Filter Media Reference Guide

Filtration Medium	Basic Characteristics	Function
Activated Alumina	Appearance: White Spherical Balls Density (kg/m^3): 750 Bed depth (inches): 24 - 36 Service flow rate (m/h): 5 - 15 Backwash flow rate (m/h): 15 - 25	Activated Alumina is "a mixture of amorphous and gamma aluminum oxide" that is used for removal of arsenic, fluoride, selenium, silica and humic acids. For arsenic and fluoride treatment, low pH (5.5-6) is superior. It can be regenerated with sodium hydroxide.
Anthracite	Appearance: Black Shiny Granules Density (kg/m^3): 850 Bed depth (inches): 18 - 30 Service flow rate (m/h): 5 - 15 Backwash flow rate (m/h) 15 - 25	Anthracite filter media is used in water treatment plants as a component of rapid gravity filters and pressure filters. These filters remove impurities, suspended solids, and turbidity from raw water, making it safe for drinking. It is now most often used with sand and other media in multi-media filters.
Calcite Ph Correction Media	Appearance: Off White Granules Density (kg/m^3): 1550 Bed depth (inches): 24 - 36 Service flow rate (m/h): 5 - 15 Backwash flow rate (m/h):12 - 20	Calcite is naturally occurring calcium carbonate. It is used to raise the pH of acidic water. Since it is dissolved only in acidic water, it is self-limiting. When acidic water reaches neutral pH, no more calcite is dissolved.
Purozite™	Appearance: Off White Granules Density (kg/m^3): 750 Bed depth (inches): 24 - 38 Service flow rate (m/h): 25 - 48 Backwash flow rate (m/h): 25 - 50	Purozite is a unique granular clinoptilolite based filter media. It is a natural product mined in the western U.S. It offers sediment filtration down to < 5 microns and backwashes well and has an excellent service rate. Used in water softening and removal of heavy metals and ammonia.
Ion Exchange Resins	Appearance: Yellow Beads Density (kg/m^3): 800 Bed depth (inches): 24 - 36 Rinse flow rate (m/h): 15 – 25 Backwash flow rate (m/h): 20 - 50	Ion exchange resins are typically composed of small beads or granules with a high surface area, allowing for efficient ion exchange. They contain functional groups that attract and hold ions of opposite charge from the surrounding solution. The most common types of ion exchange resins include cation exchange resins and anion exchange resins .These resins are used in water softeners to exchange calcium and magnesium ions for sodium ions, reducing water hardness.
StaRMnoX™ Manganese Dioxide	Appearance: Brown Black Density (kg/m^3): 1900 Bed depth (inches): 24 - 36 Service flow rate (m/h): 15 - 30 Backwash flow rate (m/h): 50 - 70	Mno2 is a processed natural medium known for the purity of its active ingredient (its 80% manganese dioxide), its durability, and its high oxidation/filtration capacity. It is used for iron, manganese, and hydrogen sulfide reduction. It has an extremely long life and high service flow rate capacity. It has a high pH range of operation and imparts no taste or odor to treated water.
Garnet Sand	Appearance: Reddish Brown Granules Density (kg/m^3): 2300 Bed depth (inches): 10 + Service flow rate (m/h): 10 - 20 Backwash flow rate (m/h): 20 - 30	Garnet is a natural, hard, and durable mineral with high specific gravity, making it an excellent material for filtration purposes. It effectively removes suspended solids, sediment, and particulates from water.The high specific gravity of garnet allows for efficient filtration, and its hardness ensures minimal breakdown during the filtration process, and also provides stability and support during backwashing processes, where flow direction is reversed to remove accumulated particles and refresh the filter media.

Granular Activated Carbon (GAC)	Appearance: Irregularly Shaped Black Granules Density (kg/m^3): 500 Bed depth (inches): 24 - 36 Chlorine removal Service flow rate (m/h): 3 - 5 Organic removal flow rate (m/h): 10 - 20 Backwash flow rate (m/h): 20 - 30	Granular carbon is the standard media for removing chlorine, volatile organic compounds (VOCs), bad taste, odor, and some chemicals. Its high surface area gives it massive adsorptive capacity. It can be manufactured from animal bones, wood, and petroleum, but most carbon is produced from anthracite coal or coconut shells.
Manganese Greensand	Appearance: Small Black Grains Density (kg/m^3): 1350 Bed depth (inches): 24 - 30 Service flow rate (m/h): 5 - 25 Backwash flow rate (m/h): 30 - 45	Manganese greensand is a purple-black filtration medium made from naturally occurring greensand coated with manganese. It serves as a catalyst to precipitate hydrogen sulfide, iron and manganese. It can be continuously regenerated with chlorine and/or a purple liquid called potassium permanganate, or it can be intermittently regenerated with potassium permanganate alone.
Walnut Shell Filter Media	Appearance: Light Brown Grits Density (kg/m^3): 625 Bed depth (inches): 12 - 24 Service flow rate (m/h): 5 - 15 Backwash flow rate (m/h): 15 - 25	Walnut shell filters are commonly used in various industries, including automotive, manufacturing, and oil and gas, for the removal of oil and other contaminants from liquids. Walnut shells have a high affinity for oil, allowing them to adsorb and retain oil molecules while allowing clean oil to pass through. This makes walnut shell filters useful for applications such as coolant filtration, hydraulic oil filtration, and oil wastewater treatment.
Quartz Silica Sand	Appearance: White Granules Density (kg/m^3): 1500 Bed depth (inches): 24 - 36 Service flow rate (m/h): 10 - 20 Backwash flow rate (m/h): 20 - 30	Quartz silica sand is effective at removing various impurities and particles from water. It can trap suspended solids, debris, and even small microorganisms, making it an essential component of water treatment processes. High-quality silica sand is preferred to minimize the risk of leaching harmful substances into the filtered water.
Filter Sand	Appearance: Light Dark Brown Density (kg/m^3): 1500 Bed depth (inches): 18 - 30 Service flow rate (m/h): 10 - 20 Backwash flow rate (m/h): 20 - 30	Filter sand is naturally occurring sand that is high in silica and low in calcium. It is graded and washed. It can be used independently or as part of a multi-media filter. Sand filters are believed to be the oldest man-made filters and they imitate a common natural filtration technique.
Filter Gravels	Appearance: Mix Color Sub Rounded Stones Density (kg/m^3): 1600 Bed depth (inches): 6 - 12 Service flow rate (m/h): 10 - 20 Backwash flow rate (m/h): 20 - 30	In multi-layer filtration systems, filter gravels act as a support layer for other filter media. For example, in dual-media or multimedia filters, the larger gravels provide support for smaller particles like sand or silex enhancing the overall filtration efficiency and preventing clogging.
Multi-Media (multi-layer)	Density (kg/m^3): 850 - 2300 Bed depth (inches): 36 - 48 Service flow rate (m/h): 10 - 20 Backwash flow rate (m/h) 20 - 30	Multi-media filters consist of several layers usually three to five of different media. The media are loaded by density the most dense in the bottom of the tank, the least dense on top. This produces a filter with excellent flow rate and relatively easy backwash properties that will filter down to ten microns.