Preceramic polymers (PCPs) offer advantages in producing ceramics due to their processability and ability to tailor their chemical structure. However, challenges such as volume shrinkage and mass loss during pyrolysis often result in pores and cracks. PCP-grafted ceramic nanoparticles (PCPGNP) have been proposed and studied as a solution to volume shrinkage and mass loss problems. PCPGNPs also help to reduce aggregation and to control the nanoparticle arrangement. The neat state of these PCPGNPs has been characterized with respect to thermal properties and rheology. Dispersing PCPGNPs in commercial preceramic polymer matrices is another attractive, but unexplored, route to control the rheological and char yield properties of the matrices. In this work, a systematic rheological study of well-defined mixtures of a commercial PCP, SMP-877, and PCPGNPs (silica with poly(1,1-dimethylpropylsilane) corona) was executed to develop design rules for the processing of such mixtures. A rheological study demonstrated the effect of increasing particle concentration on network formation with percolation occurring between 50-60 wt%. Samples above the percolation threshold also exhibited higher viscosities and rapid shear thinning thus demonstrating their printability. X-ray photon correlation spectroscopy (XPCS) corroborated the rheology and showed two diffusive modes when the material was above percolation. Mixtures of PCPGNPS and SMP-877 had synergistically higher char yields upon thermal treatment and pyrolysis. XPCS and rheological measurements during thermal treatment identified thermal jamming of the polymer grafts as a key factor in improving the char yield. With the insights gained here we expect these mixed systems to provide advanced inks for additive manufacturing of ceramics for aerospace applications.