



Oxide ceramics with passion

Quality with tradition

We are experts in the field of advanced ceramics. Since 1978 Metoxit manufacture high-precision components for orthopedics, mechanical engineering, high-temperature, measuring and control technology and the dental industry.

Materials engineering pioneering achievements such as the invention of the BIO-HIP® material or Zirconia for femoral heads characterize Metoxit.

We are a certified medical device manufacturer according to ISO 13485 and FDA 510(k).

www.metoxit.com

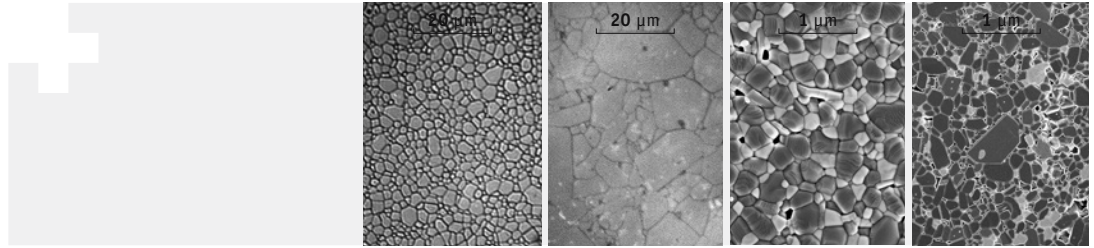
The Swiss Spirit of Innovation

#metoxit

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Proven millions of times!
Only the best is
good enough

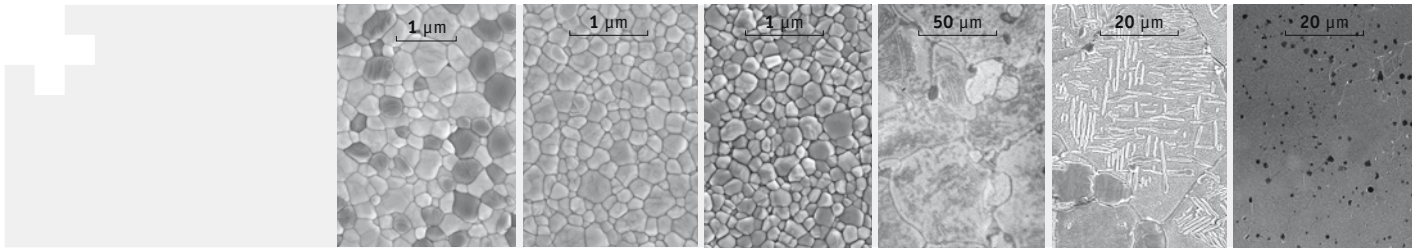
The best material for every application Alumina / Zirconia



Alumina

Designation		Al999	Al998	ZTA	ZTA
Colour		ivory	ivory	white	pink
Components		Al ₂ O ₃	Al ₂ O ₃	Al ₂ O ₃ /ZrO ₂	Al ₂ O ₃ /ZrO ₂ /Y ₂ O ₃
Purity	%	99.9	99.8	88/12	75/23/2
Density	g/cm ³	3.98	3.86	4.1	4.4
Open porosity	%	0	0	0	0
Grain size	µm	1.8	5	< 1	0.7
Hardness Vickers	Hv	2100	1900	1800	1700
Hardness Mohs		9	9	8.5	8.5
Compressive strength	MPa	3800	2500	2600	2300
Flexural strength	MPa	500	350	600	900
Young's modulus	GPa	380	350	360	270
Fracture toughness K _{IC}	MPa*m ^{0.5}	4	3.5	5.1	5.3
Poisson ratio	-	0.24	0.24	0.24	0.26
Max. operating temperature	°C	1900	1900	1000	1000
Thermal expansion (20-1000°C)	10 ⁻⁶ /K	8.0	8.0	8.3	8.5
Thermal conductivity	W/mK	30	29	25	22
Specific heat	J/kg K	900	900	700	800
Dielectric strength	kV/mm	35	30	-	-
Electrical resistivity (20°C/1000°C)	Ω cm	>10 ¹⁴ /10 ⁹	>10 ¹⁴ /10 ⁹	10 ⁹	-
Dielectric constant (100 MHz)	ε	9.6	9.6	-	-
Dielectric loss factor (1MHz 20°C)	tan δ	10 ⁻⁴	10 ⁻⁴	<1.0	<1.0
Suggested applications		Bioceramics, precision parts, spheres	Pistons, plates, precision parts, insulators	Precision parts, spheres, pistons, cores for extrusion dies	Bioceramics, precision parts, spheres, pistons, cores for extrusion dies

