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## Mechanical Properties of Wooden I-beams with Plantation Timber Materials in Hokkaido I.

### Bending, shear and partial bearing properties

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**Abstract:** Wooden I-beams with Todomatsu (*Abies sachalinensis*) lumber and Karamatsu (*Larix kaempferi*) plywood were developed to meet the demand for a stable and quality controlled supply of floor framing members for wood frame construction from plantation timber resources. In this study, wooden I-beams of 235 mm depth and three flange sizes were manufactured by common wood working machines, and their bending, shear and partial bearing properties were examined. The tolerance limits of bending and partial bearing properties of the I-beams developed in this study were equal to or higher than those of dimension lumber with the same beam depth, although statistical analyses showed that their characteristic values were lower than those of North American I-beams of similarly shaped cross sections with MSR lumber flanges and OSB webs. From the results of examination, it was confirmed that the I-beams developed in this study could be satisfactorily substituted for dimension lumber of the same depth as joists and rafters for wood frame construction under ordinary loads, although careful consideration should be given to exceptional cases when shear force is critical in the structural design.

**Keywords:** wooden I-beam, bending property, shear property, partial bearing property, characteristic value



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