

Datenblatt | Data sheet

Zirconium oxide

Highly heat resistant ceramic material balls with excellent corrosion and wear resistance. They improve their hardness when they are subjected to collisions. Yttrium doped Zirconia Oxide, they provide the best properties between ceramic materials in grinding and milling applications.

Field of application

Special bearings, control valves, pumps and valves for operation in corrosive environments, pumps for oil plants, flow meters, measuring instruments, in the medical sector (high reliability regarding low impurities of the material). Applications in grinding processes.

Corrosion resistance

Durable: In molten metal, organic solutions, caustic and most acids

Unstable: Hydrochloric acid and strong alkaline solutions

Material

Technical name	Alternative Name	Abbreviation	% Carbide
Zirconium dioxide	Zirconia	ZrO2 + Y2O3	95% ZrO2 / 5% Y2O3

Physical / mechanical / thermal / electrical / magnetic characteristics

Characteristic	Symbol	Unit	Type	Note	Value
Density	δ	g/cm ³	Physical	Environmental temp.	6,00
Modulus of Elasticity	E	GPa	Mechanical		210
Friction coefficient	μ	-	Mechanical	Environmental temp.	0,20
Spezifische heat	C	J/kg*K	Thermal	Environmental temp.	450
coefficient of linear thermal expansion	α	10 ⁻⁶ /°C	Thermal	($\Delta T = 0 - 100$ °C)	10,5
Thermal conductivity	λ	W/(m*K)	Thermal	Environmental temp.	3,5
Volume resistivity	ρ	Ω *m	Electrical	-	> 10 ¹¹
Relative magnetic permeability	μ	-	Mechanical	Diamagnetic	<~1

Technical characteristics

Characteristic	Type	Unit	Value	Unit	Value
Hardness	Mechanical	HV	87 - 91	-	-
Ultimate compressive strength	Mechanical	MPa	1750 - 2500	psi * 10 ³	254 - 362
Operating temperature	Thermal	° C	0 - 1350	° F	32 - 2462

Available with

Diameter min/max (mm)	Diameter min/max (in)	Precision grade
0,300 - 101,600	1/64 - 4	G 10 / 16 / 20 / 25 / 28 / 40 / 60 / 100