

Development and characterization of carbon chamotte mixtures during sintering

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Abstract. Silicon carbide has hardly used a natural existence. It is an artificial material essentially synthesized for the needs of technology. It belongs to the class of materials generally referred to as wide-gap semiconductors. It is the subject of numerous studies because of its interesting physical and chemical properties (high thermal and electrical conductivity, strong resistance to oxidation and radiation, high thermal and mechanical resistance, good chemical inertia ...) and which offer it a vast potential for application. The development of a silicon carbide from a carbothermic reaction of the chamotte of kaolin was the subject of our study. Silicon carbide is the product of a reaction between the residual silica of the kaolin transformations and the added carbon, and consequently to reduce the rate of the glassy phase. The latter is in the form of cristobalite between 1000-1400 ° C and in the form of an amorphous phase above 1400 ° C. The chamotte -10% carbon weight mixtures were processed and sintered at 1350 ° C for 2 hours, 5 hours and 10 hours. The spectra of XRD show that the presence of mullite as main compound by a peak centered at 21 ° C and cristobalite, the disappearance of the latter as the temperature of the treatment increases, against we notice on the results porosity the significant increase in open porosity and constancy of density.

Keywords: chamotte, SiC, carbothermic reaction, Sintering, Refractory.