

# **Ride quality evaluation of wheeled mini-forwarder using twelve-axis ride quality measurement and evaluation system**

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## Abstract:

The scope of this study is to analyze the ride vibration of a wheeled mini-forwarder based on the root mean square of acceleration, while driving on forest roads. Investigations were conducted with mini-forwarders traveling on concrete surfaces and gravel surfaces, at a speed of 7 km/h with and without 1.37-m<sup>3</sup> loads. The acceleration was measured using a twelve-axis ride quality measurement and evaluation system. The vibration levels were compared with those indicated by the health guidance caution zones defined in ISO 2631-1. The results showed that an operator of a wheeled mini-forwarder was exposed to potential health risks because the vibration levels appeared to exceed the 0.5–1.0 h health caution zone. The comfort reactions indicated that the operators were very uncomfortable while operating on a concrete surface and extremely uncomfortable while operating on a gravel surface.

Keywords: whole-body vibration, wheeled mini-forwarder, ISO 2631-1, twelve-axis ride quality measurement and evaluation system, health guidance caution zones