MICROTRAC
a VERDER company

PARTICLE SIZE ANALYZER

BLUEWAVE

Microtrac's BLUEWAVE provides accurate, reliable, and repeatable particle size analysis for a diverse range of applications by utilizing the proven theory of Mie compensation for spherical particles and the proprietary principle of Modified Mie calculations for non-spherical particles.

The BLUEWAVE is optimized for materials below 1 micron delivering unsurpassed resolution. The BLUEWAVE measures particle size from 0.01 to 2,800 µm.

Microtrac has a tradition of delivering innovative solutions in particle size analysis through light scattering technology. The BLUEWAVE Laser Diffraction (LD) analyzer is a continuation of that tradition. Utilizing the patented tri-laser technology, the BLUEWAVE provides accurate, reliable and repeatable particle size information for applications ranging from research and development to production, process, and quality control. The BLUEWAVE complies with or exceeds ISO 13320-1 particle size analysis – light diffraction methods.

FEATURES

- Tri–laser, blue / red, multi-detector, multi-angle optical system
- True blue lasers (not LEDs)
- Algorithms that utilize Mie compensation and Modified Mie calculations for spherical and non-spherical materials
- Measurement capability from 0.01 to 2,800 µm
- Wet and dry measurements
- Enclosed optical path ensures complete protection of the optical components leading to little or no operator intervention

PRODUCT ADVANTAGES

- Utilizing blue lasers, the resolution of the low-end measurements increases to dramatically improve the accuracy of measurements below one micron
- Proprietary Modified Mie calculations allow users to accurately measure non-spherical particles that other particle analyzers struggle to accurately characterize
- Seamless transition from wet to dry measurement reduces down-time
- Fixed detectors provide rugged durability and assure proper positioning
- Small bench footprint reduces demand on valuable laboratory space

TYPICAL APPLICATIONS

Used in various fields such as: beverages, biotechnology, chemicals, food, geology / mining, medicine / pharmaceuticals, metal powders, metals, pigments, polymers, powder coatings, ...

chemicals

battery materials

powders

To find the best solution for your particle characterization needs, visit our application database

PARTICLE SIZE ANALYZER BLUEWAVE

TECHNICAL DATA

Measuring range	0.01 µm - 2.8 mm
Measuring principle	Laser diffraction
Lasers	1x Red 780 nm / 2x Blue 405 nm
Laser power	Red laser 3 mW nominal Blue lasers 4 - 8 mW nominal
Detection system	Two fixed photo-electric detectors with logarithmically spaced segments placed at correct angles for optimal scattered light detection from 0.02 to 165 degrees using 151 detector segments.
Data	Volume, number and area distributions as well as percentile and other summary data
Data format	Stored in ODBC format in encrypted Microsoft Access Databases to ensure compatibility with external statistical software applications.
Data integrity	Data integrity may be ensured using FDA 21 CFR Part 11 compliant security features including password protection, electronic signatures and assignable permissions
Measuring time	~ 10 to 30 seconds
Power requirements	AC input: 90 - 132 VAC, 47 - 63 Hz, single phase 200 to 265 VAC, 47 - 63 Hz, single phase
Power consumption	25 W nominal, 50 W max. (depending on options installed)
Environmental conditions	Temperature: 5° to 40° Celsius (50° to 95° Fahrenheit) Humidity: 90% RH, non- condensing maximum Storage temperature: -10° to 50° Celsius (14° to 122° Fahrenheit) (dry only) Pollution: Degree 2
Physical specifications	Case Material: Steel and impact resistant plastic Exterior surfaces are finished with corrosion resistant paint or plating
Dimensions (W x H x D)	~ 560 x 360 x 460 mm (22 x 14 x 18 in)
Weight	~ 27 kg (60 lbs)
Eductor air supply	100 psi (689 kPa) maximum pressure 5 CFM (8,5 m3/h) at 50 psi (345 kPa) minimum flow rate Free of dry contaminants, moisture and oil
Vacuum	Vacuum must exceed 50 CFM

FUNCTION PRINCIPLE

The patented tri-laser system allows light scattering measurements to be made from the forward low angle region to almost the entire angular spectrum (0.2 to 165 degrees). It does so by a combination of three lasers and two detector arrays, all in fixed positions.

The primary laser (on-axis) produces scatter from nearly on-axis to about 60 degrees, detected by a forward array and a high-angle array, both of which have logarithmic spacing of the detector segments. The second laser (off-axis) is positioned to produce scatter beyond the 60 degree level which is detected using the same detector arrays. The third laser (off-axis) is positioned to produce backscatter, again using the same detector arrays. This technique effectively multiplies the number of sensors that are available for detection of scattered light.

The calculation of the particle size distribution can be done with Fraunhofer or Mie calculation. Microtrac was the first on the market to introduce a special calculation mode to respect irregular shape instead of spherical particles. This algorithm has been further refined for transparent, absorbing and reflecting particles.

The BLUEWAVE is fitted with a sample circuit system (Sample dispersion controller) with short paths from dispersion unit to measurement cell to optimize sample flow. The speed of the centrifugal pump can be adjusted according to the viscosity or sedimentation properties of the sample. An ultrasonic tip is integrated and can be regulated by the software. All parameters important to homogenization and dispersion are thus highly controllable. All parts that come into contact with the sample are made from resistant materials like quartz glass, Teflon, stainless steel or Kalrex (chemical compatibility class I). A second integrated pump allows for automatic filling and cleaning.

www.microtrac.com/bluewave