ZIRKOLITH® by zsystems®

Technical Information Bulletin

Material Composition Zirconia Ceramics (DIN EN 60 672)

Z5 Implants are manufactured from *TZP-A BIO-HIP®*. *ATZ* is used fort he manufacture of rotating instruments.

Designation		TZP-A BIO-HIP®	TZP	ATZ
Constituents	%	$ZrO_2/Y_2O_3/Al_2O_3$	ZrO_2/Y_2O_3	$ZrO_2/Al_2O_3/Y_2O_3$
Composition	%	95 / 5 / 0.25	95 / 5	76 / 20 / 4
Density	g/cm^3	6.05	6.05	5.5
Open porosity	%	0	0	0
Grain size (mli)	µm	0.35	0.4	0.4
Vickers hardness	Hv	1200	1200	1400
Mohrs hardness		8	8	8
Compression strength	MPa	2000	2000	2000
Bending strength	MPa	1200	1000	1400
Modulus of elasticity	GPa	210	200	220
Fracture toughness K_{1C}	$MN/m^{3/2}$	8	8	8
Poisson constant	–	0.31	0.31	0.3
Max. use temperature	°C	1000	1000	1000
Thermal expansion (20 – 1000 °C)	$10^{-6}/K$	10	10	9
Thermal conductivity	W/mK	2.5	2.5	6
Specific heat	J/kg K	500	500	600
Dielectric strength	kV/mm	–	–	–
Specific resistance (20°C/1000°C)	Ω cm	–	–	–
Dielectric constant (100 MHz)	9	–	–	–
Dielectric loss factor	tan σ	–	–	–
Processing possibilities				
Isostatic pressing		X	X	X
Form pressing		X	X	X
Slip castings				
HIP		X	X	X
Possible applications		Bioceramics (Orthopaedics, Dental), presicion parts	Bioceramics presicion parts	Bioceramics (Orthopaedics, Dental) high loaded wearing parts

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