

Bettersize

BETTER PARTICLE SIZE SOLUTIONS

Bettersizer ST

Your One-Stop QC Tool

PARTICLE SIZE



Your One-Stop QC Tool

The Bettersizer ST is an automated laser diffraction particle size analyzer designed for industrial quality control. Its patented DLOS (Dual Lens Optical System) guarantees the instrument to provide **consistent and reliable** particle size distribution results. The SOP (Standard Operating Procedure) and automated analysis procedures are designed to help you save valuable time for quality inspection.

Skip complex operations with [Bettersizer ST](#): Simply click "Start", add the sample, and Bettersizer ST will provide the particle size distribution analysis for you.

INDUSTRY

Mining and Minerals

- Kaolin
- Barite
- Calcium Carbonate

Ceramics

- Aluminum Oxide
- Zirconium Dioxide

Abrasives

- Carborundum (Silicon Carbide)
- Calcium Carbonate (Calcite)
- Carbon (Diamond)

Paints and Pigments

- Titanium Dioxide
- Iron Oxide

Metals

- Aluminium Powder
- Copper Powder
- Molybdenum Powder

Chemicals

- Catalyst
- Additives

Plastics

- PVC Grains
- EPS Particles

Batteries

- Lithium Iron Phosphate
- Lithium Cobalt Oxide

Building Materials

- Cement
- Gypsum
- Clay

Agrochemical

- Pesticides
- Herbicides
- Insecticides

BETTERSIZER ST FEATURES AT A GLANCE

Excellent Accuracy

Outstanding Repeatability



Legendary Ease-of-Use

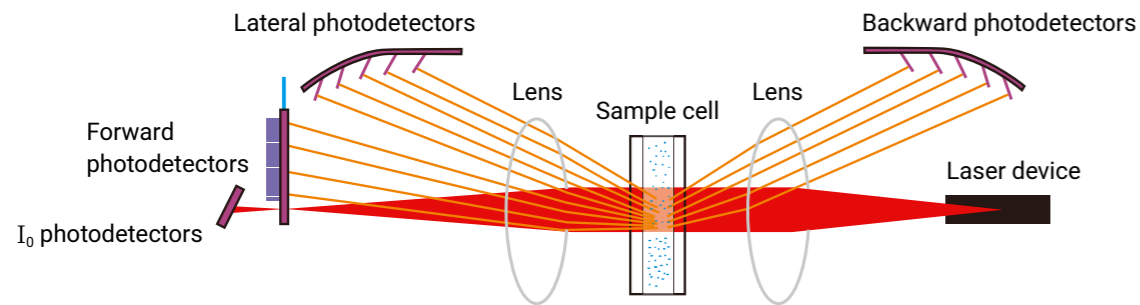
Cost-Efficiency & Robustness

"Measurement consistency allows us to verify the outcome of the process without worrying about measurement errors. The system performance and reliability are excellent in manufacturing CaCO₃. Auto-cleaning between samples is also made easy by Bettersizer ST. It has a very simple and intuitive user interface. Tests can be conducted by multiple production personnel due to its ease of use."

Sadia Munawer
QC Manager of Shaheen Grinding Mills (Pvt) Ltd.

INNOVATIVE DLOS TECHNOLOGY

The DLOS (Dual Lens Optical System) is a patented optical system designed by Bettersize Instruments. In DLOS, one single laser source and two large Fourier lenses are utilized, and the combination of wide-angle forward, lateral and backward photodetectors allows consistent and accurate results with a measurement range from 0.1 to 1000 μm .



