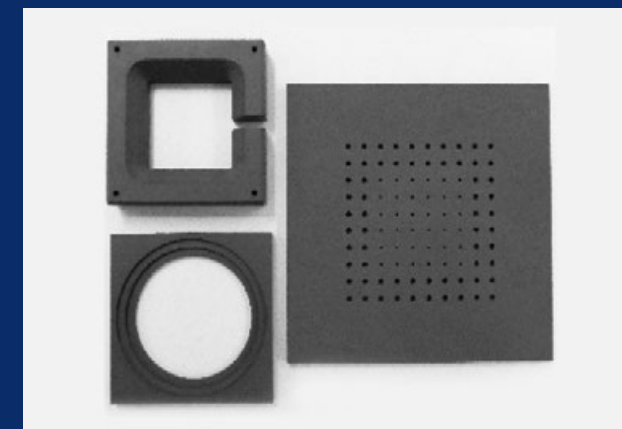
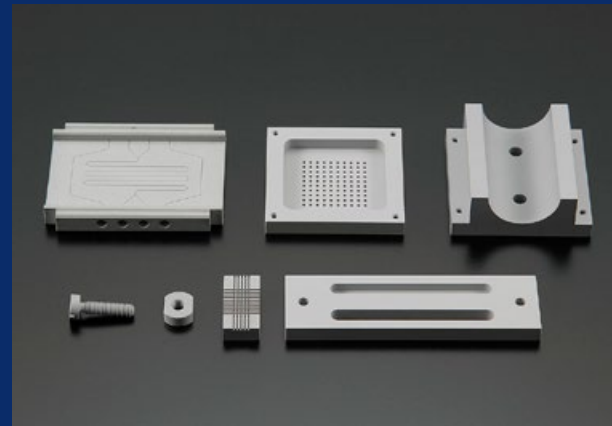


**High Strength – Fine Microstructure –
Wide Range of CTE Options**

Pure
Precision™



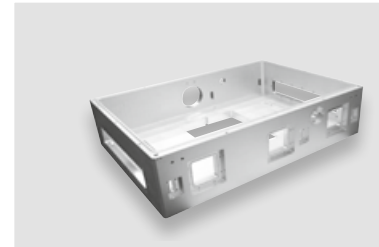
Ferofluidic® Vacuum Seal



Welded Metal Bellows
Product of KSM Corporation



Precision Vacuum Coating



Contract Manufacturing Services



Polycold® Cryogenerators
Product of Brooks Automation, Inc.



Temescal Precision Vacuum Coating Systems



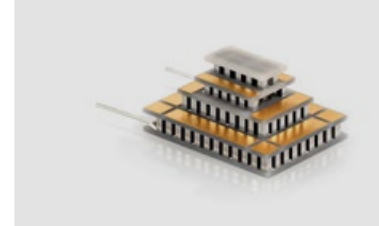
Ceramics



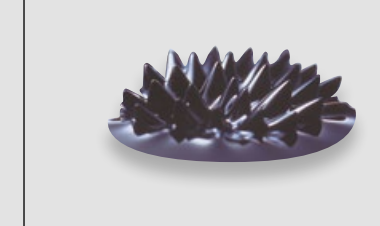
Metal Matrix Composites
Product of Japan Fine Ceramics Co., Ltd.



