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Title: Results of analytical tests on sediment cores collected by FFI from the Barents Sea				
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<p>Summary:</p> <p>Ten gravity cores from the Barents Sea have been profiled with the X-ray inspection system (XRI) and logged for P-wave velocity, bulk density and magnetic susceptibility using multi sensor core logger (MSCL). Sediment cores were opened after these non-destructive analyses, sedimentologically described and undrained shear strength was measured on selected intervals. The cores were subsampled for determining water content, wet density, dry density and grain-size characteristics.</p>				
Keywords: Marine geology		Seabed sediments	Sedimentology	
Grain size		Sediment density	Geotechnical properties of sediments	

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Fig. 1. Correlation diagram for MSCL bulk density and wet density, obtained by determining the weight of known sample volume. Solid line shows the expected correlation; dashed line indicates the offset of 0.3 g/cm^3 .

Fig. 2. Comparison of stratigraphic MSCL bulk density (solid lines) and wet density (red dots) profiles. Subsamples for wet density determinations were taken with 0.25 m intervals, except the uppermost subsample, which was obtained at 0.10 m sediment depth. The top 0.05-0.15 m sections of profiles with no data above the sediment surface (0 m level) reflect empty spaces in the core liner that are included in original MSCL logs.

APPENDIX

Appendix 1. Stratigraphic profiles of X-ray images (XRI), P-wave velocity, bulk density, magnetic susceptibility, water content, wet density, dry density, undrained shear strength, and median grain size.

Appendix 2. MSCL data treatment guide-lines and core logging notes provided by the MSCL laboratory at the University of Bergen.

Appendix 3. Cumulative grain-size distribution plots and statistical characteristics of individual samples. Note that sample IDs show the core numbers and subsampling depths, i.e. sample GC1-10 stands for the subsample collected from 10 cm depth of core GC1.

1 INTRODUCTION AND MATERIALS

This report presents results of analytical tests undertaken on 10 sediment cores collected by FFI from 10 localities in the Barents Sea. The objective of these analyses is to provide sedimentologic and sediment physical properties characteristics, which can potentially be related and/or correlated with sediment acoustic parameters.

2 METHODS AND RESULTS

The laboratory procedures with the sediment cores involved (i) stratigraphic profiling with an X-ray inspection system, (ii) stratigraphic profiling for P-wave velocity, sediment bulk density and magnetic susceptibility using a multi sensor core logger (MSCL), (iii) lithostratigraphic description, (iv) grain-size analysis, (v) determination of geotechnical and physical properties of sediments. Descriptions of methods/procedures are given below. Figures 1-10 in Appendix 1 show compilations of all obtained results and illustrate down-core variations of studied parameters. All tests were carried out at NGU except MSCL logging that was undertaken at the University of Bergen.

2.1 X-ray inspection system (XRI)

The images of the XRI system reflect variable X-ray absorption (transparency) of different sediment components. The XRI system consists of an X-ray tube and an image intensifier that converts invisible X-rays into visible light. A CCD camera is used to capture the visible image. The size of an XRI image depends upon specific settings, typically covering 10-15 cm long sediment interval. The sediment core is placed between the X-ray tube and the image intensifier; different core sections can be inspected by sliding the assembled X-ray tube and image intensifier along the core. X-ray transparency of a sediment is strongly influenced by the grain-size and the images are generally lighter for the fine-grained sediments and darker for coarse-grained sediments. XRI is a handy, non-destructive method to study the texture and structure of sediments, to characterize the distribution of gas pockets, shells, wood fragments and clasts, and to interpret the disturbances caused by bioturbation, gas escape or shear. The possibility to rotate the core simultaneously with imaging facilitates detailed geometric analyses of specific structural features.

In Appendix 1 the XRI documentation is given as sequences of digital images where each individual image corresponds to 11-14 cm sediment interval. The scale at the side of the images shows the depth in centimetres from the sediment surface or from the core section top in case of multiple sections. Individual images from all cores have been montaged to provide the complete XRI sequence.

2.2 Multi sensor core logger (MSCL)

The GEOTEK manufactured Multi Sensor Core Logger (MSCL) at the University of Bergen was used to study physical properties of sediments by means of gamma-ray density, P-wave velocity and magnetic susceptibility. The MSCL consists of a conveyor system, a central unit assembly including three sensors, a microprocessor and a computer. The conveyor system has two track sections, mounted and aligned on either side of the central unit, and a belt driven pusher block which is driven in either direction by a stepper motor and gear box assembly. The central unit assembly incorporates a compressional wave (P-Wave) logger, a gamma ray attenuation logger and a magnetic susceptibility loop. Automation is achieved through the use of an internal processor, interfaced with the rack-mounted computer that controls the entire running process and stores data.

Up to 140 cm long core sections are placed on the right hand track with the top located at the reference position. A conveyor system automatically pushes each core section through the sensor array (incrementally past gamma ray attenuation logger, the p-wave logger and through the magnetic susceptibility coil) with measurements being taken at spatial increments as defined by the user; 0.5 cm and 1 cm step-sizes were used in this study. The computer controlling the conveyor also controls the sensors, so that all data are automatically correlated. Adjacent core sections are loaded on to the conveyor by the user when prompted by the software commands. In this way a complete core can be logged in a continuous process while the raw and processed data are displayed graphically in real time on the monitor. Complete control of the graphic display is provided, both in terms of the presentation and processing protocols. Both raw and processed data are saved in formats suitable for exporting to other software environments for further data manipulation or data presentation.

MSCL data treatment guide-lines provided by the MSCL laboratory at the University of Bergen are shown in Appendix 2. Specific observations made during MSCL analyses of sediment cores treated in this report are also presented in Appendix 2.

2.2.1 Gamma ray density

Density is determined by measuring the attenuation of gamma rays through the cores. The gamma ray attenuation unit comprises a 10 millicurie Cesium-137 capsule (housed in a 150 mm diameter primary lead shield) with both 2.5 and a 5.0 mm collimators and a sodium iodide scintillation detector (housed in a 150 mm diameter collimated lead shielding to minimize any background radiation). A density resolution of better than 1% depending upon counting time used and core condition is normally achieved. The source and detector are mounted diametrically across the diameter of the core.

A narrow (pencil size) beam of gamma rays with energies principally at 0.662 MeV is emitted from the Cesium -137 source and passes through the diameter of the sediment core. At these energy levels Compton scattering is the primary mechanism for the attenuation of the gamma rays in most sedimentary material. The incident photons are scattered by collision with electrons encountered in the core and there is a partial energy loss. This attenuated gamma beam is measured by the Sodium Iodide detector. The Compton scattering of the photons is

directly related to the number of electrons in the path of the gamma ray beam. The bulk density of the sediment in each analysed interval is calculated by comparing the attenuation of gamma rays through the sediment core to the attenuation of the gamma rays through a standard of aluminium density calibration billet.

Comparisons of MSCL bulk density results with below described wet density measurements have revealed inconsistencies between different methods; these methodological problems are discussed in section 2.5.2.

2.2.2 Magnetic susceptibility

The magnetic susceptibility Bartington loop (150 mm) sensor (MS2B) is used in the MSCL system. A low intensity non-saturating alternating magnetic field is produced by an oscillator circuit in the sensor loop. Changes in the oscillator frequency caused by the sediment in the sensor loop are measured and converted into volume specific magnetic susceptibility values (SI units). The magnitude of the magnetic susceptibility values is dependent on the type of sediment, content of magnetic minerals and the volume of sediment within the coil. Identical cores of varying diameters will give different magnetic susceptibility values but will show the same down core profile. The calibration of the magnetic susceptibility loop, performed using a standard of known magnetic susceptibility, gives 5% calibration accuracy.

Density and magnetic susceptibility profiles shown in Appendix 1 display a general correspondence of these two parameters. However, density signal is obtained from thinner (< 1 cm) sediment intervals compared to magnetic susceptibility (4-6 cm thick intervals) hence the density logs have proven to be more specific and useful defining stratigraphic boundaries.

2.2.3 P-Wave velocity

The P-Wave logger system consists of two rolling compressional wave transducers (PWT), with soft couplings and a centre frequency around 220 kHz. These PWT's are spring-located on either side of the core to generate and detect short ultrasonic pulses. A short 220 kHz compressional wave pulse is produced at the transmitting transducer at a repetition rate of 1 kHz. This wave pulse travels through the core and is detected by the receiving transducer and the time of flight of the wave pulse is measured. Timing measurements have an accuracy of 50 ns providing velocity accuracy of about 0.2%, depending on core thickness and condition. Calibration can be achieved using a length of core line filled with distilled water of known temperature and velocity. The p-wave travel time is corrected for the P-wave travel time delay caused by the core liner and the electronics of the system.

P-wave velocity logs given in Appendix 1 often show scattered profiles with values spread over the wide range. Most of the abrupt jumps on P-wave velocity profiles are evidently not controlled by changes in the sediment character, but most probably reflect open, air-filled spaces in sediment liner (most likely in between liner wall and core sample) that blunder the measurement. It has to be also noted that the absolute P-wave velocity values appear systematically ca. 400 ms higher than would be expected for analysed clayey and silty sediments. This systematic error is possibly due to the incorrect calibration; there was no liner

to be found in the laboratory to match the liner that was used for coring and the calibration (which apparently was not quite correct) was done on the closest available.

2.3 Lithostratigraphic description

Lithostratigraphic description was undertaken on split cores that were obtained by cutting through the liner plastic lengthwise and pulling a steel wire through the sediment. The stratigraphic logging focused upon sedimentary structures and texture.

2.4 Grain-size analyses

For grain size analyses ca. 2 cm thick sediment slices were obtained from the following sediment depths depending upon the core length; 10, 25, 50, 75, 100, 125, 150, 175 and 200 cm. Altogether 60 samples were analysed using sieving for fractions coarser than 2 mm and laser diffraction technique using Coulter LS 200 for fractions finer than 2 mm. Samples were oxidised with H₂O₂ to remove organic matter prior to analyses. The sample suspensions used in Coulter LS 200 were dispersed in ultrasonic bath.

Stratigraphic variations of median grain size are given in Appendix 1. Complete sets of obtained grain size characteristics are found in Appendix 3.

2.5 Determination of geotechnical and physical properties of sediments

The sampling scheme (10 cm, 25 cm, 50 cm etc.) deployed for grain size analyses was also used to study the geotechnical and physical properties of sediments and the down-core trends of these parameters.

2.5.1 Undrained shear strength

The Falling Cone apparatus was used to measure sediment shear strength. The split core was placed underneath the cone holder with the tip of the cone touching the sample. The penetration depth of the cone into the sediment after releasing the cone is proportional to the undrained shear strength. Note that the values of undrained shear stress may bear a systematic error due to compaction and dewatering during transport and storage prior to analyses.

2.5.2 Water content, wet density and dry density

These parameters were determined with the aid of a thin-wall steel cylinder with known volume and weight. This cylinder was inserted into the sediment and known volumes of wet, undisturbed sediments were subsampled. Weights of wet and dry (drying at 105 °C for 24

hours) subsamples, combined with the known volume, allowed calculating water content, wet density and dry density according to the following formulas:

$$\text{Water content} = \text{Weight of pore water} / \text{Weight of dry sediment}$$

$$\text{Wet density} = \text{Weight of wet sample} / \text{Volume of wet sample}$$

$$\text{Dry density} = \text{Weight of dry sample} / \text{Volume of wet sample}$$

Wet density values obtained by determining the weight of known volume should ideally coincide with the MSCL bulk density values. Figures 1 and 2 show the correspondence between wet and bulk densities, and illustrates that MSCL bulk density values are typically lower than wet density values. Most of the cores display ca. 0.05-0.1 g/cm³ offset, whereas the offset for cores GC8, GC9 and GC10 is ca. 0.3 g/cm³ (Figs. 1 and 2). Although the ultimate cause for these offsets is yet to be proven, the incorrect MSCL calibration appears as the probable reason (Appendix 2). However, the wrong MSCL calibration would presumably result in the systematic offset and data points from the same core should ideally plot along the line which is parallel to the expected correlation line (solid line; Fig.1). Such alignment (systematic offsets) can be seen for data from GC10, whereas data points from cores GC1-GC9 display irregular offsets and scatter rather than give good alignment (Fig. 1). Assuming insignificant drifts during MSCL analyses of individual cores, the scattering of bulk density–wet density offsets for individual cores can presumably be ascribed to the accuracy of wet density measurements. The standard deviations of these offset are in the range of 0.02-0.06 g/cm³ for most of the cores.

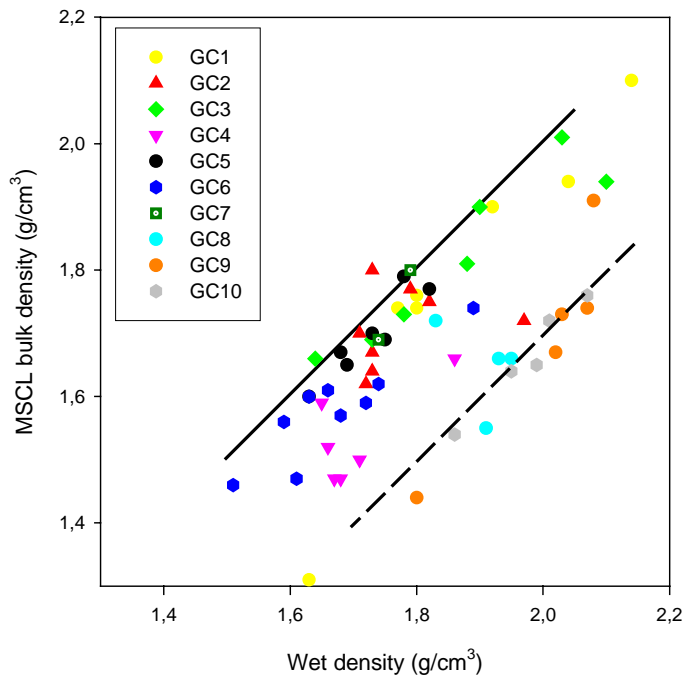


Fig. 1. Correlation diagram for MSCL bulk density and wet density, obtained by determining the weight of known sample volume. Solid line shows the expected correlation; dashed line indicates the offset of 0.3 g/cm³.

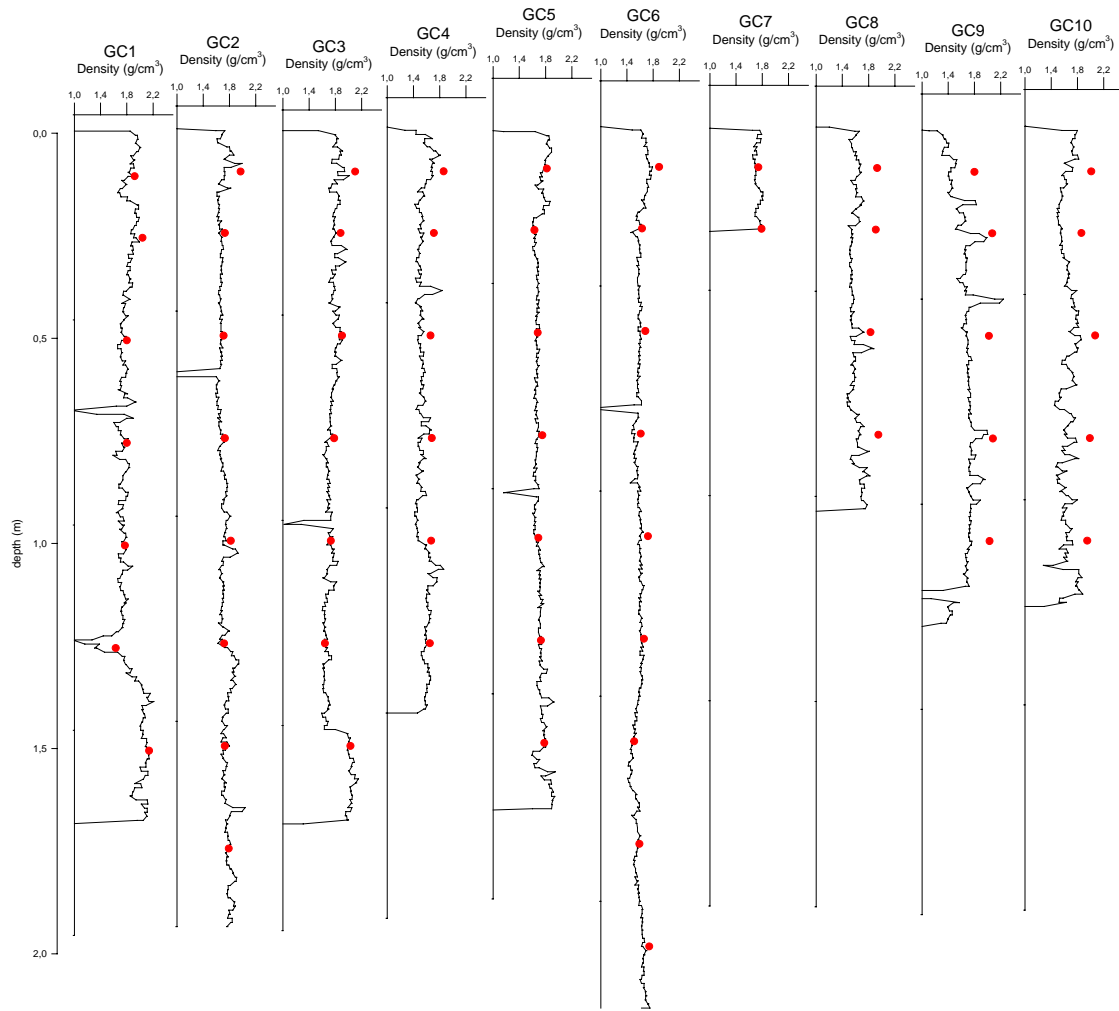
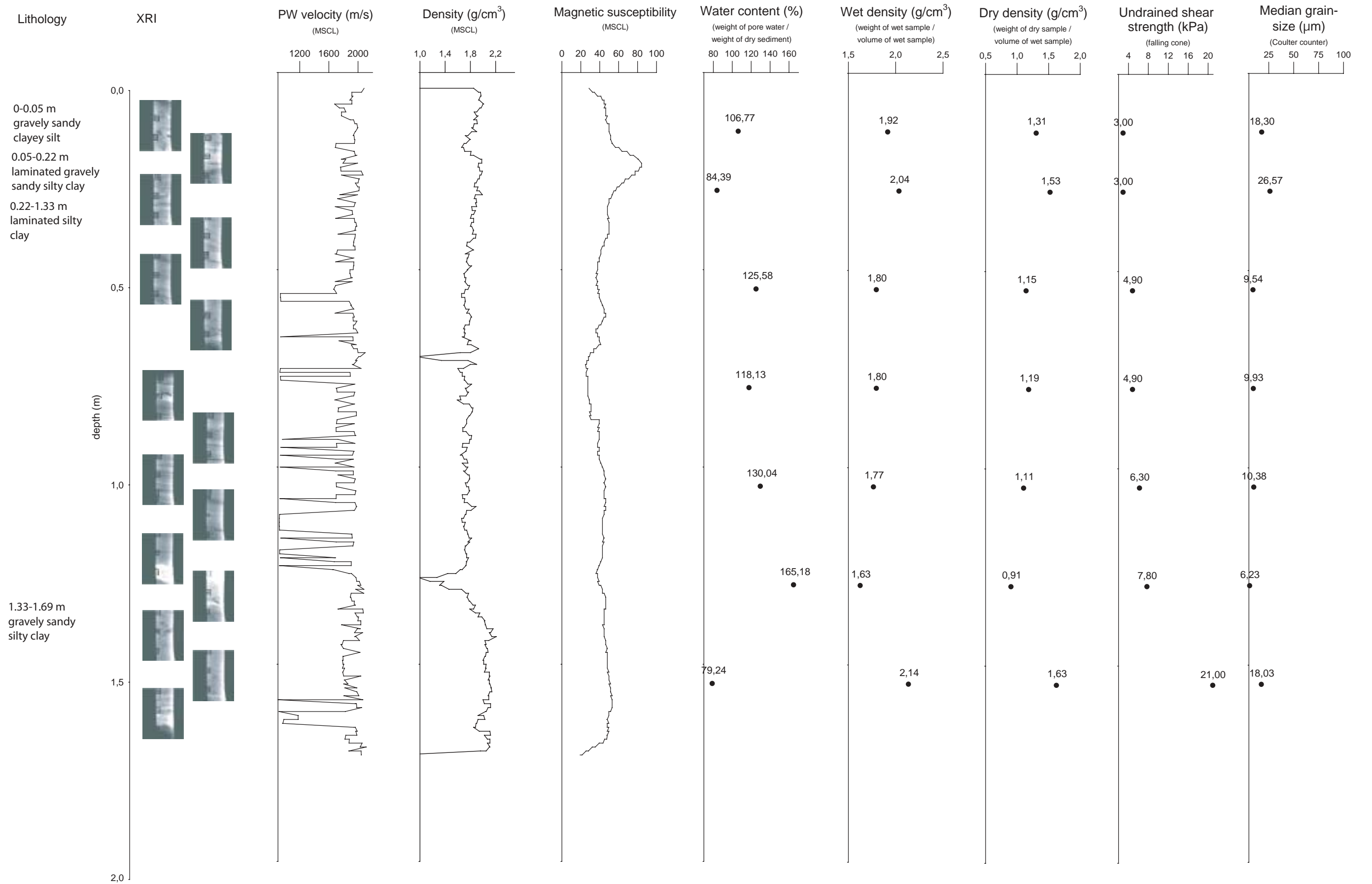


Fig. 2. Comparison of stratigraphic MSCL bulk density (solid lines) and wet density (red dots) profiles. Subsamples for wet density determinations were taken with 0.25 m intervals, except the uppermost subsample, which was obtained at 0.10 m sediment depth. The top 0.05-0.15 m sections of profiles with no data above the sediment surface (0 m level) reflect empty spaces in the core liner that are included in original MSCL logs.

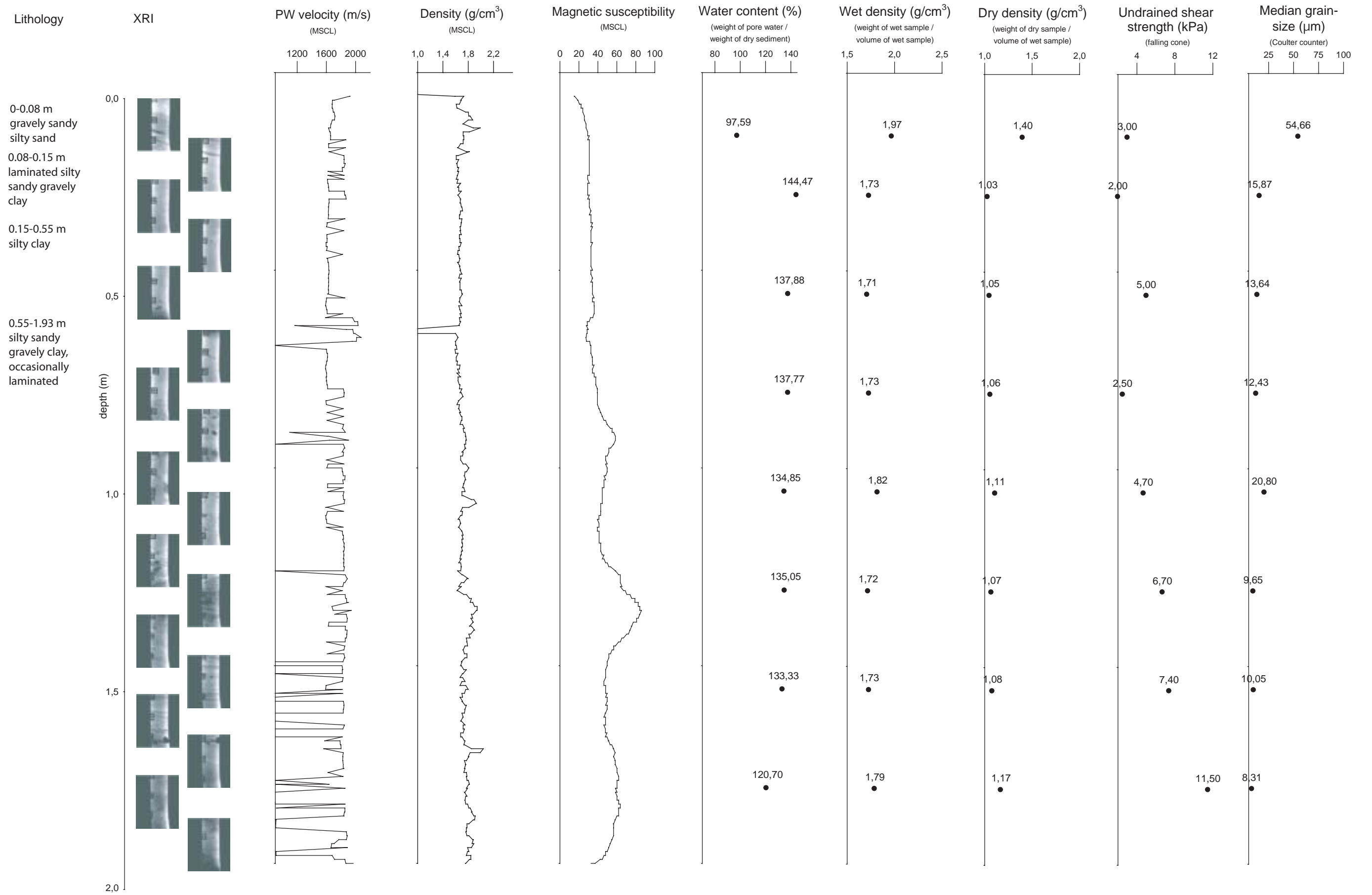
APPENDIX 1

Stratigraphic profiles of X-ray images (XRI), P-wave velocity, bulk density, magnetic susceptibility, water content, wet density, dry density, undrained shear strength, and median grain size.

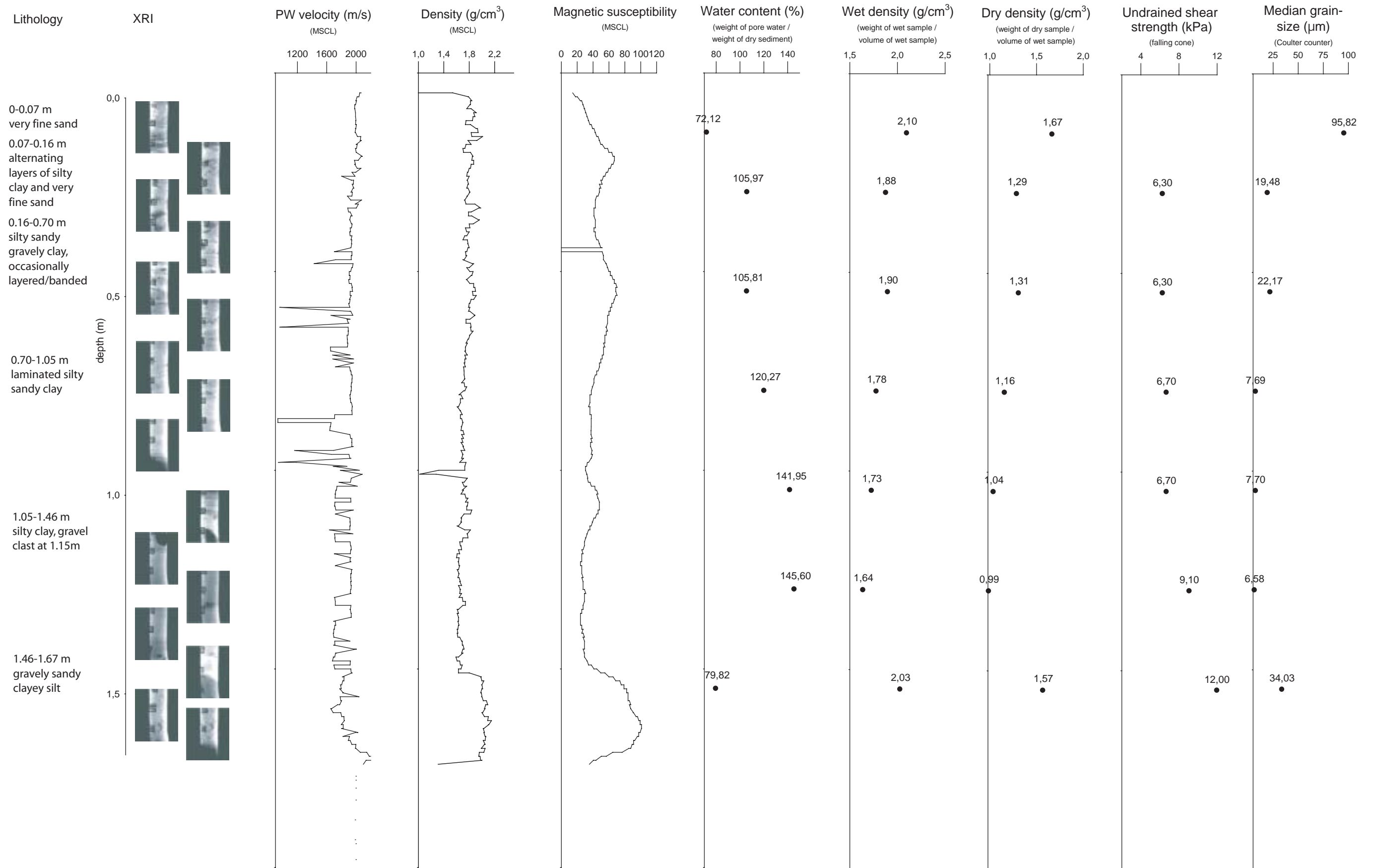
GC1



GC2



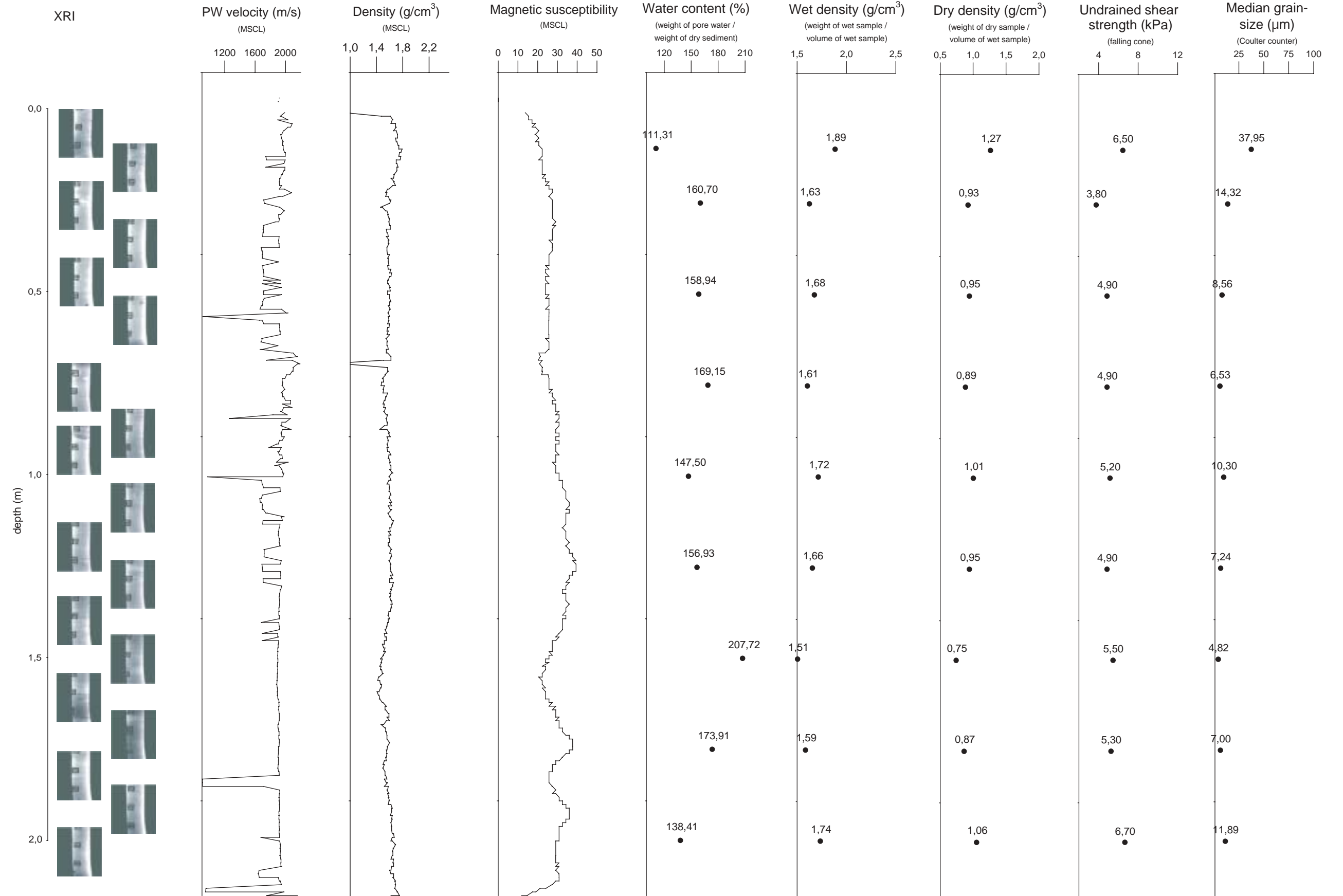
GC3



GC6

Lithology

0-2.16 m
silty clay



GC7

Lithology

XRI

PW velocity (m/s)
(MSCL)

