

عنوان مقاله:

Compressibility and Foaming behavior of steel slag/waste glass composites by particle size distribution and foam agents

محل انتشار:

مجله سرامیک های پیشرفته، دوره 5، شماره 1 (سال: 1398)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

In present research, the foam glass-ceramic composites fabricated by window glass, steel slag and SiC, CaCO₃ foaming agents were investigated by press-sintering method. The optimum sintering temperature was obtained at 1200°C with a 3-minutes holding time and 20°C/min heating rate. The optimum pressure level of 80 MPa for achieving the 70 % of relative density was selected. The effect of particle size distribution of starting materials on the green and fired density of resulted glass-ceramics composites was evaluated. The composite s green density was 1.7g/cm³ obtained using the following particle size (49 wt. % 150µm, 21wt. % 85µm, 21wt. % 65µm, 9wt. % 45µm). It was shown that using medium-fine grade of the slag powder, the compaction and green densities of samples were increased up to 16% while in the case of slag/glass composites (due to the high hardness of the glass powder), the compaction of composite was increased 11% compared to the coarse grade particles bearing samples. It was observed that finer particle sizes (below 75 µm) significantly cause more foaming and lower density (about 80 wt.% porosity). This can be due to the faster coalescence process and gases trapping which was arisen from the decomposition of foam agent.

کلمات کلیدی:

Foam, Glass-ceramic, particle size, Compressibility

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