Blue Stain and Construction Lumber

Construction lumber may be discolored for various reasons. Some lumber species are known to have characteristic coloration, wet lumber often looks different from dry lumber, and weathered lumber contrasts with freshly-cut wood. In some cases, discoloration may signal the presence of decay or mold and possible concerns about its effects on lumber. In other cases, discoloration has little or no effect on the performance of construction lumber.

One specific example of benign discoloration is Blue Stain, a common stain fungus sometimes seen on construction lumber, pine in particular, with streaked blue, black or grey markings. Blue Stain is considered effectively harmless to one's health, and does not detract from the use of lumber in building construction.

What is Blue Stain?

Blue Stain often results from the action of beetles on standing timber. The Mountain Pine Beetle is an example of a carrier of the blue stain fungus, and due to recent widespread outbreaks of the beetle in parts of British Columbia, more blue stained wood is making its way into the market.

Figure 1

The cross section of a pine log in Figure 1 shows the penetration of blue stain in the wood. When the beetle attacks a tree, it introduces fungal spores that quickly germinate and infect the sapwood. As the fungus grows the sap flow becomes blocked and the tree dies. The affected trees are quickly harvested, cut into lumber and dried to 19% moisture content or less. By drying the lumber and keeping it dry, fungal growth is virtually eliminated. Although the blue stain doesn't continue to grow, the bluish marking remains in the lumber.

How is Blue Stain identified?

The stain is predominantly blue, but may look greyish or black. It appears flush with the surface regardless of how the lumber is cut, because the blue stain fungus penetrates deep into the wood. In contrast, mold fungi are more superficial and may grow if the wood gets wet. One way to distinguish between Blue Stain and mold is to lightly rub the surface of the wood. Mold, which is usually greenish or greyish, can be brushed off or smeared, whereas the stain is not removeable due to its deep penetration.

Figure 2 shows a stack of pine lumber with blue stain. Although it looks to be different from ordinary pine lumber, there is no difference in typical construction applications. It is not considered to weaken lumber in framing applications, has the same handling and fastening characteristics, and may be painted if so required. It is also an efficient and "green" use of the forest resource, being cut from dead timber.

Figure 2

Further Information

For further help in understanding the nature of wood discoloration and deciding on whether or not action is required, users may wish to look at the Discoloration Fact Sheet by Forintek Canada Corp. available at: http://www.durable-wood.com/frequently_asked_questions/Discolorationsfactsheet.pdf