



LASER PARTICLE COUNTING

Particles are everywhere in the environment. Counting and sizing of these particles can provide important information regarding the efficacy of industrial manufacturing and municipal treatment processes. In addition, particle counting can add to the effective design of such processes.

In most particle counting instruments the particles pass through a sensing zone where they are measured individually. Some machines rely upon light blockage, some on light scatter and some on electrical sensing. The laser particle counter at BioVir's laboratory measures light-scatter in a batch-sample format.

LIGHT SCATTERING METHOD

BioVir places a portion of a sample supplied by a client into custom made, high quality glass cylinders. The cylinder is then placed in the batch particle counter where a laser diode (wavelength 670.8 nm) passes light through the sample. A photo detector collection system opposite the laser is used to measure scattered light, size and count the particles. The instrument is equipped with an electronic timer to provide an exact test duration equivalent to an output count in particles per milliliter. BioVir's instrument is capable of measuring particle from <1 to 100 um.

REPORTING

Complete Particle count and profiles are reported in one micron increments from 1 to 17 and every 5 microns up to 100 micron particles. Reports are generated in graph and text formats.

IMPORTANT USES

Municipal

- Particle Counter Calibration
- MPA FPO (Filtration Performance Optimization)
- MPA
- Filter Performance

Drinking Water Treatment Unit

- ANSI/NSF Standards Testing

Industrial

- Clean Water Applications
- Product Purity



SAMPLING*

Sampling Containers

Use glass bottles or plastic containers with wide openings. The bottle cap liners must be made with TFE, not wax coated paper. (DO NOT use coliform bottles with neutralizing tablet)

Sample Collection- General

Clean all sampling containers scrupulously by automatic dishwashing, vigorous hand brushing, and/or ultrasonication. Rinse sample container 3 to 4 times immediately before sampling with particle-free water. A good source of particle free water is distilled water available at supermarkets. Keep sampling

container closed until it is to be filled.

Use extreme care in obtaining, handling, and preparing batch samples to avoid changing total particle count and size distribution. To avoid breakup of aggregates of particles, sample very slowly using a sample container with a wide opening.

Choose representative times and locations for sampling. Ensure that particles are not subjected to greater physical forces during collection than in their natural setting.

Collect samples from a body of water by submerging the sample container to minimize turbulence and bubble entrainment. If sampling from a particular depth, use standard samplers designed for that purpose. For flowing systems, make sure that the velocity into the opening of the sampling device is the same as that of the flowing stream and that the opening diameter is at least 50 times as large as the particles to be measured. For water from a tap, let the water flow slowly and continuously down the side of the collection container.

Minimize particle contamination from the air by keeping the sample in a closed container and by minimizing time between sampling and analysis.

Most surface and ground waters contain relatively stable particles that aggregate slowly. Particle size distribution in biologically active waters or waters that have been treated with coagulants is more likely to change over short time periods. To minimize

flocculation, minimize time between sampling.

Size of Sample

The volume of sample should be 200 mL, preferably not less than 100 mL.

Sample Identification

Accompany samples with complete and accurate identifying and descriptive data. We do not accept for examination inadequately identified samples.

Sample Preservation and Storage and Shipment

- Samples must be stored and shipped cold via same-day or overnight delivery.
- **HOLDING TIME:** All particle batch samples must be placed on-test as soon as possible. Maximum sampling/transit time should not exceed 24 hours from completion of sampling.

*Adapted from Standard Methods for the Examination of Water and Wastewater, 19th Edition.