

# Zirconia - ATZ

# NANOe

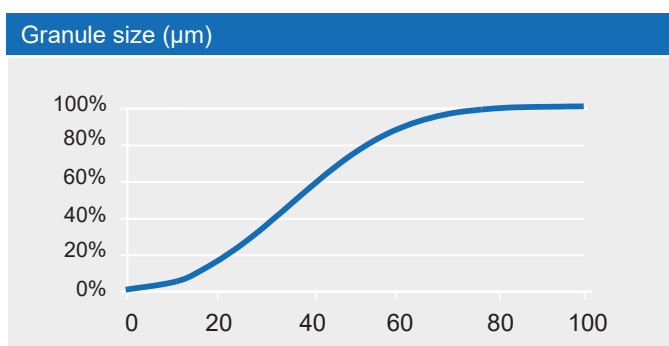
We offer several types of ATZ powders: one with binding system (ATZ-BA), one without (ATZ). Our ATZ is a homogeneous mix of our 150nm alpha alumina and our 100nm yttria stabilised zirconia. The powders are available in spray-dried granulates, in slurries or in ceramic injection molding.

## Key Benefits

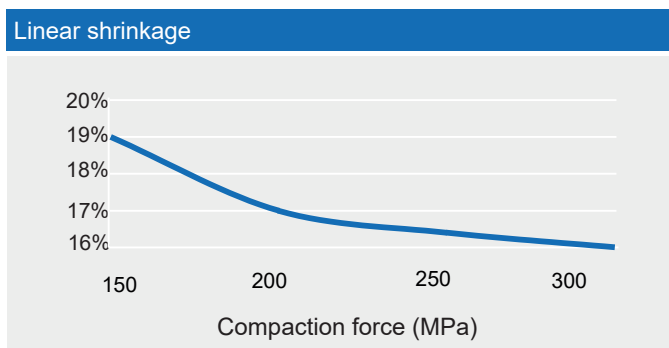
### Higher bending strength than zirconia

### Lower ageing

General characteristics		ATZ-20/80-BA
Loss on ignition	wt%	1.5 - 4
Average crystallite size	nm	Al:150 / Zr:100
Free density	g/cm <sup>3</sup>	1.6 - 1.7
Minimum purity(Zr+Y+Hf+Al)	%	99.95
Alumina content	%	20
Specific surface area	m <sup>2</sup> /g	15 ± 2
Granulates size	µm	35



Purity		ATZ-20/80-BA
ZrO <sub>2</sub>	wt%	75.7
Al <sub>2</sub> O <sub>3</sub>	wt%	20
Y <sub>2</sub> O <sub>3</sub>	wt%	4.3
HfO <sub>2</sub>	wt%	<0.1
MgO	ppm	100
Na <sub>2</sub> O	ppm	< 100
SiO <sub>2</sub> , K <sub>2</sub> O, CaO, Fe <sub>2</sub> O <sub>3</sub>	ppm	total < 230



Sintering		ATZ-20/80-BA
Compaction force	MPa	> 250
Sintering temperature	°C	1550
Sintered density	g/cm <sup>3</sup>	> 5.45
Intercept grain size Al	µm	0.5 - 0.6
Intercept grain size Zr	µm	0.4 - 0.5
Hardness (Hv10)	GPa	>14
Fracture toughness (K <sub>10</sub> )	Mpa.m <sup>0.5</sup>	> 6.5
Bending strength	MPa	1800 - 2000

