

## **Wood weathering**

Although wood is an incredibly versatile and beautiful material it does suffer from some problems. For exterior applications in Use Classes 3.1 and 3.2 (EN 335 Part 2) wood in exposed conditions will weather to give a silvery grey driftwood appearance. However, when wood is sheltered (such as under overhanging eaves) then the wood will retain its original colouration. This leads to a very unsightly appearance with uneven weathering, examples of which are not hard to find. The weathering of wood has been researched for over 100 years and although we understand very well why it happens and what causes it, there has never been a solution developed.

Wood is composed of three structural polymers: cellulose, hemicelluloses and lignin. It is the lignin that is the Achilles heel, where wood weathering is concerned. Lignin is a cross linked phenolic polymer that imparts a brown colour to wood and is the 'glue' that holds wood cells together and gives wood its stiffness. However, lignin also strongly absorbs ultraviolet light which causes the breaking of chemical bonds and leads to fragmentation of the lignin polymer. These lignin fragments are then washed out by rain, where they become food for staining microorganisms, leading to the familiar grey appearance. Because the lignin is no longer present, the cell walls at the surface become loose and can be washed away in the rain. Although this is not a problem with uncoated wood, it most certainly is an issue for clear coated wood because the coating no longer adheres to the wood surface, meaning regular and expensive maintenance.

The SiOO:X Wood Protection System is different; it is not a coating, but an envelope. The protection system has two components; the first penetrates the wood where it gradually forms an inert glassy polymer. The second component acts to seal and protect the first application until it is fully cured, but it also forms an inert water resistant envelope which penetrates the wood and creates a grey surface appearance. It does not stop the lignin from degrading, but it takes the same role by keeping the wood cells glued together, essentially using the strength of glass. Just as important, the wood now has an even weathered appearance once the protection system cures. This means that the unsightly patchy weathering of exterior wood cladding is no longer a problem. SiOO:X Wood Protection locks in the beauty of wood.

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