

Wood Flooring Species

Presented By: First Lastname
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Course Description



This course assists architects and design professionals in understanding the species used for hardwood flooring so that they can effectively specify wood flooring for their client projects.

Learning Objectives



- Recognize the characteristics of wood as an organic material
- Identify benefits of wood flooring
- Understand properties of wood that affect appearance, long-term performance
- Explain Janka Ratings, how they determine durability
- Describe color changes that occur among wood species
- Define domestic species, their characteristics
- Define exotic species, their characteristics

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Wood Characteristics



Characteristics of Wood



- Organic material
- Responds to environment
- Changes over time
- Proper expectations important to performance



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Benefits of Wood



Benefits of Wood



- Adds stability to structure
- Excellent insulation
- Durable
- Long-lasting
- Hypoallergenic
- Beautiful
- Timeless

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Properties
Affecting
Appearance



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 Properties



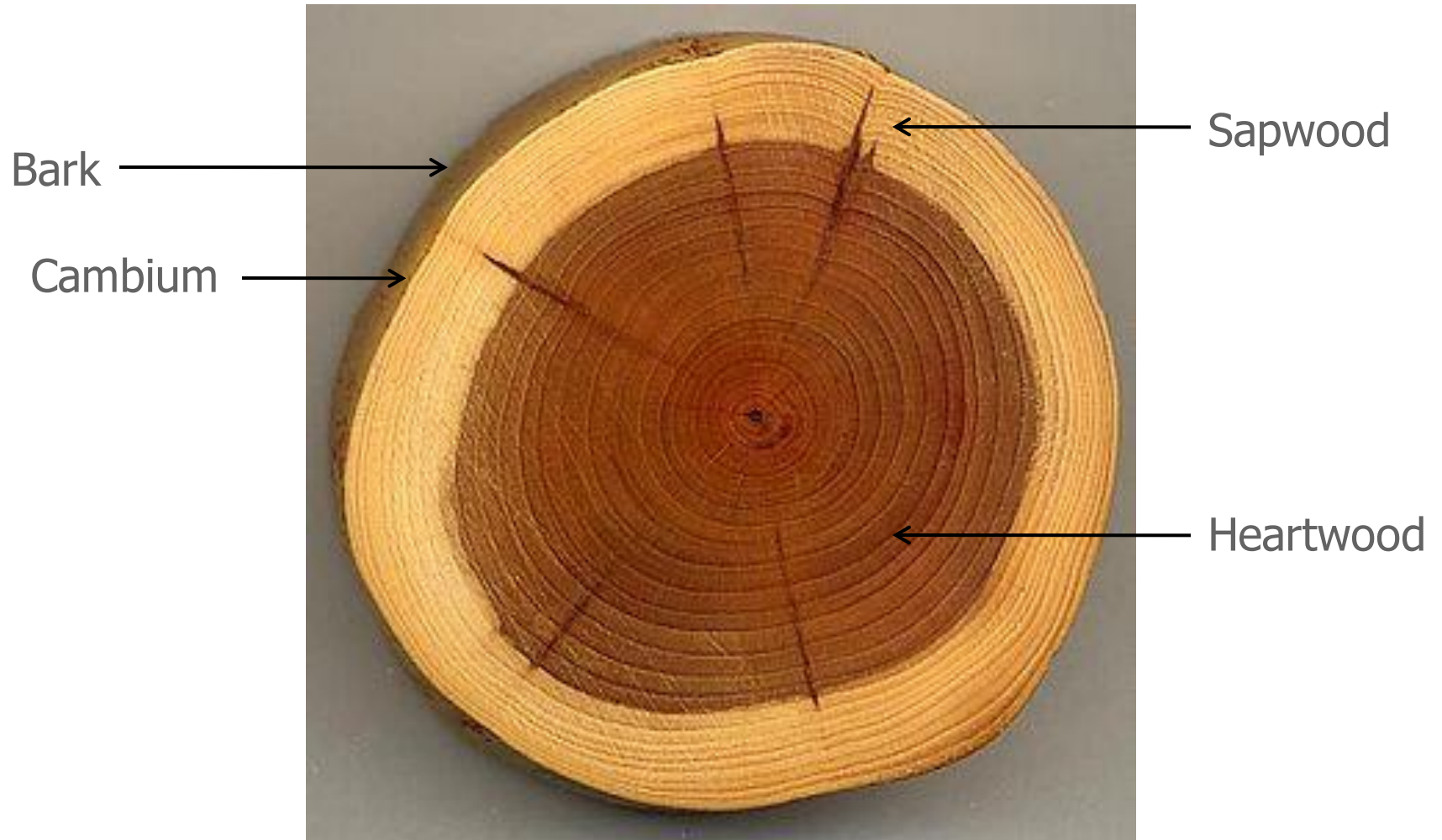
- Heartwood vs. sapwood
- Annual growth rings
- Wood grain, texture



