

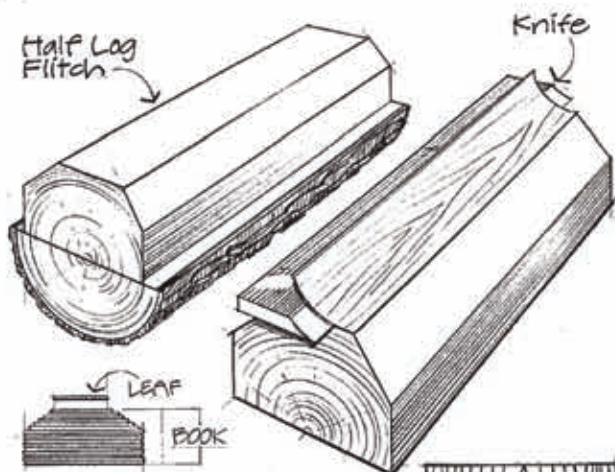
TYPES OF VENEER CUTS

The manner in which a log segment is cut with relation to the annual rings will determine the appearance of the veneer. When sliced, the individual pieces of veneer, referred to as leaves, are kept in the order in which they are sliced, thus permitting a natural grain progression when assembled as veneer faces. The group of leaves from one slicing is called a flitch and is usually identified by a flitch number and the number of gross square feet of veneer it contains. The faces of the leaves with relation to their position in the log are identified as the tight face (toward the outside of the log) and the loose face (toward the inside or heart of the log). During slicing the leaf is stressed on the loose face and compressed on the tight face. When this stress is combined with the natural variation in light refraction caused by the pores of the wood, the result is a difference in the human perception of color and tone between tight and loose faces.

The principal methods of slicing veneers and the general visual characteristics of the grain are:

PLAIN SLICING (OR FLAT SLICING)

This is the slicing method most often used to produce veneers for high quality architectural woodworking. Slicing is done parallel to a line through the center of the log. A combination of cathedral and straight grain patterns results, with a natural progression of pattern from leaf to leaf.



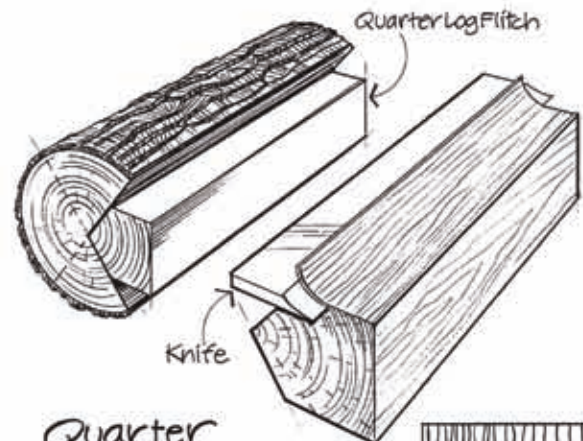
Plain Sliced Or Flat Sliced (Slicer)

Leaf width depends on log size & placement in flitch.
Half Round A somewhat similar pattern is achieved by turning a half log flitch on a lathe.



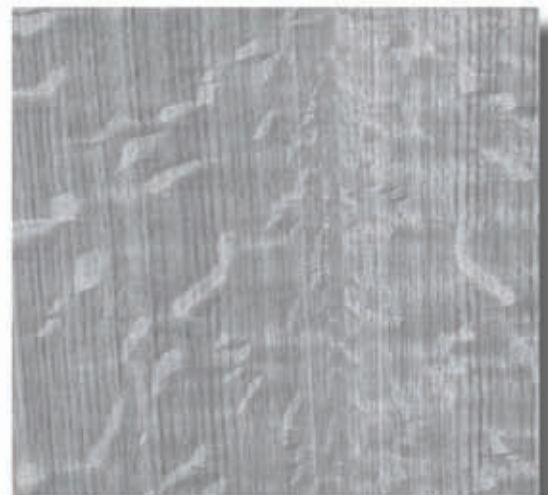
QUARTER SLICING (OR QUARTER CUT)

Quarter slicing simulates the quarter sawing process of solid lumber, roughly parallel to a radius line through the log segment. In many species the individual leaves are narrow as a result. A series of stripes is produced, varying in density and thickness from species to species. "Fleck" (sometimes called flake) is a characteristic of this slicing method in Red and White Oak.



