CUTS OF WOOD

Logs can be cut in several different ways to produce materials of varying aesthetics and dimensional stability. Understanding how these cuts are made in relation to the growth rings of the tree is the key to understanding the different look and performance of each cut.

This document covers the following topics:

PROPERTIES OF WOOD:

- annual growth rings
- medullary rays
- dimensional stability

CUTS OF WOOD:

- plain sawn
- rift sawn
- quarter sawn
- original cut

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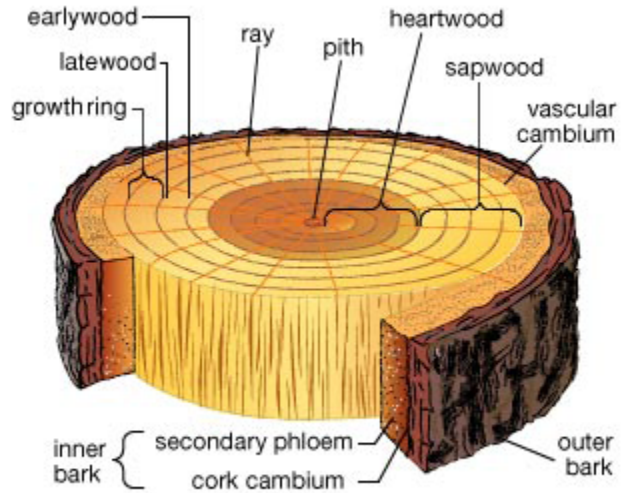
ANNUAL GROWTH RING

Most species grown in temperate climates produce visible annual growth rings that show the difference in density and color between wood formed early and that formed late in the growing season. The inner part of the growth ring, formed first, is called **"spring wood";** the outer part, formed later in the season, is called **"summer wood."** Spring wood is characterized by cells having relatively large cavities and thin walls. Summer wood cells have smaller cavities and thicker walls, and consequently are more dense than those in spring wood. The growth rings, when exposed by conventional sawing methods, provide the grain or characteristic pattern of the wood. The distinguishing features among the various species results in part from differences in growth-ring formation. And within species, natural variations in growth ensure the unique character and beauty of each piece of wood.

MEDULLARY RAYS

Medullary rays extend radially from the core of the tree toward the bark. They vary in height from a few cells in some species, to four or more inches in the oaks; they're responsible for the flake effect common in quartersawn lumber in certain species.

Source: NWFA's "Technical Publication A200"



DIMENSIONAL STABILITY

Wood is hygroscopic — meaning, when exposed to air, wood will lose or gain moisture until it is in equilibrium with the humidity and temperature of the air.

Different woods exhibit different moisture stability factors, but they always shrink and swell the most in the direction of the annual growth rings (tangentially), about half as much across the rings (radially) and only in miniscule amounts along the grain (longitudinally). This means that plainsawn flooring will tend to shrink and swell more in width than quartersawn flooring, and that most flooring will not shrink or swell measurably in length.

For example, between the fiber saturation point (usually about 30% moisture content) and the ovendry state, (0% moisture content) wood will only change by about .1 percent of its dimension along the grain (lengthwise in a plain sawn board). It will change by 2 to 8 percent across the grain and across the annular rings (top to bottom), if quartersawn; and 5 to 15 percent across the grain and parallel to the annular rings (side to side), if plain sawn.

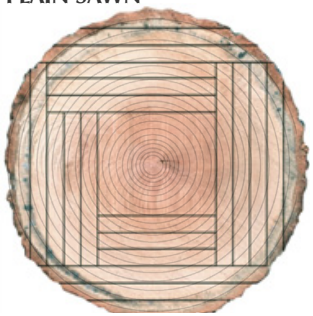
Of note, wider boards tend to move more than narrower boards. Movement in a 5-inch-wide plank is more dramatic than in a 21/4-inch strip.

Engineered wood flooring tends to be more dimensionally stable than solid flooring due to the cross-ply construction of the plywood layers. See reSAWN TIMBER co.'s document "Engineered Vs. Solid Wood" available for download at resawntimbero.com for additional information.

