

Topsizer

MODERN LASER
DIFFRACTION
TECHNOLOGY IN
AN AFFORDABLE,
EASY-TO-USE
INSTRUMENT

 OMEC

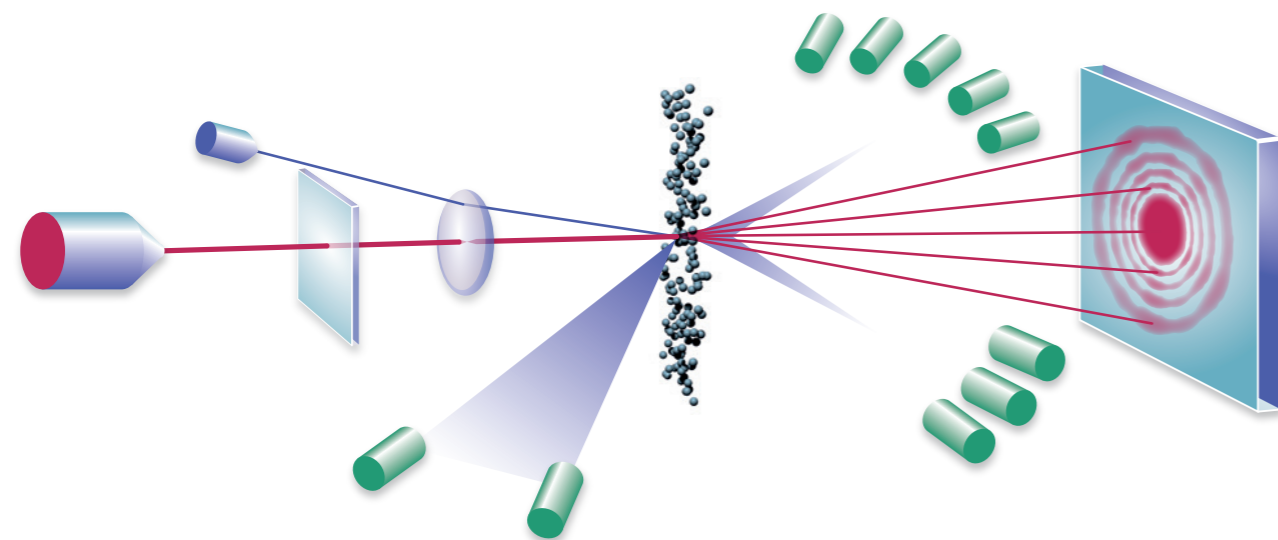
 OMEC

How Laser Diffraction Works

FOR PARTICLE SIZE MEASUREMENT

2 Particles scatter light and the way in which they do so depends on their size. Laser diffraction measures the particle size and particle size distributions of materials by measuring the intensity of the light that is scattered as a laser beam passes through a dispersed particulate sample. Under these conditions large particles scatter high amounts of light at small angles whereas small particles scatter weakly at higher angles. The resulting scattering pattern is analysed to give the size of the particles that created it. The particles measured may be solid particles or liquid droplets and range from a few nanometers to several millimeters in size.

The main elements of a laser diffraction system are the laser, the light scattering detectors, the sample presentation system and the software. Particle size calculations are made in the software using an appropriate optical model, either the Mie theory of light scattering or the Fraunhofer approximation. Laser diffraction is an ensemble technique, measuring large numbers of particles in a single sample, with results presented as volume-based sized distributions.



Easy, Accurate, Reliable and Cost effective

THE TOPSIZER

Topsizer – modern laser diffraction technology in an affordable, easy-to-use instrument

