



Application Notes

MOISTURE, NICOTINE AND SUGAR IN GROUND TOBACCO

The MCT 600-MSN analyzer measures moisture, nicotine and sugar content simultaneously with minimal sample preparation using Near Infrared Technology. This measurement technique offers considerable advantages over more traditional tests in terms of time and cost savings, and the fact that it is non-destructive.

It is recommended that the material to be tested is milled to 5 or 7mm in order to homogenize the material and obtain a more even distribution of the tobacco components. On line measurement of nicotine and sugars is not recommended owing to the fact that there is a very uneven distribution of constituents within the plant. For instance, stem tends to have a higher nicotine concentration than lamina.

Measurement of these Three Constituents is Important:

Moisture measurement is required to ensure molding does not occur during or after manufacture of the cigarettes due to too high a moisture content as well as to ensure that the tobacco will bind together and pack well in the manufacturing process. Moisture measurement is recommended on line at the conditioning plant as it enables automatic process control of the DCC's and dryers.

Nicotine content affects the flavor and quality of "the smoke." The percentage nicotine content will vary according to the type and brand of cigarette. Total nicotine level can be adjusted by varying the mix of stem, recon, lamina and expanded tobacco.

Sugars are added to enhance flavour and confer smoking characteristics to a particular blend. In the case of recon sheet, corn syrup is added to keep the sheet moist.



Measurement Performance

The graphs to the left show validation data collected for a range of different grades and blends of tobacco. The validation set comprised 44 samples, and 16 grades of tobacco. Data points greater than 2 standard deviations were removed from the validation set. This caused the exclusion of one nicotine data point, and three sugar data points from each of the total sugars and reduced sugars validation.

Moisture measurement was not validated in this instance, the maximum number of measurements at any time being three.

The table below shows **expected accuracies for the four measurements when just one calibration is used** for all grades. If different calibrations are established for different blends or grades, better measurement accuracy is expected.

Constituent	Range	Accuracy
Nicotine	2-5%	+/- 0.23%
Total Sugars	8-25%	+/- 1.8%
Reduced Sugars	8-23%	+/- 2.0%
Moisture	10-14%	+/- 0.3%

