

韓國產 主要樹種의 機械的 性質

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The Mechanical Properties for Commercial Woods in Korea

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Discussion and Conclusion

A study on the mechanical properties for commercial woods was summarized as follows.

1. The discrepancy in the mechanical properties of the commercial woods in Korea was found among species and also at the different heights of the tree (Table 1).
2. Depending upon the kind of strength properties of the wood, the order of tree species may not always keep the same order to the strength properties.
3. The highest value of the mechanical properties tested was *Quercus serrata*, the medium was *Abies holophylla* and *Abies nephrolepis* and the lowest was *Pinus densiflora* and *Larix olgensis* var. *koreana*
4. Especially, the compression among the mechanical properties showed clear proportional value to the specific gravity of the wood.
5. A general tendency of discrepancy due to the tree height was observed as follows:
 - (a) Only in *Pinus densiflora*, the strength properties increase with increasing of the height of position where the samples are taken.
 - (b) *Larix olgensis* var. *koreana*. was the largest value at the middle height of the tree.
 - (c) *Abies nephrolepis* decreases its strength according to the increase of the tree height, that is, the height increase the strength value decrease.
 - (d) *Abies holophylla* was almost the same as in case of *Abies nephrolepis*.
 - (e) *Quercus serrata* was the weakest at the middle in height of the tree.

However, since these results were obtained by the comparatively small number of specimens, the further studies are required to be tested in different age classes and different localities of the tree grown.

Table 1. Summary of mechanical properties for commercial woods in Korea

species	pro- perty	Tree por- tion	Compre- ssion (kg/cm ²)	MOR kg/cm ²	MOE kg/cm ²	Shear kg/cm ²	Tensile kg/cm ²	Impact kg/cm ²	Hardness (kg/cm ²)		
									End grain	Radial	Tangen- tial
<i>Pinus densiflora</i>		A1	333	708	69,862	75	1,139	0.193	2.92	0.91	1.00
		A2	351	792	73,592	79	1,144	0.288	6.88	0.95	0.89
		A3	373	927	88,975	82	1,189	0.384	2.98	1.06	0.88
<i>Larix olgensis</i> <i>var. koreana</i>		A1	643	1,192	110,907	86	1,614	0.520	4.84	2.50	1.64
		A2	684	1,450	124,408	78	1,712	0.468	5.28	2.55	1.71
		A3	671	1,208	119,796	105	1,259	0.538	5.58	2.22	1.62
<i>Abies ne phrolepis</i>		A1	417	718	74,583	55	662	0.382	2.61	0.89	0.90
		A2	386	702	73,784	55	1,120	0.326	2.68	0.73	0.72
		A3	378	663	68,436	58	1,031	0.288	2.77	0.75	0.77
<i>Abies holophylla</i>		A1	449	806	83,408	65	1,268	0.291	3.23	0.88	1.92
		A2	425	749	79,874	70	1,058	0.292	3.68	0.99	0.86
		A3	414	770	95,031	63	1,131	0.326	3.16	0.81	0.70
<i>Quercus serrata</i>		A1	690	1,413	134,741	150	1,816	1.204	6.04	2.34	2.35
		A2	625	1,356	122,026	144	1,849	1.472	5.55	2.07	2.48
		A3	675	1,477	131,354	145	1,629	1.306	5.96	2.27	2.51

[Note] : The symbols, A₁, A₂ and A₃, indicate the portion of the tree height i.e., top, middle and butt, respectively. ■