

INTRODUCTION TO MOISTURE METERS FOR WOOD

About one-half of the customer related problems with wood products, are problems related to wood moisture content. It is therefore essential for sawmills and wood suppliers to be able to measure moisture content since many customer requirements specify maximum wood moisture content. Wood product manufacturers also need to be able to measure moisture content in wood before and again after manufacture. With all sawn and planed wood products this can be a very rapid task taking only seconds using a battery operated wood moisture meter.



Fig 1: Protimeter *resistance type* pocket size moisture meter

High moisture content can lead to mould and stain and decay in wood within structures, damage to decoration and shrinkage in customers' buildings and goods. Wood product manufacturers may often be considered legally liable for this. For planed and sawn timber reading the level of wood moisture content is rapid if using the type of pocket size battery operated wood *resistance type* moisture meter shown in Figure 1. This type of moisture meter works on the resistance principle where two needle probes are pressed into the wood surface and the amount of electrical current passing indicates the moisture content. A good resistance type meter measures the range 10-30% (very dry to very wet) which is the range of greatest interest to most users. Sawn and planed wood gives instantly accurate readings but wood-based processed materials, such as chipboard, mdf and plywood are not suitable for measurement by *any* electrical wood moisture meter due to the different adhesive and binders used by sheet manufacturers which conduct electrical current at unknown levels.

If using a moisture meter frequently in an industrial situation, to avoid operator strain at height/reach and speed up measurements, a remote hand-probe on a flexible lead which plugs into the moisture meter is often used, one version is shown in Fig 2.

Beware of cheap moisture meters on sale which are often highly inaccurate, this makes them worse than useless because an apparent reading of say, 19% (that is really 23%), will lead to a false sense of security as regards wood being below the *decay safety line of 20%*. Also if your company is accredited to ISO 9000 you are required to keep measuring equipment accurate and in calibration. Such calibration can be done by a specialist company but if you wish to avoid sending your meter away at inconvenient times then an in-house calibration instrument such as a *checkbox*, shown in Fig 3 is recommended. This electronic device which represents softwood specimens at precise moisture contents was developed by TRADA in 1982 and it determines moisture meter accuracy instantly by checking several key points. For more details see <http://www.verus.co.uk/calibration-checkboxes.html> or BS EN 13183-2: 2002: "*Moisture content of sawn timber - Estimation by the electrical resistance method*".



Fig 2: Protimeter *Heavy Duty Hand Probe*



Fig 3: Verus Instruments *Calibration Checkbox II*

For companies kiln drying timber, a special plug-in temperature sensor accessory is available to speed up readings by instantly correcting hot timber readings, for details see <http://www.verus.co.uk/products-accessories.html>

- A *resistance-type* moisture meter should always be available in the production workshop/or on site
- All moisture meters in use (or *calibration checkboxes*) should be recently and traceably calibrated
- The Company Quality Controller should make frequent periodic calibration checks on all in-use moisture meters
- Product in-process records of wood moisture content should be retained to demonstrate compliance/fault find