Features

- High resolution and accuracy ensured by two large Fourier lenses
- Expands measurement range with 86 high-speed photodetectors
- Compact design prevents using folding optics
- Continuous incident light with consistent wavelength provided by one single laser source

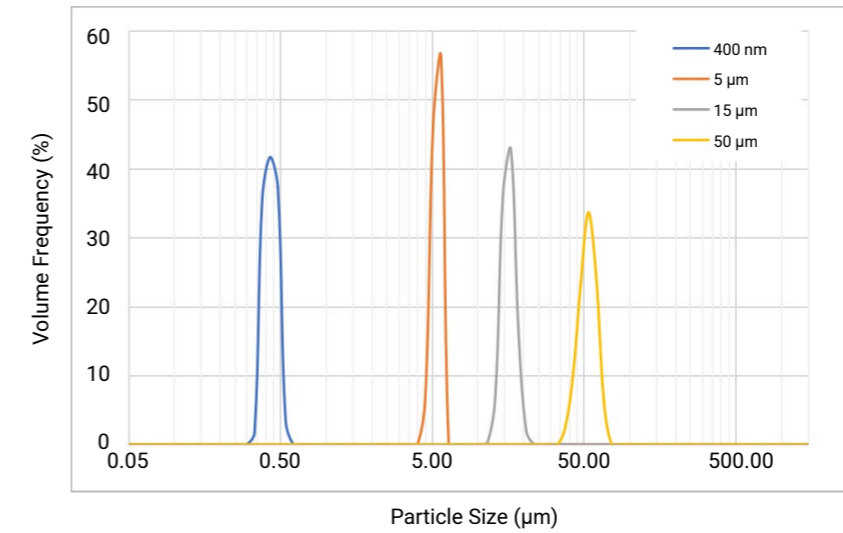
Advantages

- **Measurement range: 0.1 – 1000 μm**
- **Avoid misalignment**
The compact design of DLOS removes folding optics that are susceptible to misalignment
- **More reliable results**
Only one laser source is utilized to provide a continuous scattering spectrum with consistent wavelength
- **Cost-efficient**
Reliable results without a second laser source leads to cost efficiency

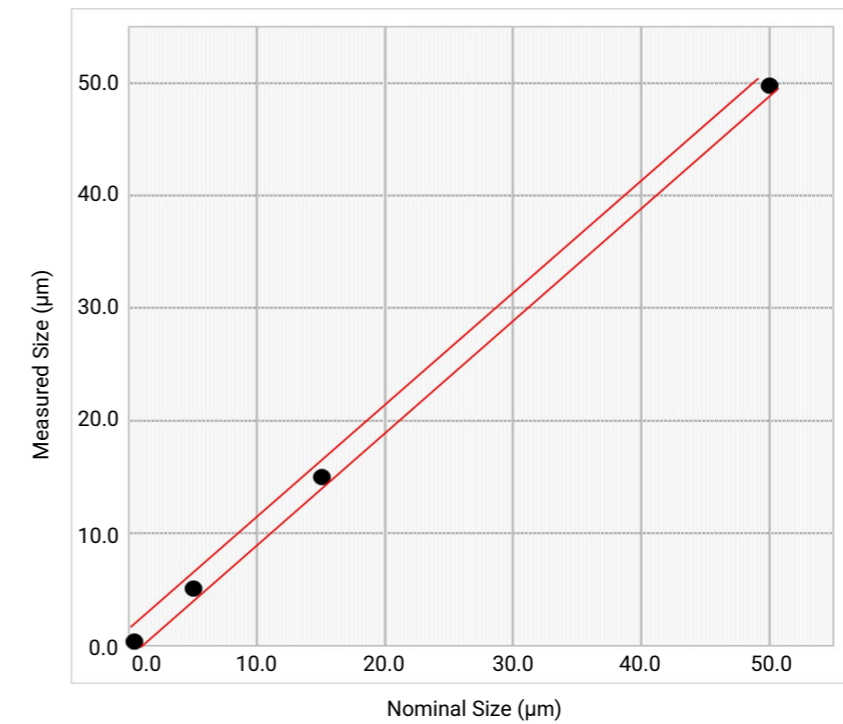


EXCELLENT ACCURACY

Accuracy Verification of Standards



Duke standard samples were measured separately by the Bettersizer ST, showing the distribution peak in the correct position and narrow distribution with high accuracy.



The red line is the nominal size range of standards $\pm 1.0\%$, and the black dots are the measured sizes. As shown in the figure, the measurement accuracy of Bettersizer ST for standards is within 1%.