Hardwood Cross Section



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Bark

Cambium

Sapwood

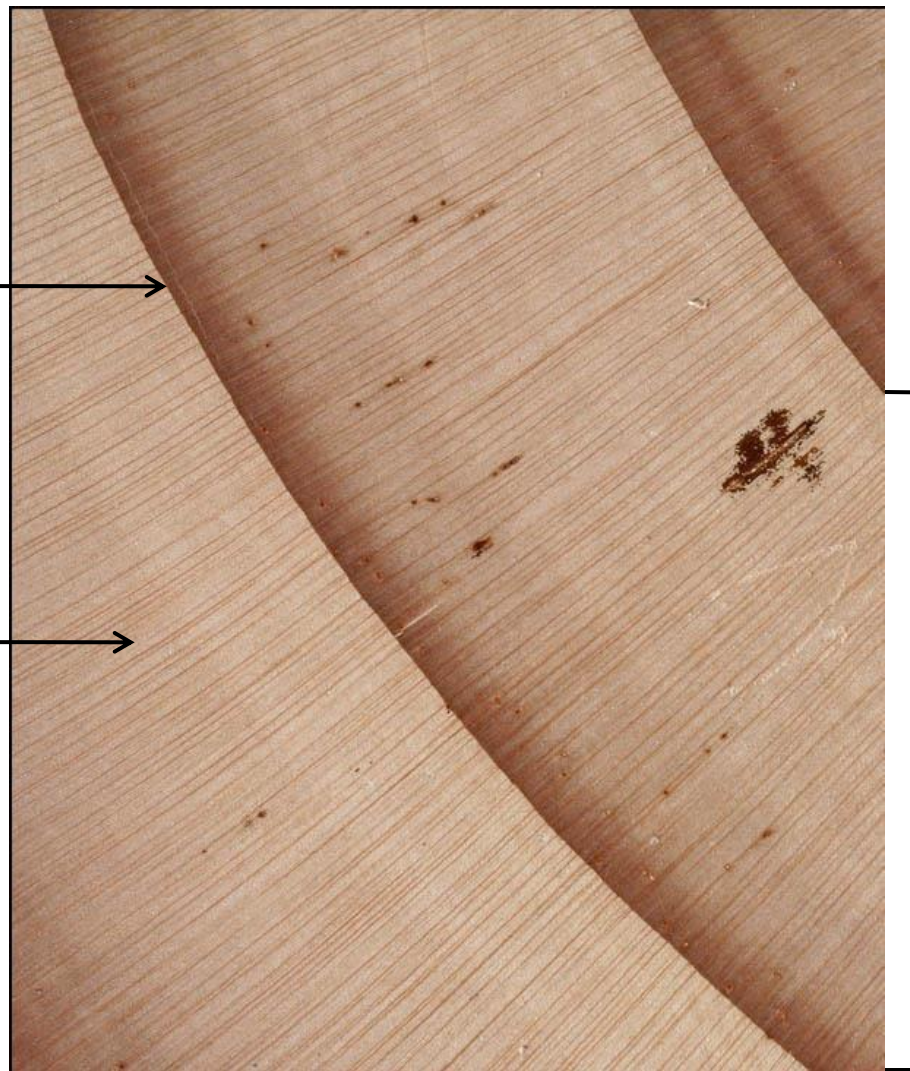
Heartwood

Hardwood Growth Rings

Summerwood



Springwood



Annual
Growth
Ring



Hardwood Grain & Texture



Straight Grain



Spiral Grain



Curly Grain

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Saw Cuts



Wood Flooring Cuts



- Plainsawn
- Quartersawn
- Riftsawn
- Livesawn



Plainsawn



- Series of parallel cuts
- Remaining cuts perpendicular to first set
- Produces wider boards than rift, quartered
- Board length varies



Plainsawn



- Board face has “cathedral” grain
- Contains flat-grain, some vertical-grain
- Contains more variation within, among boards than other cuts
- End grain growth rings between 0-45°

Quartersawn



- Quarter the log
- Remaining cuts perpendicular to growth rings
- Produces narrow boards
- Vertical grain
- More waste



Quartersawn



- Board face has fleck pattern
- Contains tight, wavy grain
- End grain annual growth rings 45-90° to surface

Riftsawn



- Quarter the log
- Remaining cuts from center face, work out
- Boards 30-60° to growth rings
- Comes from smaller part of wedge, produces more waste
- Hard to produce only wide-width rift



Riftsawn



- Board face has vertical grain
- Contains minimal fleck
- End grain annual growth rings 30-60° to surface



- First cut straight through log's center
- Remaining cuts parallel to first
- Yields extremely wide boards
- Produces very little waste





- Board face growth rings work from parallel in center to perpendicular at edges
- End grain annual growth rings 0-90° to surface

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Janka Ratings



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

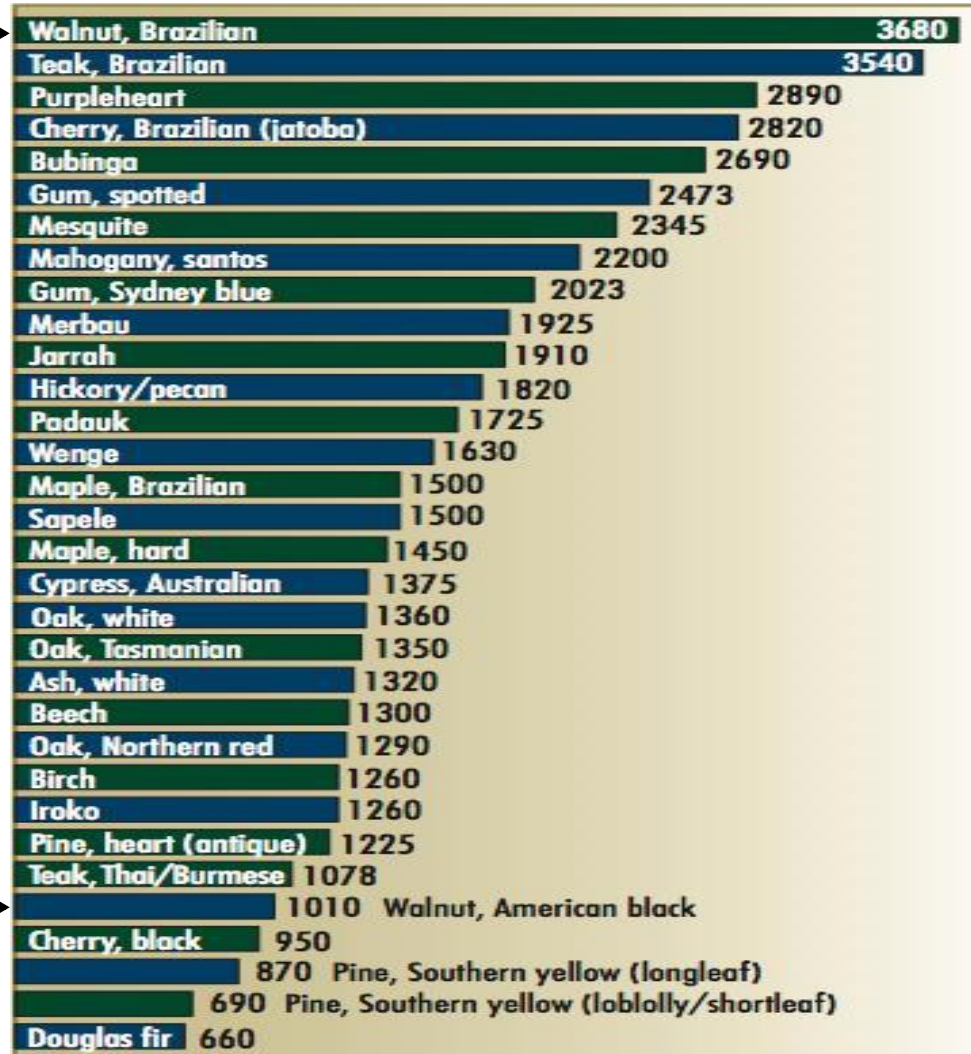
Walnut, Brazilian	3680
Teak, Brazilian	3540
Purpleheart	2890
Cherry, Brazilian (tatoba)	2820
Bubinga	2690
Gum, spotted	2473
Mesquite	2345
Mahogany, santos	2200
Gum, Sydney blue	2023
Merbau	1925
Jarrah	1910
Hickory/pecan	1820
Padouk	1725
Wenge	1630
Maple, Brazilian	1500
Sapele	1500
Maple, hard	1450
Cypress, Australian	1375
Oak, white	1360
Oak, Tasmanian	1350
Ash, white	1320
Beech	1300
Oak, Northern red	1290
Birch	1260
Iroko	1260
Pine, heart (antique)	1225
Teak, Thai/Burmese	1078
Walnut, American black	1010
Cherry, black	950
Pine, Southern yellow (longleaf)	870
Pine, Southern yellow (loblolly/shortleaf)	690
Douglas fir	660

