TechScan™ v.1.0

Owner's Manual

DELMHORST INSTRUMENT CO.

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TechScan™

VERSION 1.0

OWNER'S MANUAL

INTRODUCTION

Thank you for purchasing TechScan, a multi-purpose meter that can be used in many applications including water damage restoration, home inspection, indoor air quality, woodworking, flooring installation. TechScan provides a fast, effective way to identify moisture problems and determine if further action must be taken.

TechScan is a capacitance-type moisture meter with patented sensor technology, using the relationship between the moisture content and the dielectric properties of the material under test. When the meter is placed on wood or other hygroscopic building material, an electro-magnetic field penetrates approximately ¾ to 1 inch into the material. The meter reading represents a biased average, with the MC nearest to the sensor having the greatest effect.

If you require a more complete evaluation of moisture conditions or need to penetrate through flooring, check behind drywall, or test lumber over 1-1/2" thick, we recommend using TechScan in conjunction with a Delmhorst resistance (pin-type) moisture meter.

TechScan has two reading scales:

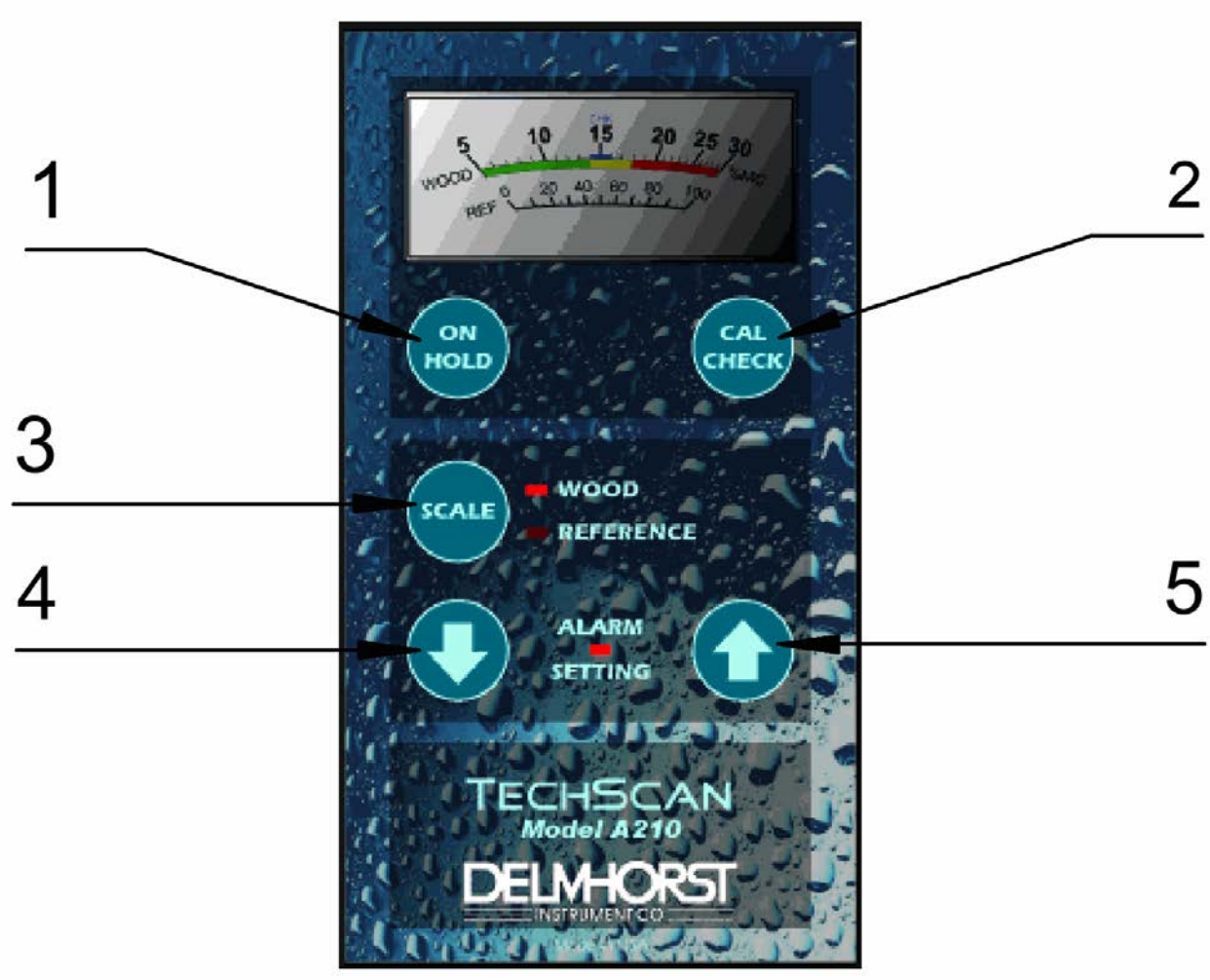
Wood : 5%-30% MC range for wood. Select when testing wood materials, such as flooring, trim, construction lumber, exterior siding.