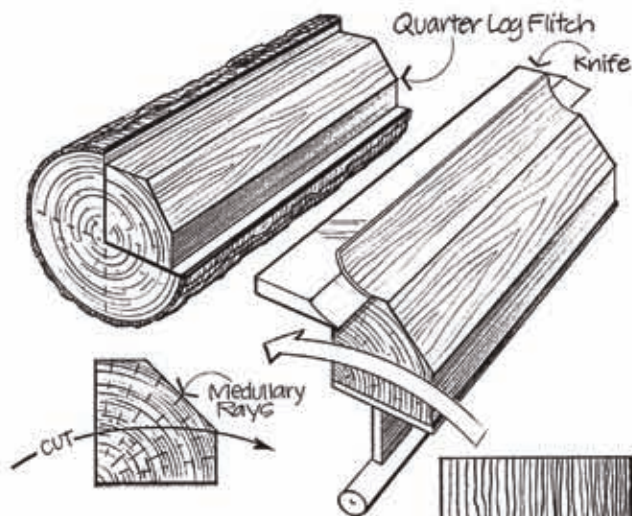
Quarter Sliced (Slicer)

Flake pattern is produced when slicing through medullary rays in some species, principally oak.



RIFT SLICING (OR RIFT CUT)

Rift veneers are produced most often in Red and White Oak, rarely in other species. Note that rift veneers and rift sawn solid lumber are produced so differently that a "match" between rift veneers and rift sawn solid lumber is highly unlikely. In both cases the cutting is done slightly off the radius lines minimizing the "fleck" (sometimes called flake) associated with quarter slicing.



Rift Cut (Lathe)

Angle of cut is 15° to the radial to minimize the ray flake effect in oaks.
Comb Grain is the portion which has VERY tight & straight grain.

Narrow Striped Pattern

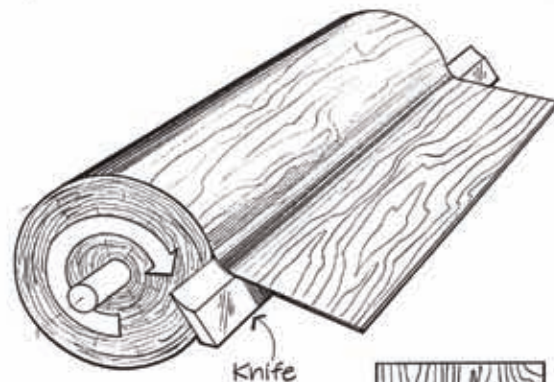
COMB GRAIN

Limited in availability, comb grain is a select product of the Rift process distinguished by tight, straight grain along the entire length of the veneer. Slight angle in the grain is allowed. Comb grain is restricted to Red and White Oak veneers.

ROTARY

The log is center mounted on a lathe and "peeled" along the general path of the growth rings like unwinding a roll of paper, providing a generally bold random appearance. Rotary cut veneers may vary in width and matching at veneer joints is extremely difficult. Almost all softwood veneers are cut this way. Except for a specific design effect, rotary veneers are the least useful in fine architectural woodwork.

Rotary sliced fine hardwood veneers are used in a limited way, and usually for special figure and cut, in the manufacture of Premium Grade woodwork. Careful consideration, specification, and communication are recommended when rotary cut is contemplated.



Rotary (Lathe)

- Wide sheets
- Broad Pattern
- Difficult Matching

Used primarily on Economy or Commercial grades.

Very Broad Pattern

COMPOSITE VENEERS

Sliced from fast-growing trees, these veneers are dyed and then reglued in molds to create "grain" patterns. The color is established during manufacture because the high percentage of glue lines resist staining by the woodworker. Must be specified by brand name and manufacturer's designation. "Matching" between components may not be possible.

