

## 北海道産カラマツにおける原木半径方向の位置による単板選別が LVLの強度性能に及ぼす影響

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### The effects of veneer selection by radial location in logs on strength properties of LVL in Japanese larch (*Larix kaempferi*) planted in Hokkaido

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北海道産カラマツによる高強度な単板積層材 (LVL) の製造可能性について検討するため、原木半径方向の採取位置によって単板を選別してLVLを製造し、曲げ試験および水平せん断試験により強度性能を調べた。また、原木の木口面の年輪情報が原木や単板のヤング係数に及ぼす影響について検討した。原木の平均年輪幅と原木のヤング係数の間には1%水準で有意な負の相関が認められた。ベニヤレースのスピンドル中心からの距離 (中心距離) の増加に伴い単板のヤング係数 (EV) が増加し、平均年輪幅が小さい原木ほどEVの平均値は高い値で推移した。原木の外周部 (中心距離12cm以上) の単板のみから構成されたLVLは、内周部 (同10cm未満) の単板のみによるLVLよりも、曲げヤング係数で53%、曲げ強さで65%、公称せん断強さで26%高い値を示し、原木半径方向の採取位置による単板選別の有効性が明らかになった。

The aim of this study was to examine the effect of the radial location of veneer on the strength properties of laminated veneer lumber (LVL) in Japanese Larch grown in Hokkaido. We manufactured LVL using veneers taken from different radial locations in logs, and then examined their strength properties using bending and horizontal shear tests. In addition, we examined how annual ring width of the logs influences the modulus of elasticity of both the logs and the veneers. Our results suggested that there was a significant negative correlation ( $p < 0.01$ ) between the average annual ring width and the modulus of elasticity of the logs. The modulus of elasticity of veneers (EV) increased as distance from the center of the veneer lathe spindle increased, and average EV was higher for logs with lower average annual ring width. In addition, we compared the strength properties of LVL composed of veneers sourced from the outer part of logs (>12 cm from the center of the veneer lathe spindle) with that sourced from the inner part of logs (<10 cm from the center of the veneer lathe spindle). LVL composed of the outer veneers was stronger than that composed of the inner veneers; 53% higher in modulus of elasticity, 65% higher in bending strength, and 26% higher in nominal shear strength. These results indicate that veneer sorting by radial location in logs is effective.

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