Reference: 0-100 scale for non-wood hygroscopic materials. **The numbers on this scale are relative, or qualitative indications of moisture levels – not % moisture content.** Select when testing building materials such as drywall, concrete, plaster, EIFS, etc. Readings in the low end of the scale usually indicate a drier condition; readings in the upper end of the scale usually indicate a higher moisture level in the material.

To establish a benchmark or "dry standard" for the material you are measuring, first take readings in areas that you know are dry, or acceptable. Then take readings on areas that you know are wet. These "dry to wet" readings should be used as the

reference points against which subsequent readings are compared. One should not expect that the reference scales for meters of different brands and types (resistance /capacitance) will read alike on the same material. The benchmark may be different from one meter type/brand to another because a given meters' response depends on the material used for calibration and on the meter's range.

SWITCH KEY FUNCTIONS



1. **On/Hold Key:** Press to turn meter on, resume reading after checking calibration or setting alarm, or hold current reading if pressed while reading. (There is a slow beeping sound while holding a reading.)
2. **Cal Check Key:** Press and hold this key while in Read mode to check calibration.
3. **Scale Key:** Press to select Wood scale or Reference scale.

4. **Down Arrow Key:** Press and hold to decrease the alarm setting.
5. **Up Arrow Key:** Press and hold to increase the alarm setting.

OPERATION

Checking the Battery and Calibration

- The meter automatically checks the battery level when it is turned on. If the battery voltage is not high enough for reliable operation, all indicators will flash for a few seconds. Replace the battery with a new one (9v alkiline).
- To check the meter's calibration, turn the meter on. Press and hold the Cal Check key. Hold the meter in the air so that only the internal reference is read. The meter must read within the blue calibration check band. If the meter reads out of calibration refer to the Service for Your Meter section (pg8).

Taking a Reading

- Press the On/Hold key to turn the unit on.
- Press the Scale key to select the Wood or the Reference scale.
- When the meter is set to wood, the panel meter wood scale is calibrated to show %MC based on the average specific gravity of Douglas Fir (0.46).
- When the meter is set to the reference scale, the meter switches to a lower sensitivity mode which is suitable for a wide range of materials.
- Press the On/Hold key while reading to hold (or freeze) the current reading. The meter will beep slowly and continue to hold the reading until the On/Hold key is pressed again.
- The alarm (fast beep) will sound whenever the current reading is above the alarm setting.

Setting the Alarm

- With the meter turned on, press the Up or Down arrow keys to adjust the alarm setting. When the Alarm Setting is being adjusted, the Alarm Setting indicator lights and the panel meter shows the alarm setting.
- The range of alarm settings is 5.0 to 30.0 for wood and 1 to 100 for the reference scale. The meter stores separate wood and reference alarm settings.
- To turn the alarm off, use the Up key to adjust the alarm setting beyond the end of the scale. The Alarm Setting indicator flashes when the alarm is turned off.
- Exit the Alarm Setting mode by pressing the On/Hold key.

Auto Shut-off

- The meter automatically turns off when no keys are pressed for three minutes.
- Five seconds before the meter turns off, the beeper will sound and the active Scale indicator will flash.
- To prevent the meter from turning off, press any key before the meter turns off.

HELPFUL TIPS FOR USING TECHSCAN TO MEASURE MC IN WOOD:

- **Set the scale to "Wood".**

- The entire sensor plate should be in contact with the surface of the board. The sensor plate measures 2-1/2" x 3-1/2".

- Readings obtained with TechScan and pin-less moisture meters in general, are affected by the amount of pressure applied to the material. Apply and maintain uniform, firm pressure to the meter when taking readings.

- The meter's RF signal penetrates to ¾" – 1". When measuring thinner material the material underneath the wood may influence the readings. If possible place a piece of glass, rubber or styrofoam under the sample to avoid false readings.

- The meter works best on smooth lumber. Rough, uneven, or cupped boards yield lower readings due to the air pockets between the sensor plate and the surface. Avoid readings on knots or splits.

- Surface moisture slightly increases the readings. Wipe obvious moisture from the board surface to minimize this effect.

- The meter is influenced by a moisture gradient but cannot detect it. If you suspect a gradient, use a Delmhorst resistance-type meter with insulated pins to determine if a normal gradient (wet core to drier outer surface) is present or if surface moisture has just soaked into the board.

- Before installing a wood floor, if possible allow the flooring to acclimate in its environment for several days before installation. During this period, check both the floor and the sub floor to ensure that moisture levels of both materials remain stable and are within recommended MC guidelines.

- The “right” moisture content depends on the final use of the wood and is climate-driven. Recommended moisture content for indoor woodworking / furniture ranges from 6%-9%. Outdoor construction grade lumber is usually 19% or less; 10%-15% for safe painting or staining.

