

# Datenblatt | Data sheet

## Ruby

Monocrystalline aluminum oxide based ceramics balls, the typical red colour of ruby is due to small amounts of impurities. They provide excellent hardness, corrosion resistance and high temperatures resistance properties, good wear resistance and dimensional stability. They are auto lubricant and easy polishing materials.

### Field of application

Bearings, special pumps and valves (chemical pumps, safety valves), measuring instruments, balls for pens and tips for probes, optical applications, flow meters, styli.

### Corrosion resistance

Good corrosion resistance in contact with (even strong) acids, alkalis and halogens, even at high temperatures

### Material

Technical name	Alternative Name	Abbreviation	% Oxide
Monocrystalline Aluminum Trioxide	Ruby	Al <sub>2</sub> O <sub>3</sub> , Cr <sub>2</sub> O <sub>3</sub> /Si <sub>2</sub> O <sub>3</sub>	98,0 - 99,9

### Physical / mechanical / thermal / electrical / magnetic characteristics

Characteristic	Symbol	Unit	Type	Note	Value
Density	$\delta$	g/cm <sup>3</sup>	Physical	Environmental temp.	3,98
Modulus of Elasticity	E	GPa	Mechanical		420
Friction coefficient	$\mu$	-	Mechanical	Environmental temp.	0,15
Spezifische heat	C	J/kg*K	Thermal	Environmental temp.	750
coefficient of linear thermal expansion	$\alpha$	10 <sup>-6</sup> /°C	Thermal	( $\Delta T = 0 - 100$ °C)	5,8
Thermal conductivity	$\lambda$	W/(m*K)	Thermal	Environmental temp.	39,0
Volume resistivity	$\rho$	$\Omega$ *m	Electrical	-	> 10 <sup>14</sup>
Relative magnetic permeability	$\mu$	-	Mechanical	Diamagnetic	<~1

### Technical characteristics

Characteristic	Type	Unit	Value	Unit	Value
Hardness	Mechanical	HV	1250 - 1700	-	-
Ultimate compressive strength	Mechanical	MPa	2100 - 2600	psi * 10 <sup>3</sup>	294 - 309
Operating temperature	Thermal	° C	-100 - 1600	° F	-320,8 - 3182

### Available with

Diameter min/max (mm)	Diameter min/max (in)	Precision grade
0,127 - 14,986	0,005 - 0,590	G 3 / 5 / 6 / 10 / 25