ENGINEERED WOOD I-JOIST FROM JOINTED ORIENTED STRAND BOARD (OSB) WEB AND SOLID WOOD FLANGES

BUREAU OF RESEARCH AND CONSULTANCY
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
MALAYSIA

By

WAN MOHD NAZRI WAN ABDUL RAHMAN
SUHAIMI MUHAMMED
ABDUL JALIL AHMAD

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En. Amran Shafie
En. Sardey Idris
En. Anuar Yaacob
Department of Wood Industries, Faculty of Applied Science, Universiti Teknologi MARA, Jengka, Pahang Darul Makmur

Mohd Rosdy Fauzi
Mohd Azri Azmy
Muhammad Nadmin Hassan
Student of Diploma Wood Industries

En. Mohamad Omar Mohamad Khaidzir
Research Engineer
Forest Research Institute of Malaysia, Kepong, Kuala Lumpur

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By:

Wan Mohd Nazri Wan Abdul Rahman. Abdul Jalil Ahmad and Suhaimi Muhammed
Department of Wood Industries, Faculty of Applied Science,
Universiti Teknologi MARA, 26400 Jengka, Pahang Darul Makmur

ABSTRACT

Problems of low-cost housing system have continued to be a primary research and development area for the engineering use of wood composite such as plywood and oriented strand board (OSB). As composites, their properties should be developed to suit their end use and they are now able to replace solid wood in many situations. For example, this study proved that there is a good potential for the manufacture and application of prefabricated wood I-joist. I-joist is a modern wood product that can be used as a housing construction material such as roof and floor systems. I-joist is a system that consists of flanges and web components, both have to work together as a system in order to match the strength property of solid wood beam. This system was obtained by using keruing (*Dipterocarpus spp.*) as solid wood flange and 2 types of web materials (OSB and plywood) with L-butt joint. The results showed that the MOR value for an I-joist with OSB web (KO-1) had the highest value of 28.4 MPa and the lowest strength (11.9 MPa) was produced by the I-joist with plywood web. In all cases, failures in the I-joist specimens studied were either in tension or in compression and failure occurred at the web joints. These jointing techniques encourage to the usage of off-cuts from related wood-based industries thus leading to the optimum utilisation of timber.