MATCHING ADJACENT VENEER LEAVES

It is possible to achieve certain visual effects by the manner in which the leaves are arranged. As noted, rotary cut veneers are difficult to match; therefore most matching is done with sliced veneers. The matching of adjacent veneer leaves must be specified. Special arrangements of leaves such as "diamond" and "box" matching are available. Consult your woodworker for choices. The more common types are:

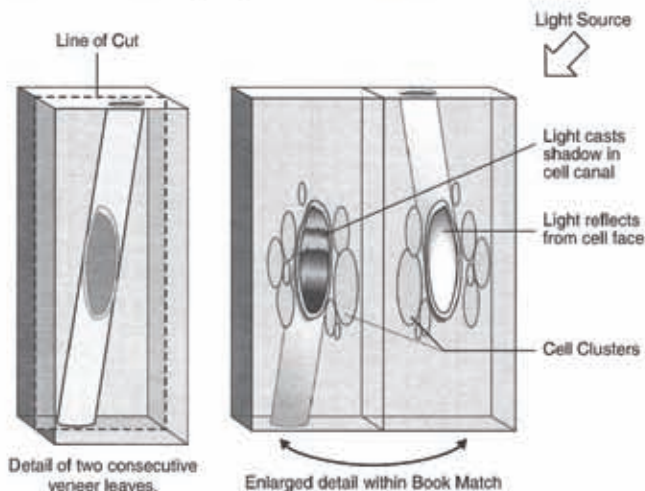
BOOK MATCHING



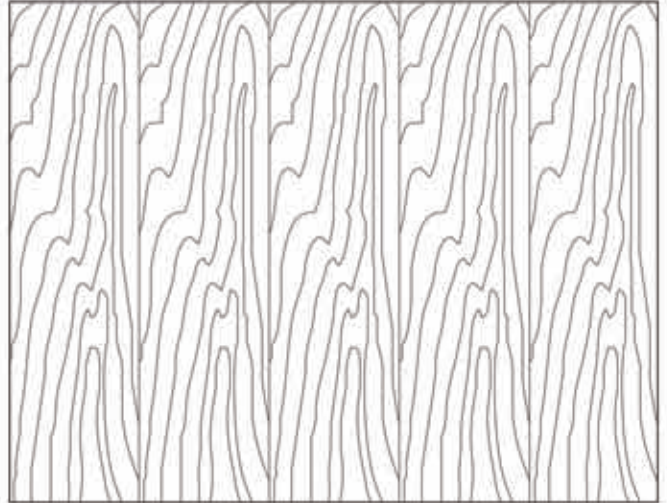
The most commonly used match in the industry. Every other piece of veneer is turned over so adjacent pieces (leaves) are opened like the pages of a book.

Visual Effect - Veneer joints match, creating a symmetrical pattern. Yields maximum continuity of grain. When sequenced panels are specified, prominent characteristics will ascend or descend across the match as the leaves progress from panel to panel.

Barber Pole Effect in Book Match - Because the tight and loose faces alternate in adjacent pieces of veneer, they may accept stain differently, and this may result in a noticeable color variation. Book matching also accentuates cell polarization, causing the perception of different colors. These natural characteristics are often called barber pole, and are not a manufacturing defect.



SLIP MATCHING

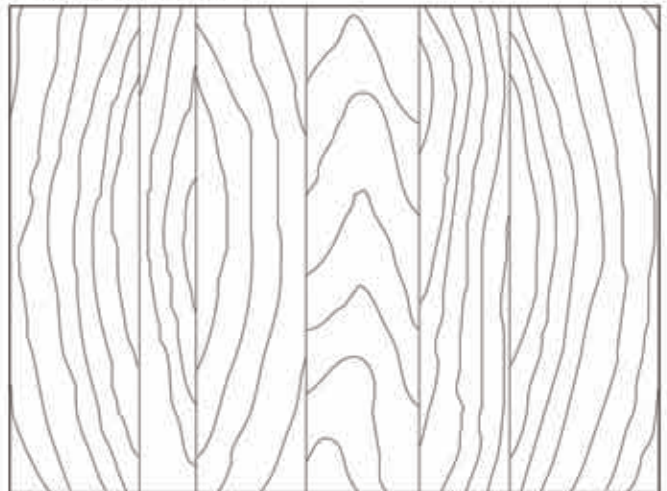


Often used with quarter sliced and rift sliced veneers. Adjoining leaves are placed (slipped out) in sequence without turning, resulting in all the same face sides being exposed.

