**Effect of Various Carbon Sources as a Sintering Additive on the Properties of Silicon Carbide**

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**ABSTRACT:**

Dense sintered Silicon Carbide (SiC) based composite with the low specific weight, the high specific strength over a large temperature range, and their great damage tolerance compared to their monolithic counterpart makes them extremely useful as a high-temperature load bearing material for many advanced applications. Pressureless solid state sintering with the suitable additives like Carbon(C), Boron(B) are highly recommended for covalent crystalline solid like SiC without any deleterious effect on their high temperature properties. In the present study, sintering behavior and microstructure changes of Silicon Carbide with the addition of three different forms of Carbon as one of the sintering aid were studied. Phenolic resin (40wt%C), Carbon Black (99wt%C), Sucrose (24.83wt%C) were used as Carbon source. Conventionally processed and uniaxially pressed SiC green samples were Pressureless sintered at 2150oC/1hr under Argon atmosphere. The influence of different types of the Carbon on the relative density, mechanical properties, microstructure and phase formation of the sintered samples were investigated.

*Keywords: Silicon Carbide; Carbon as a sintering additive; Powder processing; Pressureless sintering; Mechanical properties*