

Model L601-3 Hand-Held Moisture Meter

INSTRUCTIONS

And Species Adjustment Tables

Reference
Calibrated For
Douglas Fir



WAGNER
ELECTRONICS

1-800-634-9961

Contents

Instructions	Page 2
Introduction	Page 3
Taking Measurements	Page 4
Meter Calibration	Page 4
Meter Storage	Page 4
Questions & Answers	Pages 5–9
Species Adjustment Tables	Pages 10–19
Specific Gravity Correction Value Sources	Page 18–19
Commentary on Species Adjustment Tables	Page 20
Determining Specific Gravity	Page 21
Specific Gravity vs. Moisture Content	Pages 22–23
Species Corrections	Page 24
Zero Adjusting	Page 25
Warranty	Page 26
FCC Compliance Statement	Back Cover

Instructions

TO OPERATE press and release the ON button. Take readings by pressing the bottom of the meter to the wood surface. The meter will automatically shut off after 60 seconds of inactivity.

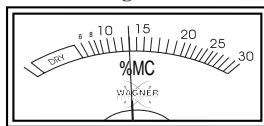
1. Read the % MC on the panel meter (Figure 1). If the wood is Douglas Fir, the scale reading indicates the % MC in the wood.
2. If the wood is not Douglas Fir, you must make a species correction.

SPECIES ADJUSTMENT TABLES are provided. When measuring a species other than Douglas Fir, use the tables to locate your species and corresponding meter reading.

Example:

Your meter reading is 13% (Figure 1).
Your species is Basswood, American.
Locate your species on the tables provided.
Find the species in the appropriate row.
Find the meter reading in the appropriate column.
Where row and column intersect is the actual reading for Basswood, American—16.5%.

Figure 1



THE LOW-BATTERY light will come on when the battery needs replacing. Replace with either (4) AA alkaline or NiCad rechargeable batteries. Observe correct polarity.

CALIBRATION is factory set. Factory calibration can be verified using a calibration verification block (CVB). The CVB is for calibration verification only. NEVER calibrate your moisture meter to this device.

Introduction

Congratulations!

You have purchased one of the most accurate moisture measurement instruments for wood in the world. Using patented electromagnetic wave technology, Wagner hand-held meters have been proven by universities and institutes worldwide to provide superior measurement results.

Utilizing an electro-magnetic field, your Wagner moisture meter measures a relatively large cross-sectional area each time you take a reading, giving you a far better representation than other technologies of the true moisture content of your wood. Pin-type meters do not provide this, only measuring a very small area, and only at a particular depth. Very short, non-insulated pins are especially prone to just reading the surface of your wood.

Your Wagner meter measures the moisture content in a 2¹/₂ inch wide by 2¹/₂ inch long by 1 inch (minimum) thick volume of your wood. This closely approximates the full-thickness cross-section method used when performing the ASTM D 4442-92 Oven Dry lab test for determining moisture content in wood. This ASTM standard (and its international counterparts) is the standard to which all moisture meters for wood are compared for accuracy. Wagner technology has been proven in many studies to provide some of the most accurate results in the industry when compared to this worldwide standard.

Other important features of Wagner hand-held meters include:

- The "Wood-Friendly"TM L601-3 DF meter uses advanced electromagnetic wave technology to accurately measure wood moisture content*
- Virtually unaffected by wood temperature or surface moisture. **

*Confirmed in university study—
information available upon request.

**Contact Wagner technical support for guidelines when wood is frozen.

Taking Measurements

Be sure to press down firmly on the center of the meter with approximately 3 pounds of force to ensure good sensor plate contact with the wood surface. This is especially important on rough-sawn lumber. Do not take readings where there is a noticeable defect or knot in the lumber.

If there is visible surface moisture or water, wipe off any excess, and let the surface of the wood dry-out for a couple of minutes, then take the reading. If possible, turn the board over and measure the other side. If the thickness of the piece is greater than 3 inches, it is a good idea to take measurements on both sides.

Ensure that there is nothing (especially your hand or metal) under the material you are measuring. The actual moisture sensing area is a 2½ inch by 2½ inch rectangle on the meter's backside (opposite side of the panel meter). In order to take a valid measurement, this sensing area must be completely covered with the wood you are measuring. If the sensing area is not completely covered, your moisture reading will be inaccurate.

Additional meter corrections may be necessary if you are measuring Raft Wood (salt water permeated), or lumber treated with Copper, Chrome, Arsenic (CCA), or Ammonical, Copper, Quantenary (ACQ).**

*Refer to the Species Setting Tables in the supplemental manual provided.

**Contact Wagner Technical Services for further information for these applications.

Meter Calibration

The meter has been calibrated at the factory and should not require re-calibration. If you need to have the calibration verified, please contact the Wagner Electronics Sales Department to purchase a calibration verification block if you don't already have one. Should the meter need to have a calibration adjustment, it will need to be returned to Wagner Technical Services Department.

Meter Storage

For a long service life, it is important to store your meter properly. Avoid excessively hot or cold locations, and keep the meter in the case provided. Do not store the meter in an area with excessive electro-magnetic interference, such as near an electric motor, or where it could be crushed, such as in front of a forklift. Do not leave the meter in an operating kiln during the drying cycle.

Questions & Answers

#1 Wagner Technology

Q: I'm nervous about buying a new technology. How long has Wagner Electronic Products been designing and manufacturing this type of moisture meter?

A: Since 1966, Wagner Electronic Products has been providing quality moisture measurement equipment. Wagner is the leading supplier of moisture measurement equipment for the primary forest products industry. Closely scrutinized and approved by numerous university studies and used for years by professional wood-grading associations, Wagner's meters continue to prove reliable and consistent, with unsurpassed convenience and ease-of-use.

#2 Theory of Operation

Q: How do Wagner Hand-Held Moisture Meters operate?

A: Wagner Hand-Held Moisture Meters send technologically advanced electromagnetic radio waves deep into the wood without leaving destructive holes. Known around the world for speed and accuracy, Wagner meters supply instant readings, scanning large amounts of board feet in seconds. Virtually unaffected by temperature and * humidity, they scan right through finished products.

* For frozen wood with up to 15% moisture content, accurate measurements can be obtained. When the frozen lumber moisture content is suspected to be over 15%, a relative reading can be obtained. Contact Wagner technical support if additional guidance is needed.

#3 Gradients and Wet Pockets

Q: What about gradients and wet pockets?