Corrections for Specific Gravity (SG)

Measurements obtained with capacitance type moisture meters such as TechScan are greatly influenced by the specific gravity of the material (specifically the wood) being measured. Materials with higher specific gravity produce higher moisture readings than materials with lower specific gravity at the same moisture content. Since TechScan is calibrated for wood at a specific gravity (SG) of 0.46, a correction is required when measuring wood species with SG values other than 0.46 At the end of this manual you will find a listing of common species with published average values for SG and also a table to correct meter readings for wood species. Use these values with the knowledge that specific gravity varies within a single species and may even vary within the same board. The following resources can be helpful if you are working with a species that is not included in these tables. When referring to published data use the SG values based on green volume and oven-dry weight (sometimes referred to as “green basis”).

www.wood-database.com

www.fpl.fs.fed.us/ (Wood Handbook 2010)

www.woodworkerssource.com

HELPFUL TIPS FOR USING TECHSCAN TO MEASURE RELATIVE MOISTURE LEVELS IN NON-WOOD MATERIALS:

- **Set the scale to “Reference”. The 0-100 reference scale is for relative wet/dry indications only. These numbers do not represent %MC.**

- The entire sensor plate should be in contact with the surface of the material being measured. The sensor plate measures 2-1/2” x 3-1/2”.

- Readings obtained with TechScan and pin-less moisture meters in general, are affected by the amount of pressure applied to the material. Apply and maintain uniform, firm pressure to the meter when taking readings.

- The meter's RF signal penetrates to ¾" – 1". Material underneath or behind the surface being tested may influence the readings. This includes metal studs, wiring, and in the case of concrete, rebar and aggregate.

- The meter works best on smooth, clean surfaces. Surface moisture slightly increases the readings. Wipe obvious moisture from the board surface to minimize this effect.

- **Testing Concrete Slabs for Flooring Applications**

  Pinless moisture meters can be an effective tool to check comparative moisture conditions in concrete slabs. They can tell you where there may be excess moisture and help determine if you need to conduct further testing, and identify specific areas on which that testing should be performed.

  TechScan cannot provide quantitative results as a basis for acceptance of a slab for installation of moisture-sensitive flooring systems. ASTM Test Method F2170 (RH using in situ probes), F1869 (calcium chloride), and F2420 (RH on surface using insulated hood) provide quantitative information for determining if moisture levels are within specific limits.

- **Using TechScan In A Water Damage Restoration Or Mold Remediation Job:**

  TechScan is a useful tool in identifying moisture in walls, ceilings and floors in a water restoration or mold remediation. In order to establish pre-loss conditions, find an area of the building that was not damaged and take several readings on various materials. This will provide you with a "dry standard" or target moisture levels when drying damaged areas.

  Take several readings on each wall. Pay special attention near the base, around doorjambs, electrical and plumbing fixtures, and other places where water may have entered. Use the meter continuously during the drying process to monitor drying progress.

- **Testing EIFS (Exterior Insulation and Finishing System):**

  Moisture intrusion problems in EIFS (synthetic stucco) stem from leaking window and door frames, improper use of or lack of sealant, and faulty installation of flashing.

If you suspect a problem conduct a visual inspection. Look for gaps around windows, doors, air conditioning units, light fixtures, hose bibs, dryer vents and other areas of potential penetration. Also look for visible signs of water damage. If you believe a problem exists, use TechScan as a quick scanning tool to determine the general location of the moisture. Then use a pin- type meter to better identify exact problem areas and depth of moisture intrusion.

CARE OF YOUR METER:

- Store the meter in a clean, dry place. The protective carrying case provided is an ideal storage place when the meter is not in use.
- Change the 9-Volt battery as needed. Continued use with a low battery may cause the meter to go out of calibration.
- Clean the meter with any biodegradable cleaner. Use the cleaner sparingly and on external parts only.
- Remove the battery if the meter will not be used for one month or longer.

SERVICE FOR YOUR METER

If your meter is not working properly, replace the battery with a new one and check the calibration. If this does not resolve the problem, go to www.delmhorst.com and follow the instructions under Product Support. If you require further assistance please call 877-DELMHORST (335-6467) or 973-334-2557.

WARRANTY

Delmhorst Instrument Co., referred to hereafter as Delmhorst, guarantees its TechScan meter for one year from date of purchase against defects in material or workmanship. If within the warranty period of the TechScan you find any defect in material or workmanship return the meter following the instructions in the **Service for Your Meter** section. This limited warranty does not cover abuse, alteration, misuse, damage during shipment, improper service, unauthorized or unreasonable use of the meter. This warranty does not cover batteries. If the meter has been tampered with, the warranty shall be void. At our option we may replace or repair the meter.

Delmhorst 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 the meter should stay in calibration; follow the instructions in the **Care of Your Meter** section.

