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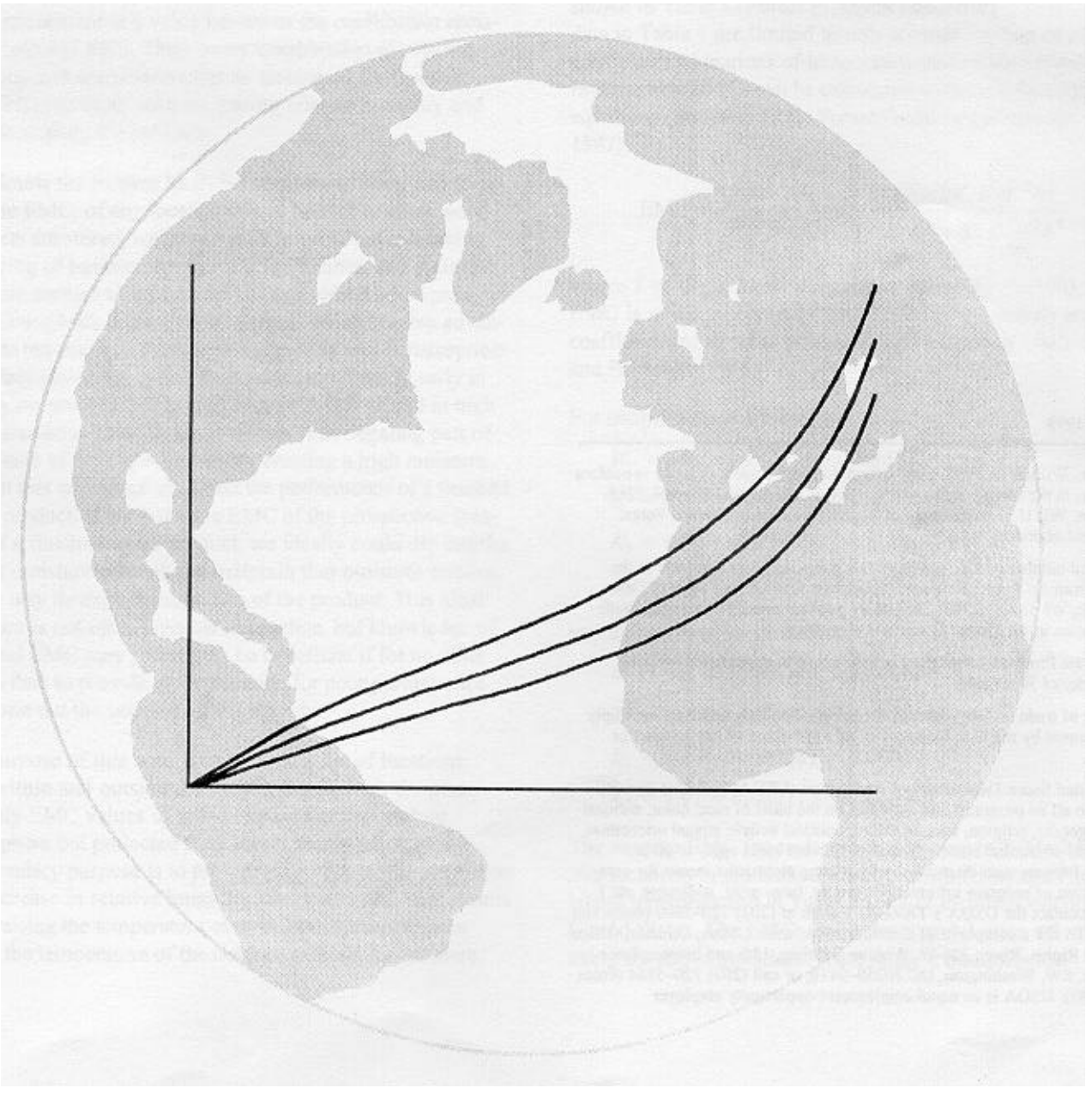
# Equilibrium Moisture Content of Wood in Outdoor Locations in the United States and Worldwide

**William T. Simpson**



# Abstract

With relative humidity and temperature data from the National Oceanic and Atmospheric Administration, the average equilibrium moisture content for each month of the year was calculated for 262 locations in the United States and 122 locations outside the United States. As an aid for storage of kiln-dried lumber, a graph is presented for determining the reduction in equilibrium moisture content that results from heating air in an enclosed storage space above the temperature of the outside air.



Keywords: Equilibrium moisture content, lumber storage, drying

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# Equilibrium Moisture Content of Wood in Outdoor Locations in the United States and Worldwide

**William T. Simpson**

## Errata

On Page 1, the equation in column 2 should read

$$\mathrm{EMC} = \frac{1{,}800}{W}\left(\frac{Kh}{1-Kh} + \frac{K_1Kh + 2K_1K_2K^2h^2}{1 + K_1Kh + K_1K_2K^2h^2}\right)$$

On Page 2, the last line in column 2 should read

". . . to 7%, a temperature rise of 20°F (11°C) is necessary."

# Equilibrium Moisture Content of Wood in Outdoor Locations in the United States and Worldwide

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## Introduction

The moisture content of wood depends on the relative humidity and temperature of the air surrounding it. If wood remains long enough in air where the relative humidity and temperature remain constant, the moisture content will also become constant at a value known as the equilibrium moisture content (EMC). Thus, every combination of relative humidity and temperature has an associated EMC value. The EMC increases with increasing relative humidity and with decreasing temperature.

If we know the relative humidity and temperature, and therefore the EMC, of any location where lumber or other wood products are stored, we have useful information relevant to air drying of lumber, storage of dried lumber, and optimum moisture content of lumber for use in finished wood products. Low EMCs accelerate air drying, which is often advantageous but can be a detriment if a species that is susceptible to surface checking, such as oak, dries too quickly early in the drying process. Kiln-dried lumber that is stored in high EMC conditions can regain moisture, thus negating part of the results of drying and possibly creating a high moisture content that will adversely affect the performance of a finished wood product. If we knew the EMC of the prospective location of a finished wood product, we ideally could dry lumber to that moisture content and maintain that moisture content all the way through manufacture of the product. This ideal situation is not often possible in practice, but knowledge of the ideal EMC may sometimes be beneficial if for no other reason than to provide an explanation for poor performance and point out the necessity for a remedy.

The purpose of this note is to provide a list of locations, both within and outside the United States, with the mean monthly EMC values of wood exposed to the outdoor atmosphere but protected from direct precipitation or sun. A secondary purpose is to provide easy to use information on the decrease in relative humidity, and thus EMC, that results from raising the temperature of an enclosed storage space above the temperature of the outdoor ambient temperature.

## Equilibrium Moisture Content at U.S. Locations

The dependence of EMC on relative humidity and temperatures between 30°F and 150°F (–1.1°C and 65.6°C) is shown in Table 1 (Forest Products Laboratory 1987). The data in Table 1 are limited to only a small fraction of all possible combinations of temperature and relative humidity. Intermediate EMCs can be calculated with the following equations (Simpson 1973, Forest Products Laboratory 1987):

$$\mathrm{EMC} = \frac{1{,}800}{W}\frac{Kh}{1-Kh} + \frac{K_1Kh + 2K_1K_2K^2h^2}{1+K_1Kh+K_1K_2K^2h^2}$$

where $T$ is temperature, $h$ is relative humidity (%/100), EMC is moisture content (%), and $W$, $K$, $K_1$, and $K_2$ are coefficients of an adsorption model developed by Hailwood and Horrobin (1946).

For temperature in Fahrenheit,

$$W = 330 + 0.452T + 0.00415T^2$$

$$K = 0.791 + 0.000463T - 0.000000844T^2$$

$$K_1 = 6.34 + 0.000775T - 0.0000935T^2$$

$$K_2 = 1.09 + 0.0284T - 0.0000904T^2$$

and for temperature in Celsius,

$$W = 349 + 1.29T + 0.0135T^2$$

$$K = 0.805 + 0.000736T - 0.00000273T^2$$

$$K_1 = 6.27 - 0.00938T - 0.000303T^2$$

$$K_2 = 1.91 + 0.0407T - 0.000293T^2$$

The average EMC for each month is shown in Table 2 for 262 locations in the United States, Puerto Rico, and Pacific Island territories and in Table 3 for 122 locations outside the United States. The EMCs in Tables 2 and 3 were calculated, using the above equations, from relative humidity and

temperature data available from the National Climatic Data Center (NCDC), National Oceanic and Atmospheric Administration (NOAA). Most of the data in Table 2 was from NCDC (1997), but 15 of the locations were from Wallis (1977). The tabulated relative humidities are the monthly averages of the daily morning and afternoon values. For the purpose of the EMC calculations, the morning and afternoon values were averaged. The temperature values are the monthly averages of the normal daily temperatures. Most of the NOAA relative humidity and temperature data is based on at least 30 years of observation. The EMCs in Table 3 were calculated from relative humidities that were derived from air and dew point temperatures (USA Today 1998; original data from NCDC). Relative humidity is the ratio of vapor pressure at the dew point temperature to vapor pressure at the air temperature. A least-squares relationship to calculate vapor pressure from temperature was developed from the data of Hawkins (1978):

$$\text{Vapor pressure} = \exp(-3.24 + 0.0519T - 0.000172T^2 + 0.000000424T^3)$$

for vapor pressure in inches of mercury and temperature in Fahrenheit, and

$$\text{Vapor pressure} = 3{,}390 \exp(-1.74 + 0.759T - 0.000424T^2 + 0.00000244T^3)$$

for vapor pressure in pascals and temperature in Celsius.

Several factors should be noted about the EMC data in Tables 2 and 3. Wood exhibits hysteresis, which means that if wood comes to equilibrium at a given relative humidity and temperature, the EMC will be slightly higher if this equilibrium is reached by losing moisture than it would be if it reaches equilibrium by gaining moisture. In the extreme, this effect can be as much as 3% moisture content. However, the EMC database used in this analysis was obtained experimentally under relative humidity conditions that oscillated slightly. This tended to establish EMCs intermediate between the two hysteresis extremes (Stamm and Loughborough 1935) and means they can be considered reasonable estimates for practical applications. A second factor is that the EMC data in Table 1 does not extend below 30°F (-1.1°C), but some of the locations in Tables 2 and 3 have winter temperatures below this level. This raises the question of the validity of the extrapolation to below 30°F. Hedlin (1967) showed evidence that EMC data at 10°F (-12.2°C) are approximately what would be expected by extrapolating from values above 30°F. So, it seems valid to assume that the extrapolated EMCs are reasonable approximations. The third factor of concern is that the EMC values, especially at high relative humidities, of wood species with a high extractive content are lower than species with little or no extractives. Some tropical hardwoods exhibit this behavior (Spalt 1958, Wangaard and Granados 1967). Western redcedar and redwood are two native continental U.S. species that might be affected by this factor (Spalt 1958, Salamon and others 1975). However, high extractive content heartwood is likely to be more prevalent in old-growth timber, and with the current trend to harvest younger growth timber, extractive content in wood may no longer be as high.

Tables 2 and 3 show the wide variability in EMC as affected by location and month. For example, the EMC in Phoenix, Arizona, in June is only 4.6%, while the EMC in Eugene, Oregon, in December is 20.2%. In Fresno, California, the EMC varies from 7.8% in July to 16.6% in December—a wide range that will cause a large variation in moisture content of wood products from summer to winter. At the other extreme, the EMC in Little Rock, Arkansas, varies throughout the year by only about 1% EMC—from 12.8% in March to 13.9% in September and December.

## Lowering Equilibrium Moisture Content for Storage

It is not uncommon for lumber to be kiln dried to 6% to 8% moisture content and then stored in a protected but unheated area where the relative humidity is such that the EMC is higher than 6% to 8%. If the EMC is high enough and storage is long enough, the lumber can increase in moisture content, which can create problems in product manufacture or performance of an end product. There are several ways to minimize this problem, including wrapping the lumber in a moisture barrier or storing it in an air-conditioned facility. One simple and not too costly method to lower EMC in an enclosed space is by simply raising the temperature above the outside ambient air temperature—easily controlled by a differential thermostat. Alternatively, a humidistat can be used to control a heating system.

