
6. Calibration curves

Calibration curve	Wood chip type	Measuring range
Softwood shavings	For shavings made of softwood	5 % - 35 %
Hardwood sawdust	For sawdust made of hardwood	5 % - 50 %
Softwood sawdust	For sawdust made of softwood	5 % - 50 %
Wood chips	See "6.3.1 Wood chips"	5 % - 50 %
Coarse chips	See "6.3.2 Coarse wood chips"	5 % - 50 %
Softwood chips	See "6.3.3 Softwood chips"	5 % - 50 %
Softwood coarse	See "6.3.4 Softwood coarse chips"	5 % - 50 %
Fine wood chips	See "6.3.5 Fine wood chips"	5 % - 50 %
Empty 1	For special sorts (calibration by Schaller GmbH)	
Empty 2	For special sorts (calibration by Schaller GmbH)	
Empty 3	For special sorts (calibration by Schaller GmbH)	
Reference	! Only for testing the moisture meter !	

6.1 How moisture is defined

The device measures and shows a material's moisture content. The moisture content readings it displays are calculated in relation to the material's overall mass:

$$\%WG = \frac{M_n - M_t}{M_n} \times 100$$

M_n : Mass of the sample with average moisture content

M_t : Mass of the sample with zero moisture content

%WG: Moisture content (in accordance with EN ISO 18134-2)

6.2 Definition of wood chips types

The given numbers (in accordance with EN ISO 17225-1) refer to the particle sizes that fit through the round screen openings.

- P16 at least 75% of the mass between 3.15 and 16 mm
- P31 at least 75% of the mass between 8 and 31.5 mm
- P45 at least 75% of the mass between 8 and 45 mm
- P63 at least 75% of the mass between 8 and 63 mm

6.3 Selection of calibration curve for wood chips

The calibration curves for wood chips depend on the wood type (hardwood, softwood), the size of the chips (size classes according to norm EN ISO 17225-1) as well as on the content of fine fraction.

If you are not sure which calibration curve is the best suited for your material, it is recommended to carry out a reference measurement by kiln-drying (according to EN ISO 18134-2).

Schaller GmbH will be happy to advise you on the selection of the right calibration curve. Please send a picture of your wood chips, placing a measuring tape to the material, to support@schaller-gmbh.at. You will receive a recommendation from us immediately.

6.3.1 Wood chips

For wood chips with fine fraction, consisting of at least one third hardwood. The fine fraction mainly derives from barks, small branches and bushes. For wood chips sizes from P31 to P45. See example pictures [41](#) and [42](#).

If your wood chips contain few fine fraction or no fine fraction or if the wood chips contain a higher proportion of softwood, use one of the following calibration curves.

6.3.2 Coarse wood chips

For coarse wood chips without fine fraction, consisting of at least one third hardwood. This curve is predominantly suited for measuring wood chips deriving from logs and full trees. For wood chips sizes from P45 to P63. See example pictures [43](#) and [44](#).

This calibration curve also has to be taken for wood chips from short rotation forestry (poplar, willow) harvested by a field chopper, for wood chips sizes from P16 to P31.

If your wood chips contain a higher proportion of softwood, use one of the following calibration curves.

6.3.3 Softwood chips

For wood chips with fine fraction, mainly (more than two thirds) consisting of softwood (spruce, fir, pine, larch). The fine fraction mainly derives from barks, small branches and bushes. For softwood chips sizes from P16 to P45. See example pictures [45](#) and [46](#).

If your wood chips contain few fine fraction or no fine fraction, use one of the following calibration curves.

6.3.4 Softwood coarse chips

For coarse wood chips without fine fraction, mainly (more than two thirds) consisting of softwood (spruce, fir, pine, larch) of 70% and more. This curve is predominantly suited for measuring wood chips deriving from logs and full trees as well as sawmill residues. For wood chips sizes from P45 to P63. See example pictures [47](#) and [48](#).

6.3.5 Fine wood chips

For fine wood chips with a high proportion of fine fraction, consisting of at least one third hardwood. The fine fraction mainly derives from barks, small branches and bushes. For wood chips size P16. See example picture [49](#).

For wood chips purely from ash trees, wood chips sizes from P31 to P45, also choose this calibration curve.

Example pictures wood chips



Example pictures coarse wood chips



Example pictures softwood chips



Example pictures softwood coarse chips



Example picture fine wood chips



6.4 Notes for comparative measurement with oven-drying method

The device uses a much higher sample quantity than the drying oven (12-fold to 20-fold quantity of kiln-drying method). Furthermore, to determine a more accurate average moisture value in case of inhomogeneous material, there can be effected several measurements within a short time.

Considering a sampling error due to the considerably smaller sample quantity as well as the content of volatile matters, resin etc. (that are not water), the kiln-drying method will practically reach an accuracy of approx. +/- 3%. Therefore, if the measuring values of these two very different methods of determining the water content are compared, differences of +/- 3% can be considered to be normal.

In the standard EN ISO 18134-2 is declared that the drying oven method provides no absolute values, but only comparable values.