UNDER NO CIRCUMSTANCES SHALL DELMHORST BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES OF ANY TYPE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS OR DOWNTIME ARISING OUT OF OR RELATED IN ANY RESPECT TO ITS METERS OR ELECTRODES AND NO OTHER WARRANTY, WRITTEN, ORAL OR IMPLIED APPLIES. DELMHORST SHALL IN NO EVENT BE LIABLE FOR ANY BREACH OF WARRANTY OR DEFECT IN THIS PRODUCT THAT EXCEEDS THE AMOUNT OF PURCHASE OF THIS PRODUCT.

The express warranty set forth above constitutes the entire warranty with respect to Delmhorst meters and no other warranty, written, oral, or implied applies. This warranty is personal to the customer purchasing the product and is not transferable.

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For more than 65 years Delmhorst Instrument has been the leading manufacturer of high quality, US-made moisture meters and thermo-hygrometers. Today we offer a wide range of meters for applications including water damage restoration, construction, flooring, lumber/woodworking, paper, and agriculture.

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TECHSCAN ADDENDUM

1. Specific Gravity Correction Table - TechScan Meter Readings vs MC - April 2013

2. TechScan Species/Botanical/SG List – April 2013

SPECIFIC GRAVITY CORRECTION TABLE - TECHSCAN METER READINGS VS. MOISTURE CONTENT

Meter Readings ↓	SG →	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58
5		9.4	9.2	8.9	8.6	8.3	8.0	7.8	7.5	7.2	6.9	6.7	6.4	6.1	5.8	5.6	5.3	5.0	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
5.5		9.9	9.7	9.4	9.1	8.8	8.5	8.3	8.0	7.7	7.4	7.2	6.9	6.6	6.3	6.1	5.8	5.5	5.2	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
6		10.4	10.2	9.9	9.6	9.3	9.0	8.8	8.5	8.2	7.9	7.7	7.4	7.1	6.8	6.6	6.3	6.0	5.7	5.4	5.2	LO	LO	LO	LO	LO	LO	LO	LO	LO
6.5		10.9	10.7	10.4	10.1	9.8	9.5	9.3	9.0	8.7	8.4	8.2	7.9	7.6	7.3	7.1	6.8	6.5	6.2	5.9	5.7	5.4	5.1	LO	LO	LO	LO	LO	LO	LO
7		11.4	11.2	10.9	10.6	10.3	10.0	9.8	9.5	9.2	8.9	8.7	8.4	8.1	7.8	7.6	7.3	7.0	6.7	6.4	6.2	5.9	5.6	5.3	5.1	LO	LO	LO	LO	LO
7.5		11.9	11.7	11.4	11.1	10.8	10.5	10.3	10.0	9.7	9.4	9.2	8.9	8.6	8.3	8.1	7.8	7.5	7.2	6.9	6.7	6.4	6.1	5.8	5.6	5.3	5.0	LO	LO	LO
8		12.4	12.2	11.9	11.6	11.3	11.0	10.8	10.5	10.2	9.9	9.7	9.4	9.1	8.8	8.6	8.3	8.0	7.7	7.4	7.2	6.9	6.6	6.3	6.1	5.8	5.5	5.2	5.0	LO
8.5		12.9	12.7	12.4	12.1	11.8	11.5	11.3	11.0	10.7	10.4	10.2	9.9	9.6	9.3	9.1	8.8	8.5	8.2	7.9	7.7	7.4	7.1	6.8	6.6	6.3	6.0	5.7	5.5	5.2