When inside temperature is raised above outside temperature without adding any moisture to the inside air, the relative humidity of the inside air is reduced. This is because the specific humidity (the mass of water per unit mass of dry air) of the air remains the same when its temperature is raised, but the capacity of the air to hold moisture increases as temperature increases, therefore lowering relative humidity. Figure 1 shows the effect on EMC of raising inside temperature above outside ambient temperature. Calculations were made using the psychometric equations given in Hawkins (1978).

The graph applies to all outside ambient air temperatures from 30°F to 90°F (–1.1°C to 32.2°C). For example, if outside EMC is 14%, Fig. 1 indicates that to reduce EMC to 7%, a temperature rise of 20°F (–6.7°C) is necessary.

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**Table 1—Dependence of equilibrium moisture content (EMC) of wood on relative humidity (RH) and temperature**

| | EMC (%) | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (°F (°C)) | 5% RH | 10% RH | 15% RH | 20% RH | 25% RH | 30% RH | 35% RH | 40% RH | 45% RH | 50% RH | 55% RH | 60% RH | 65% RH | 70% RH | 75% RH | 80% RH | 85% RH | 90% RH | 95% RH |
| 30 (–1.1) | 1.4 | 2.6 | 3.7 | 4.6 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.5 | 10.4 | 11.3 | 12.4 | 13.5 | 14.9 | 16.5 | 18.5 | 21.0 | 24.3 |
| 50 (10.0) | 1.4 | 2.6 | 3.6 | 4.6 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.5 | 10.3 | 11.2 | 12.3 | 13.4 | 14.8 | 16.4 | 18.4 | 20.9 | 24.3 |
| 70 (21.1) | 1.3 | 2.5 | 3.5 | 4.5 | 5.4 | 6.2 | 6.9 | 7.7 | 8.5 | 9.2 | 10.1 | 11.0 | 12.0 | 13.1 | 14.4 | 16.0 | 17.9 | 20.5 | 23.9 |
| 90 (32.2) | 1.2 | 2.3 | 3.4 | 4.3 | 5.1 | 5.9 | 6.7 | 7.4 | 8.1 | 8.9 | 9.7 | 10.5 | 11.5 | 12.6 | 13.9 | 15.4 | 17.3 | 19.8 | 23.3 |
| 110 (43.3) | 1.1 | 2.2 | 3.2 | 4.0 | 4.9 | 5.6 | 6.3 | 7.0 | 7.7 | 8.4 | 9.2 | 10.0 | 11.0 | 12.0 | 13.2 | 14.7 | 16.6 | 19.1 | 22.4 |
| 130 (54.4) | 1.0 | 2.0 | 2.9 | 3.7 | 4.5 | 5.2 | 5.9 | 6.6 | 7.2 | 7.9 | 8.7 | 9.4 | 10.3 | 11.3 | 12.5 | 14.0 | 15.8 | 18.2 | 21.5 |
| 150 (65.6) | 0.9 | 1.8 | 2.6 | 3.4 | 4.1 | 4.8 | 5.5 | 6.1 | 6.7 | 7.4 | 8.1 | 8.8 | 9.7 | 10.6 | 11.8 | 13.1 | 14.9 | 17.2 | 20.4 |

**Table 2—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in U.S. locations**

| State | City | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Ott | Nov | Dec |
| AK | Anchorage | 14.2 | 13.5 | 12.0 | 11.2 | 10.5 | 11.5 | 12.7 | 13.5 | 14.0 | 14.1 | 14.9 | 15.3 |
| AK | Barrow | 12.5 | 11.5 | 11.9 | 14.6 | 18.5 | 19.4 | 18.9 | 20.4 | 20.5 | 18.2 | 15.3 | 13.0 |
| AK | Bethel | 15.1 | 14.4 | 15.2 | 15.7 | 13.8 | 13.5 | 15.1 | 17.1 | 16.6 | 17.3 | 17.0 | 15.3 |
| AK | Fairbanks | 12.5 | 11.7 | 11.2 | 10.0 | 8.7 | 9.6 | 11.0 | 12.3 | 12.6 | 14.3 | 14.1 | 13.3 |
| AK | Homer | 15.7 | 14.9 | 13.7 | 13.4 | 13.1 | 13.6 | 14.7 | 15.3 | 15.3 | 14.9 | 15.4 | 15.8 |
| AK | Juneau | 16.5 | 16.0 | 15.1 | 13.9 | 13.6 | 13.9 | 15.1 | 16.5 | 18.1 | 18.0 | 17.7 | 18.1 |
| AK | King Salmom | 15.4 | 14.5 | 14.2 | 13.4 | 12.3 | 12.9 | 14.3 | 15.2 | 15.1 | 15.5 | 16.5 | 15.6 |
| AK | Kodiak | 15.7 | 15.2 | 14.2 | 13.9 | 14.8 | 15.5 | 16.1 | 15.3 | 15.4 | 14.4 | 14.9 | 15.1 |
| AK | Nome | 14.4 | 13.6 | 13.7 | 14.8 | 14.8 | 14.7 | 16.4 | 16.7 | 15.3 | 15.1 | 15.1 | 14.4 |
| AK | Valdez | 15.0 | 13.7 | 13.5 | 12.8 | 13.2 | 13.8 | 15.5 | 15.8 | 16.4 | 15.2 | 13.8 | 15.3 |
| AK | Yakutat | 17.7 | 16.9 | 15.7 | 14.6 | 14.8 | 15.5 | 16.9 | 17.5 | 17.7 | 18.2 | 18.1 | 18.3 |
| AL | Birmingham | 13.6 | 12.9 | 12.3 | 12.6 | 13.2 | 13.2 | 14.0 | 14.0 | 13.8 | 13.4 | 13.5 | 13.6 |
| AL | Huntsville | 14.5 | 13.5 | 13.0 | 12.7 | 13.5 | 13.5 | 14.0 | 14.1 | 14.4 | 13.5 | 13.7 | 14.1 |
| AL | Mobile | 13.8 | 13.1 | 13.3 | 13.3 | 13.4 | 13.3 | 14.2 | 14.4 | 13.9 | 13.0 | 13.7 | 14.0 |
| AL | Montgomery | 13.7 | 12.9 | 12.8 | 12.8 | 13.3 | 13.3 | 14.3 | 14.3 | 13.7 | 13.3 | 13.6 | 13.7 |
| AR | Fort Smith | 13.9 | 13.1 | 12.5 | 12.5 | 13.9 | 13.8 | 13.2 | 13.1 | 13.6 | 13.0 | 13.4 | 14.2 |
| AR | Little Rock | 13.8 | 13.2 | 12.8 | 13.1 | 13.7 | 13.1 | 13.3 | 13.5 | 13.9 | 13.1 | 13.5 | 13.9 |
| AZ | Flagstaff | 11.8 | 11.4 | 10.8 | 9.3 | 8.8 | 7.5 | 9.7 | 11.1 | 10.3 | 10.1 | 10.8 | 11.8 |
| AZ | Phoenix | 9.4 | 8.4 | 7.9 | 6.1 | 5.1 | 4.6 | 6.2 | 6.9 | 6.9 | 7.0 | 8.2 | 9.5 |
| AZ | Tucson | 9.1 | 8.3 | 7.6 | 6.0 | 5.2 | 4.8 | 7.7 | 8.8 | 7.6 | 7.5 | 8.0 | 9.2 |
| AZ | Winslow | 12.3 | 9.9 | 8.5 | 7.2 | 6.2 | 5.5 | 8.0 | 8.7 | 8.6 | 8.5 | 9.8 | 12.0 |
| AZ | Yuma | 8.2 | 7.8 | 7.3 | 6.5 | 6.1 | 5.6 | 6.8 | 7.4 | 7.5 | 7.4 | 8.0 | 8.7 |
| CA | Bakersfield | 14.2 | 12.1 | 10.8 | 9.2 | 7.8 | 7.1 | 6.8 | 7.3 | 8.0 | 9.4 | 11.7 | 14.1 |
| CA | Bishop | 8.1 | 6.9 | 5.3 | 4.5 | 4.3 | 3.6 | 3.8 | 3.7 | 4.0 | 4.8 | 6.3 | 7.6 |
| CA | Fresno | 16.4 | 14.1 | 12.6 | 10.6 | 9.1 | 8.2 | 7.8 | 8.4 | 9.2 | 10.3 | 13.4 | 16.6 |
| CA | Long Beach | 11.9 | 12.2 | 12.4 | 12.0 | 12.6 | 12.8 | 12.4 | 12.3 | 12.6 | 12.5 | 12.2 | 12.1 |
| CA | Los Angeles | 12.2 | 13.0 | 13.8 | 13.8 | 14.4 | 14.8 | 15.0 | 15.1 | 14.5 | 13.8 | 12.4 | 12.1 |
| CA | Oakland | 14.5 | 14.0 | 13.1 | 12.3 | 12.8 | 13.2 | 13.7 | 13.9 | 13.1 | 12.7 | 13.7 | 14.1 |
| CA | Red Bluff | 12.4 | 11.0 | 9.5 | 7.9 | 6.8 | 6.0 | 4.9 | 5.4 | 5.7 | 7.4 | 10.4 | 12.6 |
| CA | Redding | 13.7 | 11.9 | 12.0 | 10.7 | 9.8 | 8.3 | 7.3 | 7.3 | 7.9 | 9.2 | 11.6 | 13.6 |
| CA | Sacramento | 16.4 | 14.5 | 13.4 | 11.6 | 10.9 | 10.0 | 9.6 | 9.7 | 10.0 | 10.9 | 13.8 | 16.4 |
| CA | Sandberg | 10.1 | 10.2 | 10.2 | 9.7 | 8.7 | 7.2 | 5.7 | 5.9 | 6.6 | 7.9 | 9.1 | 10.3 |
| CA | San Diego | 12.0 | 12.5 | 12.8 | 12.6 | 13.5 | 14.2 | 14.1 | 14.2 | 14.0 | 13.3 | 12.5 | 12.1 |
| CA | San Francisco | 15.2 | 14.7 | 14.0 | 13.6 | 13.8 | 13.6 | 13.9 | 14.3 | 13.6 | 13.4 | 14.3 | 15.1 |
| CA | Santa Barbara | 13.2 | 13.0 | 13.7 | 12.6 | 13.8 | 14.7 | 15.3 | 15.2 | 14.5 | 13.6 | 12.1 | 13.0 |
| CA | Santa Maria | 13.4 | 14.0 | 14.7 | 14.4 | 15.0 | 14.9 | 14.4 | 15.3 | 15.1 | 14.2 | 13.1 | 13.2 |
| CA | Stockton | 16.4 | 14.6 | 12.7 | 10.9 | 9.8 | 9.0 | 8.4 | 8.7 | 9.1 | 10.4 | 13.8 | 17.0 |
| CA | Twentynine Palms | 8.3 | 7.7 | 7.2 | 6.2 | 5.6 | 4.6 | 4.8 | 5.9 | 5.4 | 5.8 | 6.8 | 8.3 |
| CO | Alamosa | 13.0 | 12.1 | 10.5 | 9.6 | 9.7 | 9.4 | 11.0 | 11.6 | 10.6 | 10.4 | 11.9 | 13.0 |
| CO | Colorado Springs | 9.8 | 9.4 | 9.6 | 9.2 | 9.8 | 9.5 | 9.8 | 10.4 | 9.6 | 9.1 | 10.0 | 10.0 |
| CO | Denver | 10.7 | 10.5 | 10.2 | 9.6 | 10.2 | 9.6 | 9.4 | 9.6 | 9.5 | 9.5 | 11.0 | 11.0 |
| CO | Grand Junction | 13.7 | 11.4 | 9.5 | 8.2 | 7.8 | 6.5 | 6.8 | 7.2 | 7.5 | 8.7 | 11.0 | 13.2 |
| CO | Pueblo | 11.1 | 9.8 | 9.4 | 9.3 | 9.5 | 9.1 | 9.5 | 9.9 | 9.6 | 9.4 | 11.4 | 11.3 |
| CT | Bridgeport | 12.6 | 12.3 | 12.2 | 11.8 | 12.6 | 13.0 | 12.9 | 13.0 | 13.5 | 13.1 | 13.0 | 12.7 |
| CT | Hartford | 12.0 | 11.9 | 11.6 | 10.8 | 11.1 | 11.8 | 11.9 | 12.6 | 13.3 | 12.7 | 12.8 | 12.9 |
| DC | Washington | 11.8 | 11.5 | 11.3 | 11.1 | 11.6 | 11.7 | 11.7 | 12.3 | 12.6 | 12.5 | 12.2 | 12.2 |
| DE | Wilmington | 12.9 | 12.6 | 12.0 | 11.5 | 12.0 | 12.1 | 12.3 | 13.0 | 13.2 | 13.1 | 13.0 | 12.9 |
| FL | Apalachicola | 14.9 | 14.9 | 14.7 | 14.5 | 14.3 | 14.5 | 15.2 | 16.2 | 15.3 | 14.1 | 14.3 | 15.1 |
| FL | Daytona Beach | 14.1 | 13.7 | 13.4 | 13.0 | 13.2 | 14.2 | 14.7 | 15.4 | 15.2 | 14.3 | 14.3 | 14.3 |
| FL | Fort Myers | 14.0 | 13.6 | 13.2 | 12.5 | 12.7 | 13.7 | 13.8 | 14.1 | 14.2 | 13.7 | 13.8 | 13.8 |
| FL | Gainesville | 15.2 | 14.4 | 14.1 | 13.6 | 13.2 | 14.6 | 15.2 | 15.9 | 16.0 | 15.5 | 15.6 | 15.4 |
| FL | Jacksonville | 14.0 | 13.2 | 12.9 | 12.4 | 12.7 | 13.4 | 13.6 | 14.3 | 15.0 | 14.4 | 14.2 | 14.3 |
| FL | Key West | 14.5 | 14.1 | 13.6 | 12.9 | 13.0 | 13.5 | 13.0 | 13.4 | 14.1 | 14.3 | 14.6 | 14.7 |
| FL | Miami | 13.5 | 13.1 | 12.8 | 12.3 | 12.7 | 14.0 | 13.7 | 14.1 | 14.5 | 13.5 | 13.9 | 13.4 |

