



SOILS AND SEDIMENTS MEASURED WITH THE PARTICA LA-950

Summary

Measurement of the particle size of soil and sediment sample is a critical part of understanding the geological history of a particular area. The nature of most samples is a wide range of particle sizes, from sub-micron clay up to sand and gravel. The relative contributions across these size ranges have traditionally been measured with several different analytical techniques to cover the range, including sedimentation and sieves. The wide measurement range of the LA-950 allows samples to be run very quickly and to cover the size range in one analysis.

Analytical test method

RI (particle): 1.44-0.10i

Dispersant fluid: Deionized water with 0.1% sodium pyrophosphate

Sonication: 20 seconds, power 4

Circulation speed: 5

Agitation speed: 3, continuous

Notes: For samples with a significant amount of fine material, the duration or intensity of the ultrasonic treatment may need to be increased to fully disperse the clay fraction. Two rinses may be required to completely clear out the larger fractions.

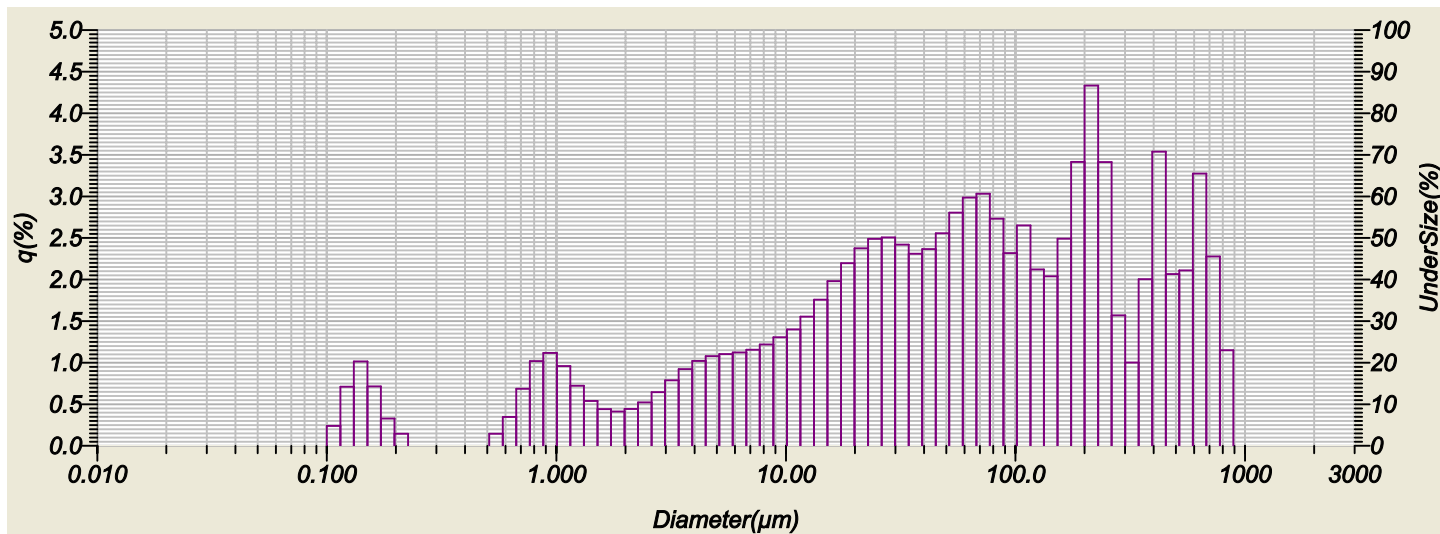
Example data

Discussion: The measurement results attached correlated well with expectations. The samples had previously been analyzed with sieves and sedimentation. The limited range and resolution of these techniques does not show the full distribution of sizes and would require 20-60 minutes per sample. With the wide range and speed of the LA-950 each sample only requires approximately 90 seconds, including sonication and two rinses.

Horiba LA950 for Windows [Wet] Ver2.00

ID# : 200506031039002
 Transmittance(R) : 76.0(%)
 Transmittance(B) : 73.6(%)
 Ultra Sonic : OFF
 Circulation Speed : 5
 Agitation Speed : 3
 Form of Distribution : Manual
 Distribution Base : Volume
 Refractive Index (R) : BCR67[BCR67 in water(1.440 - 0.100i),Water(1.333)]
 Refractive Index (B) : BCR67[BCR67 in water(1.440 - 0.100i),Water(1.333)]
 Sample Name : sample 4
 Material :
 Source :

Median Size : 60.27145(μm)
 Mean Size : 152.61098(μm)
 Mode Size : 214.0350(μm)
 Span : 7.8937
 Geo.Mean Size : 43.5546(μm)
 Geo.Variance : 6.1684(μm²)



No.	Diameter(μm)	q(%)	UnderSize(%)	No.	Diameter(μm)	q(%)	UnderSize(%)	No.	Diameter(μm)	q(%)	UnderSize(%)	No.	Diameter(μm)	q(%)	U
1	0.011	0.000	0.000	20	0.150	1.014	1.960	39	1.981	0.411	9.516	58	26.111	2.487	
2	0.013	0.000	0.000	21	0.172	0.714	2.674	40	2.269	0.441	9.956	59	29.907	2.506	
3	0.015	0.000	0.000	22	0.197	0.325	3.000	41	2.599	0.521	10.478	60	34.255	2.418	
4	0.017	0.000	0.000	23	0.226	0.142	3.142	42	2.976	0.643	11.121	61	39.234	2.309	
5	0.020	0.000	0.000	24	0.259	0.000	3.142	43	3.409	0.786	11.906	62	44.938	2.364	
6	0.022	0.000	0.000	25	0.296	0.000	3.142	44	3.905	0.920	12.827	63	51.471	2.554	
7	0.026	0.000	0.000	26	0.339	0.000	3.142	45	4.472	1.020	13.847	64	58.953	2.803	
8	0.029	0.000	0.000	27	0.389	0.000	3.142	46	5.122	1.076	14.922	65	67.523	2.983	
9	0.034	0.000	0.000	28	0.445	0.000	3.142	47	5.867	1.102	16.024	66	77.339	3.030	
10	0.039	0.000	0.000	29	0.510	0.000	3.142	48	6.720	1.121	17.145	67	88.583	2.731	
11	0.044	0.000	0.000	30	0.584	0.144	3.286	49	7.697	1.154	18.299	68	101.460	2.316	
12	0.051	0.000	0.000	31	0.669	0.345	3.631	50	8.816	1.217	19.516	69	116.210	2.650	
13	0.058	0.000	0.000	32	0.766	0.685	4.316	51	10.097	1.304	20.819	70	133.103	2.121	
14	0.067	0.000	0.000	33	0.877	1.018	5.334	52	11.565	1.397	22.217	71	152.453	2.037	
15	0.076	0.000	0.000	34	1.005	1.115	6.449	53	13.246	1.552	23.769	72	174.616	2.490	
16	0.087	0.000	0.000	35	1.151	0.958	7.407	54	15.172	1.755	25.525	73	200.000	3.414	
17	0.100	0.000	0.000	36	1.318	0.721	8.128	55	17.377	1.980	27.505	74	229.075	4.332	
18	0.115	0.238	0.238	37	1.510	0.538	8.666	56	19.904	2.195	29.700	75	262.376	3.411	
19	0.131	0.709	0.947	38	1.729	0.439	9.105	57	22.797	2.374	32.073	76	300.518	1.567	