9		13.4	13.2	12.9	12.6	12.3	12.0	11.8	11.5	11.2	10.9	10.7	10.4	10.1	9.8	9.6	9.3	9.0	8.7	8.4	8.2	7.9	7.6	7.3	7.1	6.8	6.5	6.2	6.0	5.7
9.5		13.9	13.7	13.4	13.1	12.8	12.5	12.3	12.0	11.7	11.4	11.2	10.9	10.6	10.3	10.1	9.8	9.5	9.2	8.9	8.7	8.4	8.1	7.8	7.6	7.3	7.0	6.7	6.5	6.2
10		14.4	14.2	13.9	13.6	13.3	13.0	12.8	12.5	12.2	11.9	11.7	11.4	11.1	10.8	10.6	10.3	10.0	9.7	9.4	9.2	8.9	8.6	8.3	8.1	7.8	7.5	7.2	7.0	6.7
10.5		14.9	14.7	14.4	14.1	13.8	13.5	13.3	13.0	12.7	12.4	12.2	11.9	11.6	11.3	11.1	10.8	10.5	10.2	9.9	9.7	9.4	9.1	8.8	8.6	8.3	8.0	7.7	7.5	7.2
11		15.4	15.2	14.9	14.6	14.3	14.0	13.8	13.5	13.2	12.9	12.7	12.4	12.1	11.8	11.6	11.3	11.0	10.7	10.4	10.2	9.9	9.6	9.3	9.1	8.8	8.5	8.2	8.0	7.7
11.5		15.9	15.7	15.4	15.1	14.8	14.5	14.3	14.0	13.7	13.4	13.2	12.9	12.6	12.3	12.1	11.8	11.5	11.2	10.9	10.7	10.4	10.1	9.8	9.6	9.3	9.0	8.7	8.5	8.2
12		16.4	16.2	15.9	15.6	15.3	15.0	14.8	14.5	14.2	13.9	13.7	13.4	13.1	12.8	12.6	12.3	12.0	11.7	11.4	11.2	10.9	10.6	10.3	10.1	9.8	9.5	9.2	9.0	8.7
12.5		16.9	16.7	16.4	16.1	15.8	15.5	15.3	15.0	14.7	14.4	14.2	13.9	13.6	13.3	13.1	12.8	12.5	12.2	11.9	11.7	11.4	11.1	10.8	10.6	10.3	10.0	9.7	9.5	9.2
13		17.4	17.2	16.9	16.6	16.3	16.0	15.8	15.5	15.2	14.9	14.7	14.4	14.1	13.8	13.6	13.3	13.0	12.7	12.4	12.2	11.9	11.6	11.3	11.1	10.8	10.5	10.2	10.0	9.7
13.5		17.9	17.7	17.4	17.1	16.8	16.5	16.3	16.0	15.7	15.4	15.2	14.9	14.6	14.3	14.1	13.8	13.5	13.2	12.9	12.7	12.4	12.1	11.8	11.6	11.3	11.0	10.7	10.5	10.2
14		18.4	18.2	17.9	17.6	17.3	17.0	16.8	16.5	16.2	15.9	15.7	15.4	15.1	14.8	14.6	14.3	14.0	13.7	13.4	13.2	12.9	12.6	12.3	12.1	11.8	11.5	11.2	11.0	10.7
14.5		18.9	18.7	18.4	18.1	17.8	17.5	17.3	17.0	16.7	16.4	16.2	15.9	15.6	15.3	15.1	14.8	14.5	14.2	13.9	13.7	13.4	13.1	12.8	12.6	12.3	12.0	11.7	11.5	11.2
15		19.4	19.2	18.9	18.6	18.3	18.0	17.8	17.5	17.2	16.9	16.7	16.4	16.1	15.8	15.6	15.3	15.0	14.7	14.4	14.2	13.9	13.6	13.3	13.1	12.8	12.5	12.2	12.0	11.7
15.5		19.9	19.7	19.4	19.1	18.8	18.5	18.3	18.0	17.7	17.4	17.2	16.9	16.6	16.3	16.1	15.8	15.5	15.2	14.9	14.7	14.4	14.1	13.8	13.6	13.3	13.0	12.7	12.5	12.2
16		20.4	20.2	19.9	19.6	19.3	19.0	18.8	18.5	18.2	17.9	17.7	17.4	17.1	16.8	16.6	16.3	16.0	15.7	15.4	15.2	14.9	14.6	14.3	14.1	13.8	13.5	13.2	13.0	12.7
16.5		20.9	20.7	20.4	20.1	19.8	19.5	19.3	19.0	18.7	18.4	18.2	17.9	17.6	17.3	17.1	16.8	16.5	16.2	15.9	15.7	15.4	15.1	14.8	14.6	14.3	14.0	13.7	13.5	13.2
17		21.4	21.2	20.9	20.6	20.3	20.0	19.8	19.5	19.2	18.9	18.7	18.4	18.1	17.8	17.6	17.3	17.0	16.7	16.4	16.2	15.9	15.6	15.3	15.1	14.8	14.5	14.2	14.0	13.7
