Wood Product Use

Dean Prestemon
Professor Emeritus, Forestry-
Natural Resource Ecology and Management
Wood is:

- Biological (degradable)
- Variable (within and between)
- Anisotropic (3 axes)
- Hygroscopic (EMC)
- Viscoelastic (time dependent)
Proper Use of Wood

- Match species to use
- Dry properly
- Assemble properly
- Protect / preserve properly
Important Properties

- Density and strength
- Dimensional stability
- Natural durability
- Weathering characteristics
- Appearance
Matching Species to Use

- Density and strength
- Dimensional stability
- Natural Durability
- Weathering Characteristics
Sapwood vs Heartwood
# Natural Durability

## Decay Resistance of the Heartwood of Hardwoods

<table>
<thead>
<tr>
<th>HIGH</th>
<th>MODERATE</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>black walnut</td>
<td>honey locust</td>
<td>elm</td>
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<tr>
<td>black locust</td>
<td></td>
<td>hackberry</td>
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<tr>
<td>chestnut</td>
<td></td>
<td>Hickory</td>
</tr>
<tr>
<td>osage orange</td>
<td>white oak</td>
<td>maple</td>
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<tr>
<td>ash</td>
<td>aspen</td>
<td>red oak</td>
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<tr>
<td>basswood</td>
<td>birch</td>
<td>willow</td>
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<tr>
<td>birch</td>
<td>butternut</td>
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<td>cherry</td>
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<td>Hickory</td>
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<tr>
<td>maple</td>
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<tr>
<td>red oak</td>
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<tr>
<td>willow</td>
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# Natural Durability

## Decay Resistance of the Heartwood of Softwoods

<table>
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<th>HIGH</th>
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<td>cedar</td>
<td>cypress</td>
<td>redwood</td>
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<td></td>
<td>Douglas fir</td>
<td>larch</td>
<td>true fir</td>
</tr>
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<td></td>
<td>southern pine</td>
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<td>hemlocks</td>
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<tr>
<td></td>
<td></td>
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<td>other pines</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>spruces</td>
</tr>
</tbody>
</table>
Proper Moisture Content

- Air drying: 15-20%
- Kiln drying: 6-8%
Assemble Properly

- Minimize moisture problems
- Use appropriate fasteners and adhesives
Minimize water penetration and absorption

- Limit exposure of end grain
- Allow for drainage and drying
- Accommodate shrinking and swelling
Fasten Properly

- Mechanical Fasteners
  - Nails, screws, bolts
  - Exterior vs. Interior use!
- Adhesives
  - Moisture resistant
  - Waterproof
Protect and Preserve

- Exterior vs. Interior!
- Coatings vs. Treatments
Weathering Characteristics

- Degradation by ultraviolet light and moisture
- Shrinkage
- Natural durability
Exterior Protection

- Coatings
  - Paints
  - Stains
  - Varnish?

- Treatments
  - Non-Pressure
  - Pressure
Exterior Finishes

- Penetrating
  - Water repellents
  - Stains, latex or oil
    - Semitransparent
    - Opaque or solid

- Coatings
  - Latex or oil base paints
Highly Rated Exterior Finishes by “Consumers Report”

- Exterior paints
  - Behr Premium Plus Flat
  - Valspar Duramax Satin
  - Behr Premium Plus Semi-gloss

- House and Deck stains
  - Behr Deck Plus Solid Deck, Fence & Siding Stain
  - Sears Weatherbeater Solid Deck, Fence & Siding Stains
  - Sikkens Cetol SRD Semi-transparent Stain
Exterior Treatments

- Non-Pressure
  - Brush, Spray
- Pressure
  - Level of Treatment
  - Type of Treatment
    - CCA vs. ACQ or CA
Interior Coatings

- Penetrating
  - Sealers
  - Stains
- Film forming
  - Varnish (Polyurethanes)
  - Paints
Highly-rated Interior Paints by “Consumers Reports”

- Behr Premium Plus Ultra Satin Enamel
- Kilz Casual Colors Satin
- Gliden Premium Satin
- Behr Premium Plus Ultra Flat Enamel
- Benjamin Moore Natural Flat
- Valspar Signature Colors Matte
Type of Products

- Lumber
- Plywood
- Particle board
- Fiberboard
Lumber
Common uses for hardwoods

- Furniture
- Interior trim
- Doors
- Paneling
- Structural
Furniture
Interior Trim
Interior Doors
In 1950, Eichler created an interior mood similar to the Bazett with his own models, including those in Palo Alto’s Green Gables (above).
Common Uses for Conifers

- Structural Framing
- Siding
- Decking
Structural
Plywood

- Alternating layers of veneer (crossbanded)
- Glued (exterior or interior)
- Formed under Heat and Pressure
- Enhanced stability
Particleboard

- Flakes or wafers are the basic component
- Glued
  - Interior or Exterior
- Formed under heat and pressure
Fiberboard

- Fiber is the Basic Component
- Formed under Heat and Pressure
- Little or no adhesive used