Summary Report of Experiments Investigating the Sorption of Silica to Zeolite EC-MCL

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For

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This report presents data from a column experiment studying the sorptive capacity of Zeolite EC-MCL to an aqueous-silica solution. A 30-inch long (76.2 cm) by 3-inch diameter (7.62 cm) column was constructed from PVC and filled with the sorbent material to be studied. A peristaltic pump forced an aqueous solution containing in the range of 360 mg/L silica up through the column to displace void-space air and ensure maximum contact with the sorbent material. Samples were collected periodically at the outflow of the column and analyzed using a HACH spectrophotometric method.

Results in this report are presented in Tables 1 and 2 and in Figure 1 as identified below:

Table 1. Sorbent mass, porosity, flow rate and residence time information for the Zeolite EC-MCL column experiments.

Sorbent	Mass Sorbent		Porosity	Flow Rate		Residence
	(kg)	(lb)		(mL/min)	(gal/hr)	(min)
Zeolite EC-MCL	3.44	7.57	0.48	111.2	1.80	15

Table 2. 95% breakthrough for the Zeolite EC-MCL given in pore volumes, bed volumes and minutes along with estimated mass of silica sorbed per mass of sorbent in mg/kg, lb/lb and percent basis.

Sorbent	Breakthrough			Mass sorbed		Mass Sorbed/Mass Sorbent		
	PV	BV	min	(mg)	(lb)	(mg/kg)	(lb/lb)	(% by sorbent)
Zeolite EC-MCL	30.5	14.6	458	8535	0.0188	2510	0.0025	0.251

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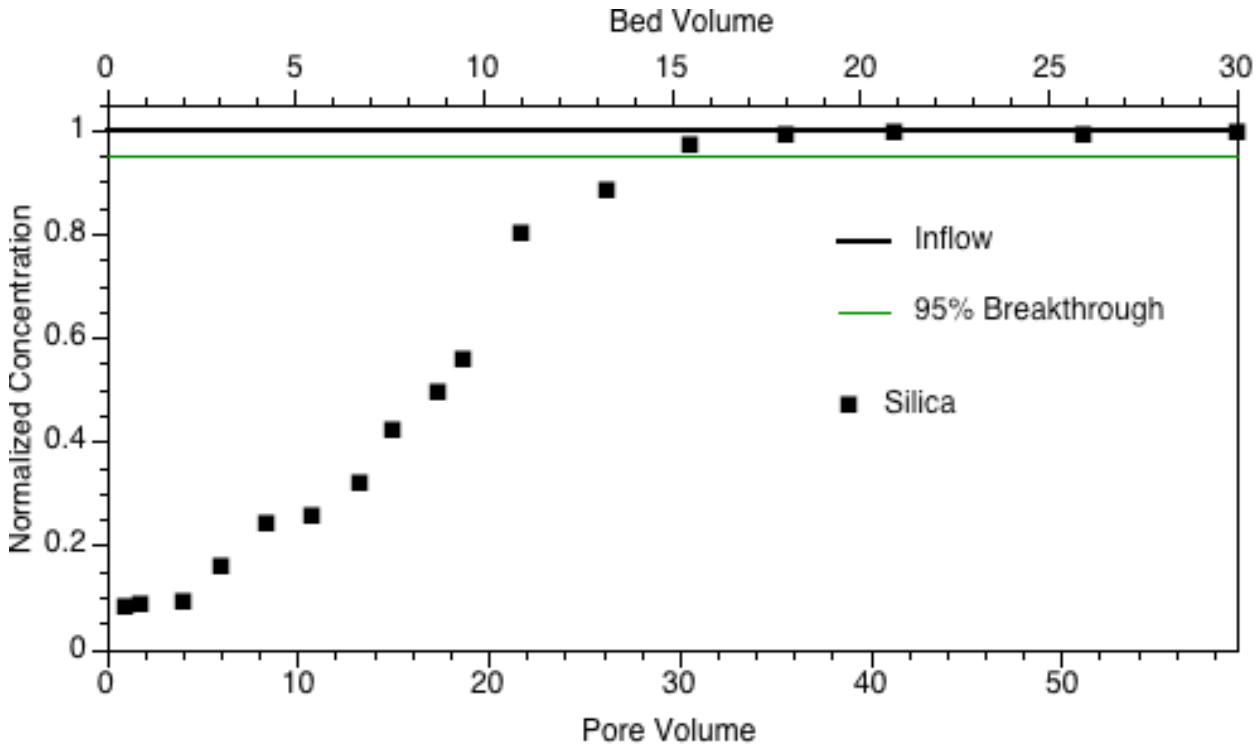

Figure 1. Breakthrough curve of silica through a column of Zeolite EC-MCL