

**Summary Report of Experiments Investigating the Sorption
of Silica to Bone char and TC-75**

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For

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This report presents data summarizing the results from two column experiments studying the sorptive capacity of bone char and TC-75 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 165 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 Figures 1 to 2 as identified below:

Table 1. Sorbent mass, porosity, flow rate and residence time information for bone char and TC-75 column experiments.

Sorbent	Mass Sorbent		Porosity	Flow Rate		Residence (min)
	(kg)	(lb)		(mL/min)	(gal/hr)	
Bone char	1.9	4.2	0.42	96.7	1.6	15
TC-75	2.2	4.8	0.39	67.5	1.1	20

Table 2. 95% breakthrough for the bonechar and TC-75 experiments given in pore 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)
Bone char	9.9	4.1	149	500	0.0011	263	0.00026	0.026
TC-75	19.4	7.5	388	2497	0.0055	1135	0.00114	0.113

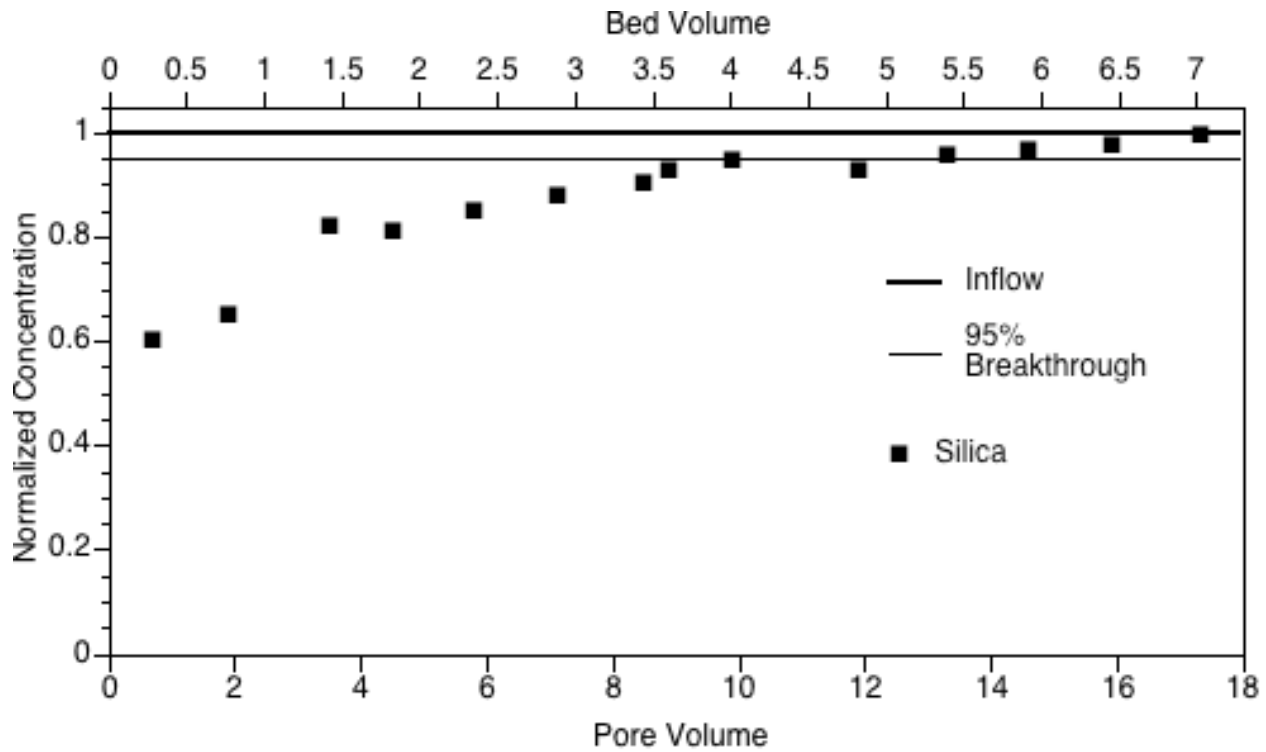


Figure 1. Breakthrough curve of silica through a column of bone char

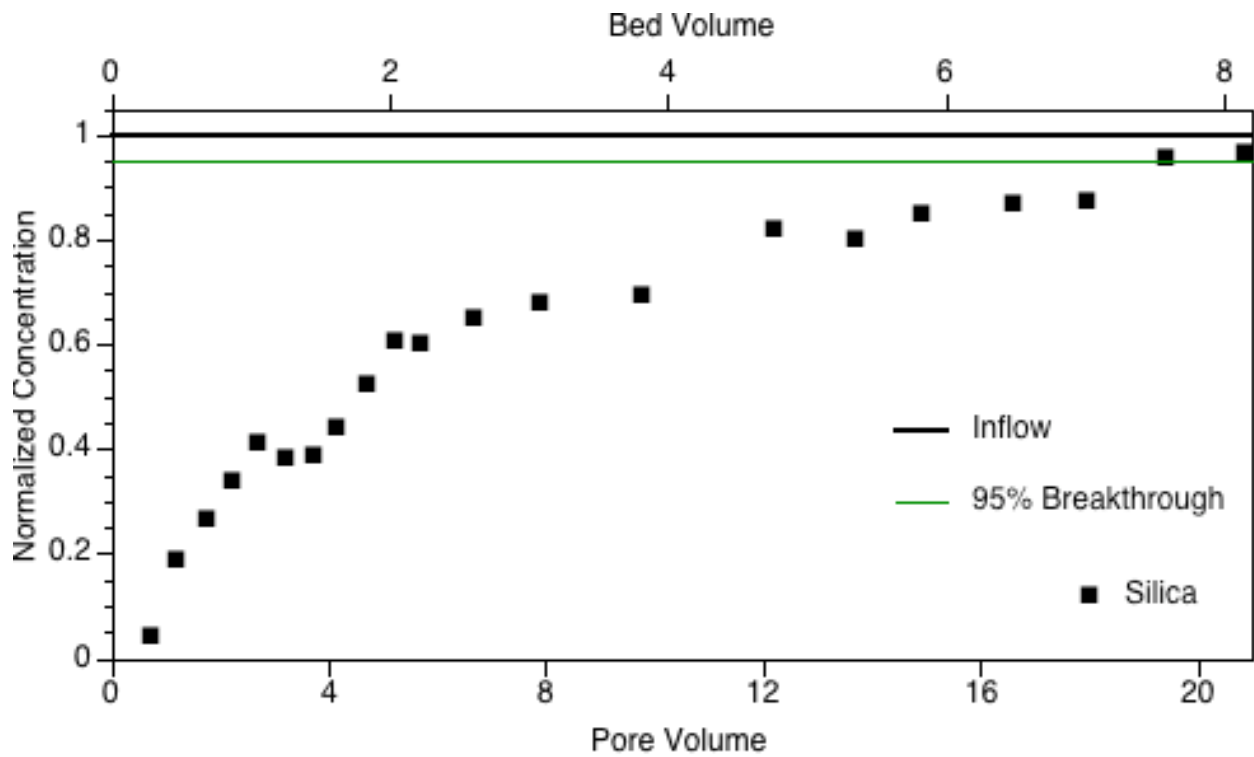


Figure 2. Breakthrough curve of silica through a column of TC-75