Wood Flooring 101

Presented By: First Lastname
February 10, 2019

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Course Description

This course assists design professionals in understanding the characteristics of hardwood flooring so that they can effectively specify wood flooring for their client projects.

Learning Objectives

- Understand the history of hardwood floors
- Discuss the advantages of hardwood floors
- Describe the types of hardwood floors
- Identify different species of hardwood floors
- Recognize how hardwood floors react to moisture
- Explain the sustainability of hardwood floors
- Examine maintenance of hardwood floors

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History

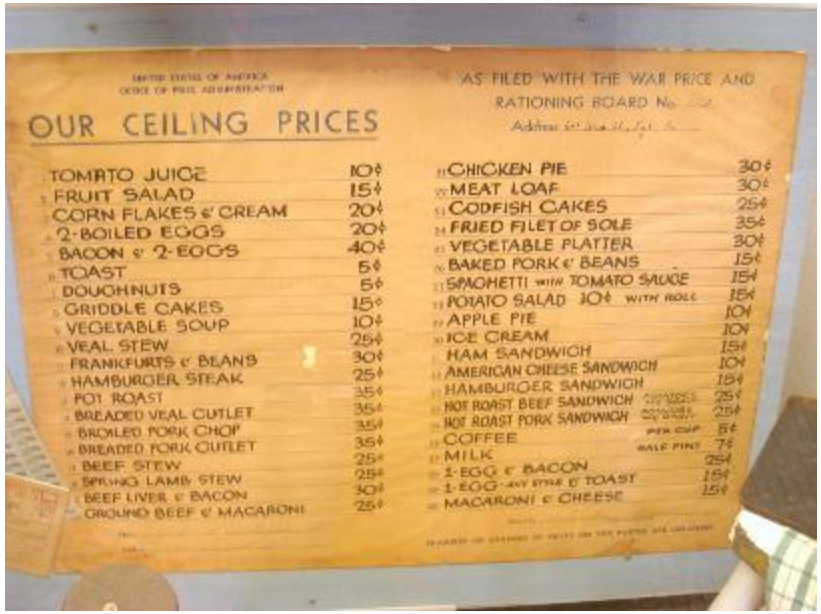
Pre 1900s

- Enjoyed by royals, upper class
- Intense labor done by expert craftsmen
- One floor could take years

Turn of the Century

- 1885 = side matcher
  - Tongue and groove
- 1898 = end matcher

World War II



- Factory finished floors more prominent
- Office of Price Administration fixed prices on products
- Factory finished floors yielded better price
- Housing for shipyard/factory workers flourished
- Demand increased

Current Day

- Market has diversified
- Consumers have more choices
- Wood/concrete subfloors, floated
- Multiple finish options
- GreenGuard, FSC certifications verify environmental sustainability

Advantages

Benefits of Wood

- Timeless value
- Hypoallergenic
- Easy to maintain
- Numerous style options
- Increases value of a home/building

Timeless Value

- Can last 100+ years
- Will adapt to many décor styles
- Can be refinished numerous times
- Less lifetime cost than other flooring options

Hypoallergenic

- Don’t harbor microorganisms or pesticides
- Minimize dust, mold and animal dander
- Improves indoor air quality

Easy to Maintain

- Sweep or dust mop
- Vacuum w/ beater bar turned off for dust between floor boards
- Use manufacturer recommended cleaning product
- Hire professional for pad & recoat to restore luster

Numerous Styles

- Color, species
- Solid, engineered
- Jobsite finished, factory finished
- Strip, plank, parquet

Increases Value

- 80% consumers want wood floors
- Real estate agents say homes with wood floors sell faster and for more money
- Great long-term value

