

Characteristics of Verneuil crystals		Rutile TiO <sub>2</sub>
PHYSICAL PROPERTIES	crystalline structure  composition purity main impurities  cleavage density dislocation density	tetragonal single crystal  TiO <sub>2</sub> 99.99%  4.25 g/cm <sup>3</sup> 10 <sup>9</sup> /m <sup>2</sup>
THERMAL PROPERTIES	melting point softening point specific heat thermal conductivity thermal expansion	2100 K  7.1 · 10 <sup>2</sup> J/kg · K at 300 K  9.19 · 10 <sup>-6</sup> / K // C-axis at 320 K 7.14 · 10 <sup>-6</sup> / K ⊥ C-axis at 320 K
MECHANICAL PROPERTIES	hardness  Young's modulus modulus of rupture compressive strength tensile strength Poisson's constant	Mohs 7 Knoop 900 – 950
CHEMICAL PROPERTIES	acid or alkaline attack porosity	insignificant 0
ELECTRICAL PROPERTIES	dielectric constant  electrical resistivity	170 electric field // C-axis at 300 K 86 electric field ⊥ C-axis at 300 K 1.9 · 10 <sup>5</sup> Ω · cm at 770 K 3.2 · 10 <sup>3</sup> Ω · cm at 1070 K 3.8 · 10 <sup>2</sup> Ω · cm at 1270 K 1.8 · 10 <sup>1</sup> Ω · cm at 1570 K 2.0 Ω · cm at 1870 K <div style="display: inline-block; vertical-align: middle; margin-left: 10px;">             } atm. O<sub>2</sub> </div>
OPTICAL PROPERTIES	refractive index n <sub>o</sub> at 0,5893 μm  chromatic dispersion (n <sub>v</sub> – n <sub>c</sub> )  transmission : – visible light – infrared  – ultraviolet	2.903 face // C-axis 2.616 face ⊥ C-axis 0.205 face // C-axis 0.155 face ⊥ C-axis  excellent 66% 1 μm   disc thickness 2.54 mm