Northern Red
Oak = 1290

Janka Ratings



Brazilian Walnut = 3680

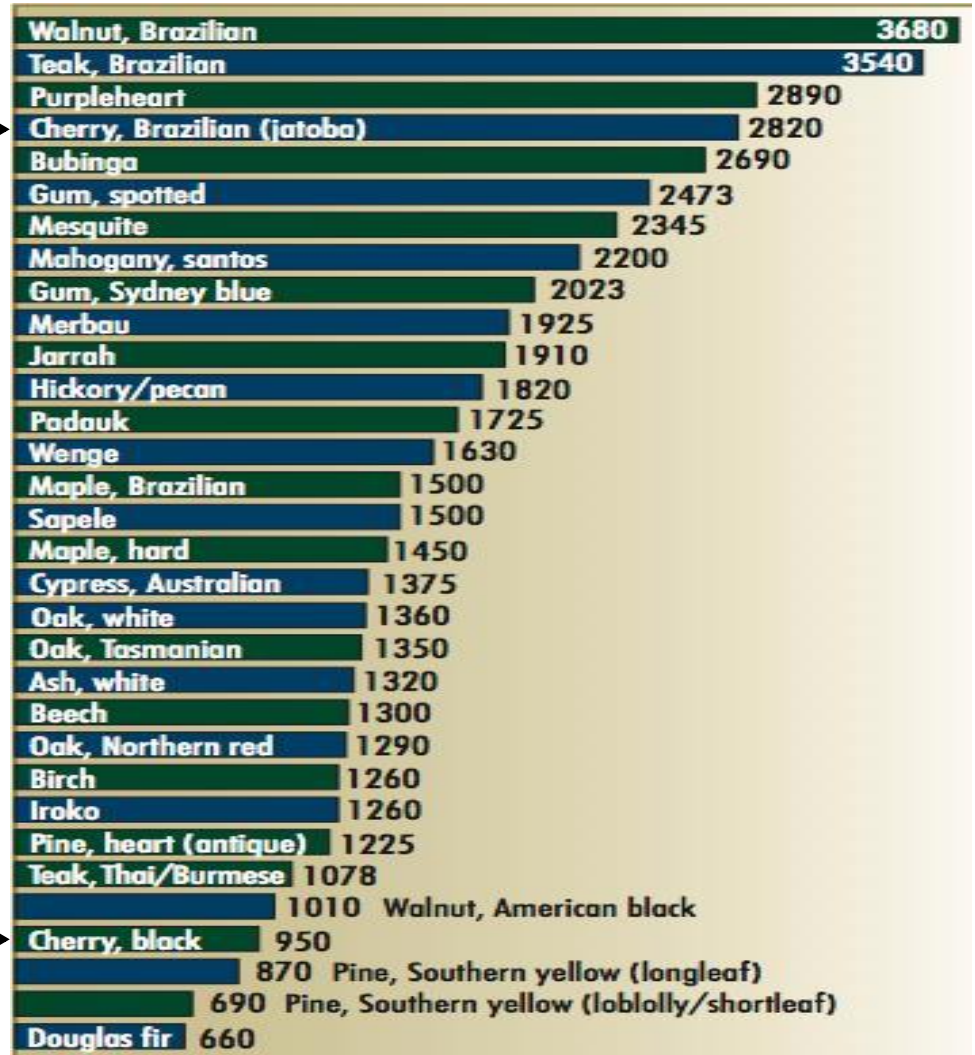


American Black Walnut = 1010

Janka Ratings



Brazilian Cherry
(Jatoba) = 2820



Black Cherry = 950



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Color Change



Color Change



- All wood changes color over time
- Natural process caused by oxidation, UV exposure
- Adds beauty, character of floor (patina)



Color Change



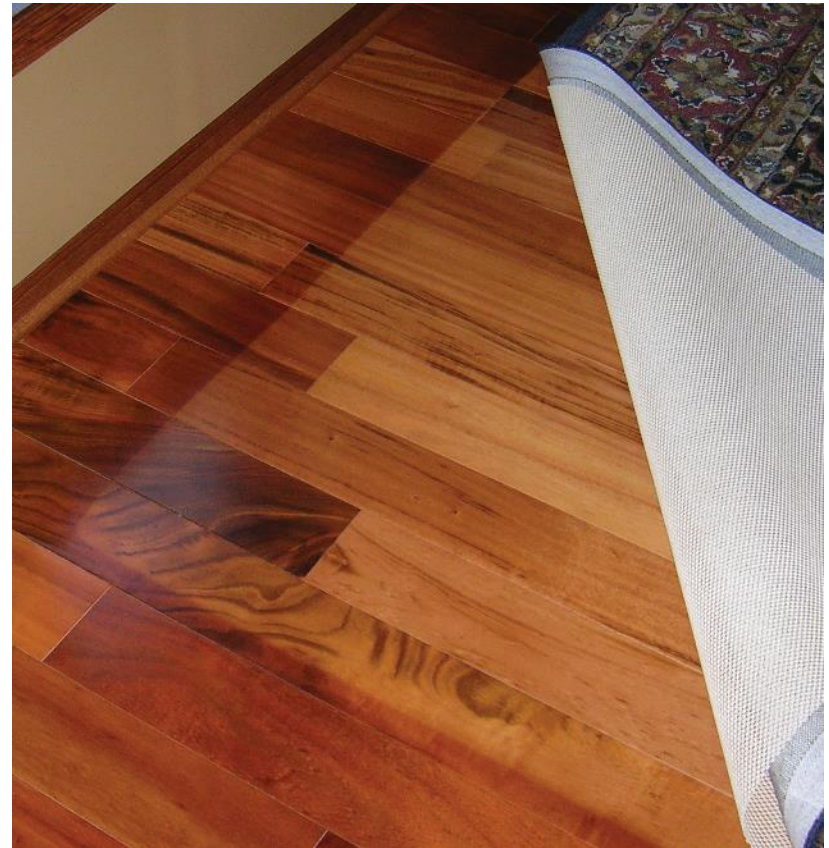
- Species change colors at different rates
 - Less change
 - Oak
 - Hickory
 - More change
 - American Cherry
 - Brazilian Cherry