A: Although the various drying processes for green lumber can leave wet cores and pockets, moisture continues to pass from fiber to fiber within the wood until it has equalized through out the whole board, and then to surrounding humidity levels. Determining if a board or load of lumber will equalize within tolerance levels can be difficult and tricky, but Wagner Moisture Meters provide this information automatically. Penetrating deep into the wood, they mathematically determine equalized moisture content and are capable of checking truckloads of board feet for specified moisture content in minutes. For even more convenience, many companies use their Wagner Hand-Held Meters to read right through the plastic wrapping around the wood on new deliveries before they allow unloading.

#4 Where are Readings Taken

Q: Where is the reading taken with a pin-type meter? With a Wagner Hand-Held?

A: Pin-type Meters take their measurements at the depth that you've been able to drive the pins. . . and only in a line between the non-insulated portion of the pins (often only the tips). In contrast, Wagner Hand-Held Moisture Meters generate a three-dimensional field that measures a 2 1/2" wide, 2 1/2" long, 1" (minimum) thick volume of wood under the entire sensor.

Questions & Answers (*continued*)

#5 Surface Moisture

Q: Is my Wagner Moisture Meter affected by surface moisture?

A: Most moisture meters can be affected by standing water or visible water on the board. You should always wipe off as much excess water as possible. Once the standing water is removed, your Wagner Moisture Meter will read slightly higher than normal, whereas other types of meters can show greatly exaggerated readings. An exception to this is the Wagner Model L607. This unit was designed to measure surface moisture to test the cure of waterborne finishes.

Note: If water is allowed to soak into the wood, it will naturally show higher moisture content. If a piece of wood is quite rough, it will soak up the water quite readily, affecting readings for all meters.

#6 Narrow Lumber

Q: What is the narrowest piece of lumber I can measure accurately with the Wagner Hand-Held Moisture Meter?

A: Model L601-3 measures boards as narrow as 2 1/2" in width.

#7 Board Thickness

Q: What board thickness can I measure?

A: Model L601-3 meters are designed to measure wood from 1 inch to 3 inches thick.

#8 Meter Orientation

Q: What about the orientation of the meter on the wood?

A: Your Wagner L601-3 moisture meter uses advanced electromagnetic wave technology and is completely unaffected by orientation (cross-grain or with the grain) on the wood.

#9 Meter Ruggedness

Q: How rugged is my L601-3 moisture meter? Is it too delicate to be used on an abusive production line?

A: The Wagner L601-3 Moisture Meter is a tough production-line model. It can be damaged by being dropped or slammed down hard on wood surfaces, as can any meter. If a large volume of wood is to be measured, an in-line system should be used.

#10 Meter Safety

Q: Is the Wagner technology safe to use?

A: Wagner's electromagnetic wave technology produces less electromagnetic radiation than standard house wiring.

#11 Wagner Vs. Pin-Type Meters

Q: How can I take accurate moisture readings without sticking pins into my wood? Why doesn't my new Wagner Hand-Held Meter read the same moisture content as my old pin meter?

A: Pin-type meters work on a primitive, resistance principle that basically measures the flow of electricity through a substance. This method is subject to many environmental variables that can dramatically affect moisture readings such as chemicals in the water trapped within the wood and the temperature of the wood. Pin-type meter readings must always be corrected for any difference in temperature above or below 70 degrees F. Wagner Hand-Held Moisture Meters use advanced electro-magnetic wave technology and are sensitive to changes in density and the actual moisture content of the wood.

#12 4x or Larger Lumber

Q: Can I get accurate results on 4x or larger lumber?

A: No hand-held moisture meter can accurately read to the center of 4x material unless you are willing and able to drive pins 1" into the lumber all the way up and down its length and breadth. However using a Wagner Hand-Held Moisture Meter, you can quickly and easily scan 4x lumber on both sides (4 x 4's on all four sides). Then only the center 1 5/8" would be unmeasured.

Note: Most wood grading agencies are generally not concerned about the moisture content in the center of thicker beams and posts. They consider 1" deep scanning more than adequate.

#13 Measuring Techniques

Q: How does this difference in measuring techniques affect accuracy?

A: If you're using a pin-type meter, the moisture content you are reading is determined by the micro-thin path the electricity takes to travel from one pin to the other. In effect, it measures only the moisture content of that very tiny path. If there is a single wet fiber between the pins, the electric charge will flow easily along that fiber and cause pin-type meters to exaggerate the moisture content in the wood when in fact it is just a very small fiber that is wet. However, if the place you choose to drive the pins into the wood is simply extraordinarily dry and untypical of the rest of the piece you will get an exaggerated dry reading. On the other hand, Wagner Hand-Held Moisture Meters take an average of the moisture content discovered by the full scan of the three-dimensional field so small wet fibers are not read as large wet spots. Plus, it only takes seconds to scan the entire board.

#14 Relative Humidity

Q: What are the effects of relative humidity on Wagner Hand-Held Moisture Meter readings?

A: As long as there is not condensation on the bottom surface of the instrument there is no effect from changes in relative humidity.

Questions & Answers (*continued*)

#15 Calibration

Q: Do the meters on the Wagner Hand-Held products ever require readjustment? Does my Wagner Hand-Held Moisture Meter need to be calibrated? If so, how often must it be done?

A: Occasionally Wagner Hand-Held Moisture Meters require adjustment. However, the process of checking zero points and calibration is very simple.

Note: Wagner Meters are originally calibrated at the factory. Type and amount of use will determine how long this original calibration will last. A calibration verification block is available for the customers who must check their calibration often. Anytime that the meter is not reading correctly on that calibration block, it should be sent into the factory for calibration.

#16 Veneers

Q: I have a very thin veneer over a doorstock and I'm trying to measure the moisture content of the core. Can I measure accurately through laminated materials?

A: If you're measuring an all-wood door with a very thin veneer wood laminate, you can probably use a correction factor to determine the moisture content of the core material.

Note: If you're measuring a door that has a plastic laminate or Formica-type laminate, the Formica laminate is going to have its own density, which is going to affect the reading of the meter. You can determine the variance caused by the laminate by first measuring only the core and then the core with the laminate. For example, if the core measures 12% without the laminate and 13.5% with, you will then know to correct your readings of the combined material by 1.5%.

#17 Rough Vs. Smooth Lumber

Q: Will Wagner Hand-Held Meters work the same on rough lumber as they do on smooth clean lumber?

A: There are little fibers in very rough material that actually allow a minute layer of air between the meter and the main body of the wood. However, this should not materially affect the reading, or if it does, only slightly lower.

Note: It's important on rough material to use some pressure and force the meter down firmly against the wood. Occasionally, the measurement of exceptionally rough material may necessitate adding 1 to 2% to get an accurate reading.

