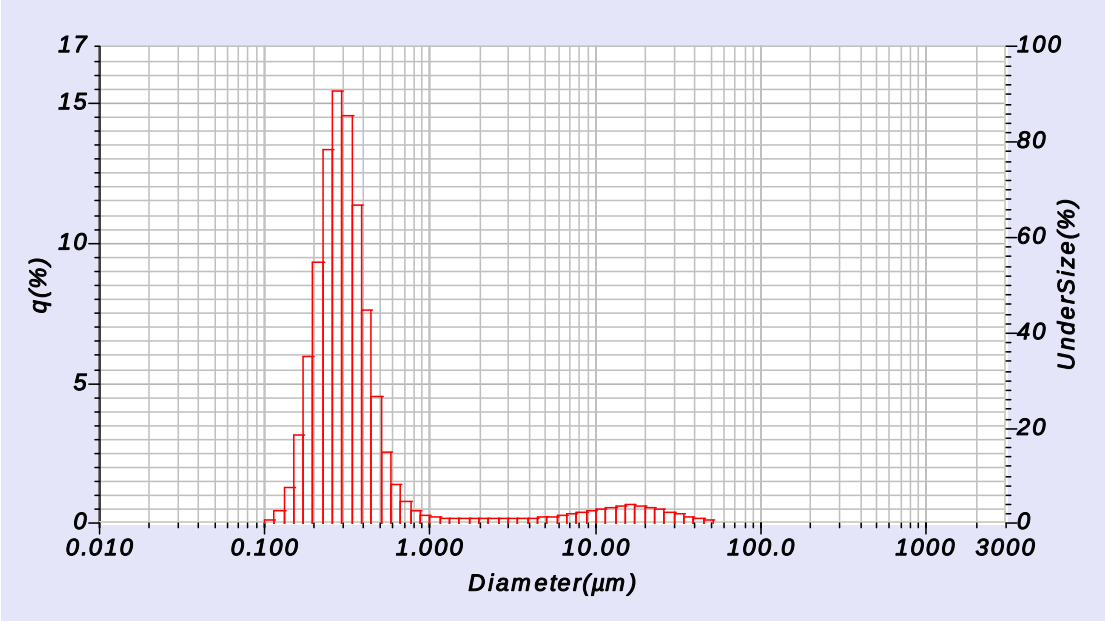
# PARTICLE SIZE ANALYSIS OF ALUMINA

## Summary

Alumina (aluminum oxide, $Al_2O_3$) has widespread use in the ceramics industry for refractory materials, abrasives, and porcelain. Many different sizes and chemically modified grades are available. Particle size affects the manufacturing and mechanical properties of these components, including packing density and mechanical strength of the final part. These materials are usually dispersed in water for measurement, with surfactant added to prevent agglomeration.

## Analytical test method

Refractive Index (particle): 2.66
Dispersant fluid: Water, 0.1% Igepal 630 surfactant
Sonication: 15 minutes, power 4
Circulation speed: 3
Agitation speed: 1, continuous
Notes: Pre-dispersion with concentrated surfactant may be necessary to wet the particle surface before adding to the dispersion fluid.




## Example data

| | |
|---|---|
| File Name: | 6472B |
| Median: | 0.300 µm |
| Mean: | 1.481 µm |
| S. D.: | 4.950 µm |
| D(10%): | 0.194 µm |
| D(90%): | 0.643 µm |

## Discussion

Microscopic examination confirmed the presence of the large particles above 1 micron. These were hard agglomerates that could not be dispersed, even with extended ultrasonic treatment. The sensitivity of the LA-960 was useful in identifying a processing problem that created these unwanted particles.