The best material
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Zirconia

Designation		ATZ	TZP-A	TZP	PSZ	PSZ	FSZ
Colour		white	white	white	yellow	white	ivory
Components		ZrO ₂ /Al ₂ O ₃ /Y ₂ O ₃	ZrO ₂ /Y ₂ O ₃ /Al ₂ O ₃	ZrO ₂ /Y ₂ O ₃	ZrO ₂ /MgO	ZrO ₂ /MgO	ZrO ₂ /Y ₂ O ₃
Purity	%	76/20/4	95/5/0.25	95/5	96.5/3.5	96.8/3.2	90/10
Density	g/cm ³	5.5	6.05	6.05	5.7	5.7	5.8
Open porosity	%	0	0	0	0	0	0
Grain size	µm	0.4	0.35	0.4	20	5	10
Hardness Vickers	Hv	1400	1200	1200	1500	1120	1200
Hardness Mohs		8	8	8	>8	>8	8
Compressive strength	MPa	2000	2000	2000	2000	2000	2000
Flexural strength	MPa	2000	1200	1000	500	700	250
Young's modulus	GPa	220	210	200	200	200	150
Fracture toughness K _{IC}	MPa*m ^{0.5}	8	8	8	10	9	-
Poisson ratio	-	0.30	0.31	0.31	0.23	0.23	-
Max. operating temperature	°C	1000	1000	1000	1000	1000	2000
Thermal expansion (20-1000°C)	10 ⁻⁶ /K	9	10	10	10	10	10
Thermal conductivity	W/mK	6	2.5	2.5	2	2	2.5
Specific heat	J/kg K	600	500	500	550	550	500
Dielectric strength	kV/mm	-	-	-	-	-	-
Electrical resistivity (20°C/1000°C)	Ω cm	10 ¹⁰ /0	-	-	10 ¹⁵ /3	>10 ¹¹ /3	10 ¹⁵ /3
Dielectric constant (100 MHz)	ε	-	-	-	-	-	-
Dielectric loss factor (1MHz 20°C)	tan δ	-	<2.0	<2.0	<3.0	<2.0	-
Suggested applications		Bioceramics, heavy-duty wear resistant parts, forming tool	Bioceramics, precision parts, positioning pins, pistons	Precision parts, heavy-duty wear resistant parts, locating pins	Precision parts, heavy-duty wear resistant parts, die	Precision parts, die-cast, heavy-duty wear resistant parts	Parts for high temperature like tubes, plates etc. parts for oxygen sensors

All information and data correspond to the present state of our knowledge concerning properties and applications. They do not guarantee certain properties for products designed for specific applications utilizing material(s) described herein. We guarantee, however, first rate quality described in our terms of delivery.

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Surfaces

Condition	Ra (µm)	Rz (µm)
not grinded	1.0 - 5.0	2.5 - 16.0
ground	0.8 - 1.2	2.5 - 8.0
fine ground	0.2 - 0.8	1.0 - 6.0
polished	0.03 - 0.3	0.5 - 4.0

Tolerances

of dimensions acc. DIN ISO 2768-1, linear measure and diameter

tolerances class	Limit of deviation in mm for nominal dimension range in mm				
	0.5 bis 3.0	> 3 bis 6	> 6 bis 30	> 30 bis 120	> 120 bis 400
f (fine)	± 0.05	± 0.05	± 0.10	± 0.15	± 0.20
m (medium)	± 0.10	± 0.10	± 0.20	± 0.30	± 0.50
c (coarse)	± 0.15	± 0.20	± 0.50	± 0.80	± 1.20

Certifications

of Metoxit AG according to the currently valid standards:

- ISO 9001
- ISO 13485
- ISO 6474:1
- ISO 6474:2
- ISO 13356



Metoxit will provide all the documents necessary to register your products in accordance with the requirements of Annex II of Directive 93/42 / ECC and FDA 510 (k).