Color Change



- Sunlight affects wood floors like skin
- Oxidation, UV exposure
- Periodically move furniture, rugs to minimize exposure



Color Change



- Finish affects color change
 - Water-based finishes generally remain clear, minimizing color change
 - Oil-based finishes amber, giving slightly yellow appearance

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Domestic Species



Domestic: Ash



- Origin: North America
- Color: Heartwood light tan to dark brown; sapwood creamy white
- Grain: bold, straight, moderately open
- Janka: 1320



Domestic: Beech



- Origin: North America
- Color: Heartwood reddish brown; sapwood pale white
- Grain: mostly closed, straight, fine uniform texture
- Janka: 1300



Domestic: Birch



- Origin: North America
- Color: heartwood light reddish-brown tinged with red; sapwood creamy yellow, pale white
- Grain: straight, closed, even texture
- Janka: 1260



Domestic: Cherry

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- Origin: North America
- Color: heartwood light to dark reddish-brown; sapwood light brown with light pinkish tone
- Grain: fine, wavy, uniform texture
- Janka: 950

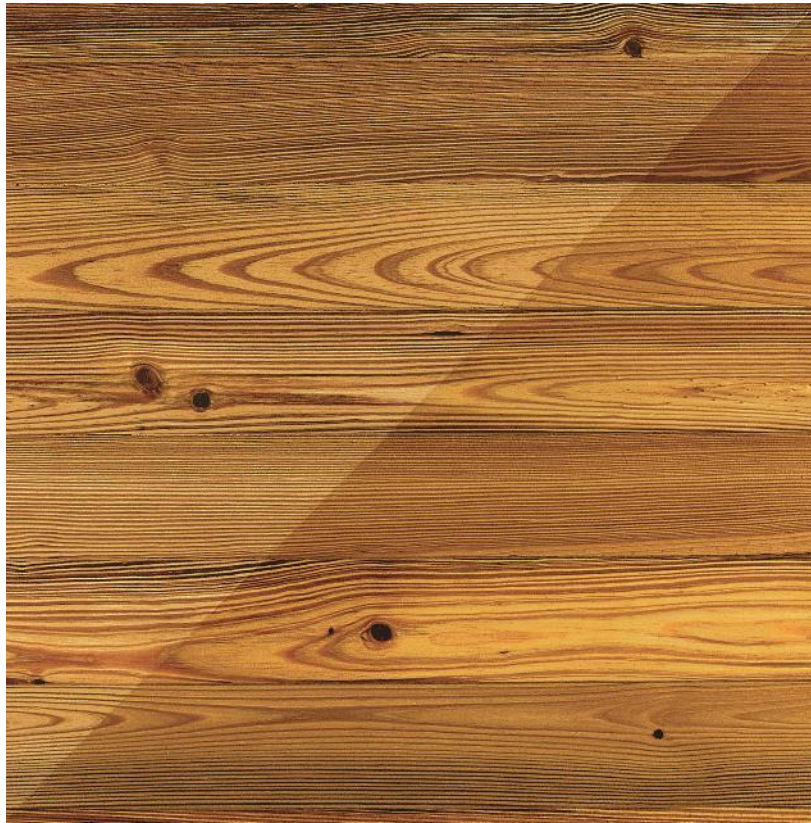


Domestic: Douglas Fir



- Origin: North America
- Color: heartwood yellowish tan to light brown; sapwood tan to white
- Grain: straight, some wavy, spiral texture
- Janka: 660

Domestic: Heart Pine



- Origin: North America
- Color: heartwood yellow after cutting, turning deep pinkish tan to warm reddish-brown; sapwood yellow with black-blue sap stain
- Grain: dense
- Janka: 1225

Domestic: Hickory



- Origin: North America
- Color: heartwood tan or reddish; sapwood white to cream with fine brown lines
- Grain: closed, rough texture
- Janka: 1820

Domestic: Maple



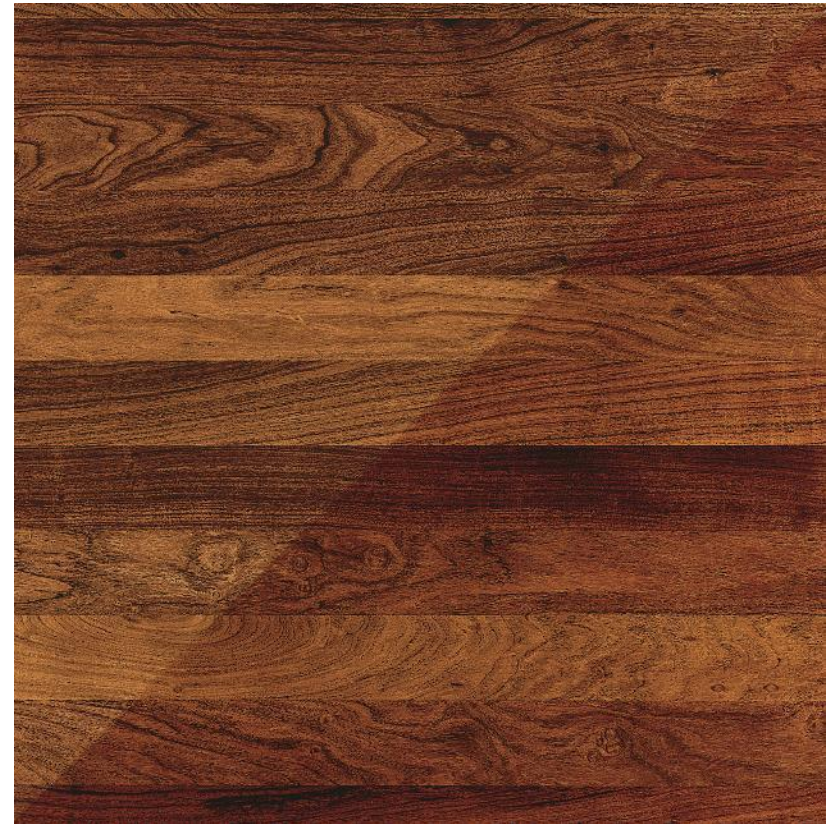
- Origin: North America
- Color: heartwood creamy white to light reddish-brown; sapwood pale to creamy white
- Grain: closed, uniform texture
- Janka: 1450