**Table 2—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in U.S. locations-con.**

| State | City | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| FL | Orlando | 13.9 | 13.3 | 13.0 | 12.5 | 12.6 | 13.7 | 14.0 | 14.4 | 14.4 | 13.7 | 13.8 | 14.0 |
| FL | Pensacola | 13.9 | 13.4 | 13.6 | 13.5 | 13.7 | 13.6 | 14.5 | 14.9 | 14.1 | 13.2 | 13.6 | 14.4 |
| FL | Tallahassee | 14.1 | 13.5 | 13.3 | 12.9 | 13.0 | 13.6 | 14.9 | 15.0 | 14.3 | 13.6 | 13.9 | 14.0 |
| FL | Tampa | 14.2 | 13.5 | 13.4 | 12.8 | 12.7 | 13.7 | 14.2 | 14.7 | 14.6 | 13.9 | 13.8 | 14.0 |
| FL | Vero Beach | 14.3 | 13.9 | 13.4 | 12.9 | 13.2 | 14.3 | 14.6 | 15.2 | 14.9 | 14.3 | 14.4 | 14.3 |
| FL | West Palm Beach | 13.6 | 13.0 | 12.8 | 12.2 | 12.7 | 14.0 | 14.0 | 13.9 | 14.5 | 13.8 | 13.5 | 13.5 |
| GA | Athens | 13.3 | 12.6 | 12.6 | 12.2 | 13.1 | 13.3 | 13.9 | 14.5 | 14.5 | 13.6 | 13.3 | 13.4 |
| GA | Atlanta | 13.3 | 12.3 | 12.0 | 11.8 | 12.5 | 13.0 | 13.8 | 14.2 | 13.9 | 13.0 | 12.9 | 13.2 |
| GA | Augusta | 13.1 | 12.4 | 12.4 | 12.2 | 12.6 | 12.8 | 13.2 | 14.0 | 13.9 | 13.2 | 13.1 | 13.2 |
| GA | Columbus | 13.9 | 13.1 | 12.8 | 12.4 | 12.5 | 12.7 | 13.6 | 13.8 | 13.7 | 13.3 | 13.5 | 13.8 |
| GA | Macon | 13.7 | 13.2 | 13.1 | 12.5 | 12.8 | 13.0 | 13.7 | 14.3 | 14.4 | 13.4 | 13.5 | 13.6 |
| GA | Rome | 13.4 | 12.9 | 12.5 | 12.1 | 12.6 | 13.0 | 13.1 | 13.3 | 13.2 | 13.3 | 12.8 | 13.3 |
| GA | Savannah | 13.0 | 12.2 | 12.3 | 11.8 | 12.5 | 13.1 | 13.4 | 14.3 | 14.4 | 13.4 | 13.2 | 13.2 |
| HI | Hilo | 13.7 | 13.5 | 13.9 | 14.3 | 14.0 | 13.3 | 14.1 | 14.3 | 13.8 | 14.1 | 14.6 | 14.3 |
| HI | Honolulu | 13.3 | 12.8 | 11.9 | 11.3 | 10.8 | 10.6 | 10.6 | 10.7 | 10.8 | 11.3 | 12.1 | 12.9 |
| HI | Kahului | 13.5 | 13.2 | 12.6 | 12.1 | 11.5 | 11.1 | 11.5 | 11.5 | 11.4 | 11.8 | 12.5 | 13.1 |
| HI | Lihue | 14.1 | 13.8 | 13.5 | 13.5 | 13.1 | 12.9 | 13.0 | 13.1 | 13.1 | 13.5 | 14.1 | 14.1 |
| IA | Des Moines | 14.0 | 13.9 | 13.3 | 12.6 | 12.4 | 12.6 | 13.1 | 13.4 | 13.7 | 12.7 | 13.9 | 14.9 |
| IA | Dubuque | 14.3 | 14.0 | 13.8 | 12.6 | 12.8 | 13.3 | 13.9 | 14.4 | 14.3 | 13.4 | 14.6 | 15.3 |
| IA | Sioux City | 14.4 | 14.3 | 14.1 | 12.3 | 12.4 | 12.9 | 13.6 | 14.2 | 13.9 | 12.8 | 14.3 | 15.2 |
| IA | Waterloo | 14.5 | 14.6 | 14.5 | 13.1 | 12.7 | 13.0 | 13.8 | 14.3 | 14.3 | 13.4 | 14.8 | 15.5 |
| ID | Boise | 15.2 | 13.5 | 11.1 | 10.0 | 9.7 | 9.0 | 7.3 | 7.3 | 8.4 | 10.0 | 13.3 | 15.2 |
| ID | Lewiston | 15.1 | 13.6 | 11.9 | 10.9 | 10.7 | 10.0 | 8.1 | 8.0 | 9.2 | 12.1 | 15.0 | 15.7 |
| ID | Pocatello | 14.7 | 13.7 | 12.0 | 10.2 | 9.9 | 9.6 | 8.4 | 8.0 | 8.8 | 10.1 | 13.2 | 14.9 |
| IL | Cairo | 14.5 | 13.9 | 13.1 | 12.2 | 13.0 | 12.9 | 13.2 | 13.6 | 13.5 | 13.0 | 13.2 | 14.2 |
| IL | Chicago | 14.2 | 13.7 | 13.4 | 12.5 | 12.2 | 12.4 | 12.8 | 13.3 | 13.3 | 12.9 | 14.0 | 14.9 |
| IL | Moline | 13.6 | 13.5 | 13.3 | 12.5 | 12.4 | 12.4 | 13.2 | 14.2 | 13.8 | 12.8 | 13.9 | 14.6 |
| IL | Peoria | 14.6 | 14.6 | 14.0 | 12.8 | 12.9 | 12.8 | 13.7 | 14.3 | 13.9 | 13.6 | 14.9 | 15.7 |
| IL | Rockford | 15.0 | 14.5 | 14.1 | 12.8 | 12.5 | 12.5 | 13.4 | 14.4 | 14.3 | 13.8 | 15.0 | 15.8 |
| IL | Springfield | 14.6 | 14.6 | 14.0 | 12.8 | 12.5 | 12.6 | 13.3 | 14.2 | 13.6 | 13.0 | 14.6 | 15.7 |
| IN | Evansville | 14.2 | 13.9 | 13.2 | 12.4 | 12.8 | 12.5 | 13.1 | 13.4 | 13.6 | 13.0 | 13.7 | 14.6 |
| IN | Fort Wayne | 15.2 | 14.8 | 13.9 | 12.9 | 12.5 | 12.4 | 13.1 | 13.9 | 14.0 | 13.8 | 15.0 | 16.2 |
| IN | Indianapolis | 15.1 | 14.6 | 13.8 | 12.8 | 13.0 | 12.8 | 13.9 | 14.5 | 14.2 | 13.7 | 14.8 | 15.7 |
| IN | South Bend | 15.5 | 14.8 | 13.8 | 12.8 | 12.5 | 12.5 | 13.1 | 14.0 | 14.1 | 13.9 | 15.2 | 16.2 |
| KS | Concordia | 14.1 | 13.7 | 12.9 | 12.8 | 13.6 | 13.1 | 12.0 | 12.7 | 13.0 | 12.3 | 13.8 | 14.2 |
| KS | Dodge City | 13.1 | 12.6 | 11.9 | 11.5 | 12.5 | 11.7 | 10.8 | 11.4 | 11.8 | 11.1 | 12.3 | 12.9 |
| KS | Goodland | 13.2 | 12.4 | 12.0 | 11.4 | 12.6 | 11.6 | 11.0 | 11.3 | 11.0 | 11.0 | 13.0 | 13.2 |
| KS | Topeka | 13.8 | 13.5 | 12.9 | 12.9 | 13.6 | 13.9 | 13.5 | 13.7 | 13.8 | 13.0 | 13.7 | 14.2 |
| KS | Wichita | 13.8 | 13.4 | 12.4 | 12.4 | 13.2 | 12.5 | 11.5 | 11.8 | 12.6 | 12.4 | 13.2 | 13.9 |
| KY | Covington | 14.1 | 13.0 | 11.8 | 11.1 | 12.0 | 12.4 | 12.4 | 12.7 | 12.6 | 11.9 | 12.7 | 13.8 |
| KY | Jackson | 13.7 | 13.0 | 11.7 | 10.8 | 13.0 | 13.8 | 14.4 | 14.8 | 14.4 | 13.0 | 12.5 | 13.9 |
| KY | Lexington | 14.6 | 13.9 | 12.9 | 12.1 | 13.0 | 13.0 | 13.6 | 13.9 | 14.2 | 13.3 | 14.0 | 14.8 |
| KY | Louisville | 13.7 | 13.3 | 12.6 | 12.0 | 12.8 | 13.0 | 13.3 | 13.7 | 14.1 | 13.3 | 13.5 | 13.9 |
| KY | Paducah | 14.6 | 14.1 | 12.9 | 12.5 | 13.7 | 13.6 | 13.9 | 14.5 | 14.3 | 13.4 | 14.0 | 14.5 |
| LA | Alexandria | 15.6 | 14.2 | 14.2 | 14.5 | 14.5 | 14.8 | 15.0 | 14.6 | 15.0 | 14.1 | 14.4 | 15.5 |
| LA | Baton Rouge | 14.6 | 13.8 | 13.6 | 13.7 | 14.0 | 14.1 | 14.8 | 14.8 | 14.3 | 13.6 | 14.3 | 14.7 |
| LA | Lake Charles | 15.7 | 14.9 | 14.7 | 14.7 | 15.2 | 15.0 | 15.3 | 15.2 | 15.0 | 14.0 | 14.5 | 15.5 |
| LA | New Orleans | 14.9 | 14.3 | 14.0 | 14.2 | 14.1 | 14.6 | 15.2 | 15.3 | 14.8 | 14.0 | 14.2 | 15.0 |
| LA | Shreveport | 14.4 | 13.7 | 13.2 | 13.7 | 14.2 | 14.0 | 13.8 | 13.6 | 13.8 | 13.5 | 14.0 | 14.4 |
| MA | Blue Hill | 13.3 | 12.8 | 12.6 | 11.7 | 12.2 | 12.9 | 12.8 | 13.3 | 13.7 | 13.3 | 13.9 | 13.4 |
| MA | Boston | 11.8 | 11.6 | 11.9 | 11.7 | 12.2 | 12.1 | 11.9 | 12.5 | 13.1 | 12.8 | 12.6 | 12.2 |
| MA | Worcester | 12.5 | 12.2 | 11.9 | 11.1 | 11.2 | 12.1 | 12.3 | 12.9 | 13.6 | 12.7 | 13.3 | 13.2 |
| MD | Baltimore | 12.3 | 11.8 | 11.6 | 11.3 | 12.0 | 12.0 | 12.1 | 12.8 | 13.1 | 13.0 | 12.6 | 12.5 |

