

# NANOe

Ready-to-sinter Nanopowders for Industrial Use



## ZTA-10 datasheet

$Al_2O_3$   $ZrO_2$  ZTA

## Zirconia Toughened Alumina ZTA nanopowders

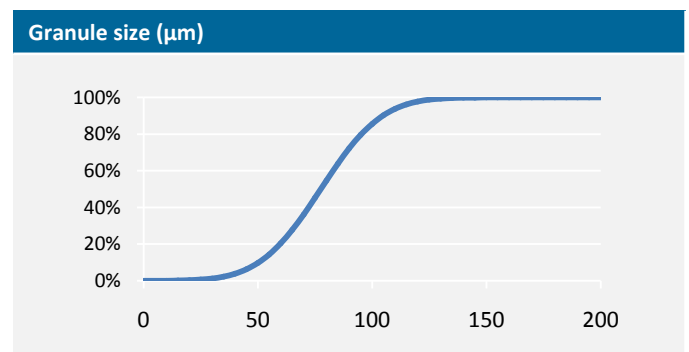
### Our Offer

We offer two main types of ZTA nanopowders: one with binding system (ZTA-BA), one without (ZTA). Our ZTA is a homogeneous mix of our 150nm alpha alumina (90wt%) and our 20nm zirconia (10wt%), 2mol% yttria stabilised. The powders are available in spray-dried granulates or slurries. Customized ZTA nanopowders are available on demand, with different weight ratio between alumina and zirconia, or different yttria doping rates.

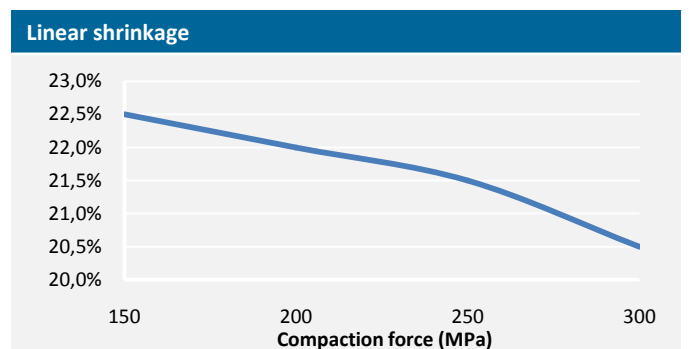
### Key Benefits

- Higher toughness than alumina
- Extremely high hardness
- Better wear resistance

General Characteristics		ZTA-10-BA / ZTA-10
Loss on ignition	wt%	4 / 1
Average crystallite size	nm	Al:150 / Zr:20
Free density	g/cm <sup>3</sup>	1.2
Minimum purity (Zr+Y+Hf+Al)	%	99.9
Zirconia content	%	10
Specific surface area	m <sup>2</sup> /g	11 ± 2
Granulates size	µm	80 - 100



Purity		ZTA-10
Al <sub>2</sub> O <sub>3</sub>	wt%	89.9
ZrO <sub>2</sub>	wt%	9.28
Y <sub>2</sub> O <sub>3</sub>	wt%	0.34
HfO <sub>2</sub>	wt%	0.35
MgO	ppm	900
Na <sub>2</sub> O	ppm	< 40
SiO <sub>2</sub> , K <sub>2</sub> O, CaO, Fe <sub>2</sub> O <sub>3</sub>	ppm	< 30



Sintering		ZTA-10
Compaction force	MPa	> 250
Sintering temperature	°C	1500
Sintered density	g/cm <sup>3</sup>	> 4.12
Intercept grain size Al	µm	0.7
Intercept grain size Zr	µm	0.25
Hardness (Hv10)	GPa	> 19
Fracture toughness (K <sub>10</sub> )	MPa.m <sup>0.5</sup>	4.5
Bending strength	MPa	740

