SPECTRA Laboratories

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Particle Size Count Analysis
Detailed Explanation of Water Analysis Print Out

A TITLE

This heading lists the customer whose sample is being analyzed and the description and identification of the sample.

B HISTOGRAM SHOWING SIZE DISTRIBUTION

1. Bin Number:
   Left hand vertical column indicates bin or channel number. Normally we use 32 bins.

2. Particle size range:
   Moving from left to right: the next vertical column shows the particle sizes, from 1 to 100 micrometers (symbol um).

Note: um is equivalent to one thousandth of a millimeter or one millionth of a meter. The human eye is able to see down to about 50 um, while the Spectrex instrument can count and size down to um.

3. Particle size in percentage:
   Next column is the percentage distribution per bin over the complete size range.

4. Relative Count Column:
   These numbers are only indirectly related to the absolute number of particles in each bin and should be ignored.

5. The Bar Graph ("Histogram"):
   This gives a quick, visual indication of the size distribution. The scale at the top can be changed as necessary.

6. Filter Box (The topmost of six rectangles to the right of the Bar Graph):
   "F-0" is used for clear water samples.
   "F-30" is used for opaque hydraulic oil samples.

7. A-T:
   This is the ACTUAL number of seconds it took to collect your sample.

8. S-T:
   This is the number of seconds SET on the computer to take your sample

9. Dilution:
   If your sample has to be diluted, this is the amount of dilution needed.

10. Offset and Gain:
    These are constants preset in the computer to ensure that the sized particles are entered in the right bins.

C LISTINGS

These are the vertical columns of numbers immediately under the Histogram.

From left to right...

1.	Bin number	As explained above in A-1
2.	Size	As explained above in A-2
3.	Total Counts per cc	This column lists the absolute number of particles in each bin and includes the dilution factor. If there is a "0" in the sub 1um category this does not mean that there are no submicron particles present. Unless specifically requested, we usually size from 1um upward as there is a slightly indeterminate factor below that size, while we are sure that all 1um particles are counted.
4.	Counts percent	As explained in A-3
5.	Surface Area percent	The computer rearranges the distribution by Surface Area. The Surface Area is derived by multiplying Counts Percent by the "square" of the diameter. Percent
6.	Volume Percent	This is calculated using the "cube" of the diameter. You will notice that the percentage distribution is heavily weighted toward the larger particle range.

D STANDARD CLASSIFICATION

This is usually in "Phi" categories, used by sedimentologists, geologists and water engineers. It is a relisting of B above in a reduced number of channels. Other "standard" listings, for hydraulic oils, are ISO, NAS and SAE. If you would prefer one of these three rather than "Phi" please specify.

E TOTALS

1. Total number of particles in the sample.
   This is a total of B-3 above.

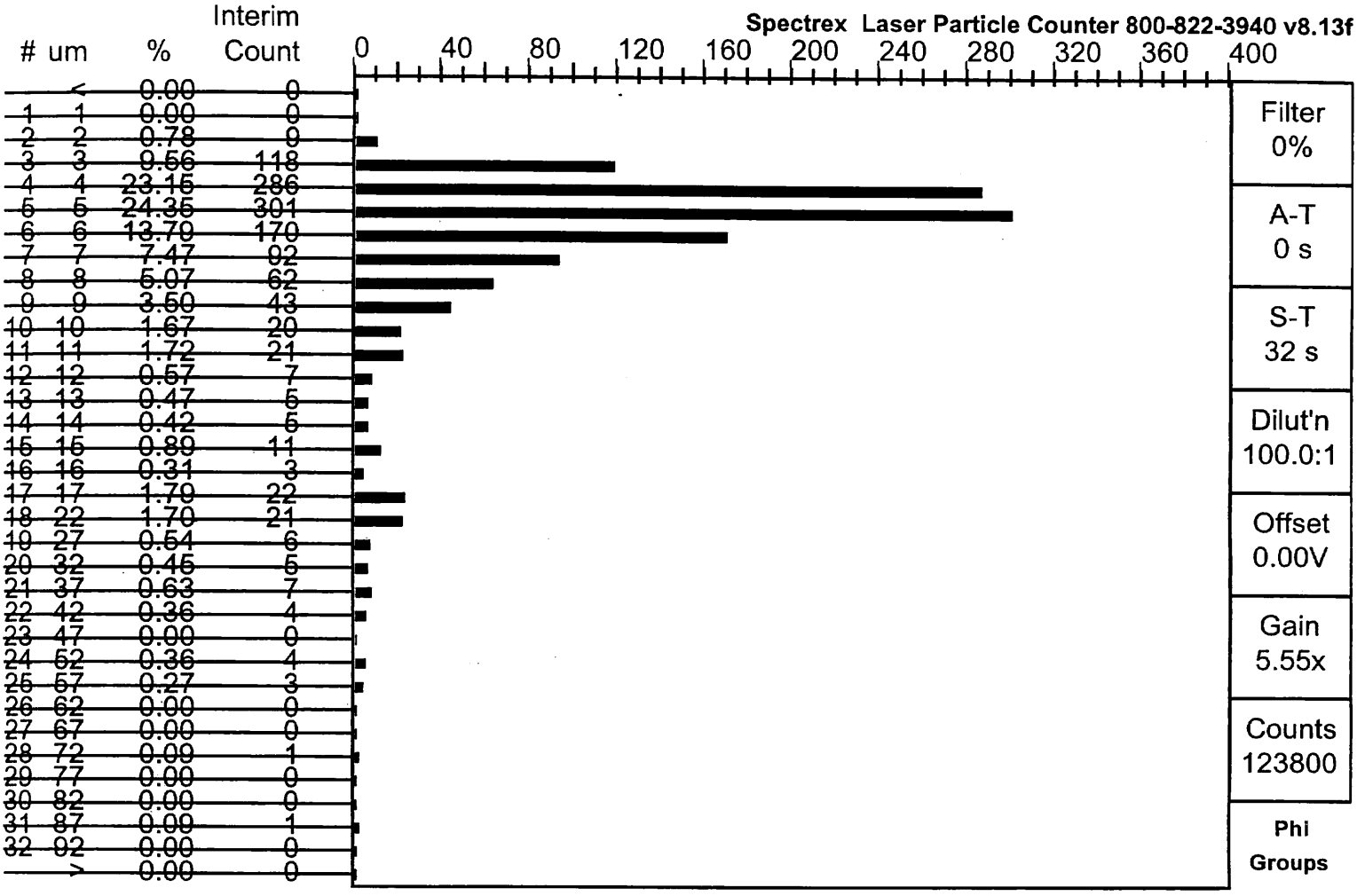
2. Dilution factor.
   This is an indication of how much dilution was necessary to get the required results.

