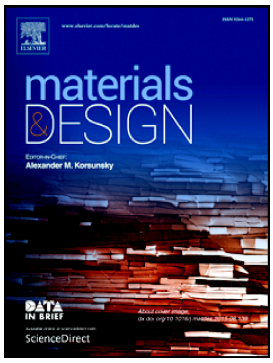

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Effect of cenosphere particle size and relative density on the compressive deformation behavior of aluminum-cenosphere hybrid foam

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Abstract

AlSi12Cu1Mg1-cenosphere hybrid foams (HFs) of varying relative densities were made through stir casting technique using CaH_2 as a foaming agent. Cenospheres of different size ranges were used as a thickening agent, as well as to create micropores in the cell wall. The foaming temperature was varied to vary the relative density, which has not been studied earlier. The combine effect of cenosphere size and relative density on the compressive deformation behavior of HFs was investigated. The plastic collapse stress, plateau stress, and energy absorption of hybrid foam increase with decrease in cenosphere size and increase in relative density. On the other hand, the densification strain is almost invariant to the cenosphere size. All the above responses are correlated with relative density and materials parameters of HFs. This study demonstrates that cenosphere a thermal power plant waste can be used to get good quality of hybrid foam.

Keywords: Cenospheres size; Hybrid foam (HF); Compressive deformation; Aluminum alloys.

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