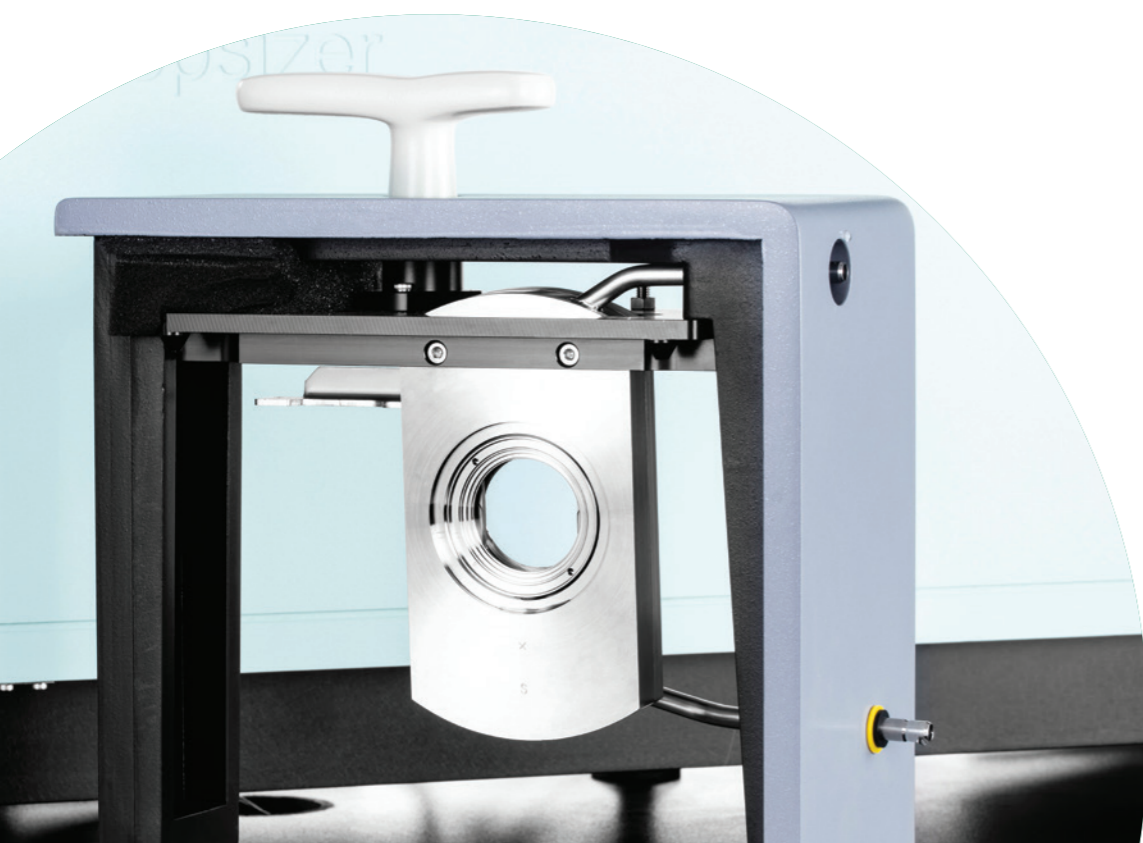
Topsizer Laser Diffraction system offers cost-effective access to modern laser diffraction particle sizing technology. This robust system deliver the reliable, high quality particle size information that businesses need to ensure the efficient performance of multiple industrial processes and products.

Users can rely on Topsizer's proven performance across many different industries and applications while reaping the benefits of a highly affordable system that is easy to install and simple to use.

The design and development of Topsizer reflects the research and development, particle sizing and software expertise of OMEC, as well as our detailed market understanding. Having access to the internationally-recognized laser diffraction knowhow and quality systems of Malvern Panalytical has enabled us to further enhance our development processes and extend the capabilities of our particle sizing instruments.

4

5



Why the Topsizer

FEATURES

Topsizer is designed to deliver high performance laser diffraction particle sizing at a level of economic investment that makes this technology accessible to the widest possible range of users. Intuitive software and user-friendly hardware make it easy for even inexperienced analysts to set up and operate and to start generating meaningful results.

Easy installation and setup for a fast start, 'Out of the box' installation allows you to simply plug in and begin.

Software-driven operation and analysis simplifies user interaction, and with global online support available whenever and wherever you need it you can be confident of rapidly achieving your application goals.

The wide measurement range of the Topsizer allows characterization of particles from submicron to a few millimetres in size in a single measurement.

Maximum resolution is achieved across this broad range by its optimized optical system and detector array. This makes it applicable for a highly diverse range of materials and particle sizes and enables the detection of well-dispersed particles and agglomerates alike.

Rugged optics and automated alignment ensure robust measurement. The use of dual wavelength measurement provides the high sensitivity needed to measure over a wide size range. Rugged configuration and automatic alignment of the optical system ensures uncomplicated

Switching between dispersion units and sample types, for robust measurement time after time. Wet and dry sample dispersion to suit different sample types and applications effective sample dispersion is critical to making good measurements.

Topsizer offers both wet and dry dispersion capabilities with straightforward switching between the two. A choice of software-controlled sample dispersion units means you can select the most appropriate dispersion conditions and dispersants for your sample or application. Furthermore, the non-destructive nature of laser diffraction allows sample recovery.



Specifications Top Sizer

OPTICAL BENCH

Size rang	0.02-2000µm (wet), 0.1-2000um (dry)
Measurement principle	Mie and Fraunhofer scattering
Repeatability	≤0.5% variation (D50, CRM sample)
Accuracy	≤±0.6% variation (D50, CRM sample)
Measurement time	<10 sec for routine tests
Light source	Dual light source technology: Red light: Helium Neon laser, wavelength 0.6328 um, power fluctuation <0.5% Blue light: Solid-state light source, wavelength 0.466 um
Detection system	Detection angle: 0.016° - 140° 98 detecting channels covering, focal plane scattering, side scattering, large angle scattering and back scattering
Optical alignment	Automatic alignment system
Lens arrangement	Single lens Reverse Fourier
Chassis	High-precision aluminum alloy

