

# METALLIZED CERAMICS

## Ceramic metallization process

### Molybdenum-manganese method:

It is a commonly used ceramic metallization method.

Metal powders such as molybdenum and manganese are mixed to make metallization slurry, which is coated on the ceramic surface and then sintered in a high-temperature hydrogen atmosphere to make the metal and ceramic undergo chemical reactions and form a firm bonding interface.

Subsequent operations such as nickel plating can be performed to further improve its performance.

It is often used in the metallization packaging of electronic ceramic components, etc., so as to realize the welding and other connections between ceramics and external metal parts.



### Gold plating method, copper plating method, tin plating method, nickel plating method, etc.:

These methods can directly plate a layer of precious metal (such as gold) or common metal (such as copper, tin, nickel) on the ceramic surface through corresponding electroless plating or electroplating processes.

During the plating process, ceramics need to be specially pretreated first, such as activation and other steps, so that its surface can better adsorb metal ions and achieve deposition.

Different metal coatings have different application scenarios.

For example, gold plating is often used in precision electronic ceramic devices with high requirements for conductivity and oxidation resistance.

Nickel plating can improve the weldability and corrosion resistance of ceramics.



# PROPERTIES

Item	Unit	92% Alumina Ceramic	92% Alumina Ceramic
Density	g/cm <sup>3</sup>	≥3.63	≥3.63
Water absorption	%	0	0
Sintering temperature	°C	1500-1700	1500-1700
Hardness	HV	≥1400	≥1500
Flexural strength	Kgf/cm <sup>2</sup>	3000	3000
Compressive strength	Kgf/cm <sup>2</sup>	24000	25000
Fracture toughness	Map.m <sup>3/2</sup>	3~4	3~4
Maximum temperature	°C	1600	1700
Coefficient of thermal expansion	/°C	8*10 <sup>-6</sup>	8*10 <sup>-6</sup>
Heat shock	T(°C)	220	220
Thermal conductivity	W/m.k(25-300°C)	2514	2514

The general characteristics of this material described above were derived from laboratory test performed by Meetcera from time on sample quantities. Actual characteristics of production lots may vary.

## Characteristic

Good mechanical properties:

It not only has the high hardness and high wear resistance of ceramics, but also has the toughness and ductility of metals. It is not easy to break and can withstand certain impacts and deformations .

Superior thermal properties:

It has a high melting point and high temperature resistance, can maintain stable performance in high temperature environments, and also has good thermal conductivity and can effectively dissipate heat .

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