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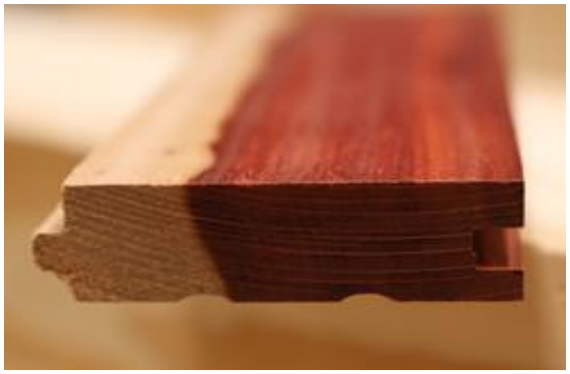
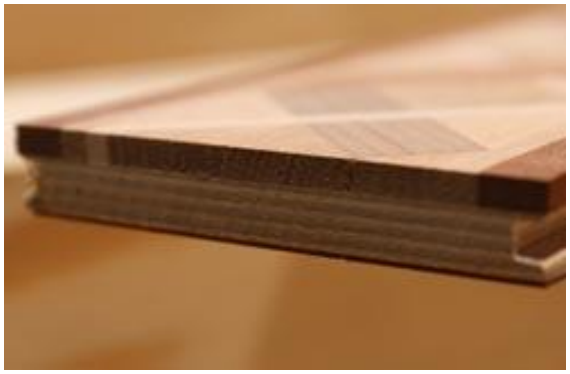
Types

Types of Hardwood Floors





- Solid
  - Solid wood top to bottom
- Engineered
  - Several layers of wood veneers
- Engineered Composite
  - Wood on top wear layer

Solid vs. Engineered

- Solid can be resanded, refinished numerous times
- The “sandability” of engineered depends on wear layer thickness
- Solid cannot be installed below grade
- Engineered can be installed above, on, below grade
- Because of their cross ply construction, engineered floors are more dimensionally stable
- Engineered can be installed on wood, concrete subfloors
- Solid can be installed on wood subfloors, on concrete subfloors if recommended by the manufacturer

Styles of Hardwood Floors

- Strip
  - Widths < 3”

- Plank
  - Widths ≥ 3”

- Parquet
  - Geometric; varies in style, width

Finish Methods

- Jobsite finished
  - Finish applied on the jobsite
- Factory finished
  - Finish applied at the manufacturing facility

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Species

Wood Flooring Species

- Manufactured from hardwood trees
- Hardwood = trees that drop their leaves
- Harvested by cutting down tree, milling logs into lumber
- Each species has its own “personality”
- Many factors affect the way finished floor looks

Hardwood Hardness

- Each species has a different degree of hardness
- Domestic species less hard
  - Oak
  - Cherry
  - Walnut
- Exotic species more hard
  - Jatoba
  - Cumaru
  - Ipe
- Harder is not always better

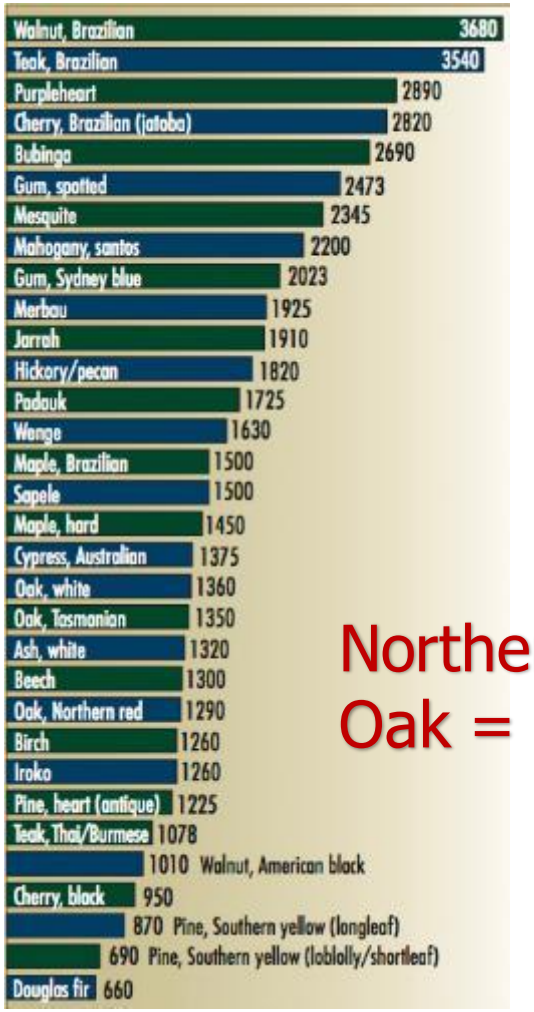
Species of Hardwood Floors

Janka Scale

- Measures the hardness of solid wood species
- Force required to embed a .444-inch steel ball to half its diameter in a piece of solid wood
- Northern red oak is the median of the test due to its prominence in today's houses and buildings