Direct Bonded Copper



Thermal Solutions



Ferrofluid



Fabricated Quartzware

FerroTec
Ceramics

**Machinable Ceramics
for Precision Process
Applications**

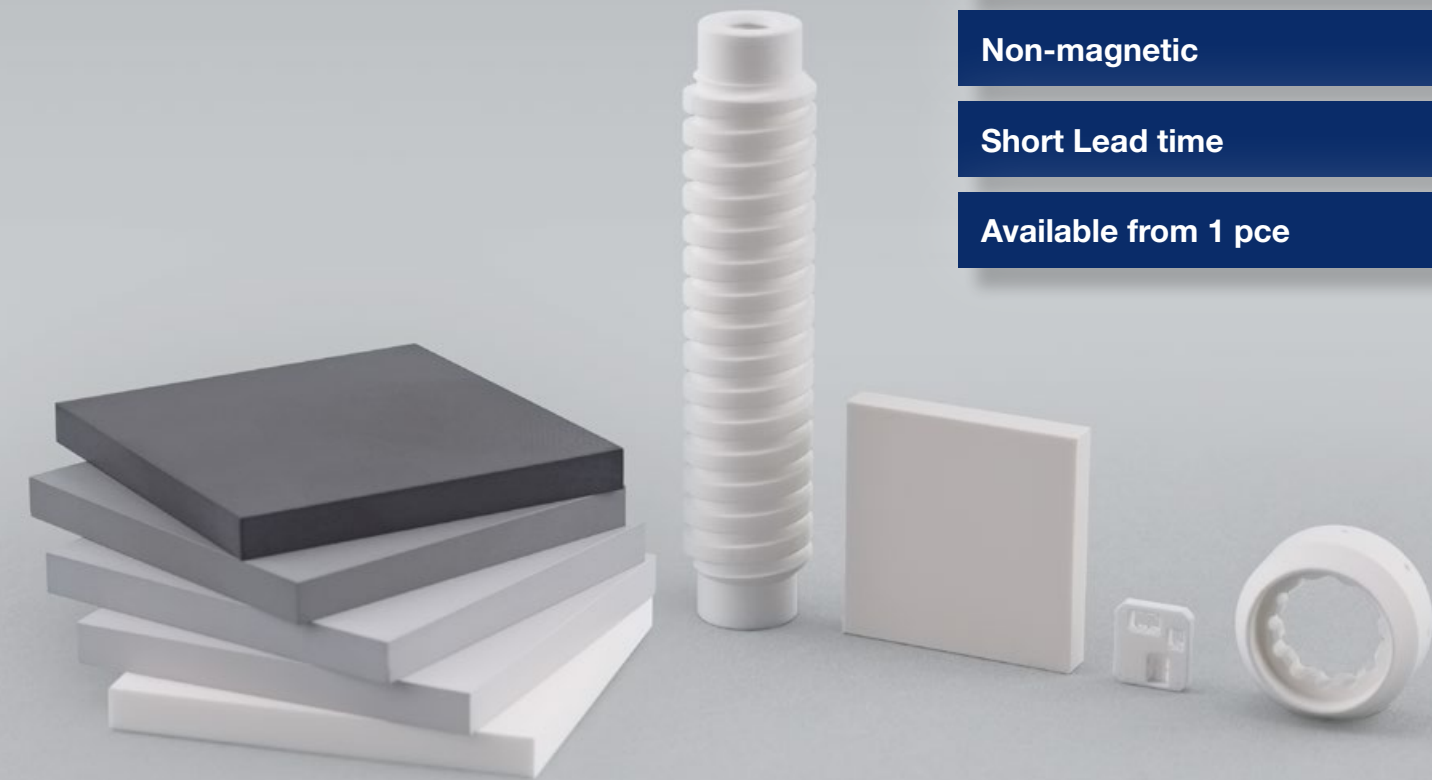
Precision machining

Electrical Insulation