Density (g/cm³)
(MSCL)

Magnetic susceptibility
(MSCL)

Water content (%)
(weight of pore water /
weight of dry sediment)

Wet density (g/cm³)
(weight of wet sample /
volume of wet sample)

Dry density (g/cm³)
(weight of dry sample /
volume of wet sample)

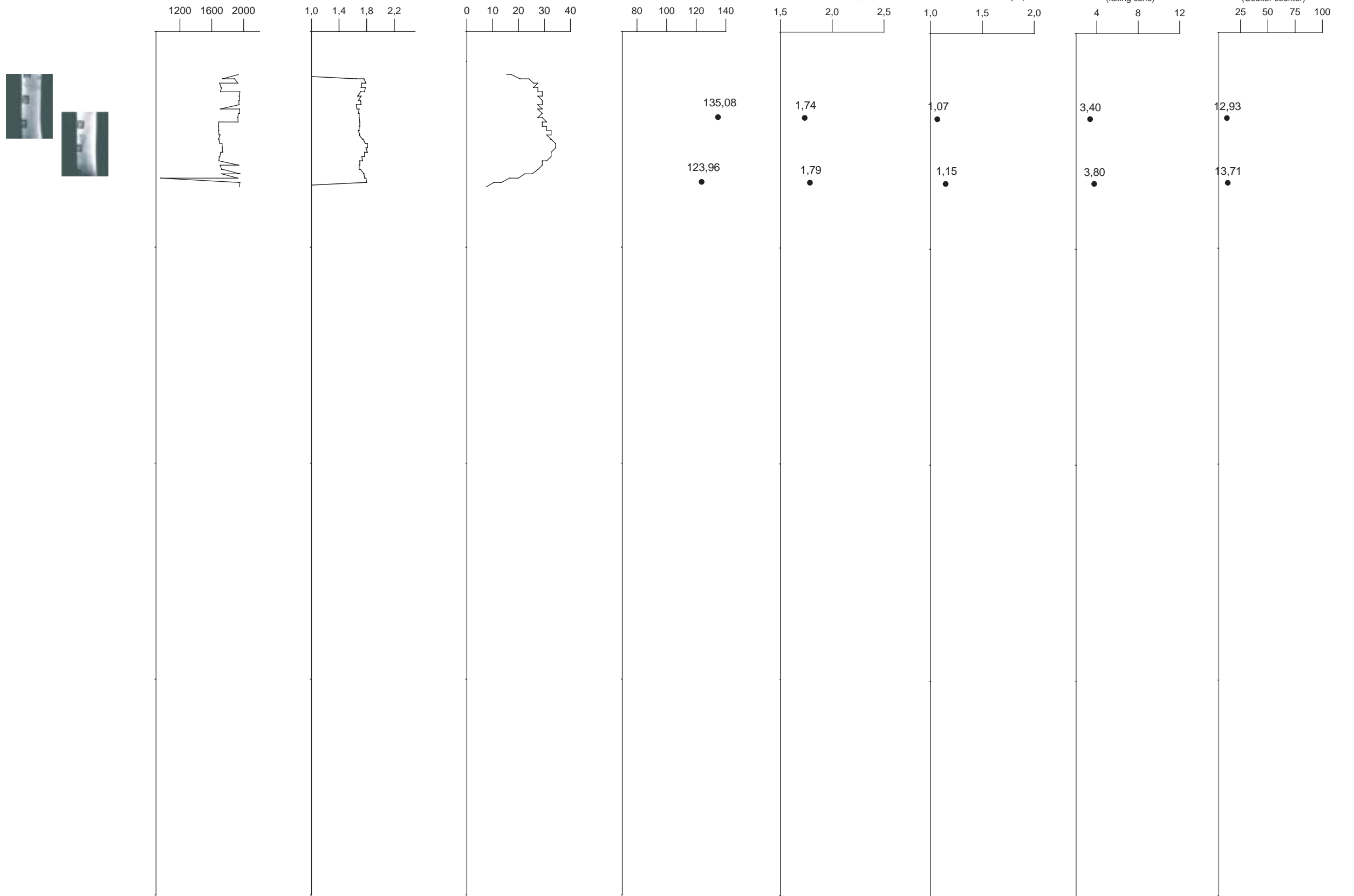
Undrained shear
strength (kPa)
(falling cone)

Median grain-
size (µm)
(Coulter counter)

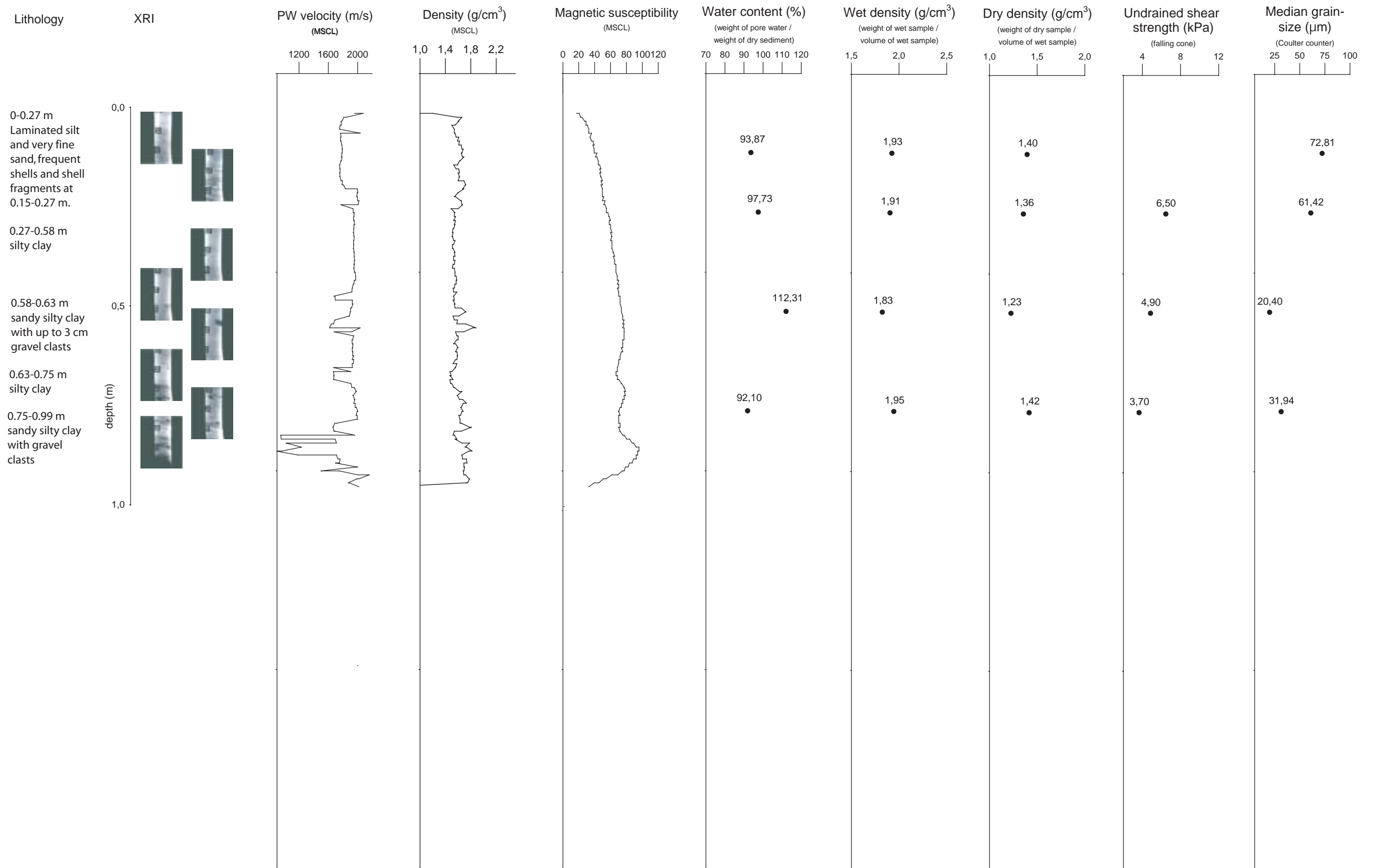
0-0.27 m
Silty clay

depth (m)

0,0
0,5



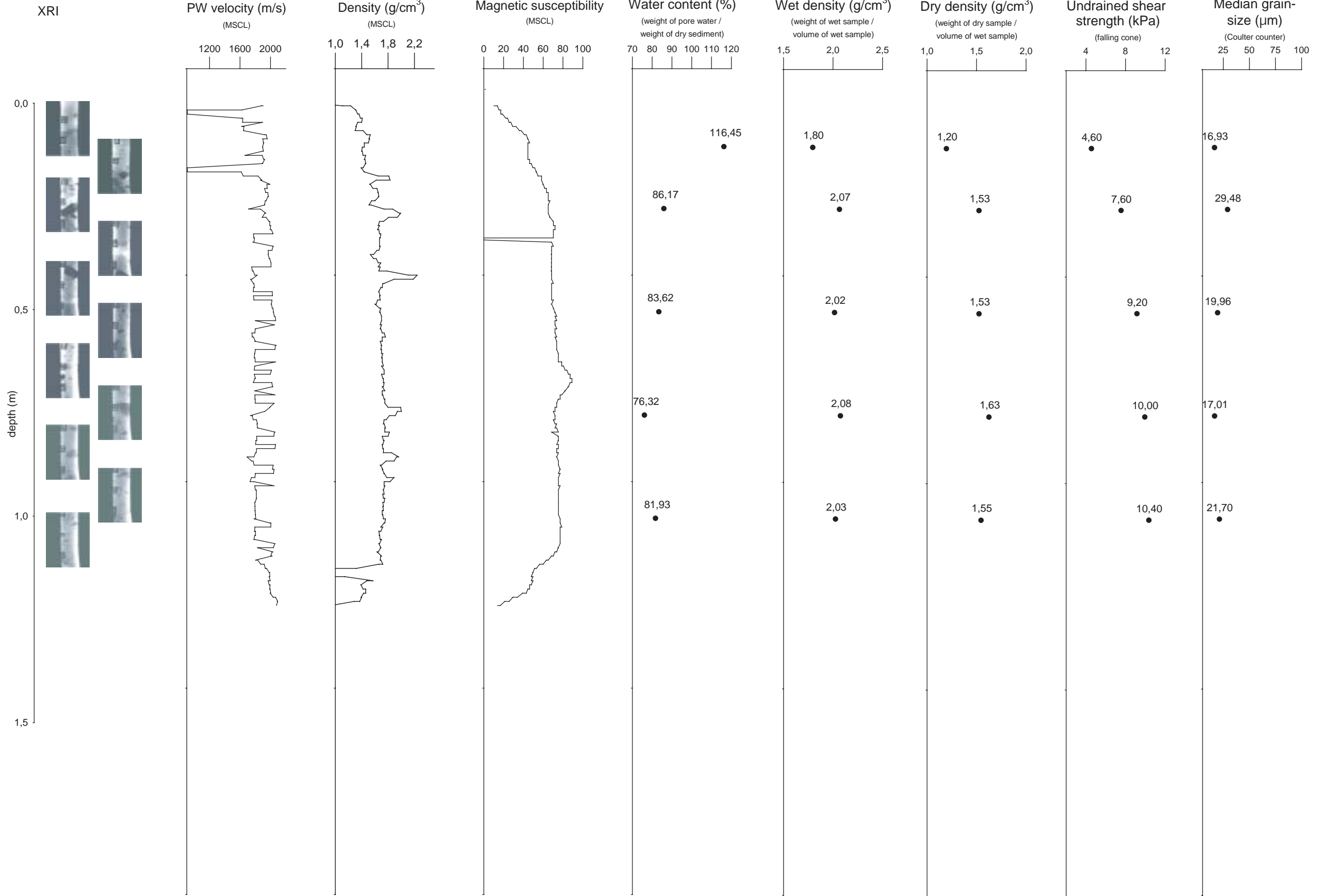
GC8



GC9

Lithology

0-1.20 m
sandy silty clay
with up to 6 cm
gravel clasts



APPENDIX 2

MSCL data treatment guide-lines and core logging notes provided by the MSCL laboratory at the University of Bergen.

Multi Sensor Core Logger
University of Bergen,
Department of Geology,
Att. Dr. Haflidi Haflidason

Data treatment MSCL

Like any form of numeric data gathered with geophysical equipment, the values measured with the MSCL need further treatment to obtain valid information.

P-wave velocity

The p-wave velocity is measured with two movable transducers pressed against the liner or the sediment. Bad contact due to dirt, air in the liner, dryness,... occurs occasional resulting in bad data. Also cracks and holes in the sediment cause wrong values. Bad data points are characterised by low p- wave amplitude and sharp drops in p- wave velocity.

- Points with very low p-wave amplitude should be deleted.
- To remove the large jumps in the p-wave velocity due to bad contact it is best to apply a moving average (5 to 10 points) over the data in a spreadsheet.

Magnetic Susceptibility

- Error messages occur sometimes in the mag.sus. data and should be deleted. They show up under the form of large negative values.
- The values around section brakes are mostly incorrect and should be removed.

Density and porosity data

- Again the values just around the section brakes should be removed.
- Very low values in density due to cracks in the sediment should also be removed. To identify these values a visual inspection of the cores is advised.

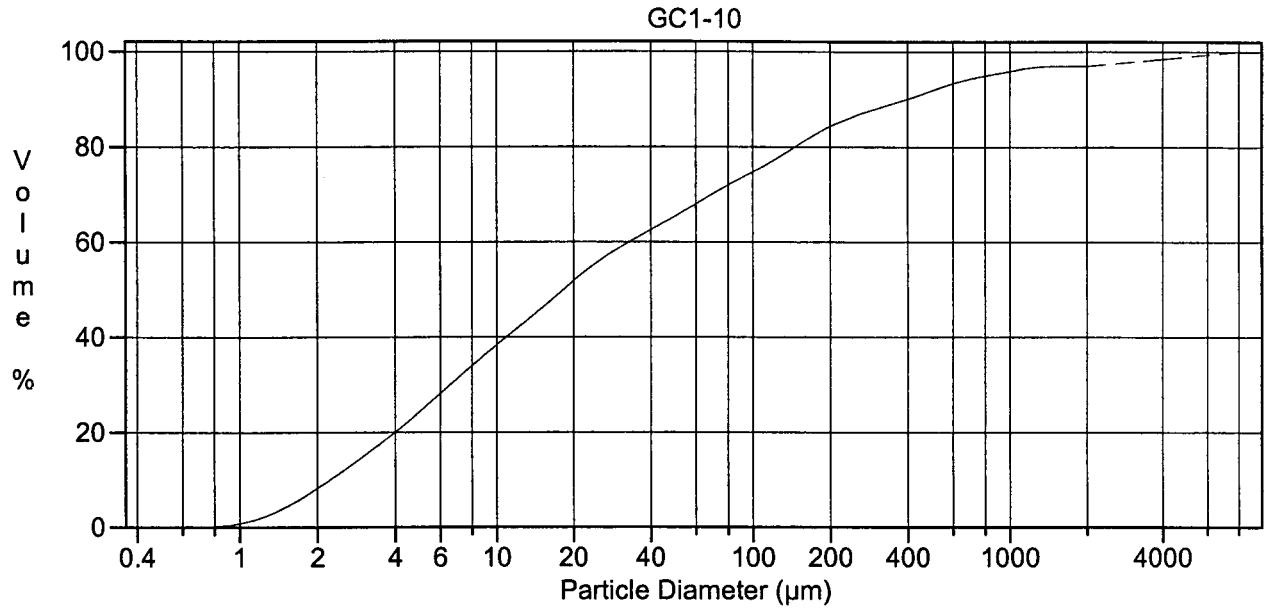
Notes for SWASI 2002 cores:

- The end caps weren't removed due to the unstable state of the sediment in cores. This will result in wrong values 3cm around the section brakes.
- On most cores large paper labels were attached with the core info. These labels resulted in bad transducer contact and wrong p-wave values.
- An identical liner wasn't available to calibrate the system so we used a similar type. The slight difference could mean a difference in absolute values for density and velocity. Relative changes however will be accurate, being the strongest point of the MSCL data.

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University Bergen
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5007 Bergen

APPENDIX 3

Cumulative grain-size distribution plots and statistical characteristics of individual samples. Note that sample IDs show the core numbers and subsampling depths, i.e. sample GC1-10 stands for the subsample collected from 10 cm depth of core GC1.



Volume Statistics (Arithmetic)

1#a.\$02

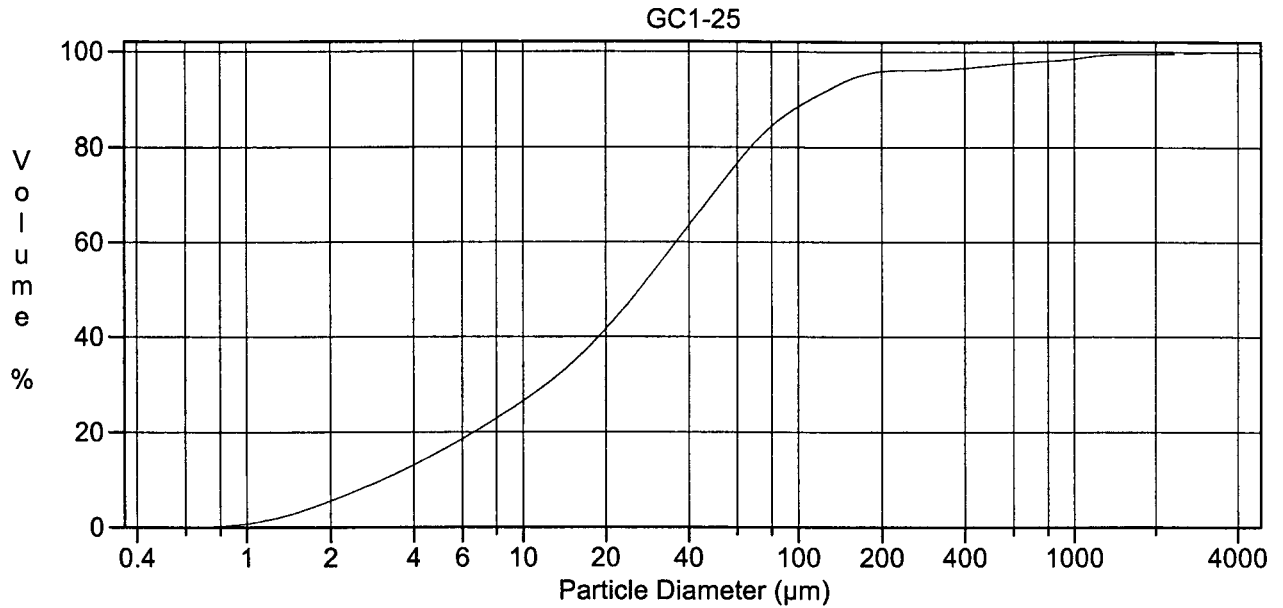
Calculations from 0.375 µm to 8000 µm

Volume	100.0%		
Mean:	224.6 µm	95% Conf. Limits:	0-1770 µm
Median:	18.30 µm	S.D.:	788.4 µm
D(3,2):	6.777 µm	Variance:	621613 µm ²
Mean/Median Ratio:	12.27	C.V.:	351%
Mode:	5.878 µm	Skewness:	5.731 Right skewed
d ₁₀ :	2.238 µm	Kurtosis:	34.45 Leptokurtic
d ₅₀ :	18.30 µm		
d ₉₀ :	397.2 µm		
Specific Surf. Area	8854 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.238	5.177	33.17	102.7	397.2

1#a.\$02

Particle Diameter µm	Volume %
1.000	7.49
2.000	16.1
5.000	14.0
10.00	7.68
15.00	5.80
20.00	4.05
25.00	6.66
40.00	2.87
50.00	2.50
60.00	2.22
70.00	0.95
75.00	0.86
80.00	1.50
90.00	26.6



Volume Statistics (Arithmetic)

2#a.\$02

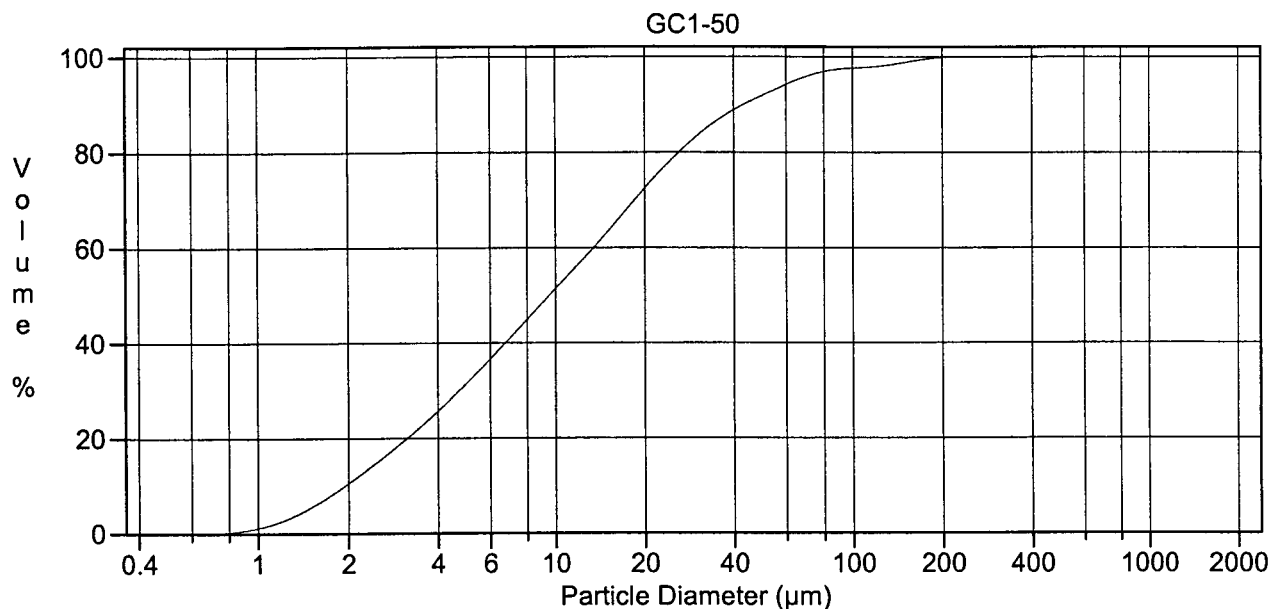
Calculations from 0.375 µm to 4000 µm

Volume	100.0%			
Mean:	76.89 µm	95% Conf. Limits:	0-576.5 µm	
Median:	26.57 µm	S.D.:	254.9 µm	
D(3,2):	8.860 µm	Variance:	64968 µm ²	
Mean/Median Ratio:	2.894	C.V.:	332%	
Mode:	34.58 µm	Skewness:	8.307 Right skewed	
d ₁₀ :	3.080 µm	Kurtosis:	79.79 Leptokurtic	
d ₅₀ :	26.57 µm			
d ₉₀ :	111.2 µm			
Specific Surf. Area	6772 cm ² /ml			

% <	10	25	60	75	90
Size µm	3.080	9.179	36.09	57.15	111.2

2#a.\$02

Particle Diameter µm	Volume %
1.000	4.82
2.000	10.4
5.000	10.5
10.00	7.81
15.00	7.28
20.00	6.58
25.00	15.3
40.00	7.26
50.00	5.85
60.00	4.60
70.00	1.77
75.00	1.48
80.00	2.35
90.00	13.3



Volume Statistics (Arithmetic) 3#.\$02

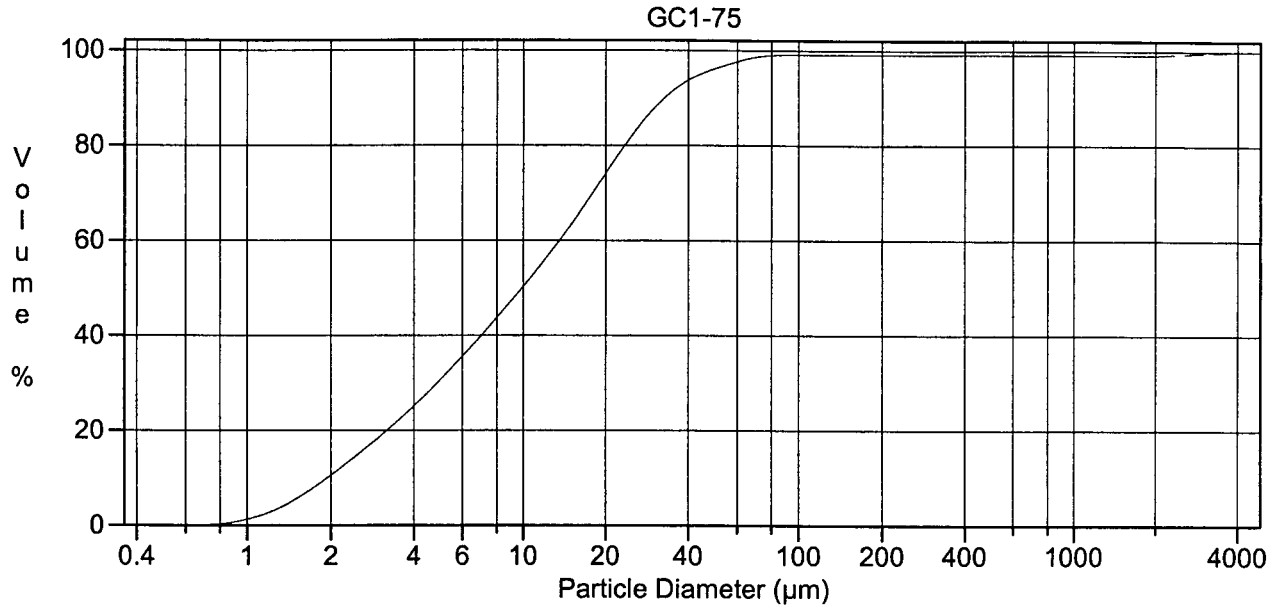
Calculations from 0.375 µm to 2000 µm

Volume	100.0%	95% Conf. Limits:	0-71.82 µm
Mean:	18.69 µm	S.D.:	27.10 µm
Median:	9.543 µm	Variance:	734.7 µm ²
D(3,2):	5.134 µm	C.V.:	145%
Mean/Median Ratio:	1.959	Skewness:	3.612 Right skewed
Mode:	18.00 µm	Kurtosis:	16.33 Leptokurtic
d ₁₀ :	1.950 µm		
d ₅₀ :	9.543 µm		
d ₉₀ :	43.31 µm		
Specific Surf. Area	11688 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.950	3.904	13.45	21.87	43.31

3#.\$02

Particle Diameter µm	Volume %
1.000	9.39
2.000	20.9
5.000	20.0
10.00	11.9
15.00	9.02
20.00	6.49
25.00	10.0
40.00	3.05
50.00	2.24
60.00	1.73
70.00	0.59
75.00	0.43
80.00	0.50
90.00	2.64



Volume Statistics (Arithmetic)

4a.\$02

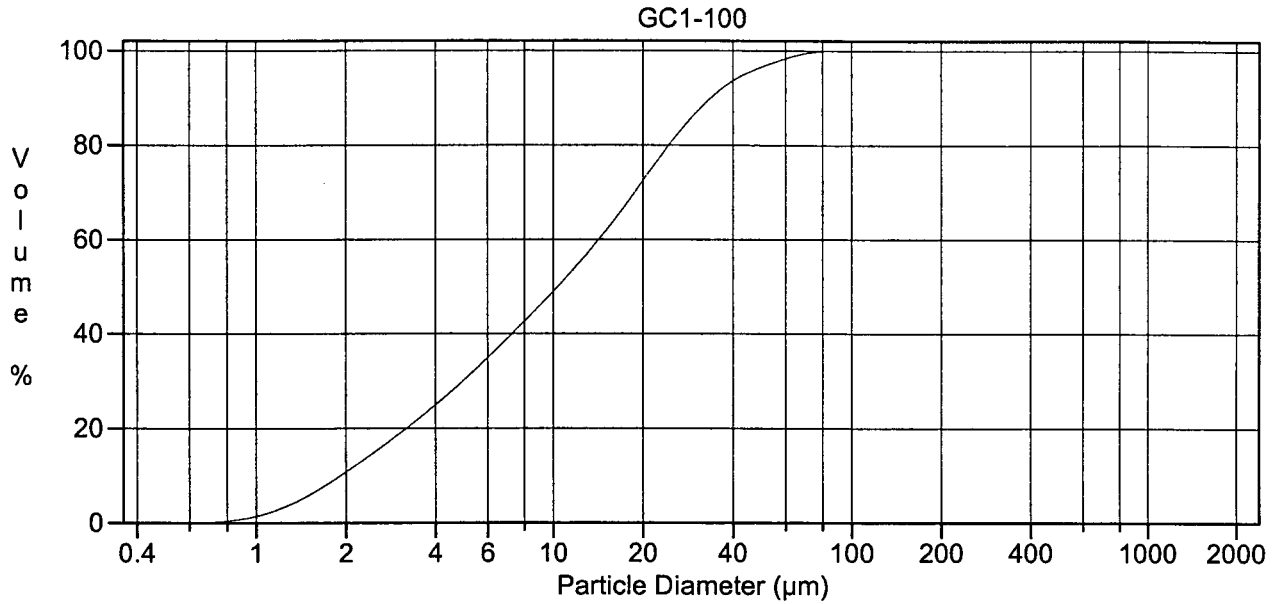
Calculations from 0.375 µm to 4000 µm

Volume	100.0%		
Mean:	40.04 µm	95% Conf. Limits:	0-567.3 µm
Median:	9.927 µm	S.D.:	269.0 µm
D(3,2):	5.128 µm	Variance:	72379 µm ²
Mean/Median Ratio:	4.033	C.V.:	672%
Mode:	19.76 µm	Skewness:	10.24 Right skewed
d ₁₀ :	1.949 µm	Kurtosis:	103.2 Leptokurtic
d ₅₀ :	9.927 µm		
d ₉₀ :	32.76 µm		
Specific Surf. Area	11701 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.949	3.993	13.63	20.51	32.76

4a.\$02

Particle Diameter µm	Volume %
1.000	9.27
2.000	20.1
5.000	19.6
10.00	13.1
15.00	10.7
20.00	8.15
25.00	11.5
40.00	2.41
50.00	1.48
60.00	0.99
70.00	0.26
75.00	0.14
80.00	0.100
90.00	0.93



