

CERAMICS FIRING SETTER

Introductions

Innovacera offers a full range of solutions for supporting parts during sintering in reducing or oxidizing atmospheres up to 1800°C.

Innovacera has the industry's broadest range of manufacturing methods - including vacuum forming, casting, pressing and CNC machining. Mullite, alumina and alumina-zirconia compositions are available for applications in sintering of technical ceramic, electronic ceramic, and powder metal parts.

Properties

- Excellent permeability
- Excellent binder removability
- Strong against thermal shock
- Low heat capacity
- No warping
- Available in various sizes and shapes
- Lightweight and easy handling



Technical Ceramics

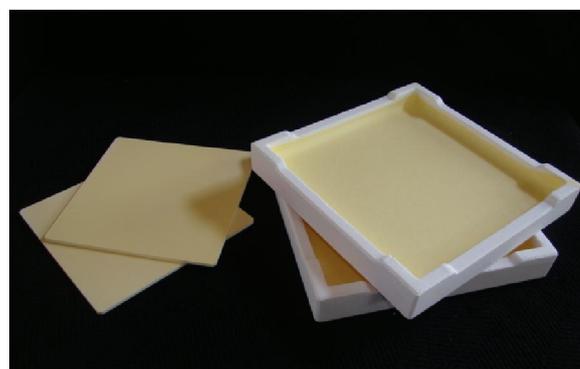
- For firing of heavy loads pressed mullite and mullite-alumina plates have excellent resistance to sagging. Engineered compositions make smooth and flat surfaces possible while maintaining excellent thermal shock properties.
- For small parts firing, Innovacera offers machinable, low mass alumina fiber based compositions that eliminate the need for costly hard tooling. This allows manufacturers to customize setter configuration without costly mold charges. Low mass setters exhibit excellent thermal shock properties and by reducing the mass of the overall furnace load. This enables rapid furnace turnaround for firing parts that can withstand rapid cooling rates.

Item	FS-88	FS-90	Big Size
Volume density (g/cm ³)	2.98	3.0	2.95
Show porosity (%)	20	15	18
Using Temperature	1650	1650	1650
Al ₂ O ₃ (%)	88	90.35	88.5
SiO ₂ (%)	11.5	9.2	11.2
Fe ₂ O ₃ (%)	0.08	0.06	0.08
Applications	Magnetic materials, MIM powder metallurgy, etc		

Electronic Ceramics/Magnetic Materials

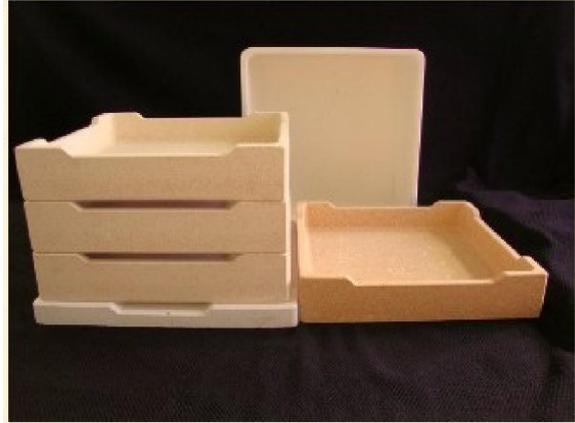
- Pressed alumina and mullite setters are available as flat plates or with posts or rails for stacking for the firing of capacitors, resistors, and other electronic ceramics.
- Alumina fiber machinable grades are available to produce custom configurations in low or high volume.
- Zirconia coatings are available for sintering compositions that may react with alumina and/or mullite setters. Several coating methods are possible depending on the setter quantity requirement and the degree of possible reaction with parts being sintered.

Item	FS-60-Z	FS88-Z	
Al ₂ O ₃ (%)	62	88	
SiO ₂ (%)	33	11.5	
Fe ₂ O ₃ (%)	1.0	0.08	
MgO(%)	2.4	--	
Using Temperature (°C)	1300	1600	
Coating index (%)	ZrO ₂ +MgO=99.8	ZrO ₂ +Y ₂ O ₃ =99.8	
Coating thickness (um)	300	300	
Applications	MnZn / NiZn	PTC / NTC	

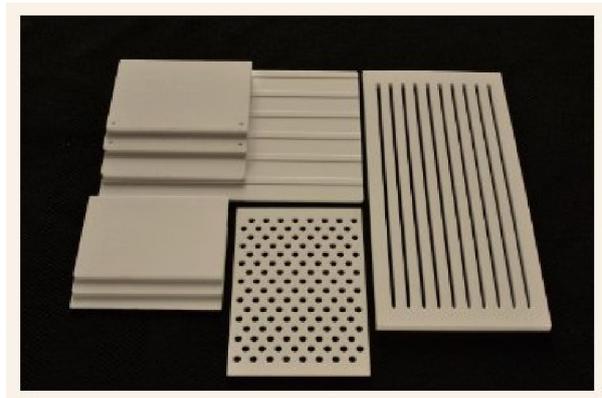
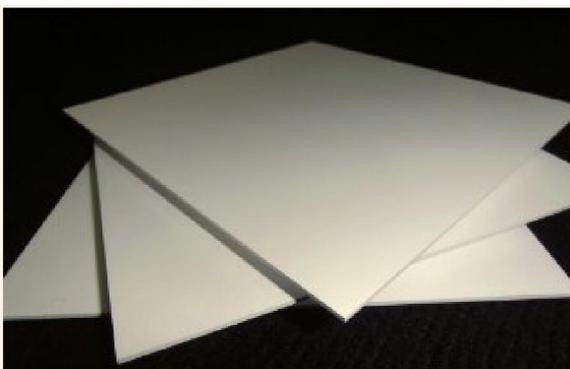


Powder Metal and Metal Injection Molding(CIM/MIM)

- High purity alumina compositions with excellent thermal shock and minimal silica impurities are available that are suitable for use in dry hydrogen or vacuum at temperatures up to 1650° C.
- Intricate shapes can be readily CNC machined to provide the support required during sintering for fragile MIM parts after binder burnout.
- Pressed compositions are available for heavier loads or for greater durability.



Item	FS-95		
Volume density (g/cm ³)	3.1		
Show porosity (%)	15		
Using Temperature	1650		
Al ₂ O ₃ (%)	95		
SiO ₂ (%)	4.8		
Fe ₂ O ₃ (%)	0.06		
NaO(%)	0.1		
Applications	MIM Stainless steel parts Vacuum Sintering		



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