MACHINABLE GLASS CERAMICS

Introductions

Is **MACHINABLE** with ordinary metal working tools;

Allows **FAST TURNAROUND**, no post firing require;

Holds **TIGHT TOLERANCES**, up to 0.012(0.0005”);

Withstands **HIGH TEMPERATURE**, up to 1000°C(no load);

Is **CLEAN**, no outgasing and zero porosity;

Machining

Machining tolerances are surprisingly tight, up to 0.012(0.0005”). it can be machined to a surface finish of less than 0.5(20uin).-AA. Configurations are limited only by available equipment and the experience of the machinist.

Sealing, Joining and Metalizing

Machinable Glass Ceramic(MGC) can also be joined or sealed – both to itself and to other material – in a number of ways: metalized parts can be soldered together and brazing has proven an effective method of joining the material to various metals; epoxy produces a strong joint, and sealing glass creates a vacuum tight seal. Even a straight-forward mechanical joint is possible.

It can be thick film metalized using metal inks, or thin film metalized by sputtering.

Ultra-High Vacuum Environments

Machinable Glass Ceramic is used as an insulator or coil support and for vacuum feed-throughs. In these applications, the conductive materials are supported by the MGC part and a compatible sealing glass is used to produce a vacuum-tight, hermetic seal.

Constant Vacuum Applications

MGC parts are found in spacers, headers and windows for microwave tube devices and as sample holders in field ion microscopes.

Aerospace Industry

Over 200 distinctly shaped MGC parts can be found on America's reusable Space Shuttle Orbitec. Retaining ring of MGC are used at all hinge points, windows and doors.

Nuclear-Related Experiments

Since MGC is not dimensionally affected by irradiation, small tubes of the materials are machined to a tolerance of one micron and used as a reference piece to measure dimensional change in other materials.

Welding Nozzle

Welding equipment manufacturers are using MGC as a nozzle on the tips of oxyacetylene torches. The material's nonwetting characteristic means molten particles won't adhere to and decrease the effectiveness of the nozzle.

Fixtures

Machinable Glass Ceramic is used as an electrode support and burner block in several industrial high heat, electrical cutting operations due to us low thermal conductivity and excellent electrical properties.

Medical Equipment

Producers of medical components are intrigued by Machinable Glass Ceramic's inertness, precise machinability and dimensional stability.

Item	Unit	Standard Value	Test Condition	
Density	g/cm^2	2.5～2.8	4°C Archimedes	
Porosity		≤0.08		
Water absorption		≤0.04	ASTMC—373	
Volume Resistivity	Ω·cm	≥10^{14}	25°C	ASTMD—657
		≥10^{7}	500°C	
Magnetic susceptibility		≤1.2×10^{-6}	25°C 10kHz	
Dielectric constant		6～7		ASTMD—150
Dielectric strength AC or DC	KV/mm	≥15		
Thermal expansion	in/in·°C	≤94×10^{-7}	Keeping 400°C	
		≤123×10^{-7}	Keeping 800°C	
Thermal conductivity	W/m·K	≥1.7	25°C	GJB1201
Continuous operating temperature	°C	850℃		
Maximum using temperature	°C	1000℃		
Flexural strength	MPa	≥108		GB6569—86
Compressive strength	MPa	≥491		GB8489—93
Impact toughness	KJ/m^2	≥2.45		GB/T14389—93
Modulus of rupture	bf/in^2	15000	25°C	ASTMC—158
Knoop hardness	KN/mm^2	1.76～3.43	25°C，100g	GJB56A—95
Acid proof	mg/m^2	87	5%HCl,24h,95°C	
HF Proof	mg/m^2		5%HF,24h,95°C	
Alkali proof	mg/m^2		5%NaOH,24h,95°C	

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

INNOVACERA

厦门英诺华新材料有限公司

XIAMEN INNOVACERA ADVANCED MATERIALS CO.,LTD

ADD: RM615, NO.398 JIAHE RD, HULI DISTRICT, XIAMEN, FUJIAN, CHINA 361004

TEL: 0086 592 558 9730 FAX: 0086 592 558 9733

EMAIL: SALES@INNOVACERA.COM

WWW.INNOVACERA.COM