#18 Plywood, Particle Board or Wafer Board

Q: Can you check moisture content of plywood, particle board or wafer board with hand-held meters?

A: Because of the glues and mixed species nature of these materials, it is very difficult to take reliable moisture readings with pin-type or Wagner Hand-Held Moisture Meters.

Note: However, If you would like to work up your own calibrations for materials you use repetitively, you can contact Wagner for guidelines and suggestions.

#19 Temperature

Q: Are the readings that I take with my Wagner Hand meter affected by the temperature of the wood like those taken with a pin-type meter? What about frozen wood?

A: Unlike pin-type meters which require corrections for temperatures above or below 70 degrees F, the readings on the Wagner Hand-Held Moisture Meter are essentially unaffected by the temperature of the wood. Moisture content can accurately be measured as soon as the hot wood is taken out of the kiln. When the same wood is measured hours later, again with the Wagner Hand-Held Meter, the readings stay consistently the same, unless the wood continues to dry during the cooling process.

For frozen wood, as long as the moisture content of the wood you are measuring is below 15%, you can get reliable readings. When moisture content readings in frozen wood exceed 15%, you will need to make corrections.

#20 Accuracy

Q: How accurate is the Wagner Hand-Held Meter?

A: The Wagner Moisture Meter is as accurate, or more accurate than any moisture detector that is on the market. This can be verified by several university studies.

#21 Correct Moisture Content

Q: What is proper moisture content for wood? What moisture content is considered too high or too low?

A: There is no one right answer for this question. As a rule, different woods and their uses determine the moisture content. For instance, if the wood is to be used in construction as a stud for building, the moisture-content requirement could be 15% to 19%. If the wood is to be glued and it is too dry, it will not bond; if it is too wet, it will not hold. Ideally, the moisture content of wood to be used for indoor furniture is between 6% and 8%.

To determine the proper moisture content for your application, contact your local university's forestry department or one of the associations supporting your industry's professionals. You may also call the Forest Products Research Laboratory in Madison, WI: 608-231-9200.

If you have any further questions
not answered in the Q&A,
please call:

1-800-634-9961

Hardwood Species Adjustment Table

SG	Meter Reads ==>	%Moisture Content										
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
0.41	<i>Alder, Red</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	
0.61	<i>Apple</i>	3.5	4.5	5.5	6.0	7.0	8.0	9.0	9.5	10.5	11.5	
0.49	<i>Ash, Black</i>	6.0	7.0	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	
0.58	<i>Ash, Blue</i>	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	12.0	
0.56	<i>Ash, Green</i>	4.5	5.5	6.5	7.0	8.0	9.0	10.0	11.0	11.5	12.5	
0.55	<i>Ash, Oregon</i>	4.5	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	13.0	
0.60	<i>Ash, White</i>	3.5	4.5	5.5	6.5	7.5	8.0	9.0	10.0	11.0	11.5	
0.39	<i>Aspen, Bigtooth</i>	7.5	8.5	9.5	10.5	12.0	13.0	14.0	15.0	16.0	17.0	
0.38	<i>Aspen, Quaking</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	
0.37	<i>Basswood, American</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.5	17.5	
0.64	<i>Beech, American</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	
0.55	<i>Birch, Paper</i>	4.5	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	13.0	
0.65	<i>Birch, Sweet</i>	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	10.5	
0.62	<i>Birch, Yellow</i>	3.5	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	
0.38	<i>Butternut</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	
0.50	<i>Cherry, Black</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	
0.43	<i>Chestnut, American</i>	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	
0.34	<i>Cottonwood, Balsam poplar</i>	8.5	9.5	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	
0.35	<i>Cottonwood, Black</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	18.0	
0.40	<i>Cottonwood, Eastern</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	
0.64	<i>Dogwood, Flowering</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	
0.50	<i>Elm, American</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	
0.63	<i>Elm, Rock</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.53	<i>Elm, Slippery</i>	5.0	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	13.5	
0.53	<i>Hackberry</i>	5.0	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	13.5	
0.66	<i>Hickory (Pecan), Bitternut</i>	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	
0.60	<i>Hickory (Pecan), Nutmeg</i>	3.5	4.5	5.5	6.5	7.5	8.0	9.0	10.0	11.0	11.5	
0.66	<i>Hickory, Pecan</i>	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	
0.62	<i>Hickory (Pecan), Water</i>	3.5	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	
0.72	<i>Hickory (True), Mockernut</i>	1.5	2.5	3.0	4.0	4.5	5.5	6.5	7.0	8.0	8.5	
0.75	<i>Hickory (True), Pignut</i>	1.0	1.5	2.5	3.0	4.0	5.0	5.5	6.5	7.0	8.0	
0.72	<i>Hickory (True), Shagbark</i>	1.5	2.5	3.0	4.0	4.5	5.5	6.5	7.0	8.0	8.5	
0.69	<i>Hickory (True), Shellbark</i>	2.0	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	
0.50	<i>Holly, American</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	
0.63	<i>Hophornbeam, Eastern</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.51	<i>Laurel, California</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
0.69	<i>Locust, Black</i>	2.0	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	

15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0	29.0	30.0	31.0	32.0
12.5	13.0	14.0	15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	22.5	23.5	24.5	25.5
15.5	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5	29.5
13.0	14.0	15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5
13.5	14.5	15.5	16.0	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.5	25.0	26.0	27.0
14.0	14.5	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5
12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	25.5
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5
18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5
11.5	12.5	13.0	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
14.0	14.5	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5
11.5	12.0	13.0	14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.0	24.0
12.0	13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.0	24.0	25.0
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5
15.0	16.0	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5
19.0	20.0	21.0	22.0	23.0	24.0	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5	34.5
19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5	34.5
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5
11.5	12.5	13.0	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
15.0	16.0	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
14.5	15.0	16.0	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0
14.5	15.0	16.0	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0
11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	25.5
11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
12.0	13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.0	24.0	25.0
9.5	10.5	11.0	12.0	12.5	13.5	14.5	15.0	16.0	16.5	17.5	18.5	19.0	20.0	20.5	21.5
8.5	9.5	10.5	11.0	12.0	12.5	13.5	14.0	15.0	16.0	16.5	17.5	18.0	19.0	19.5	20.5
9.5	10.5	11.0	12.0	12.5	13.5	14.5	15.0	16.0	16.5	17.5	18.5	19.0	20.0	20.5	21.5
10.0	11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	21.5	22.5
15.0	16.0	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
15.0	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
10.0	11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	21.5	22.5

Hardwood Species (*Continued*)

