# 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 20nm yttria stabilised zirconia. The powders are available in spray-dried granulates, in slurries or in ceramic injection molding.

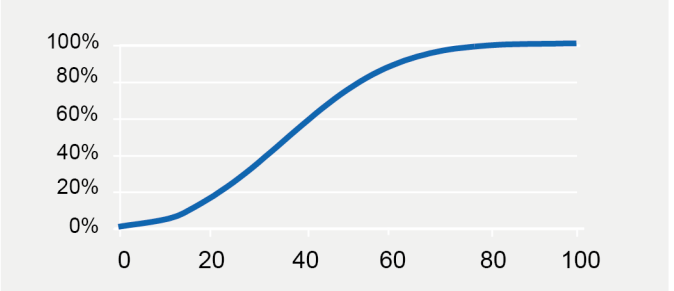
Key Benefits

**Higher bending strength than zirconia**

**Lower ageing**

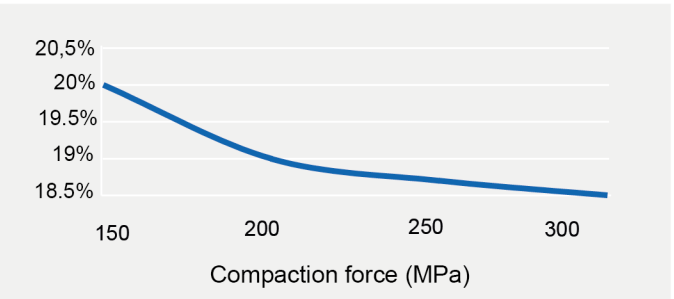
| General characteristics | | ATZ-20/80-BA |
|---|---|---|
| Loss on ignition | wt% | 4 |
| Average cristallite size | nm | Al:150 / Zr:50 |
| Free density | $g/cm^3$ | 1.5 |
| Minimum purity(Zr+Y+Hf+Al) | % | 99.9 |
| Alumina content | % | 20 |
| Specific surface area | $m^2/g$ | 15 ± 2 |
| Granulates size | µm | 35 |

Granule size (µm)



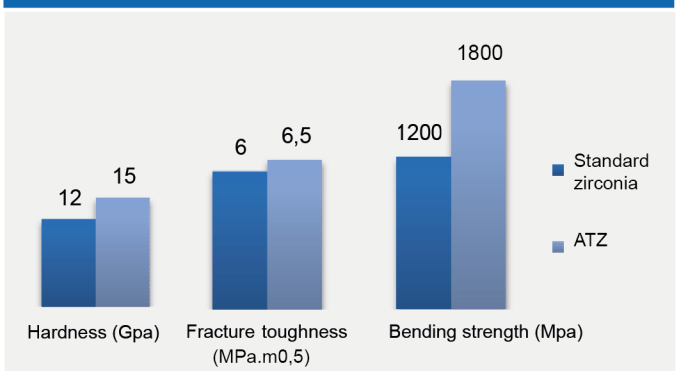

| Purity | | ATZ-20/80-BA |
|---|---|---|
| $ZrO_2$ | wt% | 73.1 |
| $Al_2O_3$ | wt% | 20 |
| $Y_2O_3$ | wt% | 4.0 |
| $HfO_2$ | wt% | < 2 |
| MgO | ppm | 200 |
| $Na_2O$ | ppm | < 40 |
| $SiO_2$, $K_2O$, CaO, $Fe_2O_3$ | ppm | < 30 |

Linear shrinkage




| Sintering | | ATZ-20/80-BA |
|---|---|---|
| Compaction force | MPa | > 250 |
| Sintering temperature | °C | 1500 |
| Sintered density | $g/cm^3$ | > 5.45 |
| Intercept grain size Al | µm | 0.6 |
| Intercept grain size Zr | µm | 0.4 |
| Hardness (Hv10) | GPa | >14 |
| Fracture toughness ($K_{10}$) | $Mpa.m^{0.5}$ | > 6.5 |
| Bending strength | MPa | 1800 - 2000 |

Mechanical properties





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