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

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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 μ m were produced. The results reveal that the optimal pore size for best sound absorption is of the order of 250-500 μ m. Also, sound absorption behavior of aluminum alloy foams with pore size of less than 250 μ m at low frequencies is much weaker than that of aluminum alloy foams with pore size of about 1500 μ m.

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

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