

ACOUSTIC BULLETIN

Floor Impact Sound Test Data

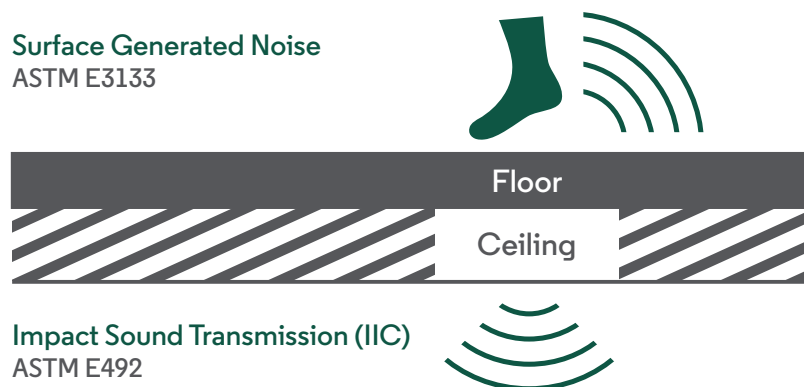
ECOsurfaces is a manufacturer of safe, ergonomic, and acoustic performance surfaces for commercial and athletic markets. As an innovator in acoustic products and testing, ECOsurfaces teamed with the University of Hartford and the Paul S. Veneklasen Research Foundation in 2015 to conduct testing on floor impact sound. In 2018, ASTM introduced a new standard for measuring the floor impact sound of floor coverings (ASTM E3133). As part of ECOsurfaces’ commitment to acoustics and transparency, it had an independent lab test seven surfaces (concrete, VCT, LVT, unbacked sheet vinyl, calendared rubber, ECOsurfaces Origins, ECOsurfaces Vinyl Rx, and ECOsurfaces Aurora) to the new standard.

Vinyl Rx: 2mm sheet vinyl fusion bonded to 5mm VCR

Origins: 3.2mm VCR/Cork tile product

Aurora: 2mm calendared rubber fusion bonded to 5mm VCR

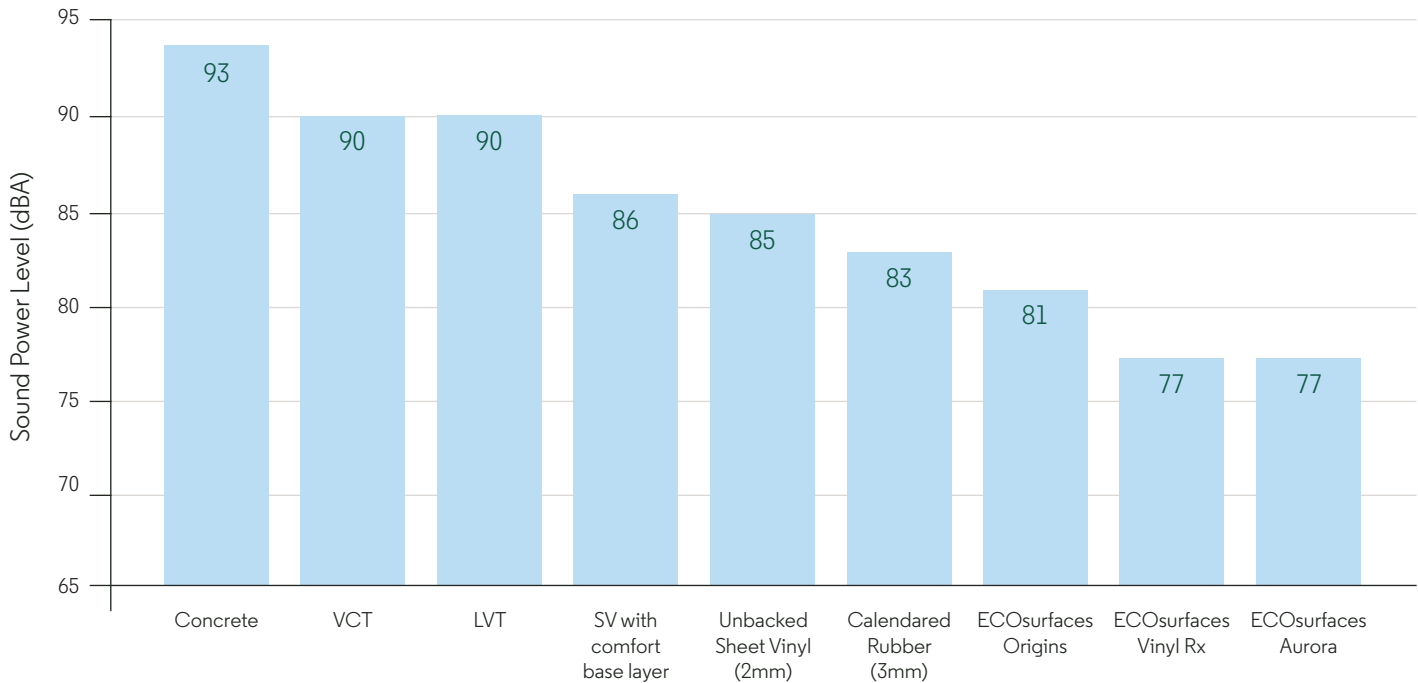
Floor impact sound is the noise produced in a room from an impact on the floor in the same room; examples include rolling carts and the click of high heels on a tile surface. Floor impact sound can be a major source of noise in a multitude of spaces, such as hospitals, schools, and offices.



