



ULTRA CLEAR

GLASS MEDIA

Unique, glass filter media, effectively removes microplastics, organic matter and heavy metals from water.

PRODUCT SHEET

The Most Efficient Water Filtration Media

**SAFE
EFFECTIVE
AFFORDABLE
SUSTAINABLE**



With more than 20 years of experience in water purification and filtration, Ultra Water (Pty) Ltd. has refined its leadership position, pioneering the development and application of OEM filtration technologies aimed at improving potable, industrial and wastewater process efficiencies.

Our history in filter media is vast and the knowledge base within our group of companies has grown from supplying various filter media to developing South Africa's only glass crushing and screening plant that uses virgin glass to produce speciality graded filter media for narrow envelopes.

Ultra Clear glass filter media is a direct replacement for silica (quartz) sand:

- Doubling the performance of sand filters with 20% more clarity;
- Resists biofouling, bio-coagulation and transient wormhole channelling;
- Filters down to sub 5 micron for effective turbidity and colour removal;
- Requires up to 20% less media;
- Outlasts all other filter media and
- Never needs to be regenerated.

Glass is less dense than sand and therefore doesn't pack as tight, meaning no gaps are formed for unfiltered water to pass through the filter bed.

This density differential has other positive impacts such as a lesser propensity to form a 'filter cake'. Filtration efficiency is greatly decreased by 'filter cake' formation.

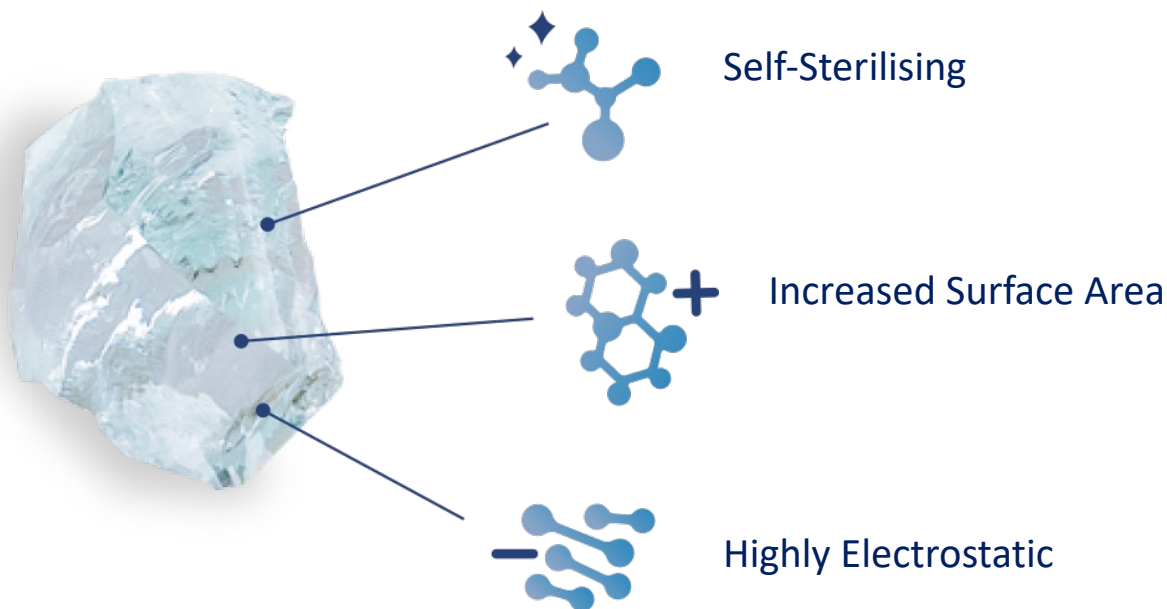
WHAT IS ULTRA CLEAR GLASS FILTER MEDIA?



Ultra Clear glass media is made from unused virgin plate glass designed to produce a unique glass filter media consisting of sub-angular, spherical shape particles with a high surface area for superior mechanical filtration and adsorption.



When in contact with water flowing through the filter free radicals (O^- and HO^-) are formed on the surface of the glass media. These free radicals have a very strong oxidation potential which protects the media from bacterial growth (bio resistant).



Metal oxide catalysts within the glass produce a slight negative charge to electrostatically attract and remove suspended particles (micro plastics), organic matter and heavy metals from water. The surface negative charge density also works well with coagulants and flocculants to remove dissolved components.

HOW OUR ULTRA CLEAR GLASS MEDIA IS MADE?

During the glass manufacturing process, raw materials are fed into a furnace, heated to a temperature of up to 1600 °C. These raw materials include Silica (SiO_2), Soda (Na_2O), Lime (CaO) and numerous metal oxides.

The metal oxides melt at a lower temperature in comparison to Silica, Soda and Lime. A slurry is formed during the melting process, when the slurry is cooled a glass structure is created.

What makes our product so unique is its high level of purity, containing very little iron oxides (Fe_2O_3). A negative charge is created by the introduction of a small concentration of metal oxides (Cr_2O_3 , TiO_2 , Al_2O_3 , K_2O etc). These molecular structures are all negatively charged (XO^-) molecules.

If the metal oxide content in glass media is too high, the water filtering through the media will have a high conductivity, hence affecting the ability of glass filter media to adsorb numerous metals (X^+). Our specially manufactured glass filter media contains the perfect balance of metal oxides to “perfect” this adsorption process.

Our Ultra Clear glass crushing plant is approved by the Department of Environmental Affairs (EIA approved).



WHY CHANGE TO ULTRA CLEAR GLASS FILTER MEDIA?



WATER SAVINGS

With superior permeability, backwash time is reduced and less frequent backwash cycles are required in comparison to using sand filter media, contributing to approximately 50% backwash water loss saving.