SG	Meter Reads ==>	%Moisture Content										
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
0.58	<i>Madrone, Pacific</i>	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	12.0	
0.50	<i>Magnolia, Southern</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	
0.48	<i>Maple, Bigleaf</i>	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5	
0.57	<i>Maple, Black</i>	4.5	5.0	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	
0.66	<i>Maple, Hard</i>	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	
0.54	<i>Maple, Red</i>	5.0	6.0	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	
0.47	<i>Maple, Silver</i>	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	
0.51	<i>Maple, Soft</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
0.63	<i>Maple, Sugar</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.61	<i>Oak (Red), Black</i>	3.5	4.5	5.5	6.0	7.0	8.0	9.0	9.5	10.5	11.5	
0.51	<i>Oak, California black</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
0.68	<i>Oak (Red), Cherrybark</i>	2.0	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	9.5	
0.64	<i>Oak (Red), Flooring (1).</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	
0.63	<i>Oak (Red), Laurel</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.63	<i>Oak (Red), Northern red</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.63	<i>Oak (Red), Pin</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.67	<i>Oak (Red), Scarlet</i>	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	
0.59	<i>Oak (Red), Southern red</i>	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	
0.63	<i>Oak (Red), Water</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.69	<i>Oak (Red), Willow</i>	2.0	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	
0.64	<i>Oak (White), Bur</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	
0.66	<i>Oak (White), Chestnut</i>	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	
0.63	<i>Oak (White), Overcup</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.67	<i>Oak (White), Post</i>	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	
0.67	<i>Oak (White), Swamp chestnut</i>	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	
0.72	<i>Oak (White), Swamp white</i>	1.5	2.5	3.0	4.0	4.5	5.5	6.5	7.0	8.0	8.5	
0.66	<i>Oak, White</i>	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	
0.64	<i>Persimmon, Common</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	
0.46	<i>Sassafras</i>	6.5	7.5	8.5	9.5	10.5	11.0	12.0	13.0	14.0	15.0	
0.52	<i>Sweetgum</i>	5.5	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	
0.49	<i>Sycamore, American</i>	6.0	7.0	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	
0.58	<i>Tanoak</i>	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	12.0	
0.50	<i>Tupelo, Black</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	
0.50	<i>Tupelo, Water</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	
0.55	<i>Walnut, Black</i>	4.5	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	13.0	
0.39	<i>Willow, Black</i>	7.5	8.5	9.5	10.5	12.0	13.0	14.0	15.0	16.0	17.0	
0.42	<i>Yellow-poplar</i>	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	

15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
13.0	14.0	15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5
15.0	16.0	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
15.5	16.5	17.5	18.5	19.5	20.5	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
13.5	14.0	15.0	16.0	17.0	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	26.5
11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
14.0	15.0	16.0	17.0	17.5	18.5	19.5	20.5	21.5	22.5	23.0	24.0	25.0	26.0	27.0	27.5
16.0	16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.0	29.0	30.0
15.0	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
12.5	13.0	14.0	15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	22.5	23.5	24.5	25.5
15.0	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
10.5	11.5	12.0	13.0	14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.0	23.0
11.5	12.5	13.0	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
11.0	11.5	12.5	13.5	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5
13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.0	25.0	26.0
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
10.0	11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	21.5	22.5
11.5	12.5	13.0	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
11.0	11.5	12.5	13.5	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5
11.0	11.5	12.5	13.5	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5
9.5	10.5	11.0	12.0	12.5	13.5	14.5	15.0	16.0	16.5	17.5	18.5	19.0	20.0	20.5	21.5
11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
11.5	12.5	13.0	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5
14.5	15.5	16.5	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5
15.5	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5	29.5
13.0	14.0	15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5
15.0	16.0	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
15.0	16.0	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
14.0	14.5	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0
17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0

Softwood Species Adjustment Table

SG	Meter Reads ==>	%Moisture Content									
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.46	<i>Baldcypress</i>	6.5	7.5	8.5	9.5	10.5	11.0	12.0	13.0	14.0	15.0
0.44	<i>Cedar, Alaska</i>	7.0	8.0	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
0.32	<i>Cedar, Atlantic white</i>	9.0	10.0	11.0	12.0	13.5	14.5	15.5	16.5	17.5	18.5
0.47	<i>Cedar, Eastern red cedar</i>	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
0.37	<i>Cedar, Incense</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.5	17.5
0.31	<i>Cedar, Northern white</i>	9.0	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	19.0
0.43	<i>Cedar, Port Orford</i>	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
0.32	<i>Cedar, Western red cedar</i>	9.0	10.0	11.0	12.0	13.5	14.5	15.5	16.5	17.5	18.5
0.51	<i>Douglas fir</i>	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.35	<i>Fir, Balsam</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	18.0
0.38	<i>Fir, California red</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.37	<i>Fir, Grand</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.5	17.5
0.39	<i>Fir, Noble</i>	7.5	8.5	9.5	10.5	12.0	13.0	14.0	15.0	16.0	17.0
0.43	<i>Fir, Pacific silver</i>	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
0.32	<i>Fir, Subalpine</i>	9.0	10.0	11.0	12.0	13.5	14.5	15.5	16.5	17.5	18.5
0.39	<i>Fir, White</i>	7.5	8.5	9.5	10.5	12.0	13.0	14.0	15.0	16.0	17.0
0.40	<i>Hemlock, Eastern</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5
0.45	<i>Hemlock, Mountain</i>	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
0.45	<i>Hemlock, Western</i>	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
0.52	<i>Larch, Western</i>	5.5	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5
0.35	<i>Pine, Eastern white</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	18.0
0.43	<i>Pine, Jack</i>	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
0.51	<i>Pine, Loblolly</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.41	<i>Pine, Lodgepole</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5
0.59	<i>Pine, Longleaf</i>	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0
0.52	<i>Pine, Pitch</i>	5.5	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5
0.56	<i>Pine, Pond</i>	4.5	5.5	6.5	7.0	8.0	9.0	10.0	11.0	11.5	12.5
0.40	<i>Pine, Ponderosa</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5
0.46	<i>Pine, Red</i>	6.5	7.5	8.5	9.5	10.5	11.0	12.0	13.0	14.0	15.0
0.48	<i>Pine, Sand</i>	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5
0.51	<i>Pine, Shortleaf</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.59	<i>Pine, Slash</i>	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0
0.44	<i>Pine, Spruce</i>	7.0	8.0	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
0.36	<i>Pine, Sugar</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5
0.48	<i>Pine, Virginia</i>	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5
0.38	<i>Pine, Western white</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.40	<i>Redwood, Old-growth</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5