Volume Statistics (Arithmetic) 5.\$02

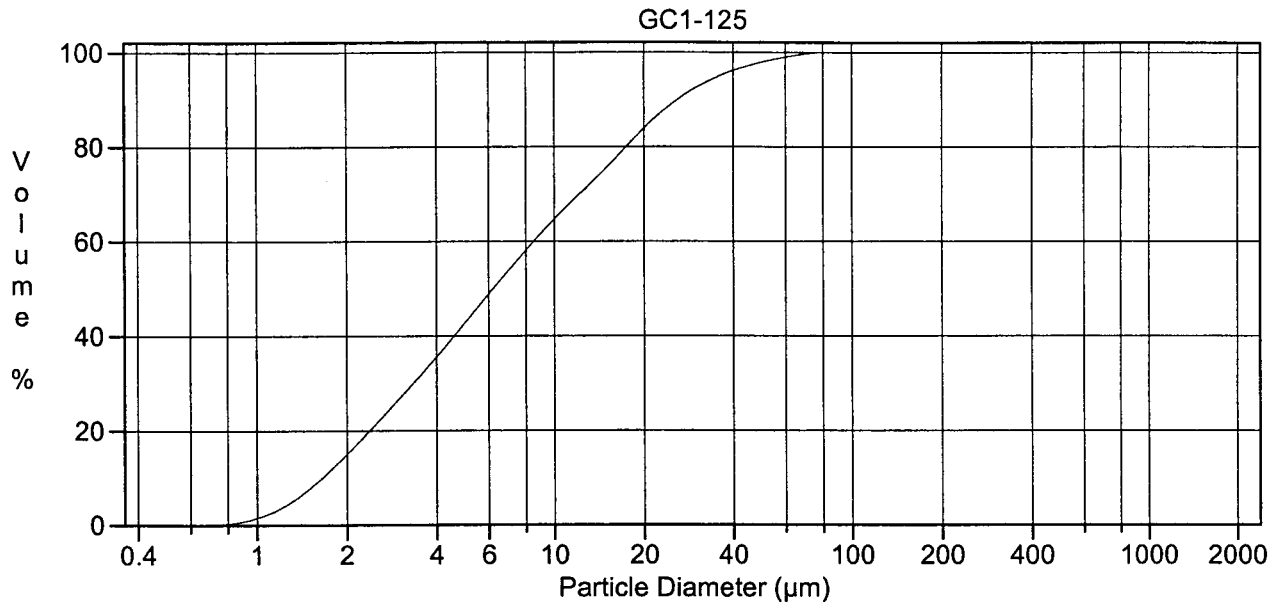
Calculations from 0.375 µm to 2000 µm

Volume	100.0%				
Mean:	14.93 µm	95% Conf. Limits:	0-42.92 µm		
Median:	10.38 µm	S.D.:	14.28 µm		
D(3,2):	5.130 µm	Variance:	204.0 µm ²		
Mean/Median Ratio:	1.438	C.V.:	95.7%		
Mode:	19.76 µm	Skewness:	1.619 Right skewed		
d ₁₀ :	1.920 µm	Kurtosis:	2.927 Leptokurtic		
d ₅₀ :	10.38 µm				
d ₉₀ :	33.85 µm				
Specific Surf. Area	11696 cm ² /ml				

% <	10	25	60	75	90
Size µm	1.920	4.027	14.28	21.44	33.85

5.\$02

Particle Diameter µm	Volume %
1.000	9.41
2.000	19.3
5.000	18.8
10.00	12.8
15.00	10.7
20.00	8.32
25.00	12.9
40.00	2.95
50.00	1.77
60.00	1.15
70.00	0.30
75.00	0.17
80.00	0.12
90.00	0.013



Volume Statistics (Arithmetic) 6.\$02

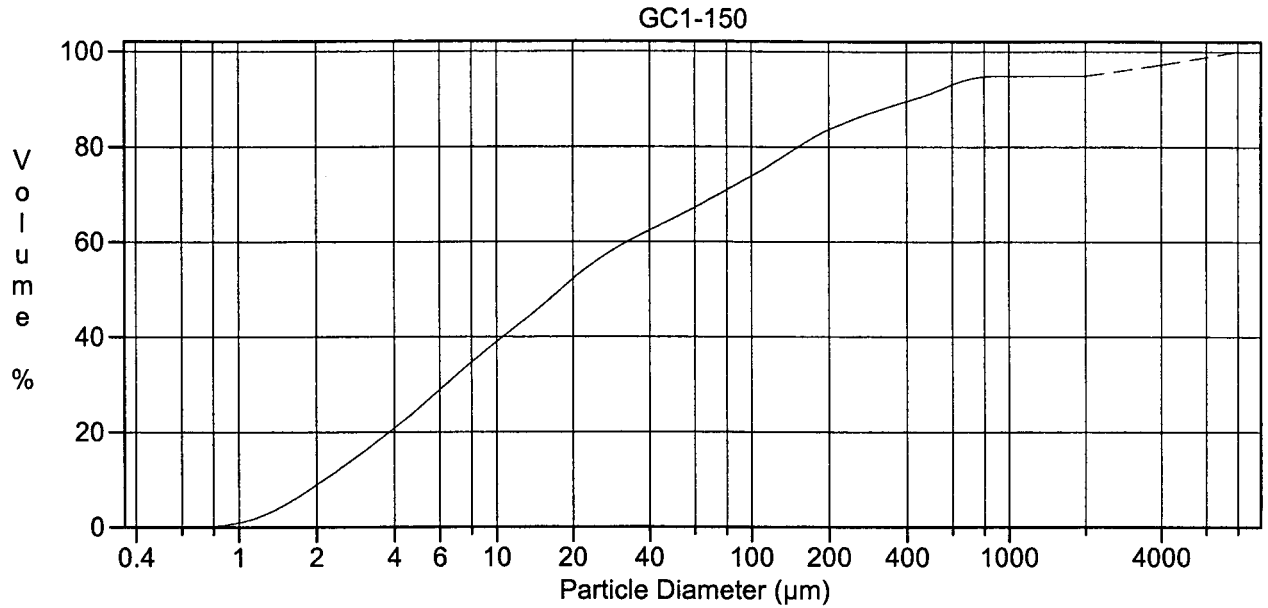
Calculations from 0.375 µm to 2000 µm

Volume	100.0%	95% Conf. Limits:	0-34.85 µm
Mean:	10.92 µm	S.D.:	12.21 µm
Median:	6.229 µm	Variance:	149.1 µm ²
D(3,2):	4.022 µm	C.V.:	112%
Mean/Median Ratio:	1.754	Skewness:	2.261 Right skewed
Mode:	5.355 µm	Kurtosis:	6.164 Leptokurtic
d ₁₀ :	1.659 µm		
d ₅₀ :	6.229 µm		
d ₉₀ :	26.11 µm		
Specific Surf. Area	14920 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.659	2.846	8.546	14.68	26.11

6.\$02

Particle Diameter µm	Volume %
1.000	13.5
2.000	27.7
5.000	21.9
10.00	11.0
15.00	8.16
20.00	5.43
25.00	6.89
40.00	1.81
50.00	1.09
60.00	0.68
70.00	0.17
75.00	0.099
80.00	0.070
90.00	0.0074



Volume Statistics (Arithmetic)

7a.\$02

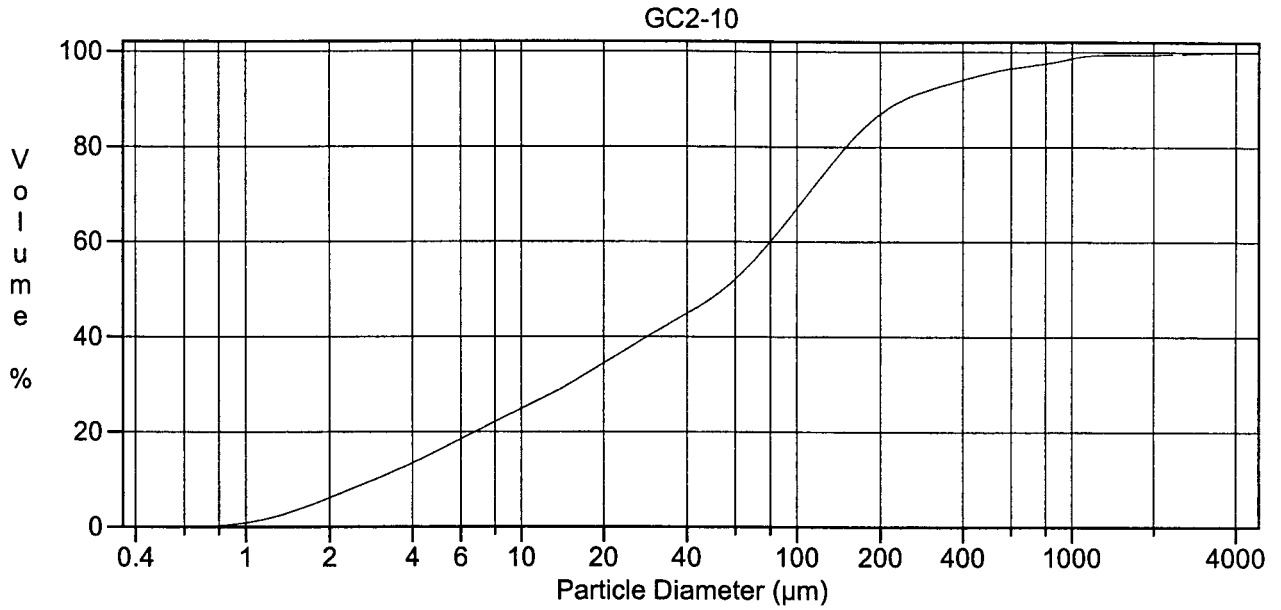
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	301.0 µm	95% Conf. Limits:	0-2289 µm	
Median:	18.03 µm	S.D.:	1014 µm	
D(3,2):	6.550 µm	Variance:	1028918 µm ²	
Mean/Median Ratio:	16.70	C.V.:	337%	
Mode:	5657 µm	Skewness:	4.524 Right skewed	
d ₁₀ :	2.141 µm	Kurtosis:	19.97 Leptokurtic	
d ₅₀ :	18.03 µm			
d ₉₀ :	430.2 µm			
Specific Surf. Area	9161 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.141	4.988	32.97	109.5	430.2

7a.\$02

Particle Diameter µm	Volume %
1.000	8.03
2.000	16.1
5.000	13.8
10.00	7.45
15.00	5.76
20.00	4.01
25.00	6.27
40.00	2.58
50.00	2.21
60.00	1.99
70.00	0.89
75.00	0.83
80.00	1.52
90.00	27.6



Volume Statistics (Arithmetic) 8a.\$02

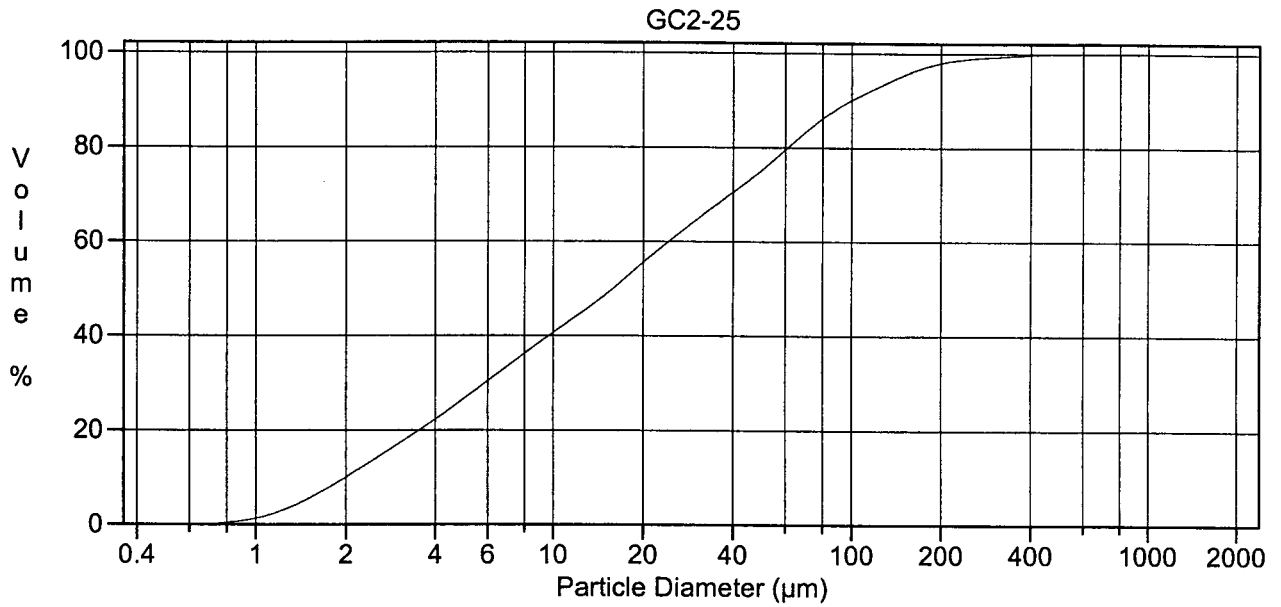
Calculations from 0.375 µm to 4000 µm

Volume	100.0%		
Mean:	123.2 µm	95% Conf. Limits:	0-660.5 µm
Median:	54.66 µm	S.D.:	274.1 µm
D(3,2):	9.418 µm	Variance:	75157 µm ²
Mean/Median Ratio:	2.254	C.V.:	223%
Mode:	116.3 µm	Skewness:	6.813 Right skewed
d ₁₀ :	2.938 µm	Kurtosis:	59.13 Leptokurtic
d ₅₀ :	54.66 µm		
d ₉₀ :	246.4 µm		
Specific Surf. Area	6371 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.938	10.18	80.12	127.9	246.4

8a.\$02

Particle Diameter µm	Volume %
1.000	5.26
2.000	9.99
5.000	8.72
10.00	5.20
15.00	4.36
20.00	3.43
25.00	7.01
40.00	3.53
50.00	3.71
60.00	3.98
70.00	2.00
75.00	1.94
80.00	3.69
90.00	36.4



Volume Statistics (Arithmetic) 9.502

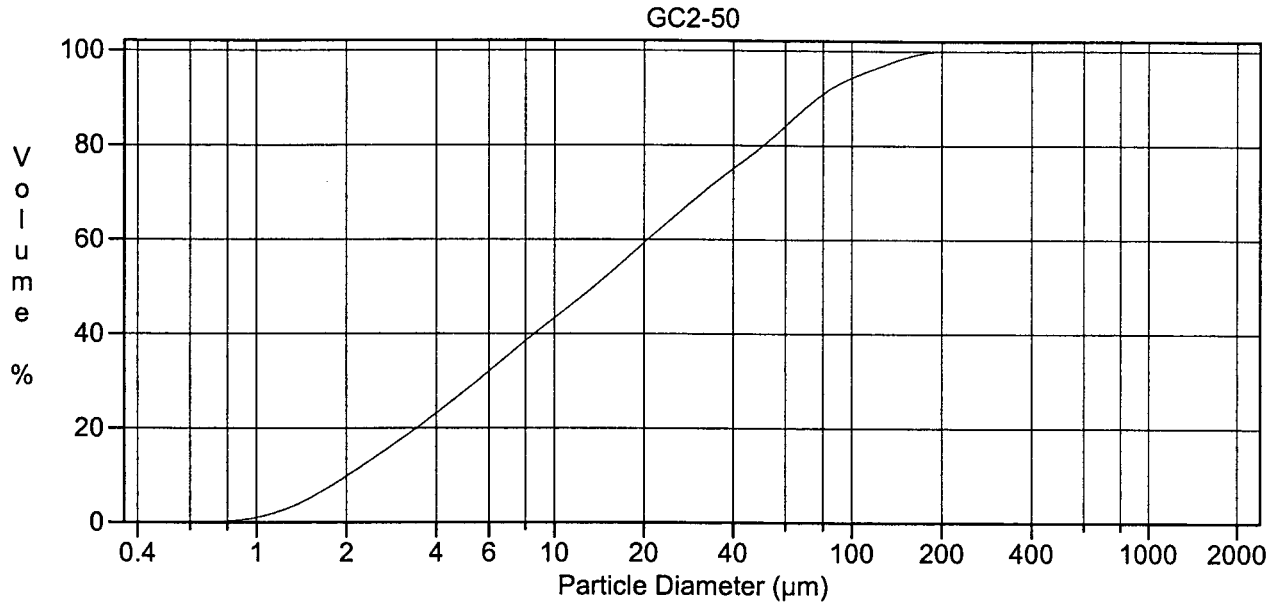
Calculations from 0.375 µm to 2000 µm

Volume	100.0%				
Mean:	37.59 µm	95% Conf. Limits:	0-145.9 µm		
Median:	15.87 µm	S.D.:	55.28 µm		
D(3,2):	5.942 µm	Variance:	3056 µm ²		
Mean/Median Ratio:	2.370	C.V.:	147%		
Mode:	60.52 µm	Skewness:	3.245 Right skewed		
d ₁₀ :	2.002 µm	Kurtosis:	15.41 Leptokurtic		
d ₅₀ :	15.87 µm				
d ₉₀ :	99.95 µm				
Specific Surf. Area	10098 cm ² /ml				

% <	10	25	60	75	90
Size µm	2.002	4.609	24.39	49.54	99.95

9.502

Particle Diameter µm	Volume %
1.000	8.72
2.000	16.6
5.000	14.0
10.00	8.16
15.00	6.70
20.00	5.12
25.00	9.87
40.00	4.77
50.00	4.28
60.00	3.75
70.00	1.55
75.00	1.35
80.00	2.20
90.00	11.7



Volume Statistics (Arithmetic)

10.\$02

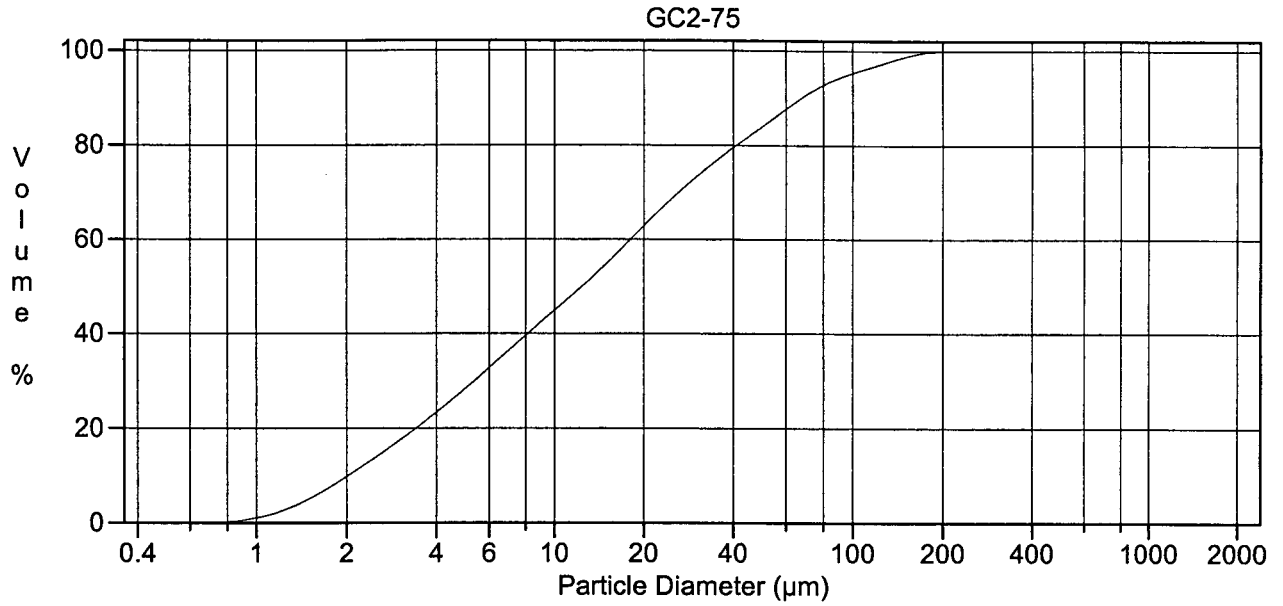
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	28.63 µm	95% Conf. Limits:	0-98.09 µm
Median:	13.64 µm	S.D.:	35.44 µm
D(3,2):	5.812 µm	Variance:	1256 µm ²
Mean/Median Ratio:	2.099	C.V.:	124%
Mode:	60.52 µm	Skewness:	1.946 Right skewed
d ₁₀ :	2.027 µm	Kurtosis:	3.890 Leptokurtic
d ₅₀ :	13.64 µm		
d ₉₀ :	76.75 µm		
Specific Surf. Area	10323 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.027	4.387	20.68	40.06	76.75

10.\$02

Particle Diameter µm	Volume %
1.000	8.79
2.000	18.1
5.000	15.4
10.00	8.92
15.00	6.97
20.00	5.36
25.00	10.5
40.00	4.73
50.00	4.34
60.00	3.86
70.00	1.57
75.00	1.32
80.00	2.06
90.00	7.15



Volume Statistics (Arithmetic)

11#.\$02

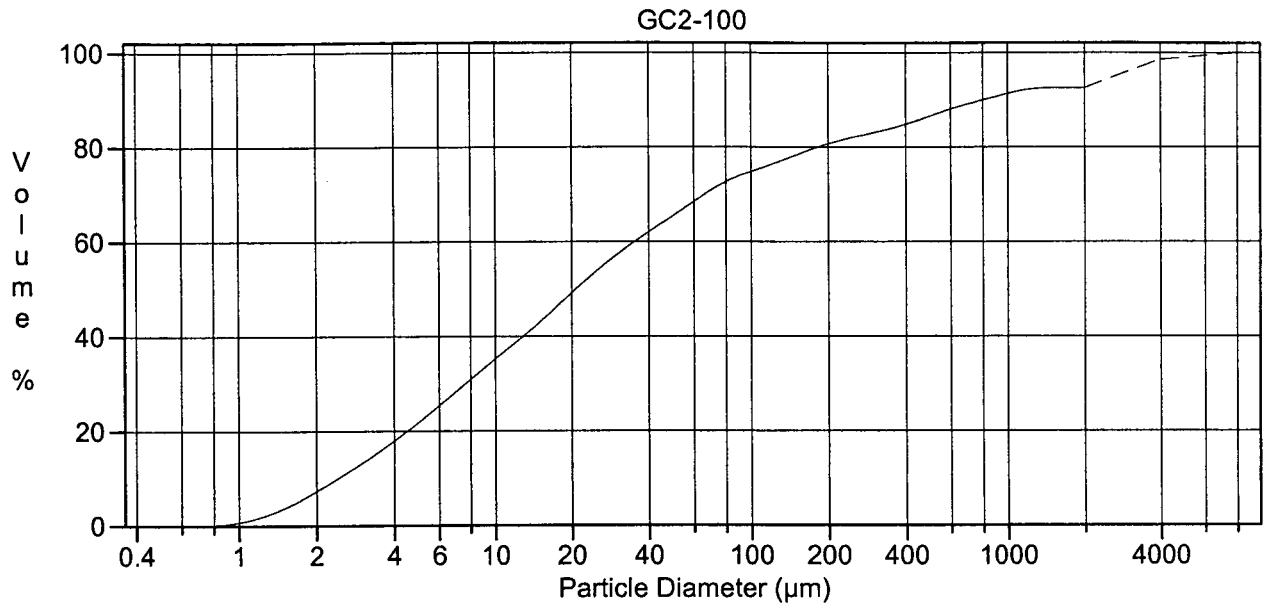
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	25.50 µm	95% Conf. Limits:	0-89.94 µm
Median:	12.43 µm	S.D.:	32.88 µm
D(3,2):	5.674 µm	Variance:	1081 µm ²
Mean/Median Ratio:	2.052	C.V.:	129%
Mode:	18.00 µm	Skewness:	2.261 Right skewed
d ₁₀ :	2.028 µm	Kurtosis:	5.585 Leptokurtic
d ₅₀ :	12.43 µm		
d ₉₀ :	67.77 µm		
Specific Surf. Area	10575 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.028	4.322	18.14	32.49	67.77

11#.\$02

Particle Diameter µm	Volume %
1.000	8.75
2.000	18.6
5.000	16.5
10.00	9.92
15.00	8.01
20.00	6.03
25.00	10.6
40.00	4.46
50.00	3.70
60.00	3.02
70.00	1.16
75.00	0.96
80.00	1.46
90.00	5.80



Volume Statistics (Arithmetic)

12a.\$02

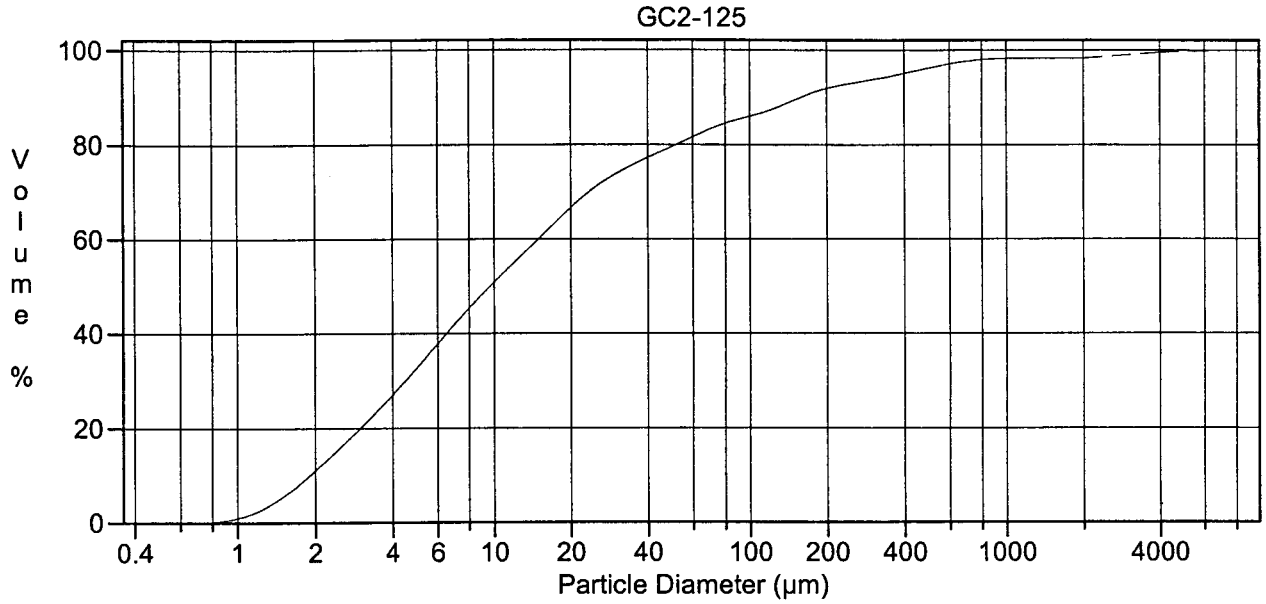
Calculations from 0.375 µm to 8000 µm

Volume	100.0%	95% Conf. Limits:	0-2191 µm
Mean:	345.8 µm	S.D.:	941.6 µm
Median:	20.80 µm	Variance:	886674 µm ²
D(3,2):	7.361 µm	C.V.:	272%
Mean/Median Ratio:	16.62	Skewness:	3.732 Right skewed
Mode:	2828 µm	Kurtosis:	14.84 Leptokurtic
d ₁₀ :	2.421 µm		
d ₅₀ :	20.80 µm		
d ₉₀ :	813.5 µm		
Specific Surf. Area	8151 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.421	5.917	35.46	103.1	813.5

12a.\$02

Particle Diameter µm	Volume %
1.000	6.62
2.000	14.5
5.000	13.3
10.00	7.85
15.00	6.17
20.00	4.61
25.00	8.23
40.00	3.48
50.00	2.92
60.00	2.42
70.00	0.96
75.00	0.80
80.00	1.26
90.00	26.2



Volume Statistics (Arithmetic)

13a.\$02

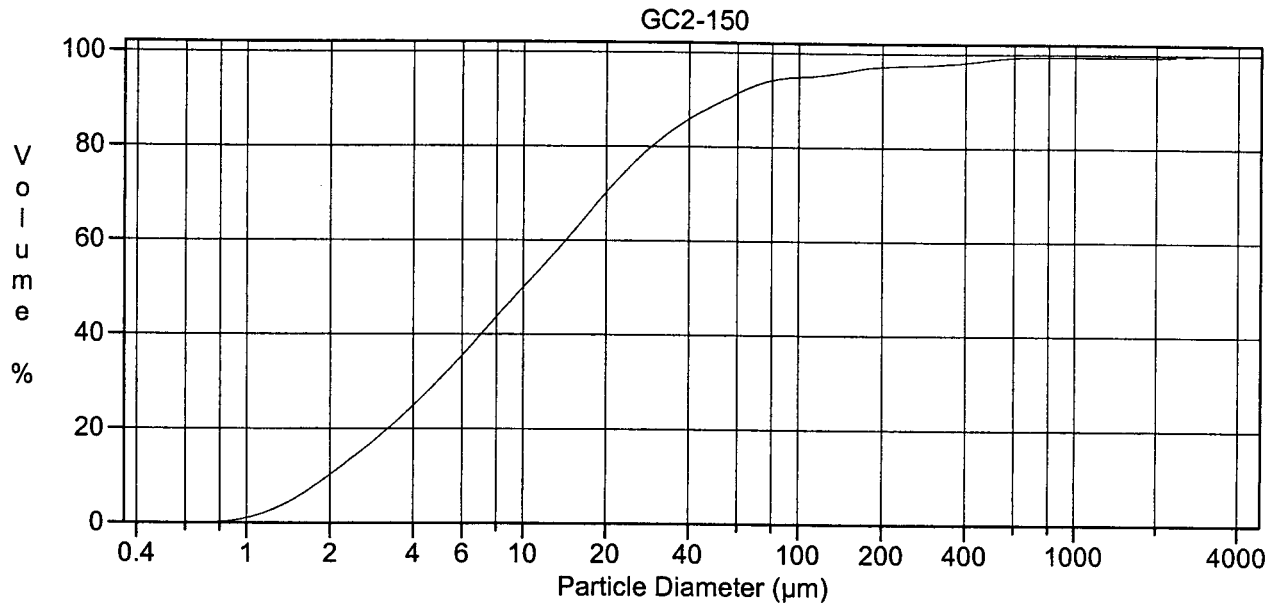
Calculations from 0.375 µm to 8000 µm

Volume	100.0%		
Mean:	113.2 µm	95% Conf. Limits:	0-1113 µm
Median:	9.648 µm	S.D.:	510.2 µm
D(3,2):	5.207 µm	Variance:	260321 µm ²
Mean/Median Ratio:	11.74	C.V.:	451%
Mode:	5.878 µm	Skewness:	8.073 Right skewed
d ₁₀ :	1.905 µm	Kurtosis:	73.28 Leptokurtic
d ₅₀ :	9.648 µm		
d ₉₀ :	159.0 µm		
Specific Surf. Area	11524 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.905	3.706	15.03	33.12	159.0

13a.\$02

Particle Diameter µm	Volume %
1.000	10.1
2.000	21.7
5.000	18.1
10.00	9.11
15.00	6.63
20.00	4.38
25.00	6.24
40.00	2.34
50.00	1.97
60.00	1.66
70.00	0.65
75.00	0.54
80.00	0.86
90.00	14.8



Volume Statistics (Arithmetic)

