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Technical Datasheet: Advanced Ceramic type MZ

General notes

- **Zirconia Toughened Alumina (ZTA)**
- a superior combination of high strength (from zirconia) and high hardness (from alumina)
- relatively low density
- no open porosity
- very hard surface, good abrasion and wear resistance
- good flexural strength and fracture toughness
- excellent thermal properties and high temperature stability
- extreme corrosion resistance, nearly chemically inert
- electrically insulating
- typically applications includes soldering processes, handling of components during thermal and chemical processes. Generally used when very rigid tips are required.

Mechanical properties

Flexural modulus:	380 GPa	
Flexural strength:	500 MPa	
Tensile strength:	450 MPa	
Fracture toughness:	7.2 Mpa·$m^{1/2}$	
Knoop Hardness	1750 kg/mm^2	

Thermal properties

Thermal conductivity	26 W/m·K	
Coef. of lin. therm expansionl:	8.0 E-6/°C	25-1000°C
Continuous Use Temperature	1400°C	20'000 h
Shock resistance, ΔT	325°C	

Electrical properties

Volume resistivity	>10^{12} Ohm·cm

Other properties

Density	4.30 g/ccm
Open porosity	0.0%
Water absorption	0.0%
Color	white

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Technical Datasheet: Nonferrous alloy type AL

General Notes

- **Aluminium alloy Anticorodal 110** (EN-6082, AlMgSi1)
- magnesium and silicon as alloying elements
- low density (2.7 g/cm^3), non-magnetizable, high electrical and thermal conductivity
- good corrosion resistance in common environments; when exposed to air, aluminium does not oxidize progressively because a hard, microscopic oxide coating forms on the surface and seals the metal from the environment.
- good cold formability, high ductility, good polishability
- generally it is used when in addition to the corrosion resistance, high strength-to-weight ratio is required
- typical applications include aircraft structural parts and automotive parts

Composition

Component	Wt.%	Component	Wt.%	Component	Wt.%
Si	0.70-1.30	Mg	0.60-1.20	Mn	0.40-1.00

Mechanical properties:

State	Hardened T4
Density	2.70 g/cm^3
Hardness, Vickers	101 HV
Tensile strength, ultimate:	205 MPa
0.2 Yield stress	>110 MPa
Elongation, break	20%
Modulus of elasticity	69 GPa

Thermal properties

Coef. of lin. therm expansion:	24.8E-06/°C	20°C-300°C
Specific heat capacity:	0.89 J/(g·K)	
Thermal conductivity:	192-215 W/(m·K)	

Electrical properties

Resistivity	0.34E-05Ohm.cm