MEDIA ANALYSIS

1) **Everzit Carbonate** (filter material EN1018) is a natural filter media manufactured from pure calcium carbonate (**$CaCO_3$**). It is used for deacidification of groundwater or for remineralization following reverse osmosis processes. EVERZIT® Carbonate has high reactivity. When used in drinking water treatment, it increases the pH level and therefore facilitates iron and manganese removal. EVERZIT® Carbonate is in accordance with the EN 1018 regulation, DIN 2000 and the German Drinking Water Ordinance (TrinkwV 2001).

Applications

- Hardening/Remineralization after Reverse osmosis (desalination)
- Treatment of raw water with low acid capacity (carbonate hardness)
- Neutralization of released carbon dioxide (deacidification)
- Increase of the pH value in swimming pool water, process water etc.
- Acute removal of iron
- Acute removal of manganese

Advantages

- No excess alkalinity in the pure water-
- Highest material purity ($CaCO_3$ > 99 %)
- No agglutination in the filter
- No grain decomposition, no swelling
- Trouble-free operation

Grain size

1,0 – 2,0 mm	approx. 1500 kg/m3
2,0 – 3,0 mm	approx. 1470 kg/m3
4,0 – 6,0 mm	approx. 1410 kg/m3
6,0 – 8,0 mm	approx. 1400 kg/m3

*other grain sizes on request

Quantities and Packing

- In PE sacks with 25 kg/ 17 l
- In PE sacks with 50 kg/ 34 l
- Big Bag of 1tn/ 675 l

2) **EVERZIT® N** (filter material EN 12909) is a natural **anthracite** filter material produced in Germany. The unique refining process of cleaning, crushing and sieving ensures the capability of converting anthracite to premium-quality filter media for single-layer and multi-layer filtration. EVERZIT® N meets the purity requirements of the European standard EN 12909 and German Drinking Water Ordinance (TrinkwV) 2001, which specifies the harmlessness to human health. This has been confirmed with periodic examinations conducted by the Institute of Hygiene, Gelsenkirchen in 2019. The double layer design replaces the conventional surface filtration by a volume filtration with considerable advantages resulting in clearly lower operation costs and lesser space requirements.

Applications

- Water purification for swimming pools
- Removal of suspended solids and turbidity
- Suitable for drinking water applications and wastewater treatment
- Suitable for arsenic removal

Advantages

- High resistance to abrasion
- Excellent separation of the filter layers after back-washing
- Low tendency to clump
- No adhesion of precipitated iron, calcium or manganese compounds
- No release of silicic acid or heavy metals into the water
- Fully functional between pH 3 to pH 12
- Higher retention capacity for solids
- Higher filtration velocity
- Lower backwash frequency
- Less space requirement

Grain size

Type	**Grain size [mm]**	**Effective size d_{10} [mm]**	**Uniformity coefficient U = d60/d10**
I	0,8 – 1,6	0,9 – 1,0	< 1,4
II	1,4 – 2,5	1,5 – 1,6	< 1,4
III	2,0 – 4,0	2,1 – 2,3	< 1,4

Quantities and Packing

- 50 litre PE bags
- 1,65 m3 big bags (1,155 kg)

3) **EVERZIT Mn** – filter material (acc. EN 13752), based on a mixed oxide, is used in water treatment for removing solved iron and manganese. The active surface of **EVERZIT Mn** filter material facilitates the oxidation of iron and manganese in oxygen-containing water and the formation of well-filterable hydrated oxide flocks.
In case of increased iron content, **EVERZIT Mn** is used as bottom layer in a multilayer filter. The major quantity of the iron is separated in the superior layer of EVERZIT® N and the reaction layer of EVERZIT® Mn remains protected. Due to its carbon dioxide resistance and the ability of **EVERZIT Mn** to reliably separate manganese at very low pH-values, the demanganization can be done without increasing the pH value.

Advantages

- Reliable removal of manganese at pH-values from 6,5
- Not required work-in time
- No need to be reactivated
- High charging at minimum contact time and high filter speeds
- EVERZIT Mn is carbon dioxide-proof

Grain size

- 0,5 mm-1mm
- 1 mm-1,5mm

Quantities and Packing

- 25 kg plastic bags
- 1000 kg big bag

4) **EVERZIT GS** is a naturally occurring mineral with uniform physical, chemical, hardness and microstructure characteristics, which provide the essential properties for a wide variety of industrial uses. Everzit is the compositional variety known as ***almandite***. There are no free elements: all oxides are combined chemically as an iron-rich aluminosilicate, which has the formula: Fe_3Al_2 $(SiO_4)_3$. Texturally and compositionally uniform in all sizes. All material minded from the same high-grade deposit.

Applications

- As polishing layer (because of its high density you can choose finer sizes compared to filter sand) wherever extremely high-water quality is required
- For removal of suspended solids down to 1 µm
- For pre-filtration to protect valuable units like activated carbon filters, ion exchangers and reverse osmosis membranes
- In single-, dual- or triple-layer-filter, combined with sand.

Grain sizes

- 0,2-0,6mm
- 0,5-1mm
- 1,4-2,5mm

(other sizes on request)

Quantities and Packing

- Bags 25 kg in pallets 1250 kg

5) EVERZIT ® Dol is a thermal processing product, produced by natural dolomite ($CaCO_3$, $MgCO_3$). It is mainly used for regulating pH in ground waters. Processed Dolomite is formed through thermal decomposition, accurately controlled so that only the magnesium carbonate of Dolomite transforms into magnesium oxide. The derived filtering product is significantly more powerful than pure calcium carbonate or even natural dolomite. EVERZIT® Dol is used in single-layer filters or dual media filters for removal of dissolved aggressive carbon dioxide. Neutralization takes place up to attainment of calcium carbonate/carbonic acid equilibrium. Besides neutralization the process also realizes increased water hardness. Dolomite is an anhydrous carbon mineral consisting of calcium and magnesium – CaMg (CO3)2. It offers 21,7 kg of calcium and 13 kg of magnesium per 100 kg. Dolomite can be dissolved in slightly acidic water.