EQUIPMENT SAVINGS

Doesn't harden, minimizing the risk of pressure drops in your filtration system. Saving time and cost on equipment maintenance.

- Less friction loss
- Increased filtered water volume



INCREASED QUALITY

Prevents the growth of bacteria (Legionella) on filter media and does not build-up biofilm in the filter bed, completely eliminating bio-coagulation and the wormhole channelling that occurs in sand filters.



CHEMICAL COST SAVINGS

Product water will have a substantial lower chlorine oxidation demand, reducing the usage of chemicals to treat and disinfect water and filter media.

- pH control
- Disinfection



HEALTH

Lower chlorine oxidation demand reduces the presence of by products such as Chloramines & Trihalomethanes



ECO-FRIENDLY

Ultra Clear glass filter media is 100 % recyclable and reusable. Glass filter media is one of the few products born to utilise an existing surplus by recycling glass to create an effective filtration media.



ENERGY CONSUMPTION SAVING

Reduction in operation of backwash pumps. Lowering the amount of carbon emissions sent into the environment.

WHERE CAN GLASS FILTER MEDIA BE USED?

Ultra Clear glass media can be used in all types of filtration systems (pressure sand filters and rapid gravity filters) for the treatment of drinking water, process water and waste water treatment. Filters should be operated with the slowest possible hydraulic loading to optimise the filtration performance.

Ultra Clear glass media can be used in the following applications:

- Ground and surface water treatment for potable use.
- Removal of arsenic, ferric, iron and manganese at high flow rates.
- Pre-treatment prior to membrane filtration – brackish and sea water.
- Post treatment of wastewater to be recycled as potable water.
- Storm water runoff.
- Swimming pool filtration - private & public.
- Irrigation water to remove most of the unwanted contaminants.
- Aquaculture and public aquaria marine or freshwater.
- High purity water for process and production use.
- Boiler feed and cooling tower side-stream filtration.
- Tertiary treatment of effluent.
- Municipal treatment of raw and waste water.



ULTRA CLEAR VS TRADITIONAL SILICA SAND

Silica sand is a natural resource, hence over time as water passes through the media either via normal filtering or backwashing, its particle size decreases and in some cases the media hardens. It therefore creates pressure fluctuations, affecting the efficiency of your water filtration system. Ultra Clear glass media doesn't harden or cause pressure drops in your filter system. The media is much more durable and consistent during the filters lifecycle.

Ultra Water conducted a pilot plant trial at a water treatment plant to test the effectivity of Ultra Clear glass filter media compared to silica sand filter media.

Parameters Tested:

- Turbidity
- Water saving on backwash
- Aluminium in final treated water

RESULTS FROM PILOT PLANT TRIAL			
Media	Glass vs Silica %	Ultra Clear Media	Silica Sand Media
Turbidity Filtered Water Average (NTU)	>300%	0.13	0.58
Water Filtered before Backwash was Required	30%	592 L	458 L
Filter Backwash Time	250%	1 min 49 seconds	4 min 46 seconds
Aluminium (mg/l as Al)	22%	0.009	0.198

OTHER ADVANTAGES

- Mechanical repairs to filter pumps will be reduced by 30% - 50%.
- Energy consumption saving (reduction in operation of backwash pump).
- Higher water quality:
 - Filters to sub 5 micron compared to sand 20 micron.
 - Less turbidity and better colour removal.
- Safety and consistency:
 - Extremely durable and rigid. Doesn't splinter off during filter and backwash cycle.
 - Doesn't cut your hands when handling media.
- Longer life span
 - Glass media will last up to 15 years. Filters can be emptied for maintenance and the same media can be reused again.
- Blue Drop status is easier to achieve with a higher water quality and reduction in water loss.

ULTRA CLEAR GRADES AND PACKAGING

GRADES

Ultra Clear glass filter media is available in three grades:

- Grade 0 - 0.425mm to 0.597mm
- Grade 1 - 0.597mm to 1.4mm
- Grade 2 - 1.4mm to 2mm
- Grade 3 - 2mm to 4mm



PACKAGING

Ultra Clear glass filter media is supplied in bags of the following size:

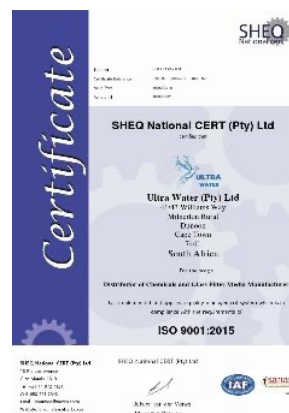
- 15 kg plastic bags (On Request)
- 20 kg plastic bags
- 1000 kg bags with bottom discharge



ISO CERTIFICATIONS

Ultra Clear glass filter media manufacturing process complies with:

- ISO 9001:2015
(Quality Management System)
- ISO 14001:2015
(Environmental Management System)
- OHSAS 18001:2007
(Occupational Health and Safety Management System)



Ultra-Water is a trusted service provider and supplier of a diverse number of products used in the water treatment industry. Our Ultra Clear glass media is available in custom packaging, we also offer bulk chemical supply and custom blending in any percentage to meet your exact process requirements.

FILTER SERVICES

- Design, Build & Installation of Pressure Filters
- Refurbishment of Filters (pressure and gravity feed)
- Filter Parts

BULK CHEMICAL SUPPLY

- Acids
- Anti Foaming Agents
- Biocides
- Coagulants & Flocculants
- Emulsion & Dry Powder for Belt Presses
- pH Correction
- Metal / Mineral Control



OTHER WATER TREATMENT PRODUCTS

- Salt (Regeneration)
- Activated Carbon Powder & Granular
- Iron & Manganese Removal (DMI 65)

ULTRA WATER (Pty)Ltd