BASICS OF WOOD – SHORT VERSION
4 SEASONS OF TREES
SPRING, SUMMER, AUTUMN & WINTER
COMMON TREES FOR WOOD FLOORS
BEECH VS. OAK
WOOD TYPES
HARDWOOD VS. SOFTWOOD

**Softwood** trees have **needles** and are mostly evergreen (e.g. spruce, pine).

**Hardwood** trees have **leaves** and mostly shed their leaves in fall (e.g. oak, beech, maple).
LUMBER
DIFFERENT SECTIONS / CUTS OF A TREE STEM

T = tangential
R = radial
WOOD & MOSITURE
 ADSORPTION, ABSORPTION

- Adsorption:
  Attraction of moisture from the air to a surface of a material (mirror)

- Absorption:
  Uptake of liquid due to physical contact with the liquid (sponge)
WOOD & WATER
WHERE? AND HOW?

- Wood is hygroscopic, attracts moisture from the air
- Free water: contained in the cell cavities (not held back by any “special forces”)
- Bound water: held within cell walls by physical / chemical forces
- With changing moisture content in the wood, the dimensions of the wood changes as well (dry: shrinkage; wet: swelling)
- Proper use of wood products requires an understanding of interaction with moisture
ANISOTROPY OF WOOD: SHRINKAGE & SWELLING

I LIKE TO MOVE IT!

- Wood shrinks most (100%) in the direction of the annual growth rings (tangentially)
- About half as much (~50%) across the rings (radially)
- And only slightly (≤10%) along the grain (longitudinally)

- The combined effects of radial and tangential shrinkage can distort the shape of wood pieces because of the difference in shrinkage and the curvature of annual rings (cupping)
### DIFFERENT WOODS
FROM OAK TO IPE

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Oak</th>
<th>Beech</th>
<th>Maple</th>
<th>Pine</th>
<th>Bamboo</th>
<th>Ipe</th>
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<tbody>
<tr>
<td>Bonding</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Activity</td>
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<td>high</td>
<td>low</td>
<td>medium</td>
<td>high</td>
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<tr>
<td>Shrinking &amp; Swelling</td>
<td>low</td>
<td>high</td>
<td>medium</td>
<td>low</td>
<td>medium</td>
<td>very high</td>
</tr>
</tbody>
</table>

All wood species have

- different behaviours in activity (bending, curving)
- different contents of resins and oils

what has an influence on bonding properties.

**Wood Wiki:**

- Oak Eiche
- Beech Buche
- Maple Ahorn
- Pine Kiefer
- Ipe Ipe