Applications

- Removal of suspended particulates
- Iron and manganese removal
- Increased water hardness due to mineralization with MgCO3 und CaCO3

- Decoration, as natural element
- Gardening, as a regulator of pH in the soil as well as a source of magnesium
- Substrate in seawater aquaria – pH regulator
- Catalyst in biomass gasification – tar elimination – (calcined type)
- Specialised industrial uses as an element in various product mixes

Grain sizes

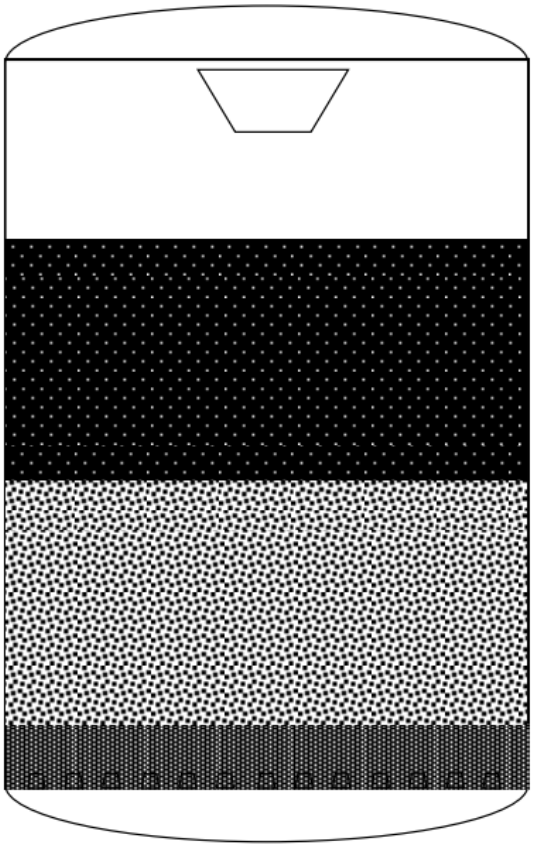
- 0,5 – 1,2 mm
- 0,5 – 2,5 mm
- 2,0 – 4,5 mm

Quantities and Packing

- Bags 25 kg in pallets 1000 kg

Recommended combination

Filter layout:



Filter Materials

EVERZIT® N

Removal of iron and turbidity

Grain size: 1,4 – 2,5 mm

EVERZIT® Mn

Removal of manganese

Grain size: 0,5 – 1,5 mm

Support Layer

Quartz Gravel or Basalt

Grain size: 2,0 - 5,6 m

6) **Glass Filter Media**, derives from **recycling of glass** products, therefore it is an environmentally friendly and recyclable product. Bottles, glazing and other glass products are crushed in special recycling facilities and then the product is washed, dried and finally classified in grain sizes, suitable for use in common sand filters.

Applications:

- Swimming pools
- Industrial facilities
- Artificial lakes

Advantages

- High filtering efficiency
- Extension of time of filtering operation in facilities with hard water
- Resistance to wear thanks to increased hardness
- Safety in use – no hard edges
- Protection of the environment, as a recycled product
- Up to 15% reduced quantity, due to low density
- Reduced maintenance cost, thanks to increased time of operation (it petrifies slower in hard water)
- Water & energy saving, thanks to 50% reduced backwashing

Sieve Size	**Microns Average Percentage Passing %**
1400	100%
1180	98.7%
1000	88.7%
750	29.3%
500	7.53%
425	1.9%
355	0.51%
180	0.06%

Grain sizes

- 0,5-1,00 mm
- 1,00-3,00 mm
- 3,00-5,00 mm

7) RAVASOL GAL C-830, coconut shell based granular activated carbon which is produced by steam activation with very good adsorption properties for many applications.

Applications

- Drinking water purification
- Industrial process liquid
- Removal of dissolved organic compounds

8) RAVASOL GAC B-830 is a granular activated carbon produced from bituminous coal by steam activation.
GAC B-830 is recommended for a wide range of applications, can be suitable for thermal reactivation and meets the
EN 12915 requirements.

9) Hydraffin CC 8 x 30 is a steam activated carbon base on coconut shells, which has a high hardness in combination with high adsorption capacity for a wide range of substances. Hydraffin CC 8 x 30 meets the requirements for water extractable substances according European Standard EN 12 915 and can be used for the potable water treatment.

10) **Carbopal CCP 90** is a steam activated **powdered** carbon base on coconut shells with a high adsorption capacity for the removal of organics from liquids and water. Carbopal CCP 90 meets the requirements of Food Chemical Codex and for water extractable substances according European Standard EN 12903. The activated carbon can be used in a large range of applications in the food industry and for potable water treatment.

Applications

- Food industry
- Potable water treatment

11) Yellow Silica sand (1,6mm-2,5mm)

Grain Size graph

Seive analysis (µm)	Reatined %
2500	4% (Max 5%)
2000	41%
1600	50%
Pan	5% (Max 5%)

12) Yellow Silica sand RWS (1mm-2mm)

Grain Size Analysis

Seive Analysis	%
+1mm	3,2%
0,8-1mm	27%
0,6-0,8mm	51%
0,5-0,6mm	13,8%
-0,5	5%

13) Gravel RWS (2-5mm)

Grain Size Analysis

Seive Analysis (µm)	**Retained %**
5000	0,4%
4000	10,8%
3000	59,8%
2500	20,6%
2000	7,6%
Pan	0,8%