



Bulletin Number: 1109

## When Weather Turns Hot

When the weather turns hot, a host of finishing problems crop up. Here are some common problems and their solutions.

**PROBLEM:** Hot finish on a cold floor will create millions of tiny bubbles. If the finish is stored in the back of a truck sitting under a summer sun, it can get as hot as 160F. When this hot finish is brought into an air-conditioned jobsite and applied to a cold floor, the finish dries extremely quickly just skimming over the top surface. As the warm finish begins to penetrate the wood, it heats up the air in the tubes within the wood. This air expands as it is heated and is trapped by the swiftly drying finish. This is visible because the bubbles will be very small and at the end of the grain tubes.

**PREVENTION:** Bring all finish into the jobsite before beginning and allow it to come to room temperature before applying it. **Never** apply finish that is warmer than the floor.

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### DRYING CONDITIONS

#### Relative Humidity

This affects dry time by changing the solvent carrying capacity of the air. The higher the humidity, the more water it contains. The more water it contains, the less room that will be available at a given temperature and barometric pressure, to pick up and carry away solvents from the finish. More airflow over the finish will help to compensate for this problem along with higher temperature.

#### Temperature

Temperature affects drying rate in two ways. First of all, it increases the air's capacity to carry vapor. This can increase the drying rate but only if the air is moving and circulating. Second, temperature can increase the rate of curing of solvents, meaning that it can result in a faster drying time. But curing rates are a couple of orders of magnitude slower than the air transport and still can result in relatively slow dry times. This is also why opening a window a crack, particularly in the winter **will not** give satisfactory results. The temperature declines thus slowing the cure rate but the airflow is still not good. The result can be a floor that dries slowly and remains in a softer state for a longer period of time.

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It can be clearly seen from the above discussion that air movement and circulation is the most important factor in drying any floor finish. Other factors do have influence but they are only significant when used along with circulation.

A properly dried finish means that enough solvents have been removed from the finish to allow good coalescence. This coalescence in turn allows the polymer chains to entangle each other helping with chemical resistance and the physical properties of the finish. Close entanglement in finishes allows crosslinking to occur thus further enhancing the adhesion, durability and overall beauty of the floor finish.

Yet, if the dry times are too fast, there may be some combing lines in the finish and the finish may not be as smooth as you would like. In knowing what influences dry times, it is possible to create conditions so that a perfect finish is achieved every time.

The conclusion to this is that in low air circulation conditions, more time must be taken before allowing regular traffic and moving furniture back onto the floor. These actions can seriously mar a still “soft” finish. This also applies to large pets whose paws and toenails will tend to dig into a slow drying and curing finish caused by limited air circulation.

So in this way, if there appears to be some softness or marring problems in a freshly finished floor, the first thing to consider is dry time and **WAS THE AIR MOVING?**

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