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(Research Article)
Acoustic damping performance of aluminum nanocomposite foams with different additive of carbon nanotubes and comparison that with conventional rockwool

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Abstract

Open cell aluminum foams have good acoustic dampening properties. In this research, in order to improve the sound damping capacity of these foams, 0.9, 1.5 and 3wt% carbon nanotubes were added to the aluminum foam. Foams were produced by the space holder method in powder metallurgy. The results showed that Al-0.9wt%CNT nanocomposite foam had the highest average sound transmission loss in the frequency range of 500-2048 Hz with 43.11 dB, which compared to the average sound transmission loss of pure aluminum with 18.35 dB, has improved by about 135%. Also, this sample was compared with rockwool with a density of 120 kg/m^3, which is generally the best choice in the sound insulation industry. In addition to reducing the thickness, the Al-0.9wt%CNT nanocomposite foam has improved the average loss of sound transmission by more than 157%.

Keywords: Acoustic damping, Nanocomposite foam, Carbon nanotube, Rockwool.

pp. 81-88 (In Persian)

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