

CAT. NO. CRM-SA-B/S

Certificate of Analysis

HPS Certified Reference Material

Sandy Soil B/S

Lot # 690821

The methods used to analyze CRM-SA-B
are described in attached CofA for CRM-SA-A

This Certified Reference Material is pristine sandy soil obtained from Johns Island and used in the preparation of CRM-SA-A except the concentrations of 20 elements have been increased 10 to 100X to improve the accuracy of the analytical measurement. The increased concentrates of analytes were added to the soil in an aerosol mist (10-30 μ m particles), dried under infrared heat lamps, ground, sieved, and blended in a mixing drum. The certified concentrations by Total and EPA Method 3050 Digestion for all the elements are as follows:

Table 1 - Total Digestion

<u>Element</u>		<u>Conc., mg/g</u>		<u>Performance Acceptance Limits (PAL), mg/g</u>	
				<u>Low</u>	<u>High</u>
Si		(40.0)			
Al		15.2	± 0.5	13.0	17.5
Ca		15.3	± 0.3	13.0	17.5
Fe		22.0	± 0.5	18.9	25.4
K		5.29	± 0.20	4.5	6.1
Mg		1.38	± 0.04	1.2	1.6
Na		1.79	± 0.18	1.5	2.0
Ti		(1.83)	1.6	2.1	

<u>Element</u>		<u>Conc., μg/g</u>		<u>PAL, μg/g</u>	
				<u>Low</u>	<u>High</u>
Ag		(28.3)	± 2.0	24.0	32.0
As		26.6	± 2.0	22.9	30.3
B		(25)		21.0	33.0
Ba		145.0	± 10.0	123.0	168.0
Be		(7.4)	± 1.0	6.2	8.5
Cd		108.0	± 5.0	94.0	131.0
Co		14.8	± 0.8	12.4	17.3
Cr		81.1	± 1.5	69.0	92.0
Cu		62.0	± 1.5	55.0	67.0
Li		(25)		21.0	33.0
Mn		430.0	± 10.0	396.0	460.0

<u>Element</u>		<u>Conc., μg/g</u>		<u>PAL, μg/g</u>	
				<u>Low</u>	<u>High</u>
Mo		54.0	± 4.0	42	65
Ni		53.9	± 2.5	49	63
Pb		129	± 6.0	103	155
Sb		(30)		25	35
Se		59.2	± 2.0	46	70
Sr		80.0	± 2.0	68	92
Tl		58.0	± 2.0	44	70
U		(50)		40	60
V		63.4	± 1.0	58	68
Zn		634.0	± 5.0	570	699

Values in parenthesis are given for information only

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Table 2 - EPA Method 3050 Digestion

<u>Element</u>	<u>Conc., mg/g</u>			<u>Performance Acceptance Limits (PAL), mg/g</u>	
				<u>Low</u>	<u>High</u>
Al	6.43	±	0.03	3.9	8.8
Ca	11.3	±	0.2	7.3	17.0
Fe	10.6	±	0.7	7.4	18.0
K	0.190	±	0.009	0.1	0.25
Mg	1.07	±	0.04	0.75	1.39
Na	0.087	±	0.006	0.06	0.103
Ti	(.041)		0.025	0.059	

<u>Element</u>	<u>Conc., µg/g</u>			<u>PAL, µg/g</u>		<u>Element</u>	<u>Conc., µg/g</u>			<u>PAL, µg/g</u>	
				<u>Low</u>	<u>High</u>					<u>Low</u>	<u>High</u>
Ag	24.7	±	0.5	13.6	35.8	Mo	(48)			33.6	62.4
As	24.2	±	1.0	17.0	31.4	Ni	42.4	±	3.0	29.7	55.1
B	(19)			12.2	25.8	Pb	135.0	±	4.0	93.1	176.0
Ba	10.3	±	0.8	7.0	13.0	Sb	14.9	±	1.5	3.6	26.2
Be	7.1	±	0.1	5.0	9.2	Se	51.3	±	2.0	35.9	66.7
Cd	111.0	±	5.0	74.4	147.6	Sr	37.0	±	2.0	20.4	53.6
Co	11.9	±	0.3	7.1	16.7	Tl	57.1	±	3.0	27.1	87.1
Cr	48.7	±	3.0	34.1	63.0	U	(62)			43.4	80.6
Cu	56.0	±	2.5	39.2	72.8	Zn	628.0	±	14.0	440	816
Li	28.4	±	0.6	20.0	36.8	Hg	5.29	±	0.44	3.70	6.87
Mn	292.0	±	5.0	205.0	379.0						

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Theodore C. Rains, Ph. D.
President