6 REASONS WHY YOUR WOOD PROJECT FAILED
AND A GUIDE TO SUCCESS
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8 Orion Moisture Meters - Setting Your Wood Projects up for Success
Wood is a living organism. Its vitality is the reason it’s such an attractive material for furniture and flooring. Some of your customers want a natural, knotted look. Others want something sleek and smooth. Regardless, the rich, aesthetic feel of the wood is central to its high demand.

But nature can have its dark side. The moisture that pumps life into the wood you’re using can also deform it. When moisture flows in and out of wood, the wood shrinks or expands in response. The greater the swings of moisture in and out, the more damage your woodwork bears.

The damage can show up in countless ways. Splitting, cracking, cupping, buckling. Whatever way moisture-related damage shows up in your wood, it’s a blight on your hard work. It doesn’t have to happen. Sure, you need to worry about the water you can see and the moisture you can’t. You can avoid most cases of moisture-related damage, but people still mess this up. Here are six ways you are setting your wood up for future moisture-related damage. But we’re not hanging you out to dry—we also give you tips on how to avoid them, including the key to mastering them all.
YOU DON’T LET THE WOOD ACCLIMATE TO ITS IN-SERVICE ENVIRONMENT

If your wood hasn’t already acclimated, moisture flow between it and the air will be inevitable. When the wood swells and constricts with the moisture exchange, deformities will likely follow. You prevent this by letting the wood reach its point of equilibrium moisture content (EMC) with its surroundings before you use it. When the wood reaches EMC, it’s no longer exchanging significant amounts of moisture with the surrounding air.

The air can only hold so much moisture. How much moisture it can hold depends on its relative humidity and temperature. If the wood’s moisture content (MC) is not in balance with the moisture in the air, the wood will either absorb or emit moisture. That’s because the moisture content of wood is connected to the relative humidity and temperature of the surrounding air. When the air’s RH increases, the wood can hold more moisture and its MC starts to go up. The opposite holds true. When the RH sinks, it sucks moisture out of the wood, causing its MC to go down.

With all these RH fluctuations, the wood is expanding and shrinking. The greater the frequency and intensity of these RH swings, the greater the potential damage to the wood.

When the wood’s MC is within two percentage points of the environment’s EMC, the wood has acclimated. Their moisture contents are in balance, so the wood and air are no longer exchanging moisture.

The old way of acclimating wood meant guessing how long the wood should sit in the in-service location before using it. Don’t guess. Once you’ve determined your EMC, you can know whether your wood has acclimated by using an accurate moisture meter. Regular MC testing will tell you whether the wood is ready to use, or whether it’s a ticking time-bomb.
YOU DON’T TEST THE MOISTURE CONTENT OF THE WOOD BEFORE STARTING YOUR PROJECT

Acclimating the wood is the first step. Often, there’s a time gap between when you’ve verified the wood has acclimated and when it’s used. Before you install it, you need to check the MC to confirm it’s still within 2% of the environment’s EMC.

If the wood is no longer acclimated, then you need to take steps. It may be enough to wait and retest the MC until it’s back in range. If you’re pressed for time, you may need to take stronger remedial measures.

Either way, you won’t know if you don’t measure the wood’s MC before you work with it.
YOU DON’T KEEP YOUR SHOP’S RELATIVE HUMIDITY (RH) AND AIR TEMPERATURE CONSTANT

Like most woodworkers, you’re probably storing stacks of wood in your shop – or somewhere. The point is, you’ve got wood waiting around. Stored wood exchanges moisture with its surroundings, just like installed wood.

The more often the MC of wood fluctuates, the greater damage it’s likely suffering. Think of any material that keeps getting stretched out. It loses shape and weakens. The same is true with wood. If you keep the RH and air temp of your shop constant, the wood will equilibrate to it. When that happens, the wood will stop absorbing or releasing moisture into the air. A stable balance is achieved.

