

NBST Design Considerations

Tube area² versus remineralization

Tube diameter area in cm ²			5 to 1 aspect	5 to 1 aspect	3 to 1 aspect	3 to 1 aspect
dia inches	area cm ²	area m ²	height cm	weight full kgs	height cm	weight full kgs
3	45.6	0.0046	38.1	1.8	22.86	1.1
4	81.1	0.0081	50.8	4.3	30.48	2.6
5	126.7	0.0127	63.5	8.3	38.1	5.0
6	182.4	0.0182	76.2	14.4	45.72	8.6

Martin Curve

Z	Remineralization with depth		per 3 day	per 5 day	per 3 day	per 5 day	per 3 day	per 5 day	per 3 day	per 5 day		
	POC	PON	POC	POC	POC	POC	POC	POC	POC	POC	POC	POC
mg m ² d ¹	mg m ² d ¹	ug per 3" tube	ug per 3" tube	ug per 4" tube	ug per 4" tube	ug per 5" tube	ug per 5" tube	ug per 6" tube	ug per 6" tube			
150	14.1	2.0	193.2	322.0	343.5	572.5	536.7	894.5	772.9	1288.1		
300	7.8	1.0	106.6	177.7	189.5	315.9	296.1	493.5	426.4	710.7		
500	5.0	0.6	68.8	114.6	122.3	203.8	191.0	318.4	275.1	458.5		
			mg C available to split		mg C available to split		mg C available to split		mg C available to split			
150		5 tubes per NBST	0.97	1.61	1.72	2.86	2.68	4.47	3.86	6.44		
300		5 tubes per NBST	0.53	0.89	0.95	1.58	1.48	2.47	2.13	3.55		
500		5 tubes per NBST	0.34	0.57	0.61	1.02	0.96	1.59	1.38	2.29		
	%C/mass		mg total available to split		mg total available to split		mg total available to split		mg total available to split			
150	18%	5 tubes	5.4	8.9	9.5	15.9	14.9	24.8	21.5	35.8		
300	12%	5 tubes	4.4	7.4	7.9	13.2	12.3	20.6	17.8	29.6		
500	8%	5 tubes	4.3	7.2	7.6	12.7	11.9	19.9	17.2	28.7		

Splitting notes: Manga's splitter, made by Rich Zuck can split down to 10mg. With a normal Manga sample of 100mg, where 90%<63u, he gets about 2% variability.

Aug 2003 update- plan is for five 5" diameter tubes per NBST w/ 5:1 aspect ratio