Visual Effect - Grain figure repeats; but joints do not show visual grain match.

Note: The lack of grain match at the joints can be desirable. The relatively straight grain patterns of quartered and rift veneers generally produce pleasing results and a uniformity of color because all faces have the same light refraction.

RANDOM MATCHING



Veneer leaves are placed next to each other in a random order and orientation, producing a "board-by-board" effect in many species.

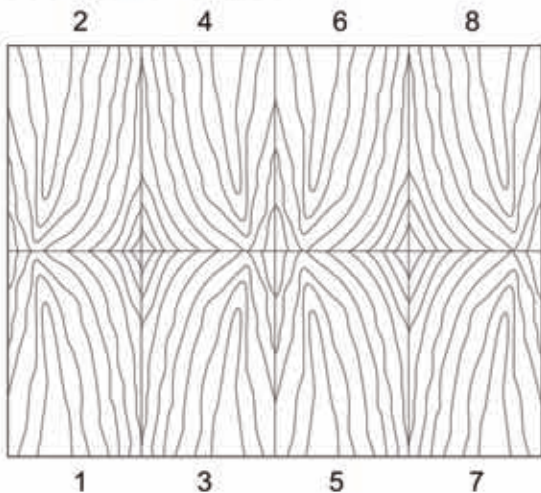
Visual Effect - Casual or rustic appearance, as though individual boards from a random pile were applied to the product. Conscious effort is made to mismatch grain at joints.

Degrees of contrast and variation may change from panel to panel. This match is more difficult to obtain than book or slip match, and must be clearly specified and detailed.

END MATCHING

Often used to extend the apparent length of available veneers for high wall panels and long conference tables. End matching occurs in three types:

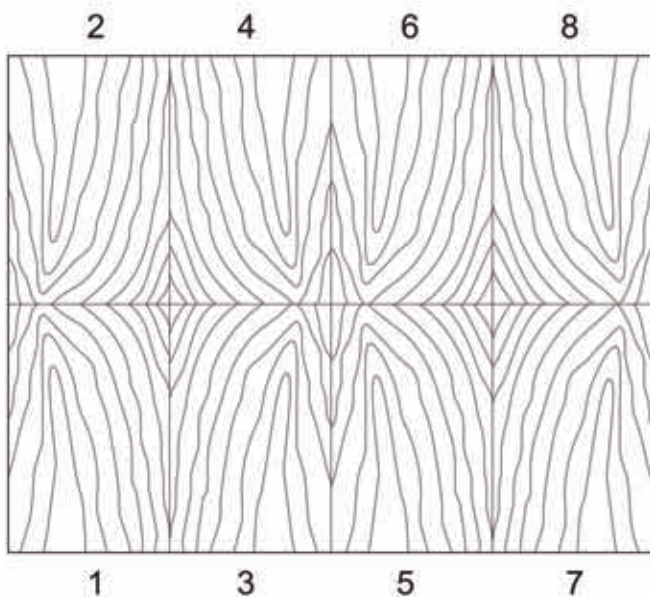
ARCHITECTURAL END MATCH



Leaves are individually book (or slip) matched, first end-to-end and then side-to-side, alternating end and side.

Visual Effect - Yields best continuous grain patterns for length as well as width. Minimizes misalignment of grain pattern.