Non-magnetic

Short Lead time

Available from 1 pce



Photoveel®

© Ferrotec Europe GmbH 11/2015

FerroTec

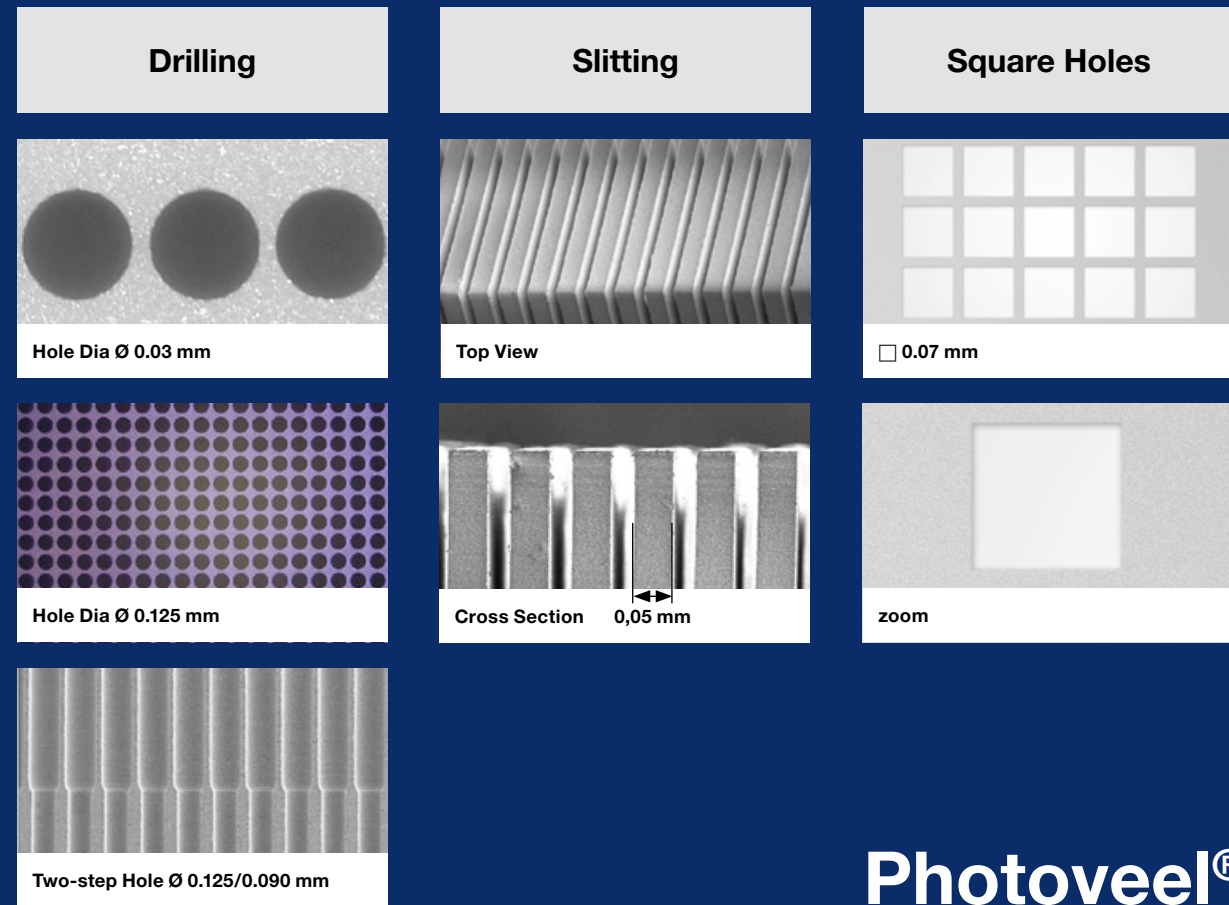
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www.ft-ceramics.co.jp

