



WOOD FLOORS AND Humidity

BY GRETE HEIMERDINGER

Wood floors have been placed in many types of buildings for centuries, and they are used in almost every gymnasium for comfort in walking, running and jumping. If properly cared for, wood floors can last for many, many years. The climate inside a building, however, can ruin the most beautiful floor with cupping, cracking, and other visible defects. Wood floors are more prone to moisture-related defects, particularly when the relative humidity fluctuates once the floor is installed and the building is in use.





Wood is a hygroscopic material, meaning that it absorbs or loses moisture until an equilibrium between the wood moisture and the relative humidity of the surrounding air has been reached. Moisture problems such as cupping or shrinking occur when wood and the air around it are not in an equilibrium. The relationship between wood moisture, air humidity, and temperature determines what wood will do: expand, shrink, or keep its dimensions. Wood is considered stable when it does not shrink or expand. At that point, it has the equilibrium moisture content (EMC) in relation to the relative humidity of the surrounding air.

Calculators showing the equilibrium moisture content and corresponding relative humidity can easily be found with a simple internet search. As can be seen on such EMC charts, wood floors should have a moisture content of 6-9% because of the relationship to the corresponding air moisture. Inside buildings, the comfortable and recommended relative humidity range is between 30-50% at a temperature of 60-80° Fahrenheit. Wood is stable at these environmental conditions when its moisture content is 6-9%.



SMART BUILT-IN SAFETY FOR THE USER AND FACILITY



CHILD SAFETY LOCK-OUT WITH AUTO SHUT-OFF



HEAT LIMITING COOKING SURFACE PROTECTORS



MEETS ADA REQUIREMENTS INCLUDING CA & TX



RADIANT & INDUCTION COOKTOPS AVAILABLE

CONTACT US FOR SPECIAL PRICING:
COOKWITHKENYON.COM | 860.664.4906

For example, if a floor is installed at about 6%, the relative humidity should be around 30%. If the relative humidity for that same floor changes to 55% and stays at 55%, the floor will pick up moisture gradually until 10% has been reached. The change in moisture content is usually accompanied by dimensional changes of the floor planks.

Delivering a flawless floor is the installer's responsibility. The installer needs to make sure that the floor has the correct moisture content and that the building is at the correct relative humidity and temperature. When the installation is complete, the report left with the administrators in charge of campus maintenance should contain wood moisture and relative humidity measurements. The maintenance crews can then check for values corresponding with the EMC chart.

Once the floor is installed, workers in the campus physical plant have the responsibility of keeping the floor in good condition for many years to come. Here are steps that maintenance crews should take in order to keep all campus wood floors beautiful by avoiding moisture problems:

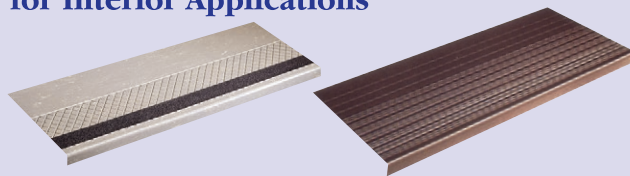


ONE SOURCE FOR ALL YOUR FLOORING NEEDS

WET APPLICATIONS



**Rubber & Vinyl Stair Treads
for Interior Applications**



Entrance Matting



MUSSON RUBBER CO.

P.O. Box 7038 • Akron, Ohio 44306
800-321-2381 • Fax 330-773-3254
info@mussonrubber.com
www.mussonrubber.com

1 Maintenance crews should take moisture measurements at the time the installation is finished, noting the values in a report. When compiling this data, maintenance workers should choose moisture-critical places and get several moisture measurements. Using a dual-depth meter, workers should take measurements with both depth settings and note location, wood species setting, measuring depth, time, and date. Maintenance workers should also measure the relative humidity with a hygrometer at the same time. The physical plant should keep this documentation; in case of any moisture problems later on, comparison with the original measurements could help to find the cause of the problem.

2 After these initial measurements have been taken and recorded, maintenance crews should then follow the guidelines of the floor manufacturer for regular maintenance and upkeep of the wood floors.

3 During regular floor maintenance, workers should also consistently monitor floor conditions by measuring the relative humidity and floor moisture content, then comparing the values to the EMC chart. When wood moisture content and relative humidity do not correspond with the EMC chart, workers should act quickly to change the relative humidity of the interior air; otherwise, the wood will change its moisture content to reach the stable value and shrink, cup, twist, etc.

Campus administrators should consider a system which automatically records the relative humidity and the temperature. Such systems provide an independent record which shows that the HVAC system is working, and they can sound an alarm to alert maintenance personnel when the relative humidity falls under or rises above the pre-set limit. A good example of when these alarms are needed

is when someone turns off the heat in the gymnasium during the winter holiday break.

In caring for wood floors, the main tools for the maintenance crew are a moisture meter, a thermo-hygrometer, and the EMC chart to check both relative humidity and wood moisture. The crew must keep records of all the measurements they take. The simple task of taking and recording wood and air moisture can help prevent problems. Additionally, when moisture problems occur, the records can help to find the cause and prevent additional problems in the future.



ABOUT THE AUTHOR: Grete

Heimerdinger has been the technical adviser for the moisture meter division for Lignomat. She graduated from the technical university in Stuttgart and started Lignomat with her husband in 1982. Lignomat now offers a full line of pin, pinless and RH meters as well as wireless monitoring devices for buildings.

NAC Flooring Essentials

Professional Installation Isn't Complete
Without These NAC Products



Sound Control



Crack Isolation



Waterproofing



NAC innovations are the foundation of world-class flooring solutions that will protect you and your building from the ground up.

800-633-4622 • nacproducts.com



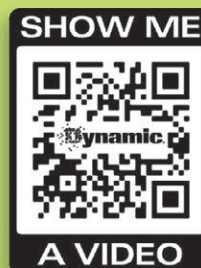


Protect Your Facilities FROM AIRBORNE CONTAMINANTS



ASHRAE guidelines for COVID-19 suggesting MERV 13 or better air filtration makes the Dynamic V8 Air Cleaning System an ideal choice for retrofitting into existing buildings

- MERV 15 performance with a MERV 13 or MERV 14 rating (power off).
- Enhanced ability to remove ultrafine particles, odors and VOCs, without ionizing or Ozone generation.
- Very low pressure drop enables retrofitting into HVAC systems not designed for high-efficiency air filtration.
- Highest dust holding capacity on the market (10 times higher than standard cartridge and bag filters).
- Extend filter change-out intervals from every few months to every several YEARS.
- Consumes 2/3 less fan energy compared to MERV 14 filters.



AIR CLEANING SYSTEM

Visit DynamicAQS.com or ask us about a free Life Cycle Cost Analysis to find out how much you can save on fan energy and maintenance costs while improving the overall air quality in your building.

Dynamic
Air Quality Solutions

The Science of Clean Air™