

A Study on Fire Resistant Characteristics of Ceramic Block according to the Mixture Ratios of Raw Materials

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The study is intended to examine the fire resistant characteristics of ceramic block, which is used as an insulation of steel furnace water-cooling beam, depending on the mixture ratios of raw materials. Alumina cement and ceramic fibers are used as the raw materials of ceramic block. To review the fire resistant characteristics of ceramic block, compression strength, linear variance and specific gravity were measured. The compression strength was measured by destructing a 5cm³ cubic mold, which had been dried at 110°C. To measure the linear variance and specific gravity, a 16x4x4cm mold was prepared after having being dried at 110°C for 24 hours and heated up at 1350°C for 3 hours. As the ratio of a raw material, alumina cement increased up to 30 ~ 80%, the compression strength also increased from 160 to 640 kgf/cm². Simultaneously, the linear variance slightly decreased while the specific gravity increased from 1.48 to 1.76. In case of ceramic fiber, as its ratio increased, the compression strength decreased from 600 to 160kgf/cm². The linear variance, unlike alumina cement, increased slightly while the specific gravity decreased from 1.85 to 1.40.