

## AGOSTYX'S LINE OF B-STAGEABLE\* POLYSILAZANES:

- Ceraset<sup>TM</sup> B Boron Modified Polymethylvinylsilazane / 50% solids in Dibutyl Ether <u>See, for Example:</u> Advanced Covalent Ceramics from Organosilicon Polymers for Sustainable Energy and Environment; Dissertation by Shakir Bin Mujib, Kansas State University
- Ceraset<sup>TM</sup> A Aluminum Modified Ceraset<sup>TM</sup>B / 50% solids in Dibutyl Ether <u>See, for Example:</u> Review of Recent Gas Turbine EBC Developments, Dave Carruthers & Associates, Environmental Barrier Coatings Workshop, November 15-16, 2005, Nashville Tennessee
- Ceraset<sup>TM</sup> T Titanium Modified Ceraset<sup>TM</sup> B / 50% solids in Dibutyl Ether <u>See, for Example:</u> European Patent Application, EP 3 057 925 B1, Manufacturing Process of a Preceramic Polymer for Ceramic Including Metal Boride
- Ceraset<sup>TM</sup> Z Zirconium Modified Ceraset<sup>TM</sup> B / 50% solids in Dibutyl Ether <u>See, for Example:</u> From Design to Characterization of Zirconium Nitride/Silicon Silicon Nitride Nanocomposites, M.C. Bechelany, V. Proust, A. Lale, M. Balestrat, A. Brioude, C. Gervais, R. K. Nashihora, S. Bernard, J. European Ceramic Society, 2022, 42 (5), pp 2135-2145
- Ceraset<sup>TM</sup> H Hafnium Modified Ceraset<sup>TM</sup> B / 50% solids in Dibutyl Ether <u>See, for Example:</u> SiHf(B)CN-based Ultra-High Temperature Ceramic Nanocomposites: Single-source Precursor Synthesis and Behavior in Hostile Environments"; Dissertation by M. Eng. Jia Yuan, Technische Universitat Darmstadt

## NOTE:

Original Ceraset<sup>TM</sup> Poly(urea)methylvinylsilazane (PUMVS) - either in solvent or as a 100% "solids" liquid – is available upon request.

Any of the above Metal-Modified Poly(urea)silazanes without Boron Modification -

either in solvent or as a 100% "solids" liquid - are also available upon request.

## \*SAMPLE COMPOSITE FABRICATION METHOD USING A B-STAGEABLE POLY(UREA)SILAZANE

Fiber Fabric is impregnated with a 50% solids solution of polysilazane either by an immersion, spray, or brush process. While an inert atmosphere is not required, polysilazane solutions are somewhat moisture sensitive. It is advisable to apply the 50% solids solution in a normal to low humidity environment. After the fabric is impregnated, it is rapidly heated (50-100°C /min) to 120°C to evaporate the solvent and held for a period of 7 minutes to increase crosslink density to just below the gel point.. This "B-staged" prepreg can then be laid up to the desired thickness, fixtured, and cured. The curing process entails heating the B-staged prepreg to 260°C at 200 psi for at least 8 hours. After mold-curing, the composite is removed and post-cured. The post-cure step involves heating to 260°C for 12 hours. Alternatively, the initial B-staged prepreg can be covered and stored in a refrigerator for future use. After post-curing the composite is ready for machining and conversion to ceramic.