"The operation and measurement procedure of Bettersizer ST is convenient and easy-to-follow, it helps us build an accuracy benchmark of the measurement result, which has revolutionized the quality of our products."

Liaoning Meishuo Mineral Products Co. Ltd

OUTSTANDING REPEATABILITY

Exceptional repeatability provided by Betsizer ST ensures the reliability of the results. Rapid measurements with **consistent and reliable** results can ease your workload on quality control.

Excellent Repeatability From:

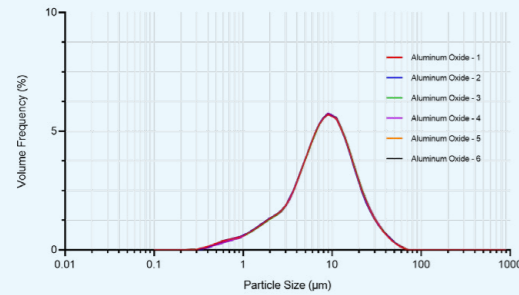
- Stability of signal transmission systems
- Efficient dispersion system
- Automatic alignment keeps the instrument always in optimum condition
- Signal acquiring rate up to 3500 times/second



Repeatability Tests

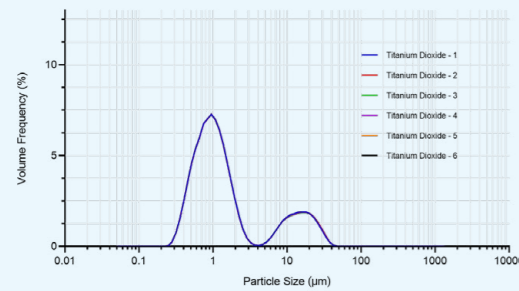
The outstanding repeatability of Betsizer ST, demonstrated by the following two consecutive tests.

Aluminum Oxide



| Sample Name | D05 (µm) | D10 (µm) | D50 (µm) | D90 (µm) | D95 (µm) |
|--------------------|----------|----------|----------|----------|----------|
| Aluminum Oxide - 1 | 1.337 | 2.211 | 8.693 | 22.30 | 29.10 |
| Aluminum Oxide - 2 | 1.352 | 2.212 | 8.655 | 22.24 | 29.27 |
| Aluminum Oxide - 3 | 1.364 | 2.260 | 8.789 | 22.59 | 29.50 |
| Aluminum Oxide - 4 | 1.444 | 2.309 | 8.809 | 22.69 | 29.66 |
| Aluminum Oxide - 5 | 1.360 | 2.233 | 8.744 | 22.42 | 29.39 |
| Aluminum Oxide - 6 | 1.388 | 2.251 | 8.738 | 22.35 | 29.31 |
| RSD | 2.77% | 1.63% | 0.66% | 0.78% | 0.66% |

Titanium Dioxide



| Sample Name | D05 (µm) | D10 (µm) | D50 (µm) | D90 (µm) | D95 (µm) |
|----------------------|----------|----------|----------|----------|----------|
| Titanium Dioxide - 1 | 0.454 | 0.534 | 1.158 | 16.08 | 22.36 |
| Titanium Dioxide - 2 | 0.454 | 0.534 | 1.158 | 16.23 | 22.65 |
| Titanium Dioxide - 3 | 0.453 | 0.534 | 1.158 | 16.20 | 22.68 |
| Titanium Dioxide - 4 | 0.454 | 0.534 | 1.158 | 16.28 | 22.72 |
| Titanium Dioxide - 5 | 0.452 | 0.532 | 1.157 | 16.31 | 22.76 |
| Titanium Dioxide - 6 | 0.454 | 0.534 | 1.156 | 16.22 | 22.65 |
| RSD | 0.18% | 0.15% | 0.07% | 0.49% | 0.63% |

"The instrument has very good stability. We are now at the stage of new product research and development, most of the samples are in flake structure, and Betsizer ST helps us measure the particle size differences of different batches, which is helpful for our R&D and product quality control."