Janka Ratings

- Force required to embed a .444-inch steel ball to half its diameter in a piece of solid wood
- Rates all solid wood species
- Northern red oak used as base value due to its prominence in the flooring industry



Northern Red Oak = 1290

Red Oak

- Origin = North America
- Janka rating = 1290
- Stability = average
- Easily available
- <200 subspecies in North America

Maple, Sugar/Hard

- Origin = North America
- Janka rating = 1450
- Easily available
- Grain is closed, uniform texture
- Great for modern look

Hickory

- Origin = North America
- Janka rating = 1820
- Readily available
- Grain is closed, very high character
- Suitable for “rustic” designs

Brazilian Cherry (Jatoba)

- Origin = South America
- Janka rating = 2820
- Limited availability
- Moderate to high color variation
- Changes color over time due to light exposure, oxidation

Brazilian Walnut (Ipe)

- Origin = South America
- Janka rating = 3680
- Limited availability
- Large color variation
- Fine to medium grain
- Great for high traffic areas

NWFA/NOFMA Grades

- Oak
  - Clear Oak
  - Select Oak
  - No. 1 Common
  - No. 2 Common

Clear Oak

- Minimal character marks, discoloration
- Uniform appearance
- Very little sapwood

Select Oak

- Slight milling imperfections
- Small, tight knots
- Slightly open checks
- Heartwood, sapwood present

No. 1 Common Oak

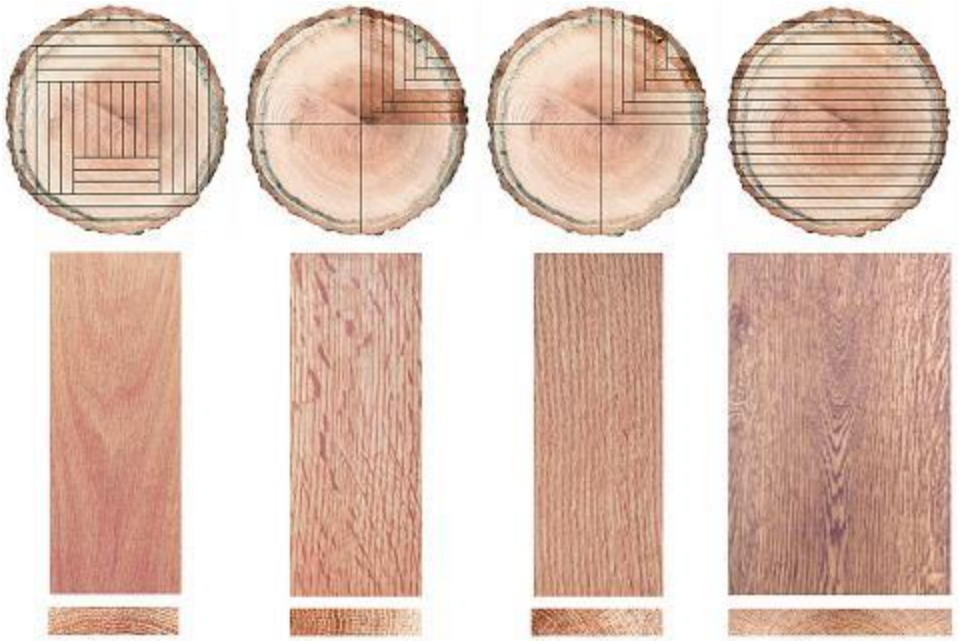
- Prominent variations in coloration, character
- Broken knots over ½” in diameter
- Worm holes
- Checks allowed

No. 2 Common Oak

- May contain natural variations of the wood
- Manufacturing imperfections
- High color variations
- Large knots, open character

Wood Flooring Cuts

- Plain Sawn
  - Shows tangential grain at 0-45 degree angle
- Rift Sawn
  - Shows radial grain at 30-60 degree angle
- Quarter Sawn
  - Shows radial grain at 45-90 degree angle
- Livesawn
  - Shows grain at 0-90 degree angle



