIPTION

Sand (silica) in its different forms (sand, sillex, gravel) is the oldest natural available granular filtration media. Even today, the use of sand remains popular for the treatment of municipal water in very big open gravity filters, in swimming pool filters and in pressurized filters for the treatment of ground water.

In a lot of groundwater applications the use of sand has been replaced with other granular filtration offering more benefits (faster flow rate, better quality of filtrate, lower in weight, etc.)

Sand is present in nature all over the world, washed and sieved. It exists in different grades that vary from one supplier to another. It is used for the removal of suspended solids, but can also be used to filter of oxidized iron or manganese.

A pressurized sand filter always contains different layers of sand, going from relatively fine sand on top to coarse gravel as a support layer. In between the use of 2 more particle sizes is common.

EXAMPLE:

Fine sand: 0.4 – 0.8 mm fine sand

First intermediate layer: 0.8 – 1.25 mm sand

Second intermediate layer: 1.7 – 2.5 mm fine gravel

Support layer: 3.0 – 5.0 mm coarse gravel

USP'S

- Available all over the world
- Very cheap filtration media
- Irregular surface area, offering a lot of filtration capacity
- No need of chemicals to backwash or regenerate, just water or water/air



ORDER INFORMATION

Article number	0901016142 ¹
	0901010002 ²
	0901016148 ³
	0901016151 ⁴
	0901011420 ⁵
	0901016153 ⁶
	0901016155 ⁷
Description	Filtration sand 0.4 - 0.8 mm ¹
	Filtration sand 0.5 - 1.0 mm ²
	Filtration sand 0.8 - 1.25 mm ³
	Gravel 1.7 - 2.5 mm ⁴
	Gravel 2.0 - 3.15 mm ⁵
	Gravel 3.15 - 5.6 mm ⁶
Quantity per pallet	40 bags
	bags of 25 kg

SAND AND SILEX

PHYSICAL CHARACTERISTICS

Color	brown/yellowish
Bulk density	1.5 - 1.7 kg/l
Particle sizes	many grades going from fine sand to coarse gravel

CONDITIONS FOR OPERATION

Recommended service flow rate	20 - 30 m/h
Recommended backwash rate	30 - 38 m/h
pH range	entire pH range
Freeboard	+/- 50% of filter bed
Bed depth	600 - 1200 mm
Chemical composition	SiO ₂ min 96%
Filtration efficiency	30 - 40 micron

MAXIMUM REMOVAL CONCENTRATION

Iron	8 mg/l (only oxidized iron)
Hydrogen Sulfide	does not apply
Manganese	2 mg/l (only oxidized manganese)

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	✓
Manganese removal	✓
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

TURBIDEX

GENERAL DESCRIPTION

Turbidex is a 100% natural alumino-silicate (zeolite) mineral, offering exceptional characteristics in the world of sediment filtration. The suspended solids are mechanically strained with sedimentation, flocculation, physical absorption, electrostatic absorption and ion-exchange down to 3 – 5 micron.

The excellent filtration capacities are also due to the high irregular surface area and the very high porosity of the media.

USP'S

- Possible to produce almost crystal clear water down to <0.1 NTU of turbidity
- Turbidex is a lightweight media compared to sand
- The loading capacity is up to 2.8 times greater than sand
- Allows higher flow rates (50 m/h) than sand (30 m/h) and multimedia (38 m/h)
- Offers a higher filtration efficiency (3 – 5 micron), much better than sand (25 – 30 micron) and multimedia (12 – 15 micron)
- The quality of the filtrate often reduces the need for additional downstream filtration



ORDER INFORMATION

Article number	0902010001
Description	Turbidex
Quantity per pallet	36 bags
Packaging	Bags of 1 cft*

* 1 cft = 28.3 L = 50 lbs = 22.6 kg



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TURBIDEX

PHYSICAL CHARACTERISTICS

Color	off-white
Bulk density	0.8 kg/l
Particle sizes	14 x 30 mesh (600 - 1400 micron)

CONDITIONS FOR OPERATION

Recommended service flow rate	30 - 50 m/h
Recommended backwash rate	34 - 45 m/h
pH range	entire range
Freeboard	50% of bed depth
Bed depth	600 - 900 mm
Surface area	14 - 25 m ³ /g
Water temperature	60°C (max.)

A gravel bed support is required.
Allow bed to saturate before initial backwash.

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	✓
Ion-exchange	✓

APPLICATIONS

Sediment removal	✓
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

Media

AFM® NG

GENERAL DESCRIPTION

AFM® NG is a unique hydrophobic surface for advanced adsorption of organics and microplastics. AFM® NG is an inert, amorphous aluminosilicate (glass) manufactured by up-cycling post-consumer green and brown glass bottles in dedicated, state-of-the-art factories designed and operated specifically for the production of activated glass water filtration media. AFM® is used as filter media in single or dual media filtration in both open (RGF) and closed (pressure) filters for treatment of various sources of water such as ground water, surface water, seawater and waste water treatment.

USP'S

- Hydrophobic media (non-polar)
- 1 micron filtration rate without flocculation
- Adsorption of organic substances incl. Hydrocarbon and micro-plastics
- Bio resistant
- Self sterilizing surface



ORDER INFORMATION

Article number	3034100012
Description	AFMng Grade 1 0.4-0.8mm
Quantity per pallet	40 bags
Packaging	21 kg



STD 61

PHYSICAL CHARACTERISTICS

Color	green / brown
Bulk density	1.26 kg/l
Particle sizes	0.4 - 0.8 mm

CONDITIONS FOR OPERATION

Recommended service flow rate	5 - 20 m/h
Recommended backwash rate	25 - 30 m/h
pH range	4 - 10
Freeboard	50% of bed depth
Bed depth	1000 mm
Surface area	14 - 25 m ³ /g
Water temperature	0 - 100 °C

A gravel bed support is required.
Allow bed to saturate before initial backwash.

MAXIMUM REMOVAL CONCENTRATION

Iron	does not apply
Hydrogen Sulfide	does not apply
Manganese	does not apply

TECHNIQUES

Filtration	✓
Adsorption	
Ion-exchange	

APPLICATIONS

Sediment removal	✓
Iron removal	
Manganese removal	
Hydrogen sulfide removal	
Removal of organic material	✓
Removal of chlorine	
Color removal	
pH-correction	
Arsenic removal	
Radium removal	
Softening	