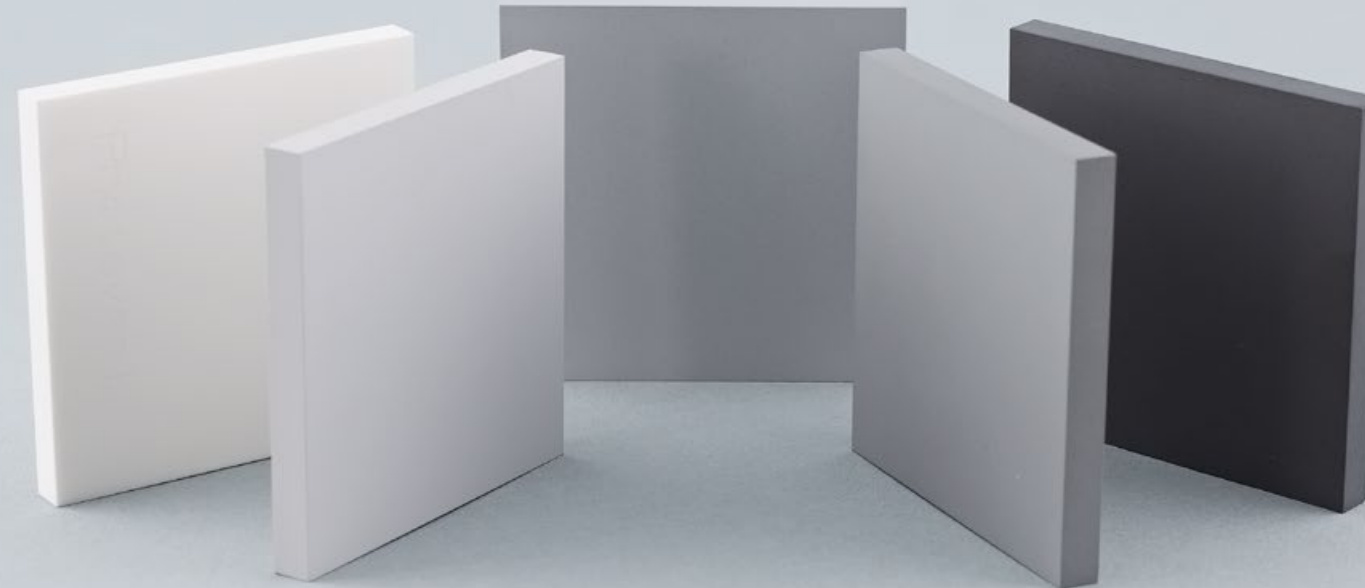
Supports Microscopic Hole Drilling

Key Applications/Features

Properties und Characteristics



Photoveel®



Machinable Ceramics								
Material			Photoveel II	Photoveel II-k70	Photoveel α3.4	Photoveel IIS/ IIS-Black	Photoveel L	Photoveel N
General Properties	Main component purity		wt%					
	Color		Gray	Gray	Gray	Gray/Black	White	White
	Density		g/cm ³					
	Water Absorption		%					
Mechanical Properties	Bending Strength		MPa					
	Young's Modulus		GPa					
	Vickers Hardness		GPa					
Thermal Properties	Max. Operating Temperature		°C					
	Coefficient of Thermal Expansion		RT-500°C		1/C(x10 ⁻⁶)		<RT-400°C>	
	Coefficient of Thermal Conductivity		W/m-K					
	Thermal Shock Resistance		ΔT(°C)					
	Volume Resistivity		25 °C		300 °C		500 °C	
Electrical Properties	Dielectric Constant		10 GHz		10 ¹⁵		10 ¹⁵	
	Dielectric Loss (tanδ)		10 GHz		10 ⁻⁴		10 ⁻⁴	
	Q Factor (1/tanδ)		10 GHz		10 ⁴		10 ⁴	
	Dielectric Break-down Voltage		kV/mm		35		20	
Main Characteristics								
▼ Low ▲ High			▼ CTE ▲ Strength ▲ Thermal conductivity ▲ Thermal shock resistance	▼ CTE ▲ Strength ▲ Thermal conductivity ▲ Thermal shock resistance	● CTE similar to silicon	● Black color	▲ Reflectance	▼ Thermal conductivity

Low CTE material: Photoveel II/ II-k70
 High thermal conductivity: Photoveel II-k70
 High bending strength: Photoveel II-k70
 Defined CTE material: Photoveel α3.4*
 Low light reflexion: Photoveel II-S Black
 Thermal insulation material: Photoveel N
 Acoustic matching layer: Photoveel Longitudinal Wave Velocity 5500m/s

*other CTE on request