Domestic: Mesquite



- Origin: North America
- Color: heartwood dark reddish-brown; sapwood light brown
- Grain: high character, ingrown bark, mineral streaks
- Janka: 2345



Domestic: Pine



- Origin: North America
- Color: heartwood light yellow/orange to reddish-brown or yellowish brown; sapwood light tan to yellowish-white
- Grain: closed, knotty
- Janka: 870

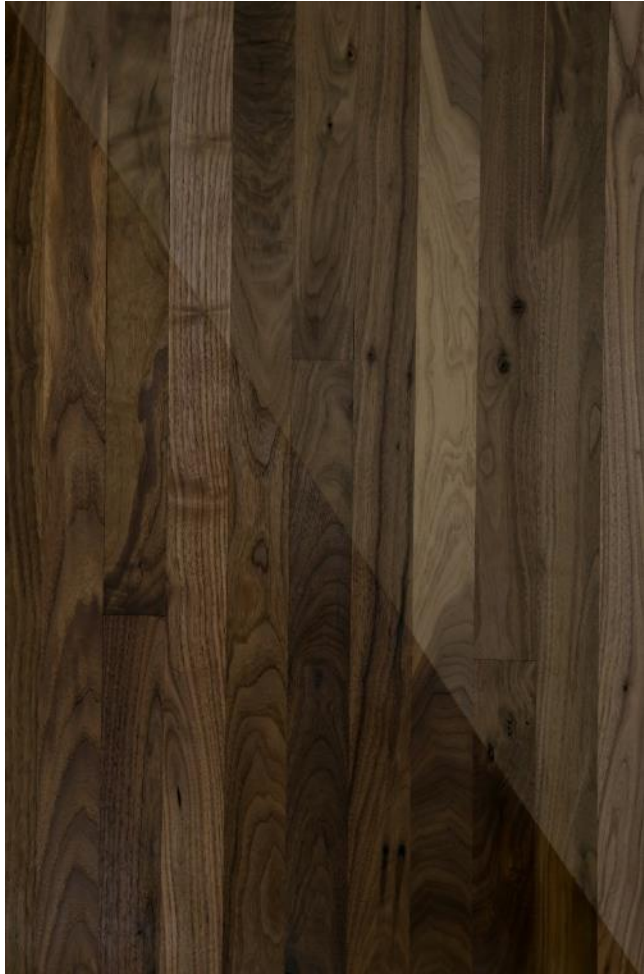


Domestic: Red Oak



- Origin: North America
- Color: heartwood medium brown; sapwood light brown with reddish tones
- Grain: open, variation depending on saw cut
- Janka: 1290

Domestic: Walnut



- Origin: North America
- Color: heartwood deep, rich, dark brown to purplish-black; sapwood nearly white to tan
- Grain: straight, open, some burls
- Janka: 1010

Domestic: White Oak



- Origin: North America
- Color: heartwood light brown; sapwood white to cream
- Grain: open, variation depending on saw cut
- Janka: 1360

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Exotic



Exotic: Australian Cypress



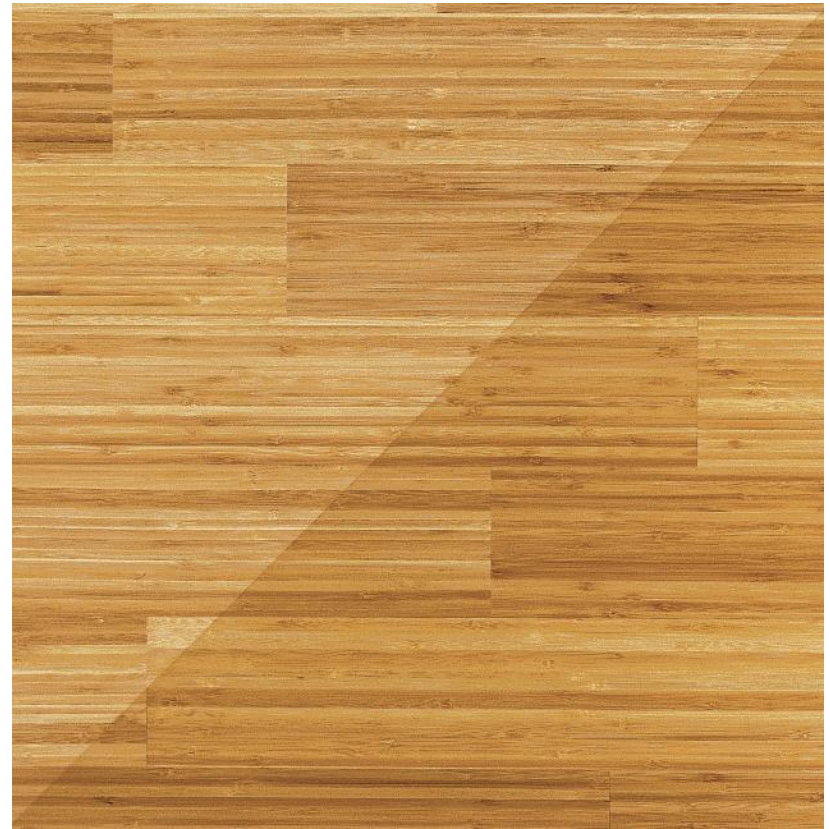
- Origin: Australia
- Color: heartwood honey gold to brown, darker knots; sapwood cream
- Grain: closed
- Janka: 1375