Daoming Optics & Chemicals Co. Ltd

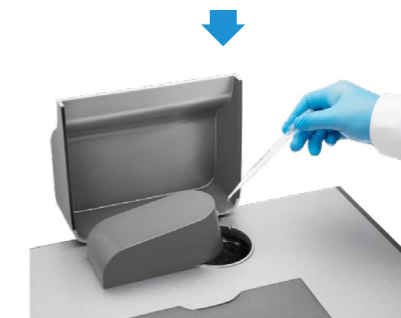
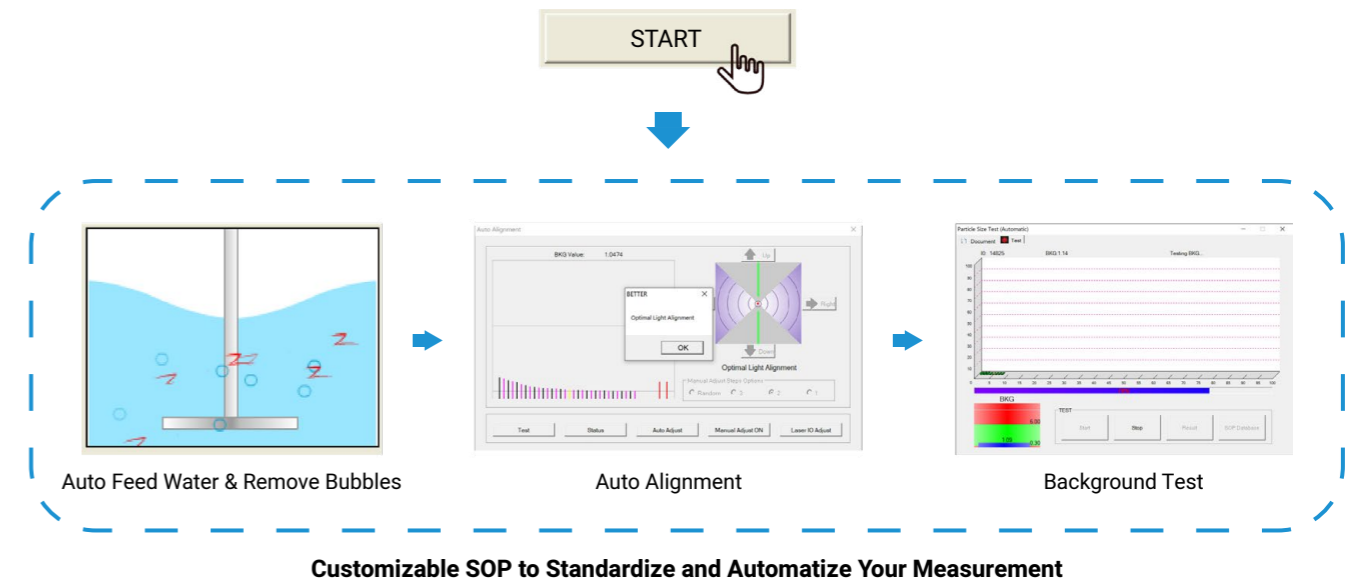
EASE YOUR WORKLOAD IN ALL ASPECTS

The Betsizer software provides various functions that greatly reduce your workload.

I . Intuitive Software

Standard Operating Procedure (SOP)

SOP is an easy solution for standardized and automatic testing. It ensures the measurement results are operator-independent, objective and reliable.

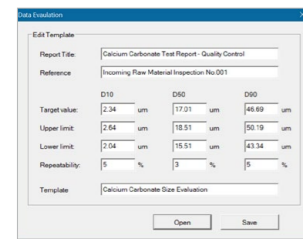


Add Sample

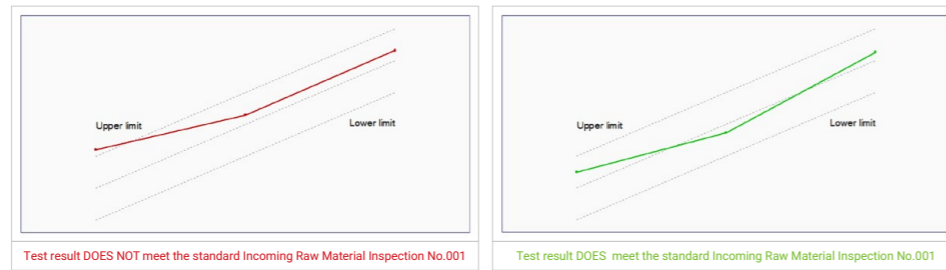


Generate Measurement Report

II . Intelligent Data Evaluation for Quality Control



"Data Evaluation" function to customize standards.