15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5
16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.0	30.0	31.0
19.5	20.5	21.5	22.5	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.5	35.5
16.0	16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.0	29.0	30.0
18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5
20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.5	29.5	30.5	31.5	32.5	33.5	34.5	35.5
17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5
19.5	20.5	21.5	22.5	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.5	35.5
15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5	34.5
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5
18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0
17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5
19.5	20.5	21.5	22.5	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.5	35.5
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5
16.5	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0
16.5	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0
14.5	15.5	16.5	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5
19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5	34.5
17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5
15.0	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0	29.0	30.0	31.0	32.0
13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.0	25.0	26.0
14.5	15.5	16.5	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5
13.5	14.5	15.5	16.0	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.5	25.0	26.0	27.0
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5
16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5
15.5	16.5	17.5	18.5	19.5	20.5	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
15.0	15.5	16.5	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.0	25.0	26.0
16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.0	30.0	31.0
18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0
15.5	16.5	17.5	18.5	19.5	20.5	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5

Softwood Species (*Continued*)

SG	Meter Reads ==>	%Moisture Content									
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.35	<i>Redwood, Young-growth</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	18.0
0.42	<i>Spruce, Black</i>	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
0.35	<i>Spruce, Engelmann</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	18.0
0.40	<i>Spruce, Red</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5
0.40	<i>Spruce, Sitka</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5
0.36	<i>Spruce, White</i>	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5
0.51	<i>SYP</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.53	<i>Tamarack</i>	5.0	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	13.5

Imported Species Adjustment Table

SG	Meter Reads ==>	%Moisture Content									
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.69	<i>Afromosia</i>	2.0	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5
0.64	<i>Andiroba</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5
0.54	<i>Anegre</i>	5.0	6.0	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0
0.55	<i>Avodire</i>	4.5	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	13.0
0.62	<i>Banak (Cuangare)</i>	3.5	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0
0.77	<i>Benge (Ehie, Bubinga)</i>	0.5	1.5	2.5	3.0	4.0	4.5	5.5	6.0	7.0	7.5
0.61	<i>Caribbean pine</i>	3.5	4.5	5.5	6.0	7.0	8.0	9.0	9.5	10.5	11.5
0.44	<i>Cativo</i>	7.0	8.0	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
0.51	<i>Cypress</i>	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0
0.82	<i>Degame</i>	0.0	0.5	1.0	2.0	2.5	3.5	4.0	5.0	5.5	6.0
0.58	<i>Determa</i>	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	12.0
0.70	<i>Ebony, East Indian</i>	2.0	2.5	3.5	4.5	5.0	6.0	6.5	7.5	8.5	9.0
0.50	<i>Gmelina</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0
0.38	<i>Hura</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.70	<i>Iroko</i>	2.0	2.5	3.5	4.5	5.0	6.0	6.5	7.5	8.5	9.0
0.80	<i>Jarrah</i>	0.0	0.5	1.5	2.0	2.5	3.5	4.0	5.0	5.5	6.5
0.46	<i>Jelutong</i>	6.5	7.5	8.5	9.5	10.5	11.0	12.0	13.0	14.0	15.0
0.76	<i>Kapur</i>	0.5	1.5	2.5	3.0	4.0	4.5	5.5	6.0	7.0	7.5
0.64	<i>Keruing (Apitong)</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5
0.67	<i>Koa</i>	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0
0.67	<i>Lauan, Dark Red</i>	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0
0.50	<i>Lauan, White (Light Red Meranti)</i>	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0
0.45	<i>Limba</i>	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
0.61	<i>Mahogany, African</i>	3.5	4.5	5.5	6.0	7.0	8.0	9.0	9.5	10.5	11.5

15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0

19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0 32.0 33.5 34.5

17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0 32.0

19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0 32.0 33.5 34.5

17.5 18.5 19.5 20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.5 28.5 29.5 30.5 31.5 32.5

17.5 18.5 19.5 20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.5 28.5 29.5 30.5 31.5 32.5

18.5 19.5 20.5 21.5 22.5 23.5 24.5 25.5 27.0 28.0 29.0 30.0 31.0 32.0 33.0 34.0

15.0 15.5 16.5 17.5 18.5 19.5 20.5 21.5 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0

14.5 15.0 16.0 17.0 18.0 19.0 20.0 20.5 21.5 22.5 23.5 24.5 25.5 26.0 27.0 28.0

15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0

10.0 11.0 12.0 12.5 13.5 14.5 15.0 16.0 17.0 17.5 18.5 19.5 20.0 21.0 21.5 22.5

11.5 12.5 13.0 14.0 15.0 16.0 16.5 17.5 18.5 19.0 20.0 21.0 21.5 22.5 23.5 24.5

14.0 15.0 16.0 17.0 17.5 18.5 19.5 20.5 21.5 22.5 23.0 24.0 25.0 26.0 27.0 27.5

14.0 14.5 15.5 16.5 17.5 18.5 19.0 20.0 21.0 22.0 23.0 24.0 24.5 25.5 26.5 27.5

12.0 13.0 13.5 14.5 15.5 16.5 17.0 18.0 19.0 20.0 20.5 21.5 22.5 23.0 24.0 25.0

8.5 9.0 10.0 11.0 11.5 12.5 13.0 14.0 14.5 15.5 16.0 17.0 17.5 18.5 19.0 20.0

12.5 13.0 14.0 15.0 15.5 16.5 17.5 18.5 19.0 20.0 21.0 22.0 22.5 23.5 24.5 25.5

16.5 17.5 18.5 19.5 20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.5 28.5 29.0 30.0 31.0

15.0 15.5 16.5 17.5 18.5 19.5 20.5 21.5 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0

7.0 7.5 8.5 9.0 10.0 10.5 11.5 12.0 13.0 13.5 14.5 15.0 16.0 16.5 17.5 18.0

13.0 14.0 15.0 15.5 16.5 17.5 18.5 19.0 20.0 21.0 22.0 23.0 23.5 24.5 25.5 26.5

10.0 11.0 11.5 12.5 13.5 14.0 15.0 15.5 16.5 17.5 18.0 19.0 20.0 20.5 21.5 22.0

15.0 16.0 17.0 18.0 19.0 19.5 20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.0 28.0 29.0

18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0 32.0 33.5

10.0 11.0 11.5 12.5 13.5 14.0 15.0 15.5 16.5 17.5 18.0 19.0 20.0 20.5 21.5 22.0

7.0 8.0 8.5 9.5 10.0 11.0 11.5 12.5 13.0 14.0 14.5 15.5 16.0 17.0 17.5 18.5

16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 23.5 24.5 25.5 26.5 27.5 28.5 29.5 30.5

