



C301 CAPACITIVE TIMBER MOISTURE METER



The C301 capacitive timber moisture meter is non-invasive and simple to use. No large electrodes or pins are required to be inserted into the timber.

Features

- Capacitive type instrument with digital readout.
- Non-invasive operation
- Self contained with no external electrodes
- Continuous operation enabling large areas to be rapidly checked

Specifications

Range	: 0 to 200% moisture content
Material	: Radiata pine, dry density 0.46 Tonnes/cub m
Display	: 4 digit LCD
Operation	: Single push button
Battery Monitor	: Digital display "Lo-b"
Battery	: 1 x 9V heavy duty, IEC 6F22
Dimensions	: 145 x 85 x 40mm
Weight	: 225g

How it works

The back of the meter contains an electrode, which forms part of a capacitor. If a piece of material is placed in the field of the electrode then the capacitance will change according to the dielectric constant of the material. Dry wood has a low dielectric constant whilst water has a very high constant thus the water in a piece of timber will account for most of the change in capacitance. The meter measures this change and interprets it in terms of how much water is present ie the moisture content of the timber. This value is directly displayed on a digital display. The meter is calibrated to Radiata pine of dry density 0.46 Tonnes/cub m.

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How to use it

Hold the meter in one hand and place the electrode surface on the underneath of the meter directly against a flat surface on the object to be measured. Press the button with the thumb and the meter will read. The meter will work as long as the button is pressed and can be moved around looking for damp spots. Make sure that the electrode is in good contact with the timber surface. When the message "b-Lo" flashes on the display then a new 9V battery should be fitted.

How to use it effectively

Whilst the meter is very simple to use it has limitations, which should be taken into account to obtain effective readings.

1. Where accuracy is of prime importance readings should be checked with a resistive type meter conforming to the Standard AS/NZS1080. In this respect the meter is especially useful for screening for damp spots, which are then investigated with a conventional pin type meter.
2. The meter does not read well on irregular or rough surfaces. Make sure the whole of the electrode is in close contact with a flat part of the object being measured.
3. The meter measures moisture in any object close to the electrode. That includes fingers so keep them away from the under surface of the meter by grasping it by the handle only.
4. Whilst the meter has depth of penetration of up to 25mm it is more sensitive to moisture close to the electrode. This depth of penetration allows it to detect damp timber beneath wall boards but the reading is less than the actual moisture content of the timber due to the extra distance. In practice one should look for a marked change in the reading and follow up with a resistive meter.
5. The meter will read low on thin sections of timber because part of the field goes right through them into the air beyond. Likewise if the electrode area is not completely covered by the sample a low reading is likely.
6. Capacitive moisture meters can be used for any type of timber however they are very sensitive to timber density. This meter is set up for normal construction timber and denser timber will appear wetter whilst lighter timber will appear drier than the actual value. As it is very difficult to estimate timber density in the field a backup resistive measurement should always be resorted to when there is any doubt. Under these circumstances the meter is better used for comparisons between similar types of timber.
7. Capacitive readings are less sensitive to temperature than resistive readings however care is indicated if the temperature of the timber differs markedly from normal values especially if it is below freezing as ice has a different dielectric constant from liquid water.
8. The meter can be used for any insulating material likely to contain moisture however the natural dielectric properties of the material are likely to affect the reading to a great degree so some discretion is required. Sufficient thicknesses of paper products and cardboard seem to give a good reading as well as some types of MDF and particle board. Materials containing air pockets such as corrugated cardboard and tissue need to be compressed to obtain sufficient density. Materials containing conductive resins such as melamine boards and some types of particle board are to be avoided. Concrete, plaster and cement products can also be measured but again only for comparative purposes and to identify damp spots.
9. The meter is sensitive to the proximity of metal and other conductors such as graphite or salts. Do not be fooled by nails, screws, straps or other metal objects buried beneath the surface as they will give a higher reading than normal simulating a damp spot.