Organic Application Note

Carbon and Nitrogen in Soil and Sediment

Instrument
TruSpec CN

Sampling and Sample Preparation
It is essential that a representative and uniform sample be analyzed. Samples should be uniform powder.

Accessories
502-186 Tin Foil Cup

Sample Mass (Weight)
0.1 to 0.5 gram

Calibration
LECO 502-308, 502-309 and/or 502-062 Soil Calibration Samples, NIST, or other suitable reference materials.

Analysis Parameters

Combustion Furnace Temperature	950°C
Afterburner Temperature	850°C

Element Parameters

	Nitrogen	*Carbon*
Analyze	Yes	Yes
Minimum Analysis Time	30 seconds	NA
Comparator Level	1.00	NA
Endline Time	1 second	NA
Conversion Factor	1.00	1.00
Significant Digits	5	5

IR Analysis Stabilize Comparator	0.00
IR Baseline Delay Time	5 seconds
IR Baseline Time	2 seconds
IR Pressure Stabilization Comparator	0.00
IR Stop Flow Time	5 seconds
TC Baseline Delay Time	5 seconds
TC Baseline Time	2 seconds

Burn Profile

Burn Steps	*Time*	*Furnace Flow*
1	15 seconds	High
2	300 seconds	Medium
3	5 seconds	High

TruSpec®

Macro Ballast Parameters

Ballast

Equilibrate Time	30 seconds
Not Filled Timeout	400 seconds

Aliquot Loop

Fill Time	20 seconds
Equilibrate Pressure Time	4 seconds

Procedure

1. Prepare instrument for operation as outlined in the operator's instruction manual.
2. Determine and calibrate system blank as outlined in the operator's instruction manual.
3. Instrument must be calibrated as outlined in the operator's instruction manual.
4. Perform Drift Correction as outlined in the operator's instruction manual.
   Note: Drift should be performed at the start of every day or when the check standard does not return the correct result(s).
5. Weigh sample into a 502-186 Tin Foil Cup, seal, enter mass (weight) in Sample Login, place into the appropriate position of the sample carousel and proceed with analysis.
   Note: Some atmosphere will be trapped with the sample when it is encapsulated in the tin foil. This will cause biased nitrogen results at low nitrogen concentrations. Therefore, an atmospheric blank should be determined and entered. The atmospheric blank can be determined by analyzing an inert material such as LECO 501-427 Com-Aid several times using similar weights of the Com-Aid to the weight of samples being analyzed. Enter the actual weight of the Com-Aid (Com-Aid should be baked-off in muffle furnace at ~1000°C for 15 minutes and placed in a glass vial until used). The nitrogen value obtained is considered the atmospheric blank and can be automatically compensated using the TruSpec software. Refer to the operator's instruction manual for details regarding setting the atmospheric blank. For best precision, keep the weights of the unknown samples consistent. Typical atmospheric blanks are 0.02 to 0.04% N.

Typical Results

Sample	Mass g	Carbon %	Nitrogen %
LECO	0.2062	0.87	0.104
502-062	0.2048	0.86	0.112
0.84 % C	0.2042	0.86	0.105
0.097% N	0.2017	0.86	0.107
	0.2042	0.86	0.106
	0.2007	0.89	0.104
	0.2012	0.82	0.106
	0.2040	0.85	0.100
	0.2080	0.84	0.112
	0.2050	0.86	0.102
	X =	***0.86***	***0.106***
	s =	***0.01***	***0.004***

Delivering the Right Results

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-9001:2000 No. FM 24045***

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