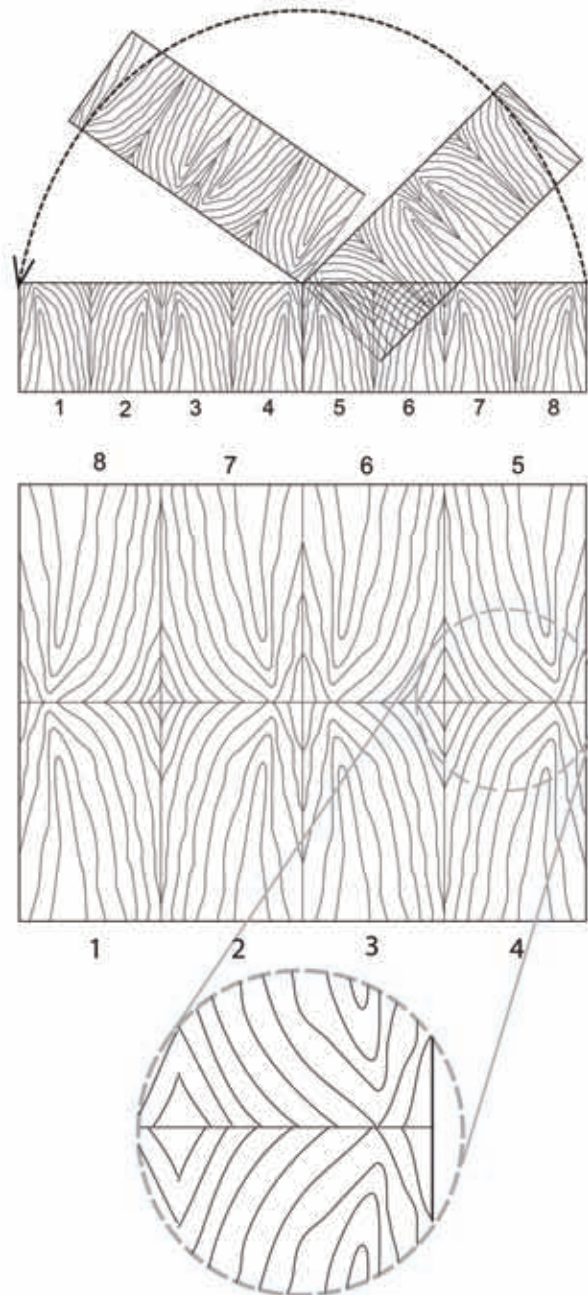
CONTINUOUS END MATCH



Leaves are individually book (or slip) matched, separate panels are stacked in sequenced order, either horizontally or vertically in the elevation. (Horizontal sequence illustrated.)

Visual Effect - Yields sequenced grain patterns for elevations, with pleasing blend of figure horizontally or vertically.

PANEL END MATCH



Natural Grain Pattern Mismatch Occurs

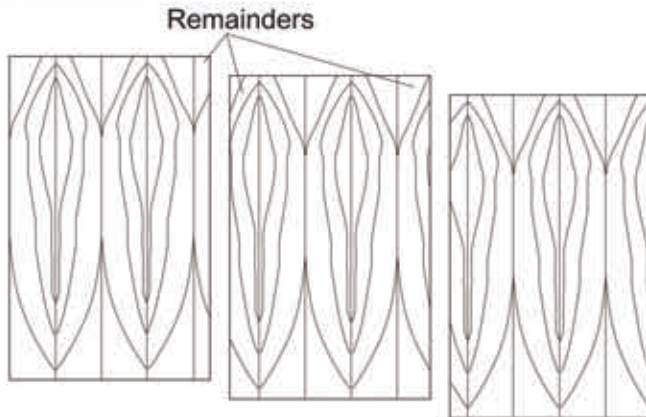
Leaves are book (or slip) matched on panel subassemblies, with sequenced subassemblies end matched, resulting in some modest cost savings on projects where applicable.

Visual Effect - For most species, yields pleasing, blended appearance and grain continuity. Some misalignment of grain pattern will occur, and is not a defect.

MATCHING WITHIN INDIVIDUAL PANEL FACES

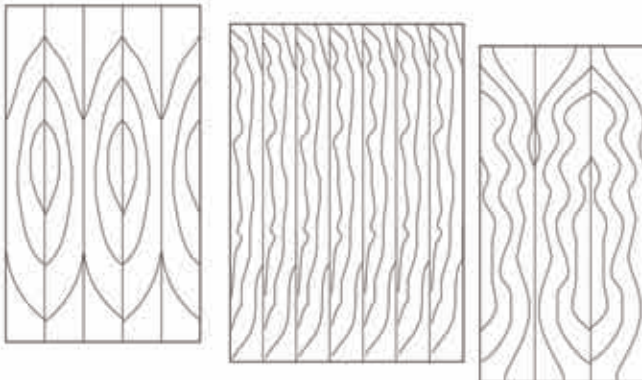
The individual leaves of veneer in a sliced flitch increase or decrease in width as the slicing progresses. Thus, if a number of panels are manufactured from a particular flitch, the number of veneer leaves per panel face will change as the flitch is utilized. The manner in which these leaves are "laid up" within the panel requires specification, and is classified as follows:

