



## Application Notes

### Moisture and Fat in Biscuits and Cookies

A rapid moisture measurement taken at line, and in some instances on line, will not only lead to increased productivity and reduced energy costs, but will also result in a more consistent high quality product with greater shelf life. A fat measurement can be made simultaneously and is of value for labeling and quality assurance.

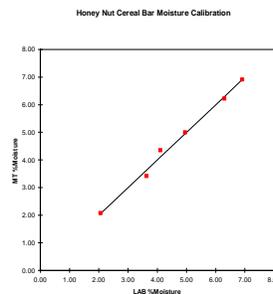
#### Biscuit Manufacturing Process

Production lines vary, but essentially comprise the following elements: mixer, dough dump station, lay time conveyor, lift conveyor, rotary molder, wire-cut machine, dispenser and oven.

#### Measurement Location and Performance

Measurements are typically made off-line, and can be made on whole or crumbed biscuits. The moisture read-out is instantaneous. At-line measurements are practical as measurements can be made on products from multiple production lines by simply selecting the different product calibration. Therefore, erroneous measurement through non-equilibration of the product is eliminated. (Measurement on-line at the exit of the oven is problematic owing to the fact that surface moisture bears no relationship to the bulk moisture.)

Measurement on line is feasible if there is no break in product, this is generally the case closer to the packaging stations, where the gauge function is to perform a final quality check.



	Product	Cookies/Biscuits with no Inclusions	Cookies/Biscuits with added Chocolate Chips, Raisins, etc.
	<b>Moisture Range %</b>	<b>Accuracy (+/-)</b>	<b>Accuracy (+/-)</b>
<b>Moisture</b>	2-12% (product dependent)	0.1%	0.15 – * 0.6%
<b>Fat</b>	20-25%	0.2%-0.3%	0.3-0.5%

The best accuracies are achieved with crumbed cookies/biscuits in the case where they contain added nuts, chocolate, etc.