**Table 2—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in U.S. locations—con.**

| State | City | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| ME | Caribou | 13.5 | 13.0 | 13.0 | 12.7 | 11.7 | 12.6 | 13.2 | 13.7 | 14.3 | 14.6 | 15.7 | 14.8 |
| ME | Portland | 13.1 | 12.7 | 12.7 | 12.1 | 12.6 | 13.0 | 13.0 | 13.4 | 13.9 | 13.8 | 14.0 | 13.5 |
| MI | Alpena | 15.0 | 14.0 | 13.9 | 12.8 | 12.1 | 12.5 | 12.9 | 14.2 | 15.0 | 14.4 | 15.4 | 15.8 |
| MI | Detroit | 14.7 | 14.1 | 13.5 | 12.6 | 12.3 | 12.3 | 12.6 | 13.3 | 13.7 | 13.5 | 14.4 | 15.1 |
| MI | Flint | 15.0 | 14.3 | 13.5 | 12.6 | 12.2 | 12.7 | 13.1 | 13.9 | 14.4 | 13.9 | 14.9 | 15.5 |
| MI | Grand Rapids | 15.5 | 14.7 | 14.1 | 13.0 | 12.3 | 12.7 | 13.1 | 14.1 | 14.6 | 14.3 | 15.3 | 16.0 |
| MI | Houghton Lake | 15.8 | 14.9 | 14.5 | 12.9 | 12.0 | 12.6 | 13.1 | 14.7 | 15.3 | 15.1 | 16.5 | 16.7 |
| MI | Lansing | 16.3 | 15.2 | 14.5 | 13.2 | 12.7 | 12.8 | 13.4 | 14.4 | 14.9 | 14.8 | 15.8 | 16.7 |
| MI | Marquette | 12.6 | 14.9 | 13.9 | 12.8 | 12.2 | 12.9 | 13.3 | 14.1 | 14.5 | 14.2 | 14.9 | 16.0 |
| MI | Muskegon | 15.8 | 14.9 | 13.9 | 12.8 | 12.2 | 12.8 | 13.5 | 14.6 | 14.7 | 14.3 | 14.9 | 16.0 |
| MI | Sault Ste. Marie | 15.6 | 14.9 | 14.7 | 13.5 | 12.9 | 14.1 | 14.7 | 15.3 | 16.1 | 15.8 | 16.7 | 16.7 |
| MN | Duluth | 14.2 | 13.5 | 13.7 | 12.6 | 12.1 | 13.3 | 13.7 | 14.7 | 15.0 | 14.0 | 15.1 | 15.4 |
| MN | International Falls | 13.5 | 13.1 | 13.1 | 12.2 | 12.0 | 13.1 | 13.8 | 14.7 | 15.3 | 14.6 | 16.0 | 15.3 |
| MN | Minneapolis–St. Paul | 13.7 | 13.6 | 13.3 | 12.0 | 11.9 | 12.3 | 12.5 | 13.2 | 13.8 | 13.3 | 14.3 | 14.6 |
| MN | Rochester | 15.5 | 15.3 | 15.1 | 13.5 | 13.0 | 13.0 | 14.0 | 14.6 | 14.8 | 13.8 | 15.7 | 16.5 |
| MN | Saint Cloud | 14.1 | 14.1 | 14.1 | 12.7 | 12.3 | 13.2 | 13.5 | 14.3 | 14.5 | 13.9 | 14.9 | 15.1 |
| MO | Columbia | 14.5 | 14.1 | 13.1 | 12.6 | 14.1 | 13.7 | 13.4 | 13.7 | 13.9 | 13.5 | 14.1 | 14.8 |
| MO | Kansas City | 13.7 | 13.7 | 13.0 | 12.7 | 13.6 | 13.5 | 13.3 | 13.6 | 13.8 | 12.7 | 13.6 | 14.1 |
| MO | St. Louis | 14.5 | 14.1 | 13.2 | 12.4 | 12.8 | 12.6 | 12.9 | 13.3 | 13.7 | 13.1 | 14.0 | 14.9 |
| MO | Springfield | 13.5 | 13.2 | 12.7 | 12.6 | 13.7 | 13.8 | 13.3 | 13.1 | 13.7 | 12.8 | 13.3 | 13.8 |
| MS | Jackson | 15.1 | 14.4 | 13.7 | 13.8 | 14.1 | 13.9 | 14.6 | 14.6 | 14.6 | 14.1 | 14.3 | 14.9 |
| MS | Meridian | 14.1 | 13.4 | 13.2 | 13.3 | 13.8 | 13.4 | 14.1 | 14.0 | 13.9 | 13.5 | 13.6 | 14.1 |
| MS | Tupelo | 14.2 | 13.6 | 12.8 | 12.9 | 13.7 | 13.5 | 13.6 | 13.9 | 14.0 | 13.6 | 13.8 | 14.3 |
| MT | Billings | 11.3 | 11.0 | 10.8 | 10.3 | 10.4 | 10.1 | 8.9 | 8.5 | 9.5 | 9.9 | 11.1 | 11.3 |
| MT | Glasgow | 14.5 | 14.4 | 13.2 | 11.0 | 10.6 | 10.7 | 9.9 | 9.3 | 10.2 | 11.3 | 13.9 | 15.1 |
| MT | Great Falls | 12.1 | 11.5 | 10.9 | 10.3 | 10.4 | 10.3 | 9.1 | 9.0 | 9.7 | 10.1 | 11.3 | 11.8 |
| MT | Havre | 12.8 | 12.8 | 9.8 | 9.0 | 7.8 | 7.9 | 6.5 | 6.4 | 7.7 | 8.8 | 11.3 | 13.4 |
| MT | Helena | 12.9 | 12.0 | 11.2 | 10.4 | 10.3 | 10.2 | 9.1 | 9.2 | 10.2 | 10.8 | 12.6 | 13.4 |
| MT | Kalispell | 16.0 | 14.8 | 12.8 | 11.4 | 11.5 | 12.1 | 11.1 | 10.7 | 11.8 | 13.3 | 15.8 | 17.1 |
| MT | Miles City | 13.5 | 13.3 | 11.0 | 9.7 | 8.8 | 8.4 | 6.8 | 6.6 | 8.3 | 9.3 | 12.2 | 13.8 |
| MT | Missoula | 16.7 | 15.1 | 12.8 | 11.4 | 11.6 | 11.7 | 10.1 | 9.8 | 11.3 | 12.9 | 16.2 | 17.6 |
| NC | Asheville | 14.1 | 13.3 | 13.2 | 12.6 | 14.4 | 15.0 | 15.6 | 15.9 | 16.1 | 14.7 | 14.0 | 14.0 |
| NC | Cape Hatteras | 14.4 | 14.1 | 13.7 | 12.9 | 13.8 | 14.2 | 14.9 | 14.9 | 14.4 | 14.1 | 14.0 | 14.2 |
| NC | Charlotte | 12.8 | 11.9 | 12.0 | 11.4 | 12.4 | 12.8 | 13.1 | 13.8 | 13.8 | 13.0 | 12.9 | 12.8 |
| NC | Greensboro | 12.9 | 12.1 | 12.1 | 11.5 | 12.9 | 13.1 | 13.8 | 14.3 | 14.3 | 13.5 | 12.8 | 12.8 |
| NC | Raleigh | 12.8 | 12.1 | 12.2 | 11.7 | 13.1 | 13.4 | 13.8 | 14.5 | 14.5 | 13.7 | 12.9 | 12.8 |
| NC | Wilmington | 13.0 | 12.4 | 12.7 | 12.0 | 13.2 | 13.4 | 14.2 | 14.8 | 14.6 | 13.7 | 13.2 | 13.1 |
| ND | Bismarck | 13.9 | 14.3 | 14.1 | 12.4 | 11.9 | 12.8 | 12.2 | 12.1 | 12.5 | 12.4 | 14.3 | 14.8 |
| ND | Fargo | 14.2 | 14.6 | 15.2 | 12.9 | 11.9 | 12.9 | 13.2 | 13.2 | 13.7 | 13.5 | 15.2 | 15.2 |
| ND | Williston | 14.9 | 15.0 | 14.5 | 12.4 | 11.7 | 12.1 | 11.5 | 11.3 | 12.2 | 12.6 | 14.9 | 15.2 |
| NE | Grand Island | 13.5 | 13.4 | 13.0 | 12.1 | 12.7 | 12.2 | 12.6 | 12.9 | 12.8 | 12.1 | 13.3 | 13.9 |
| NE | Lincoln | 13.9 | 14.2 | 13.5 | 12.7 | 13.2 | 12.8 | 12.7 | 13.5 | 13.3 | 12.7 | 13.8 | 14.5 |
| NE | Norfolk | 13.5 | 13.9 | 13.7 | 12.2 | 12.3 | 12.4 | 12.6 | 13.2 | 12.7 | 12.1 | 13.4 | 14.0 |
| NE | North Platte | 13.9 | 13.4 | 12.6 | 12.0 | 12.6 | 12.7 | 12.4 | 12.6 | 12.2 | 11.9 | 13.0 | 13.7 |
| NE | Omaha | 14.0 | 13.8 | 13.0 | 12.1 | 12.6 | 12.9 | 13.3 | 13.8 | 14.0 | 13.0 | 13.9 | 14.8 |
| NE | Scottsbluff | 12.6 | 11.7 | 11.2 | 10.9 | 11.3 | 10.9 | 10.7 | 10.9 | 10.6 | 10.9 | 12.3 | 12.8 |
| NE | Valentine | 13.4 | 13.3 | 13.1 | 11.8 | 11.9 | 11.6 | 11.5 | 11.5 | 11.2 | 11.3 | 12.3 | 12.8 |
| NH | Concord | 12.9 | 12.4 | 12.4 | 11.4 | 11.6 | 12.5 | 12.5 | 13.3 | 13.9 | 13.6 | 13.9 | 13.7 |
| NH | Mt. Washington | 17.3 | 17.0 | 17.9 | 18.3 | 17.5 | 19.1 | 20.3 | 20.1 | 18.5 | 17.1 | 18.0 | 17.8 |
| NJ | Atlantic City | 13.1 | 12.9 | 12.6 | 12.2 | 12.7 | 12.7 | 13.2 | 13.6 | 13.9 | 13.9 | 13.7 | 13.2 |
| NJ | Newark | 12.6 | 11.9 | 11.4 | 10.6 | 11.2 | 11.1 | 11.1 | 11.6 | 12.3 | 12.3 | 12.5 | 12.6 |