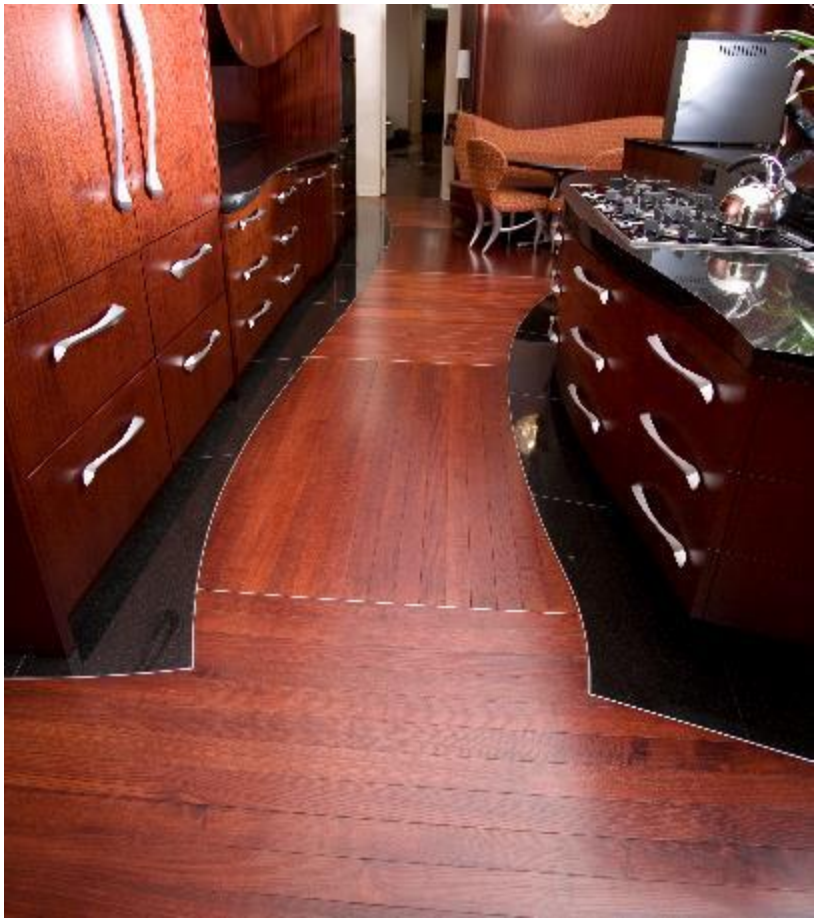
Moisture

Performance

- Wood is hygroscopic
- Absorbs, loses moisture depending on environment
- Swells = moisture gain
- Shrinks = moisture loss
- Direction of movement based on growth rings

Plank Performance

- Movement increases as width increases
- 6” board moves 2x more than 3” board
- 6” board moves ½ as much as 12” board



Plank Performance

- 5” Solid oak plank
  - 70˚F & 40% RH = 5”
    - Across 10’ = no movement
  - 70˚F & 20% RH = 4.941”
    - Across 10’ = 1.4” shrinkage
  - 70˚F & 65% RH = 5.079”
    - Across 10’ = 1.9” swelling

Hardwood Floors and Moisture

- Wood performs best at
  - 60-80 ºF
  - 30-50% RH

MOISTURE CONTENT OF WOOD AT VARIOUS TEMPERATURES AND RELATIVE HUMIDITY READINGS

Fahrenheit	Celcius																			
30		1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
40		1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
50		1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
60		1.3	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1	26.8
70		1.3	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
80		1.3	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.9	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6	26.3
90		1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26.0
100		1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9	25.6
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98

Relative Humidity (percent)

