



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.

DRYING CONDITIONS

A properly dried wood floor coating means that enough solvents have been removed from the coating to allow the polymer chains to entangle. Entanglement enhances adhesion, durability, and overall beauty of a coating. In dry winter conditions, our concern is flash drying due to very low humidity. If 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. Turning off all HVAC systems and blocking any air flow over the coating until the coating tacks up is important in these conditions. In the summer, we need to focus on air exchange. The outside air is typically humid, and adding solvents or water to the air inside makes it even more saturated, slowing the drying and curing process. The solution is to exchange the air in the room with fresh air. We don't want this happening directly on a freshly applied (and still tacky) coating. We also don't want to stir up dust from ceiling (or other locations). Therefore, for best results in humid summer conditions, be prepared to turn down any airflow while the finish is being applied and be prepared to turn it back on several hours later (at least 2 hours for water-based coatings and 6 hours for oil-based coatings). **Air movement and circulation is the most important factor in drying any wood floor coating.**

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Temperature

Temperature affects drying rate in two ways. First of all, it increases the air's capacity to carry vapor. **This can speed up drying 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 play time. However, higher temperatures do NOT compensate for low air exchange. Air exchange is the most important factor in properly curing wood floor coatings. This is why a wood floor coating may not cure correctly (even in an air conditioned building) if air flow or air exchange over the floor is not good. The air conditioning will naturally lower the overall indoor humidity (this is positive for curing), but will lower the temperature (this is a negative). The real key to overcome this obstacle is exchanging the air over the floor.

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. Again, more airflow (fresh air exchange) over the finish will help to compensate for this condition.

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.

The conclusion to this is that in low air circulation conditions, more time must be taken before allowing heavy sports play or before allowing anything heavy to be placed on the floor (i.e. bleachers).

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 **IS FRESH AIR BEING EXCHANGED OVER THE FLOOR?**

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