17.5		21.9	21.7	21.4	21.1	20.8	20.5	20.3	20.0	19.7	19.4	19.2	18.9	18.6	18.3	18.1	17.8	17.5	17.2	16.9	16.7	16.4	16.1	15.8	15.6	15.3	15.0	14.7	14.5	14.2
18		22.4	22.2	21.9	21.6	21.3	21.0	20.8	20.5	20.2	19.9	19.7	19.4	19.1	18.8	18.6	18.3	18.0	17.7	17.4	17.2	16.9	16.6	16.3	16.1	15.8	15.5	15.2	15.0	14.7
18.5		22.9	22.7	22.4	22.1	21.8	21.5	21.3	21.0	20.7	20.4	20.2	19.9	19.6	19.3	19.1	18.8	18.5	18.2	17.9	17.7	17.4	17.1	16.8	16.6	16.3	16.0	15.7	15.5	15.2
19		23.4	23.2	22.9	22.6	22.3	22.0	21.8	21.5	21.2	20.9	20.7	20.4	20.1	19.8	19.6	19.3	19.0	18.7	18.4	18.2	17.9	17.6	17.3	17.1	16.8	16.5	16.2	16.0	15.7
19.5		23.9	23.7	23.4	23.1	22.8	22.5	22.3	22.0	21.7	21.4	21.2	20.9	20.6	20.3	20.1	19.8	19.5	19.2	18.9	18.7	18.4	18.1	17.8	17.6	17.3	17.0	16.7	16.5	16.2
20		24.4	24.2	23.9	23.6	23.3	23.0	22.8	22.5	22.2	21.9	21.7	21.4	21.1	20.8	20.6	20.3	20.0	19.7	19.4	19.2	18.9	18.6	18.3	18.1	17.8	17.5	17.2	17.0	16.7
21		25.4	25.2	24.9	24.6	24.3	24.0	23.8	23.5	23.2	22.9	22.7	22.4	22.1	21.8	21.6	21.3	21.0	20.7	20.4	20.2	19.9	19.6	19.3	19.1	18.8	18.5	18.2	18.0	17.7
22		26.4	26.2	25.9	25.6	25.3	25.0	24.8	24.5	24.2	23.9	23.7	23.4	23.1	22.8	22.6	22.3	22.0	21.7	21.4	21.2	20.9	20.6	20.3	20.1	19.8	19.5	19.2	19.0	18.7
23		27.4	27.2	26.9	26.6	26.3	26.0	25.8	25.5	25.2	24.9	24.7	24.4	24.1	23.8	23.6	23.3	23.0	22.7	22.4	22.2	21.9	21.6	21.3	21.1	20.8	20.5	20.2	20.0	19.7
24		28.4	28.2	27.9	27.6	27.3	27.0	26.8	26.5	26.2	25.9	25.7	25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.4	23.2	22.9	22.6	22.3	22.1	21.8	21.5	21.2	21.0	20.7
25		29.4	29.2	28.9	28.6	28.3	28.0	27.8	27.5	27.2	26.9	26.7	26.4	26.1	25.8	25.6	25.3	25.0	24.7	24.4	24.2	23.9	23.6	23.3	23.1	22.8	22.5	22.2	22.0	21.7
26		HI	HI	29.9	29.6	29.3	29.0	28.8	28.5	28.2	27.9	27.7	27.4	27.1	26.8	26.6	26.3	26.0	25.7	25.4	25.2	24.9	24.6	24.3	24.1	23.8	23.5	23.2	23.0	22.7
27		HI	HI	HI	HI	HI	30.0	29.8	29.5	29.2	28.9	28.7	28.4	28.1	27.8	27.6	27.3	27.0	26.7	26.4	26.2	25.9	25.6	25.3	25.1	24.8	24.5	24.2	24.0	23.7
28		HI	HI	HI	HI	HI	HI	HI	HI	HI	29.9	29.7	29.4	29.1	28.8	28.6	28.3	28.0	27.7	27.4	27.2	26.9	26.6	26.3	26.1	25.8	25.5	25.2	25.0	24.7
29		HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	29.8	29.6	29.3	29.0	28.7	28.4	28.2	27.9	27.6	27.3	27.1	26.8	26.5	26.2	26.0	25.7
30		HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	HI	30.0	29.7	29.4	29.2	28.9	28.6	28.3	28.1	27.8	27.5	27.2	27.0	26.7