Noise is of special concern in hospitals, where it consistently ranks as one of the two lowest scoring items on the HCAPHS patient surveys. Guidelines from the Facilities Guidelines Institute (FGI) set forth “Maximum Design Criteria for Noise in Interior Spaces.” However, these criteria are for building systems and are based on unoccupied rooms; thus, these criteria do not take into account noises, such as footsteps, generated by building occupants.

ASTM E3133 helps address this gap and provides the healthcare designer with a key acoustic metric for the healing environment. Testing to ASTM standards (like E3133) allows architects and designers to make an “apples-to-apples” comparison of the performance of products from various manufacturers.

Floor Impact Sound Levels (per ASTM E3133)



Testing was performed by Intertek, an independent IAS-certified lab in York, PA. The “SV with comfort base layer” sound level was provided from the manufacturer’s published test data.

FINDINGS

- Floor impact sound levels from generic VCT and LVT were 9 and 13 decibels (dB) higher than from ECOsurfaces’ Origins, and Vinyl Rx and Aurora, respectively. In terms of perceived loudness, a 9dB increase in noise level is nearly twice as loud, and 13dB is 2.5 times louder.
- Floor impact sound levels for Origins, Vinyl Rx and Aurora were also below the VCT and LVT levels at almost all frequencies. At high frequencies, VCT is as much as 24dB louder than Vinyl Rx, which is more than four times as loud.
- Floor impact sound levels for ECOsurfaces’ Origins, Vinyl Rx and Aurora were lower than for other common flooring surfaces for hospitals, such as 2mm sheet vinyl (SV) and SV with a comfort base. With levels from 4 to 9 dB higher, these common flooring surfaces were noticeably louder.

CONCLUSION

The new ASTM E3133 test protocol provides a standardized method for analyzing flooring impact sound generated and measured within a space. This standard may provide an accurate comparison of acoustic data when considering flooring products.

In each case, the comparative test results of resilient products commonly used in healthcare environments indicate that a product with a VCR backing fusion bonded to a high-performance top layer can dramatically reduce the perceived loudness in the space. Noise generated within the space from Floor Impact Sound can typically result from footsteps, rolling traffic and dropped items.

The data show that ECOsurfaces’ Vinyl Rx, Aurora, and Origins flooring significantly reduce the “click” (the high frequency portion) of footsteps that is especially prominent with high-heels and hard-soled shoes on hard floor surfaces.