

**Issued in: September 2003****Serial No. 18/03****CALIBRATION OF INFRA-RED MOISTURE METER***(This Advisory Circular replaces Circular No. T6, Serial No.1/81)*

The internationally accepted standard method of moisture determination of tea is the oven method. A weighed sample of tea is kept in an oven controlled at $103 \pm 2^{\circ}\text{C}$ for a minimum of four hours and is weighed again. The difference in weight is the weight of moisture in the sample and this is quoted as a percentage of the original weight. This method though accurate is time-consuming and is not suitable for routine use in tea factories.

There are several types of moisture meters, which give a quick reading, but with lower accuracy. These instruments, however, are suitable for routine use. One such instrument is the Infra-red Moisture Meter. In this instrument, the moisture in the tea sample is driven off by the heat from the infra-red lamp. Initially, only the moisture is driven off but subsequently the tea is burnt. Therefore, the time for which the sample should be dried is critical in order to get a reasonably accurate value of the moisture content. It is not correct to dry the sample until such time that traces of smoke are seen, as this cannot be observed accurately. The switch-ON time, the time for which the sample should be dried, is determined by the calibration procedure given below.

It is advisable to calibrate the moisture meter at the factory itself as the calibration depends on the particle size of the tea, power supply, voltage etc.

Procedure for Calibration

1. Level the meter using a spirit level.
2. Check the scale at various points using actual weights. Slight adjustments may be necessary using the knob provided.
3. Adjust the height of the bulb so that tea will just start to burn (smoke) in about 10 minutes after switching on the bulb and note this position. This will ensure that the required switch-on time is well within 10 minutes.
4. Collect some fired dhools from the drier mouth and divide into two samples. Send one sample to the Technology Division of the TRI or to a suitable laboratory for accurate determination of the moisture content using the Oven method. This sample should be packed in a tin leaving no air space and sealed with adhesive tape.
5. Place the standard (usually 10g) quantity of the dhool from the second sample on the moisture meter pan. Switch on the bulb and note the reading every 30 seconds commencing from 3 minutes to 10 minutes.
6. Repeat as in (5) and take the average of the two sets of readings. If the readings are too different repeat for consistency.

7. Once the oven-method moisture readings are sent to the estate, read out the time, which corresponds to the readings obtained as in (6). This is the switch-on time to obtain the correct moisture reading.
8. The above time depends on the distance of the bulb from the pan, as such, it should be kept constant as determined in (3).
9. The switch-on time varies with the particle size, therefore the time should be determined separately for each dhool and each grade.
10. The above time also depends on the power supply voltage, therefore, calibration and subsequent use of the instrument should be carried out more or less at the same voltage.

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