**Picea sitchensis (Bong.) Carr.**

**Family: Pinaceae**

**Sitka Spruce**

The genus *Picea* is composed of about 30 species native to North America [12] and Eurasia [20]. The word *picea* comes from the ancient Latin name (*pix, picis* = pitch) of a pitchy pine, probably Scotch pine (*Pinus sylvestris* L.). The word *sitchensis* is for Sitka Island (now Baranof Island) in southeastern Alaska.

**Other Common Names:** Abete di Sitka, British Columbia sitka-spruce, coast west spruce, coast spruce, eipcea de menzies, epicea de Menzies, epicea de Sitka, epinette de sitka, great tideland spruce, menzies spar, Menzies spruce, menziesie, picea de Sitka, picea di Sitka, sequoia silver spruce, silver spruce, Sitka spar, Sitka spruce, sitka-fichte, sitkafichte, Sitka-gran, sitka-gran, sitkankuusi, sitka-spar, spruces d'america, tideland spruce, West Coast spruce, western spruce, yellow spruce.

**Distribution:** Sitka spruce is native to the Pacific Coast region from southern Alaska (Kodiak Island and Cook Inlet), southeast through southeastern Alaska, western British Columbia, western Washington, western Oregon and northwestern California.

**The Tree:** Sitka spruce trees normally reach heights of 160 feet, with diameters of 5 feet. A record tree was recorded to be 216 feet tall, with a diameter of 16.7 feet.

**General Wood Characteristics:** The sapwood of Sitka spruce is a creamy white to light yellow, while the heartwood is pinkish yellow to brown. It may be 3 to 6 inches wide or even wider in young trees. The wood has a fine, uniform texture and generally has a straight grain. It is moderately light in weight, moderately low in bending and compressive strength, moderately stiff, moderately soft, and moderately low in resistance to shock. On the basis of weight, it rates high in strength properties and can be obtained in clear, straight-grained pieces. It has moderately small shrinkage. It is not difficult to kiln-dry and can be worked easily (when free of knots). It has a low resistance to decay and is resistant to preservation treatments under pressure, but can be treated by a water diffusion process. Thin panels of Stika spruce are highly resonant, making them desirable for piano sounding boards.

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

<table>
<thead>
<tr>
<th></th>
<th>Specific gravity</th>
<th>MOE x10^6 lbf/in²</th>
<th>MOR lbf/in²</th>
<th>Parallel lbf/in²</th>
<th>Perpendicular lbf/in²</th>
<th>WML in-lbf/in³</th>
<th>Hardness lbf</th>
<th>Shear lbf/in²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>0.37</td>
<td>1.23</td>
<td>5700</td>
<td>2670</td>
<td>280</td>
<td>6.3</td>
<td>350</td>
<td>760</td>
</tr>
<tr>
<td>Dry</td>
<td>0.42</td>
<td>1.57</td>
<td>10200</td>
<td>5610</td>
<td>580</td>
<td>9.4</td>
<td>510</td>
<td>1150</td>
</tr>
</tbody>
</table>

*WML = Work to maximum load.
Reference (56).*

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

<table>
<thead>
<tr>
<th>Type of shrinkage</th>
<th>0% MC</th>
<th>6% MC</th>
<th>20% MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangential</td>
<td>7.5</td>
<td>6.0</td>
<td>3.8</td>
</tr>
<tr>
<td>Radial</td>
<td>4.3</td>
<td>3.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Volumetric</td>
<td>11.5</td>
<td>9.2</td>
<td>2.5</td>
</tr>
</tbody>
</table>

References: (185, 56, 192).

### Kiln Drying Schedules

**Conventional temperature/moisture content-controlled schedules**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower grades</td>
<td>T7-A5</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Upper grades</td>
<td>T12-B5</td>
<td>T12-B4</td>
<td>T11-B3</td>
<td>T5-B2</td>
<td>T5-B2</td>
<td>J</td>
</tr>
</tbody>
</table>

*Reference (28, 185).*

**Conventional temperature/time-controlled schedules**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Lower grades</th>
<th>Upper grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>294</td>
<td>294</td>
</tr>
</tbody>
</table>

*References (28, 185).*

### Working Properties: Sitka spruce is easily worked if free of knots.

### Durability: Sitka spruce is rated as slightly or nonresistant to heartwood decay (14).

### Preservation: It is resistant to preservation treatments under pressure, but can be treated by a water diffusion process.

### Uses: Lumber, pulpwood, sounding boards for high quality pianos, guitar faces, ladders, components for experimental light aircraft, oars, planking, masts and spars for boats, and turbine blades.

### Toxicity: Working with fresh wood may cause dermatitis or other contact sensitivities (8,11&16).

### Additional Reading and References Cited (in parentheses)