

Technical Bulletin-Understanding Product Samples

This technical bulletin has been written in order to assist the reader in better understanding the impact that environmental conditions may have on wood samples beyond issues of appearance grade and quality.

It is the nature of wood products to adjust their moisture content to the equilibrium relative moisture of the surrounding environment. Wood products do this by releasing and or absorbing moisture as its surrounding area changes in temperature and humidity. When wood takes on moisture it expands and when it loses moisture it shrinks. It is also not abnormal for wood to develop surface checks or cracks as the wood acclimates or equalizes to the project site conditions. These checks and cracks have no effect on the strength or durability of the wood; it is simply a natural reaction to the drying process.

Wood dries by movement of free water through fiber cavities, fiber walls and movement of water vapor through wood. Because wood is not homogeneous, it shrinks more along the growth rings (radial) than across the rings (tangential). Tangential dimensional change is often nearly twice that of radial movement for most wood species and longitudinal (length) dimensional change is almost always negligible. These shrinkage variations may cause wood movement or checking. Wood movement will cease as the moisture content of wood approaches equilibrium with its environment. Checking will often remedy itself with the checks closing once the core of the timber has reached equilibrium. While this is typical, it cannot be guaranteed. Any individual piece of wood will display unique shrinkage or swelling patterns in these three planes of the lumber. The larger the wood dimension the longer this process takes

To minimize shrinkage, warping, checking and splitting in the finished product, lumber must be acclimated to the middle of the range of expected in-use moisture content prior to installation. This can be done through the process of either...

Air Drying (natural process/slow): Air dry moisture content for Iron Woods is generally in the range of 18% to 25%. All Iron Woods 2" nominal thickness and thicker are supplied Air Dried only.
or

Kiln Drying (artificial process/accelerated): Kiln Dry moisture content for Iron Woods is generally in the range of 12%-18%. Iron Woods under 2" nominal thickness and thinner are available in both Air Dried and Kiln Dried options.

For much of the United States, the exterior moisture content equilibrium of thoroughly air dried lumber is 12% to 15%. For the seasonal EMC levels in your region consult the US Forest Labs website, www.fpl.fs.fed.us. Search for the document titled, "Equilibrium Moisture Content of Wood in Outdoor Locations".

Indoor environments pose a unique challenge to wood as equilibrium drops to 6% to 8%. As Iron Woods products are produced for exterior applications 'typically', Iron Woods samples subject to indoor environments, may react inconsistently and be subject to movement and checking which would not occur in an exterior application environment. Such movement is not indicative of long term performance for which the products superior performance is intended and well documented.

Color and Grain Variation

Color and Grain Variation is typical of materials created by nature and recognized as part of the beauty that sets natural products apart from manufactured products. This is particularly true where wood products are concerned though some species have more or less color variation than others. This should always be considered when looking at wood samples.

Some consistency in color can be achieved through either staining wood or allowing wood to weather or grey out.