RUNNING MATCH



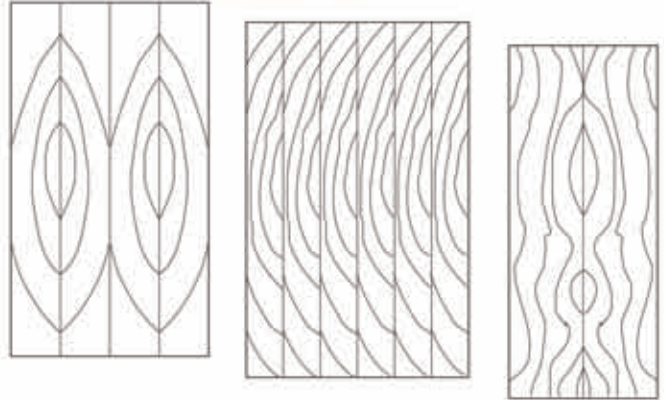
Each panel face is assembled from as many veneer leaves as necessary. This often results in a non-symmetrical appearance, with some veneer leaves of unequal width. Often the most economical method at the expense of aesthetics, it is the standard for Custom Grade and must be specified for other Grades. Running matches are seldom "sequenced and numbered" for use as adjacent panels. Horizontal grain "match" or sequence cannot be expected.

BALANCE MATCH



Each panel face is assembled from veneer leaves of uniform width before edge trimming. Panels may contain an even or odd number of leaves, and distribution may change from panel to panel within a sequenced set. While this method is the standard for Premium Grade, it must be specified for other Grades, and it is the most common assembly method at moderate cost.

BALANCE AND CENTER MATCH



Each panel face is assembled of an even number from veneer leaves of uniform width before edge trimming. Thus, there is a veneer joint in the center of the panel, producing horizontal symmetry. A small amount of figure is lost in the process. Considered by some to be the most pleasing assembly at a modest increase in cost over Balance Match.

FIRE-RETARDANT PANELS

FLAME SPREAD CLASSIFICATION

The various codes utilize flame spread classifications for wood and other materials. It is the responsibility of the specifier to determine which elements, if any, of the woodwork require special treatment to meet local codes. In most codes, the panel products used to fabricate casework and furniture are not regulated.

FLAME SPREAD FACTORS

CORE - The fire rating of the core material determines the rating of the assembled panel. Fire-retardant veneered panels must have a fire-retardant core. Particleboard core is available with a Class I (Class A) rating and can be used successfully with veneer or rated high pressure decorative laminate faces. MDF (Medium Density Fiberboard) is available with a fire rating in some markets.

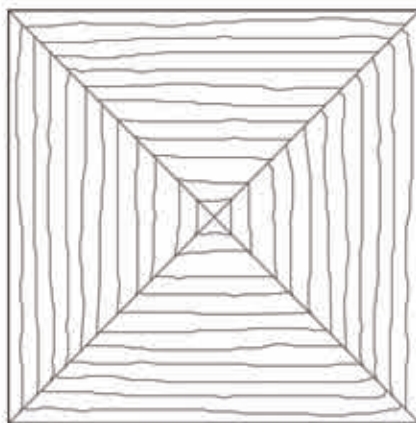
FACE - Some existing building codes, except where locally amended, provide that facing materials $\frac{1}{28}$ " (0.9 mm) or thinner are not considered in determining the flame spread rating of the panel. If state and local codes move toward adoption of the International Building Code provisions, it is possible that the $\frac{1}{28}$ " (0.9 mm) exemption may not be available. In localities where basic panel building codes have been amended it is the responsibility of the specifier to determine whether the application of the facing material specified will meet the code. Traditionally, face veneers are not required to be fire-retardant treated, and such treatment will adversely affect the finishing process.