14a.\$02

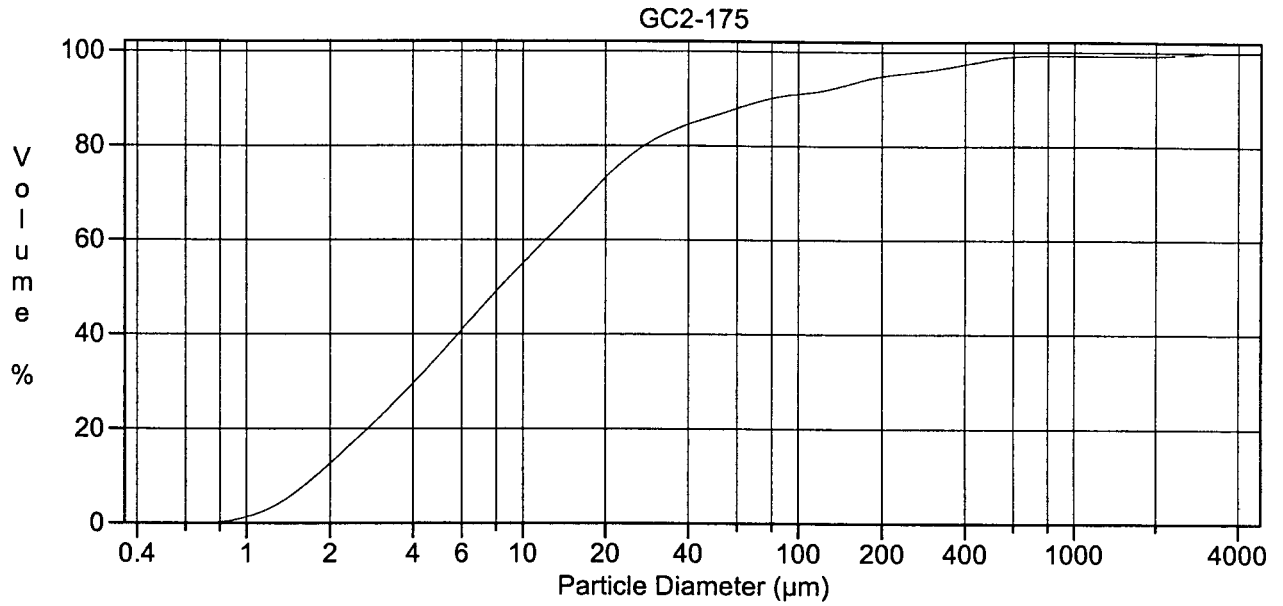
Calculations from 0.375 µm to 4000 µm

Volume	100.0%		
Mean:	44.15 µm	95% Conf. Limits:	0-484.3 µm
Median:	10.05 µm	S.D.:	224.5 µm
D(3,2):	5.305 µm	Variance:	50418 µm ²
Mean/Median Ratio:	4.392	C.V.:	509%
Mode:	18.00 µm	Skewness:	11.38 Right skewed
d ₁₀ :	1.982 µm	Kurtosis:	136.8 Leptokurtic
d ₅₀ :	10.05 µm		
d ₉₀ :	54.21 µm		
Specific Surf. Area	11310 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.982	4.030	14.33	23.84	54.21

14a.\$02

Particle Diameter µm	Volume %
1.000	9.17
2.000	20.3
5.000	19.4
10.00	11.5
15.00	8.73
20.00	6.19
25.00	9.48
40.00	3.18
50.00	2.38
60.00	1.80
70.00	0.60
75.00	0.43
80.00	0.50
90.00	5.36



Volume Statistics (Arithmetic)

15a.\$02

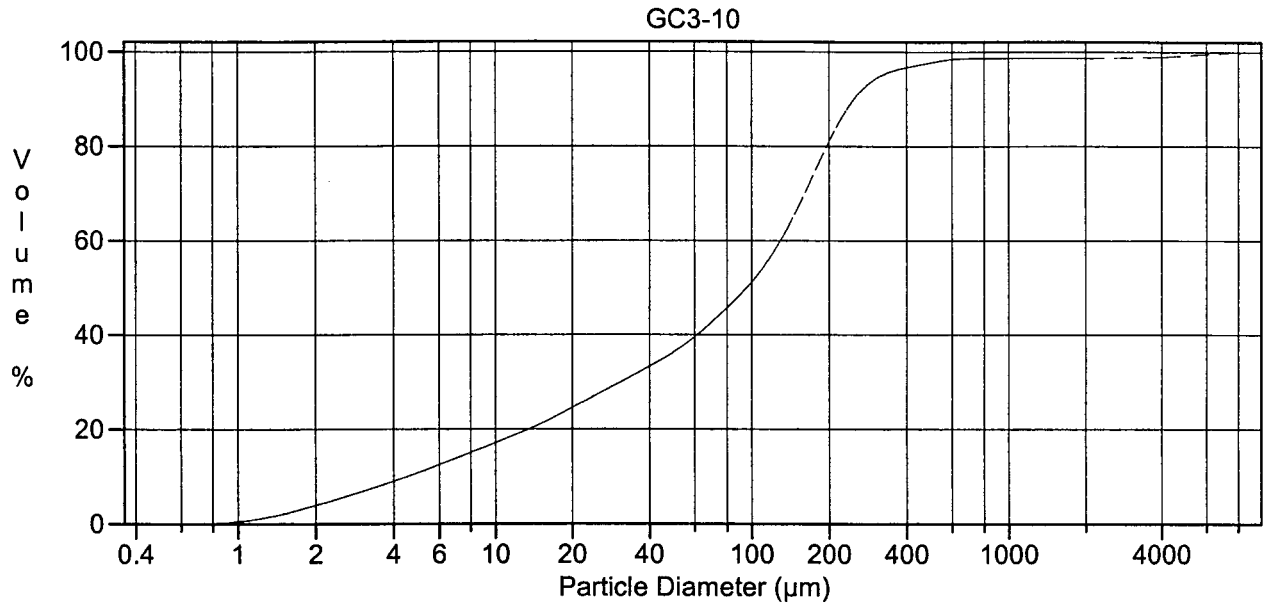
Calculations from 0.375 µm to 4000 µm

Volume	100.0%		
Mean:	58.65 µm	95% Conf. Limits:	0-592.5 µm
Median:	8.313 µm	S.D.:	272.4 µm
D(3,2):	4.707 µm	Variance:	74194 µm ²
Mean/Median Ratio:	7.056	C.V.:	464%
Mode:	5.878 µm	Skewness:	9.242 Right skewed
d ₁₀ :	1.781 µm	Kurtosis:	90.17 Leptokurtic
d ₅₀ :	8.313 µm		
d ₉₀ :	79.07 µm		
Specific Surf. Area	12747 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.781	3.360	12.19	21.63	79.07

15a.\$02

Particle Diameter µm	Volume %
1.000	11.4
2.000	23.0
5.000	19.3
10.00	10.4
15.00	7.73
20.00	5.04
25.00	6.37
40.00	1.87
50.00	1.51
60.00	1.30
70.00	0.50
75.00	0.39
80.00	0.56
90.00	9.38



Volume Statistics (Arithmetic)

16a.\$02

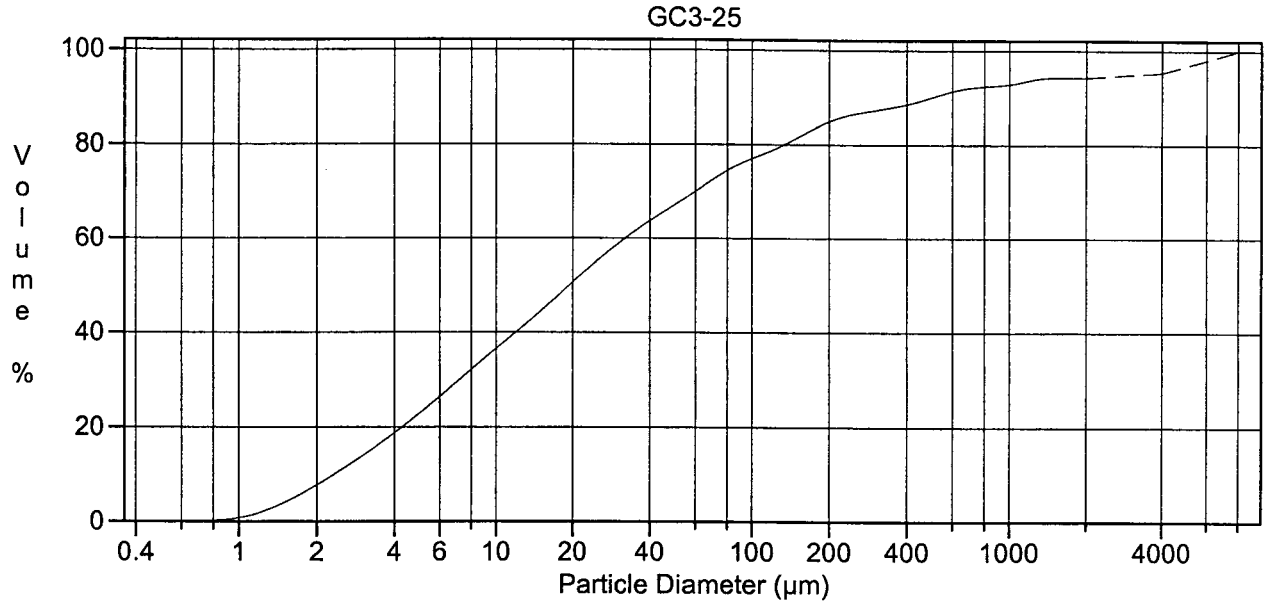
Calculations from 0.375 µm to 8000 µm

Volume	100.0%	95% Conf. Limits:	0-1368 µm
Mean:	181.0 µm	S.D.:	605.5 µm
Median:	95.82 µm	Variance:	366582 µm ²
D(3,2):	13.49 µm	C.V.:	334%
Mean/Median Ratio:	1.889	Skewness:	8.424 Right skewed
Mode:	168.8 µm	Kurtosis:	72.22 Leptokurtic
d ₁₀ :	4.522 µm		
d ₅₀ :	95.82 µm		
d ₉₀ :	250.7 µm		
Specific Surf. Area	4447 cm ² /ml		

% <	10	25	60	75	90
Size µm	4.522	20.89	129.7	177.1	250.7

16a.\$02

Particle Diameter µm	Volume %
1.000	3.46
2.000	6.93
5.000	6.23
10.00	3.98
15.00	3.40
20.00	2.78
25.00	5.93
40.00	3.13
50.00	3.15
60.00	3.16
70.00	1.52
75.00	1.46
80.00	2.82
90.00	51.6



Volume Statistics (Arithmetic)

17a.\$02

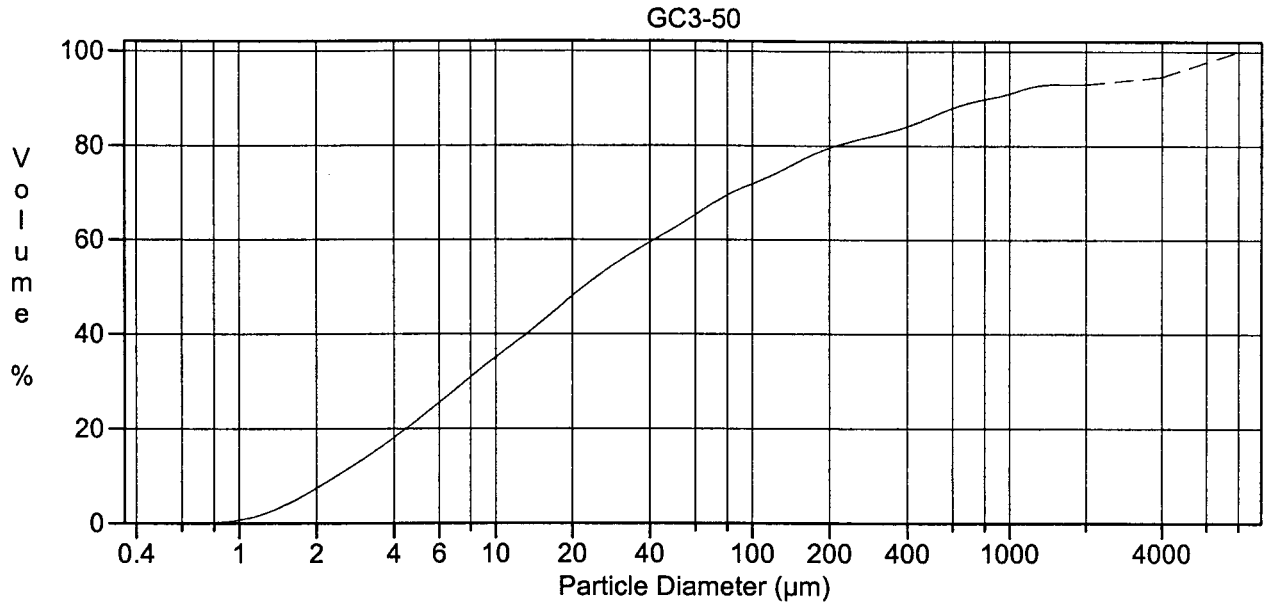
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	373.1 µm	95% Conf. Limits:	0-2757 µm	
Median:	19.48 µm	S.D.:	1216 µm	
D(3,2):	7.066 µm	Variance:	1478862 µm ²	
Mean/Median Ratio:	19.15	C.V.:	326%	
Mode:	5657 µm	Skewness:	3.897 Right skewed	
d ₁₀ :	2.339 µm	Kurtosis:	13.80 Leptokurtic	
d ₅₀ :	19.48 µm			
d ₉₀ :	492.7 µm			
Specific Surf. Area	8492 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.339	5.609	32.24	83.48	492.7

17a.\$02

Particle Diameter µm	Volume %
1.000	6.97
2.000	15.1
5.000	13.7
10.00	7.99
15.00	6.14
20.00	4.61
25.00	8.49
40.00	3.36
50.00	2.90
60.00	2.56
70.00	1.05
75.00	0.90
80.00	1.44
90.00	24.1



Volume Statistics (Arithmetic)

18a.\$02

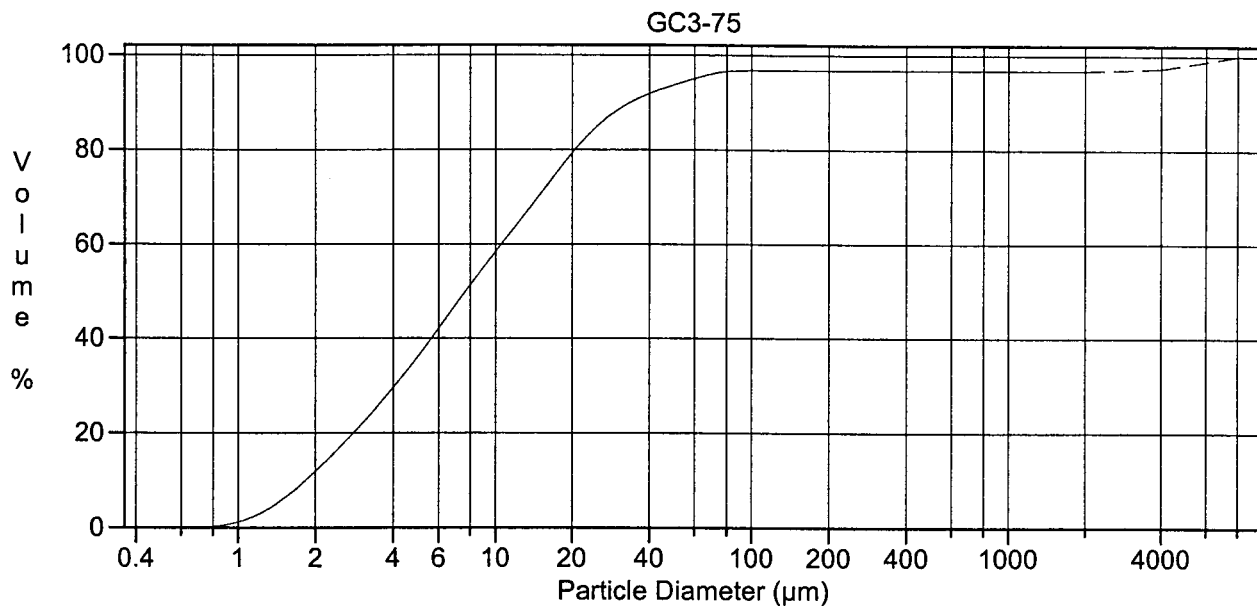
Calculations from 0.375 µm to 8000 µm

Volume	100.0%		
Mean:	453.5 µm	95% Conf. Limits:	0-3008 µm
Median:	22.17 µm	S.D.:	1303 µm
D(3,2):	7.400 µm	Variance:	1698459 µm ²
Mean/Median Ratio:	20.46	C.V.:	287%
Mode:	5657 µm	Skewness:	3.480 Right skewed
d ₁₀ :	2.390 µm	Kurtosis:	10.79 Leptokurtic
d ₅₀ :	22.17 µm		
d ₉₀ :	829.2 µm		
Specific Surf. Area	8109 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.390	5.869	41.83	133.9	829.2

18a.\$02

Particle Diameter µm	Volume %
1.000	6.80
2.000	14.6
5.000	13.0
10.00	7.33
15.00	5.71
20.00	4.17
25.00	7.20
40.00	3.10
50.00	2.72
60.00	2.36
70.00	0.97
75.00	0.83
80.00	1.37
90.00	29.3



Volume Statistics (Arithmetic) 19a.\$02

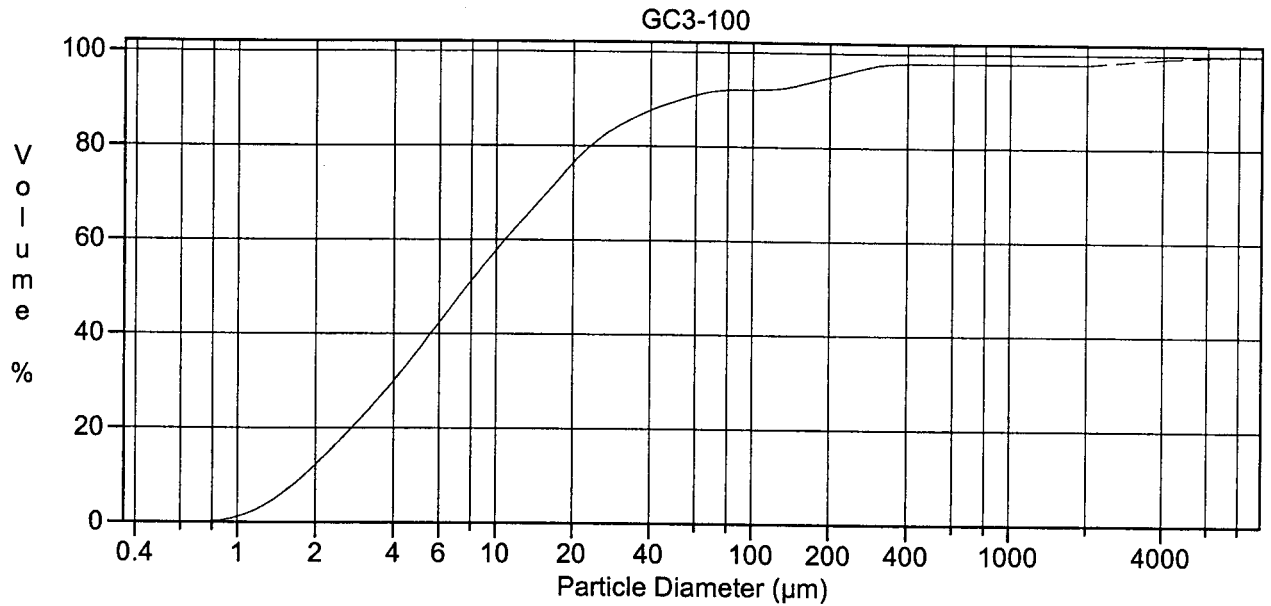
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	179.5 µm	95% Conf. Limits:	0-2011 µm	
Median:	7.690 µm	S.D.:	934.3 µm	
D(3,2):	4.628 µm	Variance:	872898 µm ²	
Mean/Median Ratio:	23.34	C.V.:	520%	
Mode:	6.452 µm	Skewness:	5.540 Right skewed	
d ₁₀ :	1.834 µm	Kurtosis:	29.13 Leptokurtic	
d ₅₀ :	7.690 µm			
d ₉₀ :	33.91 µm			
Specific Surf. Area	12963 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.834	3.416	10.56	17.34	33.91

19a.\$02

Particle Diameter µm	Volume %
1.000	10.8
2.000	24.2
5.000	22.2
10.00	12.2
15.00	8.72
20.00	5.68
25.00	6.93
40.00	1.81
50.00	1.33
60.00	1.02
70.00	0.32
75.00	0.21
80.00	0.18
90.00	3.27



Volume Statistics (Arithmetic)

20a.\$02

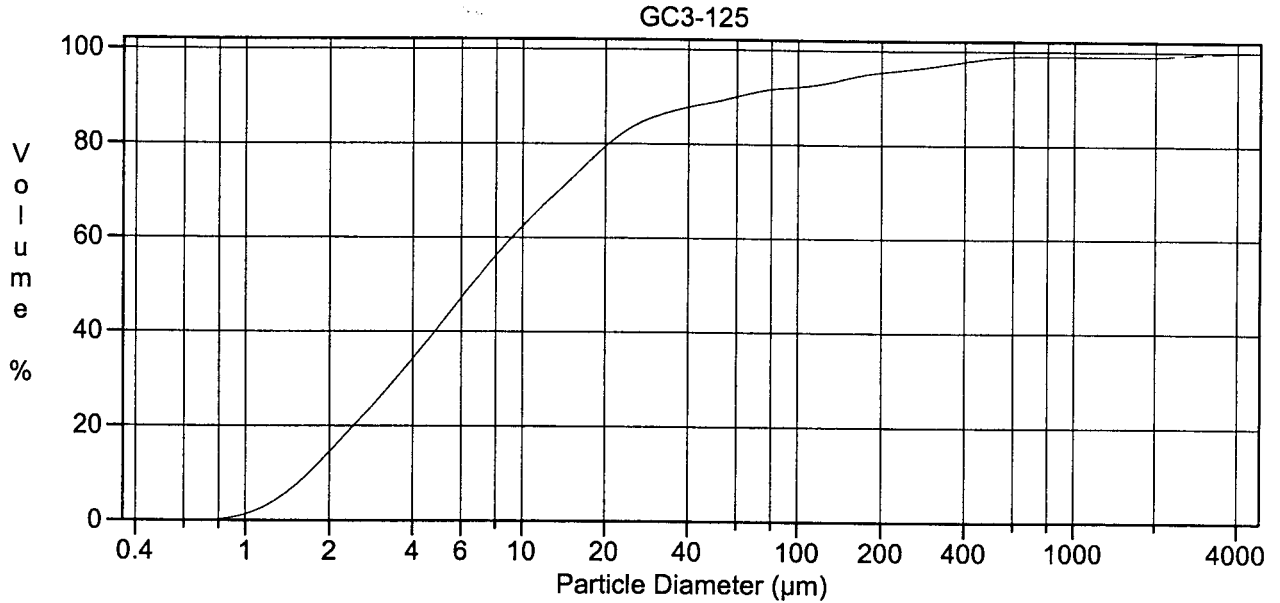
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	103.7 µm	95% Conf. Limits:	0-1255 µm	
Median:	7.702 µm	S.D.:	587.5 µm	
D(3,2):	4.647 µm	Variance:	345164 µm ²	
Mean/Median Ratio:	13.47	C.V.:	566%	
Mode:	5.878 µm	Skewness:	7.871 Right skewed	
d ₁₀ :	1.814 µm	Kurtosis:	65.23 Leptokurtic	
d ₅₀ :	7.702 µm			
d ₉₀ :	53.47 µm			
Specific Surf. Area	12913 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.814	3.353	10.86	19.02	53.47

20a.\$02

Particle Diameter µm	Volume %
1.000	11.1
2.000	24.3
5.000	21.2
10.00	10.9
15.00	7.71
20.00	4.97
25.00	6.28
40.00	1.96
50.00	1.32
60.00	0.84
70.00	0.21
75.00	0.12
80.00	0.080
90.00	7.95



Volume Statistics (Arithmetic)

21a.\$02

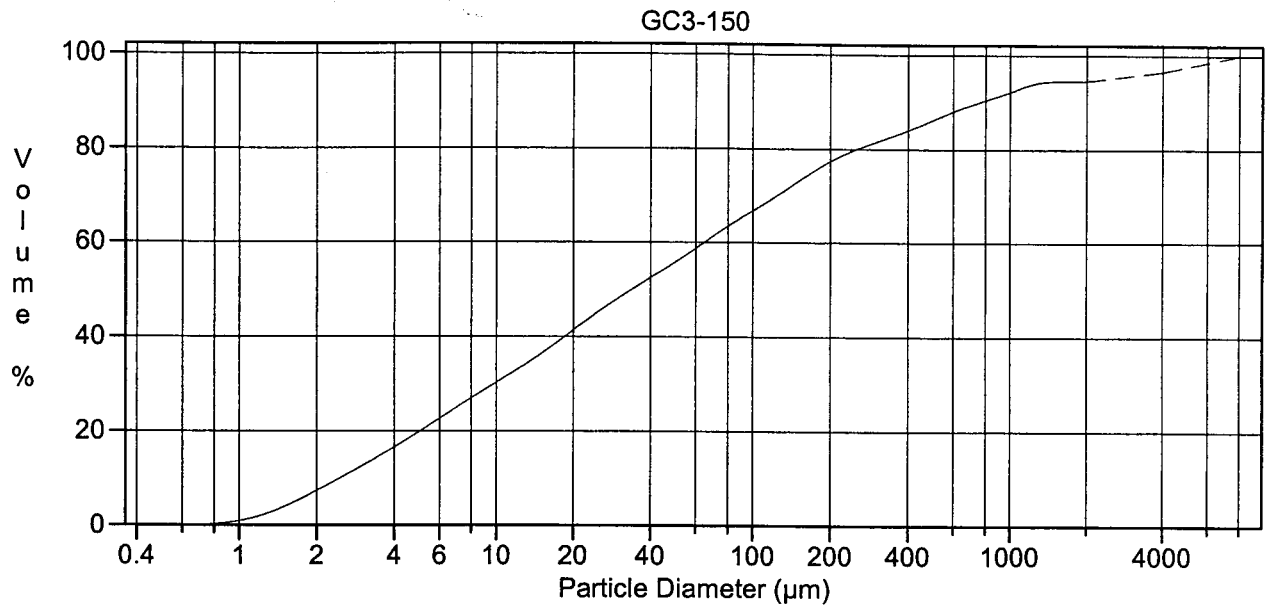
Calculations from 0.375 µm to 4000 µm

Volume	100.0%				
Mean:	56.73 µm	95% Conf. Limits:	0-631.1 µm		
Median:	6.576 µm	S.D.:	293.1 µm		
D(3,2):	4.212 µm	Variance:	85890 µm ²		
Mean/Median Ratio:	8.627	C.V.:	517%		
Mode:	5.355 µm	Skewness:	8.848 Right skewed		
d ₁₀ :	1.686 µm	Kurtosis:	80.28 Leptokurtic		
d ₅₀ :	6.576 µm				
d ₉₀ :	59.72 µm				
Specific Surf. Area	14246 cm ² /ml				

% <	10	25	60	75	90
Size µm	1.686	2.934	9.188	16.71	59.72

21a.\$02

Particle Diameter µm	Volume %
1.000	13.2
2.000	26.7
5.000	21.2
10.00	10.0
15.00	7.01
20.00	4.19
25.00	4.24
40.00	1.18
50.00	1.11
60.00	1.00
70.00	0.36
75.00	0.27
80.00	0.35
90.00	7.99



Volume Statistics (Arithmetic)

22a.\$02

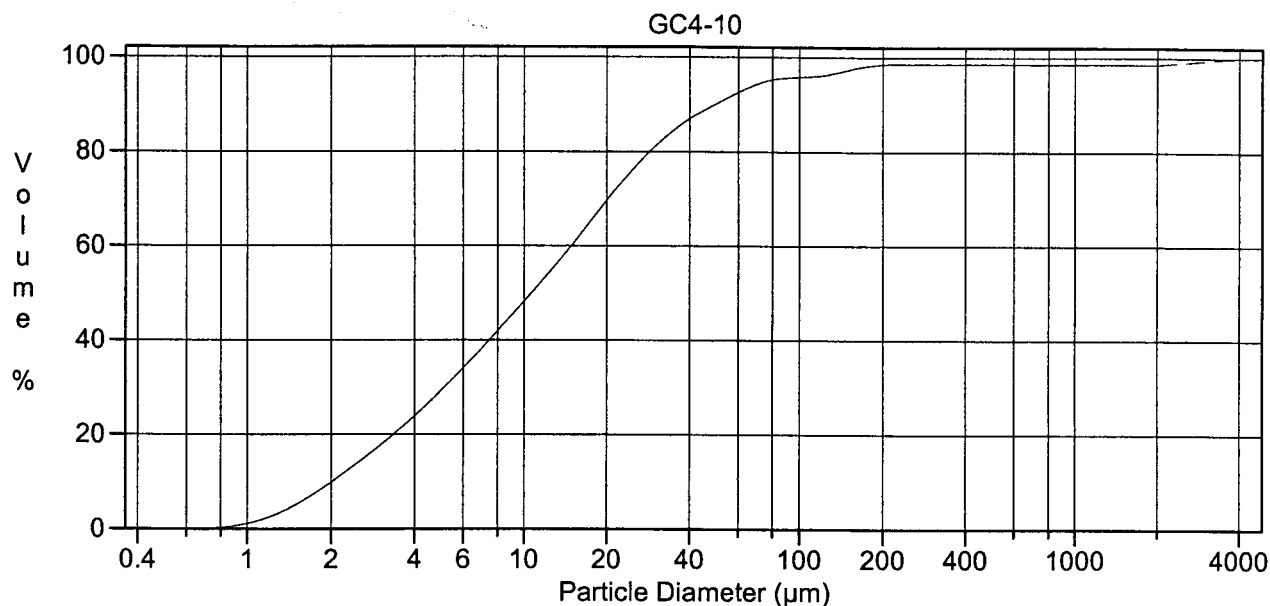
Calculations from 0.375 µm to 8000 µm

Volume	100.0%		
Mean:	379.5 µm	95% Conf. Limits:	0-2511 µm
Median:	34.03 µm	S.D.:	1088 µm
D(3,2):	8.006 µm	Variance:	1182879 µm ²
Mean/Median Ratio:	11.15	C.V.:	287%
Mode:	5657 µm	Skewness:	4.096 Right skewed
d ₁₀ :	2.464 µm	Kurtosis:	16.34 Leptokurtic
d ₅₀ :	34.03 µm		
d ₉₀ :	756.3 µm		
Specific Surf. Area	7494 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.464	7.041	65.26	169.8	756.3

22a.\$02

Particle Diameter µm	Volume %
1.000	6.48
2.000	12.4
5.000	10.4
10.00	6.06
15.00	5.03
20.00	3.85
25.00	7.30
40.00	3.27
50.00	2.89
60.00	2.60
70.00	1.13
75.00	1.02
80.00	1.79
90.00	34.9



Volume Statistics (Arithmetic)

23#a.\$02

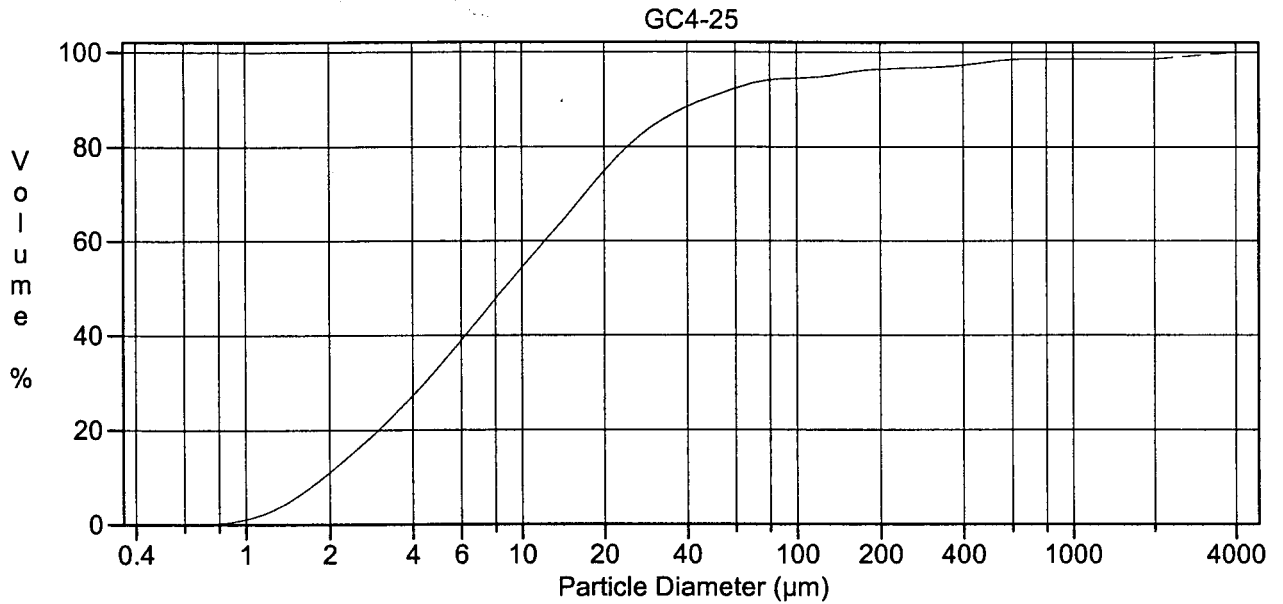
Calculations from 0.375 µm to 4000 µm

Volume	100.0%			
Mean:	60.61 µm	95% Conf. Limits:	0-723.1 µm	
Median:	10.66 µm	S.D.:	338.0 µm	
D(3,2):	5.418 µm	Variance:	114264 µm ²	
Mean/Median Ratio:	5.687	C.V.:	558%	
Mode:	18.00 µm	Skewness:	8.013 Right skewed	
d ₁₀ :	2.019 µm	Kurtosis:	62.63 Leptokurtic	
d ₅₀ :	10.66 µm			
d ₉₀ :	49.89 µm			
Specific Surf. Area	11073 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.019	4.207	14.90	23.86	49.89

