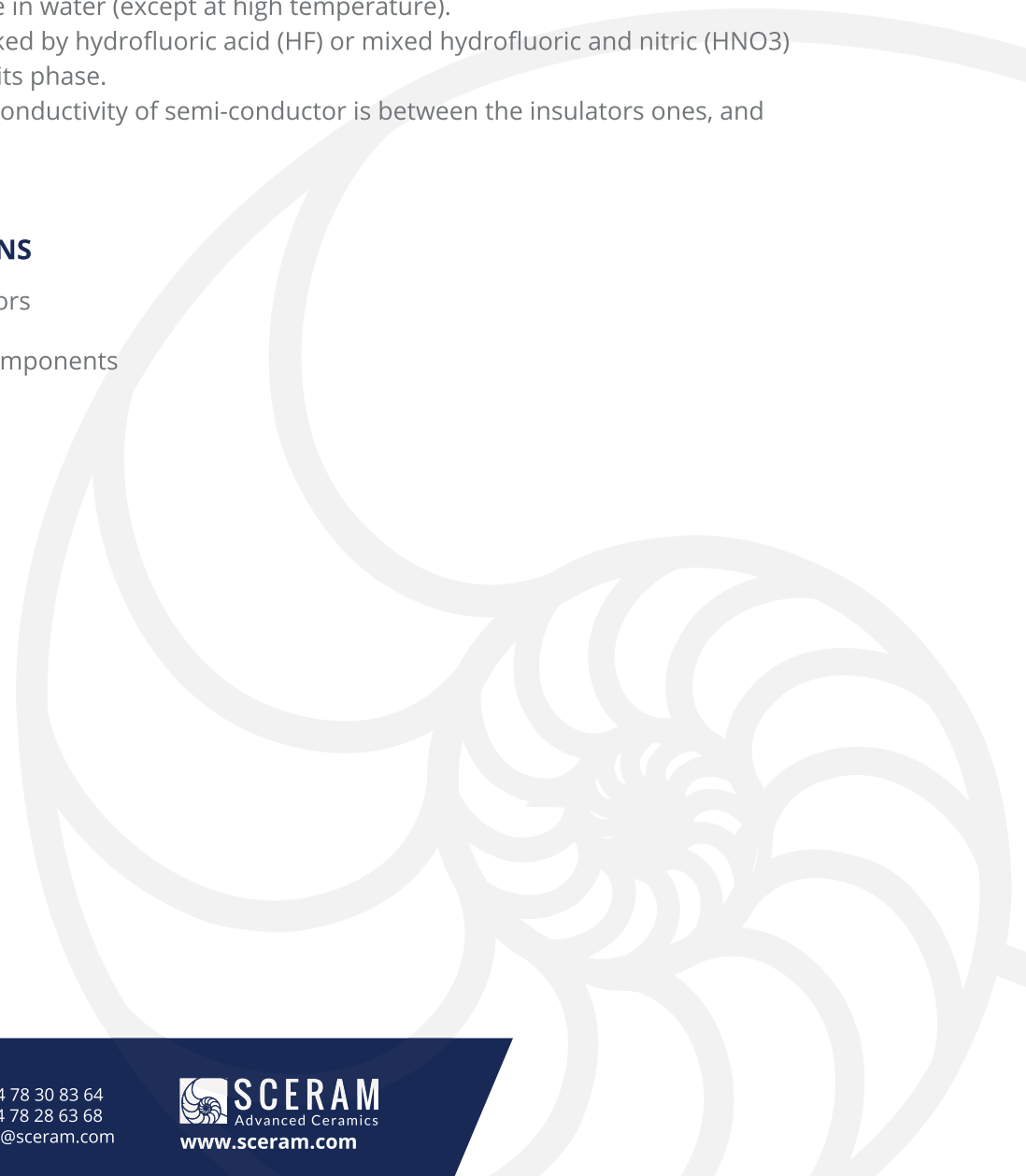


BASIC PROPERTIES

- Silicon material is a semi-conductor.
- Its electrical conductivity is a lot inferior than metal ones.
- It is not soluble in water (except at high temperature).
- Silicon is attacked by hydrofluoric acid (HF) or mixed hydrofluoric and nitric (HNO₃) depending on its phase.
- The electrical conductivity of semi-conductor is between the insulators ones, and metal ones.

APPLICATIONS

Semi-conductors
Photovoltaic
Mechanical components
Aerospatial



MATERIAL		SILICON
Chemical Formula		
Aspect / color		Bluish black
Porosity		
Mechanical	Measuring unit	
Hardness	Mohs	7
Young modulus	GPa	130
Bulk modulus	GPa	98
Flexion resistance	MPa	210
Physical		
Critical temperature	°c	4886
Boiling temperature		2355
Fusion temperature		1414
Atomic weight	g/mol	28,0855
Density at solid state (ambient temp.)	g/cm3	2,3283
Density at liquid state (melting point)	g/cm3	2,5250
Critical density	g/cm4	0,1207
Saturation vapor pressure (melting point)	mm Kg	2,80 x 10 ⁻⁴
Critical pressure	atm	530
Debye temperature	°K	645
Width of the gap	eV	1,107
Carrier mobility	electrons (cm ² /V.s) holes (cm ² /V.s)	1900 500
Electrical		
Dielectrical constant	10E7-10E9 Hz	12,1
Thermal		
Specific heat at 300°k	J/Kg.°K	705
Melting heat	kJ/kg	1103
Heat of vaporization	kJ/kg	15 900
Heat of sublimation	kJ/kg	17 000
Coefficient of thermal expansion at 300°K	10 ⁻⁶ /°K	4,68
Thermal conductivity at 300°K	W/m.°K	148
Thermal conductivity at 400°K	W/m.°K	98,9
Thermal conductivity at 500°K	W/m.°K	76,2
Thermal conductivity at 800°K	W/m.°K	42,2
Thermal conductivity at 1000°K	W/m.°K	31,2
Thermal conductivity at 1400°K	W/m.°K	23,5
Optical		
Refractive index	Wave length 4 microns	3,4255
Transmission	Wave length 4 microns	5308