SPECIAL MATCHES

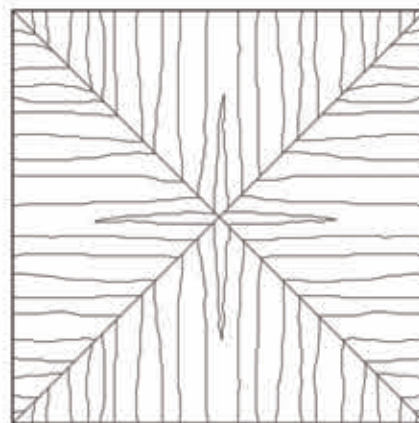
There are regional variations in the "names" of the following veneer leaf matching techniques. It is strongly recommended the design professional use both names and drawings to define the effect desired.



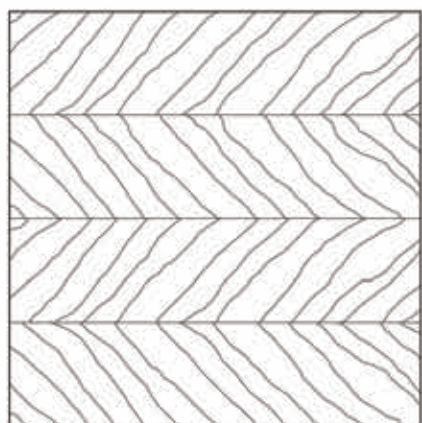
8 PIECE SUNBURST



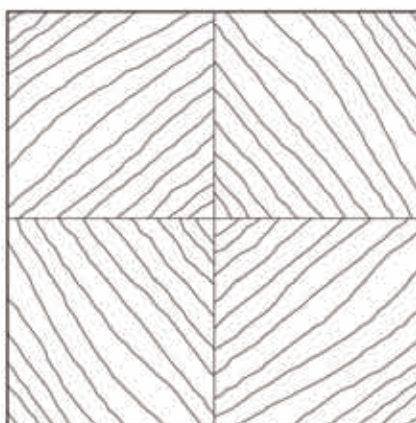
BOX MATCH



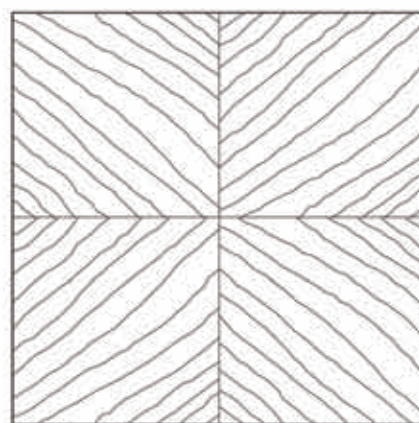
REVERSE OR END GRAIN BOX



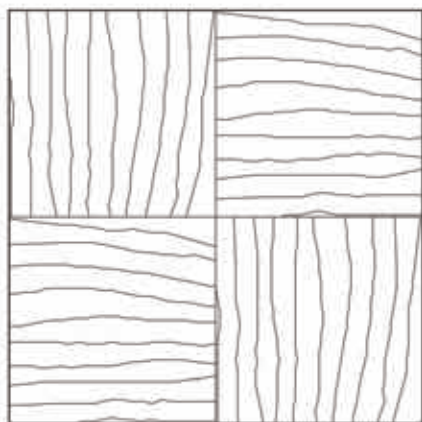
HERRINGBONE OR V-BOOK MATCH



DIAMOND MATCH



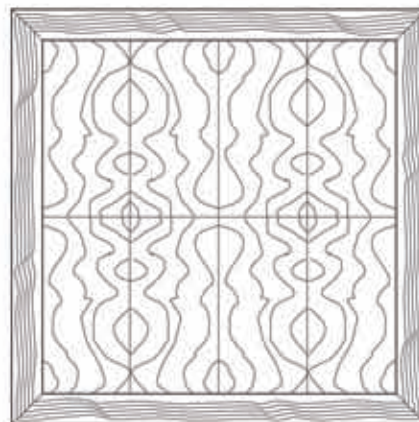
REVERSE DIAMOND MATCH



PARQUET MATCH



SWING MATCH



BOOK & BUTT MATCH W/ BORDER