23#a.\$02

Particle Diameter µm	Volume %
1.000	8.74
2.000	19.4
5.000	19.0
10.00	12.1
15.00	9.36
20.00	6.81
25.00	10.4
40.00	3.21
50.00	2.38
60.00	1.80
70.00	0.59
75.00	0.39
80.00	0.41
90.00	4.39



Volume Statistics (Arithmetic)

24a.\$02

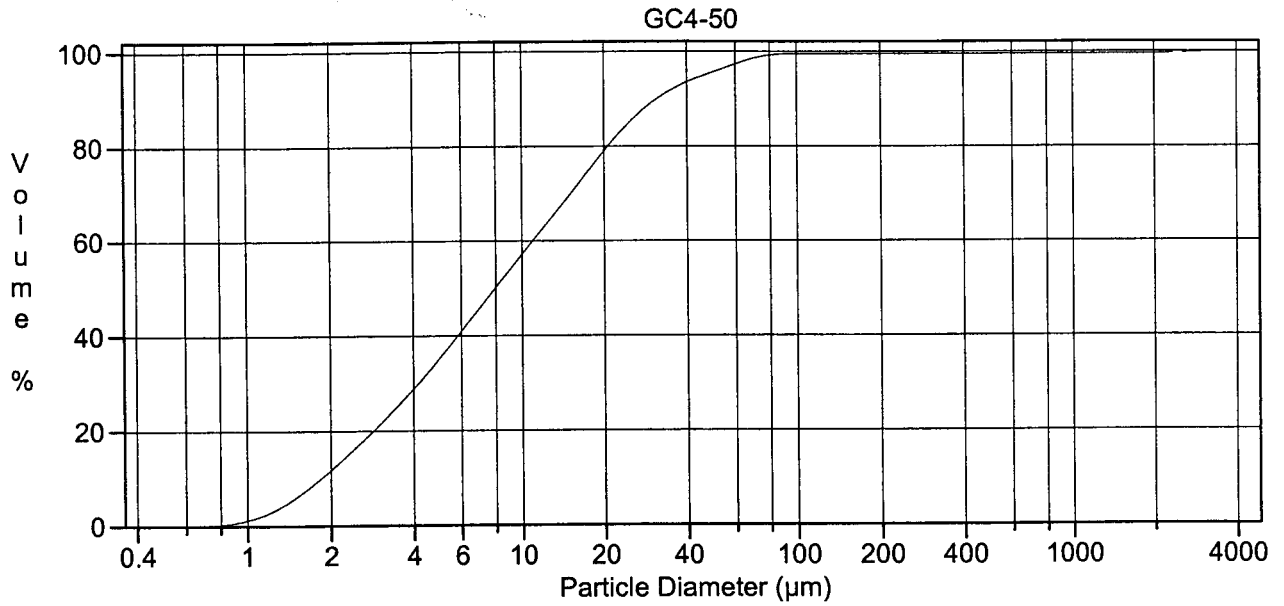
Calculations from 0.375 µm to 4000 µm

Volume	100.0%				
Mean:	65.30 µm	95% Conf. Limits:	0-732.6 µm		
Median:	8.670 µm	S.D.:	340.5 µm		
D(3,2):	4.952 µm	Variance:	115920 µm ²		
Mean/Median Ratio:	7.532	C.V.:	521%		
Mode:	7.083 µm	Skewness:	7.727 Right skewed		
d ₁₀ :	1.905 µm	Kurtosis:	59.51 Leptokurtic		
d ₅₀ :	8.670 µm				
d ₉₀ :	46.76 µm				
Specific Surf. Area	12116 cm ² /ml				

% <	10	25	60	75	90
Size µm	1.905	3.686	12.18	20.17	46.76

24a.\$02

Particle Diameter µm	Volume %
1.000	9.97
2.000	22.3
5.000	20.9
10.00	11.8
15.00	8.69
20.00	5.87
25.00	7.75
40.00	2.27
50.00	1.64
60.00	1.19
70.00	0.38
75.00	0.25
80.00	0.27
90.00	5.63



Volume Statistics (Arithmetic)

25a.\$02

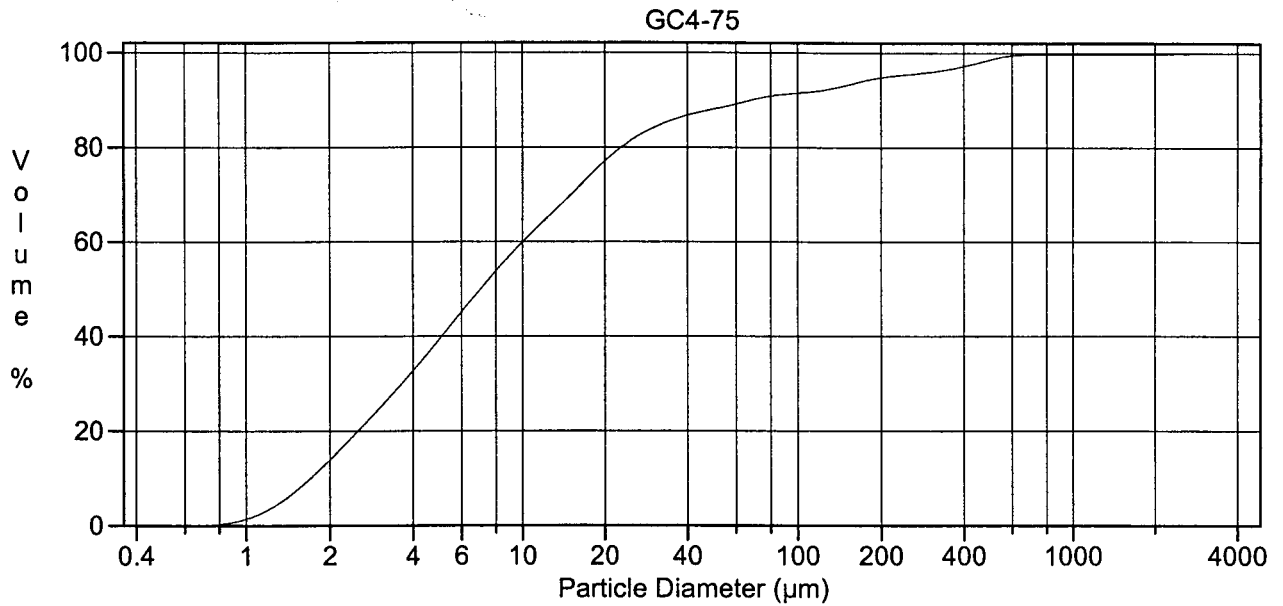
Calculations from 0.375 µm to 4000 µm

Volume	100.0%	95% Conf. Limits:	0-437.7 µm
Mean:	28.61 µm	S.D.:	208.7 µm
Median:	8.001 µm	Variance:	43558 µm ²
D(3,2):	4.685 µm	C.V.:	729%
Mean/Median Ratio:	3.576	Skewness:	13.28 Right skewed
Mode:	16.40 µm	Kurtosis:	175.1 Leptokurtic
d ₁₀ :	1.850 µm		
d ₅₀ :	8.001 µm		
d ₉₀ :	31.44 µm		
Specific Surf. Area	12808 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.850	3.489	11.00	17.67	31.44

25a.\$02

Particle Diameter µm	Volume %
1.000	10.5
2.000	23.5
5.000	21.9
10.00	12.6
15.00	9.29
20.00	6.29
25.00	8.21
40.00	2.14
50.00	1.61
60.00	1.27
70.00	0.41
75.00	0.26
80.00	0.24
90.00	0.60



Volume Statistics (Arithmetic)

26a.\$02

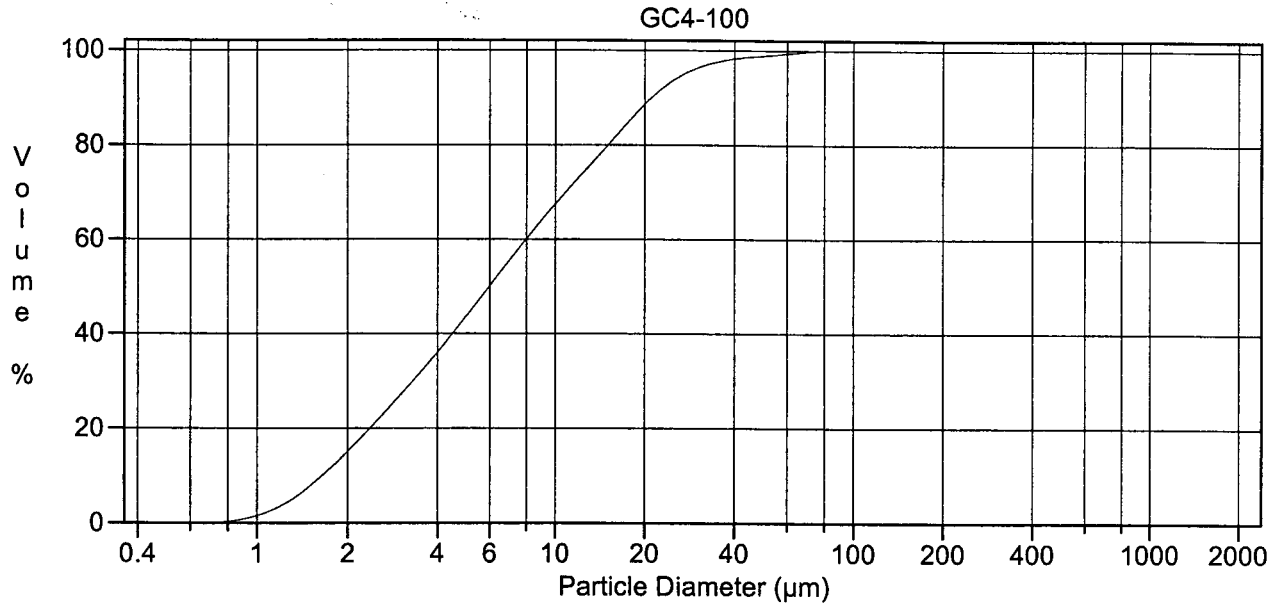
Calculations from 0.375 µm to 4000 µm

Volume	100.0%			
Mean:	44.21 µm	95% Conf. Limits:	0-401.9 µm	
Median:	7.064 µm	S.D.:	182.5 µm	
D(3,2):	4.352 µm	Variance:	33298 µm ²	
Mean/Median Ratio:	6.258	C.V.:	413%	
Mode:	5.355 µm	Skewness:	11.86 Right skewed	
d ₁₀ :	1.709 µm	Kurtosis:	171.7 Leptokurtic	
d ₅₀ :	7.064 µm			
d ₉₀ :	68.70 µm			
Specific Surf. Area	13786 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.709	3.059	10.08	18.42	68.70

26a.\$02

Particle Diameter µm	Volume %
1.000	12.5
2.000	25.5
5.000	20.4
10.00	10.0
15.00	7.19
20.00	4.51
25.00	5.24
40.00	1.32
50.00	1.07
60.00	1.00
70.00	0.40
75.00	0.31
80.00	0.41
90.00	8.77



Volume Statistics (Arithmetic) 27.\$02

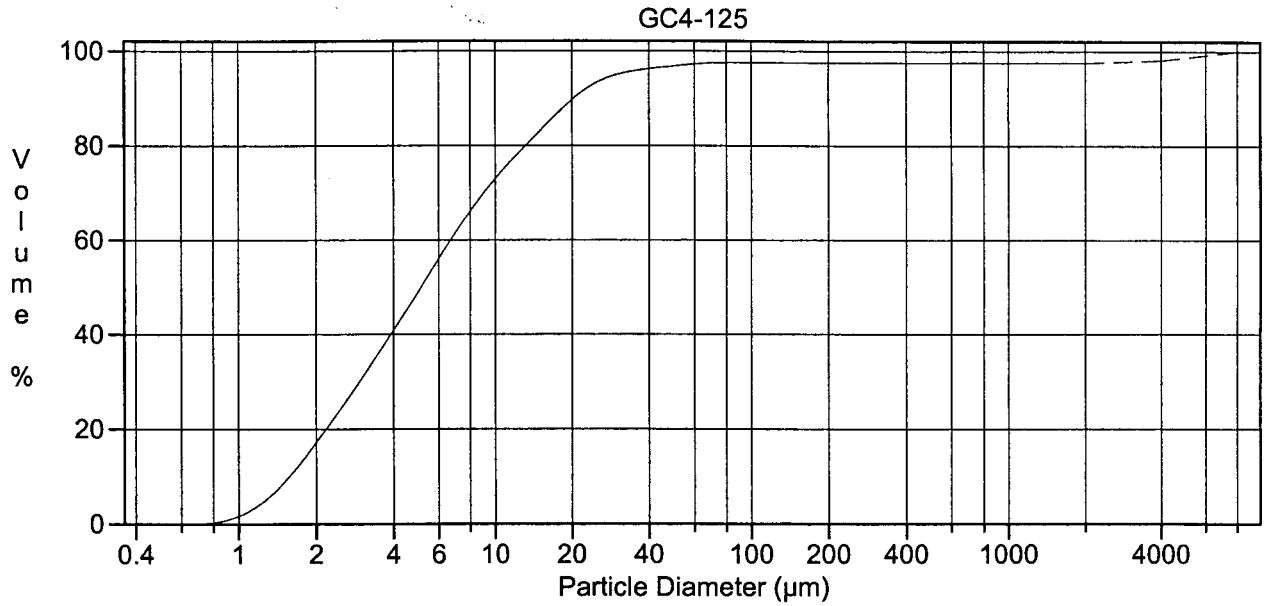
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	9.439 µm	95% Conf. Limits:	0-29.06 µm	
Median:	6.001 µm	S.D.:	10.01 µm	
D(3,2):	3.926 µm	Variance:	100.2 µm ²	
Mean/Median Ratio:	1.573	C.V.:	106%	
Mode:	5.878 µm	Skewness:	2.723 Right skewed	
d ₁₀ :	1.653 µm	Kurtosis:	11.04 Leptokurtic	
d ₅₀ :	6.001 µm			
d ₉₀ :	21.15 µm			
Specific Surf. Area	15283 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.653	2.822	7.990	12.80	21.15

27.\$02

Particle Diameter µm	Volume %
1.000	13.6
2.000	28.5
5.000	23.9
10.00	12.4
15.00	8.68
20.00	5.19
25.00	4.54
40.00	0.62
50.00	0.45
60.00	0.42
70.00	0.14
75.00	0.081
80.00	0.061
90.00	0.0070



Volume Statistics (Arithmetic)

28#a.\$02

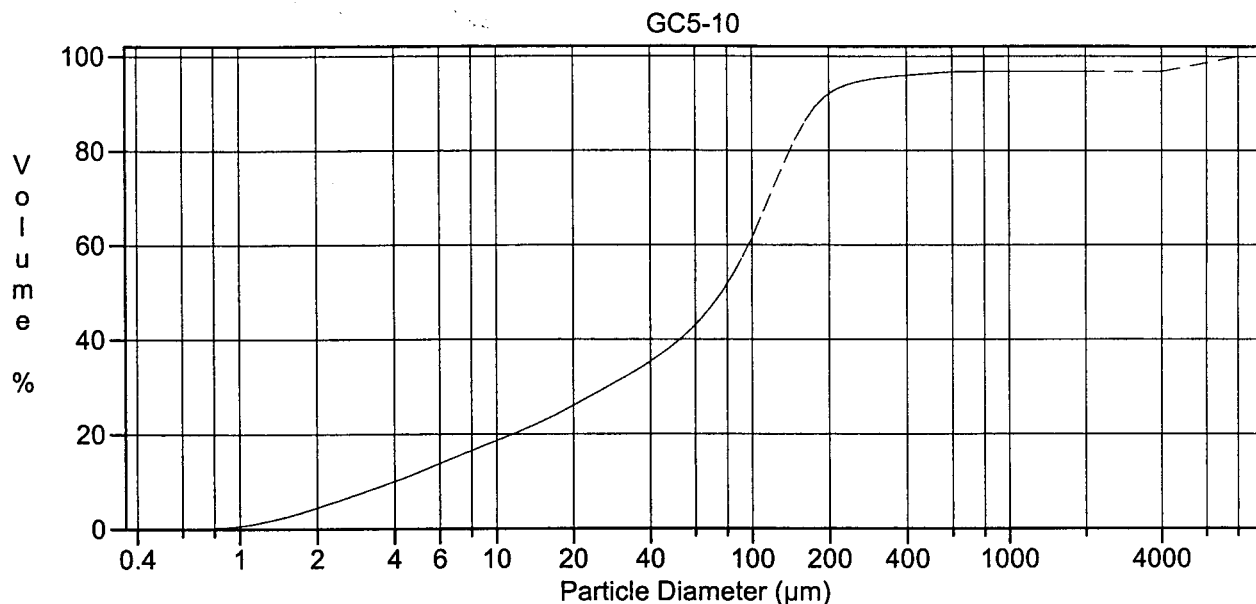
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	132.2 µm	95% Conf. Limits:	0-1701 µm	
Median:	5.128 µm	S.D.:	800.2 µm	
D(3,2):	3.615 µm	Variance:	640254 µm ²	
Mean/Median Ratio:	25.78	C.V.:	605%	
Mode:	5.355 µm	Skewness:	6.505 Right skewed	
d ₁₀ :	1.576 µm	Kurtosis:	41.15 Leptokurtic	
d ₅₀ :	5.128 µm			
d ₉₀ :	20.35 µm			
Specific Surf. Area	16596 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.576	2.547	6.708	10.77	20.35

28#a.\$02

Particle Diameter µm	Volume %
1.000	15.5
2.000	31.9
5.000	23.9
10.00	10.1
15.00	6.62
20.00	3.75
25.00	2.84
40.00	0.57
50.00	0.41
60.00	0.25
70.00	0.045
75.00	0.019
80.00	0.0081
90.00	2.49



Volume Statistics (Arithmetic)

29a.\$02

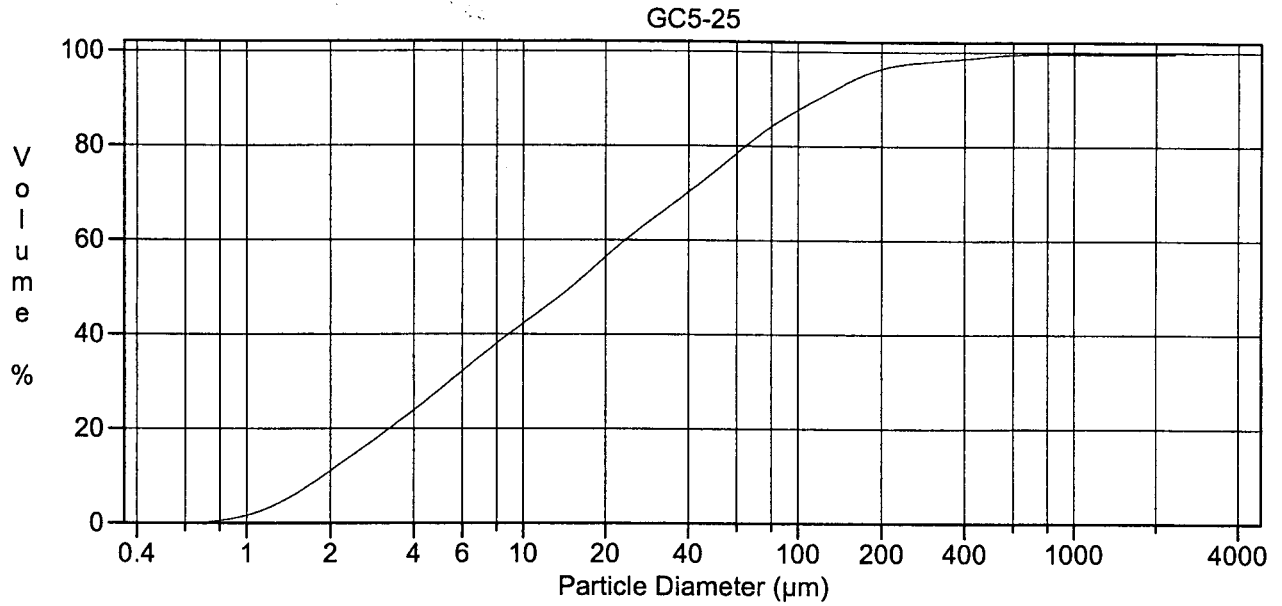
Calculations from 0.375 µm to 8000 µm

Volume	100.0%		
Mean:	263.5 µm	95% Conf. Limits:	0-2210 µm
Median:	76.46 µm	S.D.:	992.9 µm
D(3,2):	12.15 µm	Variance:	985903 µm ²
Mean/Median Ratio:	3.446	C.V.:	377%
Mode:	116.3 µm	Skewness:	5.216 Right skewed
d ₁₀ :	4.003 µm	Kurtosis:	25.38 Leptokurtic
d ₅₀ :	76.46 µm		
d ₉₀ :	182.1 µm		
Specific Surf. Area	4940 cm ² /ml		

% <	10	25	60	75	90
Size µm	4.003	18.48	97.08	128.1	182.1

29a.\$02

Particle Diameter µm	Volume %
1.000	3.89
2.000	7.50
5.000	6.54
10.00	4.00
15.00	3.46
20.00	2.84
25.00	6.40
40.00	3.80
50.00	3.92
60.00	4.17
70.00	2.22
75.00	2.30
80.00	4.81
90.00	43.5



Volume Statistics (Arithmetic)

30a.\$02

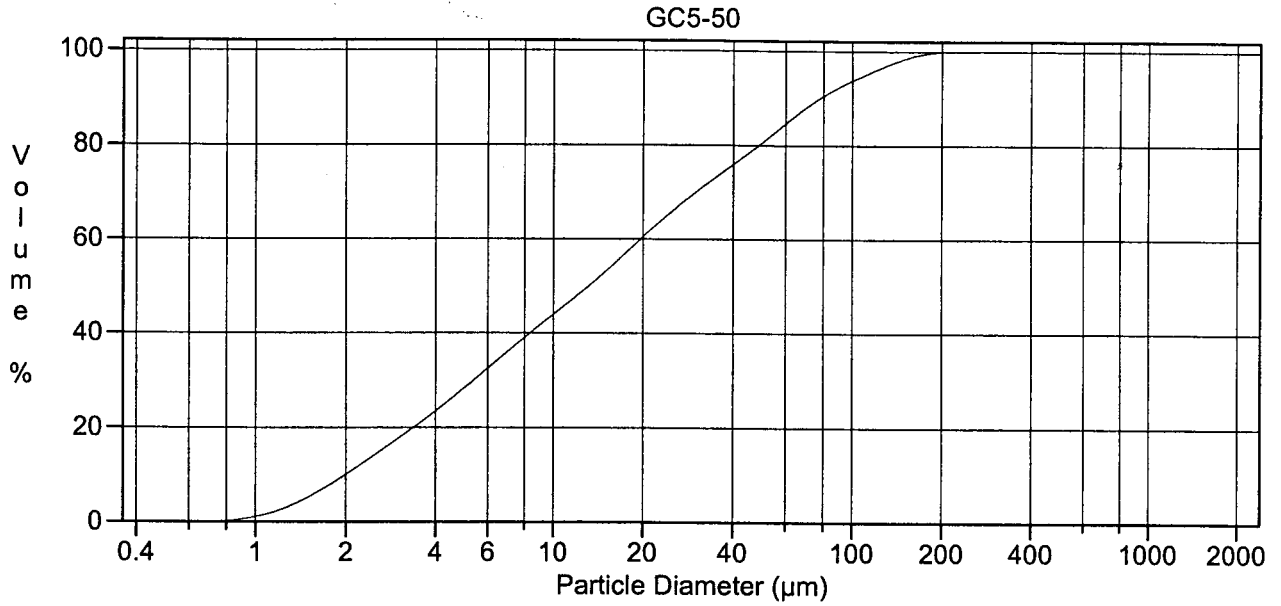
Calculations from 0.375 µm to 4000 µm

Volume	100.0%		
Mean:	54.61 µm	95% Conf. Limits:	0-445.8 µm
Median:	15.03 µm	S.D.:	199.6 µm
D(3,2):	5.600 µm	Variance:	39826 µm ²
Mean/Median Ratio:	3.634	C.V.:	365%
Mode:	18.00 µm	Skewness:	12.23 Right skewed
d ₁₀ :	1.888 µm	Kurtosis:	165.3 Leptokurtic
d ₅₀ :	15.03 µm		
d ₉₀ :	118.2 µm		
Specific Surf. Area	10714 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.888	4.244	23.70	51.26	118.2

30a.\$02

Particle Diameter µm	Volume %
1.000	9.48
2.000	17.3
5.000	13.9
10.00	7.74
15.00	6.39
20.00	4.75
25.00	8.99
40.00	4.39
50.00	3.81
60.00	3.24
70.00	1.34
75.00	1.17
80.00	1.97
90.00	14.0



Volume Statistics (Arithmetic)

31#.\$02

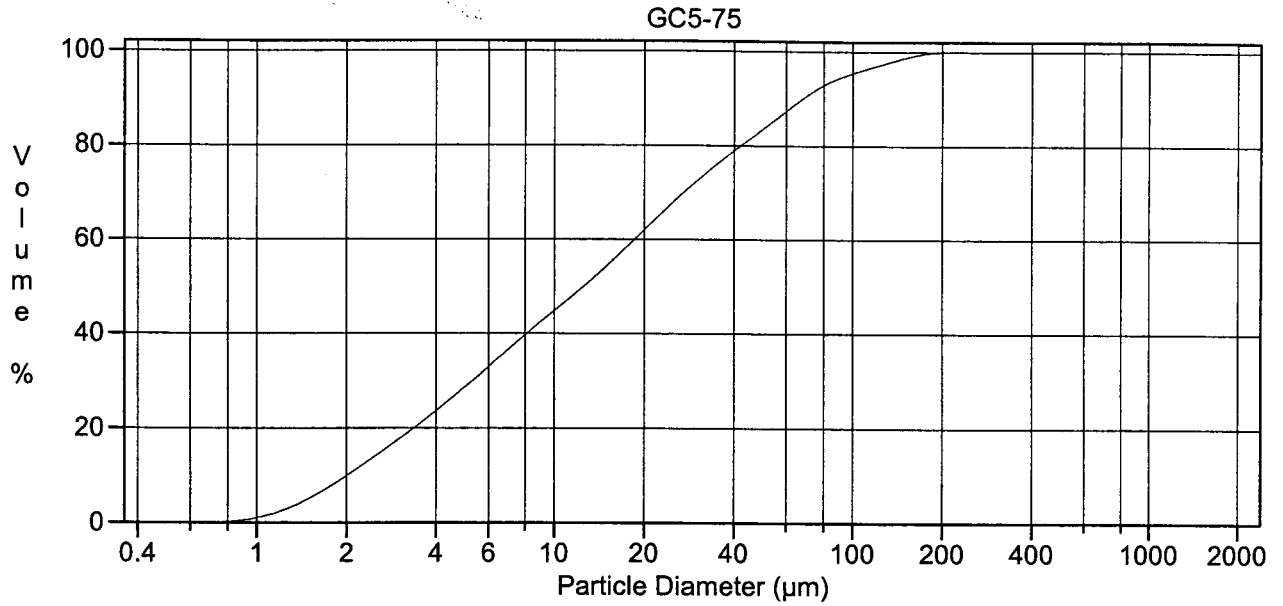
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	28.45 µm	95% Conf. Limits:	0-99.42 µm	
Median:	13.19 µm	S.D.:	36.21 µm	
D(3,2):	5.708 µm	Variance:	1311 µm ²	
Mean/Median Ratio:	2.156	C.V.:	127%	
Mode:	18.00 µm	Skewness:	2.019 Right skewed	
d ₁₀ :	1.996 µm	Kurtosis:	4.155 Leptokurtic	
d ₅₀ :	13.19 µm			
d ₉₀ :	78.06 µm			
Specific Surf. Area	10512 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.996	4.308	19.75	38.45	78.06

31#.\$02

Particle Diameter µm	Volume %
1.000	9.00
2.000	18.2
5.000	15.6
10.00	9.11
15.00	7.33
20.00	5.49
25.00	10.0
40.00	4.65
50.00	4.05
60.00	3.39
70.00	1.34
75.00	1.15
80.00	1.85
90.00	7.73



Volume Statistics (Arithmetic) 32.\$02

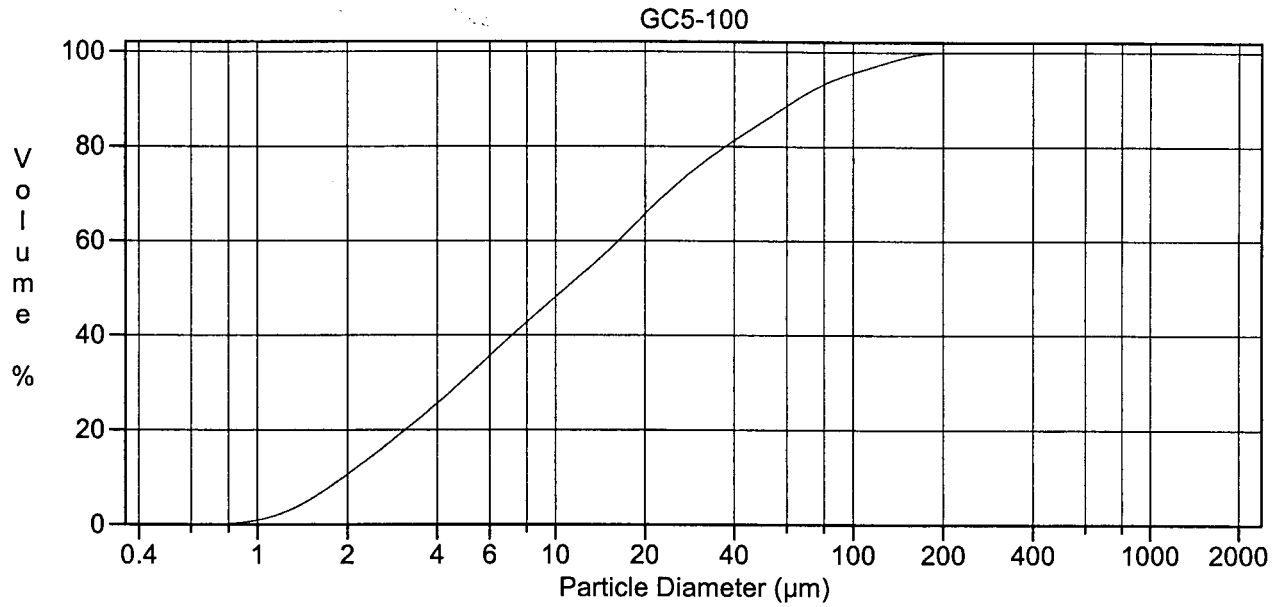
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	25.78 µm	95% Conf. Limits:	0-90.38 µm
Median:	12.59 µm	S.D.:	32.96 µm
D(3,2):	5.657 µm	Variance:	1086 µm ²
Mean/Median Ratio:	2.048	C.V.:	128%
Mode:	19.76 µm	Skewness:	2.252 Right skewed
d ₁₀ :	2.007 µm	Kurtosis:	5.712 Leptokurtic
d ₅₀ :	12.59 µm		
d ₉₀ :	68.22 µm		
Specific Surf. Area	10607 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.007	4.270	18.65	33.63	68.22