SPECIFIC GRAVITY CORRECTION TABLE - TECHSCAN METER READINGS VS. MOISTURE CONTENT

Meter Readings ↓	SG →	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.80
5		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
5.5		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
6		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
6.5		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
7		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
7.5		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
8		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
8.5		LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
9		5.4	5.1	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
9.5		5.9	5.6	5.3	5.1	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
10		**6.4**	**6.1**	**5.8**	**5.6**	**5.3**	**5.0**	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
10.5		6.9	6.6	6.3	6.1	5.8	5.5	5.2	5.0	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
11		7.4	7.1	6.8	6.6	6.3	6.0	5.7	5.5	5.2	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
11.5		7.9	7.6	7.3	7.1	6.8	6.5	6.2	6.0	5.7	5.4	5.1	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
12		8.4	8.1	7.8	7.6	7.3	7.0	6.7	6.5	6.2	5.9	5.6	5.4	5.1	LO	LO	LO	LO	LO	LO	LO	LO	LO
12.5		**8.9**	**8.6**	**8.3**	**8.1**	**7.8**	**7.5**	**7.2**	**7.0**	**6.7**	**6.4**	**6.1**	**5.9**	**5.6**	**5.3**	**5.0**	LO	LO	LO	LO	LO	LO	LO
13		9.4	9.1	8.8	8.6	8.3	8.0	7.7	7.5	7.2	6.9	6.6	6.4	6.1	5.8	5.5	5.2	5.0	LO	LO	LO	LO	LO
13.5		9.9	9.6	9.3	9.1	8.8	8.5	8.2	8.0	7.7	7.4	7.1	6.9	6.6	6.3	6.0	5.7	5.5	5.2	LO	LO	LO	LO
14		10.4	10.1	9.8	9.6	9.3	9.0	8.7	8.5	8.2	7.9	7.6	7.4	7.1	6.8	6.5	6.2	6.0	5.7	5.4	5.1	LO	LO
14.5		10.9	10.6	10.3	10.1	9.8	9.5	9.2	9.0	8.7	8.4	8.1	7.9	7.6	7.3	7.0	6.7	6.5	6.2	5.9	5.6	5.4	5.1
15		**11.4**	**11.1**	**10.8**	**10.6**	**10.3**	**10.0**	**9.7**	**9.5**	**9.2**	**8.9**	**8.6**	**8.4**	**8.1**	**7.8**	**7.5**	**7.2**	**7.0**	**6.7**	**6.4**	**6.1**	**5.9**	**5.6**
15.5		11.9	11.6	11.3	11.1	10.8	10.5	10.2	10.0	9.7	9.4	9.1	8.9	8.6	8.3	8.0	7.7	7.5	7.2	6.9	6.6	6.4	6.1
16		12.4	12.1	11.8	11.6	11.3	11.0	10.7	10.5	10.2	9.9	9.6	9.4	9.1	8.8	8.5	8.2	8.0	7.7	7.4	7.1	6.9	6.6
16.5		12.9	12.6	12.3	12.1	11.8	11.5	11.2	11.0	10.7	10.4	10.1	9.9	9.6	9.3	9.0	8.7	8.5	8.2	7.9	7.6	7.4	7.1
17		13.4	13.1	12.8	12.6	12.3	12.0	11.7	11.5	11.2	10.9	10.6	10.4	10.1	9.8	9.5	9.2	9.0	8.7	8.4	8.1	7.9	7.6
17.5		**13.9**	**13.6**	**13.3**	**13.1**	**12.8**	**12.5**	**12.2**	**12.0**	**11.7**	**11.4**	**11.1**	**10.9**	**10.6**	**10.3**	**10.0**	**9.7**	**9.5**	**9.2**	**8.9**	**8.6**	**8.4**	**8.1**
18		14.4	14.1	13.8	13.6	13.3	13.0	12.7	12.5	12.2	11.9	11.6	11.4	11.1	10.8	10.5	10.2	10.0	9.7	9.4	9.1	8.9	8.6
18.5		14.9	14.6	14.3	14.1	13.8	13.5	13.2	13.0	12.7	12.4	12.1	11.9	11.6	11.3	11.0	10.7	10.5	10.2	9.9	9.6	9.4	9.1
19		15.4	15.1	14.8	14.6	14.3	14.0	13.7	13.5	13.2	12.9	12.6	12.4	12.1	11.8	11.5	11.2	11.0	10.7	10.4	10.1	9.9	9.6
19.5		15.9	15.6	15.3	15.1	14.8	14.5	14.2	14.0	13.7	13.4	13.1	12.9	12.6	12.3	12.0	11.7	11.5	11.2	10.9	10.6	10.4	10.1
20		**16.4**	**16.1**	**15.8**	**15.6**	**15.3**	**15.0**	**14.7**	**14.5**	**14.2**	**13.9**	**13.6**	**13.4**	**13.1**	**12.8**	**12.5**	**12.2**	**12.0**	**11.7**	**11.4**	**11.1**	**10.9**	**10.6**
21		17.4	17.1	16.8	16.6	16.3	16.0	15.7	15.5	15.2	14.9	14.6	14.4	14.1	13.8	13.5	13.2	13.0	12.7	12.4	12.1	11.9	11.6
22		18.4	18.1	17.8	17.6	17.3	17.0	16.7	16.5	16.2	15.9	15.6	15.4	15.1	14.8	14.5	14.2	14.0	13.7	13.4	13.1	12.9	12.6
23		19.4	19.1	18.8	18.6	18.3	18.0	17.7	17.5	17.2	16.9	16.6	16.4	16.1	15.8	15.5	15.2	15.0	14.7	14.4	14.1	13.9	13.6
24		20.4	20.1	19.8	19.6	19.3	19.0	18.7	18.5	18.2	17.9	17.6	17.4	17.1	16.8	16.5	16.2	16.0	15.7	15.4	15.1	14.9	14.6
25		**21.4**	**21.1**	**20.8**	**20.6**	**20.3**	**20.0**	**19.7**	**19.5**	**19.2**	**18.9**	**18.6**	**18.4**	**18.1**	**17.8**	**17.5**	**17.2**	**17.0**	**16.7**	**16.4**	**16.1**	**15.9**	**15.6**
26		22.4	22.1	21.8	21.6	21.3	21.0	20.7	20.5	20.2	19.9	19.6	19.4	19.1	18.8	18.5	18.2	18.0	17.7	17.4	17.1	16.9	16.6
27		23.4	23.1	22.8	22.6	22.3	22.0	21.7	21.5	21.2	20.9	20.6	20.4	20.1	19.8	19.5	19.2	19.0	18.7	18.4	18.1	17.9	17.6
28		24.4	24.1	23.8	23.6	23.3	23.0	22.7	22.5	22.2	21.9	21.6	21.4	21.1	20.8	20.5	20.2	20.0	19.7	19.4	19.1	18.9	18.6
29		25.4	25.1	24.8	24.6	24.3	24.0	23.7	23.5	23.2	22.9	22.6	22.4	22.1	21.8	21.5	21.2	21.0	20.7	20.4	20.1	19.9	19.6
30		**26.4**	**26.1**	**25.8**	**25.6**	**25.3**	**25.0**	**24.7**	**24.5**	**24.2**	**23.9**	**23.6**	**23.4**	**23.1**	**22.8**	**22.5**	**22.2**	**22.0**	**21.7**	**21.4**	**21.1**	**20.9**	**20.6**

