Characteristics of the Ceramic Blocks with Porous Silica

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Porous silica was applied to the ceramic blocks of which major materials are alumina cement and ceramic fiber to investigate the fire resistant characteristics in accordance with the change of the concentration of the materials. Compression strength, linear variance, and specific gravity were measured to review fire resistant characteristics. The increase of the alumina cement content from 25 to 70% resulted in the increase of compression strength from 100 to 430kgf/cm^2, and the specific gravity from 1.25 to 1.5. As for the ceramic fiber, the increase of concentration caused reduction in compression strength from 320 to 80kgf/cm^2, and specific gravity from 1.45 to 1.3. The increase of porous silica resulted in the reduction in compression strength from 300 to 100kgf/cm2 and specific gravity from 1.5 to 1.2. Linear variance was not influenced by the concentration of the raw materials. It could be confirmed that ceramic blocks having low specific gravity and high compression strength could be produced by using porous silica.