32.\$02

Particle Diameter µm	Volume %
1.000	8.95
2.000	18.6
5.000	16.2
10.00	9.48
15.00	7.65
20.00	5.92
25.00	11.0
40.00	4.59
50.00	3.88
60.00	3.24
70.00	1.25
75.00	1.03
80.00	1.55
90.00	5.63



Volume Statistics (Arithmetic)

33.\$02

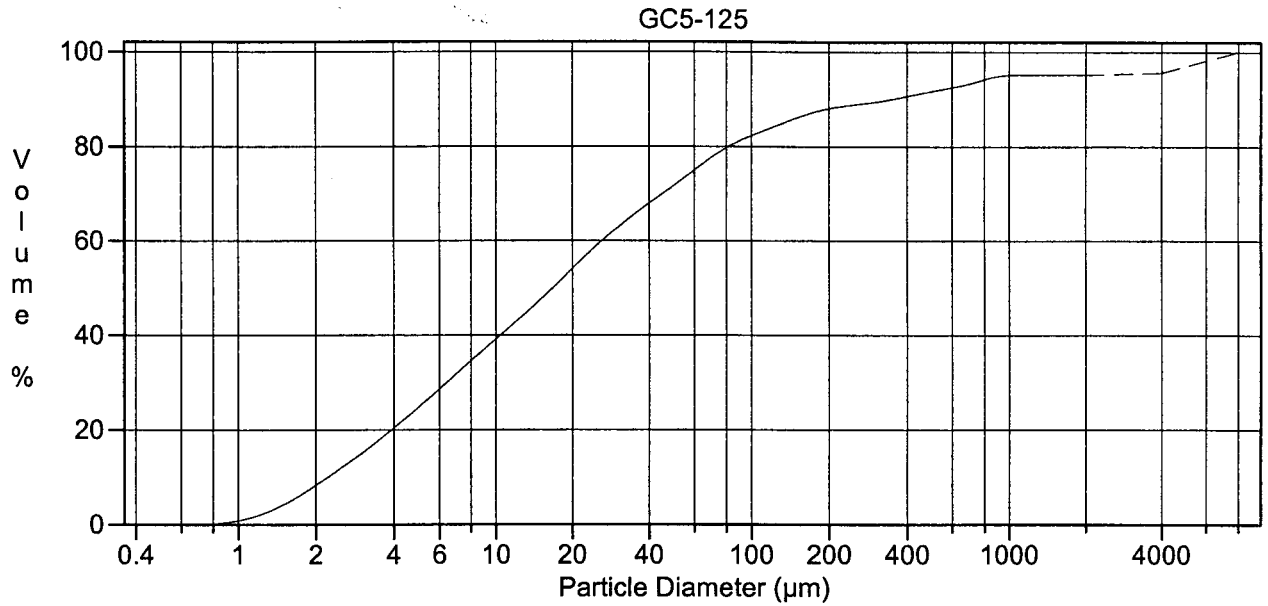
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	23.89 µm	95% Conf. Limits:	0-86.55 µm
Median:	10.86 µm	S.D.:	31.97 µm
D(3,2):	5.354 µm	Variance:	1022 µm ²
Mean/Median Ratio:	2.200	C.V.:	134%
Mode:	18.00 µm	Skewness:	2.360 Right skewed
d ₁₀ :	1.946 µm	Kurtosis:	6.098 Leptokurtic
d ₅₀ :	10.86 µm		
d ₉₀ :	65.10 µm		
Specific Surf. Area	11206 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.946	3.911	16.32	29.34	65.10

33.\$02

Particle Diameter µm	Volume %
1.000	9.67
2.000	20.3
5.000	17.2
10.00	9.71
15.00	7.79
20.00	5.80
25.00	9.85
40.00	4.01
50.00	3.31
60.00	2.71
70.00	1.06
75.00	0.88
80.00	1.38
90.00	5.42



Volume Statistics (Arithmetic)

34a.\$02

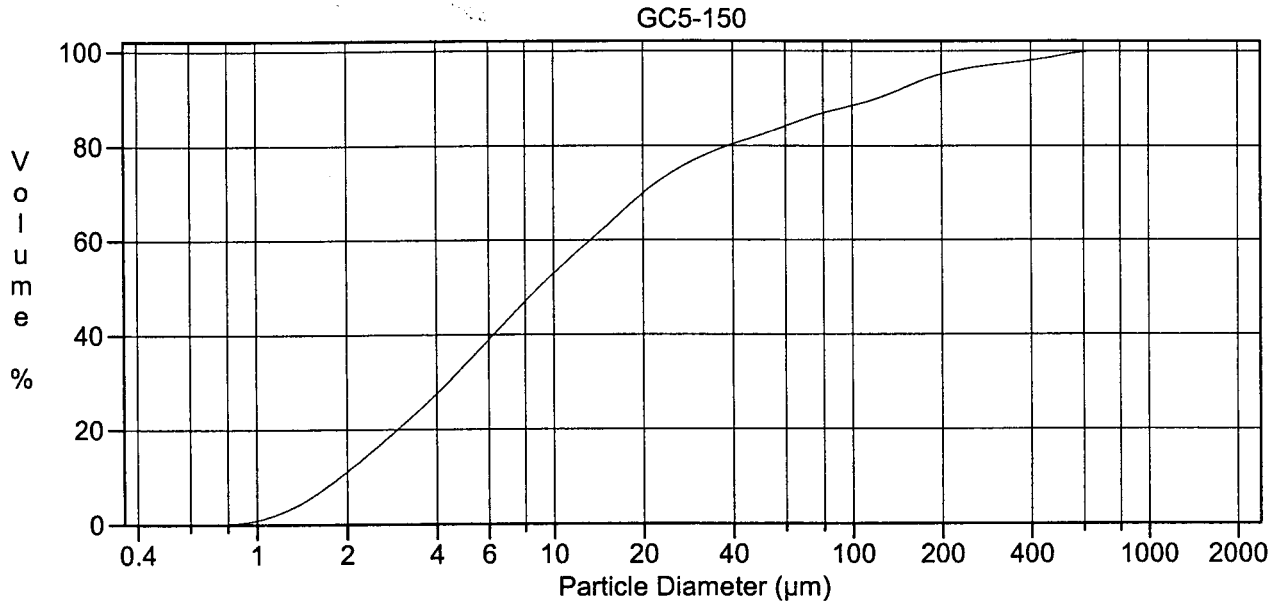
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	324.6 µm	95% Conf. Limits:	0-2619 µm	
Median:	16.78 µm	S.D.:	1171 µm	
D(3,2):	6.580 µm	Variance:	1370571 µm ²	
Mean/Median Ratio:	19.35	C.V.:	361%	
Mode:	5657 µm	Skewness:	4.214 Right skewed	
d ₁₀ :	2.223 µm	Kurtosis:	16.16 Leptokurtic	
d ₅₀ :	16.78 µm			
d ₉₀ :	351.7 µm			
Specific Surf. Area	9119 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.223	5.071	26.23	60.37	351.7

34a.\$02

Particle Diameter µm	Volume %
1.000	7.54
2.000	16.4
5.000	14.4
10.00	8.35
15.00	6.60
20.00	4.96
25.00	8.82
40.00	3.80
50.00	3.24
60.00	2.73
70.00	1.09
75.00	0.93
80.00	1.48
90.00	18.9



Volume Statistics (Arithmetic) 35.\$02

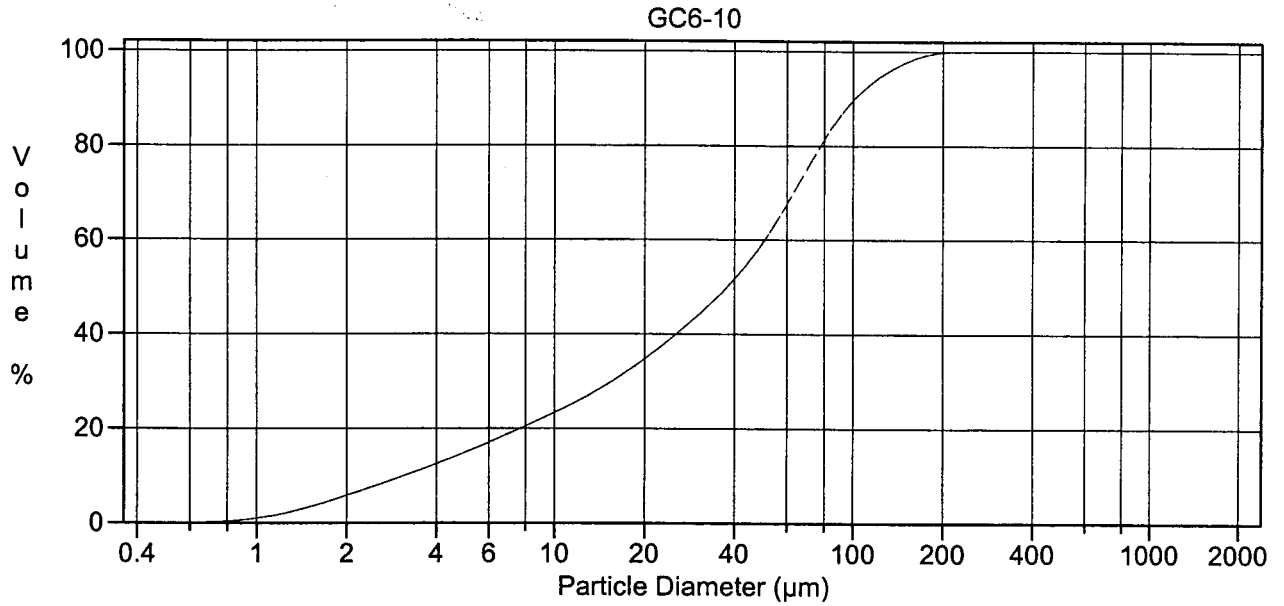
Calculations from 0.375 µm to 2000 µm

Volume	100.0%	95% Conf. Limits:	0-215.5 µm
Mean:	40.77 µm	S.D.:	89.13 µm
Median:	8.942 µm	Variance:	7944 µm ²
D(3,2):	5.079 µm	C.V.:	219%
Mean/Median Ratio:	4.560	Skewness:	3.899 Right skewed
Mode:	5.878 µm	Kurtosis:	17.12 Leptokurtic
d ₁₀ :	1.901 µm		
d ₅₀ :	8.942 µm		
d ₉₀ :	122.6 µm		
Specific Surf. Area	11813 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.901	3.639	13.37	26.15	122.6

35.\$02

Particle Diameter µm	Volume %
1.000	10.2
2.000	22.4
5.000	19.4
10.00	9.86
15.00	6.99
20.00	4.53
25.00	5.97
40.00	2.06
50.00	1.77
60.00	1.57
70.00	0.64
75.00	0.54
80.00	0.86
90.00	12.3



Volume Statistics (Arithmetic)

36#.\$02

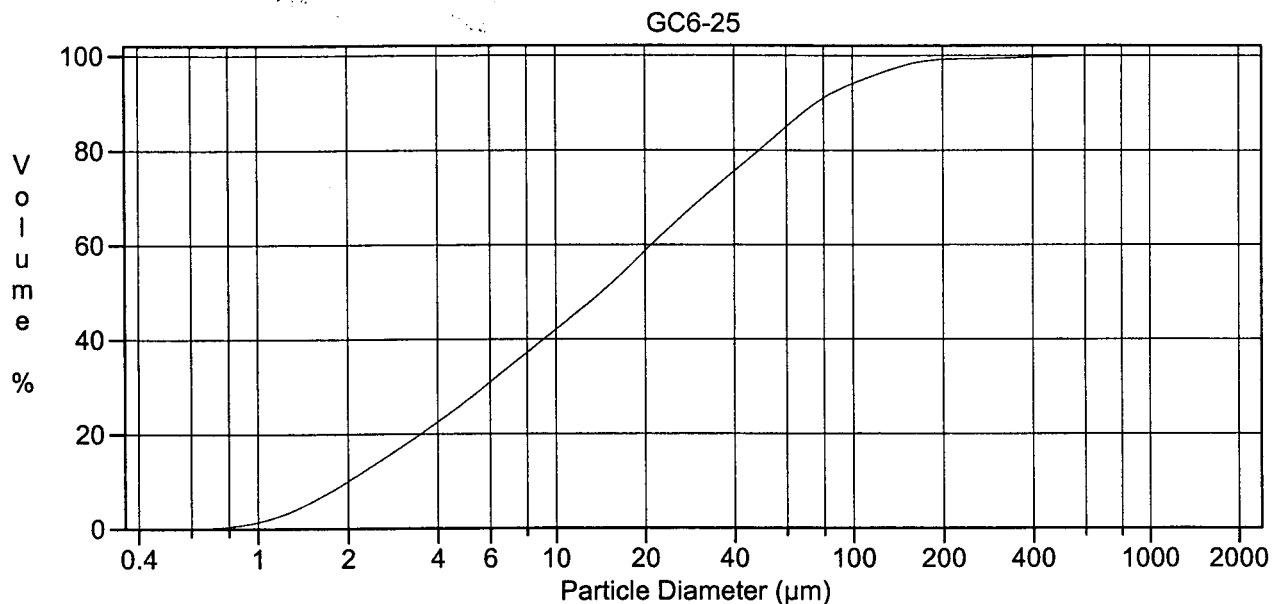
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	46.29 µm	95% Conf. Limits:	0-125.9 µm	
Median:	37.95 µm	S.D.:	40.60 µm	
D(3,2):	9.343 µm	Variance:	1648 µm ²	
Mean/Median Ratio:	1.220	C.V.:	87.7%	
Mode:	66.44 µm	Skewness:	1.075 Right skewed	
d ₁₀ :	3.129 µm	Kurtosis:	0.993 Leptokurtic	
d ₅₀ :	37.95 µm			
d ₉₀ :	101.3 µm			
Specific Surf. Area	6422 cm ² /ml			

% <	10	25	60	75	90
Size µm	3.129	11.34	50.75	70.01	101.3

36#.\$02

Particle Diameter µm	Volume %
1.000	4.86
2.000	9.08
5.000	8.42
10.00	5.98
15.00	5.39
20.00	4.77
25.00	12.2
40.00	7.81
50.00	8.03
60.00	7.57
70.00	3.30
75.00	2.91
80.00	4.83
90.00	14.0



Volume Statistics (Arithmetic)

37.\$02

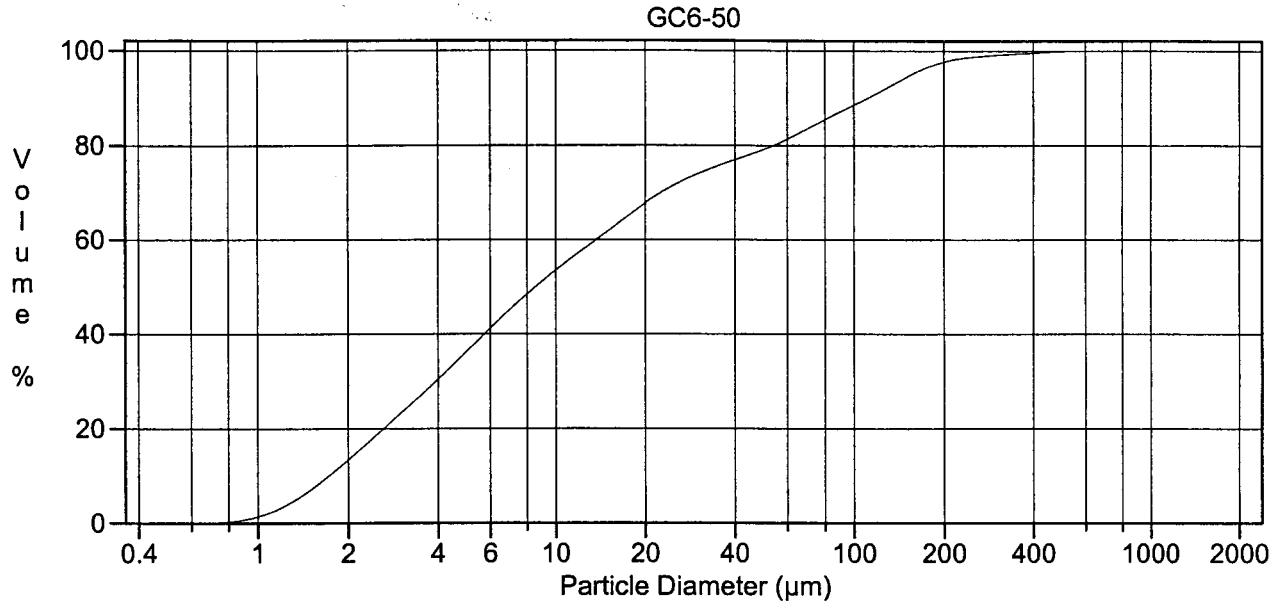
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	31.00 µm	95% Conf. Limits:	0-130.5 µm	
Median:	14.32 µm	S.D.:	50.75 µm	
D(3,2):	5.781 µm	Variance:	2576 µm ²	
Mean/Median Ratio:	2.165	C.V.:	164%	
Mode:	19.76 µm	Skewness:	5.588 Right skewed	
d ₁₀ :	2.000 µm	Kurtosis:	47.70 Leptokurtic	
d ₅₀ :	14.32 µm			
d ₉₀ :	75.76 µm			
Specific Surf. Area	10378 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.000	4.549	21.10	39.14	75.76

37.\$02

Particle Diameter µm	Volume %
1.000	8.65
2.000	16.9
5.000	15.0
10.00	9.17
15.00	7.46
20.00	5.80
25.00	11.1
40.00	5.08
50.00	4.31
60.00	3.53
70.00	1.37
75.00	1.15
80.00	1.79
90.00	7.27



Volume Statistics (Arithmetic) 38.\$02

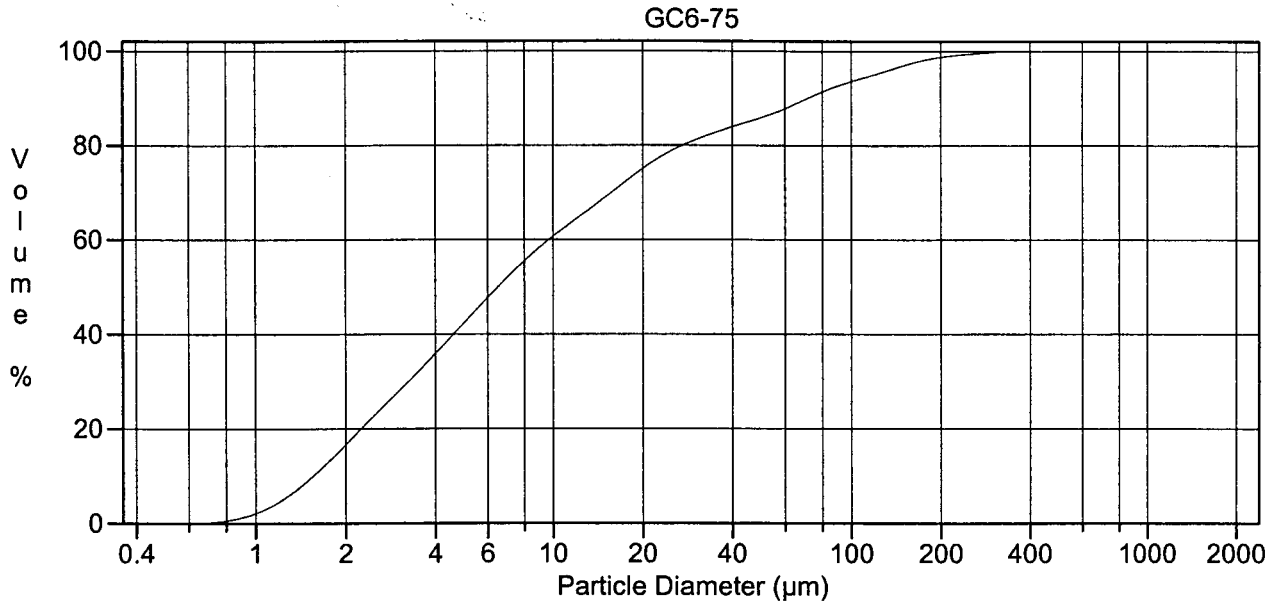
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	34.54 µm	95% Conf. Limits:	0-154.4 µm	
Median:	8.563 µm	S.D.:	61.15 µm	
D(3,2):	4.699 µm	Variance:	3740 µm ²	
Mean/Median Ratio:	4.034	C.V.:	177%	
Mode:	5.355 µm	Skewness:	3.440 Right skewed	
d ₁₀ :	1.735 µm	Kurtosis:	16.45 Leptokurtic	
d ₅₀ :	8.563 µm			
d ₉₀ :	111.5 µm			
Specific Surf. Area	12768 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.735	3.238	13.79	33.07	111.5

38.\$02

Particle Diameter µm	Volume %
1.000	12.0
2.000	22.9
5.000	17.3
10.00	8.20
15.00	5.96
20.00	3.88
25.00	5.36
40.00	2.18
50.00	2.19
60.00	2.21
70.00	1.01
75.00	0.93
80.00	1.64
90.00	12.9



Volume Statistics (Arithmetic) 39.\$02

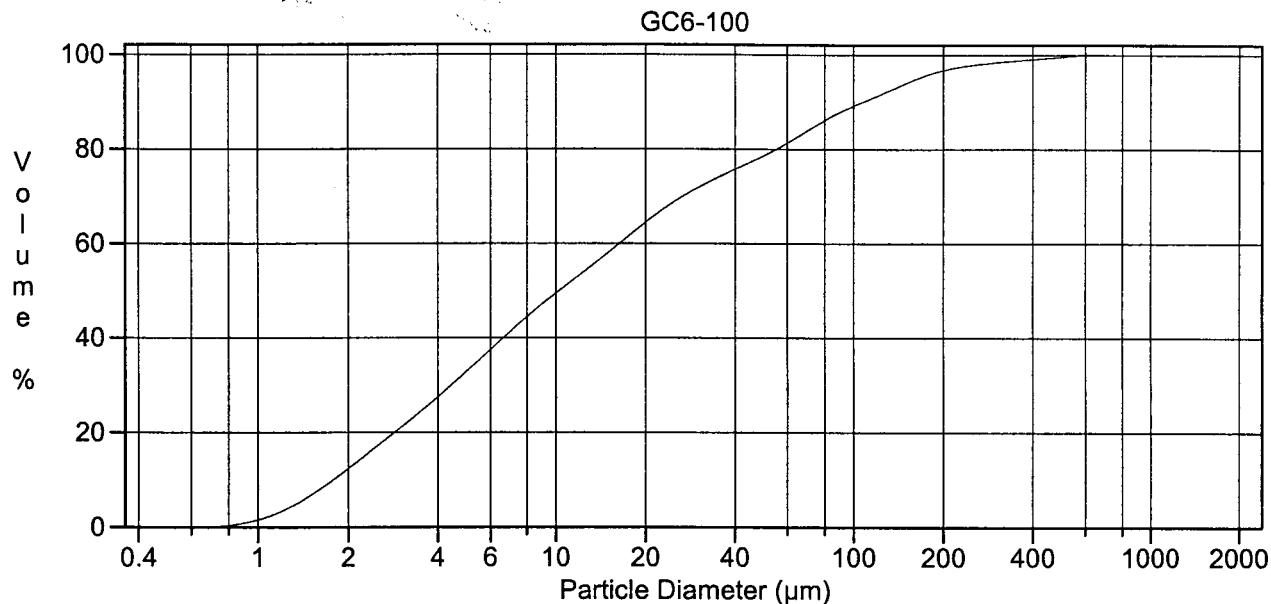
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	23.77 µm	95% Conf. Limits:	0-109.2 µm	
Median:	6.528 µm	S.D.:	43.58 µm	
D(3,2):	4.001 µm	Variance:	1899 µm ²	
Mean/Median Ratio:	3.641	C.V.:	183%	
Mode:	5.355 µm	Skewness:	3.336 Right skewed	
d ₁₀ :	1.562 µm	Kurtosis:	13.31 Leptokurtic	
d ₅₀ :	6.528 µm			
d ₉₀ :	71.66 µm			
Specific Surf. Area	14995 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.562	2.713	9.722	20.06	71.66

39.\$02

Particle Diameter µm	Volume %
1.000	14.5
2.000	25.7
5.000	18.3
10.00	8.25
15.00	6.09
20.00	3.81
25.00	5.14
40.00	1.95
50.00	1.91
60.00	1.95
70.00	0.88
75.00	0.78
80.00	1.27
90.00	7.37



Volume Statistics (Arithmetic) 40.\$02

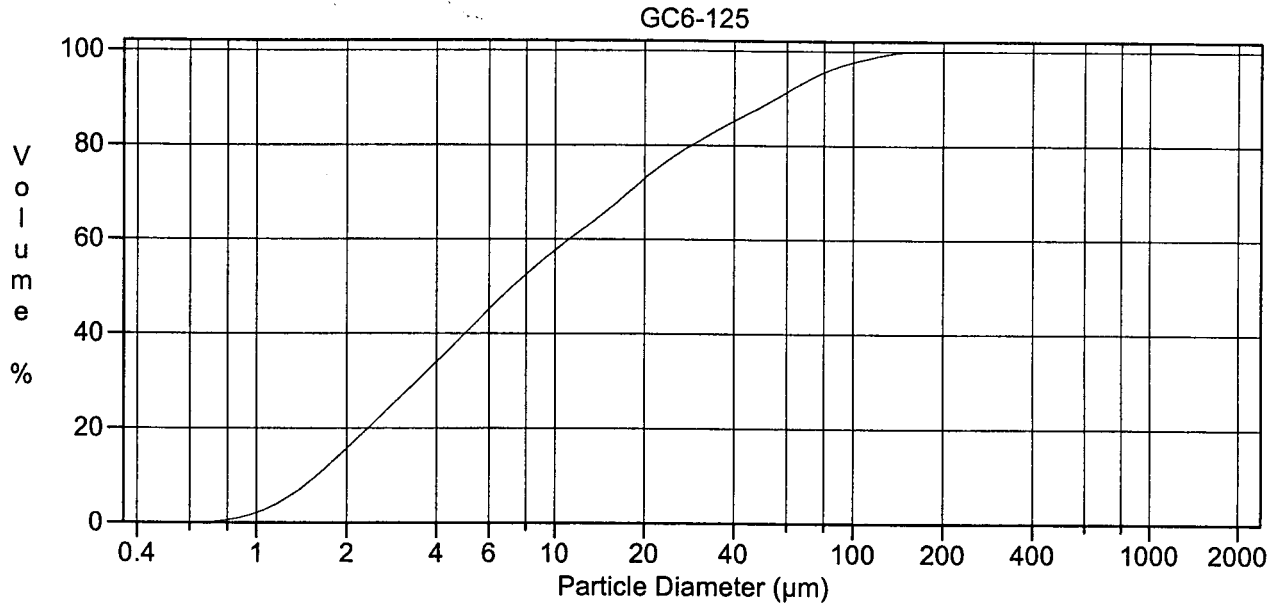
Calculations from 0.375 μm to 2000 μm

Volume	100.0%		
Mean:	37.95 μm	95% Conf. Limits:	0-177.6 μm
Median:	10.30 μm	S.D.:	71.23 μm
D(3,2):	5.004 μm	Variance:	5074 μm^2
Mean/Median Ratio:	3.683	C.V.:	188%
Mode:	5.878 μm	Skewness:	3.980 Right skewed
d ₁₀ :	1.786 μm	Kurtosis:	20.58 Leptokurtic
d ₅₀ :	10.30 μm		
d ₉₀ :	107.8 μm		
Specific Surf. Area	11991 cm^2/ml		

% <	10	25	60	75	90
Size μm	1.786	3.598	16.46	37.99	107.8

40.\$02

Particle Diameter μm	Volume %
1.000	10.8
2.000	20.5
5.000	16.6
10.00	8.55
15.00	6.45
20.00	4.41
25.00	6.90
40.00	2.85
50.00	2.70
60.00	2.61
70.00	1.16
75.00	1.03
80.00	1.74
90.00	12.2



Volume Statistics (Arithmetic) 41.502

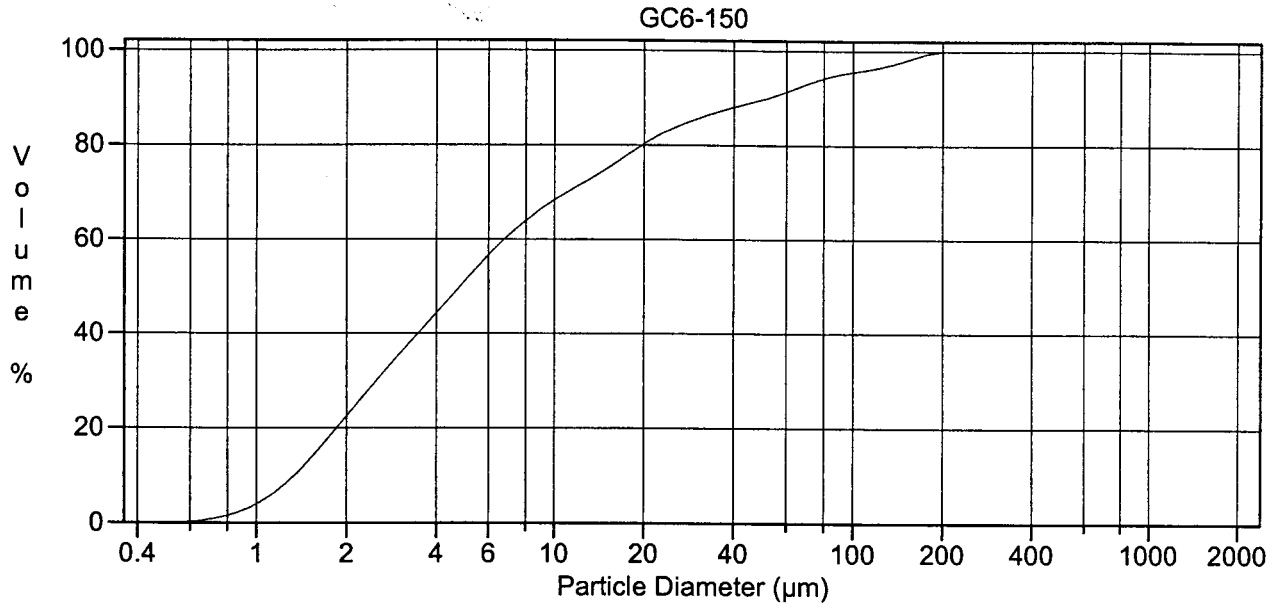
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	18.72 µm	95% Conf. Limits:	0-70.10 µm
Median:	7.239 µm	S.D.:	26.21 µm
D(3,2):	4.161 µm	Variance:	687.0 µm ²
Mean/Median Ratio:	2.587	C.V.:	140%
Mode:	5.355 µm	Skewness:	2.355 Right skewed
d ₁₀ :	1.594 µm	Kurtosis:	5.972 Leptokurtic
d ₅₀ :	7.239 µm		
d ₉₀ :	55.60 µm		
Specific Surf. Area	14420 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.594	2.858	11.22	22.08	55.60

41.502

Particle Diameter µm	Volume %
1.000	13.7
2.000	24.3
5.000	17.5
10.00	8.53
15.00	6.71
20.00	4.67
25.00	7.59
40.00	3.27
50.00	2.88
60.00	2.47
70.00	0.98
75.00	0.81
80.00	1.25
90.00	3.26