PLAIN SAWN

The most common and least expensive cut of wood is PLAIN SAWN (also refered to as FLAT SAWN). PLAIN SAWN boards are produced by cutting tangentially to a tree's growth rings producing the familiar "cathedral" or "flame" pattern on the board face. The annual growth rings are generally at a 0° - 30° angle to the face of the board. PLAIN SAWN lumber is less dimensionally stable than Quarter/Rift Sawn lumber. Due to the angle of the growth rings, PLAIN SAWN boards are more prone to cupping and crowning, and will tend to expand and contract more across the width of the board.

PLAIN SAWN



PLAIN SAWN
END GRAIN

PLAIN SAWN
BOARD FACE

PLATEAU Collection - Plain Sawn

TIOGA
WHITE OAK

SPROUL
WHITE OAK

MOSHANNON
WHITE OAK

LOCK HAVEN
HICKORY

WILLIAMSPORT
BLACK WALNUT

STOCKPORT
BLACK WALNUT

TUSCARORA
HARD MAPLE

CALGARY
HARD MAPLE

reSAWN TIMBER CO.™

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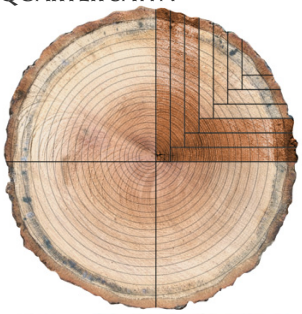
QUARTER SAWN and RIFT SAWN

QUARTER & RIFT SAWN lumber is produced by first cutting the log into quarters and then making alternating cuts that are perpendicular to the annual growth rings. The shaded boards in the picture below on the left show QUARTER SAWN boards labels 1-6 to show the alternating cuts. The annual growth rings in QUARTER SAWN lumber are at a 45° - 90° angle to the face of the board. QUARTER SAWING produces boards with mostly vertical-grain and a distinctive figuring often referred to as “flecks”, “flakes” or “ray flecks” caused by the medullary rays of the log. The shaded boards in the picture on the right show RIFT SAWN boards labeled 7-12. The annual growth rings in RIFT SAWN lumber are at a 30° - 60° angle to the face of the board. RIFT SAWN lumber produces a very consistent and quiet board face with mostly vertical-grain. This vertical-grain lends added stability to the QUARTER & RIFT SAWN boards making them less likely to cup or crown. Expansion and contraction occurs parallel to the directon of the growth rings - in this case vertically - resulting in added stability and making these cuts ideal for wide plank flooring and wood flooring over radiant heat.

QUARTER SAWN



QUARTER SAWN
END GRAIN

QUARTER SAWN
BOARD FACE

RIFT SAWN

RIFT SAWN
END GRAIN

RIFT SAWN
BOARD FACE

PRIMA Collection - rift & quarter sawn white oak

PAVANE

MEDITATION

MOZARTIANA

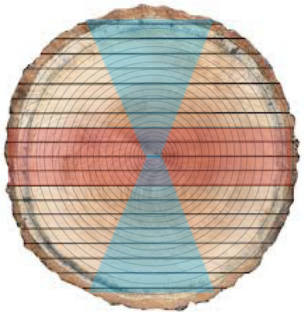
AGON

SERENADE

ORIGINAL CUT

reSAWN's ORIGINAL CUT incorporates plain sawn (blue shading), rift sawn (no shading) and quarter sawn (red shading) grain patterns and all grades and character marks into the final product. this seemingly simple cut actually requires advanced knowledge and experience in the milling and drying process of wood to ensure that the harder heart wood does not become brittle and break apart through the drying or milling process. this is not a new method of cutting but rather a modern take on a historic theme. early settler's used this through-and-through method of sawing to quickly and efficently produce flooring for their barns and homes. original cut White Oak's unique blend of character and grain pattern recaptures this historic aesthetic for contemporary settings.

ORIGINAL CUT



ORIGINAL CUT
BOARD FACE

RUSTIC MODERN Collection - several designs feature ORIGINAL CUT White Oak

ALABASTER

BARTEK

STEAMBOAT

WHITEHALL

CHAPEL

MAJOR

BOWTHORPE

NEW AMSTERDAM

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