



## NANO ZIRCONIUM OXIDE (Y<sub>2</sub>O<sub>3</sub>) / ZIRCONIA

**Zirconium Oxide (ZrO<sub>2</sub>), also known as Zirconia:** This is a white crystalline oxide of zirconium. Its most naturally occurring form, with a monoclinic crystalline structure, is the mineral baddeleyite. Zirconium oxide is used in a wide variety of applications, one of the most common of which is as a refractory material, due to its high heat resistance. It also finds use in thermal barrier coatings, in advanced ceramics due to its high hardness, and in dental ceramics due to its good biocompatibility and strength. One notable property of zirconium oxide is that under certain conditions, it can undergo a phase transformation which can induce large stresses, leading to a material that is very resistant to crack propagation.

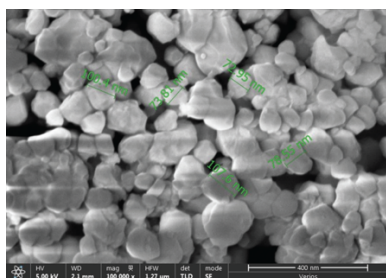
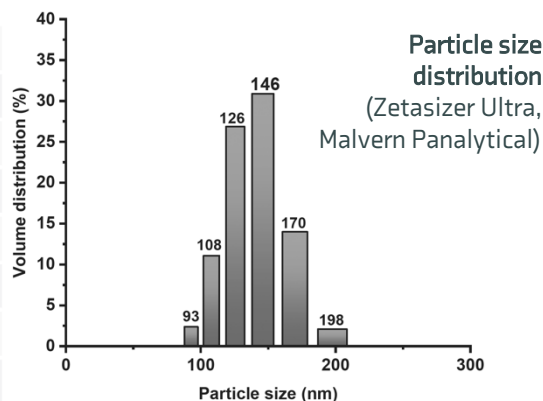
### EXTENSIVE CHARACTERISATION DATA

To ensure uncompromised product quality, each particle batch is analysed and characterized using the latest quality control techniques including dynamic light scattering (DLS), Scanning Electron Microscopy (SEM), transmission electron microscopy (TEM) and Brunauer-Emmett-Teller (BET) analysis. A specific quality control certificate will accommodate every batch. Additional customer-specific characterization requirements can be agreed upon.

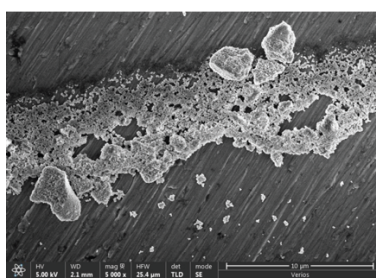
The below is just an example of many different types of **Nano Zirconia** and materials we can produce for our customers, also much below that size.

### MATERIAL CHARACTERISTICS

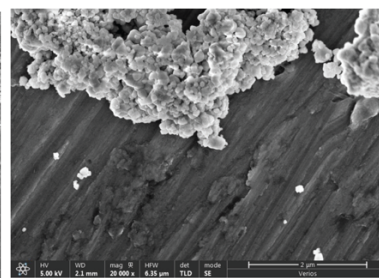
Chemical name	Zirconium Oxide
Formula	ZrO <sub>2</sub>
Molecular weight	123.22 g mol <sup>-1</sup>
Physical state	Solid
Appearance (Form)	Powder
Appearance (Color)	White
Purity	99.9 %
Particle size	~146 nm



SEM image (Verios G4 XHR SEM)



SEM image (Verios G4 XHR SEM)



SEM image (Verios G4 XHR SEM)

### APPLICATIONS

- Advanced ceramics
- Refractory purposes
- Thermal barrier coating (TBC)
- Electronic applications
- Medical products
- Semiconductor Industry
- Glass ceramics & Jewellery
- Dental industry
- Scratch resistant and abrasive material
- Oxygen-rich systems