

# Species Settings

## Questions & Answers

for Wagner Model:

- MMI 1100



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# Questions and Answers

## #1 Theory of Operation

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

**A:** Hand-held moisture meters from Wagner Meters send technologically advanced electromagnetic radio waves deep into the wood without leaving destructive holes. Known around the world for speed and accuracy, meters from Wagner Meters supply instant readings, scanning large amounts of board feet in seconds. Virtually unaffected by temperature and humidity<sup>1</sup>, they scan right through finished products.

Footnote:

<sup>1</sup> 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 Meters Technical Support if additional guidance is needed.

### #2 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 throughout 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 moisture meters from Wagner 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 hand-held meters from Wagner Meters to read right through the plastic wrapping around the

wood on new deliveries before they allow unloading!

### **#3 Where to Take Readings**

**Q:** Where is the reading taken with my moisture meter from Wagner Meters?

**A:** The Wagner MMI-1100 hand-held moisture meter generates a three-dimensional field under the entire sensor that measures a 1 1/2" wide, 2 1/2" long, 3/4" (minimum) thick volume of wood under the entire sensor. The meter can be held in one place or slid rapidly along the entire length of the wood product, on both finished and unfinished wood, for stable, accurate readings.

### **#4 Surface Moisture**

**Q:** Is my moisture meter from Wagner Meters affected by surface moisture?

**A:** Most moisture meters can be affected by standing water or visible water on

## Questions and Answers cont'd...

the board. You should always wipe off as much excess water as possible. Once the standing water is removed, your moisture meter from Wagner Meters will read slightly higher than normal, whereas other types of meters can show greatly exaggerated readings. An exception to this is the Wagner Meters 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.

## **#5 Narrow Lumber**

**Q:** What is the narrowest piece of lumber I can measure accurately with my handheld moisture meter from Wagner Meters?

**A:** The MMI-1100 measures boards as narrow as  $1\frac{1}{2}$  inches in width. Contact Wagner Meters for information to measure lumber narrower than  $1\frac{1}{2}$  inches.

## **#6 Board Thickness**

**Q:** What board thickness can I measure?

**A:** The MMI-1100 is designed to measure wood from  $\frac{3}{4}$  inch to  $1\frac{1}{2}$  inches thick.

## **#7 Meter Orientation**

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

**A:** Your Wagner MMI-1100 moisture meter uses advanced electromagnetic wave technology and is virtually unaffected by orientation (cross-grain or with the grain) on the wood.

### #8 Meter Ruggedness

**Q:** How rugged is my MMI-1100 moisture meter? Is it too delicate to be used on an abusive production line?

**A:** Your MMI-1100 meter is designed for compact convenience. 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.

### #9 Meter Safety

**Q:** Is the Wagner Meters technology safe to use?

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



## #10 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.

# Species Setting Table

Specific Gravity	Species
0.65	Afromosia
0.41	Alder, Red
0.57	Andiroba
0.49	Ash, Black
0.58	Ash, Blue
0.56	Ash, Green
0.55	Ash, Oregon
0.55	Ash, Red
0.60	Ash, White
0.39	Aspen, Bigtooth
0.38	Aspen, Quaking
0.51	Avodire
0.46	Baldcypress
0.45	Banak ( <i>Virola</i> spp.)
0.37	Basswood, American
0.64	Beech, American
0.70	Benge ( <i>Guibourtia arnoldiana</i> )
0.55	Birch, Paper
0.65	Birch, Sweet
0.53	Birch, White
0.62	Birch, Yellow

Specific Gravity	Species
0.38	Butternut
0.42	Cativo
0.44	Cedar, Alaska
0.32	Cedar, Atlantic White
0.47	Cedar, Eastern Red Cedar
0.37	Cedar, Incense
0.31	Cedar, Northern White
0.43	Cedar, Port Orford
0.32	Cedar, Western Red Cedar
0.44	Cedar, Yellow
0.50	Cherry, Black
0.43	Chestnut, American
0.34	Cottonwood, Balsam Poplar
0.35	Cottonwood, Black
0.40	Cottonwood, Eastern
0.72	Degame
0.55	Determa
0.72	Dogwood, Flowering
0.48	Douglas Fir
0.50	Elm, American
0.63	Elm, Rock
0.53	Elm, Slippery
0.35	Fir, Balsam

## Species Setting Table Continued...

Specific Gravity	Species
0.38	Fir, California Red
0.37	Fir, Grand
0.39	Fir, Noble
0.43	Fir, Pacific Silver
0.32	Fir, Subalpine
0.39	Fir, White
0.53	Hackberry
0.40	Hemlock, Eastern
0.45	Hemlock, Mountain
0.45	Hemlock, Western
0.66	Hickory (Pecan), Bitternut
0.60	Hickory (Pecan), Nutmeg
0.62	Hickory (Pecan), Water
0.72	Hickory (True), Mockernut
0.75	Hickory (True), Pignut
0.72	Hickory (True), Shagbark
0.69	Hickory (True), Shellbark
0.66	Hickory, Pecan
0.55	Holly, American
0.70	Hophornbeam, Eastern
0.40	Hura

