ADMATEC
A NANODIMENSION DIVISION

Admatec Materials

Advanced ceramics for high-demanding applications

The AdmaPrint Materials

The AdmaPrint feedstock is specially formulated with a mixture of photosensitive resins and a solid load of ceramic powder, called slurry. The use of light curing and slurries allows achieving high resolutions and very fine surface roughness in printed products. Also, it prevents health hazards and (cross)contamination related to the use of dry powders. The AdmaPrint feedstocks can be used to print complex geometries, large and fine structures resulting in a wide variety of functional products.

Alumina

Alumina (Al2O3) is one of the most commonly used ceramics in high-tech applications because of its wear resistance and its high chemical and temperature stability. Alumina finds applications in water purification, insulators, semiconductor components, and medical implants. The AdmaPrint A130 & A300, Admatec's alumina recipes, deliver components with high density (> 98%) and smooth surfaces (Ra = 0.3-3 µm).

PROPERTIES

- High hardness
- High electrical resistance
- Refractoriness

APPLICATIONS

- Semiconductors and electronics
- Medical implants
- Valves and pumps

Zirconia

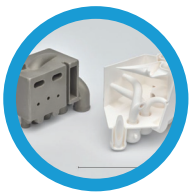
With superior mechanical properties, zirconia (ZrO2) presents high flexural strength and fracture resistance. Also, zirconia shows very low thermal conductivity, high chemical inertness, and biocompatibility. Among the applications of zirconia, we can find dental restorations, thermal barrier coatings, and jewelry. The AdmaPrint Z130 & Z300, Admatec's zirconia recipes, deliver mechanically strong products with high definition.

PROPERTIES

- Low thermal conductivity
- High electrical resistance
- High toughness

APPLICATIONS

- Extrusion dies
- Bearings
- Jewelry



Silica

Silica (SiO2) is well known for its thermal shock resistance and leachability (chemical dissolution). For these reasons, it is commonly used for the production of shells and cores in investment casting for aerospace and energy applications. The AdmaPrint S130, Admatec's silica-based recipe, delivers mechanically strong shells with excellent surface properties.

PROPERTIES

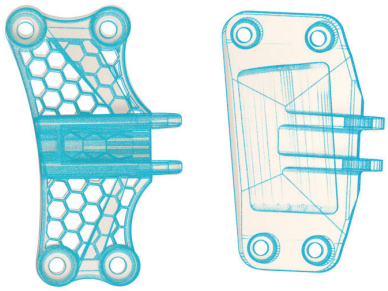
- High thermal shock resistance
- Chemical and mechanical leachability

APPLICATIONS

- High precision casting
- Refractories

THE UNIQUE CAPABILITIES OF ADVANCED TECHNICAL CERAMICS

Advanced ceramics combine high-performance properties for demanding applications. Ceramics are hard inorganic, nonmetallic materials with an impressive capability to hold their excellent mechanical, chemical, electrical properties and thermal wear resistances under extreme environments.



ADMATEC PRINTERS ARE OPEN SYSTEMS

In addition to our Admatec ceramic materials, Admaflex systems allow the print of a wide range of external materials such acrylate, Styrene, Thiol-ene based and cationic UV curing resins.

Admatec customers experimented already a wide range of slurry type such hydroxyapatite (HA), Tricalcium Phosphate (TCP), ATZ (Alumina toughened Zirconia), ZTA (Zirconia Toughened Alumina), ZrO2-Y2O3 Yttrium Stabilized Zirconia, metals (stainless steel, copper etc…) and more.

Slurries that can be cured in a wavelength of 405nm and match the viscosity requirement range of 2-4 Pa.s* for Admaflex 300 or 5-20 Pa.s* for Admaflex 130 are the perfect candidates for our systems.

*shear rate of 10 1/s at room temperature