

Reducing playground injuries by increasing HIC sampling rate from 8 kHz to 20 kHz

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ABSTRACT

Impact attenuating surface (IAS) materials are used in children's playgrounds to limit the potential impact hazard presented to a child when falling from playground equipment; the largest hazard being head impact injuries. The head injury criterion (HIC) is used to measure the IAS around the world.

Australia adopted a sampling rate of 8 kHz for playground IAS testing in 1996 from automotive industry testing for measurement of the HIC.

Data acquisition has improved since 1996 and it is important that the performance of the IAS is measured accurately.

An investigation into the effects of sampling rate on the HIC value was undertaken. A variety of IAS samples were impact tested at sampling rates ranging from 8 kHz to 80 kHz using a calibrated hemispherical headform fitted with a tri-axial accelerometer.

The results of this testing will be presented. The testing confirmed that a sampling rate of 8 kHz under reported the HIC particularly at the critical fall height of IAS.

Australia adopted a sampling rate of 20 kHz on the 23 November 2016 when they published AS 4422:2016.