



Particle Size by Laser Diffraction – Technique, Reporting, and Sample Policies

The submission of samples for testing constitutes acknowledgment of the information, sample requirements, and financial responsibility of the submitter which are provided in this document.

General Statements on Particle Size Testing:

- Particle Size testing is a very procedural and situational test, and the results will greatly depend on the information that is provided to help guide H&M's testing processes. Please provide as much of the following information as possible:
 - A pre-existing method, even if for another manufacturer, vendor, or prior lab.
 - Any known information on the composition, components, and phases present in your sample.
 - The solubility of the sample in aqueous and non-aqueous solvents, if known. If wet or dry testing is preferred, it can be discussed.
 - Any expected size ranges, and if the material is expected to be agglomerated or had some treatment, please provide any information you can as that can impact steps and results.
 - Depending on the size, shape, and nature of your sample, knowing the refractive index values (real and imaginary) can be very useful for ensuring best results. These values can be found in tables and references in some cases.
- Please submit any references or requirements with the sample and clearly state an objective. Requests made to alter or reanalyze the samples/report after a report has been issued are subject to revision fees.
- Analysis reports will include an objective (if supplied), any stated requirements of the objective, a description of the sample and testing conditions, a summary of the report figures and tables and discussing of any results. Standard particle size reports will provide the data on a volume basis, the mean, median, mode, standard deviation, and the typical distribution values of D10, D50, and D90. If the sample has multiple modes, data on different modes can be broken down and provided by the software. This will usually require discussion and may involve extra costs.

Provided Method & Information versus Method Development:

- Because of the nature of particle size testing as noted above, the best results come from having a solid understanding of the sample including enough of the information outlined so the best results can be obtained. Failure to provide a detailed method or information can result in incorrect results for which you may still be charged, including retesting and reruns to rectify such situations.
- Alternatively, testing methods can be developed, refined, and established if a customer wants the testing to be performed to that level on a routine basis. The cost, standards, metrics, and requirements to establish a method require discussion with H&M.

General Sample requirements:

- The sample quantity varies between wet and dry testing and with the nature and behavior of the sample. For wet analyses, 0.25 grams or less can be enough sample. For dry analyses, testing can sometimes be done on 0.25 grams per sample, but it can depend on the material and behavior and the machine settings and test setup to properly run the sample needs to be established well. The sample is consumed each test set, so it often can take up to 5 to 10 grams to get the settings correct and enough data.
- The listed working range of the LD system is listed as 30 nm to 3 mm (according to the manufacturer), but measurement can be difficult at either end of that listed and the practical range is best considered as 100 nm to 1000 nm.

Please submit your samples with the required documents to the following address:

H&M Analytical Services
1301 Whitehorse Mercerville Road
Suite 101
Hamilton, NJ 08619

<https://h-and-m-analytical.com>
Tel: +1 609 758 5700
admin@h-and-m-analytical.com



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Technique Limitations:

- H&M offers this testing as a basic analysis technique for wet and dry samples, but is not set-up as a full particle size-laboratory; as such, the type of sample we can process is limited by our equipment setup and may not be suitable for all projects.
- Non-powder samples such as creams, emulsions, ointments, and other forms, may require special setups and methods that our setup may not be best suited for.
- We do not test hazardous or dangerous materials or utilize highly hazardous solvents.
- There are limitations on the size, shape, dispersability, solubility, viscosity, and many other behaviors related to the sample and the ability to test it. There are other ways of measuring particle size that are better for specific situations and these should be discussed based on the information available for each specific project.
- There are considerations and limitations for wet, dry, and non-aqueous wet testing methods. Dispersants are used for many test methods and provide the best results but can only be chosen well or tested easily when information is known.

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