**Table 2—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in U.S. locations-con.**

| State | City | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug. | Sep | Oct | Nov | Dec |
| NM | Albuquerque | 10.4 | 9.3 | 8.0 | 6.9 | 6.8 | 6.4 | 8.0 | 8.9 | 8.7 | 8.6 | 9.6 | 10.7 |
| NM | Clayton | 10.5 | 10.1 | 9.7 | 9.1 | 9.9 | 9.7 | 10.6 | 10.8 | 10.4 | 9.8 | 10.5 | 10.8 |
| NM | Roswell | 10.7 | 9.6 | 8.0 | 7.4 | 8.1 | 8.3 | 9.1 | 9.9 | 10.5 | 9.7 | 10.0 | 10.2 |
| NV | Elko | 13.3 | 12.5 | 11.1 | 10.0 | 9.5 | 8.7 | 7.3 | 7.4 | 8.0 | 9.1 | 11.8 | 13.2 |
| NV | Ely | 12.2 | 11.8 | 10.9 | 9.7 | 9.3 | 8.0 | 7.2 | 7.7 | 8.0 | 9.2 | 10.9 | 11.9 |
| NV | Las Vegas | 8.5 | 7.7 | 7.0 | 5.5 | 5.0 | 4.0 | 4.5 | 5.2 | 5.3 | 5.9 | 7.2 | 8.4 |
| NV | Reno | 12.3 | 10.7 | 9.7 | 8.8 | 8.8 | 8.2 | 7.7 | 7.9 | 8.4 | 9.4 | 10.9 | 12.3 |
| NV | Winnemucca | 12.9 | 11.7 | 10.4 | 9.1 | 8.7 | 7.7 | 6.1 | 6.3 | 7.2 | 8.7 | 11.3 | 13.2 |
| NY | Albany | 13.5 | 12.8 | 12.4 | 11.4 | 12.0 | 12.4 | 12.6 | 13.6 | 14.3 | 13.8 | 13.9 | 14.2 |
| NY | Binghamton | 15.0 | 14.3 | 13.7 | 12.5 | 12.6 | 13.2 | 13.2 | 14.3 | 15.1 | 14.4 | 15.0 | 15.7 |
| NY | Buffalo | 15.0 | 14.9 | 14.2 | 12.6 | 12.2 | 12.4 | 12.3 | 13.2 | 13.7 | 13.7 | 14.6 | 15.2 |
| NY | Islip | 13.2 | 12.7 | 12.8 | 12.5 | 12.4 | 12.4 | 13.3 | 13.6 | 13.9 | 13.7 | 13.4 | 12.8 |
| NY | New York | 12.2 | 11.9 | 11.5 | 11.0 | 11.5 | 11.8 | 11.8 | 12.4 | 12.6 | 12.3 | 12.5 | 12.3 |
| NY | Rochester | 14.3 | 14.3 | 13.7 | 12.5 | 12.3 | 12.6 | 12.6 | 13.6 | 14.4 | 14.2 | 14.6 | 15.4 |
| NY | Syracuse | 14.2 | 13.9 | 13.4 | 12.2 | 12.3 | 12.6 | 12.7 | 13.8 | 14.6 | 14.1 | 14.6 | 15.1 |
| OH | Akron | 14.6 | 13.9 | 13.2 | 12.2 | 12.4 | 12.8 | 13.0 | 14.0 | 14.1 | 13.5 | 14.0 | 14.8 |
| OH | Cincinnati | 14.5 | 13.8 | 13.1 | 12.2 | 12.6 | 12.9 | 13.2 | 13.9 | 13.9 | 13.2 | 13.9 | 14.8 |
| | Cleveland | 14.6 | 14.2 | 13.7 | 12.6 | 12.7 | 12.7 | 12.8 | 13.7 | 13.8 | 13.3 | 13.8 | 14.6 |
| OH | Columbus | 14.2 | 13.7 | 12.6 | 12.0 | 12.6 | 12.6 | 13.0 | 13.7 | 13.8 | 13.1 | 13.9 | 14.6 |
| OH | Dayton | 14.5 | 14.1 | 13.4 | 12.4 | 12.3 | 12.3 | 12.6 | 13.4 | 13.7 | 13.2 | 14.4 | 15.2 |
| OH | Mansfield | 15.4 | 14.9 | 13.8 | 12.6 | 12.8 | 13.0 | 13.2 | 14.1 | 14.1 | 13.4 | 14.6 | 16.0 |
| OH | Toledo | 14.9 | 14.3 | 13.8 | 12.8 | 12.4 | 12.7 | 13.3 | 14.3 | 14.4 | 13.8 | 14.7 | 15.8 |
| OH | Youngstown | 15.3 | 14.8 | 13.9 | 12.6 | 12.5 | 12.8 | 13.2 | 13.7 | 14.3 | 13.8 | 14.6 | 15.7 |
| OK | Oklahoma City | 13.2 | 12.9 | 12.2 | 12.1 | 13.4 | 13.1 | 11.7 | 11.8 | 12.9 | 12.3 | 12.8 | 13.2 |
| OK | Tulsa | 13.3 | 12.7 | 12.1 | 12.1 | 13.7 | 13.5 | 12.2 | 12.5 | 13.8 | 12.8 | 13.1 | 13.5 |
| OR | Astoria | 17.2 | 16.6 | 16.3 | 16.2 | 16.3 | 16.4 | 16.0 | 16.4 | 16.4 | 16.9 | 17.6 | 17.8 |
| | Burns | 12.8 | 12.6 | 10.1 | 8.1 | 7.7 | 7.3 | 5.9 | 6.1 | 6.7 | 8.6 | 11.9 | 14.5 |
| OR | Eugene | 18.9 | 17.4 | 15.7 | 14.6 | 14.0 | 13.1 | 11.6 | 11.7 | 12.3 | 15.6 | 18.9 | 20.2 |
| OR | Medford | 16.7 | 14.1 | 13.0 | 12.1 | 11.3 | 10.3 | 9.4 | 9.4 | 10.0 | 12.1 | 16.5 | 17.8 |
| | Pendleton | 15.8 | 14.0 | 11.6 | 10.6 | 9.9 | 9.1 | 7.4 | 7.7 | 8.8 | 11.0 | 14.6 | 16.5 |
| OR | Portland | 16.5 | 15.3 | 14.2 | 13.5 | 13.1 | 12.4 | 11.7 | 11.9 | 12.6 | 15.0 | 16.8 | 17.4 |
| OR | Salem | 16.9 | 15.8 | 14.4 | 13.9 | 13.4 | 12.8 | 11.6 | 11.6 | 12.3 | 14.6 | 17.8 | 18.0 |
| PA | Allentown | 13.3 | 12.8 | 12.1 | 11.7 | 12.0 | 12.2 | 12.4 | 13.3 | 13.8 | 13.6 | 13.5 | 13.7 |
| PA | Avoca | 13.7 | 13.2 | 12.5 | 11.7 | 11.9 | 12.9 | 13.0 | 13.6 | 14.4 | 13.7 | 13.9 | 14.1 |
| PA | Erie | 14.8 | 14.6 | 13.8 | 13.0 | 13.1 | 13.4 | 13.6 | 13.8 | 14.0 | 13.4 | 13.7 | 14.5 |
| PA | Harrisburg | 12.4 | 11.9 | 11.7 | 11.2 | 11.7 | 11.9 | 12.1 | 12.8 | 13.3 | 13.1 | 12.8 | 12.5 |
| PA | Philadelphia | 12.6 | 11.9 | 11.7 | 11.2 | 11.8 | 11.9 | 12.1 | 12.4 | 13.0 | 13.0 | 12.7 | 12.7 |
| PA | Pittsburg | 13.8 | 13.2 | 12.7 | 11.5 | 11.9 | 12.1 | 12.6 | 13.2 | 13.6 | 12.9 | 13.5 | 14.1 |
| PA | Williamsport | 13.3 | 12.8 | 12.5 | 11.6 | 12.2 | 12.9 | 13.3 | 14.0 | 14.7 | 14.0 | 13.9 | 13.7 |
| PC | Guam | 16.3 | 16.2 | 15.8 | 15.6 | 16.3 | 16.4 | 17.9 | 18.6 | 18.9 | 18.4 | 17.5 | 16.5 |
| PC | Koror | 15.2 | 14.9 | 14.6 | 14.4 | 15.1 | 15.5 | 15.5 | 15.5 | 15.0 | 15.2 | 15.0 | 15.2 |
| PC | Marshall Islands | 15.0 | 14.6 | 15.0 | 15.9 | 16.0 | 16.0 | 15.9 | 15.7 | 15.5 | 15.5 | 15.7 | 15.5 |
| PC | Pago Pago | 16.4 | 16.4 | 16.6 | 16.8 | 16.6 | 15.9 | 15.6 | 15.4 | 15.2 | 15.7 | 15.7 | 15.7 |
| PC | East Caroline Is. | 15.3 | 15.0 | 15.2 | 15.8 | 16.4 | 16.6 | 17.0 | 16.8 | 16.6 | 16.8 | 16.6 | 16.0 |
| PC | Wake Island | 13.3 | 13.3 | 13.8 | 14.0 | 14.1 | 14.1 | 14.2 | 14.7 | 14.7 | 14.5 | 14.1 | 13.5 |
| PC | West Caroline Is. | 14.7 | 14.3 | 13.9 | 13.8 | 14.4 | 15.0 | 15.2 | 15.5 | 15.4 | 15.4 | 15.2 | 15.0 |
| PR | San Juan | 13.7 | 13.2 | 12.6 | 12.5 | 13.2 | 13.3 | 13.5 | 13.4 | 13.5 | 13.6 | 13.9 | 13.8 |
| RI | Providence | 12.0 | 11.7 | 11.7 | 11.1 | 11.8 | 12.1 | 12.2 | 12.6 | 13.0 | 12.7 | 12.8 | 12.5 |
| SC | Charleston | 13.3 | 12.6 | 12.5 | 12.4 | 12.8 | 13.5 | 14.1 | 14.6 | 14.5 | 13.7 | 13.2 | 13.2 |
| SC | Columbia | 13.0 | 12.3 | 12.3 | 11.8 | 12.4 | 12.7 | 13.2 | 14.0 | 14.0 | 13.5 | 13.4 | 13.1 |
| SC | Greenville | 12.6 | 11.9 | 11.9 | 11.6 | 12.7 | 13.0 | 13.4 | 14.1 | 14.2 | 13.6 | 12.7 | 12.7 |

