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Low speed exterior vehicle noise and the effect of pavement type

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For operating conditions of cruise and moderate acceleration, the exterior noise emission of light vehicles is typically dominated by tire/pavement noise at speeds of 50 km/h or greater. At a test speed of 56 km/h, it has been found that pavement type can create a 10 dB or more variation in tire/pavement noise. This has significant implications for both community noise and vehicle noise emission testing. In this paper, the results tire/pavement noise measurements for over 40 different pavements in Europe and the United States are reported. These pavements include research surfaces, existing roadways, and ISO 10844 passby test surfaces. Measurements were conducted using an on-board sound intensity methodology that has been correlated to cruise-by noise levels. These results are discussed in terms of the revisions being considered for the newly revised ISO 362 passby test procedure and the ISO 10844 test surface specification. Additionally, a case history of community traffic noise reduction achieved by use of a quieter pavement is reviewed to demonstrate the importance of the pavement in low speed vehicle noise emissions.