CRYSTAL QUEST®
Water Filters

TRAPP XT

WHAT IS TRAPP XT?

STRUCTURE AND COMPOSITION OF TRAPP XT BEADS

Trapp XT is a granular magnesium oxide–based adsorption media engineered for use in fixed-bed adsorption systems. The material is processed into controlled granular particle sizes, typically in the range of 2–5 mm and 5–8 mm, to meet the hydraulic and adsorption requirements of various water-treatment applications.

Decades of applied research have shown that granular adsorption media provides an effective balance of mechanical durability, hydraulic performance, and adsorption efficiency when used in properly designed adsorber columns.

Removal Of

- **AMMONIA**
- **BORON**
- **HYDROGEN SULFIDE**
- **HEAVY METALS**
- **PHOSPHORUS**
- **SUSPENDED SOLIDS**
- **SILICA and many more...**

PHYSICAL ADSORPTION

Many commercially available filtration media based on magnesium or manganese oxides are produced as conventional granular materials that may contain impurities capable of leaching into treated water. The drinking water industry requires high-purity magnesium oxide media for pretreatment applications involving suspended solids, heavy metals, and acidic contaminants.

Trapp XT, produced by Crystal Quest®, is a high-purity magnesium oxide–based granular media formulated specifically for water treatment applications. The material consists of free-flowing, uniform granular particles designed to promote effective contact between the media surface and the treated water.

Trapp XT is a porous, amorphous form of magnesium oxide (MgO). Although it shares the same base chemistry as other MgO-based products, it differs significantly due to its unique surface morphology and internal pore structure, developed through a proprietary manufacturing process. This process produces granular particles with macroporous characteristics and a broad pore-size distribution, enhancing adsorption capacity compared to conventional magnesium oxide media. *All Adsorber Division products are WQA/NSF certified, where applicable.*

PHYSICS

The porous outer surface of Trapp XT granular media exhibits a strong physical affinity for liquids when exposed to water, a process known as physisorption. Ionic and molecular species present in water become attracted to and retained on the external surface and within the accessible pore structure of the granular particles.

The retained species are referred to as adsorbates, and the process by which they are captured is called adsorption.

Different contaminants exhibit varying adsorption affinities depending on molecular size, charge, and chemical properties. Adsorption within Trapp XT occurs primarily on the outer surface and within the macro- and mesoporous structure of the granular media. This adsorption process is reversible, allowing adsorbed molecules to be released gradually during backwashing or under reduced pressure or concentration conditions.

Molecules larger than the pore openings cannot be adsorbed, while smaller molecules—such as silica, phosphates, and ammonia—can be effectively captured by the media.

Mesoporous magnesium oxide is widely recognized for its effectiveness in capturing CO_2 and H_2S in water and wastewater treatment.

USAGE OF TRAPPXT

This Brochure describes 10 applications where Trapp XT can be used to purify process water in 10 ways.

- **Effective filtration of suspended solids**
- **High alkalinity enables pH control without chemical dosing**
- **Effective silica removal compared to ion-exchange resins and membranes**
- **Superior phosphorus removal compared to many alternative technologies**
- **Removal of CO, HS, and ammonia in water and wastewater**
- **Facilitates precipitation and downstream removal of heavy metals**
- **Helps control corrosion in municipal and utility networks without chemical corrosion inhibitors**
- **Supports controlled enrichment of water with magnesium ions (Mg^{2+})**

World health regulations specify that remineralized or desalinated water should meet the following criteria:

- **Mg^{2+} concentration: 25–30 mg/L**
- **Alkalinity: >100 mg/L as $CaCO_3$**

High-purity magnesium oxide in water forms a stable, corrosion-resistant protective film without the addition of antiscalants or corrosion inhibitors.

Mechanism
- Adsorption
- Ion Exchange

Easy and safe to handle since:
- Non - Hazardous
- Non - Corrosive
- Non - Toxic

Adding different chemicals to raise pH in water, solutions of sodium hydroxide (NaOH), sodium carbonate ($NaCO_3$) or potassium hydroxide (KOH) are typically used. To add chemicals into water or waste water is difficult, problematic and very expensive. A dosing system for household, point of entry and point of use for raising pH in conjunction with another household device is not suitable and does not exist. If there is mechanical failure in the dosing system or if the storage tank containing (NaOH) is not periodically filled, the pH of the feed water will revert to the feed water pH.

For heavy metal's removal application, this means the consumer will drink water with feed, copper, zinc, nickel and will have corrosive and scale in household piping. Trapp XT will help the whole water treatment industry to get rid of expensive closing system's and using unhealthy caustic solution's to raise pH. The Trapp XT media is an adsorber media, meaning Trapping (see fig. 1).

Positive ion's from the water to remove heavy metal's by a mechanism of adsorption and releasing OH□ Ions to increase move specifically, by predominantly adsorption or predominantly Ion-Exchange.

The Trapp XT media is non-bonded particulate and the material is in the form of RESIN BEADS. Casted molded material an invention of Crystal Quest.



TECHNICAL DESCRIPTION & DATA

Description:
Trapp XT granular adsorption media is designed for potable water and wastewater treatment applications, including the removal of silica, phosphates, ammonia, CO_2, H_2S, and heavy metals. The media also neutralizes acidic water and is suitable for treating corrosive deionized or softened water, while enriching water with magnesium and calcium.

Chemical and Physical Properties	Magnesium Oxide (MgO): 80 % Calcium Oxide (CaO): 10 % Proprietary: 10 % Chemically inert, no metals present.
Bulk Density	Grade 2–5 mm and 5–8 mm granular media SI: 1300 kg/m³ US: 81.16 lb/ft³
Packaging: Standard	28.3 liter/bag*
Storage:	Store in a dry place.
Sizing of Trapp XT Systems	See Crystal Quest® Pressure Filter Design and Installation Guidelines.
Manufacturing:	**Quest Technologies Inc.** **175 Chastain Meadows CT #100** **Kennesaw, GA 30144**

If there is no sufficient raw water quality data, adequate water samples from all sources of supply should be collected and analyzed by state certified laboratory. The water analyzes are dependent on the parameters/contaminants (i.e Organic, Iron and Manganese, Arsenic, Radium, Hardness, pH and etc.) For proper design, please contact us.

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