

# Accepted Manuscript

Impact sound of timber floors in sustainable buildings

M. Marco Caniato, Federica Bettarello, Patrizio Fausti, Alessio Ferluga, Lucia Marsich, Chiara Schmid



PII: S0360-1323(17)30197-X

DOI: [10.1016/j.buildenv.2017.05.015](https://doi.org/10.1016/j.buildenv.2017.05.015)

Reference: BAE 4905

To appear in: *Building and Environment*

Received Date: 15 January 2017

Revised Date: 2 May 2017

Accepted Date: 8 May 2017

Please cite this article as: Caniato MM, Bettarello F, Fausti P, Ferluga A, Marsich L, Schmid C, Impact sound of timber floors in sustainable buildings, *Building and Environment* (2017), doi: 10.1016/j.buildenv.2017.05.015.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Marco Caniato<sup>1,3,\*</sup>, Federica Bettarello<sup>2</sup>, Patrizio Fausti<sup>3</sup>, Alessio Ferluga<sup>1</sup>, Lucia Marsich<sup>1</sup>, Chiara Schmid<sup>1</sup>

<sup>1</sup> Engineering and Architecture Department, University of Trieste, via Valerio 6/a, 34127 Trieste, Italy

<sup>2</sup> AcusticaMente Engineering consulting, via Garibaldi 13/b, 31015 Conegliano (TV), Italy

<sup>3</sup> Department of Engineering, University of Ferrara, via Saragat 1, Ferrara, Italy

\* corresponding author: [mcaniato@units.it](mailto:mcaniato@units.it); +39347316728; FAX +39 040 558 3836

## **Abstract**

Timber buildings represent a robust alternative to traditional heavyweight constructions. They allow CO<sub>2</sub> storage, high structure and performance reproducibility, fast assembly and final certification of every panel.

Nowadays, acoustic insulation is one of the most requested performances on the part of inhabitants, but not always fulfilled. Since these kind of edifices are relatively new in the market, there are very few studies on acoustic properties, regarding on impact sound performances. In this paper, an in-depth analysis of impact noise on bare timber floors is presented, focusing on how impact sound reduction cannot be as efficient as in heavyweight constructions. Two new equations are proposed, modelling the impact sound pressure level of common bare timber structures and the influence of traditional floating floor systems is analysed.

**Keywords:** Sustainable timber buildings; acoustic; impact sound insulation; precast energy saving panels

## **1. Introduction**

Lightweight precast timber buildings are present worldwide and their market trend is growing, since the related thermal insulation performances provide very good final results. They allow CO<sub>2</sub> storage, since wood is widely used, as it is a renewable and environmentally friendly raw material and commonly a very good thermal insulation is provided thanks to traditional [1] and new materials [2] use. Generally, these constructions are built within industry plants where costs are minimised beforehand and where it is ensured that as little waste as possible is produced, according to Kyoto protocol purposes [3].

Download English Version:

<https://daneshyari.com/en/article/4911493>

Download Persian Version:

<https://daneshyari.com/article/4911493>

[Daneshyari.com](https://daneshyari.com)