Abstract

The manufacture of foam glass from recycled material is a way that fits with the global objective of environmental protection and the optimal use of household glass waste. The energy savings, achieved through the use of cullet, result in a significant reduction in air pollution, especially carbon dioxide (CO_2) emission, and reduce the cost of the production process. Moreover, the foam glass, as an insulation active material, will help to reduce the residential energy consumption for heating and/or air conditioning. As this porous material is produced by gas bubbles formation (decomposition of carbonates) within a melt glass, the purpose of this study is to identify the temperature range of foaming gas evolution and its influence on the material properties. This analysis was performed by coupled DTA (differential thermal analysis) & TGA (thermogravimetric analysis). Thermal analysis was performed according to the same procedure as for the sample preparation temperature i.e. a final temperature of 850 °C with a heating rate of 6.5 °C/min. Morphology and physical properties have been measured and the high thermal properties of the resulting product make it a suitable candidate for the fabrication of insulating panels for construction industry