Organic Application Note

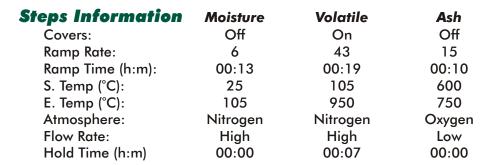
Moisture, Volatile, Ash, and % Fixed Carbon in Coal and Coke

Sample Weight ~1 g

Analysis Time 3 to 5 hours

General Settings

Crucible Density: 3.00
Cover Density: 3.00
Sample Density: 1.50



Constants	Moisture	Volatile	Ash	
Constant Weight	0.05%	100.00%	0.05%	
Weight/Time (h:m)	00:09	00:09	00:09	

Equations

Initial Weight: W[Initial]

Moisture: ((W[Initial]-W[Moisture])/W[Initial])*100
Volatile Matter: ((W[Moisture]-W[Volatile])/W[Initial])*100

Ash (W[Ash]/W[Initial])*100

Fixed Carbon: 100-(E[Moisture]+E[VolatileMatter]+E[Ash])
Volatile Matter/Dry Basis: E[VolatileMatter]*(100/(100-E[Moisture]))

Ash/Dry Basis: E[Ash]*(100/(100-E[Moisture]))

Fixed Carbon/Dry Basis: 100-(E[VolatileMatterDryBasis]+E[AshDryBasis])

Volatile Calibration

- 1. Define 6 to 8 standards with known dry basis volatile values (for accurate results, the standards must cover the range of the unknowns).
- 2. Analyze each standard 2 to 3 times with a total of 19 crucibles following the procedure below.
- 3. When analysis is finished, calibrate and create a calibration curve (refer to the operator's instruction manual for detailed procedure).
- 4. Save in a file and analyze unknowns using this method.
- 5. If PC is not used, the Volatile Calibration is done through the DSP.



Procedure

- 1. Check furnace balance with 1 g weight in "sequence test".
- 2. Select method as described above.
- 3. Enter ID codes if a PC is used, if not, they will be entered later with the DSP.
- 4. Press Analyze.
- 5. Load empty crucibles into the furnace carousel making sure a crucible is in the reference position.
- 6. Press Start for locating and taring of crucibles.
- 7. The furnace cover opens and each crucible is presented to the operator for sample loading.
- 8. Put ~ 1 g sample of coal or coke into the crucible.
- 9. Press "next" to continue.
- 10. When all crucibles are loaded, analysis begins.

Typical Results

Sample	% Moisture	% Volatile	% Ash	% Fixed Carbon
Charcoal n = 4 Average SD	5.28 0.03	33.36 0.03	0.99 0.01	65.65 0.02
Coal #1 n = 4 Average SD	5.63 0.04	32.66 0.03	8.42 0.02	58.92 0.04
Coal #2 n = 4 Average SD	0.84 0.006	29.61 0.06	3.92 0.02	66.47 0.04
Coal #3 n = 4 Average SD	0.64 0.01	23.92 0.13	6.21 0.04	69.86 0.09
Coal #4 n = 3 Average SD	2.38 0.007	35.82 0.13	4.91 0.03	59.27 0.10
Coke #1 n = 4 Average SD	3.70 0.03	6.22 0.05	19.77 0.03	74.02 0.04
Coke #2 n = 4 Average SD	2.83 0.008	4.65 0.04	19.95 0.01	75.39 0.05
Met Coke n = 5 Average SD	0.03 0.01	0.56 0.08	7.08 0.03	92.35 0.10



LECO Corporation • 3000 Lakeview Ave. • St. Joseph, MI 49085-2396 Phone: 800-292-6141 • Fax: 269-982-8977 info@leco.com • www.leco.com • ISO-9001 No. FM 24045