HORIBA Scientific

Application Note

Titanium Alloy Metal Powder

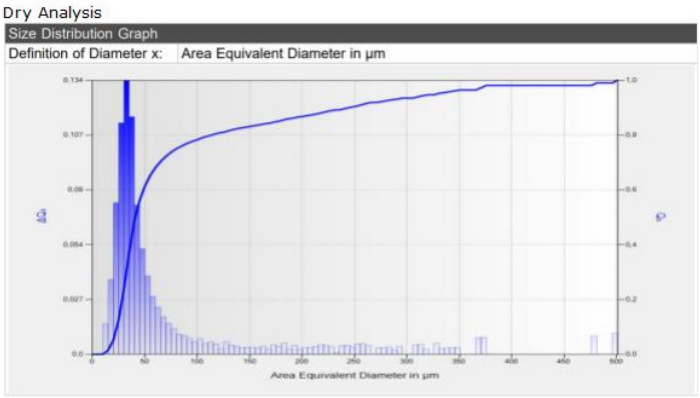
AN248

Summary

Titanium powder is a naturally occurring mineral ranging in color in various shades of gray and black. Titanium is used in a wide range of manufactured products. Some applications where it can be found are coatings, car parts, lightweight aerospace components, and additive manufacturing (3D printing). It can also be found in medical devices and dental implants due to its high biocompatibility.

The particle size of titanium powder is important to final product surface quality, quality and robustness of coatings and mechanical strength of products. It also allows for the monitoring for elimination of large sizes which can plug nozzels in additive manufacturing.

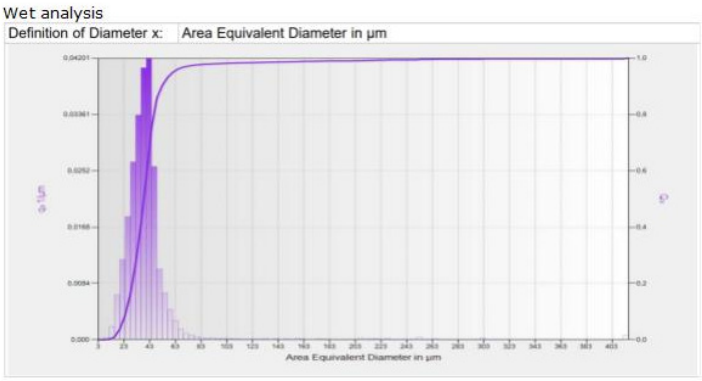
Analytical test method dry
Sample amount: 1 gram
Covered area: 0.5%
Feeder Speed: 20
Measurement Model: Area equivalent diameter
Number of particles: 400,000
Feeder Width: 20mm
Objective: 0.735x



Example dry data
Median: 35.70 µm
D(10%): 22.70 µm
Mean:
D(90%): 229.1 µm

Figure 1. Measurement of 10^Ti64 dry

Analytical test method wet
Dispersant fluid: water
Surfactant: none
Liquid level: medium
Sonication: 1 minute at 50% power
Circulation speed: 5
Measurement Model: Area equivalent diameter
Sample amount: 250 milligrams
Number of particles: 1,000,000
Objective: 1.333x



Example wet data
Median: 38.14 µm
D(10%): 24.26 µm
Mean:
D(90%): 52.26 µm

Figure 2. Ti64 02 Wet