



EVERZIT® Filter Materials



**Drinking Water
Treatment**



**Sea Water
Pre-Treatment**



**Waste Water
Treatment**



**Swimming Pool
Treatment**

EVERZIT® N

Anthracite filter media in accordance with EN 12909

EVERZIT® N is a natural anthracite filter material produced in Germany. Especially favorable geological processes formed anthracite with a particularly special structure. Our unique refining process of cleaning, crushing and sieving ensures our capability to convert anthracite to premium-quality filter media for single-layer and multi-layer filtration. It has a proven track record spanning more than 45 years in successful water treatment worldwide.

Grain sizes

- I) 0.6 - 1.6 mm
- II) 1.4 - 2.5 mm
- III) 2.0 - 4.0 mm
- IV) 3.5 - 7.0 mm

Quality and purity

- EN 12909
- German Drinking Water Ordinance 2001
- AWWA B 100-09
- DIN 19643
- DVGW work sheet W 213
- ÖNORM 6216

Features and benefits

Anthracite used as a raw material for EVERZIT® N has by nature ideal characteristics for a filter media:

- High abrasion resistance
- Good retention, even of particulates with high specific gravity
- No silicic acid leach-out into water

Applications

Dual media filtration avoids conventional „surface-only“ filtration as found in sand filter beds. Particulate retention occurs throughout the media (in-depth filtration) which offers considerable advantages, i.e. lower investment costs and reduced operating costs:

- longer run time between backwashes
- higher treatment capacity
- higher filtration speeds feasible
- improved filtrate quality

Chemical and physical characteristics

Carbon	approx. 92.0 %
Ash	approx. 5.5 %
Volatile matter	approx. 8.5 %
Specific density	approx. 1.35 - 1.55 g/cm ³
Bulk density	approx. 700 kg/m ³
Hardness	3 - 4 Mohs
Hardgrove Grindability Index	approx. 44° HGI



EVERZIT® Mn

Manganese dioxide in accordance with EN 13752

Based on naturally occurring manganese dioxide, EVERZIT® Mn is used primarily for catalytic manganese removal in drinking water and mineral water treatment. The high active surface area of EVERZIT® Mn facilitates oxidation of iron and manganese in water with high oxygen content and promotes formation of hydrated oxide floccules which are easily filtered out.

Grain size

0.5 - 1.5 mm

Quality and purity

- EN 13752
- German Drinking Water Ordinance 2001
- DVGW work sheet W 213

Features and benefits

- Provides reliable manganese removal at pH levels from 6.5 and upwards
- EVERZIT® Mn does not require any running-in time. Unlike conventional manganese removal process, it demanganizes with full effect immediately upon start-up and in subsequent operation.
- EVERZIT® Mn does not have to be chemically regenerated, unlike conventional media which require regeneration by addition of e.g. potassium permanganate (KMnO₄) solution.

Applications

EVERZIT® Mn is used as a single-layer filter media or as the bottom layer (in place of quartz sand) in dual media filters. In certain cases it can be also used in mixed beds in combination with quartz sand.

EVERZIT® Mn is inert to carbon dioxide and reliably removes manganese even at slightly acidic pH levels (i.e. > 6.5). Therefore in most cases there is no need to increase the pH value before manganese removal.

Chemical and physical characteristics

MnO ₂	> 65.0 %
Fe ₂ O ₃	approx. 7 %
SiO ₂	approx. 4 %
Density	approx. 3.9 g/cm ³
Bulk density	approx. 1500 kg/m ³ ± 100 kg/m ³



EVERZIT® GS

Garnet sand in accordance with EN 12910

EVERZIT® GS is a naturally occurring garnet sand (Almandine). Its high density makes it particularly well suited for use in very fine grain sizes for ultra-fine particulate filtration.

Grain sizes

- I) 0.2 - 0.6 mm
- II) 0.6 - 1.4 mm
- III) 1.4 - 2.5 mm



Quality and purity

- EN 12910
- German Drinking Water Ordinance 2001
- DVGW work sheet W 213

Features and benefits / Applications

EVERZIT® GS is used as the bottom filtration layer in dual media filters. Very high in density, it can be used in very fine grain sizes – i.e. down to 0.2 mm – in wide-ranging applications including:

- Ultra-fine particulate filtration
- Pre-filtration before activated carbon filters, ion exchangers or reverse osmosis units
- Shallow media layers, i.e. layers 200 - 400 mm in height

For optimum operation, we recommend use of a support layer of EVERZIT® GS in the grain size range 1.4 – 2.5 mm.

Chemical and physical characteristics

Almandine	97 - 98 %
SiO ₂	36 %
Al ₂ O ₃	20 %
FeO	30 %
Fe ₂ O ₃	2 %
Specific density	approx. 4.1 g/cm ³
Bulk density	approx. 2100 - 2300 kg/m ³
Hardness	approx. 7 - 8 Mohs

Quartz Sand

Quartz sand is mined from natural sources and refined by washing, drying and sieving in accordance with EN 12904.

Quartz sand is nearly round in grain shape and has a generally smooth surface. It is preferred for use as the bottom layer in dual media filters and also for use in single-layer filtration.

