

Spring 2010 Foam Filtration Research

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Research

Flat Foam Sheet Experiments with coagulated particles

Currently, we are testing the filtering capacity of foam under the worst case lab conditions, which consists of filtering water containing unflocculated clay particles. This represents the worst case scenario, because the particles are small and uncoagulated. We would like to test the filtering capacity of the foam under conditions that are more reflective of conditions in an AguaClara plant. This involves adding alum and a rapid mix tube to our system, in order to produce larger particles, which will then lead to, hopefully, higher levels of colloid removal.

Flat Foam Sheet Experiments

Prior to considering the actual design of a proposed filtration unit, it is necessary to test the filtering capacity of the foam material we would like to use. Therefore, a number of experimental trials on foam with varying pore sizes and flow rates were conducted. Pore sizes are measured in the units pores per inch, which is a linear measurement. A smaller pore size corresponds with a larger number of pores per inch, i.e. a pore size of 90 ppi will have smaller pores than foam with 60 ppi. Briefly, it was found that the flat foam sheets alone do not provide enough colloid removal, under the conditions tested, to be an implementable method of filtration for the AguaClara plants. However, under more realistic conditions, where particles would be flocculated, rather than the worst case lab conditions as tested, foam filtration may in fact be feasible. Please see the results and discussion of each experiment for further explanation.