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Influence of sound absorption on close proximity noise of porous pavement

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The main objective of this research is to correlate sound absorption of a new bituminous porous pavement (air void content 21%) with the close proximity noise. Different core samples were taken from a porous road surface. The normal incidence sound absorption spectra were measured for these samples using the two-microphone impedance tube. Noise levels close to the tire/pavement contact patch were measured continuously in a geo-referenced way, when the test vehicle was rolling. The emission properties of the porous surface as a function of vehicles speed are analyzed in the acoustic frequency range showing different behaviors for the relationships between noise levels and speed. An abrupt variation in the relationship between the coefficient B and frequencies below 1 kHz was observed ($L_{cp}=A+B\log(V)$). This feature could be highly influenced by sound absorption mechanism, particularly noticeable for a non-clogged porous surface with a high content of air voids.