

Augite-Anorthit Glass-Ceramic From Wastes of Basalt and Ceramic

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Abstract

Dark brown glasses were prepared from wastes of basalts quarry and ceramic factory. Addition of CaF_2 , Cr_2O_3 and their mixture $\text{CaF}_2\text{-Cr}_2\text{O}_3$ were tested as nucleation catalysts. Major augite-anorthite with secondary magnetite and olivine and may little synthetic quartz were developed through the crystallization process. The content of anorthite usually overcomes the augite at higher temperature. Fine microstructure glass-ceramic was detected in all the samples. The coefficient of thermal expansion and microhardness value of glass-ceramic samples (at 1000 °C) were from 60.16 to 92.91 $\times 10^{-7} \text{ }^\circ\text{C}^{-1}$ (in the 20-500 °C) and 5.23 to 6.12 GP respectively . The density of the glass-ceramic samples was from 2.58 to 3.25 g/cm^3 .

Key words: Glass-ceramic , basalt , ceramic wastes :