Specific Gravity	Species
0.57	Iroko
0.75	Jarrah
0.38	Jelutong
0.70	Kapur
0.76	Keruing (Dipterocarpus spp.)
0.52	Larch, Western
0.55	Laurel, California
0.40	Limba
0.69	Locust, Black
0.64	Madrone, Pacific
0.50	Magnolia, Southern
0.44	Mahogany, African
0.47	Mahogany, True
0.63	Manni
0.48	Maple, Bigleaf
0.57	Maple, Black
0.60	Maple, Hard
0.54	Maple, Red
0.47	Maple, Silver
0.51	Maple, Soft
0.63	Maple, Sugar
0.67	Merbau
0.54	Mersawa

## Species Setting Table Continued...

Specific Gravity	Species
0.61	Oak (Red), Black
0.68	Oak (Red), Cherrybark
0.63	Oak (Red), Laurel
0.63	Oak (Red), Northern Red
0.63	Oak (Red), Pin
0.67	Oak (Red), Scarlet
0.59	Oak (Red), Southern Red
0.63	Oak (Red), Water
0.69	Oak (Red), Willow
0.64	Oak (White), Bur
0.66	Oak (White), Chestnut
0.63	Oak (White), Overcup
0.67	Oak (White), Post
0.67	Oak (White), Swamp Chestnut
0.72	Oak (White), Swamp White
0.53	Oak, California Black
0.68	Oak, White
0.32	Obeche
0.35	Okoume
0.68	Opepe
0.49	Parana Pine

Specific Gravity	Species
0.66	Peroba de campos
0.71	Peroba rosa
0.71	Persimmon, Common
0.35	Pine, Eastern White
0.43	Pine, Jack
0.51	Pine, Loblolly
0.41	Pine, Lodgepole
0.59	Pine, Longleaf
0.52	Pine, Pitch
0.56	Pine, Pond
0.40	Pine, Ponderosa
0.46	Pine, Red
0.48	Pine, Sand
0.51	Pine, Shortleaf
0.59	Pine, Slash
0.45	Pine, Spruce
0.36	Pine, Sugar
0.48	Pine, Virginia
0.35	Pine, Western White
0.42	Primavera
0.71	Purpleheart
0.45	Radiata Pine
0.56	Ramin

## Species Setting Table Continued...

Specific Gravity	Species
0.40	Redwood, Old-Growth
0.35	Redwood, Young-Growth
0.55	Roble (Tabebuia spp.)
0.84	Rosewood, Brazilian (Dalbergia Nigra)
0.79	Rosewood, Indian
0.60	Sapele
0.46	Sassafras
0.44	Spanish Cedar
0.42	Spruce, Black
0.35	Spruce, Engelmann
0.40	Spruce, Red
0.40	Spruce, Sitka
0.36	Spruce, White
0.52	Sweetgum
0.49	Sycamore, American
0.56	SYP (Southern Yellow Pine)
0.53	Tamarack
0.64	Tanoak
0.57	Teak
0.50	Tupelo, Black



Specific Gravity	Species
0.50	Tupelo, Water
0.55	Walnut, Black
0.39	Willow, Black
0.42	Yellow-Poplar

## Other Materials

### Plywood and OSB

Specific Gravity	Plywood and OSB
0.57	Plywood <sup>1</sup>
0.060	OSB <sup>1</sup>

The MMC-200 series meters can be used to measure non-wood materials if the density is similar to wood products. Non-wood species can be measured

Footnote:

#### <sup>1</sup> Specific Gravity Correction Value Sources

These meter settings were developed by Wagner Meters. These values are based on our research and have been developed to give users a general correction factor for plywoods & OSB. Please keep in mind that plywood & OSB manufacturing processes can differ slightly and some plywood and OSB of the same species may vary slightly.

by using the meter reading as a relative measurement device 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 Meters at (541) 582-0541 for additional information on species corrections if needed or visit <http://wagnersg.com/>**

## Checking the Moisture Content in Veneer

You can check the moisture content of veneer with your Wagner hand-held moisture meter as follows:

1. Put veneer into a tight stack of at least 3/4 inch, and separate the stack by at least 3 inch to 4 inch from the rest of the stack. Measuring a stack less than the scan depth of the meter will give you a reading that is lower than the true moisture reading. Refer to the species adjustment table for the wood you are using.
2. Electro Static Discharge (ESD) needs to be prevented, as Wagner's warranty doesn't cover ESD damage. The instruments are tested to withstand a 15 KV static charge but not the typical 150 -

## Checking the Moisture Content in Veneer

250 KV found in a veneer charge.  
species setting in the meter.

The veneer table should be earth grounded with a metal wand attached by wire to the table. The wand must then be run up and down the edge of a veneer stack to discharge static, or the person using the moisture meter must have a Velcro wrist band with a tethered strap which is grounded.

These same static precautions apply to lumber moving from a planer; the hand-meter is not an in-line measurement system. This unit is meant to check lumber while stationary.

If these guidelines are adhered to, the risk of ESD damage to your moisture meter is

## **Checking the Moisture Content in Veneer**

greatly reduced or eliminated. Please call the factory if you have any questions or concerns about this information.

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