"Data Evaluation" report provides a quick snapshot of your sample, so that you can easily determine if your sample meets your QC requirement and identify where it's disqualified.

III . Performance Validation

With the independent Performance Validation function, the software can automatically generate reports that complies with ISO 13320 and pharmacopoeias.

Bettersize
Bettersizer ST Performance Validation Certificate

Operator: Testing Instrument Serial Number: 01.10.AC.000732
Test Time: 2021-09-18 Guideline: USP/EP/JP/ChP
Repeatability: D10<=5.0% D50<=3.0% D90<=5.0%
Accuracy: D10<=5.0% D50<=3.0% D90<=5.0%

| Sample Name:Corundum(WRP) | Sample Source:Bettersize | Catalog No.:X009.0005.0100 | Packaging Lot#--- |
|---------------------------|--------------------------|----------------------------|-------------------|
| No. | D10(um) | D50(um) | D90(um) |
| 1 | 73.19 | 112.8 | 173.4 |
| 2 | 73.12 | 112.8 | 173.3 |
| 3 | 73.15 | 112.9 | 173.4 |
| 4 | 73.28 | 112.0 | 173.0 |
| 5 | 73.25 | 112.8 | 173.0 |
| 6 | 73.15 | 112.8 | 173.3 |
| Average | 73.19 | 112.8 | 173.2 |
| Target | 71.33+-3.57 | 110.5+-3.32 | 109.3+-8.47 |
| Tolerance | 64.37-78.64 | 103.9-117.2 | 152.7-186.6 |
| Accuracy | Qualified | Qualified | Qualified |
| Repeatability | 0.09%Qualified | 0.05%Qualified | 0.11%Qualified |

The Performance Validation of this Product has PASSED!

I certify the performance validation has been performed according to the documented Bettersize test procedures and the results obtained are within compliance.

Tester Signature: _____ Date: _____

IV . System Inspection

Diagnostic scan: System inspection checklist.

System Inspection

| Instrument | Wet dispersion unit | Dry dispersion unit |
|-----------------------|-------------------------------|---------------------------|
| 1 Laser | 1 LLS | 1 Vacuum |
| 1 Forward detectors | 1 Inlet and Outlet tubing | 1 Compressor |
| 1 Lateral detectors | 1 Inlet and Outlet pump | 1 Pressure sensor |
| 1 Backward detectors | 1 Cell assembly | 1 Measure window assembly |
| 1 IO detector | 1 Circulation tightness | 1 Funnel feeding rate |
| 1 Signal amplifier | 1 Circulation motor control | 1 Feeding speed |
| 1 AD converter | 1 Power supply system | 1 Power supply system |
| 1 USB signal system | 1 Circulation control system | 1 Dispersion unit control |
| 1 Power supply system | 1 Ultrasound power supply | |
| 1 Sample cell | 1 Ultrasound energy convertor | |
| 1 Camera 1 | | |
| 1 Light source 1 | | |
| 1 Camera 2 | | |
| 1 Light source 2 | | |

Buttons: Diagnose, Stop, Copy, Close

COST-EFFICIENCY & ROBUSTNESS

Outstanding Robustness

- Integrated casting of the bottom plate to protect the instrument
- Accurate measurements can be achieved even after a robustness test
- Long-life fiber semiconductor laser source
- Durable circulation tank with casted stainless steel
- Power-adjustable ultrasonic disperser with dry run protection



Compact Design

- Save valuable workspace for factories and laboratories with an internal wet dispersion system
- The DL0S ensures result accuracy and reliability, while avoiding folding optics that are susceptible to misalignment