Exotic: Bamboo



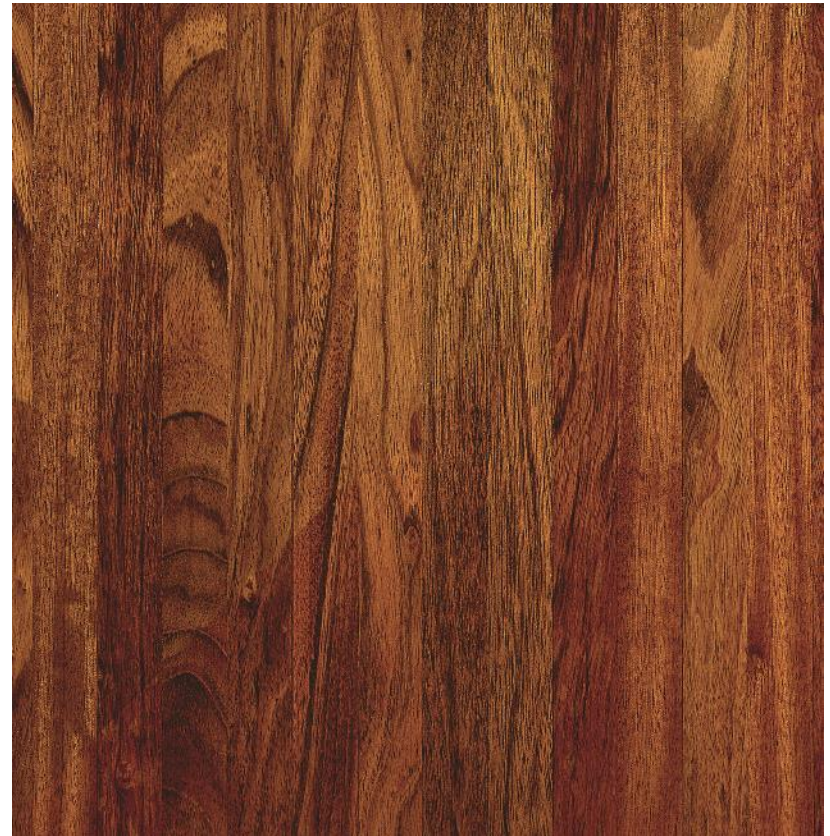
- Origin: Asia
- Color: heartwood tannish brown; sapwood manila to yellow
- Grain: distinctive, shows nodes from stalks
- Janka: Not rated



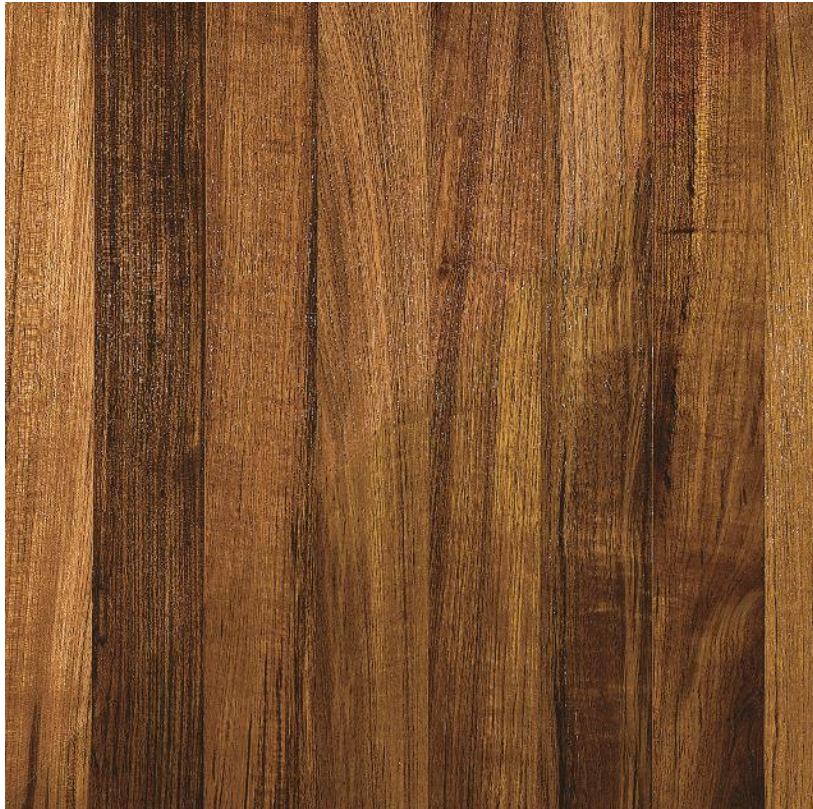
Exotic: Brazilian Cherry



- Origin: South America
- Color: heartwood salmon red to orange-brown changing to russet, reddish-brown with dark streaks; sapwood gray-white
- Grain: interlocked, medium texture
- Janka: 2820



Exotic: Burmese Teak



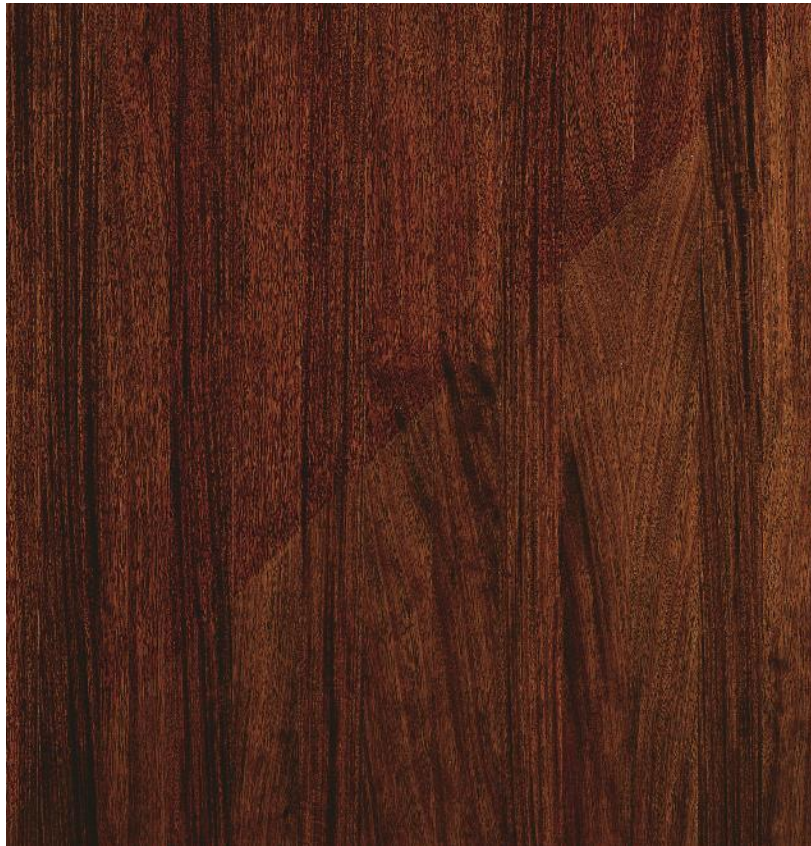
- Origin: Asia
- Color: heartwood yellow-brown to dark golden brown, changing to rich brown; sapwood cream
- Grain: straight, coarse, uneven texture
- Janka: 1000

Exotic: Cumaru



- Origin: South America
- Color: heartwood red-brown to purple-brown; sapwood light yellow-brown, purple streaks, changing to uniform light brown or yellow-brown
- Grain: interlocked, fine texture
- Janka: 3540

