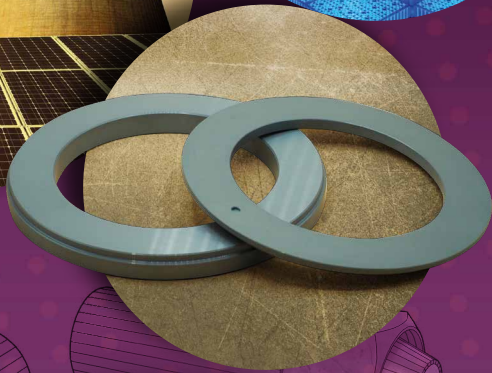
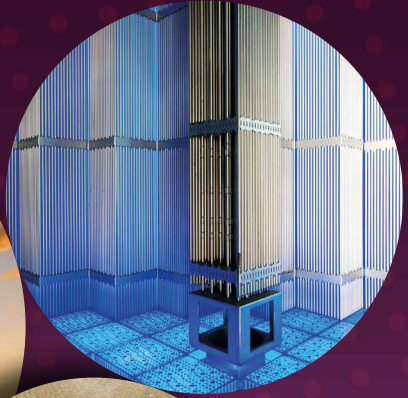




SOLCERA

Advanced Materials



CERAZCONTROL[®]

PLUS ▪ MAX ▪ SMART

CERAMIC SOLUTIONS
FOR NUCLEAR ENERGY

SOLCERA

«Reliable Ceramic Components for Nuclear Safety»

The supply of high-quality ceramic components is essential to meet the stringent safety and security requirements of nuclear facilities, even in the event of a severe accident.

SOLCERA is committed to nuclear safety, with highly trained (CFSI, NDT, ...) and skilled teams, and has been delivering major components integrated into reactors to key players in the nuclear industry for several decades.



Applications

- Solar driven air-conditioning systems
- Nuclear reactor core components: Shielding materials, neutron moderators / absorbers, control rods
- Components for SMRs (Small Modular Reactors)
- Seals for primary pumps
- Monitoring systems: Hermetic feedthroughs, windows, viewports, control rods, thermocouples
- Civil and military nuclear R&D
- Long-term storage of nuclear waste
- Flash lamps for high power laser amplifiers

WHY CHOOSING SOLCERA CERAMIC SOLUTIONS?



Pressure



Neutronic absorption



Vibration resistance



Irradiation



Chemical inertia



Exceptional durability



Thermal stability shock resistance



Electrical isolation



Mechanical resistance



Ultra-high vacuum



Corrosive resistance



Reactor components

OUR MATERIALS

Properties	Units	Nitrides				Cera4Control® B ₄ C		Alumina		Magnesia	Hafnia	Zirconia	Transparent	Tungsten Carbide
		Kersit	Plus B ₄ C	Max B ₄ C	Smart B ₄ C	TS150 for brazing	AF997	MgO	HfO ₂	ZFME	Spinel UV to MWIR	WC		
Composition (mass %)		91% Si ₃ N ₄	76% boron	76% boron	70% boron	97,6% Al ₂ O ₃	99,7 % Al ₂ O ₃	94% MgO	99,50% HfO ₂	97% ZrO ₂	100% MgAl ₂ O ₄	85 to 97% WC	3 to 15% Co	
Density	g/cm ³	3,20	1,60-1,80	>2,45	>2,45	3,75	>3,89	>3,40	8,40	5,6	3,58	14-15,20		
Boron isotopic content				19,9										
Hardness - Vickers	GPa	16	-	28	-	15	18	5	-	11	13	10-20		
3-point bending strength / biaxial (b)	MPa	900	-	425	-	280	310	-	-	600	390	2000-3000		
Elastic modulus	GPa	315	-	440	-	330	310	-	-	210	270	-		
Fracture toughness	MPa(m) ^{1/2}	7,5	-	3-4	-	3,8	4,8	-	-	8,5	2,2	8-15		
Coefficient of thermal expansion	x10 ⁶	3,1	-	5	-	8,5	8,5	15	5,8	9,5	7,8	4,5-7		
Thermal conductivity (20° to 100°C)	W/mK	19	-	-	-	30	29	14	1,14	1,9	15,3	80-110		
Thermal shock resistance		+++	++	++	+	++	+	++	-	+++	+	+++		
Maximum use temperature	°C	1600		2000		1700	1700	1800	2400	1600	1500	800		
Melting Point	°C	-		2350		200	2050	2800	2840	2760	1710	2870		

Assemblies technologies Ceramic to metal brazing, glass to metal sealing, welding...



This Chart is intended to illustrate typical properties of a selection of SOLCERA. Property values may vary with method of manufacture, size and shape of part and may not be used as absolute values.

STRONG PARTNERSHIPS



83, rue Marcelin Berthelot - 77550 MOISSY-CRAMAYEL - France

Z.I. n°1 - rue de l'Industrie - 27000 ÉVREUX - France

Tel.: + 33 (0)2 32 29 42 00 - info@solcera.com

