Organic Application Note

Moisture and Ash Determination in Flour

Sample Preparation

Flour samples may be analyzed as received. Moisture and ash may be determined simultaneously on the same sample using the TGA-601.

Analysis Time

~4 hours for moisture and ash

Steps Information

	Step 1	Step 2	Step 3
Covers:	OFF	OFF	OFF
Ramp Rate:	18	36	1
Ramp Time:	0:05	0:13	0:00
Start:	25	130	600
End:	130	600	600
Atmosphere:	Air	Air	Air
Flow Rate:	High	High	Low
Hold Time:	0:40	2:45	0:25
Const. Wt. %:	100	100	100
Const. Wt. Time:	0:09	0:09	0:09
Final Step Weight:	At End of Step	At End of Step	At End of Step

Equations

Initial Weight:	W[Initial]
Weight Loss Step 1:	((W[Initial]-W[Step1])/W[Initial])*100
Weight Loss Step 2:	((W[Step1]-W[Step2])/W[Initial])*100
Weight Loss Step 3:	((W[Step2]-W[Step3])/W[Initial])*100
Residue:	(W[Step3]/W[Initial])*100

Procedure

1. Enter method as described above through the PC or keypad.
2. Enter ID codes if a PC is used; if not, they will be entered through the keypad.
3. Choose "Collect" on the PC to begin a taring step or "Start" on the keypad.
4. Load empty crucibles into the furnace carousel making sure a crucible is in the reference position.
5. Press "Start" on the keypad to advance the taring process.
6. The furnace cover opens and each crucible is presented to the operator for sample loading.
7. Load 1.55 to 1.65 g of sample into the crucible; tap the sample gently (outside the instrument) to ensure a flat sample surface.
8. Place crucible back in the unit and press "Next" on the keypad to continue.
9. When all crucibles are loaded, analysis begins.

Typical Results

Within-Run Precision (n=4 each sample)

Sample	% Moisture Avg.	% Moisture Std. Dev.	% Ash Avg.	% Ash Std. Dev.
Hard Wheat, High Ash	12.70	0.02	0.613	0.005
Hard Wheat, Low Ash	11.52	0.04	0.469	0.005
Soft Wheat, High Ash	11.82	0.01	0.437	0.003
Soft Wheat, Low Ash	11.55	0.01	0.358	0.004
Dark Rye, High Ash	9.90	0.04	2.835	0.005

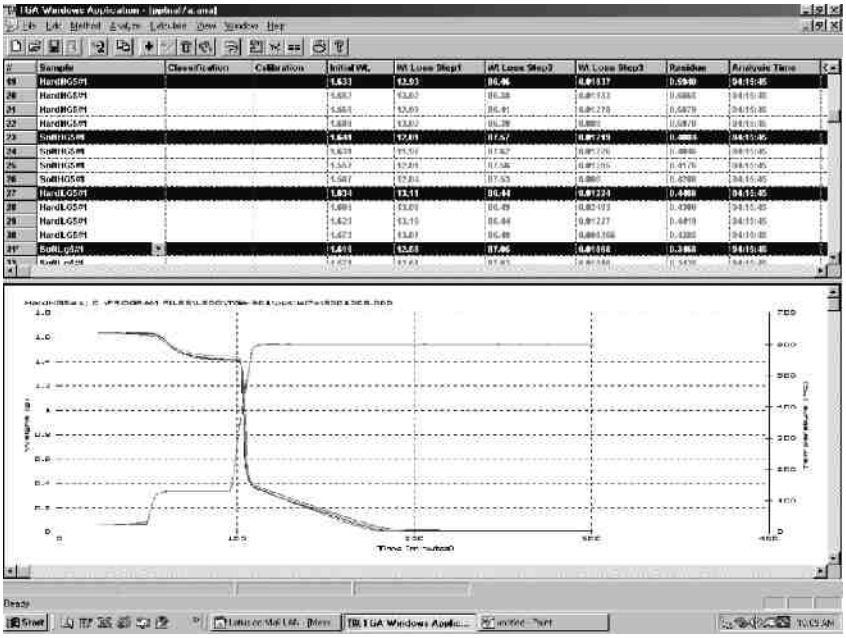
Day-to-Day Precision (n=4 days)

Sample	% Moisture Avg.	% Moisture Std. Dev.	% Ash Avg.	% Ash Std. Dev.
Hard Wheat, High Ash	12.64	0.05	0.621	0.009
Hard Wheat, Low Ash	11.52	0.03	0.474	0.005
Soft Wheat, High Ash	11.90	0.11	0.442	0.010
Soft Wheat, Low Ash	11.52	0.04	0.365	0.012
Dark Rye, High Ash	9.93	0.05	2.840	0.008

TGA-601 PC Windows® Software Features

The optional TGA-601 Windows® software provides convenient spreadsheet-based sample login/data management and PC-based instrument operation. Furthermore, the Windows® software provides plots of sample weight and/or oven temperature vs. time—very powerful tools for both types of method development.

For example, minimum time for an ashing step can be determined by plotting sample weight and evaluating the minimum time required to reach the desired degree of weight stability. Other method variations that may be evaluated using the plots are temperature, atmosphere, and flow. Both raw data and reports data are recorded on the hard drive of the PC, and may be recalled at any later date for review.



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