

## Drying and Curing Times

Drying times and curing relate to two different stages that occur in water-based polymer systems. All water-based products, i.e. stains, paints or sealants, contain free water, hence their description as water-based. When coatings are applied and exposed to air, the free water begins to evaporate. The rate of evaporation is influenced by the humidity and temperature. The higher the temperature and lower the humidity, the faster the rate of evaporation. Once most of the water has evaporated, the surface becomes dry to the touch. The time from application to "Dry to the touch" is the drying time. For sealants we typically talk about the time it takes a product to "skin over." Once the material has dried or skinned over, it develops some strength. At this point, brushing out or tool smoothing will likely result in defects, i.e. balling up of the material. For the material to achieve its maximum strength and properties, it must be allowed to cure.

Curing time relates to the time it takes for all the water to evaporate and the product to achieve its maximum hardness (to obtain the parameters for which it was designed). As opposed to drying, curing is a physical entanglement of polymer chains between particles and, if applicable, chemical reactions. During the curing process environmental factors such as temperature, wind, rain, snow and humidity have a significant impact on the time to achieve the fully cured state.

In addition to the environmental factors, the time it takes our sealants (Perma-Chink, Energy Seal, Woodsman and Check Mate 2) to cure depends on the application thickness as well as the type of backing material. Once a sealant skins over, the skin inhibits further evaporation of water. This along with environmental factors dictate the curing time.