Volume Statistics (Arithmetic) 42.\$02

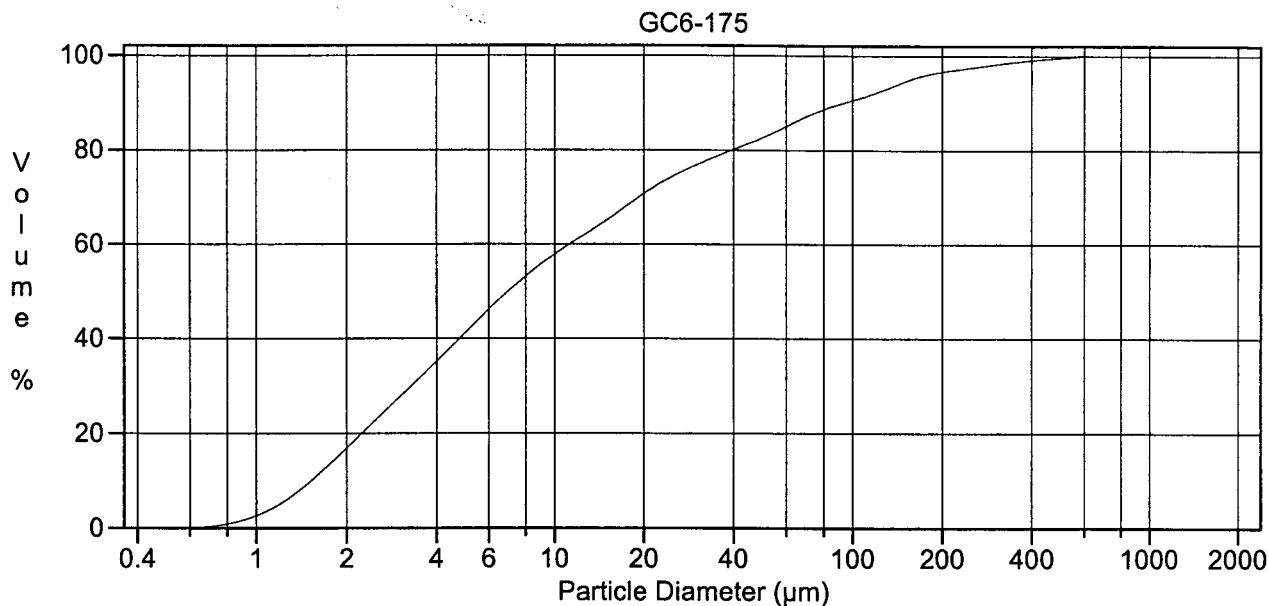
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	17.77 µm	95% Conf. Limits:	0-83.37 µm
Median:	4.824 µm	S.D.:	33.47 µm
D(3,2):	3.230 µm	Variance:	1120 µm ²
Mean/Median Ratio:	3.684	C.V.:	188%
Mode:	1.919 µm	Skewness:	3.178 Right skewed
d ₁₀ :	1.341 µm	Kurtosis:	10.50 Leptokurtic
d ₅₀ :	4.824 µm		
d ₉₀ :	52.45 µm		
Specific Surf. Area	18576 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.341	2.166	6.797	15.06	52.45

42.\$02

Particle Diameter µm	Volume %
1.000	18.4
2.000	28.7
5.000	17.2
10.00	6.60
15.00	5.27
20.00	3.29
25.00	4.47
40.00	1.67
50.00	1.62
60.00	1.64
70.00	0.70
75.00	0.57
80.00	0.83
90.00	5.01



Volume Statistics (Arithmetic) 43.\$02

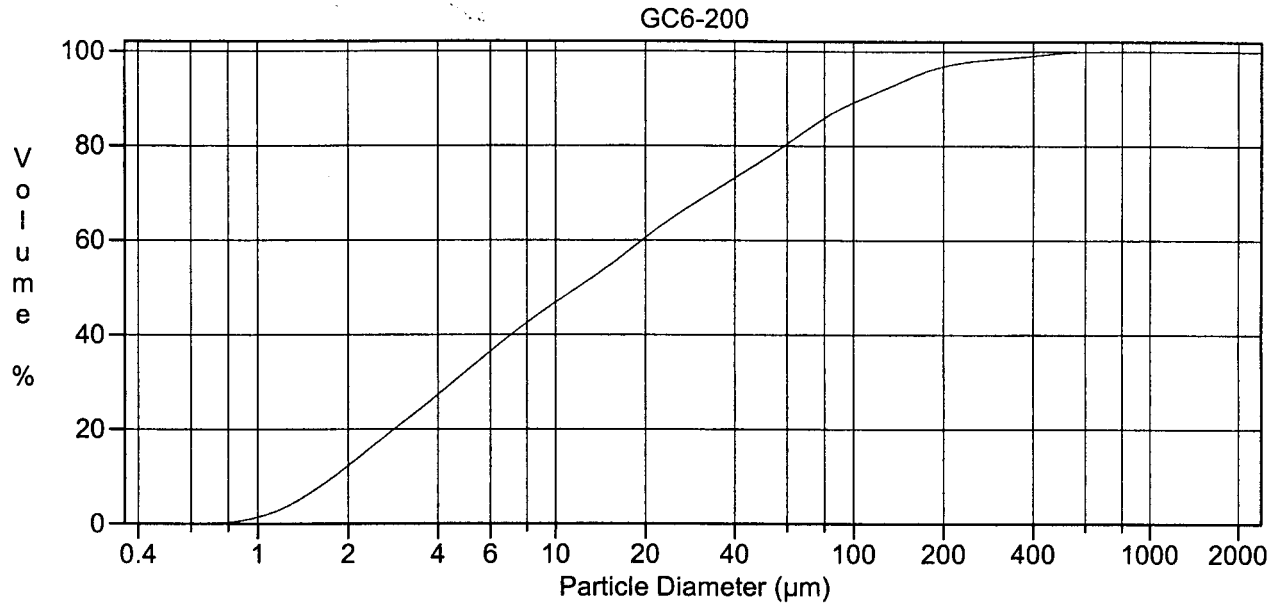
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	33.41 µm	95% Conf. Limits:	0-172.6 µm	
Median:	6.998 µm	S.D.:	71.03 µm	
D(3,2):	4.031 µm	Variance:	5045 µm ²	
Mean/Median Ratio:	4.774	C.V.:	213%	
Mode:	4.878 µm	Skewness:	4.196 Right skewed	
d ₁₀ :	1.528 µm	Kurtosis:	21.79 Leptokurtic	
d ₅₀ :	6.998 µm			
d ₉₀ :	93.54 µm			
Specific Surf. Area	14883 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.528	2.731	11.30	26.15	93.54

43.\$02

Particle Diameter µm	Volume %
1.000	14.3
2.000	24.3
5.000	16.7
10.00	7.22
15.00	5.63
20.00	3.76
25.00	5.67
40.00	2.53
50.00	2.37
60.00	2.10
70.00	0.83
75.00	0.69
80.00	1.09
90.00	10.3



Volume Statistics (Arithmetic) 44.\$02

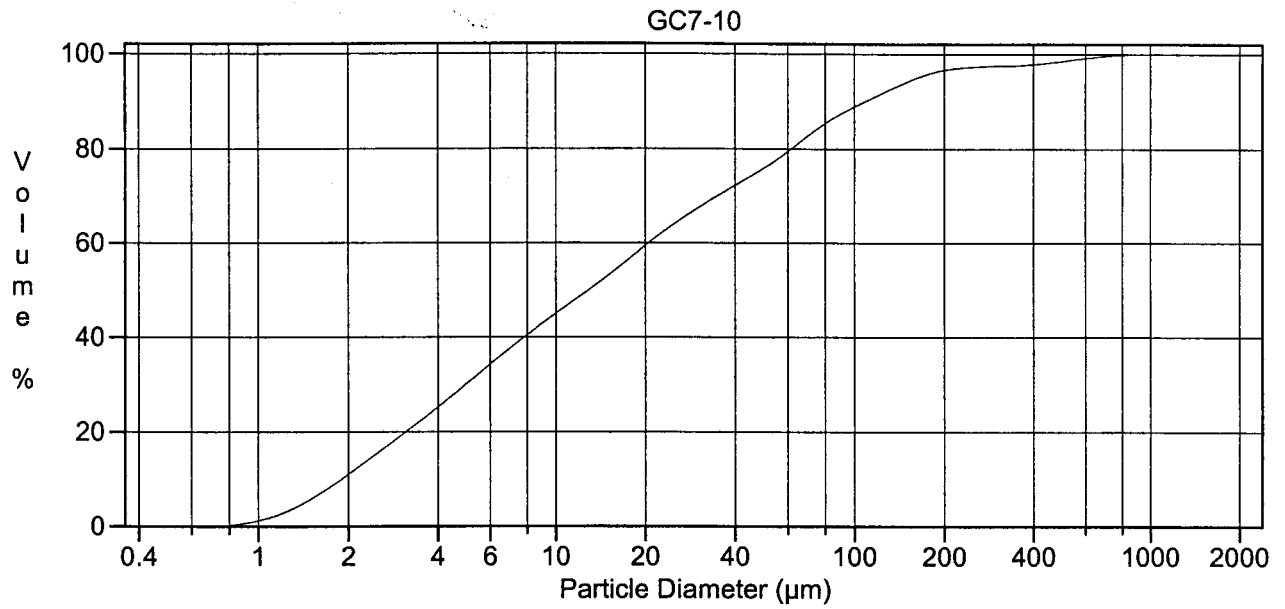
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	39.36 µm	95% Conf. Limits:	0-177.3 µm	
Median:	11.89 µm	S.D.:	70.35 µm	
D(3,2):	5.154 µm	Variance:	4950 µm ²	
Mean/Median Ratio:	3.311	C.V.:	179%	
Mode:	5.355 µm	Skewness:	3.874 Right skewed	
d ₁₀ :	1.797 µm	Kurtosis:	19.59 Leptokurtic	
d ₅₀ :	11.89 µm			
d ₉₀ :	107.7 µm			
Specific Surf. Area	11641 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.797	3.611	19.57	44.71	107.7

44.\$02

Particle Diameter µm	Volume %
1.000	10.9
2.000	20.0
5.000	14.6
10.00	7.53
15.00	6.10
20.00	4.44
25.00	8.21
40.00	3.84
50.00	3.42
60.00	3.06
70.00	1.29
75.00	1.12
80.00	1.85
90.00	12.3



Volume Statistics (Arithmetic)

45.\$02

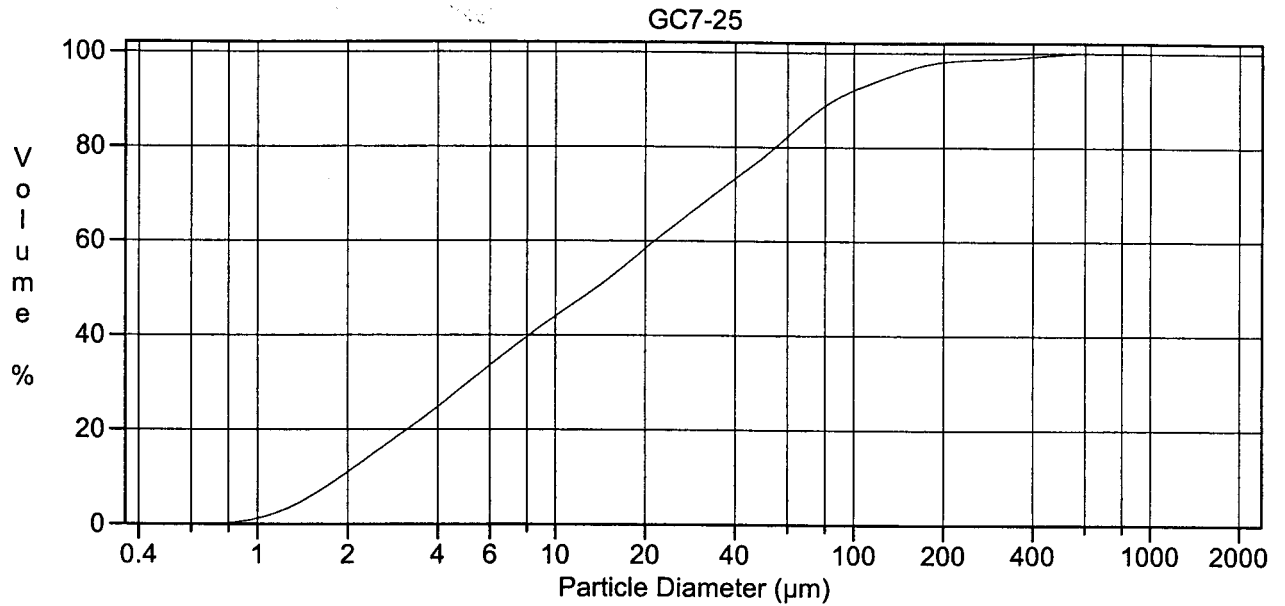
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	45.16 µm	95% Conf. Limits:	0-233.5 µm	
Median:	12.93 µm	S.D.:	96.09 µm	
D(3,2):	5.499 µm	Variance:	9233 µm ²	
Mean/Median Ratio:	3.492	C.V.:	213%	
Mode:	5.355 µm	Skewness:	4.945 Right skewed	
d ₁₀ :	1.902 µm	Kurtosis:	29.37 Leptokurtic	
d ₅₀ :	12.93 µm			
d ₉₀ :	108.8 µm			
Specific Surf. Area	10910 cm ² /ml			

% <	10	25	60	75	90
Size µm	1.902	3.977	20.63	47.56	108.8

45.\$02

Particle Diameter µm	Volume %
1.000	9.86
2.000	19.0
5.000	15.0
10.00	8.03
15.00	6.30
20.00	4.64
25.00	8.21
40.00	3.72
50.00	3.55
60.00	3.29
70.00	1.40
75.00	1.22
80.00	2.01
90.00	12.7



Volume Statistics (Arithmetic)

46#.\$02

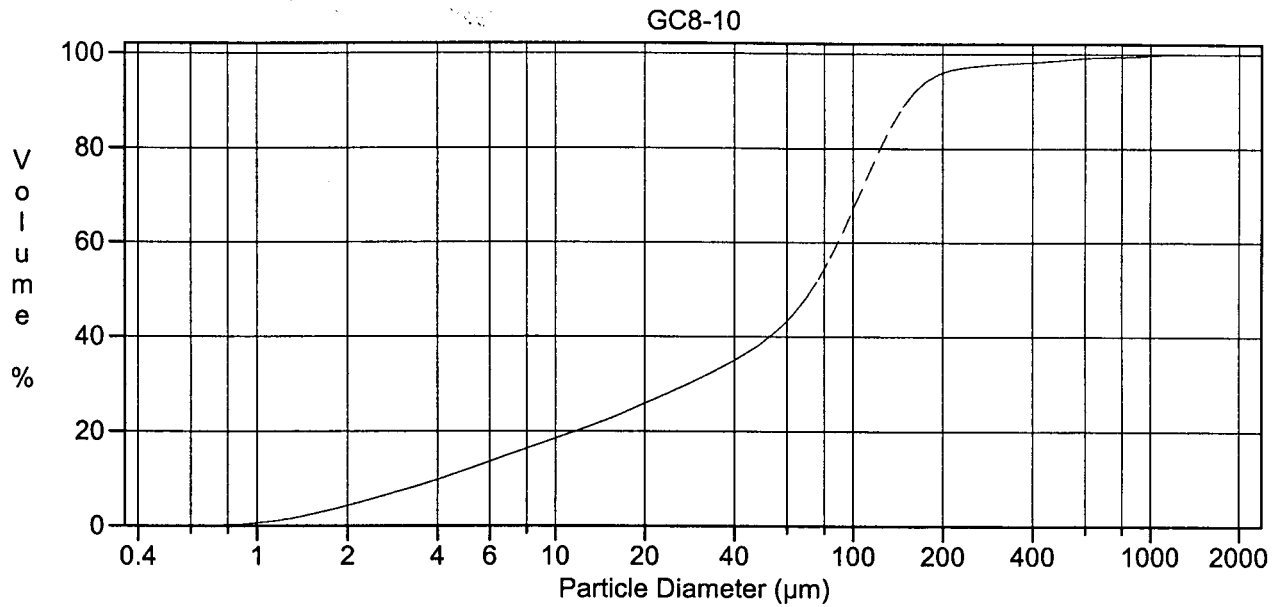
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	35.56 µm	95% Conf. Limits:	0-157.1 µm
Median:	13.71 µm	S.D.:	61.99 µm
D(3,2):	5.541 µm	Variance:	3843 µm ²
Mean/Median Ratio:	2.594	C.V.:	174%
Mode:	60.52 µm	Skewness:	4.605 Right skewed
d ₁₀ :	1.902 µm	Kurtosis:	28.51 Leptokurtic
d ₅₀ :	13.71 µm		
d ₉₀ :	86.20 µm		
Specific Surf. Area	10828 cm ² /ml		

% <	10	25	60	75	90
Size µm	1.902	4.057	21.60	43.67	86.20

46#.\$02

Particle Diameter µm	Volume %
1.000	9.83
2.000	18.5
5.000	14.5
10.00	7.85
15.00	6.42
20.00	4.96
25.00	9.93
40.00	4.76
50.00	4.28
60.00	3.73
70.00	1.50
75.00	1.26
80.00	1.97
90.00	9.34



Volume Statistics (Arithmetic)

47.\$02

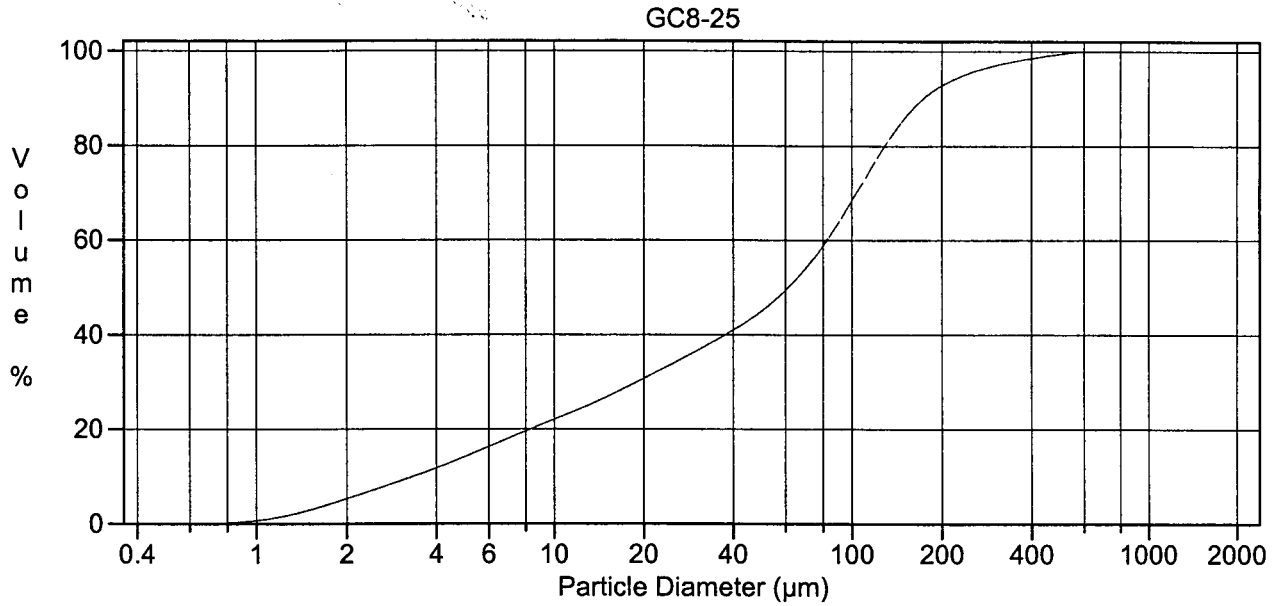
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	84.55 µm	95% Conf. Limits:	0-296.8 µm	
Median:	72.81 µm	S.D.:	108.3 µm	
D(3,2):	12.29 µm	Variance:	11723 µm ²	
Mean/Median Ratio:	1.161	C.V.:	128%	
Mode:	105.9 µm	Skewness:	5.463 Right skewed	
d ₁₀ :	4.110 µm	Kurtosis:	42.95 Leptokurtic	
d ₅₀ :	72.81 µm			
d ₉₀ :	152.3 µm			
Specific Surf. Area	4882 cm ² /ml			

% <	10	25	60	75	90
Size µm	4.110	18.72	89.02	113.7	152.3

47.\$02

Particle Diameter µm	Volume %
1.000	3.72
2.000	7.50
5.000	6.66
10.00	3.98
15.00	3.36
20.00	2.74
25.00	6.38
40.00	3.94
50.00	4.38
60.00	5.13
70.00	2.89
75.00	3.04
80.00	6.33
90.00	39.4



Volume Statistics (Arithmetic) 48.\$02

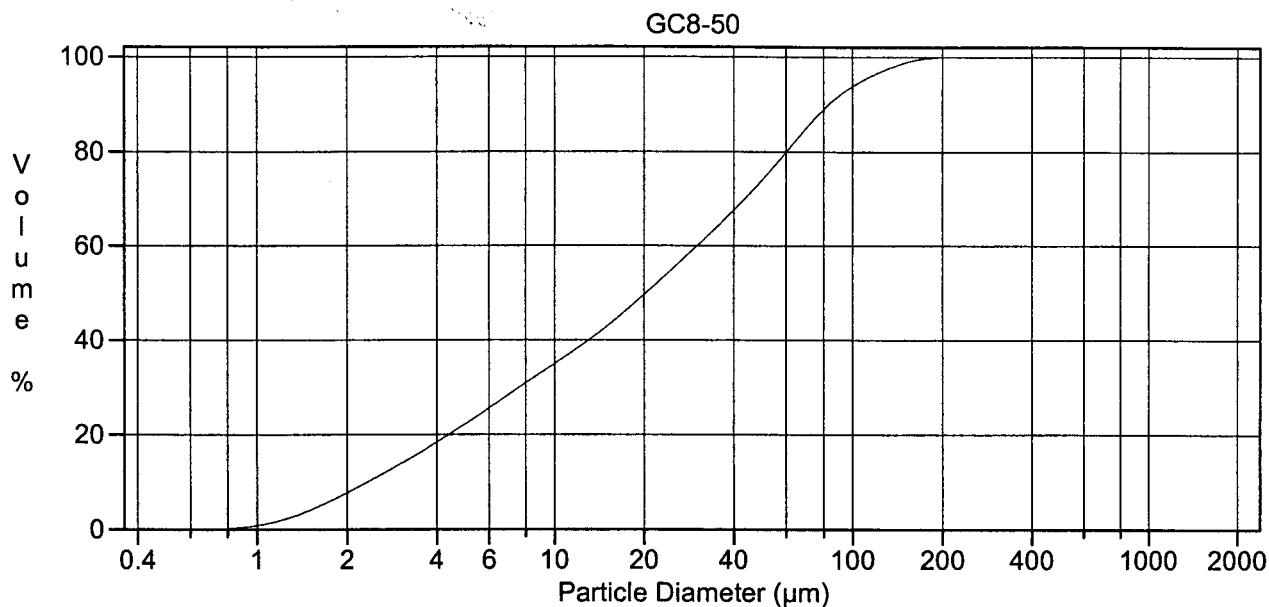
Calculations from 0.375 µm to 2000 µm

Volume	100.0%				
Mean:	80.48 µm	95% Conf. Limits:	0-252.0 µm		
Median:	61.42 µm	S.D.:	87.50 µm		
D(3,2):	10.52 µm	Variance:	7657 µm ²		
Mean/Median Ratio:	1.310	C.V.:	109%		
Mode:	105.9 µm	Skewness:	2.229 Right skewed		
d ₁₀ :	3.345 µm	Kurtosis:	7.341 Leptokurtic		
d ₅₀ :	61.42 µm				
d ₉₀ :	173.6 µm				
Specific Surf. Area	5704 cm ² /ml				

% <	10	25	60	75	90
Size µm	3.345	13.07	82.63	115.7	173.6

48.\$02

Particle Diameter µm	Volume %
1.000	4.62
2.000	8.91
5.000	7.81
10.00	4.69
15.00	3.94
20.00	3.17
25.00	7.13
40.00	4.14
50.00	4.31
60.00	4.59
70.00	2.38
75.00	2.40
80.00	4.81
90.00	36.5



Volume Statistics (Arithmetic) 49.502

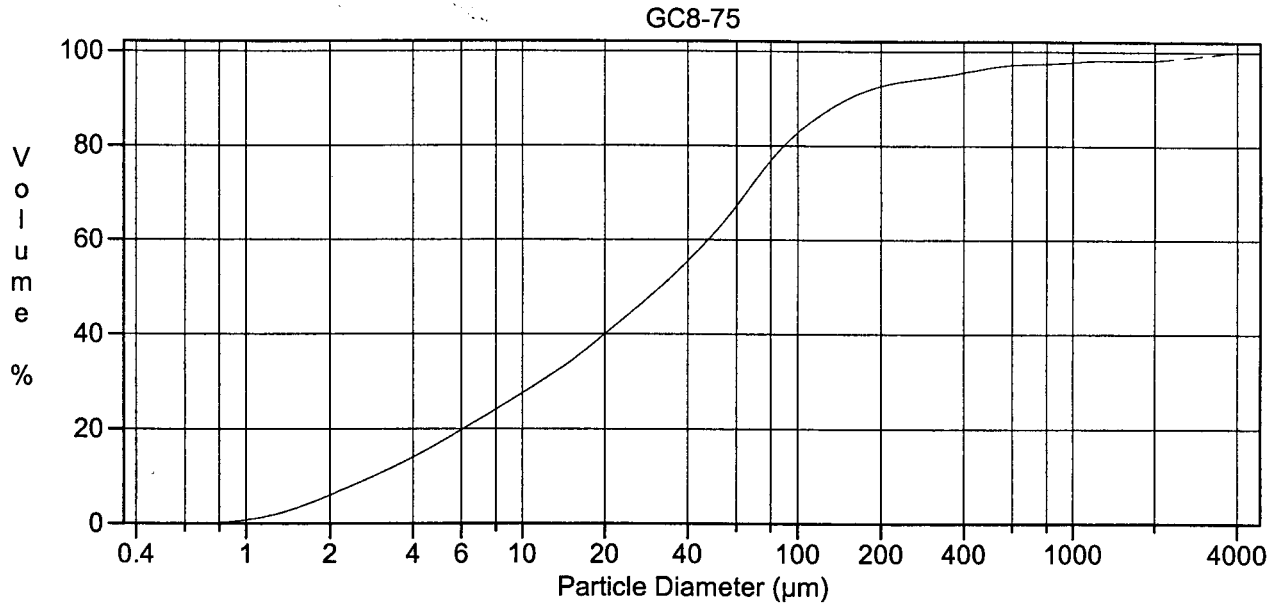
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	33.70 µm	95% Conf. Limits:	0-103.7 µm	
Median:	20.40 µm	S.D.:	35.74 µm	
D(3,2):	7.024 µm	Variance:	1277 µm ²	
Mean/Median Ratio:	1.652	C.V.:	106%	
Mode:	60.52 µm	Skewness:	1.512 Right skewed	
d ₁₀ :	2.350 µm	Kurtosis:	2.211 Leptokurtic	
d ₅₀ :	20.40 µm			
d ₉₀ :	83.54 µm			
Specific Surf. Area	8542 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.350	5.848	30.35	51.71	83.54

49.502

Particle Diameter µm	Volume %
1.000	6.92
2.000	14.5
5.000	12.7
10.00	7.86
15.00	6.74
20.00	5.56
25.00	12.4
40.00	6.50
50.00	5.86
60.00	5.10
70.00	2.10
75.00	1.80
80.00	2.89
90.00	8.31



Volume Statistics (Arithmetic)

50#a.\$02

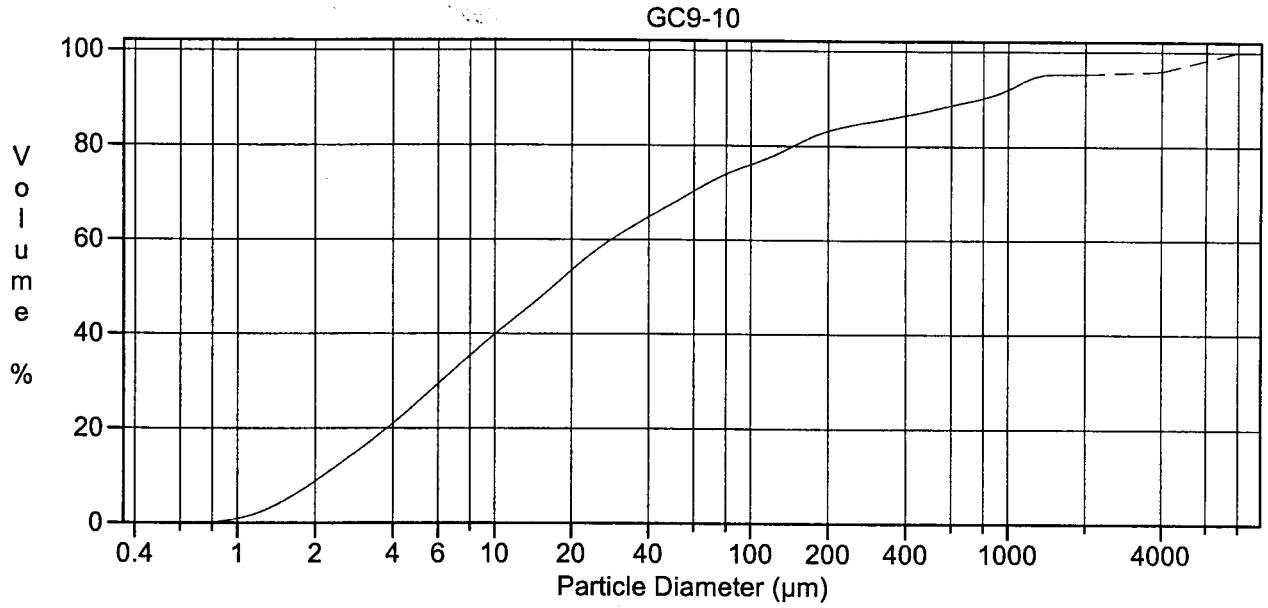
Calculations from 0.375 µm to 4000 µm

Volume	100.0%		
Mean:	116.5 µm	95% Conf. Limits:	0-884.1 µm
Median:	31.94 µm	S.D.:	391.6 µm
D(3,2):	8.786 µm	Variance:	153360 µm ²
Mean/Median Ratio:	3.648	C.V.:	336%
Mode:	66.44 µm	Skewness:	6.279 Right skewed
d ₁₀ :	2.891 µm	Kurtosis:	40.02 Leptokurtic
d ₅₀ :	31.94 µm		
d ₉₀ :	153.0 µm		
Specific Surf. Area	6829 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.891	8.521	47.63	75.65	153.0

50#a.\$02

Particle Diameter µm	Volume %
1.000	5.26
2.000	11.1
5.000	10.4
10.00	6.71
15.00	5.70
20.00	4.71
25.00	10.8
40.00	5.99
50.00	5.74
60.00	5.28
70.00	2.29
75.00	2.04
80.00	3.41
90.00	19.8



Volume Statistics (Arithmetic)

