

# Oxygen in Biomass and Biofuel

LECO Corporation; Saint Joseph, Michigan USA

## Instrument: TruSpec<sup>®</sup> Oxygen Module

### Sampling and Sample Preparation

It is essential that a representative and uniform sample be analyzed.

### Accessories

601-963 Tin Capsule

### Calibration Samples

NIST 39J Benzoic Acid, LECO 502-204 Dinitrobenzoic Acid, LECO 501-053 Acetanilide, or other suitable standard.

### Analysis Parameters

Combustion Furnace Temperature	950°C
Afterburner Temperature	850°C
Oxygen Furnace Temperature (manually set)	1300°C

### Element Parameters

Analyze	Oxygen
Baseline Delay Time	Yes
Minimum Analysis Time	15 seconds
Comparator Level	60 seconds
Endline Time	1.00
Conversion Factor	1 second
Significant Digits	1.00
	5

### Burn Profile

Burn Steps	Time	Furnace Flow
1	10 seconds	None

### Procedure

1. Prepare instrument for operation as outlined in the operator's instruction manual.
2. Determine and calibrate systems blank as outlined in the operator's instruction manual. (NOTE: Must use sealed 601-963 Tin Caps; refer to step #5 below).
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 doesn't return the correct result(s).*
5. Weigh ~1-2 milligram sample into a 601-963 Tin Capsule, carefully seal to ensure sample is not lost, enter sample mass in Sample Login, place into the appropriate position of the sample carousel, and proceed with analysis.

### Typical Results

Sample	Mass mg	% Oxygen
Wood Chips #1	0.99	47.50
	1.009	48.03
	0.999	48.61
	1.034	48.58
	1.058	48.51
	<b>X =</b>	<b>48.25</b>
	<b>s =</b>	<b>0.48</b>
Wood Chips #2	1.056	44.28
	1.065	44.75
	1.008	43.02
	1.002	43.95
	1.05	43.62
	<b>X =</b>	<b>43.92</b>
	<b>s =</b>	<b>0.66</b>
Biofuel	1.008	44.26
	1.034	46.55
	1.013	44.13
	1.081	45.59
	<b>X =</b>	<b>45.13</b>
	<b>s =</b>	<b>1.1</b>



### LECO Corporation

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