



120 Valley Court
Oak Ridge, TN 37830
Ph: 865-482-5717
FAX: 865-482-1281
zypcoatings.com

3D Cer-Paste SC

3D Printable Wear Resistant Ceramic

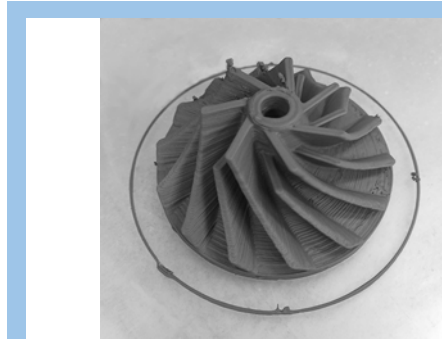
Based on nearly 40 years of experience formulating exceptional high temperature ceramic coatings, ZYP Coatings is proud to present its first line of ready-to-use ceramic pastes formulated for 3D printing. Prior to a commercial launch, the pastes were tested and implemented for 3D printing projects within the Materials Science and Technology Division at Oak Ridge National Laboratory. The solvent-based pastes can be used in extrusion-based Paste Deposition Modeling (PDM) 3D printers, similar to desktop Fused Deposition Modeling (FDM) printers used for polymers, except no heat is required. Once dry, parts printed with 3D Cer-Paste SC can be sintered in a standard fashion without warping or cracking. Depending on the sintering conditions, the resulting ceramic can possess low porosity, high resistance to corrosion and excellent wear resistance.

Key Attributes

- Solvent-based formula is easily printed with common, inexpensive 3D printer assemblies
- No heat required for printing
- Once dry, printed ceramic pieces can be sintered in a standard fashion
- Does not crack or warp during sintering
- Sintering up to 1900-2000 C produces a ceramic with >90% theoretical density
- Corrosion resistant
- Excellent wear resistance

Use Notes

1. Resuspend the paste by stirring, rolling or drill mixing.
2. If desired, the paste can be diluted with ethanol or polyethylene glycol to desired consistency.
3. Print ceramic article using normal extrusion operations on a PDM 3D printer.
4. Once dry, fire the ceramic article in inert atmosphere up to up to 2000 C. Suggested sintering: 10 C/min to 1700-1900 C in flowing argon, hold for 30 minutes, furnace cool. Packing the green ceramic piece in loose SiC powder during sintering may also be useful. Shrinkage will be approximately 40-60% by volume.
5. Place the fired ceramic into service. Service temperature should not exceed the sintering temperature used in Step 4.



3D Printed SC part, as printed (not sintered).

This shows that a highly complex Silicon Carbide part can be made from our Cer-Paste. Fired SC parts have good wear and corrosion resistance.

Specifications

Active Ingredients:	Alpha Silicon Carbide
Fired Composition:	>85% SiC
Liquid Carrier:	Ethanol
Binder Phase	Stable refractory
Color	Gray
Max Use Temperature	
Air	1600 C
Inert	2000 C
Shelf Life	>3 months
H F R Ratings	1-4-0

Ideal Use

- Aerospace or aeronautical applications
- Thermal shock-resistant insulation
- High temperature corrosion-resistant fixtures

Sizes

Standard Size: gallon, quart, or pint Nalgene containers

Safety Information

- Consult SDS before use.
- Avoid breathing of dusts.
- For Industrial use only.

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