Influence of cell size on energy absorption capacity of Al matrix composite foams

M.Heidari Ghaleh[1], N.Ehsani[1], H.Baharvandi[1], A.Sadeghi[1]

[1]*Dept.Materials and Manufacturing Technology, Iran Science and research Division, Tehran, Iran*

Abstract

A356+5wt%SiC foams were produced by a melt foaming method. Different cell size and cell size distribution was achieved using different foaming condition. Moreover percentage of foaming agent and effect of strain rate was also tested. Uniaxial compression test was performed on the samples and energy absorption capacity was determined from area under plateau region at a constant strain in stress-strain curve. Control of amount of $CaCO_3$, holding and mixing time was found to be a determining factor for cell size and cell size distribution. By foaming at 700 ºC, 10 min holding time, 4 min mixing time and 3wt% $CaCO_3$, a homogenous cell size was obtained and increased energy absorption capacity.

Keywords: Al matrix composite foams, Cell size distribution, Compressive strength, Energy absorption capacity.