

Particle Size Analysis of Flavor Emulsions

Introduction

An emulsion is droplets of one fluid suspended in another fluid. The stability of an emulsion depends on both the initial size of the droplet and a surfactant which is often added to stabilize the surface of the droplet. Particle size analysis is used during the emulsification process to ensure optimum sizing of the droplets and during stability studies to identify any creaming (coalescence of droplets) due to an unstable dispersion.

Flavor emulsions are concentrates used for food products. The flavor could be a natural product or a synthesized material, emulsified to make delivery easier. Analysis would require the concentrated emulsion to be diluted in to water. Additional surfactant may be required to stabilize the emulsion upon dilution.

Analytical Test Method

Refractive Index (particle): 1.45-0.5i

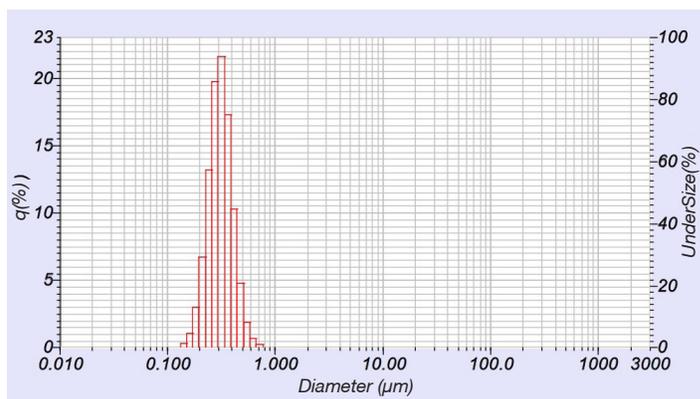
Dispersant fluid: Deionized water

Sonication: None

Circulation speed: 3

Agitation speed: 1

Notes: Due to the strong color of some flavor emulsions, care must be exercised in determining the optimum sample concentration based on light transmission values.



Example data

Median: 0.308 μm
Mean: 0.319 μm
D(10%): 0.222 μm
D(90%): 0.430 μm

Results

For a stable emulsion, the distribution will usually be relatively narrow and for most applications in the sub-micron range. The excellent performance of the LA-960 optical system allows for extremely stable and accurate results to be collected.