**Table 2—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in U.S. locations-con.**

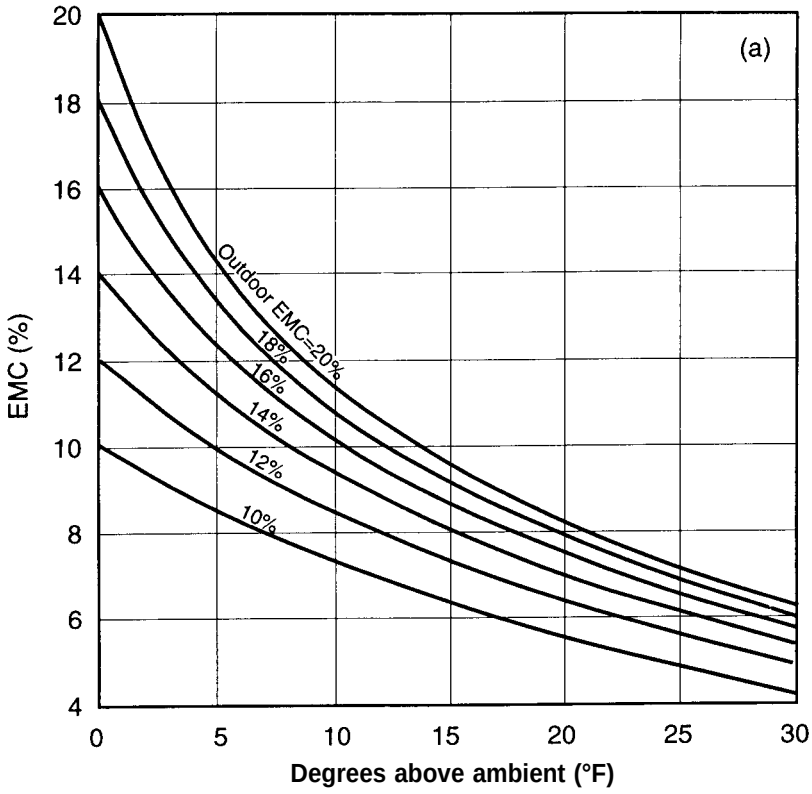
| State | City | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| SD | Aberdeen | 14.6 | 14.8 | 15.1 | 13.0 | 12.5 | 13.4 | 12.9 | 13.0 | 13.0 | 13.0 | 15.1 | 15.4 |
| SD | Huron | 13.9 | 14.6 | 14.6 | 13.2 | 13.1 | 13.4 | 13.0 | 13.3 | 13.4 | 13.0 | 14.3 | 14.6 |
| SD | Rapid City | 12.6 | 12.7 | 12.1 | 11.2 | 11.5 | 11.5 | 10.5 | 9.9 | 9.9 | 10.4 | 12.1 | 12.8 |
| SD | Sioux Falls | 14.2 | 14.6 | 14.2 | 12.9 | 12.6 | 12.8 | 12.6 | 13.3 | 13.6 | 13.0 | 14.6 | 15.3 |
| TN | Bristol-Johnson City | 13.9 | 13.2 | 12.4 | 12.2 | 13.6 | 14.0 | 14.6 | 14.8 | 14.6 | 13.6 | 13.5 | 14.0 |
| TN | Chattanooga | 14.0 | 13.3 | 12.7 | 12.3 | 13.0 | 13.2 | 13.6 | 13.9 | 13.9 | 13.6 | 13.5 | 14.2 |
| TN | Knoxville | 14.2 | 13.4 | 12.8 | 12.4 | 13.7 | 14.0 | 14.4 | 14.7 | 14.7 | 14.1 | 14.0 | 14.4 |
| TN | Memphis | 13.8 | 13.1 | 12.4 | 12.2 | 12.7 | 12.8 | 13.0 | 13.1 | 13.2 | 12.5 | 12.9 | 13.6 |
| TN | Nashville | 13.9 | 13.4 | 12.4 | 12.4 | 13.4 | 13.2 | 13.6 | 13.8 | 14.1 | 13.4 | 13.5 | 13.9 |
| TX | Abilene | 12.0 | 12.0 | 11.1 | 10.9 | 12.1 | 11.5 | 10.5 | 10.8 | 11.9 | 11.6 | 11.9 | 11.9 |
| TX | Amarillo | 11.6 | 11.6 | 10.4 | 10.0 | 11.0 | 11.2 | 10.4 | 11.3 | 11.9 | 10.8 | 11.3 | 11.3 |
| TX | Austin | 13.3 | 13.1 | 12.8 | 13.1 | 14.1 | 13.6 | 12.6 | 12.4 | 13.0 | 12.9 | 13.3 | 13.4 |
| TX | Brownsville | 15.7 | 14.9 | 14.0 | 14.0 | 14.3 | 14.1 | 13.5 | 13.6 | 14.3 | 14.0 | 14.1 | 15.2 |
| TX | Corpus Christi | 15.5 | 15.1 | 14.2 | 14.8 | 15.4 | 15.0 | 14.0 | 14.0 | 14.3 | 14.0 | 14.2 | 14.8 |
| TX | Dallas–Ft. Worth | 13.6 | 13.1 | 12.9 | 13.2 | 13.9 | 13.0 | 11.6 | 11.7 | 12.9 | 12.8 | 13.1 | 13.5 |
| TX | Del Rio | 12.4 | 11.8 | 11.1 | 11.8 | 12.9 | 12.4 | 11.7 | 12.1 | 13.0 | 12.9 | 12.9 | 12.2 |
| TX | El Paso | 9.6 | 8.2 | 7.0 | 5.8 | 6.1 | 6.3 | 8.3 | 9.1 | 9.3 | 8.8 | 9.0 | 9.8 |
| TX | Houston | 14.8 | 14.4 | 14.2 | 14.0 | 14.6 | 14.4 | 14.1 | 14.2 | 14.5 | 14.0 | 14.4 | 14.7 |
| TX | Lubbock | 11.6 | 11.5 | 10.2 | 10.0 | 11.0 | 11.0 | 11.0 | 11.5 | 12.3 | 11.6 | 11.5 | 11.3 |
| TX | Midland–Odessa | 11.4 | 11.1 | 9.6 | 9.5 | 10.5 | 10.8 | 10.3 | 10.8 | 12.1 | 11.4 | 11.1 | 11.0 |
| TX | Port Arthur | 15.7 | 14.9 | 14.6 | 14.9 | 15.2 | 15.2 | 15.6 | 15.5 | 15.1 | 14.3 | 14.7 | 15.6 |
| TX | San Angelo | 12.3 | 11.9 | 10.8 | 10.8 | 12.0 | 12.0 | 10.9 | 11.1 | 12.7 | 12.6 | 12.3 | 12.4 |
| TX | San Antonio | 13.3 | 13.0 | 12.5 | 13.0 | 13.9 | 13.3 | 12.5 | 12.4 | 12.9 | 12.7 | 12.8 | 13.0 |
| TX | Victoria | 15.0 | 14.4 | 13.9 | 14.1 | 14.5 | 14.4 | 13.8 | 13.8 | 14.3 | 13.8 | 14.1 | 14.8 |
| TX | Waco | 14.4 | 13.9 | 13.4 | 13.5 | 14.2 | 12.9 | 11.6 | 11.7 | 12.9 | 13.1 | 13.7 | 14.1 |
| TX | Wichita Falls | 13.1 | 12.9 | 12.1 | 12.0 | 12.9 | 12.4 | 10.8 | 11.2 | 12.8 | 12.5 | 12.9 | 13.1 |
| UT | Milford | 11.9 | 10.9 | 8.1 | 6.5 | 5.5 | 4.5 | 4.8 | 5.2 | 5.2 | 6.4 | 9.3 | 11.8 |
| UT | Salt Lake City | 14.6 | 13.2 | 11.1 | 10.0 | 9.4 | 8.2 | 7.1 | 7.4 | 8.5 | 10.3 | 12.8 | 14.9 |
| UT | Wendover | 11.4 | 9.9 | 7.6 | 6.5 | 5.6 | 5.4 | 4.1 | 4.7 | 5.2 | 7.2 | 10.2 | 11.9 |
| VT | Burlington | 13.0 | 12.9 | 12.7 | 11.9 | 11.7 | 12.2 | 12.2 | 13.1 | 14.2 | 13.7 | 14.1 | 13.9 |
| VA | Lynchburg | 11.8 | 11.5 | 11.4 | 10.9 | 12.5 | 12.8 | 13.3 | 13.9 | 13.8 | 13.0 | 12.2 | 12.2 |
| VA | Norfolk | 12.7 | 12.3 | 12.1 | 11.5 | 12.2 | 12.4 | 12.9 | 13.6 | 13.4 | 13.4 | 12.8 | 12.7 |
| VA | Richmond | 13.2 | 12.5 | 12.0 | 11.3 | 12.1 | 12.4 | 13.0 | 13.7 | 13.8 | 13.5 | 12.8 | 13.0 |
| VA | Roanoke | 11.6 | 11.2 | 11.1 | 11.0 | 12.4 | 12.6 | 12.8 | 13.4 | 13.9 | 12.9 | 12.1 | 11.9 |
| VA | Wallops Island | 13.4 | 13.0 | 13.2 | 12.7 | 13.6 | 13.7 | 14.1 | 14.6 | 14.1 | 13.8 | 13.6 | 13.4 |
| WA | Olympia | 18.9 | 17.0 | 15.3 | 14.5 | 14.0 | 13.9 | 13.3 | 13.3 | 14.2 | 16.6 | 19.1 | 19.9 |
| WA | Quillayute | 19.6 | 18.0 | 17.2 | 16.6 | 16.2 | 16.5 | 16.1 | 16.6 | 16.4 | 18.1 | 20.1 | 20.4 |
| WA | Seattle–Tacoma | 15.6 | 14.6 | 15.4 | 13.7 | 13.0 | 12.7 | 12.2 | 12.5 | 13.5 | 15.3 | 16.3 | 16.5 |
| WA | Spokane | 17.5 | 15.5 | 12.9 | 11.4 | 10.9 | 10.3 | 8.7 | 8.6 | 9.8 | 12.1 | 17.1 | 18.7 |
| WA | Yakima | 15.5 | 13.7 | 11.1 | 9.9 | 9.5 | 9.4 | 8.8 | 9.2 | 10.1 | 11.6 | 14.5 | 16.5 |
| WI | Green Bay | 14.5 | 14.4 | 14.3 | 13.1 | 12.5 | 13.0 | 13.6 | 14.6 | 14.8 | 14.4 | 15.2 | 15.5 |
| WI | La Crosse | 14.1 | 14.0 | 13.8 | 12.4 | 12.2 | 13.0 | 13.5 | 14.5 | 14.7 | 13.7 | 14.6 | 15.2 |
| WI | Madison | 14.5 | 14.3 | 14.1 | 12.8 | 12.5 | 12.8 | 13.4 | 14.4 | 14.9 | 14.1 | 15.2 | 15.7 |
| WI | Milwaukee | 14.0 | 13.9 | 13.9 | 13.4 | 12.9 | 13.1 | 13.4 | 14.3 | 14.4 | 13.8 | 14.5 | 15.0 |
| WV | Beckley | 14.5 | 13.9 | 12.9 | 11.7 | 12.8 | 13.8 | 14.6 | 14.9 | 15.2 | 13.8 | 13.4 | 14.2 |
| WV | Charleston | 13.7 | 13.0 | 12.1 | 11.4 | 12.5 | 13.3 | 14.1 | 14.3 | 14.0 | 13.6 | 13.0 | 13.5 |
| WV | Elkins | 14.2 | 13.7 | 13.3 | 12.8 | 13.4 | 14.4 | 15.2 | 15.7 | 15.5 | 13.9 | 13.9 | 14.6 |
| WV | Huntington | 13.9 | 13.3 | 12.3 | 11.7 | 13.1 | 13.7 | 14.1 | 14.5 | 14.7 | 13.5 | 13.3 | 13.9 |
| WV | Parkersburg | 14.6 | 14.1 | 12.9 | 11.5 | 11.6 | 12.3 | 12.1 | 13.0 | 12.6 | 12.8 | 13.2 | 14.2 |
| WY | Casper | 12.3 | 12.0 | 11.3 | 11.0 | 11.0 | 10.1 | 9.0 | 8.6 | 9.2 | 10.3 | 11.9 | 12.3 |
| WY | Cheyenne | 10.2 | 10.4 | 10.7 | 10.4 | 10.8 | 10.5 | 9.9 | 9.9 | 9.7 | 9.7 | 10.6 | 10.6 |
| WY | Lander | 12.1 | 11.5 | 10.7 | 10.0 | 9.9 | 8.9 | 7.8 | 7.7 | 8.7 | 9.8 | 11.9 | 12.3 |
| WY | Sheridan | 12.8 | 12.4 | 11.7 | 11.1 | 11.5 | 11.4 | 9.9 | 9.2 | 10.1 | 10.9 | 12.9 | 13.0 |

