

# Units of moisture measurements and their conversions

Established moisture measuring instruments (like GMH3830 before V1.4) are displaying the material moisture relative to the dry weight of a material. In practice other units are used, too, especially the wet basis moisture content. The display of newer instruments (like GMH3830 V1.4 or GMR100) can be switched to both units.

## Moisture content MC or u (relative to dry weight) = dry basis moisture content

Most common unit for moisture measuring instruments. The unit is %, sometimes used: % MC. The unit expresses the moisture content like calculated below:

$$\text{Moisture content } u [\%] = (\text{weight}_{\text{wet}} - \text{weight}_{\text{dry}}) / \text{weight}_{\text{dry}} * 100$$

Or:

$$\text{Moisture content } u [\%] = (\text{weight}_{\text{water}}) / (\text{weight}_{\text{dry}}) * 100$$

weight<sub>wet</sub>: weight of the wet material

weight<sub>water</sub>: weight of water in the wet material

weight<sub>dry</sub>: oven-dry weight of material

Examples: 1kg of wet wood, which contains 500g of water has a moisture content u of 100%

1kg of wet wood, which contains 200g of water has a moisture content u of 25%

## Wet-Basis Moisture Content w (relative to total weight)

The wet-basis moisture content expresses the ratio of the mass of water to the total mass of the substance. The ratio is represented by the following equation (the unit is % as well):

$$\text{wet-basis moisture } w [\%] = (\text{weight}_{\text{wet}} - \text{weight}_{\text{dry}}) / \text{weight}_{\text{wet}} * 100$$

Or:

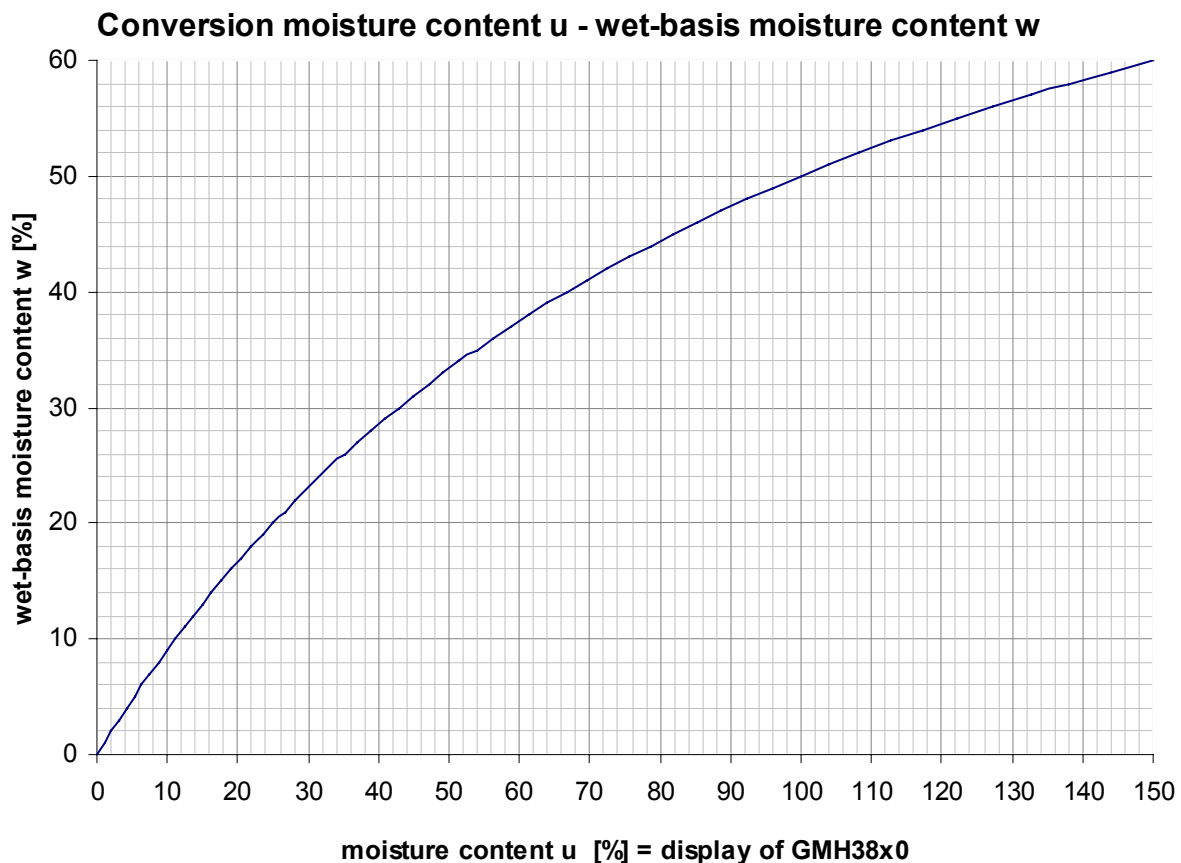
$$\text{wet-basis moisture } w [\%] = (\text{weight}_{\text{water}}) / \text{weight}_{\text{wet}} * 100$$

Conversion meter display u -> wet-basis moisture w

$$\text{wet-basis moisture } w [\%] = 100 * \text{Moisture content } u [\%] / (100 + \text{Moisture content } u [\%])$$

Examples: 1kg of wet wood, which contains 500g of water has a moisture content u of 50%

1kg of wet wood, which contains 200g of water has a moisture content u of 20%



rarely used:

### Dry-Content

The unit is % again.

$$\text{dry content}[\%] = \text{weight}_{\text{dry}} / \text{weight}_{\text{wet}} * 100$$

Conversion meter display u -> dry content

$$\text{dry content}[\%] = 10000 / ( 100 + \text{Moisture content } u[\%])$$

Examples:      1kg of wet wood, which contains 500g of water has a moisture content u of 50%  
                  1kg of wet wood, which contains 200g of water has a moisture content u of 80%