8.5 9.5 10.0 11.0 11.5 12.5 13.0 14.0 14.5 15.5 16.5 17.0 18.0 18.5 19.5 20.0

11.5 12.5 13.0 14.0 15.0 16.0 16.5 17.5 18.5 19.0 20.0 21.0 21.5 22.5 23.5 24.5

11.0 11.5 12.5 13.5 14.0 15.0 16.0 16.5 17.5 18.5 19.0 20.0 21.0 21.5 22.5 23.5

11.0 11.5 12.5 13.5 14.0 15.0 16.0 16.5 17.5 18.5 19.0 20.0 21.0 21.5 22.5 23.5

15.0 16.0 17.0 18.0 19.0 19.5 20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.0 28.0 29.0

16.5 17.5 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0 31.0

12.5 13.0 14.0 15.0 15.5 16.5 17.5 18.5 19.0 20.0 21.0 22.0 22.5 23.5 24.5 25.5

Imported Species (*Continued*)

SG	Meter Reads ==>	%Moisture Content										
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	
0.59	<i>Mahogany, True</i>	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	
0.68	<i>Manni</i>	2.0	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	9.5	
0.80	<i>Merbau</i>	0.0	0.5	1.5	2.0	2.5	3.5	4.0	5.0	5.5	6.5	
0.65	<i>Mersawa</i>	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	10.5	
0.63	<i>Mueri (Cherry)</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.38	<i>Obeche</i>	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	
0.66	<i>Ocote pine</i>	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	
0.44	<i>Okoume</i>	7.0	8.0	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	
0.73	<i>Opepe</i>	1.5	2.0	3.0	3.5	4.5	5.5	6.0	7.0	7.5	8.5	
0.54	<i>Parana pine</i>	5.0	6.0	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	
0.63	<i>Peroba de campos</i>	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	
0.75	<i>Peroba rosa</i>	1.0	1.5	2.5	3.0	4.0	5.0	5.5	6.5	7.0	8.0	
0.45	<i>Primavera</i>	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	
0.80	<i>Purpleheart</i>	0.0	0.5	1.5	2.0	2.5	3.5	4.0	5.0	5.5	6.5	
0.48	<i>Radiata pine</i>	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5	
0.65	<i>Ramin</i>	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	10.5	
0.64	<i>Roble (Quercus)</i>	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	
0.85	<i>Rosewood, Brazilian (Jacaranda)</i>	0.0	0.0	0.5	1.0	2.0	2.5	3.5	4.0	5.0	5.5	
0.85	<i>Rosewood, Indian</i>	0.0	0.0	0.5	1.0	2.0	2.5	3.5	4.0	5.0	5.5	
0.61	<i>Santa Maria</i>	3.5	4.5	5.5	6.0	7.0	8.0	9.0	9.5	10.5	11.5	
0.62	<i>Sapele</i>	3.5	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	
0.41	<i>Spanish Cedar</i>	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	
0.59	<i>Teak</i>	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	
0.67	<i>Yew</i>	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	

Specific Gravity Correction Value Sources

(1). This SG correction value was developed by Wagner Electronic Products, Inc.

15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.0	25.0	26.0
10.5	11.5	12.0	13.0	14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.0	23.0
7.0	8.0	8.5	9.5	10.0	11.0	11.5	12.5	13.0	14.0	14.5	15.5	16.0	17.0	17.5	18.5
11.5	12.0	13.0	14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.0	24.0
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5
11.0	12.0	12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
16.5	17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.0	30.0	31.0
9.0	10.0	11.0	11.5	12.5	13.0	14.0	15.0	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.0
14.0	15.0	16.0	17.0	17.5	18.5	19.5	20.5	21.5	22.5	23.0	24.0	25.0	26.0	27.0	27.5
12.0	12.5	13.5	14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
8.5	9.5	10.5	11.0	12.0	12.5	13.5	14.0	15.0	16.0	16.5	17.5	18.0	19.0	19.5	20.5
16.5	17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0
7.0	8.0	8.5	9.5	10.0	11.0	11.5	12.5	13.0	14.0	14.5	15.5	16.0	17.0	17.5	18.5
15.5	16.5	17.5	18.5	19.5	20.5	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
11.5	12.0	13.0	14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.0	24.0
11.5	12.5	13.0	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
6.0	7.0	7.5	8.5	9.0	10.0	10.5	11.5	12.0	12.5	13.5	14.0	15.0	15.5	16.5	17.0
6.0	7.0	7.5	8.5	9.0	10.0	10.5	11.5	12.0	12.5	13.5	14.0	15.0	15.5	16.5	17.0
12.5	13.0	14.0	15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	22.5	23.5	24.5	25.5
12.0	13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.0	24.0	25.0
17.5	18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0	29.0	30.0	31.0	32.0
13.0	13.5	14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.0	25.0	26.0
11.0	11.5	12.5	13.5	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5

Commentary on Species Adjustment Tables

In 1992, a study was conducted at the Forest Research Laboratory of Oregon State University on species correction for the Wagner Hand-Held Moisture Meters. The species tested were Douglas Fir, Lodgepole Pine, Western Red Cedar, Western Hemlock, White Fir, Western Larch, Engelmann Spruce, and White Oak. Three to four 40-piece samples of each species were tested. Specific gravity was found to be the primary factor on species adjustment. A species equation as a function of specific gravity and the meter reading was obtained using multiple-regression technique (R-square = 0.95) as follows:

$$AF = 8.77 + (0.25 * MM) - (15.86 * SG) - (0.62 * SG * MM)$$

in which:

AF = Adjustment Factor

MM = Meter Reading

SG = Species average Specific Gravity in oven dry weight and 12% moisture-content volume basis.

The species adjustments provide the adjusted moisture measurements that are based on the species adjustment determined using the species adjustment equation, with rounding to the nearest 0.5.

Wood is not a uniform material. Specific gravity of solid-sawn lumber varies within the piece and among pieces. In the OSU study, the average specific gravity for each species differed from the individual sample by plus or minus 1% to plus or minus 8%. For general applications, average specific gravity values can be found in the Wood Handbook (USDA Agriculture Handbook No. 72, 1999). Except for one species for which the experimental value is 7% higher, the species' overall average specific gravity values obtained in the OSU study are comparable with those in the Wood Handbook. The exception may be caused by unknown biases in the sampling scheme. The Wood Handbook values are used in the tables, except for the imported species, unless otherwise noted.

