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Investigation of the effect of aluminum alloy foam pore size on the sound absorption coefficient

A. Bahreini[1], A. Alizadeh[*1], H.R. Baharvandi[1], A. Ramezani Ghaemi[2]

1. Materials and Manufacturing Technologies Complex, Malek Ashtar Univ. of Tech.
2. Dept. of Broadcast Eng., IRIB Univ.

Abstract

The close-pore aluminium foams are generally regarded as poor sound absorbers. This paper studies the sound absorption behavior of the open- pore aluminium alloy foams manufactured by the space holder method. Their sound absorption coefficients at normal incidence in ranges of 0.8-20 kHz were investigated by the transfer function method. The aluminum alloy foams with similar porosity but with three different pore size less than 106, 106-250 and 1000-2000 µm were produced. The results reveal that the optimal pore size for best sound absorption is of the order of 250-500 µm. Also, sound absorption behavior of aluminum alloy foams with pore size of less than 250 µm at low frequencies is much weaker than that of aluminum alloy foams with pore size of about 1500 µm.

Keywords: Aluminum alloy foam, Sound absorption coefficient, Pore size

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* Corresponding author E-mail: aalizadeh241@gmail.com