Your most ideal option is to keep the air temperature and humidity in your storage area the same as the typical end-use environment. If most of your work stays indoors, storing wood in ambient conditions that result in a 6% - 8% MC is a suitable target. Most interiors will have an EMC that falls in this range.

Do you live in a humid or dry area? Does most of your work stay local? Then adjust your storage target MC as needed.
YOU DON’T FOLLOW THE INSTRUCTION MANUAL ON HOW TO USE YOUR MOISTURE METER

Not all moisture meters work in the same way. The moisture meter’s instruction manual details the best practices you need to follow.

The moisture meter manual will remind you of the little – yet important – details about how to use your meter to get the most accurate results. For example, it should note places on wood where you shouldn’t use the meter, such as on a defect or, if you’re using a pinless meter, at the end of the board. The pinless moisture meter manual will also explain that the sensor plate must be placed entirely on the wood to take a reading.

When you read the manual, you may also find some “hidden gem” functions you didn’t know your meter could do. For instance, if you have an Orion® 950 moisture meter, you may not realize that the meter will calculate a room’s EMC for you. But it will, and it’s an amazing confidence boost when you don’t have to calculate EMC manually.
You will never get an accurate reading from a moisture meter that’s out of calibration. It won’t happen.

A moisture meter can get out of calibration when its internal mechanisms get damaged. Two ways this could happen are if the moisture meter is dropped or water gets inside of it. Anything that interferes with the meter’s internal workings could affect the calibration. For this reason, most “built-in” calibration checks on meters aren’t helpful. They operate using the same internal circuitry. If the moisture meter is out of calibration because something has interfered with its internal mechanisms, you can’t rely on the built-in check. Always have an external calibration tool with you so you can check your moisture meter. Pin and pinless moisture meters use different external calibration check tools. Make sure the one you buy works for the meter you have. With (almost) every moisture meter, if it’s out of calibration, you’ll have to send it back in and pay a hefty fee to get it recalibrated.

The exception to that rule is Wagner Meter’s Orion line of moisture meters. Every moisture meter in the Orion line comes with a recalibration tool paired with your meter. You can use it to calibrate your Orion moisture meter back to factory-level accuracy in just a few seconds. Being able to recalibrate your meter in the field can be a lifesaver – both in terms of not losing your meter for a couple weeks (because it has to be sent to the manufacturer), and not having the unexpected expense.
YOU DON’T SET YOUR METER TO USE THE CORRECT SPECIES

The wood’s species affects how the moisture meter calculates its moisture content. Each species has unique chemical properties and density, each of which can affect a moisture reading. It doesn’t matter if you’re using a pin or pinless moisture meter. They both need to know what species is being measured. The pinless meter reacts to the wood’s density, while pin meters react to its varying chemical properties.

But the meter can’t figure out what wood it’s measuring. It needs you to tell it. If you don’t, the chances you’re getting an accurate MC measure are low.

Extremely low-end moisture meters won’t have a species setting. In that case, the meter should have a species conversion table in its manual. You must use it to convert the meter reading manually, based on the species. If your moisture meter has a species setting, select the species before taking moisture readings. If you work with standard species, any moisture meter with a species setting should be fine. Some meters have an extended species range that includes even exotic species.
We may be biased, but we think your best option to avoid making any of these mistakes is to use an Orion moisture meter. There are five Orion models to suit everyone from a hobbyist to the busiest hardwood flooring installer. They all come standard with a suite of functions that make taking accurate MC readings fast and easy. The faster and easier it is for you to test wood for its MC, the more likely you’re going to do it as often as needed. Armed with accurate MC readings, you can be confident that your craftsmanship will shine.

Enjoy peace of mind on your next job by using state-of-the-art moisture measurement tools by Wagner Meters. Be sure to check out the Orion pinless meters for wood. For more information, call worldwide toll-free at (844) 755-3368, or visit us online at [www.wagnermeters.com](http://www.wagnermeters.com).