Physical Properties of WHABAEC-Wood*

(Chamaecyparis pisifera)

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Summary

Chamaecyparis pisifera was imported about 60 years ago and the fundamental wood structural factors for wood utilization in Korea were not yet investigated.

The fundamental wood structural factors—specific gravity, cell-diameter of tracheids, cell-wall thickness of tracheids, length of tracheids and standing moisture contents—of its 3 specimens, grown in Jinju, cut down in fall were investigated here as follows:
1. Moisture contents showed highest value in butt part of sap wood and it was gradually decreased with getting away from butt part, however, stable in heart wood.
2. Green specific gravity showed higher value in sap wood than in heart wood. Air and oven dry specific gravity were the converse.
3. Value of tracheid length increased slowly up to 12th annual ring, however, considerably stable at the rear part.

Tracheid length was a little longer in heart wood than in sap wood and it also longer in top part of specimens than in butt part.

Its width was wider in sap wood than in heart wood.

The values of its thickness showed more or less thicker in sap wood.

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1. **Chamaecyparis pisifera** is a coniferous tree species commonly known as Hinoki cypress. It is native to Japan and also cultivated in other countries, including Korea. The text discusses its physical properties and how they influence its utilization in wood products.

2. **Summary** provides an overview of the research findings, highlighting the differences in moisture content, specific gravity, and tracheid length between sapwood and heartwood. The data shows that heartwood has a higher specific gravity and longer tracheids, which are important considerations for woodworkers.

3. **Physical Properties** section outlines the methodological approach taken in the study. The specimens were cut down in fall and their properties were measured at different parts of the tree to understand their variability. The results suggest that heartwood is more stable and has higher density compared to sapwood, making it suitable for different applications in wood products.
Ⅱ. 材料 및 方法

1. 供試材의 採取

慶南 晉州市에 位置한 慶尚大學 樹木園에서 標準木
이라고 認定되는 比較的 種型이 少고 正常의으로 生長
하고 있는 3本의 立木을 選定하여 1972年 9月 29日에
伐採하여 供試木으로 하였다.

Table 1. Sample trees,

<table>
<thead>
<tr>
<th>Sample tree</th>
<th>Tree height (m)</th>
<th>D.B.H. (cm)</th>
<th>Tree age</th>
<th>Annual ring width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.52</td>
<td>20.9</td>
<td>24</td>
<td>5.37</td>
</tr>
<tr>
<td>2</td>
<td>11.17</td>
<td>18.7</td>
<td>17</td>
<td>6.01</td>
</tr>
<tr>
<td>3</td>
<td>6.92</td>
<td>12.8</td>
<td>17</td>
<td>4.23</td>
</tr>
</tbody>
</table>

* Diameter of breast height of tree with bark

2. 供試材의 選製 및 濃度方法

i) 立木含水量 및 濃度測定

個体으로 根元部位(0m)에서 3cm 높케의 圓板을 2m
間隔으로 造材하여 各圓板에서 四方位別로 邊材에
서 2cm x 2cm의 8個의 正立方体의 試片을 準備하였으
며 立木含水量은 Mcmillen(1950)* 또는 採用한 Oven
dry method를 적용하여 測定하였으며 濃度은 含水量
測定이 곧난 試片을 利用하여 U.S. Forest Products
Laboratory(1965)와 Pillow(1960)*의 方法인 試驗体
容積對重量的 比 計算하여 全乾、 気乾 및 生材比重
을 求하였다.

ii) 假管材の 測定

個體中 根元部(0m), 5m部位에서 春、秋季別로 圓板
에서 四方位別로 試材を 選製하여 Jeffrey(1917)와
Sass(1957)의 方法으로 解離を 実施하여 假管材
의 赤、 厚、 膜厚などを 測定하였다. 特に 假材の 測定에
는 Chalk와 Chattaway(1934)*의 全長測定法(Total
length method)를 採用하였다.

III. 結果 및 考察

1. 立木의 含水量

第 2表의 結果에서 平均立木含水量을 考察하여 보면
邊材의 立木含水量은 根元部이 가장 높고 上部으로
 감수록 낮아지는 傾向이에 全体的으로 邊材의 立木含
水量은 145.893%에서 250.436%으로 平均 126.786%
을 나타내었으며 邊材는 45.836%에서 59.814%으로
平均 54.199%로 邊材에 비하여 邊材는 部位別 立木含水
量의 比較는 제외나 邊材가 큰 差를 보인것은 U.S.
Forest Products Laboratory(1960)*에서 소나무類의
生材含水量値와 一致하였다.

Table 2. Average specific gravities and moisture contents of specimens.

<table>
<thead>
<tr>
<th>Tree height (m)</th>
<th>Part</th>
<th>Specific gravity</th>
<th>Moisture contents(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Green</td>
<td>Air dry</td>
</tr>
<tr>
<td>0</td>
<td>H</td>
<td>0.5993</td>
<td>0.3825</td>
</tr>
<tr>
<td>1</td>
<td>S</td>
<td>0.8145</td>
<td>0.3221</td>
</tr>
<tr>
<td>1.3</td>
<td>H</td>
<td>0.5757</td>
<td>0.4284</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>0.5442</td>
<td>0.4077</td>
</tr>
<tr>
<td>5</td>
<td>S</td>
<td>0.8850</td>
<td>0.3137</td>
</tr>
<tr>
<td>7</td>
<td>S</td>
<td>0.5487</td>
<td>0.4082</td>
</tr>
<tr>
<td>9</td>
<td>H</td>
<td>0.7974</td>
<td>0.3328</td>
</tr>
<tr>
<td>Mean</td>
<td>S</td>
<td>0.5494</td>
<td>0.4034</td>
</tr>
</tbody>
</table>

2. 木材의 比重

材部位別の 邊、 心材의 平均比重値는 表 2와 그림
1과 같은데 生材比重에 있어서 邊材의 平均比重は 0.8
539이며 比重 心材は 0.5494이었던 것이 平均 気乾比重은
邊材가 0.3413인데 心材는 0.4034였으며 全乾比重은
邊材가 0.2966인데 比重 心材は 0.3588이던 것은 生材比
重は 邊材가 心材보다 큰 値を 보이나 氣乾 및 全乾比
重は 邊材가 心材가 큰 値を 나타냈다. 그러나 材의
地上部位別の 邊、 心材 다같이 변한가 변화가 없었다.