**Table 3—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in locations outside U.S.**

| Country | City | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Argentina | Buenos Aires | 11.4 | 12.4 | 13.2 | 14.1 | 14.4 | 14.7 | 15.6 | 14.0 | 12.7 | 13.1 | 12.3 | 11.9 |
| Australia | Hobart, TS | 10.8 | 11.5 | 11.9 | 12.7 | 14.3 | 14.6 | 14.6 | 13.5 | 13.2 | 11.8 | 11.4 | 11.0 |
| Australia | Melbourne | 11.8 | 11.4 | 10.7 | 12.2 | 14.0 | 15.6 | 15.1 | 13.9 | 13.3 | 12.1 | 11.7 | 10.9 |
| Australia | Perth | 9.0 | 8.8 | 9.5 | 11.1 | 13.1 | 14.4 | 15.3 | 14.0 | 13.0 | 12.0 | 10.7 | 9.8 |
| Australia | Sydney | 12.6 | 12.9 | 13.2 | 13.2 | 12.8 | 13.0 | 12.3 | 11.8 | 11.4 | 11.8 | 11.6 | 11.8 |
| Austria | Vienna | 16.1 | 14.2 | 12.6 | 11.2 | 11.9 | 11.8 | 10.7 | 11.1 | 12.5 | 14.3 | 15.3 | 15.2 |
| Bahamas | Nassau | 15.0 | 13.9 | 13.6 | 12.7 | 13.9 | 14.3 | 13.9 | 14.7 | 14.7 | 15.1 | 14.3 | 14.6 |
| Belgium | Antwerp | 19.2 | 15.8 | 16.0 | 13.8 | 14.4 | 14.1 | 15.0 | 14.2 | 15.8 | 18.0 | 18.6 | 18.5 |
| Belgium | Brussels | 18.4 | 16.4 | 15.5 | 13.8 | 13.7 | 14.9 | 13.8 | 14.2 | 15.3 | 16.2 | 17.8 | 18.5 |
| Bermuda | Hamilton | 12.6 | 13.1 | 12.8 | 12.6 | 14.2 | 14.7 | 13.9 | 13.3 | 13.3 | 13.3 | 12.6 | 12.9 |
| Boliva | La Paz | 14.2 | 13.8 | 13.5 | 11.4 | 9.3 | 8.5 | 8.3 | 8.9 | 10.0 | 10.3 | 10.5 | 12.2 |
| Bosnia | Tuzla | 15.6 | 15.2 | 11.9 | 12.0 | 12.5 | 12.9 | 12.3 | 12.9 | 13.8 | 15.2 | 15.9 | 16.9 |
| Brazil | Brasilia | 13.6 | 13.2 | 13.9 | 13.2 | 12.6 | 11.6 | 10.5 | 9.5 | 9.7 | 11.6 | 13.6 | 14.6 |
| Brazil | Rio De Janeiro | 12.4 | 11.9 | 12.7 | 13.3 | 13.9 | 13.2 | 12.9 | 12.4 | 12.9 | 12.7 | 12.2 | 13.0 |
| Brazil | Sao Paulo | 15.5 | 14.3 | 13.9 | 15.0 | 15.9 | 14.5 | 12.5 | 13.8 | 14.6 | 14.6 | 15.5 | 14.2 |
| Canada | Calgary, AB | 10.8 | 11.0 | 10.8 | 9.5 | 9.6 | 10.0 | 10.4 | 10.6 | 10.4 | 9.9 | 10.7 | 11.2 |
| Canada | Churchill, MN | 11.3 | 11.1 | 12.6 | 14.8 | 16.1 | 15.0 | 14.0 | 14.8 | 15.9 | 16.7 | 15.6 | 11.8 |
| Canada | Edmonton, AB | 13.1 | 13.3 | 12.7 | 10.7 | 10.2 | 11.9 | 13.4 | 13.7 | 12.9 | 12.0 | 14.2 | 14.6 |
| Canada | Halifax, NS | 14.6 | 15.7 | 13.6 | 13.6 | 14.3 | 14.1 | 13.8 | 14.6 | 14.9 | 16.1 | 17.0 | 16.6 |
| Canada | Montreal, ON | 13.8 | 13.1 | 12.1 | 11.5 | 11.4 | 12.3 | 12.6 | 13.5 | 14.5 | 13.8 | 14.7 | 15.1 |
| Canada | Mould Bay, NT | 15.6 | 19.0 | 14.7 | 14.1 | 18.0 | 17.5 | 17.0 | 19.1 | 20.5 | 18.3 | 12.5 | 14.4 |
| Canada | Quebec, QB | 12.7 | 12.8 | 12.6 | 11.7 | 11.1 | 12.0 | 13.2 | 13.8 | 14.0 | 13.4 | 14.6 | 13.9 |
| Canada | St. John, NB | 13.5 | 13.2 | 12.8 | 12.9 | 13.2 | 14.1 | 14.9 | 14.9 | 15.3 | 15.5 | 15.7 | 14.7 |
| Canada | St. John's, NF | 17.1 | 15.8 | 16.6 | 15.7 | 15.4 | 16.2 | 15.8 | 16.3 | 16.8 | 16.6 | 16.3 | 17.3 |
| Canada | Toronto, ON | 15.7 | 15.2 | 14.1 | 12.4 | 12.4 | 12.3 | 12.3 | 13.5 | 14.5 | 14.6 | 16.4 | 17.2 |
| Canada | Vancouver, BC | 17.6 | 16.5 | 16.0 | 14.7 | 14.0 | 14.1 | 13.8 | 14.5 | 15.8 | 18.0 | 17.8 | 19.2 |
| Canada | Winnipeg, MN | 16.6 | 14.4 | 15.1 | 11.2 | 10.1 | 12.0 | 12.9 | 12.8 | 12.4 | 13.0 | 15.2 | 14.9 |
| Canada | Yellowknife, NT | 11.7 | 11.3 | 11.0 | 11.0 | 9.9 | 9.7 | 10.4 | 12.1 | 13.8 | 16.0 | 14.3 | 12.5 |
| Chile | Santiago | 9.8 | 10.2 | 11.3 | 12.2 | 14.8 | 16.1 | 16.1 | 15.2 | 14.0 | 12.4 | 11.3 | 10.5 |
| China | Beijing | 7.0 | 6.9 | 7.4 | 7.7 | 9.2 | 10.2 | 13.3 | 13.9 | 11.4 | 9.9 | 9.1 | 7.7 |
| China | Hong Kong | 12.2 | 13.8 | 15.4 | 15.5 | 15.5 | 15.1 | 13.9 | 13.9 | 13.3 | 11.7 | 11.4 | 11.1 |
| China | Shanghai | 13.6 | 13.7 | 14.6 | 14.1 | 14.2 | 15.5 | 16.0 | 15.5 | 15.1 | 14.2 | 13.3 | 12.7 |
| Colombia | Barranquilla | 14.3 | 13.9 | 13.3 | 13.9 | 15.1 | 15.1 | 14.7 | 15.5 | 16.0 | 16.5 | 15.5 | 14.3 |
| Colombia | Bogota | 15.7 | 15.8 | 15.3 | 16.3 | 16.8 | 16.3 | 14.8 | 15.3 | 15.8 | 16.3 | 17.4 | 15.8 |
| Czech Republic | Prague | 19.8 | 17.4 | 14.0 | 12.1 | 12.7 | 13.1 | 12.5 | 13.1 | 14.0 | 16.6 | 19.2 | 19.9 |
| Denmark | Copenhagen | 19.1 | 18.2 | 16.3 | 13.7 | 12.6 | 13.1 | 13.1 | 13.4 | 14.8 | 16.7 | 19.3 | 19.1 |
| Egypt | Alexandria | 12.4 | 12.2 | 12.2 | 11.3 | 11.6 | 12.1 | 13.0 | 12.7 | 12.2 | 12.4 | 11.8 | 12.8 |
| England | Birmingham | 19.2 | 18.4 | 15.4 | 14.6 | 13.9 | 14.4 | 13.8 | 14.1 | 15.8 | 16.7 | 17.8 | 19.3 |
| England | Leeds | 16.5 | 15.9 | 14.1 | 13.1 | 12.4 | 13.0 | 12.5 | 13.1 | 13.7 | 16.7 | 16.0 | 16.5 |
| England | Liverpool | 18.5 | 17.1 | 15.5 | 14.6 | 14.0 | 14.1 | 14.1 | 14.9 | 16.3 | 17.3 | 17.9 | 18.5 |
| England | London | 19.3 | 16.5 | 15.5 | 13.5 | 13.3 | 13.1 | 13.1 | 13.1 | 14.5 | 17.4 | 17.9 | 19.4 |
| England | Newcastle | 17.6 | 17.0 | 15.4 | 14.1 | 13.9 | 14.8 | 14.9 | 14.1 | 15.2 | 16.1 | 17.1 | 19.3 |
| England | Plymouth | 17.8 | 17.1 | 16.6 | 15.6 | 15.2 | 15.3 | 15.8 | 15.8 | 17.5 | 16.8 | 18.7 | 18.6 |
| Equador | Quito | 13.0 | 13.0 | 13.7 | 13.4 | 13.4 | 11.4 | 10.5 | 10.2 | 11.2 | 12.4 | 13.0 | 13.0 |
| Ethiopia | Addis Ababa | 9.5 | 10.1 | 9.9 | 10.7 | 9.9 | 12.2 | 15.4 | 15.4 | 14.1 | 10.4 | 9.5 | 9.5 |
| Finland | Helsinki | 19.5 | 19.5 | 16.0 | 13.2 | 11.7 | 12.2 | 13.4 | 15.8 | 16.7 | 18.5 | 19.9 | 19.7 |
| France | Bordeaux | 17.8 | 16.0 | 14.7 | 13.6 | 14.1 | 13.8 | 13.2 | 13.2 | 14.6 | 17.4 | 18.0 | 18.6 |
| France | Brest | 19.4 | 16.5 | 17.2 | 16.1 | 16.2 | 16.9 | 16.9 | 16.9 | 18.1 | 18.1 | 18.0 | 17.2 |
| France | Marseille | 14.1 | 13.1 | 12.3 | 11.4 | 11.5 | 10.9 | 10.1 | 10.8 | 11.8 | 13.1 | 13.6 | 14.6 |
| France | Nice | 11.0 | 11.7 | 12.3 | 13.7 | 14.1 | 13.9 | 13.9 | 13.2 | 13.9 | 13.1 | 12.1 | 11.5 |
| France | Paris | 17.7 | 15.3 | 14.6 | 12.6 | 13.3 | 13.1 | 12.3 | 12.0 | 14.1 | 16.8 | 18.6 | 17.7 |
| Germany | Berlin | 19.0 | 16.8 | 14.9 | 12.4 | 11.8 | 12.8 | 12.3 | 12.5 | 14.5 | 16.1 | 18.5 | 20.0 |
| Ghana | Accra | 12.7 | 13.6 | 14.3 | 14.7 | 15.5 | 17.0 | 16.5 | 16.5 | 16.0 | 15.5 | 14.7 | 14.3 |
| Grand Cayman | George Town | 15.5 | 15.1 | 14.3 | 13.6 | 14.7 | 14.3 | 14.7 | 14.7 | 15.5 | 15.5 | 15.5 | 15.5 |
| Greece | Athens | 12.6 | 12.6 | 12.1 | 11.9 | 11.1 | 10.1 | 8.4 | 8.6 | 9.4 | 11.3 | 12.7 | 13.3 |
| India | Bombay | 10.1 | 9.6 | 10.6 | 12.4 | 12.7 | 15.1 | 17.6 | 17.6 | 16.0 | 12.7 | 10.5 | 9.9 |
| India | Calcutta | 12.1 | 11.2 | 10.8 | 12.2 | 13.6 | 16.0 | 17.0 | 17.6 | 17.0 | 14.7 | 13.0 | 12.6 |
| India | Madras | 13.9 | 13.3 | 12.7 | 12.7 | 10.7 | 10.0 | 11.5 | 11.9 | 12.7 | 14.3 | 14.7 | 14.7 |
| India | New Delhi | 11.0 | 9.9 | 8.4 | 6.6 | 6.3 | 8.0 | 12.2 | 13.6 | 11.3 | 9.2 | 9.7 | 10.6 |
| Indonesia | Jakarta | 17.6 | 16.5 | 16.0 | 14.7 | 14.7 | 14.3 | 13.9 | 13.9 | 13.3 | 13.0 | 13.9 | 15.1 |
| Iraq | Baghdad | 12.8 | 11.1 | 9.0 | 7.2 | 5.4 | 4.3 | 4.1 | 4.7 | 5.1 | 6.6 | 9.0 | 12.9 |

