

Zirconia Toughened Alumina 12% **NANOE**

We offer several types of ZTA powders: one with binding system (ZTA-12 BA), one without (ZTA-12). Our ZTA is a homogeneous mix of our 150 nm alpha alumina and our 100 nm yttria stabilized zirconia. The powders are available in spray-dried granulates, slurries or in ceramic injection molding.

Key Benefits

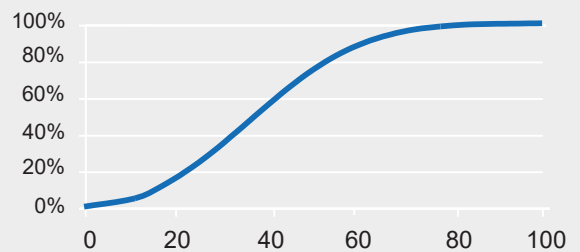
Higher toughness than alumina

Extremely high hardness

Better wear resistance

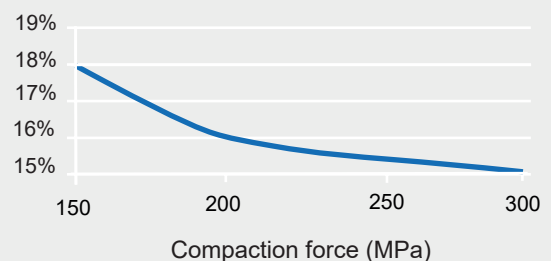
General characteristics		ZTA BA-12/ ZTA-12
Loss on ignition	wt%	1.7 - 3
Average crystallite size	nm	Al:150 / Zr:100
Free density	g/cm ³	1.3 - 1.4
Minimum purity(Zr+Y+Hf+Al)	%	99.95
Zirconia content	%	12
Specific surface area	m ² /g	13 ± 2
Granulates size	µm	35

Granule size (µm)



Purity		ZTA-12
Al ₂ O ₃	wt%	87.9
ZrO ₂	wt%	11.3
Y ₂ O ₃	wt%	0.6
HfO ₂	wt%	< 0.1
MgO	ppm	250
Na ₂ O	ppm	< 100
SiO ₂ , K ₂ O, CaO, Fe ₂ O ₃	ppm	total < 230

Linear shrinkage



Sintering		ZTA-12
Compaction force	MPa	> 200
Sintering temperature	°C	1550
Sintered density	g/cm ³	> 4.12
Intercept grain size Al	µm	0.8 - 0.9
Intercept grain size Zr	µm	0.3 - 0.4
Hardness (Hv10)	GPa	> 19
Fracture toughness (K ₁₀)	Mpa.m ^{0.5}	> 4.5
Bending strength	MPa	740

Mechanical properties