3. Mean Size and Standard Deviation are computed form Total Counts per cc (B-3).

4. Date and Time at which the sample was run is a valuable reference for the future.
   (In parts per million)

Company Name
Spectra Lab #
Client ID: #

Example Report - pg 1



Phi	Size	Total counts /cc	Counts percent	Surface area percent	Volume percent
10	1-2	0.00	0.00%	0.00%	0.00%
9	2-4	12,806.90	10.34%	0.88%	0.15%
8	4-8	85,120.59	68.76%	18.23%	5.04%
7	8-16	17,722.68	14.32%	14.13%	6.46%
6	16-31	5,377.79	4.34%	17.95%	13.80%
5	31-63	2,550.29	2.06%	37.51%	50.92%
4	63-128	221.76	0.18%	11.30%	23.63%

Total counts: 123,800.00/cc
Dilution factor: 100.00:1
Mean size: 7.08um
Standard dev: 7.14um

Sample taken on February 3, 2005 at 14:02

Company Name
Spectra Lab #
Client ID: #

Example Report - pg 2

Bin	Size	Total counts /cc	Counts percent	Surface area percent	Volume percent
	<	0.00	0.00%	0.00%	0.00%
1	1um	0.00	0.00%	0.00%	0.00%
2	2um	970.22	0.78%	0.03%	0.00%
3	3um	11,836.68	9.56%	0.85%	0.15%
4	4um	28,653.81	23.15%	3.66%	0.80%
5	5um	30,141.48	24.35%	6.02%	1.56%
6	6um	17,075.86	13.79%	4.91%	1.46%
7	7um	9,249.43	7.47%	3.62%	1.21%
8	8um	6,274.09	5.07%	3.21%	1.18%
9	9um	4,333.65	3.50%	2.81%	1.13%
10	10um	2,069.80	1.67%	1.65%	0.72%
11	11um	2,134.48	1.72%	2.06%	0.97%
12	12um	711.49	0.57%	0.82%	0.41%
13	13um	582.13	0.47%	0.79%	0.42%
14	14um	517.45	0.42%	0.81%	0.46%
15	15um	1,099.58	0.89%	1.98%	1.17%
16	16um	388.09	0.31%	0.79%	0.49%
17	17um	2,217.64	1.79%	5.12%	3.33%
18	22um	2,106.76	1.70%	8.15%	6.42%
19	27um	665.29	0.54%	3.88%	3.56%
20	32um	554.41	0.45%	4.54%	4.74%
21	37um	776.18	0.63%	8.49%	9.88%
22	42um	443.53	0.36%	6.25%	8.00%
23	47um	0.00	0.00%	0.00%	0.00%
24	52um	443.53	0.36%	9.59%	14.40%
25	57um	332.65	0.27%	8.64%	13.90%
26	62um	0.00	0.00%	0.00%	0.00%
27	67um	0.00	0.00%	0.00%	0.00%
28	72um	110.88	0.09%	4.59%	8.81%
29	77um	0.00	0.00%	0.00%	0.00%
30	82um	0.00	0.00%	0.00%	0.00%
31	87um	110.88	0.09%	6.71%	14.82%
32	92um	0.00	0.00%	0.00%	0.00%
	>	0.00	0.00%	0.00%	0.00%
	TOTALS	123,800.00	100.00%	100.00%	100.00%

Sample taken on February 3, 2005 at 14:02