Simple Maintenance

- Simple disassembly of sample cells allows a quick cleaning, which can be easily accessed without professional tools and excessive clean formulations
- Auto-cleaning function for the circulation tank eases the maintenance work greatly
- Auto-cleaning process can be easily customized in the software



Low Cost of Ownership

- Entry-level price for a laser particle size analyzer
- A measurement range that covers most applications can be achieved with DL0S without additional cost for a second laser source

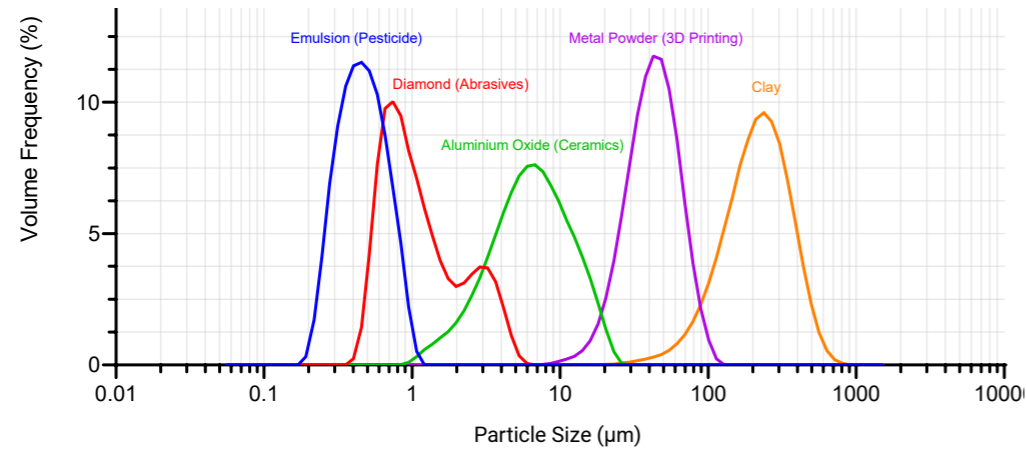
"This unit is very straightforward in its uses, has a good software and is simple to operate for various parameters. Bettersizer ST is compact compared to a lot of instruments! Overall, I found this product to be good value for the money."

Arfan Firdaos
QC Supervisor of Clariant Specialty Chemicals Indonesia

APPLICATIONS

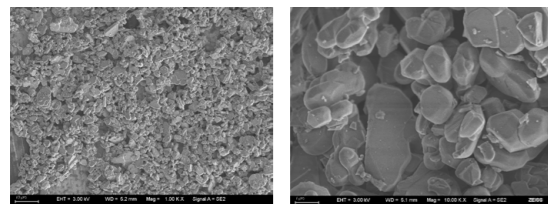
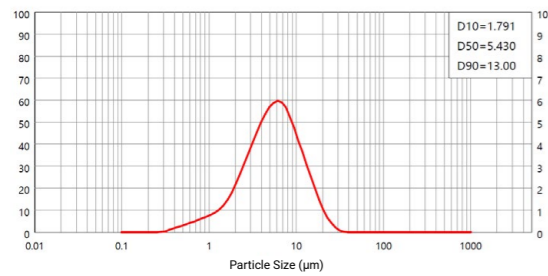
With its outstanding accuracy and repeatability, Bettersizer ST is a perfect QC tool for your every application and challenge.

Particle Size Distribution Measured by Bettersizer ST

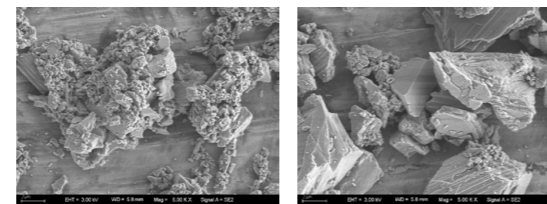
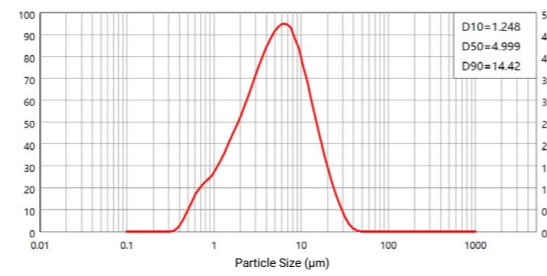


