



Evaluation of recycled crushed glass filter efficiency with conventional sand filters

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The objective of this survey is the evaluation of filter media utilizing recycled crushed glasses as a filter media in a dual media anthracite-glass filter compared to a dual media anthracite-sand filter. In general, the particle removal capabilities of crushed-glass filter were slightly poorer than those of a sand filter. It was found that the crushed glass used in this project had a higher angularity and slightly higher uniformity coefficient than the sand tested. After 6 month, the crushed-glass filter was able to produce a filter effluent of 50-70 particles/ml (diameter $>2\mu$), which is greater than 25-50 particle/ml (diameter $>2\mu$) produced by sand filter. Over the course of 6-month study the dual media crushed-glass filter was able to achieve a 1.4 log removal, which was only slightly greater than the dual media silica sand filter that achieved a 1.6 log removal of particles with diameter $>2\mu$. The reason of application of this size (2μ) in this survey is similarity to the size of Giardia cyst and Cryptosporidium Parvum Oocyst which are two major pathogen indexes in water treatment. The removal efficiency of 2-5 μ particles in crushed glass media (similar to parasite size) was greater than sand filter. The time of reapplication of media after backwash is very important in water treatment plant operation. This time for glass filter was two times more than that of sand filter.

Keywords: Water quality, Recycled crushed glasses, Sand filter, Water treatment, Giardia

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