

HPVA FINDINGS ON BLOTCHY CHERRY VENEER

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HPVA has investigated a condition in cherry veneer that is commonly referred to as "blotchy cherry". The condition can be generally described as irregular shaped areas, or blotches, which appear darker in color than the surrounding areas, and which are scattered over the surface of the veneer, or plywood panel face. In the small number of samples supplied to HPVA as examples of blotchy cherry, two completely different conditions have been identified as factors in the blotchy effect. One of these conditions is natural figure. The second condition is an actual stain, gray to charcoal or black in color, caused by either enzymatic action, or iron contamination.

FIGURE

In the majority of raw cherry veneer and cherry veneered panel samples examined by HPVA, the uneven color appearance is believed to be due to figure. In such figured veneer, there are areas where wavy, open or end grain occurs at the veneer surface. This irregularity of the grain is sufficient, of itself, to cause differences in light reflection that appear as variations in color. A general characteristic of veneer of this type is that the dark areas often appear to become lighter, while lighter areas simultaneously appear to turn darker as the viewing angle is changed. If a finish stain is applied without first using a sealer, or washcoat, to partially fill areas with more open or end grain, such areas will tend to absorb more stain and actually become much darker in color, creating a severe blotchy effect. Proper sanding and the use of an initial sealer coat prior to staining is essential in order to minimize the blotchy effects of such natural figure in cherry. Popular industry opinion seems to be that figure in cherry has become, and will likely remain, more prevalent with newer sources of logs that are being used since most logging in the Allegheny National Forest was halted in 1999 due to environmentalist actions.

STAIN

Two raw cherry plywood samples examined by HPVA exhibited a blotchy appearance of a different nature than that attributed to figure in other samples. In these samples, the darker areas had a somewhat shadow-like appearance, gray to charcoal or black in color, and did not appear to involve irregular grain. Darker areas tended to remain darker than surrounding areas with changes in the viewing angle.

Sanding of the panel surfaces failed to remove the discoloration, and microscopic examination of the cross-section confirmed that the discoloration extends through the veneer thickness. A sample of one of these panels was also sent to Mississippi State University for examination by Dr. Terry Amburgey. He performed a microscopic examination, and various chemical reaction tests. Based on the irregular pattern of distribution over the surface, the fact that the discoloration was concentrated in the wood rays, and that it could be eliminated by the application of dilute oxalic acid, but not by phosphoric acid, Dr. Amburgey concluded that the discoloration is most consistent with an enzymatic stain. He indicated that enzymatic stains are more common in sapwood, but can also occur in the heartwood of species such as cherry.

Dr. Amburgey also provided the following statements: He believes the veneer probably "came from a log stored under water spray for a prolonged period of time (several months). During this time enzyme stains could have occurred..." "High value veneer logs can be protected from enzymatic stains by rapid utilization and drying, log fumigation, or storing at low temperatures (refrigerate). These discolorations cannot be prevented by any of the anti-sapstain chemicals now on the market, but end coats (*on logs*) will retard their development." Also, during storage under water spray for a prolonged period of time, "depending on the water supply, the wood could have picked up enough iron to cause slight iron stain. Another possible source of iron stain is the hot water used to heat the logs prior to cutting veneer." It is possible that the water at the facility where the veneer was cut needs to be "treated periodically for iron removal."

(See examples of blotchy cherry on the following two pages.)

EXAMPLE OF BLOTCHY CHERRY INVOLVING FIGURE AND IMPROPER FINISHING

upper half of panel sealed and sanded before final finish coats – note color uniformity
lower half of panel unsealed & unsanded before final finish coats – note dark and blotchy color



EXAMPLE OF BLOTCHY CHERRY DUE TO STAIN

panel sample unsanded & unfinished