Here are some measurement examples from various industries:

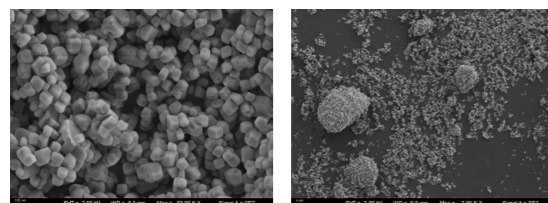
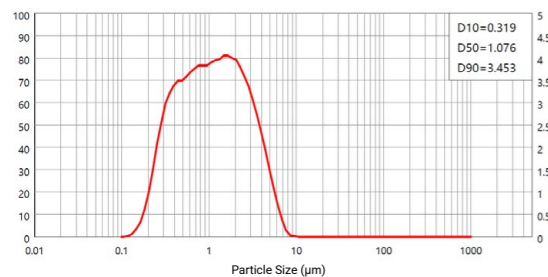
Aluminum Oxide



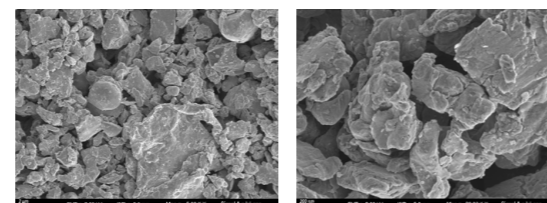
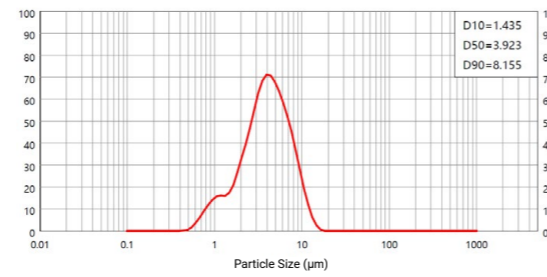
Ground Calcium Carbonate



Precipitated Calcium Carbonate



Alloyed Powder



SPECIFICATION

| Parameters Measured | |
|--------------------------------------|--|
| Particle size distribution | Suspensions, emulsions, dry powders |
| General | |
| Principle | Laser diffraction technology |
| Analysis | Mie scattering theory and Fraunhofer diffraction theory |
| Typical measurement time | Less than 10 seconds |
| Measurement Performance | |
| Measurement range | 0.1 µm - 1000 µm |
| Accuracy error | ≤1% (NIST certified standards) |
| Repeatability error | ≤1% (NIST certified standards) |
| Number of size classes | ≤100 (adjustable) |
| Feeding mode | Automatic wet circulation |
| Main Device | |
| Optical system | Patented DLOS (Dual Lens Optical Systems) |
| Laser | High-power fiber semiconductor laser (10 mW/635 nm) |
| Laser class | Class 1 laser product |
| Detector | 86 photodetectors (forward, lateral and backward arrangements) |
| Measuring angle | 0.031 - 159° |
| Dispersion Module | |
| Circulation speed | 300 - 2500 r/min |
| Circulation flow rate | 3,000 - 8,000 mL/min |
| Ultrasonication | Dry run protection, Max 50 W (adjustable) |
| Circulation tank capacity | 600 mL |
| Software | |
| Conformity | 21 CFR Part 11, ISO 13320, CE |
| Reports | Customizable reporting |
| System Parameters | |
| Dimensions (L x W x H) | 660 x 420 x 320 mm |
| Weight | 38 KG |
| Voltage | DC 24V, 221 W |
| Computer Configuration (Recommended) | |
| Computer interface | At least one high-speed USB 2.0 or USB 3.0 port required |
| Operating system | Windows 7 or higher |
| Hardware specification | Intel Core I5, 4GB RAM, 250GB HD |



Available in the UK:
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Bettersize

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