**Table 3—Equilibrium moisture content (EMC) of wood, exposed to outdoor atmosphere, in locations outside U.S.—con.**

| | | EMC (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | City | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Ireland | Dublin | 17.8 | 15.9 | 16.0 | 15.5 | 15.2 | 15.3 | 15.4 | 16.3 | 15.8 | 16.7 | 16.6 | 18.5 |
| Is. of St. Martin | St. Martin | 13.3 | 13.3 | 13.9 | 14.3 | 13.9 | 13.3 | 13.3 | 13.9 | 13.9 | 14.3 | 14.3 | 14.3 |
| Israel | Jerusalem | 13.8 | 13.1 | 11.8 | 9.8 | 9.1 | 9.5 | 10.2 | 11.2 | 10.6 | 10.7 | 11.2 | 13.5 |
| Israel | Tel Aviv | 13.0 | 13.0 | 11.9 | 10.5 | 11.2 | 11.7 | 12.7 | 12.4 | 12.1 | 11.6 | 11.1 | 13.0 |
| Italy | Genoa | 11.2 | 11.2 | 11.8 | 12.4 | 13.1 | 13.2 | 12.7 | 12.4 | 12.4 | 12.5 | 11.6 | 11.2 |
| Italy | Milan | 15.2 | 14.8 | 13.4 | 12.9 | 14.1 | 13.8 | 13.5 | 13.9 | 15.0 | 16.2 | 15.4 | 15.2 |
| Italy | Naples | 15.1 | 14.2 | 13.6 | 13.7 | 13.5 | 13.5 | 13.0 | 13.0 | 14.2 | 15.4 | 15.7 | 15.1 |
| Italy | Palermo | 14.4 | 13.7 | 14.0 | 14.1 | 14.2 | 13.6 | 13.6 | 13.6 | 13.3 | 13.2 | 13.8 | 14.1 |
| Italy | Piss | 14.1 | 13.1 | 13.2 | 13.6 | 14.1 | 13.2 | 12.9 | 12.9 | 13.5 | 14.1 | 14.3 | 14.6 |
| Italy | Rome | 15.1 | 15.1 | 15.2 | 15.3 | 14.9 | 15.5 | 15.1 | 14.7 | 15.0 | 15.0 | 16.2 | 14.7 |
| Italy | Venice | 17.0 | 14.9 | 15.1 | 14.0 | 13.4 | 14.2 | 13.2 | 13.6 | 15.0 | 15.3 | 16.6 | 15.8 |
| Jamaica | Kingston | 12.7 | 12.4 | 12.4 | 12.4 | 12.7 | 12.4 | 12.4 | 12.4 | 13.3 | 13.6 | 13.3 | 12.7 |
| Japan | Kobe | 10.8 | 11.0 | 10.9 | 11.0 | 11.8 | 13.6 | 14.3 | 12.7 | 13.3 | 12.0 | 12.4 | 11.4 |
| Japan | Nagasaki | 12.1 | 12.1 | 12.3 | 12.8 | 13.2 | 15.0 | 15.5 | 13.9 | 13.9 | 12.1 | 12.4 | 12.5 |
| Japan | Tokyo | 9.5 | 9.6 | 10.9 | 12.4 | 12.6 | 15.5 | 16.0 | 14.3 | 14.6 | 13.5 | 11.8 | 10.5 |
| Kenya | Nairobi | 11.3 | 10.3 | 10.7 | 13.5 | 14.2 | 13.5 | 13.4 | 12.5 | 11.3 | 11.1 | 12.9 | 13.2 |
| Korea | Seoul | 10.9 | 10.9 | 10.5 | 10.1 | 10.9 | 12.4 | 15.1 | 13.9 | 12.6 | 11.7 | 11.3 | 11.4 |
| Luxembourg | Luxembourg | 21.0 | 15.7 | 14.9 | 11.9 | 11.8 | 13.1 | 12.0 | 12.5 | 14.4 | 16.7 | 17.7 | 20.0 |
| Madagascar | Antananarivo | 13.9 | 14.2 | 13.9 | 13.9 | 13.5 | 13.4 | 13.7 | 13.1 | 11.3 | 11.3 | 12.3 | 13.9 |
| Mexico | Acapulco | 14.3 | 13.6 | 14.3 | 14.7 | 14.3 | 14.7 | 14.7 | 14.7 | 15.1 | 14.7 | 14.7 | 14.3 |
| Mexico | Cancun | 16.5 | 15.5 | 14.3 | 14.7 | 13.6 | 15.1 | 14.7 | 15.1 | 15.1 | 15.1 | 15.5 | 16.0 |
| Mexico | Mazatlan | 12.9 | 12.6 | 12.6 | 12.4 | 12.7 | 13.0 | 14.3 | 14.7 | 15.5 | 14.7 | 13.3 | 13.2 |
| Mexico | Puerto Vallarta | 14.6 | 14.6 | 14.6 | 15.1 | 14.3 | 14.7 | 15.1 | 14.7 | 15.5 | 15.1 | 15.1 | 15.5 |
| Morocco | Casablanca | 16.8 | 16.8 | 16.9 | 16.9 | 15.9 | 15.9 | 16.0 | 16.5 | 17.0 | 16.4 | 16.4 | 17.5 |
| Netherland Antilles | Aruba | 13.6 | 13.6 | 13.6 | 13.6 | 13.6 | 13.6 | 14.3 | 13.6 | 14.3 | 14.3 | 14.7 | 14.7 |
| Netherland Antilles | Curacao | 14.7 | 14.3 | 13.6 | 14.3 | 14.3 | 13.9 | 13.9 | 13.6 | 14.3 | 15.1 | 14.7 | 14.7 |
| Netherlands | Amsterdam | 21.1 | 18.4 | 17.8 | 15.5 | 14.8 | 15.3 | 16.4 | 15.9 | 18.1 | 18.0 | 21.3 | 20.2 |
| Niger | Niamey | 4.3 | 3.6 | 3.6 | 4.6 | 7.2 | 9.2 | 11.7 | 13.0 | 11.7 | 7.6 | 5.3 | 4.9 |
| Nigeria | Lagos | 14.3 | 13.3 | 13.9 | 15.1 | 16.0 | 17.6 | 18.2 | 17.0 | 19.7 | 18.2 | 15.5 | 13.9 |
| Norway | Bergen | 16.9 | 15.1 | 13.9 | 13.3 | 12.8 | 13.6 | 14.8 | 15.3 | 15.2 | 15.1 | 15.8 | 16.9 |
| Norway | Oslo | 17.2 | 17.2 | 14.6 | 11.2 | 10.6 | 11.0 | 11.5 | 12.0 | 13.3 | 15.5 | 16.9 | 18.0 |
| Peru | Lima | 15.1 | 15.1 | 15.1 | 15.5 | 17.0 | 16.4 | 15.9 | 16.4 | 16.4 | 15.4 | 15.0 | 14.6 |
| Philippines | Manila | 14.3 | 13.3 | 12.4 | 11.9 | 12.7 | 14.3 | 15.5 | 16.5 | 16.0 | 15.5 | 15.1 | 14.7 |
| Portugal | Lisbon | 15.2 | 14.4 | 13.3 | 13.0 | 12.5 | 12.1 | 11.0 | 10.6 | 11.6 | 13.5 | 15.3 | 16.2 |
| Russia | Moscow | 17.5 | 16.2 | 14.4 | 12.3 | 12.1 | 13.1 | 13.8 | 15.4 | 16.2 | 17.0 | 18.0 | 18.5 |
| Scotland | Aberdeen | 18.4 | 17.0 | 16.5 | 15.5 | 15.6 | 15.7 | 15.8 | 16.3 | 16.8 | 17.9 | 17.1 | 17.7 |
| Scotland | Edinburgh | 18.4 | 15.8 | 15.4 | 14.6 | 14.3 | 14.4 | 14.9 | 15.3 | 16.8 | 17.3 | 17.8 | 19.3 |
| Scotland | Glascow | 19.2 | 17.0 | 16.5 | 14.2 | 13.6 | 14.8 | 14.5 | 15.3 | 16.8 | 18.7 | 17.8 | 19.3 |
| Scotland | Kirkwall | 18.4 | 19.2 | 17.7 | 17.8 | 17.3 | 18.7 | 19.6 | 19.6 | 18.7 | 19.5 | 19.4 | 19.3 |
| Singapore | Singapore | 16.5 | 16.0 | 15.1 | 16.5 | 16.0 | 16.5 | 16.5 | 16.5 | 17.0 | 17.0 | 18.2 | 17.0 |
| Somalia | Mogadishu | 13.3 | 13.9 | 12.7 | 13.0 | 13.6 | 14.7 | 14.7 | 15.1 | 14.3 | 14.3 | 13.9 | 13.9 |
| South Africa | Cape Town | 12.1 | 12.4 | 13.2 | 13.8 | 14.9 | 14.4 | 15.7 | 14.8 | 13.7 | 12.8 | 12.6 | 12.6 |
| South Africa | Pretoria | 10.2 | 10.6 | 10.6 | 10.1 | 9.3 | 9.2 | 8.7 | 8.1 | 7.8 | 9.0 | 9.8 | 10.4 |
| Spain | Barcelona | 13.8 | 13.5 | 13.6 | 14.0 | 14.9 | 15.0 | 14.3 | 14.3 | 14.6 | 14.5 | 14.4 | 13.2 |
| Spain | Bilbao | 13.2 | 12.3 | 12.3 | 13.0 | 13.1 | 13.5 | 13.5 | 14.2 | 12.6 | 12.5 | 13.0 | 12.9 |
| Spain | Madrid | 14.5 | 13.0 | 11.7 | 11.5 | 10.8 | 9.7 | 8.2 | 8.2 | 9.8 | 12.2 | 13.9 | 14.5 |
| Spain | Seville | 13.9 | 13.3 | 11.6 | 11.7 | 10.3 | 9.6 | 8.8 | 8.6 | 9.4 | 11.1 | 13.1 | 14.4 |
| St. Lucia Island | St. Lucia | 13.9 | 13.3 | 12.7 | 13.3 | 13.3 | 13.9 | 14.3 | 14.7 | 14.7 | 14.3 | 15.1 | 13.9 |
| Sudan | Khartoum | 5.0 | 4.0 | 3.2 | 3.2 | 3.7 | 4.8 | 6.8 | 7.7 | 6.9 | 5.1 | 5.2 | 5.6 |
| Sweden | Stockholm | 18.8 | 18.8 | 16.1 | 13.2 | 11.5 | 11.9 | 12.5 | 13.4 | 15.7 | 18.5 | 20.0 | 23.3 |
| Switzerland | Bern | 17.4 | 15.2 | 13.7 | 13.1 | 13.3 | 12.5 | 12.6 | 12.6 | 14.1 | 15.6 | 15.9 | 18.3 |
| Switzerland | Geneva | 16.9 | 15.7 | 13.0 | 11.9 | 12.7 | 12.0 | 11.8 | 11.8 | 13.7 | 16.2 | 15.4 | 16.3 |
| Switzerland | Zurich | 16.2 | 15.1 | 13.0 | 12.2 | 12.4 | 13.1 | 12.3 | 12.8 | 14.9 | 16.2 | 16.4 | 18.3 |
| Taiwan | Taipei | 15.8 | 16.4 | 16.9 | 15.5 | 16.0 | 14.7 | 13.3 | 13.9 | 14.7 | 15.5 | 15.5 | 15.4 |
| Tanzania | Dar es Salaam | 14.7 | 13.9 | 15.5 | 17.0 | 16.5 | 15.1 | 15.1 | 14.3 | 14.3 | 14.7 | 14.7 | 15.1 |
| Thailand | Bangkok | 12.2 | 13.0 | 12.7 | 12.7 | 13.3 | 13.0 | 13.9 | 13.9 | 14.7 | 14.7 | 13.3 | 11.9 |
| Tunisia | Tunis | 15.2 | 14.8 | 14.4 | 13.4 | 12.3 | 11.2 | 10.6 | 11.0 | 12.7 | 13.5 | 14.1 | 15.3 |
| Venezuela | Caracas | 13.9 | 13.2 | 12.4 | 13.3 | 13.9 | 14.3 | 15.1 | 14.6 | 14.3 | 14.6 | 15.1 | 14.2 |
| Vietnam | Hanoi | 15.4 | 16.9 | 18.2 | 17.0 | 15.5 | 14.7 | 15.5 | 16.0 | 14.7 | 14.3 | 13.9 | 14.2 |
| Vietnam | Ho Chi Minh City | 12.2 | 11.5 | 11.7 | 12.2 | 13.0 | 14.7 | 14.7 | 15.1 | 15.5 | 15.1 | 14.3 | 13.0 |
| Wales | Cardiff | 19.3 | 17.1 | 17.1 | 14.6 | 15.2 | 15.3 | 15.4 | 15.4 | 16.3 | 18.7 | 19.4 | 18.5 |



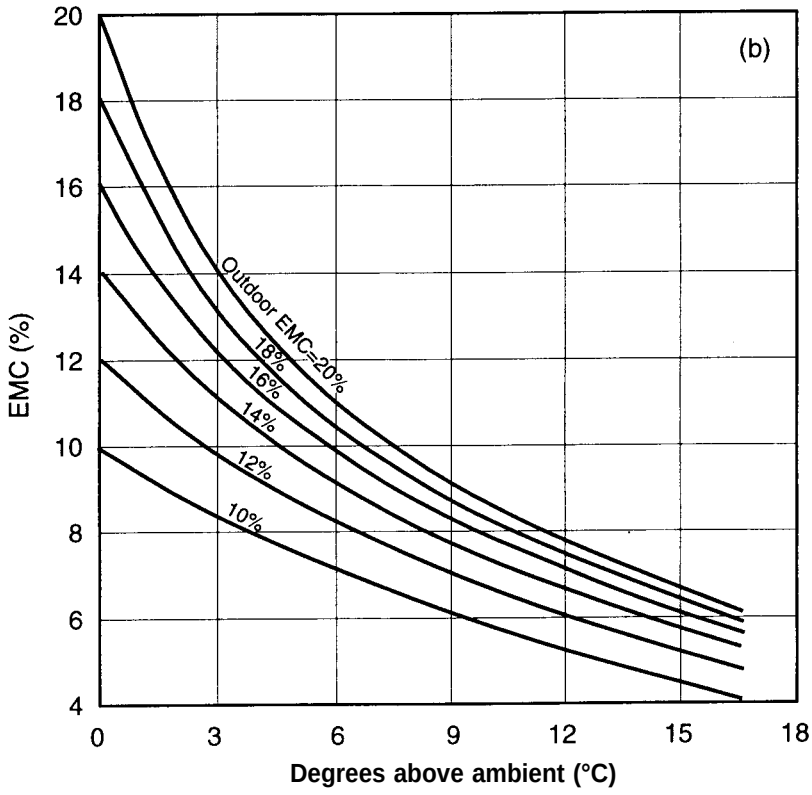




**Figure l—Equilibrium moisture content (EMC) of wood when air in an enclosed space is heated above the temperature of the outside ambient air: (a) in Fahrenheit, (b) in Celsius.**