Exotic: Ipe

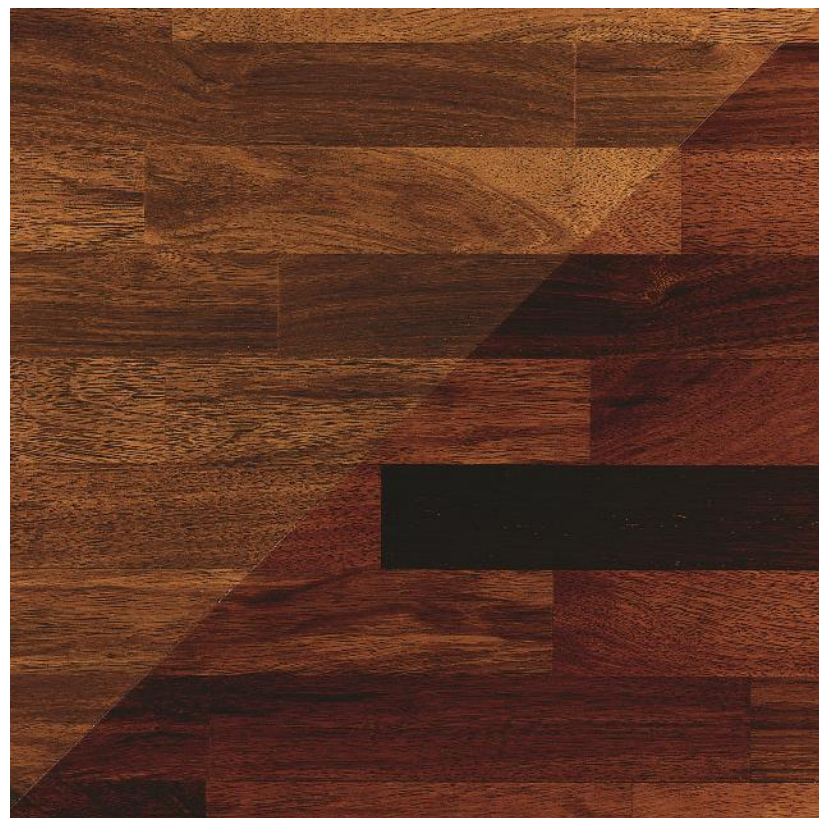


- Origin: South America
- Color: heartwood blackish brown; sapwood light yellowish tan, green overtones, changing to medium to dark brown
- Grain: straight, fine to medium texture
- Janka: 3680

Exotic: Merbau



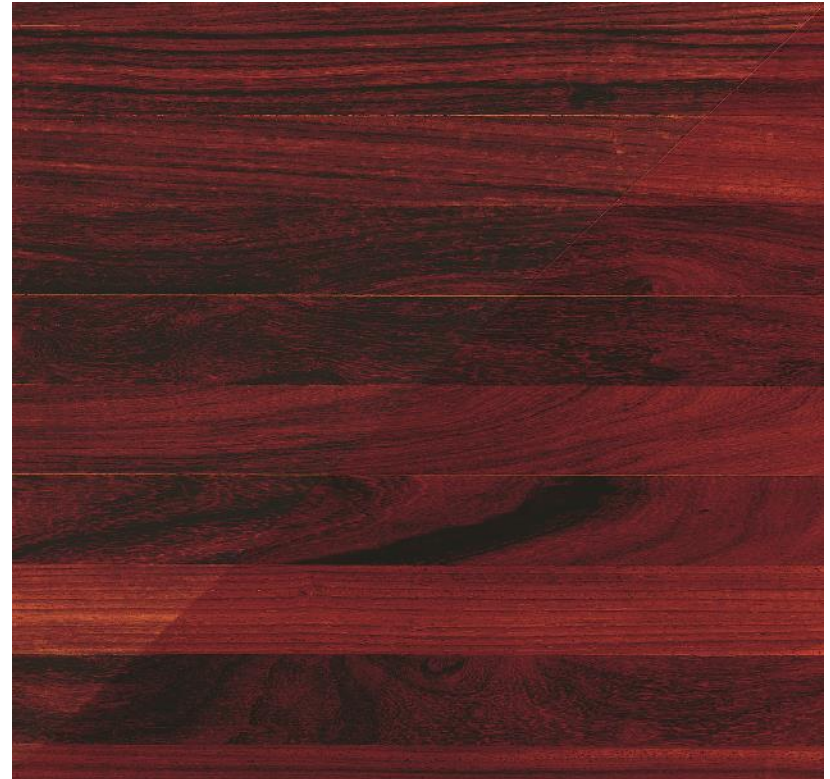
- Origin: Southeast Asia
- Color: heartwood yellowish to orange-brown turning brown to dark red-brown; sapwood light brown
- Grain: straight, coarse texture
- Janka: 1925



Exotic: Padauk



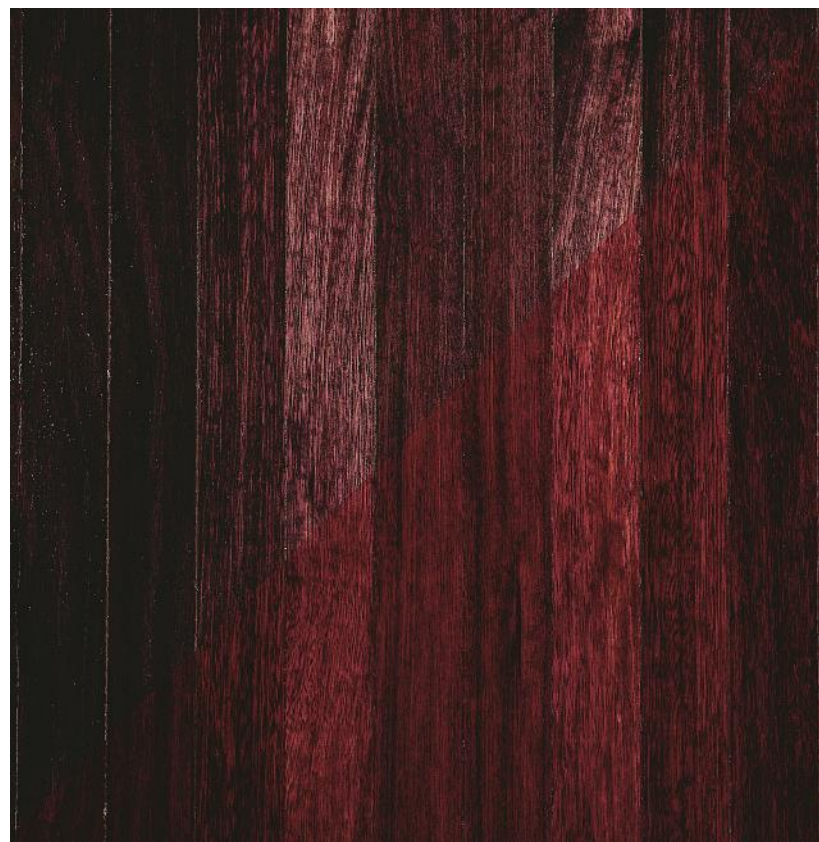
- Origin: Africa
- Color: heartwood reddish-orange, darkening to reddish- or purplish-brown; sapwood cream
- Grain: straight, coarse texture
- Janka: 1725



