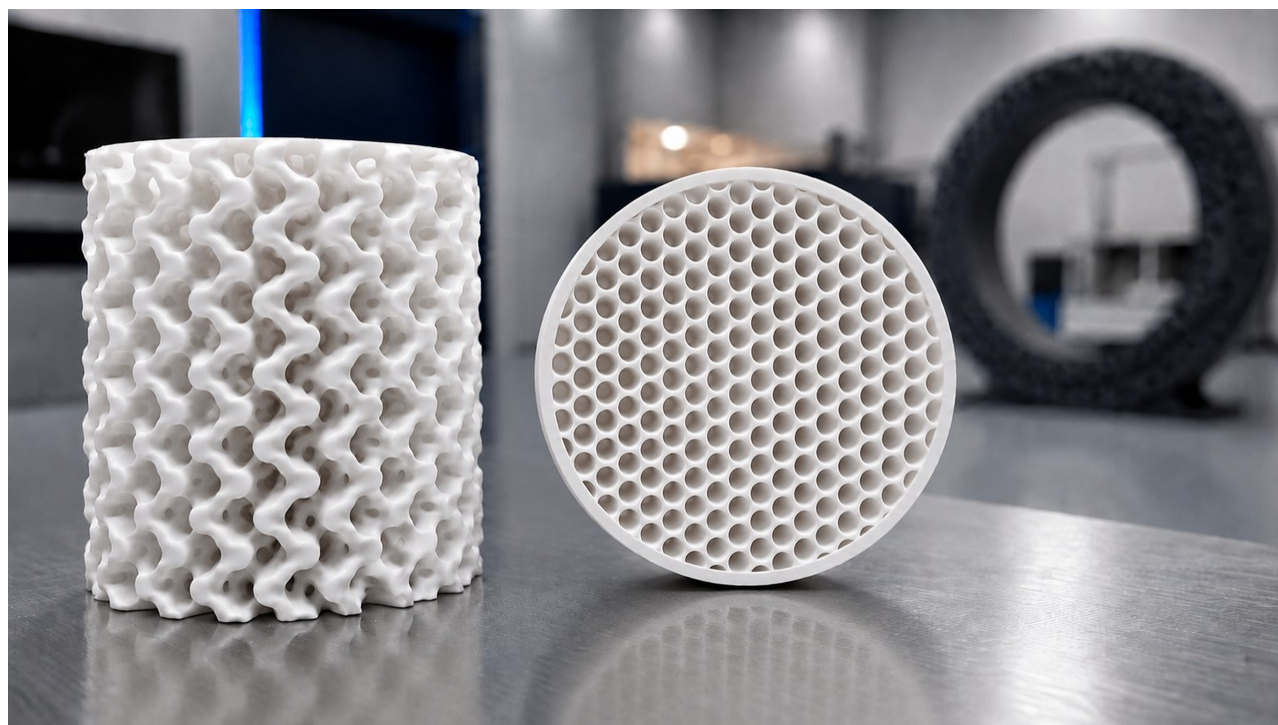


TECHNICAL DATA SHEET

Ceramic 3D Printing Service

Technical ceramics — precision ceramic DLP and large-format binder jetting



Technical ceramics across the scale range — fine sintered lattices and membranes to meter-scale silicon-carbide hardware.

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SECTION I

Service Overview

ACS Material offers project-based ceramic 3D printing (technical-ceramic additive manufacturing) through two complementary routes: high-precision ceramic DLP (vat photopolymerization), which cures a ceramic-loaded slurry layer by layer at a nominal XY pixel pitch down to 25 μm , and large-format ceramic binder jetting, which binds ceramic powder across build volumes up to 1800 $\times$ 1000 $\times$ 700 mm. Printed green parts are debound and densified through a material-specific route such as sintering or infiltration; where parts sinter, shrinkage is compensated in the green design.

The service covers dense alumina, zirconia, and silicon-nitride components, silica-based casting cores, bioceramic research scaffolds in TCP and hydroxyapatite, and large silicon-carbide hardware. Every job is engineered and quoted to the specific project; please contact us with your design (STEP/STL) for materials, route selection, feasibility, lead time, and pricing.

SECTION II

Capabilities

Parameter	Specification
Process Routes	Ceramic DLP (vat photopolymerization, 405 nm) · Ceramic binder jetting
Build Volume — DLP	Up to 192 $\times$ 108 $\times$ 300 mm (typical — confirmed per project)
Build Volume — Binder Jetting	Up to 1800 $\times$ 1000 $\times$ 700 mm (typical — confirmed per project)
Nominal XY Pixel Pitch (DLP)	25–50 μm
Nominal Printhead Resolution (BJ)	254–300 dpi
Layer Thickness	25–100 μm (DLP) · 0.2–0.5 mm (binder jetting)
Final Relative Density	Up to ~99% (DLP, sintered — material-dependent) · ~95% (binder jetting)
Post-Processing	Debinding, densification (sintering or infiltration), and grinding / lapping (as required)

Values are supplier-reported typicals shown for orientation and are not design allowables; the exact build size, accuracy, density, and finish achievable for a given part are confirmed at the time of quotation.

SECTION III

Materials

Material	Relative density	Purity	Density (g/cm ³)	Flexural strength (MPa)
Alumina (high-purity)	99.4%	99.99%	3.99	430
Alumina (standard grades)	98.4–99.2%	99.8–99.9%	3.98–3.99	400
Zirconia	99.2–99.4%	—	6.08–6.09	900–930
Silicon nitride	99.8%	—	3.23	—
Silica-based	72%	—	2.44	—
TCP (tricalcium phosphate)	98%	95%	3.07	—
Hydroxyapatite	92–98%	95%	3.16	—
SiC (binder jetting)	~95%	—	—	—

Values are supplier-reported typicals; material formulation, densification route, geometry, and post-processing affect results, and these figures are not design allowables. Ranges may span multiple supplier formulations and should not be read as a single material specification. Additional compositions, glasses, and custom slurries can be discussed per project.

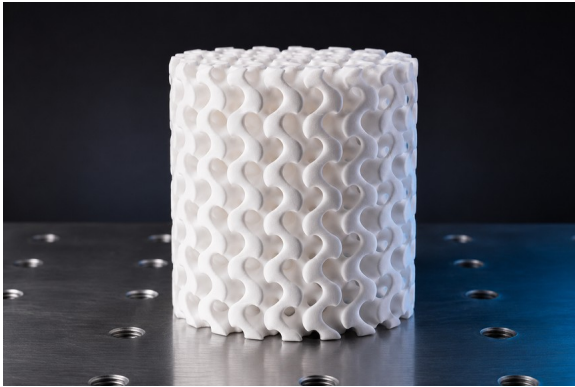
SECTION IV

Applications

- Semiconductor & Optics
- Chemical & Energy
- Medical & Dental Research
- Aerospace & High Temperature
- Electronics & Thermal Management
- Research & Custom Structures

Typical target applications, each subject to material and geometry review. Bioceramic parts are supplied for research and development use; no medical-device claims are made.

Representative parts



Sintered technical-ceramic gyroid lattice — precision ceramic DLP



Multi-channel ceramic membranes for filtration and catalysis



Large-format silicon-carbide component — ceramic binder jetting



Micro-tube array — fine, repeatable small features

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DISCLAIMER

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