

## Chemistry of the OMNI Compounds

OMNI-FIX™, OMNI-KAP™, OMNI-TRAP™ media and the SorbaSet™ series, including Universal SorbaSet™, SorbaSet S™ and SorbaSet B™, are all based on patented modified and natural synthetic Aluminum Silicate/Calcium Aluminum zeolites. They follow all the normal reactions of these compounds, but have been modified by the OMNI process to increase their ion exchange, absorption and adsorption potentials. A further reaction of the OMNI process is to solidify and fixate these compounds after drying to produce a highly leach and pressure resistant product approved for land burial.

The primary reaction of OMNI-FIX™ and OMNI-TRAP™ media is one of cation exchange at a rate of 25-100 m.e.q./gram depending on the amount and valence of the ion. Anion and nonionic removal is through absorption and adsorption. Insoluble and suspended particle removal is by simple filtration action. While the filtration action is quite good, care should be taken to remove the maximum of particles to prevent filter binding. Upon wetting, these products act as molecular sieves and offer a very large number of “activated” sites for exchange and absorption. When these sites are filled, gelling results to shut down the effluent flow. During drying, a second reaction occurs causing the silicates and aluminates to cross link, becoming extremely insoluble over a wide pH range.

OMNI-FIX™ may be also used as a filter precoat for final polishing of effluents. OMNI-TRAP™ media is ready to use as shipped . When using OMNI-FIX™ in a batch process, pollutant removal occurs within 1 to 12 hours. Sludge fixation takes from 24 to 48 hours for complete insolubilization.

While having a similar chemistry, OMNI-KAP™ and the SorbaSet™ series are rapid set solidification compounds. They have less ion exchange capacity, but are more absorbent and can bond larger quantities of liquids than OMNI-FIX™. OMNI-KAP™ also can neutralize and solidify acid wastes at a rate of 375 m.e.q. of alkali per gram. (based on HCl). It has high flocculating properties for a wide variety of emulsions and dispersions. The resultant sludge is self-solidifying and ready for land disposal.

The SorbaSet™ series are similar to OMNI-KAP™ in having neutralization properties (SorbaSet B™ for alkalis) and high absorption and fume repressing qualities. Universal SorbaSet™ will solidify non-aqueous liquids with a simple addition of water. Pollutants treated with OMNI-KAP™ and the SorbaSet™ series are not as leach resistant as those treated with OMNI-FIX™ and OMNI-TRAP™ media.

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