Grain size

- 0.40 - 0.80 mm
- 0.63 - 1.00 mm
- 0.71 - 1.25 mm
- 1.00 - 1.60 mm
- 2.00 - 3.15 mm
- 3.15 - 5.60 mm



Quality and purity

- EN 12904
- German Drinking Water Ordinance 2001
- AWWA B 100-09
- DIN 19643
- DVGW work sheet W 213
- ÖNORM 6216

Features and benefits

- High abrasion resistance
- High purity (SiO₂ > 97%)
- long lifetime

Applications

Quartz sand is preferred for use as the bottom layer in dual media filters and also for use in single-layer filtration. High in density it can be used in fine grain sizes for fine particulate filtration. Coarse quartz gravel, i.e. grain sizes > 2 mm, is available for use as support layer.

Chemical and physical characteristics

SiO ₂	approx. 97.0 %
Al ₂ O ₃	approx. 1.1 %
Fe ₂ O ₃	approx. 0.3 %
Loss on Ignition	approx. 0.2 %
Specific density	approx. 2.65 g/cm ³
Bulk density	approx. 1400 - 1600 kg/m ³
Hardness	approx. 7 Mohs

EVERZIT® Carbonate

Calcium-carbonate filter media in accordance with EN 1018

EVERZIT® Carbonate 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.

Grain sizes

- 1.0 - 2.0 mm
- 2.0 - 3.0 mm
- 4.0 - 6.0 mm
- 6.0 - 8.0 mm

Quality and purity

- EN 1018
- German Drinking Water Ordinance 2001
- DIN 19643
- DVGW work sheet W 213

Features and benefits

- Highest material purity ($\text{CaCO}_3 > 99\%$)
- No localized excess alkalinity after process stoppages
- No danger of filter clogging by agglomeration

Applications

EVERZIT® Carbonate is used in single-layer filters and in some cases as the bottom layer in dual media filters to realize:

- Neutralization of dissolved carbon dioxide (deacidification)
- Hardening/remineralization following reverse osmosis (desalination)
- pH increase in swimming pool water after chlorination
- Iron and manganese removal

Chemical and physical characteristics

CaCO_3	approx. 99.1 %
MgCO_3	approx. 0.4 %
SiO_2	approx. 0.25%
Al_2O_3	approx. 0.15%
Fe_2O_3	approx. 0.04%
Bulk density	approx. 1400 - 1500 kg/m ³



EVERZIT® Dol

Semi-calcined dolomite filter media in accordance with EN 1017

EVERZIT® Dol is a filter media manufactured from natural dolomite ($\text{CaCO}_3 \cdot \text{MgCO}_3$). It is primarily used for groundwater deacidification. Semi-calcined dolomite is formed by thermal decomposition which is precisely controlled to convert only the dolomite's magnesium carbonate component to magnesium oxide. The resultant filter media is significantly more reactive than e.g. pure calcium carbonate or even non-calcined natural dolomite.

Grain sizes

- 0) 0.5 - 1.2 mm
- I) 0.5 - 2.5 mm
- II) 2.0 - 4.5 mm

Quality and purity

- EN 1017
- German Drinking Water Ordinance 2001
- DVGW work sheet W 213

Features and benefits

- Problem-free transition when EVERZIT® Dol replaces similar media used in existing filter systems
- Natural mineral refined by purely thermal treatment
- High reactivity

Applications

EVERZIT® Dol is used in single-layer filters or dual media filters for removal of dissolved aggressive carbon dioxide. Besides neutralization the process also realizes increased water hardness.

Chemical and physical characteristics

CaCO_3	approx. 68 %
MgO	approx. 25 %
CaO	approx. 1.0 %
MgCO_3	approx. 5.6 %
Specific density	approx. 3.3 g/cm ³
Bulk density	approx. 1100 kg/m ³
pH value	approx. 11



EVERZIT® Special Plus

Anthracite-based filter media in accordance with EN 12907

EVERZIT® Special PLUS is a thermally treated filter media based on anthracite coal. It was developed primarily for treatment of swimming pool water by removal of disinfection byproducts such as chloramines, trihalomethanes and adsorbable organic halogen compounds (AOX).

Grain sizes

0.6 - 1.6 mm

Quality and purity

- EN 12907
- German Drinking Water Ordinance 2001
- DIN 19643
- DVGW work sheet W 213
- ÖNORM 6216

Features and benefits

- Complies with permissible limits for chloramine and trihalomethanes in accordance with DIN 19643
- Can be used to upgrade existing filter plants without need for equipment modifications
- Provides lasting improvement of air quality above indoor pools

Applicatons

EVERZIT® Special PLUS is used as the top layer in dual media filters. The hydraulic properties of EVERZIT® Special PLUS are virtually identical to those of EVERZIT® N (Type I) which has been successfully used in filtration for decades. Therefore the existing filter can normally be used for EVERZIT® Special PLUS without need for modification. Degradation of the disinfection byproducts occurs by adsorption as well as catalytic decomposition on phase interfaces in the media.

