

## Custom-made Products

Ceramaret designs and produces components out of the hardest of materials such as Advanced Ceramics (zirconia, alumina) and synthetic sapphire and ruby. Due to their outstanding properties, these materials are used in specific applications requiring durability (high resistance to wear, corrosion, heat, pressure, and hostile gas and liquid environments) as well as excellent dielectric strength and biocompatibility.

Ceramaret offers custom-made solutions to its high-tech customers. A personalized service by our professional staff, products of outstanding quality and competitive prices make Ceramaret the leader in the field of manufacturing precision parts in hard materials.



# **Ceramaret, a century of experience in precision manufacturing and over three decades in the production of miniature parts in Advanced Ceramics.**

Ceramaret's philosophy is to press the ceramic parts as close as possible to the final shape and dimensions, avoiding expensive secondary machining operations. Ceramaret has complete control of the quality, from the powder to the finished product.

## **The quality of the final product starts with the quality of the raw material**

Upon receipt, every batch of raw material is thoroughly tested although Ceramaret requests certificate of conformance from its suppliers of ceramic powders. Several parameters are tested before releasing the powder for production:

*Particle size distribution – Density – Flow ability – Loss on Ignition – Shrinkage – Porosity after sintering – Grain size – Flexural strength – Hardness*

Some of these measurements require very sophisticated measuring equipment, such as a Scanning Electron Microscope.

## **Materials available**

**Alumina ceramics ( $\text{Al}_2\text{O}_3$ )** with a purity up to 99,9%, a grain size between 1 to 5  $\mu$ , a density of 3,98  $\text{g/cm}^3$  and a hardness of 2000 Hv.

**TZP Zirconia ( $\text{ZrO}_2$ )** Ytria stabilized ( $\text{Y}_2\text{O}_3$ ), with a grain size < 1  $\mu$ , a density of 6,08  $\text{g/cm}^3$  and a hardness of 1400 Hv.

**ZTA (Zirconia Toughened Alumina)** such as 90% Alumina + 10% Zirconia or 80% Zirconia + 20% Alumina. Other blends are also available on request.

**Synthetic Ruby and Sapphire**, mono-crystalline materials, are also available for specific applications.

## **Applications**

**Computer Industry:** Ruby & Zirconia guides and printwires. Ceramaret is the leader in this field and supplies all the main Dot Matrix Printer manufacturers and printhead repair companies. Ceramaret is the last manufacturer of Ruby guides that are still used on heavy duty Dot Matrix Printheads.

**Analytical Instruments:** Ruby, Sapphire and Advanced Ceramics are widely used in analytical instruments for their outstanding resistance to heat, wear, chemical solvents. These materials are also inert and biocompatible. Typical applications are in HPLC pumps (Pistons, Balls & Seats, Rotors & Stators for injection valves, pump heads, etc), precision dispensers (Pistons for pipettes, and metering pumps).

**Medical Instruments:** The outstanding characteristics of Advanced Ceramics make it a material used more and more frequently in high-tech medical instruments, for applications such as the Ophthalmology, the Endoscopy, the Microtomy, Electro-Surgery, components for Implantable devices.

**Miscellaneous applications:** In addition to those mentioned above, applications for Advanced Ceramics are numerous. Anywhere from bearings for navigation instruments to insulator for accelerometers for submarines, precision ceramic parts are required for their outstanding performances.