

Measurement of 50-100nm Resins on LA-960

Introduction

Resins are employed in several industries for numerous uses including the processing of textiles, paper, and leather. Synthetic resins are often manufactured through polymerization or polycondensation reactions. A desirable property of resins is that they will dry from a viscous liquid to a variable state of hardness and elasticity. Particulate sizes of these materials are indicative of purity, therefore measurement proffers quality control.

A set of samples from a major chemical company was tested on the LA-960 to showcase the instrument's performance with sub-100nm materials. The current analytical method calls for laser diffraction measurements of larger materials and PCS measurement of the smaller particle sizes. The goal of the test was to find one instrument that could run all materials.

Analytical Test Method

RI (particle): 1.60-0.00i

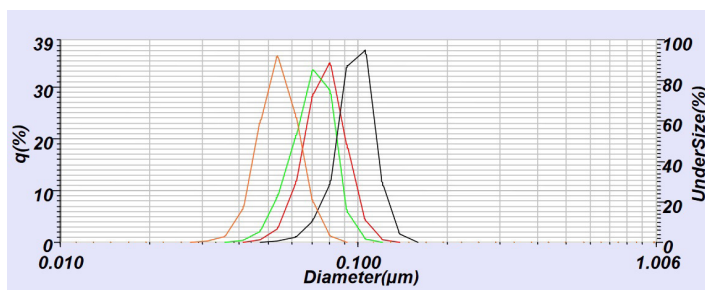
Form of Distribution: Manual, 30

Dispersant fluid: Deionized water, Micro-90 (surfactant)

Circulation speed: 2

Agitation speed: 2, continuous

Note: Due to the nature of resins (i.e. hardening), filtration of samples may be required to accurately measure the smallest particles without interference.



Example data

| Sample | Expected Range (nm) | Median (nm) |
|---------|---------------------|-------------|
| Resin 1 | 40-60 | 55.24 |
| Resin 2 | 70-110 | 78.56 |
| Resin 3 | 70-110 | 71.87 |
| Resin 4 | 90-120 | 99.89 |

Results

The above data demonstrates the LA-960's ability to accurately distinguish between several sub-100nm samples of the same material type. The results fell within a range delineated by the customer and confirmed with PCS measurements, a feat that their current laser diffraction instrument could not accomplish. The LA-960 offers outstanding range of measurement with accuracy and precision below 100nm.