CEDAR

Western Red Cedar, *Thuja plicata*
Family: Cupressaceae

**Distribution:**
Western Red Cedar (*Thuja plicata*) grows in the Pacific Northwest and along the Pacific coast to Alaska. Western Red Cedar lumber is produced principally in Washington, followed by Oregon, Idaho, and Montana. The tree has been planted in Great Britain and New Zealand.

**The Tree:**
Western Red Cedar trees reach heights of 200 feet with diameters of 16 feet. The trunk of older trees is buttressed, fluted and quite tapered.

**General Wood Characteristics:**
The heartwood of Western Red Cedar is reddish or pinkish brown to dull brown and the sapwood nearly white. The sapwood is narrow, often not over 1 inch in width. The wood is generally straight grained and has a uniform but rather coarse texture. It has very small shrinkage. This species is light in weight, moderately soft, low in strength when used as a beam or posts, and low in shock resistance. Its heartwood very resistant to decay.

**Mechanical Properties (2-inch standard):**

<table>
<thead>
<tr>
<th></th>
<th>Specific Gravity</th>
<th>MOE GPa</th>
<th>MOR MPa</th>
<th>Compression Parallel MPa</th>
<th>Perpendicular MPa</th>
<th>WML $^a$ KJ/m$^3$</th>
<th>Hardness N</th>
<th>Shear MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>0.31</td>
<td>6.48</td>
<td>35.8</td>
<td>19.1</td>
<td>1.65</td>
<td>34.5</td>
<td>1160</td>
<td>5.31</td>
</tr>
<tr>
<td>Dry</td>
<td>0.34</td>
<td>7.65</td>
<td>51.7</td>
<td>31.4</td>
<td>3.17</td>
<td>40.0</td>
<td>1560</td>
<td>6.83</td>
</tr>
</tbody>
</table>

$^a$WML – Work to maximum load. Reference (59).

**Drying and Shrinkage:**
Percentage of shrinkage Type of shrinkage (green to final moisture content)

<table>
<thead>
<tr>
<th></th>
<th>0% MC</th>
<th>6% MC</th>
<th>20% MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangential</td>
<td>5.0</td>
<td>4.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Radial</td>
<td>2.4</td>
<td>1.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Volumetric</td>
<td>6.8</td>
<td>5.4</td>
<td>2.3</td>
</tr>
</tbody>
</table>

References: (56, 192).

**Working Properties:**
The timber works well with both hand tools and machine operations. It may splinter when worked on the end grain (mortising, etc.). It is subject to compression during planing and molding. It nails and screws well and takes both stains and paint satisfactorily (5).

**Durability:**
Western Red Cedar is rated as resistant to very resistant to heartwood decay (14). It is not immune to attack by termites and furniture beetles (5).
**Preservation:**
It is resistant to preservative treatment.

**Uses:**
Western Red Cedar is used principally for shingles, lumber, poles, posts, and piles. The lumber is used for exterior siding, interior finish, greenhouse construction, ship and boat building, boxes and crates, sash, doors, and millwork.