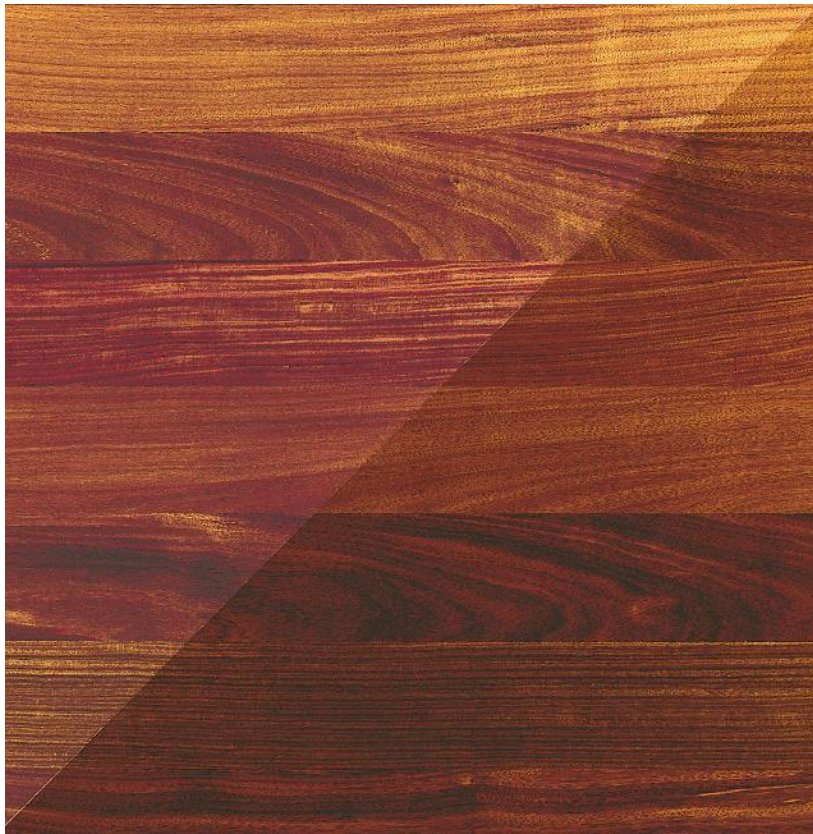
Exotic: Purpleheart



- Origin: Mexico, Central America, South America
- Color: heartwood brown, darkening to deep purple to purplish-brown; sapwood cream
- Grain: straight, medium to fine texture
- Janka: 2890

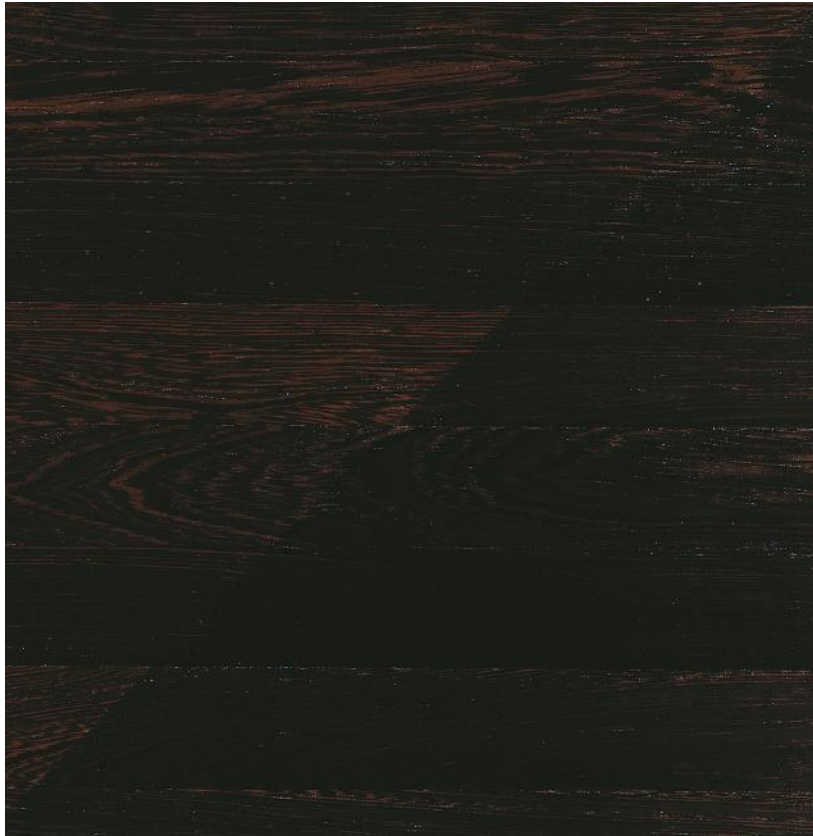


Exotic: Santos Mahogany



- Origin: South America
- Color: heartwood dark reddish-brown; sapwood light brown
- Grain: striped, with even, fine texture
- Janka: 2200

Exotic: Wenge



- Origin: Africa
- Color: heartwood yellow-brown changing to dark brown, almost black; sapwood yellowish-white
- Grain: straight, coarse texture
- Janka: 1630

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Summary



Wood Flooring Species



- Wood is an organic material, changes over time
- Wood adds structural stability, provides insulation, is durable, long-lasting, hypoallergenic, beautiful, timeless
- The physical properties, cut of wood affect its appearance
- Janka ratings measure strength of wood species
- All wood species change color over time
- Domestic species are readily available
- Exotic species are less readily available, provide a wide range of natural color options

Thank You

The logo for the Northwest Florida Area (nwfa) is located in the top right corner. It consists of the lowercase letters 'nwfa' in a white, sans-serif font, with a small green leaf icon integrated into the letter 'a'.

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A photograph of a bedroom interior. The floor is made of dark wood planks arranged in a herringbone pattern. On the left, a bed with a white and grey plaid sheet is visible. In the background, there is a dark nightstand with a lamp and a white curtain. The text "Questions?" is overlaid in white on the floor.

Questions?