Species adjustment can be determined for lumber sorted, or otherwise known, to have specific gravity different from the species' average. One example is lumber graded under the Dense rules. If the specific gravity of a lumber sample is known, species adjustment can be determined by the species adjustment equation.

The species adjustment equation provides a way to expand the use of your Wagner Hand-Held Moisture Meter for lumber of any species groups having similar species-specific gravity values. One example is Hem-Fir. For a species group, one way to determine the species adjustment is by the use of a weighted average of the individual species' average specific gravity values. The weighing procedure used in the ASTM D2555 by standing timber volume can be used. Species adjustment is not recommended for any species group having a broad range of species-specific gravity values. There are no recognized limits on species group species adjustment. Species adjustment for species groups should be used with knowledge on the variability on species involved and the affect of it on species adjustment. If the species mix in the lumber production of a species group is controlled or known to have specific gravity different from that used for the species group, a better estimation of species adjustment can be determined using the known specific gravity in the above species correction equation.

Determining Specific Gravity

Determining the Adjustment Factor for an Unknown Species

The adjustment table based on specific gravity of solid wood is provided on the following page. If you don't know the species of the wood you are using, or the specific gravity differs from the handbook because of a different growing region, use the following procedure.

Determining the Specific Gravity

1. Select a sample of wood with all edges being true. Carefully measure the dimensions of the sample using a caliper. You will need the length, width, and thickness.
2. Convert these measurements to feet.
3. Carefully measure the weight of the sample.
4. Convert the weight to pounds.
5. Calculate specific gravity.

Example:

Length = 10 in. 10 in. / 12 in. = 0.833 ft.

Width = 7.5 in. 7.5 in. / 12 in. = 0.625 ft.

Thickness = 1.5 in. 1.5 in. / 12 in. = 0.125 ft.

Volume = L x W x T 0.833 x 0.625 x 0.125 = 0.065 cu. ft.

Weight = 20 oz. 20 oz. / 16 oz. = 1.25 lb.

Specific Gravity:

(Weight / Volume) / Specific Gravity of water

(1.25 lb. / 0.065 cu. ft.) / 62.34 lb. / cu. ft. = **0.31**

In order to ensure that the value obtained for the specific gravity is statistically significant, a number of pieces must be measured and the average determined. Use this value of specific gravity with the table provided to find the actual adjustment factor for your species of wood.

Specific Gravity vs. Moisture Content

SG	%Moisture Content												
	5	6	7	8	9	10	11	12	13	14	15	16	17
0.30	9.5	10.5	11.5	12.5	13.5	14.5	16.0	17.0	18.0	19.0	20.0	21.0	22.0
0.31	9.0	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	19.0	20.0	21.0	22.0
0.32	9.0	10.0	11.0	12.0	13.5	14.5	15.5	16.5	17.5	18.5	19.5	20.5	21.5
0.33	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.5	19.5	20.5	21.5
0.34	8.5	9.5	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0
0.35	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	18.0	19.0	20.0	21.0
0.36	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5	19.5	20.5
0.37	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.5	17.5	18.5	19.5	20.5
0.38	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
0.39	7.5	8.5	9.5	10.5	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
0.40	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5	19.5
0.41	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5	19.5
0.42	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0
0.43	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0
0.44	7.0	8.0	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.5
0.45	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5	17.5	18.0
0.46	6.5	7.5	8.5	9.5	10.5	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0
0.47	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	16.5	17.5
0.48	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5	15.5	16.5	17.5
0.49	6.0	7.0	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.0	17.0
0.50	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	15.0	16.0	17.0
0.51	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	15.5	16.5
0.52	5.5	6.0	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5	15.5	16.5
0.53	5.0	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	13.5	14.5	15.0	16.0
0.54	5.0	6.0	6.5	7.5	8.5	9.5	10.5	11.5	12.0	13.0	14.0	15.0	16.0
0.55	4.5	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	13.0	14.0	14.5	15.5
0.56	4.5	5.5	6.5	7.0	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5	15.5
0.57	4.5	5.0	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	13.5	14.0	15.0
0.58	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	12.0	13.0	14.0	15.0
0.59	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	13.0	13.5	14.5
0.60	3.5	4.5	5.5	6.5	7.5	8.0	9.0	10.0	11.0	11.5	12.5	13.5	14.5
0.61	3.5	4.5	5.5	6.0	7.0	8.0	9.0	9.5	10.5	11.5	12.5	13.0	14.0
0.62	3.5	4.0	5.0	6.0	7.0	7.5	8.5	9.5	10.5	11.0	12.0	13.0	13.5
0.63	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	12.0	12.5	13.5
0.64	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	10.5	11.5	12.5	13.0
0.65	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	10.5	11.5	12.0	13.0
0.66	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	11.0	12.0	12.5
0.67	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.0	10.0	11.0	11.5	12.5
0.68	2.0	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0	9.5	10.5	11.5	12.0
0.69	2.0	3.0	3.5	4.5	5.5	6.0	7.0	8.0	8.5	9.5	10.0	11.0	12.0
0.70	2.0	2.5	3.5	4.5	5.0	6.0	6.5	7.5	8.5	9.0	10.0	11.0	11.5

18	19	20	21	22	23	24	25	26	27	28	29	30
23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	32.0	33.0	34.0	35.0	36.0
23.0	24.0	25.0	26.0	27.0	28.5	29.5	30.5	31.5	32.5	33.5	34.5	35.5
22.5	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.5	35.5
22.5	23.5	24.5	25.5	26.5	27.5	28.5	30.0	31.0	32.0	33.0	34.0	35.0
22.0	23.0	24.0	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5	34.5
22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5	34.5
21.5	22.5	23.5	24.5	25.5	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0
21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5
21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.5
21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0
20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5
20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0	29.0	30.0	31.0	32.0
20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0
19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5
19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.5	29.0	30.0	31.0
19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0
19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5	27.5	28.5	29.5	30.5
18.5	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.5	28.0	29.0	30.0
18.5	19.5	20.5	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0
18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5	29.5
18.0	19.0	19.5	20.5	21.5	22.5	23.5	24.5	25.5	26.5	27.0	28.0	29.0
17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0
17.5	18.0	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5	28.5
17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.5	25.5	26.0	27.0	28.0
17.0	17.5	18.5	19.5	20.5	21.5	22.5	23.0	24.0	25.0	26.0	27.0	27.5
16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	24.0	24.5	25.5	26.5	27.5
16.0	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.5	25.0	26.0	27.0
16.0	17.0	17.5	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	26.0	26.5
15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	23.0	23.5	24.5	25.5	26.5
15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.5	24.0	25.0	26.0
15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.5	22.0	23.0	24.0	25.0	25.5
15.0	15.5	16.5	17.5	18.5	19.0	20.0	21.0	22.0	22.5	23.5	24.5	25.5
14.5	15.5	16.5	17.0	18.0	19.0	20.0	20.5	21.5	22.5	23.0	24.0	25.0
14.5	15.0	16.0	17.0	18.0	18.5	19.5	20.5	21.0	22.0	23.0	24.0	24.5
14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5	24.5
14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.5	23.0	24.0
13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	22.0	23.0	23.5
13.5	14.0	15.0	16.0	16.5	17.5	18.5	19.0	20.0	21.0	21.5	22.5	23.5
13.0	14.0	14.5	15.5	16.5	17.0	18.0	19.0	19.5	20.5	21.5	22.0	23.0
12.5	13.5	14.5	15.0	16.0	17.0	17.5	18.5	19.5	20.0	21.0	21.5	22.5
12.5	13.5	14.0	15.0	15.5	16.5	17.5	18.0	19.0	20.0	20.5	21.5	22.0