TECHSCAN SPECIES / SG LIST

SPECIES NAME:	BOTANICAL NAME:	SG	SPECIES NAME:	BOTANICAL NAME:	SG
ALDER	Alnus glutinosa	0.37	KERUING	Dipterocarpus spp.	0.69
ASH, WHITE	Fraxinus americana	0.55	KOA	Acacia koa	0.53
ASPEN	Populus tremula	0.36	LARCH, EURO	Larix decidua	0.45
BASSWOOD	Tilia glabra	0.32	LARCH, WESTERN	Larix occidentalis	0.48
BEECH, AMERICAN	Fagus grandifolia	0.56	MAGNOLIA, SOUTHERN	Magnolia grandiflora	0.46
BEECH, EURO	Fagus sylvestris	0.53	MAHOGANY- AFRICAN	Khaya spp	0.42
BIRCH	Betula alba	0.55	MAHOGANY- HOND	Swietenia spp	0.45
BRAZILIAN CHERRY	Hymenea courbaril	0.64	MAHOGANY-TRUE	Shorea spp.	0.46
BUBINGA	Guibourtia spp.	0.71	MAPLE, HARD	Acer saccharum	0.56
CEDAR, EASTERN RED	Juniper virginiana	0.44	MAPLE, RED (SOFT)	Acer rubrum	0.49
CEDAR, INCENSE	Libocedrus decurrens	0.35	MAPLE, SILVER (SOFT)	Acer saccharinum	0.44
CEDAR, SPANISH	Cedrela spp.	0.41	MERANTI	Shorea spp.	0.46
CEDAR,WESTERN RED	Thuja plicata	0.31	MYRTLE, OREGON	Umbellularia californica	0.51
CHERRY, BLACK	Prunus serotina	0.47	MYRTLE, TASMANIAN	Nothophagus spp	0.50
COTTONWOOD, BLACK	Populus strichocarpa	0.31	OAK, RED	Quercus spp.	0.56
DOUGLAS FIR	Pseudotsuga menziesii	0.45	OAK, WHITE	Quercus spp.	0.60
EBONY, AFRICAN	Diospyros crassiflora	0.78	PECAN	Carya illinoinensis	0.60
ELM, AMERICAN	Ulmus spp.	0.46	PINE, JACK	Pinea banksiana	0.40
FIR, RED	Abies magnifica	0.65	PINE, LONGLEAF	Pinus palustris	0.54
FIR, WHITE	Abies concolor	0.37	PINE, PONDEROSA	Pinus ponderosa	0.38
GUM, BLACK	Nyssa sylvatica	0.64	PINE, RADIATA	Pinus radiata	0.42
GUM, RED/SWEETGUM	Liquidambar styraciflua	0.46	PINE, SHORTLEAF	Pinus echinata	0.47
HACKBERY	Celtis occidentalis	0.49	PINE, SUGAR	Pinus lambertiana	0.34
HEMLOCK, EASTERN	Tsuga canadensis	0.36	PINE, WHITE	Pinus strobus	0.36
HEMLOCK, WESTERN	Tsuga heterophylla	0.42	POPLAR, YELLOW	Liriodendron tulipifera	0.40
HICKORY, SHAGBARK	Carya ovata	0.64	PURPLEHEART	Peltogyne spp.	0.67
JATOBA	Hymenea courbaril	0.77	RAMIN	Gonystylus spp.	0.52

TECHSCAN SPECIES / SG LIST

SPECIES NAME:	BOTANICAL NAME:	SG
SPRUCE, BLACK	Picea mariana	0.38
SPRUCE, ENGLMN	Picea engelmannii	0.33
SPRUCE, SITKA	Picea sitchensis	0.37
SPRUCE, WHITE	Picea glauca	0.33
TAMARACK	Larix larcina	0.48
TEAK	Tectona grandis	0.55
REDWOOD	Sequoia sempirvirous	0.36
ROSEWOOD, BRAZ	Dalbergia nigra	0.80
RUBBERWOOD	Hevea brazilensis	0.49
TUPELO	Nyssa sylvatica	0.64
VIROLA	Virola spp.	0.42
WALNUT, BLACK	Juglans nigra	0.51

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NOTE: SG VALUES ARE BASED ON GREEN VOLUME AND OVEN-DRY WEIGHT.

April 2013 - rev1