51a.\$02

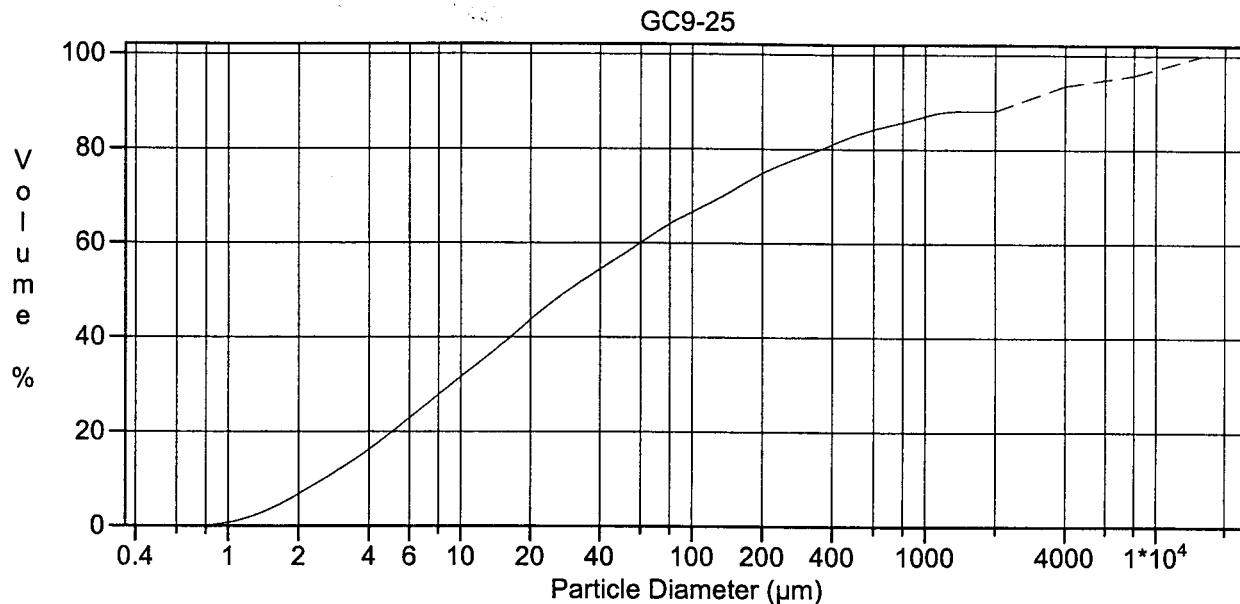
Calculations from 0.375 µm to 8000 µm

Volume	100.0%			
Mean:	361.6 µm	95% Conf. Limits:	0-2614 µm	
Median:	16.93 µm	S.D.:	1149 µm	
D(3,2):	6.480 µm	Variance:	1320497 µm ²	
Mean/Median Ratio:	21.35	C.V.:	318%	
Mode:	5657 µm	Skewness:	4.099 Right skewed	
d ₁₀ :	2.155 µm	Kurtosis:	15.78 Leptokurtic	
d ₅₀ :	16.93 µm			
d ₉₀ :	786.7 µm			
Specific Surf. Area	9259 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.155	4.898	28.81	89.56	786.7

51a.\$02

Particle Diameter µm	Volume %
1.000	7.96
2.000	16.6
5.000	14.4
10.00	7.73
15.00	5.92
20.00	4.25
25.00	7.10
40.00	2.98
50.00	2.52
60.00	2.10
70.00	0.83
75.00	0.70
80.00	1.14
90.00	25.0



Volume Statistics (Arithmetic)

52a.\$02

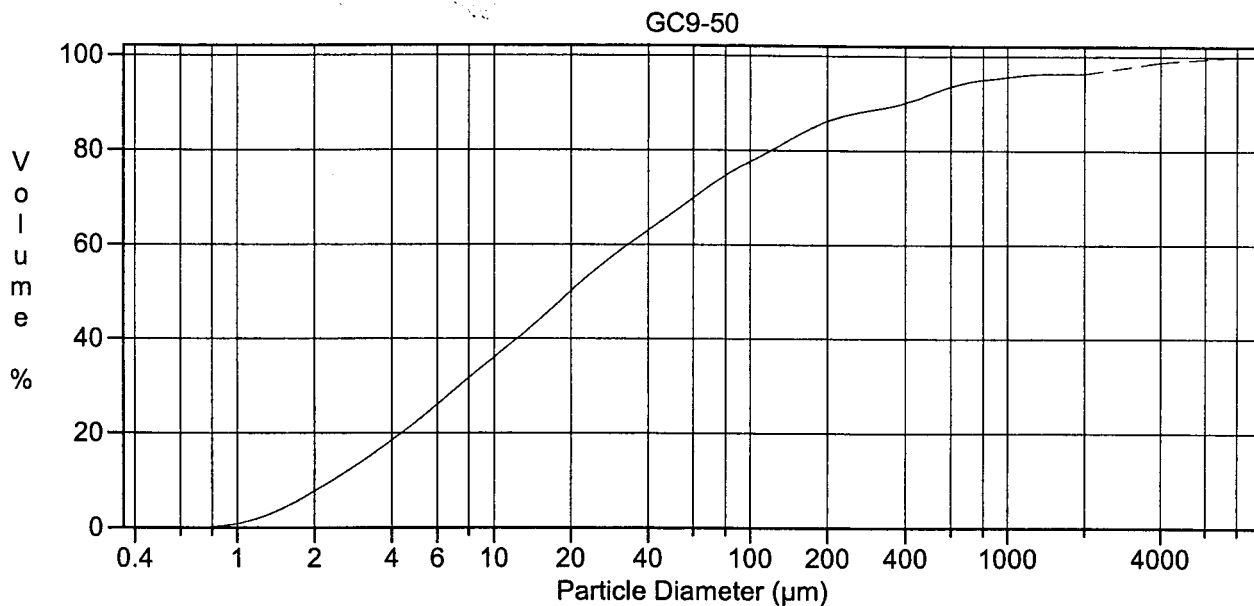
Calculations from 0.375 µm to 16000 µm

Volume	100.0%			
Mean:	851.0 µm	95% Conf. Limits:	0-5597 µm	
Median:	29.48 µm	S.D.:	2422 µm	
D(3,2):	8.130 µm	Variance:	5864341 µm ²	
Mean/Median Ratio:	28.86	C.V.:	285%	
Mode:	2828 µm	Skewness:	3.570 Right skewed	
d ₁₀ :	2.591 µm	Kurtosis:	12.05 Leptokurtic	
d ₅₀ :	29.48 µm			
d ₉₀ :	2695 µm			
Specific Surf. Area	7380 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.591	6.814	60.13	204.1	2695

52a.\$02

Particle Diameter µm	Volume %
1.000	6.03
2.000	13.0
5.000	11.8
10.00	6.78
15.00	5.27
20.00	3.88
25.00	6.92
40.00	3.01
50.00	2.58
60.00	2.25
70.00	0.95
75.00	0.84
80.00	1.41
90.00	34.6



Volume Statistics (Arithmetic)

53a.\$02

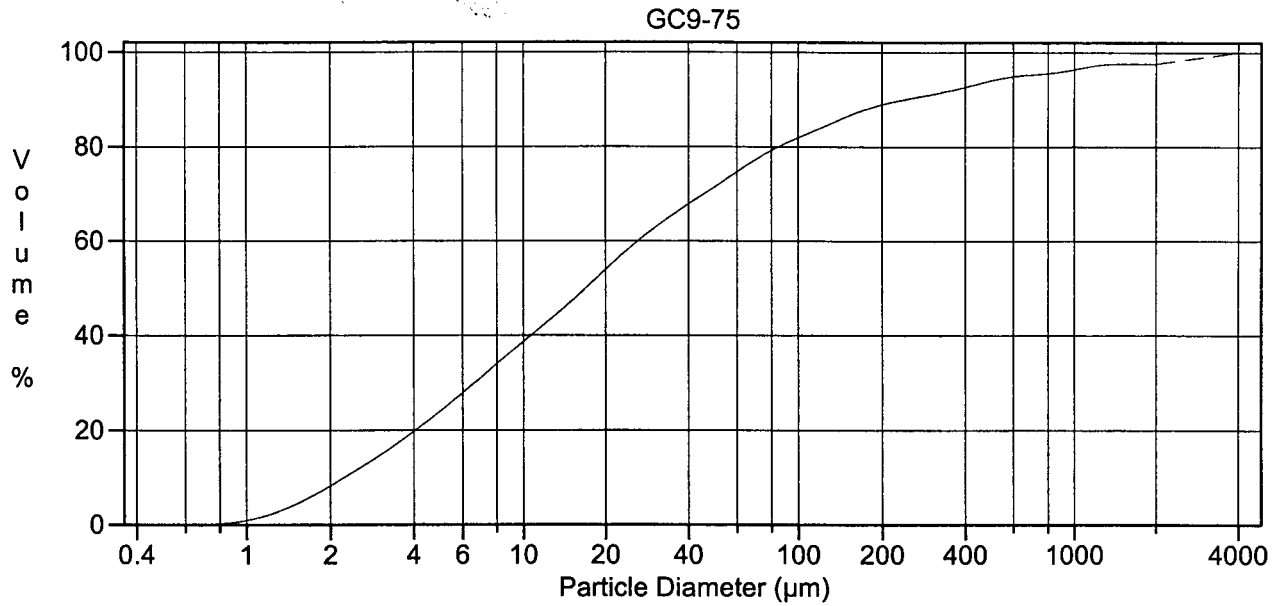
Calculations from 0.375 µm to 8000 µm

Volume	100.0%		
Mean:	220.4 µm	95% Conf. Limits:	0-1718 µm
Median:	19.96 µm	S.D.:	764.0 µm
D(3,2):	7.107 µm	Variance:	583646 µm ²
Mean/Median Ratio:	11.04	C.V.:	347%
Mode:	2828 µm	Skewness:	5.509 Right skewed
d ₁₀ :	2.354 µm	Kurtosis:	32.61 Leptokurtic
d ₅₀ :	19.96 µm		
d ₉₀ :	395.0 µm		
Specific Surf. Area	8442 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.354	5.718	33.54	82.12	395.0

53a.\$02

Particle Diameter µm	Volume %
1.000	6.88
2.000	14.7
5.000	13.5
10.00	7.91
15.00	6.21
20.00	4.61
25.00	8.34
40.00	3.69
50.00	3.16
60.00	2.70
70.00	1.11
75.00	0.97
80.00	1.62
90.00	23.8



Volume Statistics (Arithmetic)

54a.\$02

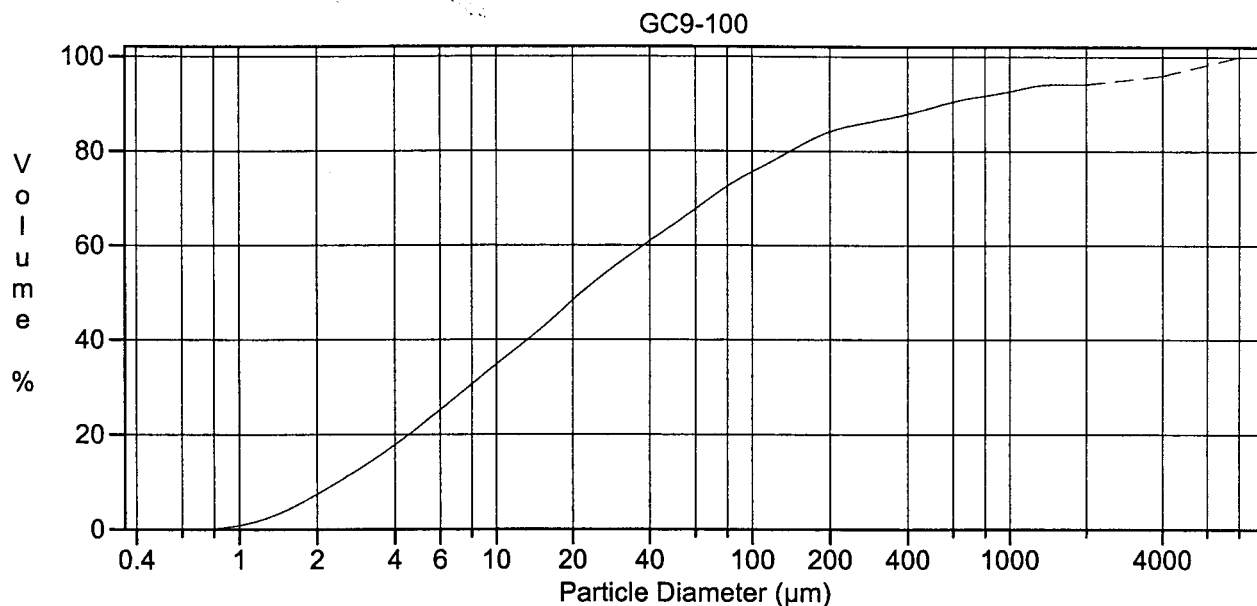
Calculations from 0.375 µm to 4000 µm

Volume	100.0%				
Mean:	142.6 µm	95% Conf. Limits:	0-1040 µm		
Median:	17.01 µm	S.D.:	457.8 µm		
D(3,2):	6.631 µm	Variance:	209557 µm ²		
Mean/Median Ratio:	8.387	C.V.:	321%		
Mode:	2828 µm	Skewness:	5.048 Right skewed		
d ₁₀ :	2.249 µm	Kurtosis:	25.96 Leptokurtic		
d ₅₀ :	17.01 µm				
d ₉₀ :	242.9 µm				
Specific Surf. Area	9048 cm ² /ml				

% <	10	25	60	75	90
Size µm	2.249	5.247	26.40	61.60	242.9

54a.\$02

Particle Diameter µm	Volume %
1.000	7.34
2.000	15.8
5.000	14.6
10.00	8.53
15.00	6.75
20.00	5.05
25.00	8.84
40.00	3.70
50.00	3.11
60.00	2.63
70.00	1.07
75.00	0.92
80.00	1.52
90.00	19.3



Volume Statistics (Arithmetic)

55a.\$02

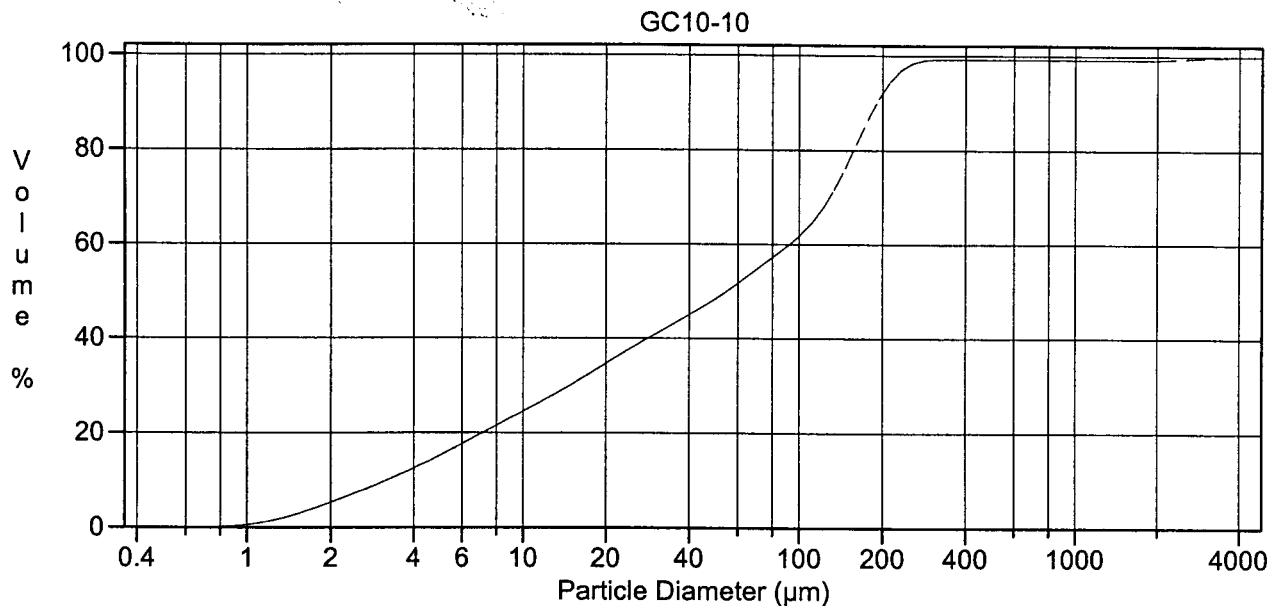
Calculations from 0.375 µm to 8000 µm

Volume	100.0%	95% Conf. Limits:	0-2637 µm
Mean:	366.2 µm	S.D.:	1159 µm
Median:	21.70 µm	Variance:	1342869 µm ²
D(3,2):	7.353 µm	C.V.:	316%
Mean/Median Ratio:	16.87	Skewness:	3.973 Right skewed
Mode:	5657 µm	Kurtosis:	14.77 Leptokurtic
d ₁₀ :	2.408 µm		
d ₅₀ :	21.70 µm		
d ₉₀ :	562.8 µm		
Specific Surf. Area	8160 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.408	5.981	38.02	95.77	562.8

55a.\$02

Particle Diameter µm	Volume %
1.000	6.66
2.000	14.2
5.000	13.0
10.00	7.61
15.00	6.01
20.00	4.45
25.00	8.07
40.00	3.62
50.00	3.13
60.00	2.72
70.00	1.14
75.00	1.01
80.00	1.71
90.00	25.8



Volume Statistics (Arithmetic)

56a.\$02

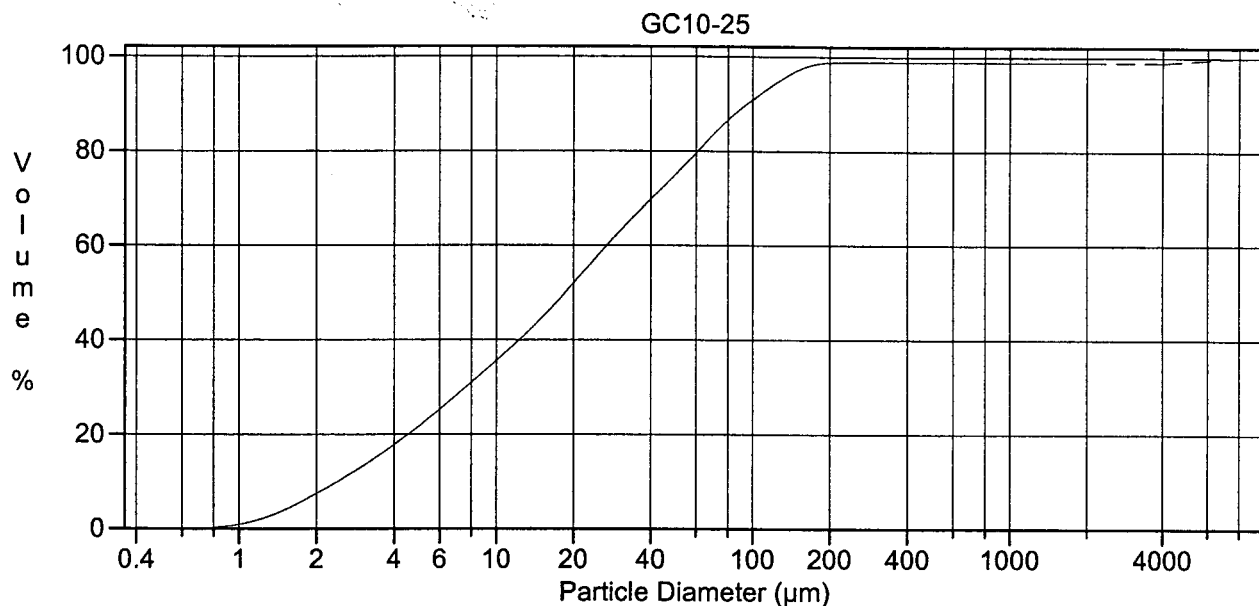
Calculations from 0.375 µm to 4000 µm

Volume	100.0%			
Mean:	102.0 µm	95% Conf. Limits:	0-614.6 µm	
Median:	54.92 µm	S.D.:	261.5 µm	
D(3,2):	10.07 µm	Variance:	68408 µm ²	
Mean/Median Ratio:	1.857	C.V.:	256%	
Mode:	153.8 µm	Skewness:	9.508 Right skewed	
d ₁₀ :	3.210 µm	Kurtosis:	96.20 Leptokurtic	
d ₅₀ :	54.92 µm			
d ₉₀ :	190.9 µm			
Specific Surf. Area	5961 cm ² /ml			

% <	10	25	60	75	90
Size µm	3.210	10.44	92.57	143.5	190.9

56a.\$02

Particle Diameter µm	Volume %
1.000	4.72
2.000	9.94
5.000	9.23
10.00	5.60
15.00	4.53
20.00	3.46
25.00	6.91
40.00	3.46
50.00	3.24
60.00	2.97
70.00	1.31
75.00	1.22
80.00	2.29
90.00	40.6



Volume Statistics (Arithmetic)

57a.\$02

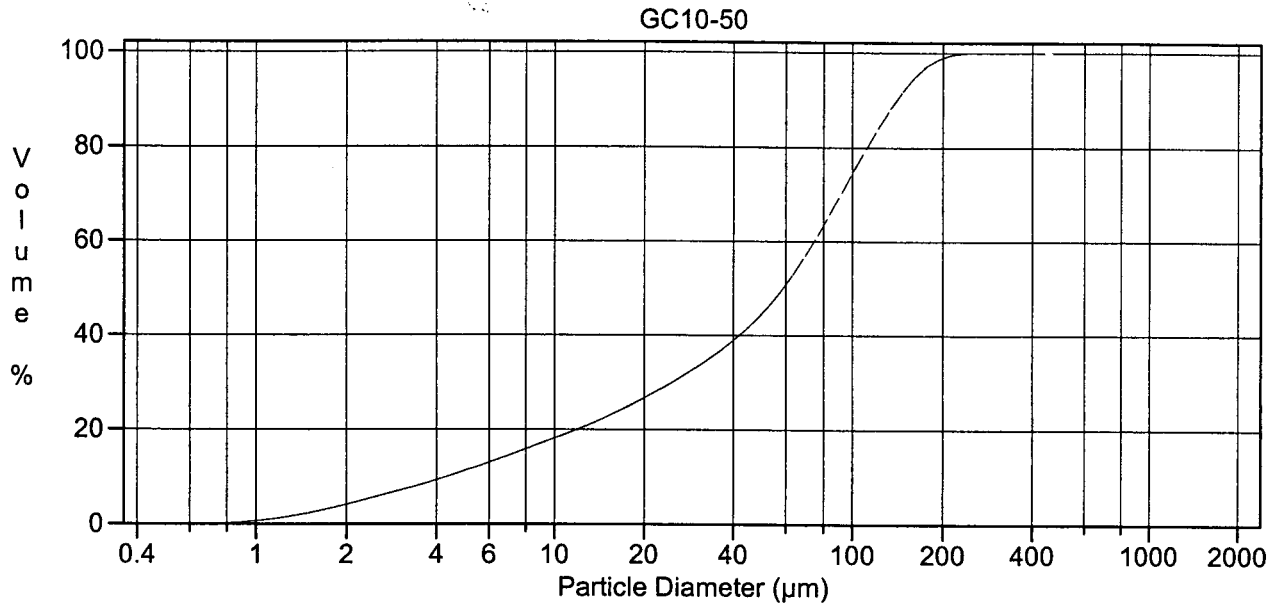
Calculations from 0.375 µm to 8000 µm

Volume	100.0%				
Mean:	97.67 µm	95% Conf. Limits:	0-1270 µm		
Median:	18.59 µm	S.D.:	598.2 µm		
D(3,2):	7.043 µm	Variance:	357814 µm ²		
Mean/Median Ratio:	5.254	C.V.:	612%		
Mode:	19.76 µm	Skewness:	9.149 Right skewed		
d ₁₀ :	2.419 µm	Kurtosis:	82.04 Leptokurtic		
d ₅₀ :	18.59 µm				
d ₉₀ :	95.45 µm				
Specific Surf. Area	8519 cm ² /ml				

% <	10	25	60	75	90
Size µm	2.419	5.956	27.10	50.06	95.45

57a.\$02

Particle Diameter µm	Volume %
1.000	6.55
2.000	14.3
5.000	13.8
10.00	8.99
15.00	7.46
20.00	5.96
25.00	11.8
40.00	5.27
50.00	4.53
60.00	3.91
70.00	1.64
75.00	1.44
80.00	2.42
90.00	11.1



Volume Statistics (Arithmetic)

58#.\$02

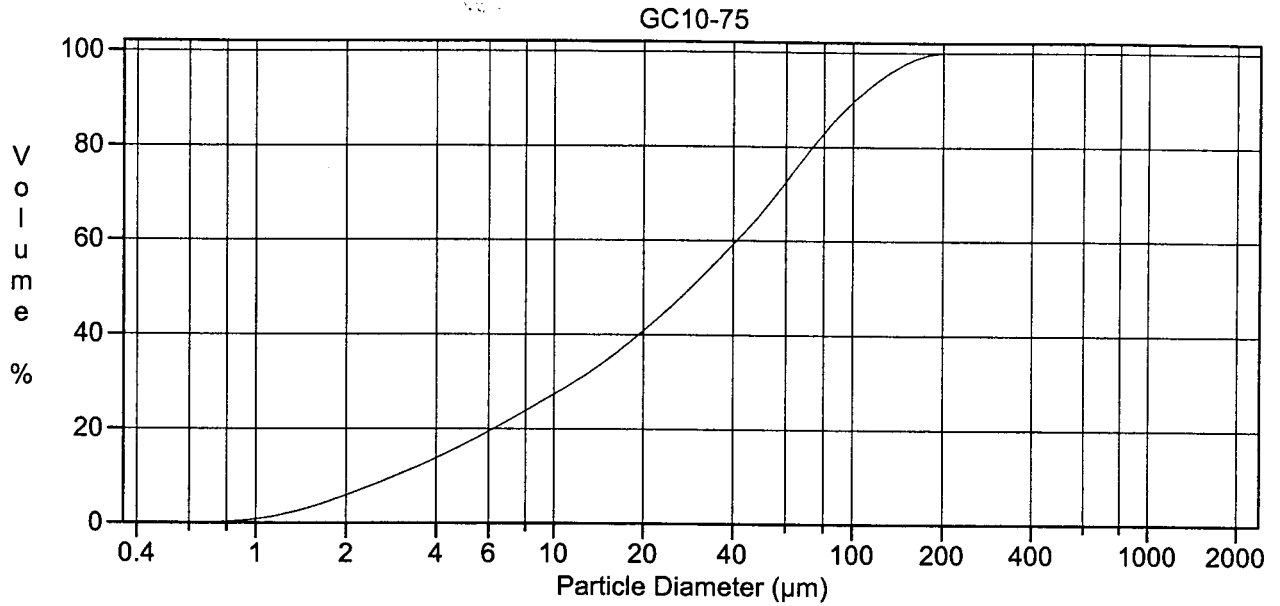
Calculations from 0.375 µm to 2000 µm

Volume	100.0%		
Mean:	65.56 µm	95% Conf. Limits:	0-167.8 µm
Median:	58.81 µm	S.D.:	52.14 µm
D(3,2):	12.26 µm	Variance:	2719 µm ²
Mean/Median Ratio:	1.115	C.V.:	79.5%
Mode:	96.49 µm	Skewness:	0.659 Right skewed
d ₁₀ :	4.343 µm	Kurtosis:	-0.286 Platykurtic
d ₅₀ :	58.81 µm		
d ₉₀ :	140.2 µm		
Specific Surf. Area	4893 cm ² /ml		

% <	10	25	60	75	90
Size µm	4.343	17.92	74.53	101.0	140.2

58#.\$02

Particle Diameter µm	Volume %
1.000	3.50
2.000	7.16
5.000	6.85
10.00	4.55
15.00	3.91
20.00	3.40
25.00	8.87
40.00	5.77
50.00	6.15
60.00	6.38
70.00	3.15
75.00	3.06
80.00	5.82
90.00	30.8



Volume Statistics (Arithmetic) 59.\$02

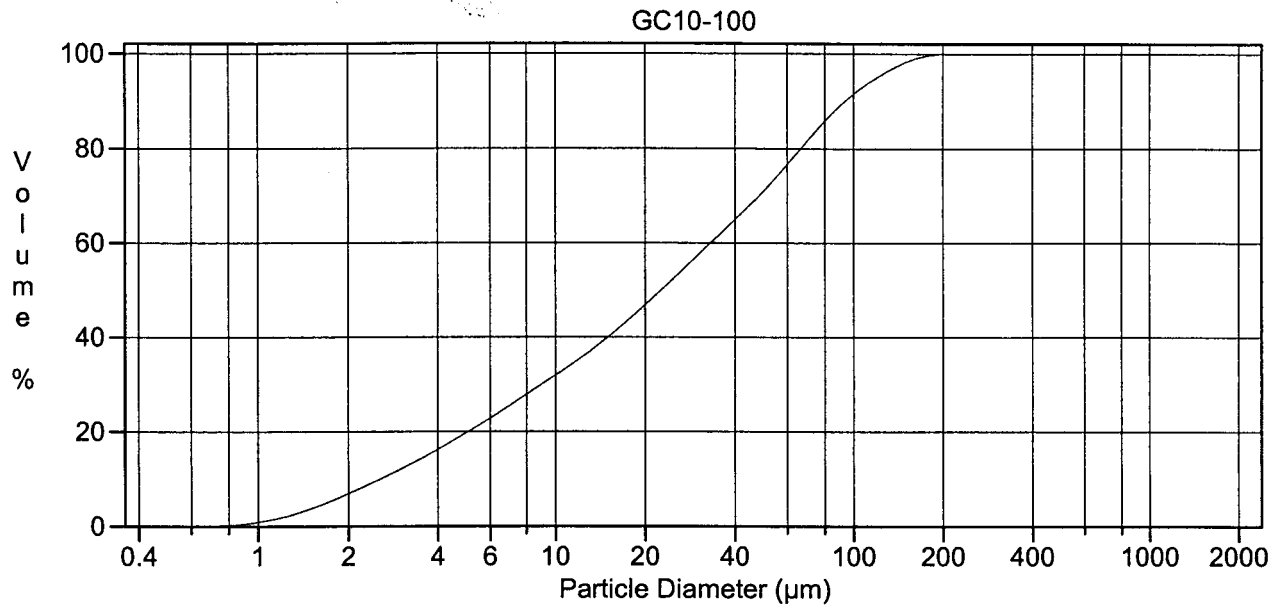
Calculations from 0.375 µm to 2000 µm

Volume	100.0%			
Mean:	42.18 µm	95% Conf. Limits:	0-122.4 µm	
Median:	28.99 µm	S.D.:	40.93 µm	
D(3,2):	8.653 µm	Variance:	1675 µm ²	
Mean/Median Ratio:	1.455	C.V.:	97.0%	
Mode:	66.44 µm	Skewness:	1.241 Right skewed	
d ₁₀ :	2.926 µm	Kurtosis:	1.100 Leptokurtic	
d ₅₀ :	28.99 µm			
d ₉₀ :	102.2 µm			
Specific Surf. Area	6934 cm ² /ml			

% <	10	25	60	75	90
Size µm	2.926	8.656	41.23	64.34	102.2

59.\$02

Particle Diameter µm	Volume %
1.000	5.16
2.000	10.9
5.000	10.5
10.00	7.11
15.00	6.29
20.00	5.45
25.00	13.0
40.00	6.91
50.00	6.37
60.00	5.74
70.00	2.48
75.00	2.20
80.00	3.73
90.00	13.5



Volume Statistics (Arithmetic)

60#.\$02

Calculations from 0.375 µm to 2000 µm

Volume	100.0%	95% Conf. Limits:	0-113.4 µm
Mean:	37.27 µm	S.D.:	38.85 µm
Median:	22.74 µm	Variance:	1510 µm ²
D(3,2):	7.609 µm	C.V.:	104%
Mean/Median Ratio:	1.639	Skewness:	1.415 Right skewed
Mode:	66.44 µm	Kurtosis:	1.653 Leptokurtic
d ₁₀ :	2.564 µm		
d ₅₀ :	22.74 µm		
d ₉₀ :	93.75 µm		
Specific Surf. Area	7886 cm ² /ml		

% <	10	25	60	75	90
Size µm	2.564	6.836	33.32	57.13	93.75

60#.\$02

Particle Diameter µm	Volume %
1.000	6.07
2.000	12.8
5.000	12.2
10.00	8.00
15.00	6.89
20.00	5.74
25.00	12.4
40.00	6.11
50.00	5.60
60.00	5.08
70.00	2.19
75.00	1.93
80.00	3.23
90.00	11.0