Chemical and physical characteristics

Raw material	natural anthracite
Specific density	approx. 1.3 g/cm ³
Bulk density	approx. 620 kg/m ³
Specific surface area (BET)	approx. 320 m ² /g
Ash	approx. 3 %
Water	< 2 %



FILTER COAL H

Lignite-coke filter media in accordance with EN 12907

FILTER COAL H is a filter media manufactured from thermally treated lignite coal. This porous media is primarily used for the reduction of chloramines in swimming pool water treatment.

Grain sizes

- I) 0.6 - 1.6 mm
- II) 1.4 - 2.5 mm
- III) 2.5 - 5.0 mm

Quality and purity

- EN 12907
- German Drinking Water Ordinance 2001
- DIN 19643
- DVGW work sheet W 213
- ÖNORM 6216

Applications

FILTER COAL H is used as the top layer in dual media filters. It is particularly well suited for swimming-pool water treatment by removal of disinfection byproducts such as chloramines, trihalomethanes and adsorbable organic halogen compounds (AOX). Degradation occurs by adsorption as well as catalytic decomposition on the media's phase interfaces.

Chemical and physical characteristics

Carbon	88 %
Ash	6 -9 %
Volatile matter	2 - 3 %
Specific density	approx. 2.0 g/cm ³
Bulk density	approx. 500 kg/m ³
Specific surface area (BET)	approx. 300 m ² /g



EVERSORB

Activated carbon in accordance with EN 12915

EVERSORB is a steam-activated carbon which is manufactured primarily from coconut shells or bituminous coal. EVERSORB is used for the adsorption of organic contaminants and is available in many different specifications and grain sizes.

Grain sizes

- 0.425 - 1.7 mm (12 x 40 Mesh)
- 0.5 - 2.5 mm (8 x 35 Mesh)
- 1.4 - 2.5 mm (8 x 14 Mesh)
- 2.4 - 4.8 mm (4 x 8 Mesh)



Quality and purity

- EN 12915
- German Drinking Water Ordinance 2001
- DIN 19643
- DVGW work sheet W 213
- ÖNORM 6216

Features and benefits

- Very high active surface area
- Wide-ranging adsorption spectrum for organic pollutants
- Optimized hydraulic properties

Applications

EVERSORB is used in open or closed high-speed filter systems in accordance with DIN 19605 for adsorption and removal of:

- Organic compounds such as e.g. CHCs, pesticides, herbicides
- Chloramines
- Ozone
- Humic substances
- Trace contaminants, e.g. trace amounts of pharmaceuticals

Chemical and physical characteristics EVERSORB 500

Raw material	bituminous coal
Bulk density	approx. 450 kg/m ³
Iodine no.	approx. 950 mg/g
Specific surface area (BET)	approx. 1000 m ² /g
Ash	< 10 %
Water	< 2 %

EVERZIT® As

Granular ferric hydroxide filter media in accordance with EN 15029

EVERZIT® As is a filter media based on iron (III) hydroxide oxide. Due to its high chemical activity, EVERZIT® As is ideally suited for adsorption of arsenic and other heavy metals. A special manufacturing process is used to produce iron hydroxide in granular form. The granulometry of the product can be controlled in the process, permitting manufacturing of various product grades for a wide variety of application fields.

Grain sizes

- 0.5 - 2.0 mm
- 2.0 - 4.0 mm



Quality and purity

- EN 15029*
- German Drinking Water Ordinance 2001

*Note: While EVERZIT® As exceeds the permissible manganese content given in Table A.1 of EN 15029, this value is explicitly provided for informative purposes only and is in no way binding. Water extraction testing clearly shows that manganese leach-out from EVERZIT® As occurs in trace amounts only, i.e. far below the limits specified in Germany's strict Drinking Water Ordinance.

Features and benefits

- Dry product, easy to transport and handle
- Environment friendly and cost-efficient due to utilization of recycled ferric hydroxide sludge from water treatment
- Outstanding value for purchase investment

Applications

- EVERZIT® As is used in single-layer filters for
- Arsenic adsorption in drinking water treatment
- Groundwater treatment in contaminated-site remediation
- Treatment of industrial wastewaters contaminated with heavy metals

Chemical and physical characteristics

Formula	FeOOH
Iron content	> 40 %
Ironhydroxide content	> 64 %
Specific density	approx. 1.9 g/cm ³
Bulk density	approx. 600 - 650 kg/m ³
Specific surface (BET)	approx. 300 m ² /g
Moisture	< 10 %



Cost-Effective Packaging Units

EVERZIT® N saves you money even in delivery to your plant. A variety of packaging units are available to meet your specific needs:

- 50 litre valve bags on Euro or one-way pallets
(with UV stabilized shrink-wrap film)
- Big Bags with capacities up to 1,65 m³
- Bulk transport in silo trucks

EVERS Worldwide

Multilayer filtration with EVERZIT® N is in widespread use on all continents the world over. Offering constant raw material quality, utmost care in manufacturing and a proven track record with decades of field use, EVERZIT® N assures efficient operation of existing and future filtration systems.



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Certified



Every day, EVERZIT® N is used to process approx. 22.8 billion litres of raw water to valuable drinking water at locations worldwide.