SYSTEM COMPLIANCE

Laser safety	Class 1, IEC60825-1:2007 and CFR Chapter I: Sub-chapter J: Part 1040 (CDRH)
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SOFTWARE AND DATA PROCESSING

Software design	Modular design Integrated sampling and measurement, data handling and reporting Navigation function
Optical parameters	Comprehensive database for Refractive Index and Absorption values for a wide range of materials
Operating modes	Automated mode, using SOPs created in the software Manual mode, using on-screen controls
Analysis modes	Multiple data analysis models to cover broader applications Volume, surface area, length and number distribution
Report and data export	Reports exported in PDF, Word and Excel file formats Data record exported as CSV or Excel file format

SAMPLE DISPERSION UNIT

SCF-108A	Wet dispersion Full software control of pump/stirrer and sonication High performance, splash resistant, maximum dispersant volume 1000ml Dip-in centrifugal pump and stir head, maximum speed 3500 rpm Built in 50W ultrasonic probe
DPF-110	Dry dispersion Automatic via SOP, including sample feed and dispersion Working pressure 0.05-0.6MPa Stepless adjustable pressure and feeding rate

WEIGHT AND DIMENSIONS

Optical bench	1310 × 275 × 425mm
SCF-108A	240 × 380 × 370mm
DPF-110	305 × 245 × 295mm

Particle Size matters

OUR TECHNOLOGY

Particle size influences numerous properties such as reactivity, dissolution rate, suspension stability, appearance, flowability and handling, packing density and porosity.

Modern instrumentation makes particle size measurement straightforward, enabling better control of product quality and greater understanding of ingredients, processes and outputs. One of the most extensively used particle sizing techniques is laser diffraction, a long-established, robust and universally recognized method around which many standards have been developed.

10



11

*For more information refer to general brochure

Strength of Laser Diffraction

YOUR ADVANTAGE

Laser diffraction is one of the most established and widely-used particle characterization techniques. The fact that it is robust, reliable and simple to use, and generates data that is relevant and easy to interpret, has led to its adoption in industry and academia around the world. A number of key characteristics underpin the continuing success of laser diffraction particle sizing in different industries and applications:

- Non-destructive technique - allows recovery and re-use of precious samples.
- Wide measurement range - from submicron to several millimetres for maximum flexibility.
- Wet and dry sample dispersion - aids the development of optimum measurement methods.
- High sample throughput - enables many measurements per day for maximum efficiency.

- Rapid results generation - for efficient working and closer control of products and processes.
- High measurement repeatability - achieved through sampling a large number of many particles in each measurement - delivers confidence in the results.
- No calibration - simple straightforward verification using standard reference materials simplifies set up and operation.
- Proven and established technique - covered by ISO 13320 (2009) guidance is provided by ISO 13320: 2020.

Technological advances in recent years have brought systems such as the TopSizer to the market. Cost-effective, simple to install and extremely easy to use, these new systems instruments make laser diffraction particle sizing even more accessible for a wider range of applications and budgets.

12

13



Your competitive edge

As part of the Malvern Panalytical family, OMEC's own significant experience and expertise in particle sizing continues to gain further strength and support. Our TopSizer laser diffraction systems were co-developed with teams at Malvern Panalytical, within their internationally-recognized quality management system. Together we also contribute to the continued development of international standards in laser diffraction particle sizing.

OMEC particle sizing systems are used across a wide range of industrial sectors and in academia. Our laser diffraction particle size analyzers offer straightforward solutions in areas such as: building materials; calcium carbonate; powder coatings, paints and pigments; ceramics; powder metallurgy; battery materials; mining and minerals; and specific pharmaceutical ingredients applications.

Our products give users access to the most modern particle sizing technology without the high cost of ownership that is so often a barrier to its adoption. Simple self-installation and ongoing expert support that is delivered online make our systems an easy and convenient choice for laboratories anywhere in the world.

We know that customers rely on our instruments in order to ensure the quality of their own processes and products. OMEC's commitment, quality and integrity are reflected through the company's internationally recognized ISO 9001:2015 Quality Management Certification

OMEC Instruments
Zhuhai, China

WWW.OMECINSTRUMENTS.COM

OMEC, A MALVERN PANALYTICAL BRAND

Service and Support

We aim to be responsive, achieve a rapid turnaround and make it easy for you to do business with us.

At OMEC we want you to have particle size measurement available whenever you need it. We are here to help you with quality answers and short turnaround times.

Online Helpdesk

To achieve a very high level of service, we rely on our helpdesk portal, accessible via our website, allowing us to direct your request to the most appropriate OMEC team member anywhere in the world. Managed by experienced specialists, we ensure a quick turn around time for any question or request.

FAQ

Using our FAQ database, you can take advantage of our years of experience serving customers like you