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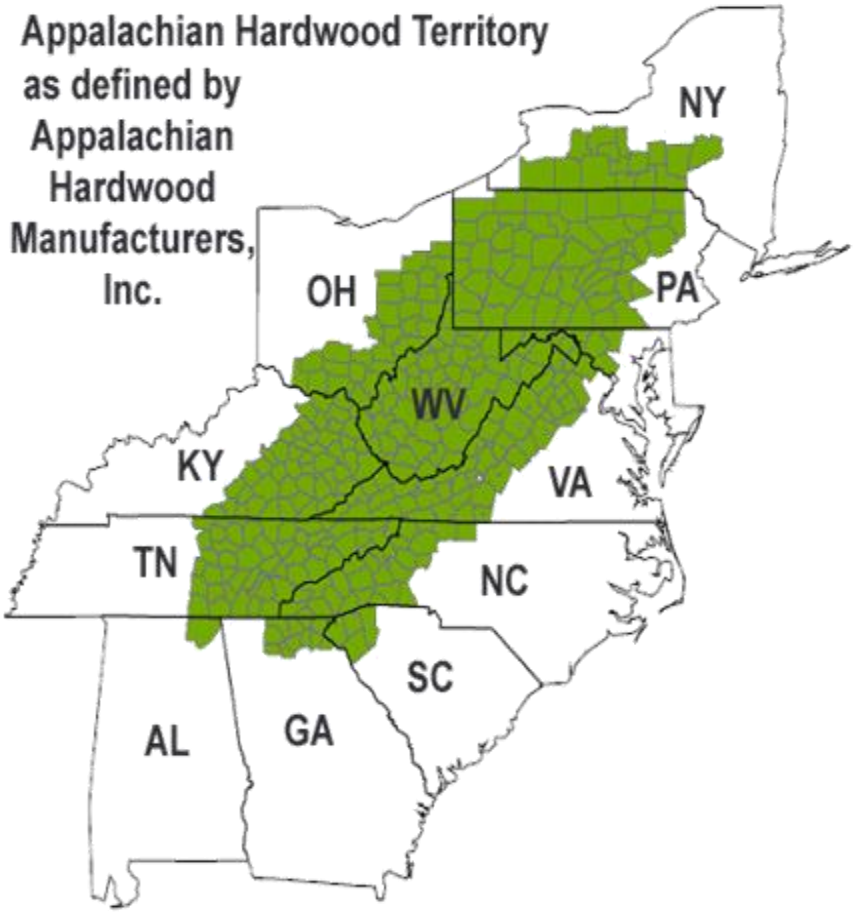
Sustainability

Sustainability of Hardwood Floors

- Renewable Resource
  - Average annual net growth for hardwoods is greater than average annual removals
- Reduces Global Warming
  - Carbon neutral product that produces oxygen during its growth cycle and stores carbon during its service life
- Saves Natural Resources
  - Uses less water and energy to produce that other flooring options
- Biodegradable
  - At the end of its service life, wood flooring can be burned as fuel or recycled

Sustainability of Hardwood Floors

- Appalachian Hardwood Forest grows 2.29 trees for every one harvested
- 65 million acres of forest



Maintenance

Maintenance

- Most neglected aspect of specifying hardwood floors
- Essential component of the specification process
- Maximizes lifetime of product
- Promotes long-term sustainability of raw materials
- Minimizes cost and repair/renovation
- Protects client’s investment

Improper Care

- Water
  - Can break down finish and damage the wood
- All Purpose Cleaners
  - Can break down or strip finish
- Vinegar
  - Will break down and damage finish
- Steam Cleaning Mops
  - Will damage the finish and the wood
- Wood Furniture Treatments
  - Will add contamination to the surface creating slippery, dangerous surface
- Wood Floor Polishes
  - Will quickly add shine to flooring which scuffs, scratches and diminishes rapidly

Routine Maintenance

- Sweep or dust mop regularly
- Use vacuum with beater bar turned off to remove dust from between floor boards
- Use protective felt pads on all furniture legs
- Place breathable walk off mats at all entrances
- Remove spills promptly with damp cloth
- Maintain consistent temperature & humidity

Summary

Summary

- Hardwood is an organic material with unique characteristics
- Prior to World War II, hardwood floors laborious to install
- Benefits include structural integrity, sustainability, environmental friendliness, improved indoor air quality
- Types of hardwood floors include solid, engineered
- Hardwood floors styles include strip, plank, parquet
- Floors finished on the job site, at the factory
- Each hardwood species has unique properties
- The Janka Scale measures hardness of solid wood species
- Hardwood lumber is plainsawn, quartersawn, riftsawn, livesawn
- Current design trends include wider boards, random widths, character marks, rustic species, color variety
- Routine care requires sweeping, vacuuming with beater bar off
- Long-term care requires a maintenance coat, sanding, refinishing

Thank You

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