

Abstract

The transport and filtration behaviour of fine particles (silt) in columns packed with sand was investigated under saturated conditions by using step-input injections. Three samples of different particle size distributions (coarse medium, fine medium and a mixture of both) were used in order to highlight the influence of the pore size distribution on particle retention and size selection of recovered particles. The main parameters of particle transport and deposition were derived from the adjustment of the experimental breakthrough curves by an analytical model. The higher particle retention occurs in the mixture medium, owing to its large pore size distribution, and the filtration coefficient decreases with increasing flow velocity. Particle size distribution of recovered particles shows a thorough size selection: (i) the first recovered particles are the coarser ones; (ii) the size of the recovered particles increases with increasing flow velocity and enlarger pore distribution of the medium