

Oxidation Resistance of Calcium Boride Covered C/C Composite

J. Matsushita*, K. Suzuki*, S. Tanaka*, T. Ariga*, S. Shimai**-***, J-b. Li**-***, and H. Lin**

**Department of Materials Science, Tokai University, Hiratsuka 259-1292, Japan*

***Department of Materials Science and Engineering, Tsinghua University, Beijing 100084, P. R. China*

****Department of Materials Science, Qinghai University, Qinghai 810016, P. R. China*

E-mail: jmatsu@keyaki.cc.u-tokai.ac.jp

ABSTRACT

The oxidation resistance at high temperature of the calcium hexaboride covered C/C composite was investigated in order to determine the suitability of this composite for high temperature engineering applications. The aim of this study was to give the resistance oxidation performance to the surface of C/C composites covered with CaB₆ powder were dispersed to a triethyleneglicol using the dipping process in order to coat this sample. The C/C composite samples were obtained with additional mass equal to about 1 to 4 % of the total sample mass, and surface of its sample was coated with the C/C composite material without its process. The samples were oxidized at room temperature up to 1273 K in air atmosphere. The mass changes were measured to estimate the oxidation resistance. Based on the result of X-ray diffraction analysis, CaB₄O₇ and CaB₂O₄ were postulated to be present on the oxidized surface of the sample. The high temperature oxidation resistance of C/C composite significantly improved by covered boride films as an excellent oxidation resistance layer.

Keywords: Calcium Boride, C/C Composite, Oxidation