Species Corrections

The dry specific gravity (density) values for a species are based on the best, current world data, and are used to determine the species correction factor within the meter. The values provide average density values for the species. A coefficient of variation (COV) of about 10% describes the variability inherent in many common domestic (US) species.

If the specific gravity of your lumber cannot be found with the resources listed in the tables provided or you are dealing with an unknown species, the value may be determined by referring to the “Determining Specific Gravity” section of this manual. Additional resources are: the Forest Products Lab at <http://www.fpl.fs.fed.us/> and the Wood Handbook at <http://www.fpl.fs.fed.us/documnts/fplgtr/fplgtr113/ch01.pdf>

The Wagner hand-meters can be used to measure non-wood materials if the density is similar to wood products. Non-wood species can be measured by using the meter reading as a relative value such as in “go/no-go” applications, or when determining if one measurement area contains more moisture than another, i.e. measurements that do not require a high absolute accuracy. SG formulas can't be applied to non-solid wood species due to the presence of glues and resins, which cause a non-linear moisture content curve. If greater accuracy is required, the ASTM oven-dry procedure can be used to determine a meter correction value for non-solid woods.

Please contact Wagner Electronics at (541) 582-0541 for additional information on species corrections if needed.

Zero Adjusting

WARNING!

DO NOT USE THIS SECTION OF THE MANUAL UNLESS ABSOLUTELY NECESSARY!

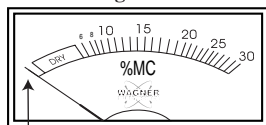
BECAUSE of the stability of the circuit in these products, a person virtually never has to adjust the zero setting.

ZERO-ADJUSTING a meter is a two-step process. (1) With the power OFF, adjust the **PHYSICAL ZERO** (Figure 1) until the needle rests precisely on the lowest mark on the scale (Figure 2). (2) Remove the **DRY BOX ZERO** cap (Figure 1). Hold the meter in midair so that the bottom is level and several feet from any object. Press and release the ON button; this will cause the needle to rest near the lower edge of the DRY BOX. Insert a small screwdriver into the hole and adjust the **DRY BOX ZERO** until the needle rests precisely on the lower edge of the DRY BOX (Figure 3).

Figure 1

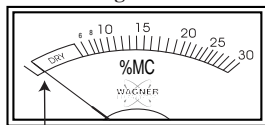


Figure 2



PHYSICAL ZERO—Adjust until needle sits on lowest mark.

Figure 3



DRY BOX ZERO—Adjust until needle sits on lower edge of DRY BOX.

Warranty

Wagner Electronic Products, Inc. warrants this product against defects in material and workmanship for one (1) year from the date of purchase, subject to the following terms and conditions:

“Wagner’s liability under this warranty shall be limited, at Wagner’s option, to the repair or replacement of this product or any part thereof which is demonstrated to be defective. To exercise this warranty, customer must telephone, fax or e-mail Wagner’s Customer Service Department for an RMA (Return Materials Authorization) number and factory instructions for shipment. This limited warranty does not apply if the product has been damaged by accident, negligent handling, misuse, alteration, damage during shipment, or improper service. Wagner Electronic Products, Inc. shall, in no event, be liable for any breach of warranty or defect in this product which exceeds the amount of the purchase price of the product. Wagner Electronic Products, Inc. shall not be liable for incidental or consequential damages for the breach of any express or implied warranty with respect to this product or its calibration.”

With proper care and maintenance, as recommended in the manual, the meter should stay in calibration; however, because Wagner Electronic Products, Inc. has no control over the manner in which the unit will be used, it makes no warranty that the meter will stay in calibration for any specific period of time. Wagner Electronic Products, Inc. recommends purchasing a calibration verification block or return the unit to the factory for diagnostic checkup and recalibration, on the anniversary date of purchase, each year the meter is in service.

This warranty is in lieu of all other warranties, whether oral or written, express or implied. Any implied warranties, including implied warranties of merchantability and fitness for a particular purpose, are excluded. Agents and employees of Wagner Electronic Products, Inc. are not authorized to make modifications to this warranty or additional warranties binding on Wagner Electronic Products, Inc. Accordingly, additional statements, whether oral or written, except written statements from an officer of Wagner Electronic Products, Inc. do not constitute warranties and should not be relied upon by the customer.

This warranty is personal to the customer purchasing the product from Wagner Electronic Products, Inc. and is not transferable.

Repair Service—In the event of damage or failure to your meter, contact Wagner for a RMA number prior to returning it for repair:

Voice: (541) 582-0541
Fax: (541) 582-4138
E-Mail: support@www.wagner.com

Mail:
Technical Services Department
Wagner Electronic Products, Inc.
326 Pine Grove Road
Rogue River, OR 97537

Your meter will be repaired, calibrated and returned promptly.

FCC Compliance Statement

This equipment has been tested and found to comply within the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installations.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is powered.
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

CAUTION: Only equipment certified to comply with Class B (computer input/output devices, terminals, printers, etc.) should be attached to this equipment.

Finally, any changes or modifications to the equipment by the user not expressly approved by the grantee or manufacturer could void the user's authority to operate such equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications compliance statement

This equipment does not exceed class B limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of communications. Operation in a residential area may cause unacceptable interference to radio and TV reception, requiring the owner or operator to take whatever steps are necessary to correct the interference.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.



Wagner Electronic Products, Inc.

326 Pine Grove Road, Rogue River, OR 97537 USA

Phone: (541) 582-0541 Fax: (541) 582-4138

E-mail: sales@www.wagner.com