

## **An Investigation of Raw Material Effects on Nano SiC Based Foam Glass Production**

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**Abstract :** Foam glass is an innovative material which composed of glass and carbon/carbonate based minerals; and has incomparable properties like light weight, high thermal insulation and cellular structure with sufficient rigidity. In the present study, the effects of the glass type and mineral addition on the foam glass properties were investigated. Nano sized SiC was fixed as foaming agent at the whole of the samples, mixed glass waste and sheet glass were selectively used as glass sources; finally Al<sub>2</sub>O<sub>3</sub> was optionally used as mineral additive. These raw material powders were mixed homogenously, pressed at same pressure and sintered at same schedule. Finally, obtained samples were characterized based on the required properties of foam glass material, and optimum results were determined. At the end of the study, 0.049 W/mK thermal conductivity, 72 % porosity, and 0.21 kg/cm<sup>2</sup> apparent density with 2.41 MPa compressive strength values were achieved with using nano sized SiC, sheet glass and Al<sub>2</sub>O<sub>3</sub> mineral additive. It can be said that the foam glass materials can be preferred as an alternative insulation material rather than polymeric based conventional insulation materials because of supplying high thermal insulation properties without containing unhealthy chemicals and burn risks.

**Keywords :** foam glass, foaming, silicon carbide, waste glass

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