

# Approved Methodologies

## To Which LECO Instruments Conform

### ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

#### Metals

<i>Instruments</i>	<i>Method</i>	<i>Elements</i>	<i>Materials</i>
CS-Series (C/S) TCH-Series (O/N) ONH-Series (O/N)	E-1019	C, S, N, O	Steel, Iron*, Nickel/Cobalt Alloys
	E-1587	C, S, N, O	Refined Nickel
	E-1941	C	Refractory and Reactive Metals
TCH-Series (O/N) ONH-Series (O/N)	E-1409	O, N	Titanium & Titanium Alloys
	E-1569	O	Tantalum
	E-2575	O	Copper
TCH-Series (H) ONH-Series (H)	E-1447	H	Titanium & Titanium Alloys
CS-Series (C/S) SC632-Series	E1915-97	C, S	Metal Bearing Ores and Related Materials (i.e. tailings, waste rock)
All Metals for CHNOS	E-1806	Sampling and Sample Prep	Iron and Steel

#### Energy

<i>Instruments</i>	<i>Method</i>	<i>Elements/Properties</i>	<i>Materials</i>
AC500, AC600	D-1989 D-5865	Calorific Value	Coal & Coke
	D-2382 D-240 D-4809	Calorific Value	Hydrocarbon Fuels
	D-5468	Calorific Value	Waste Materials
SC144DR, S632, TruSpec S, CHN628 S	D-1552	S	Oils & Petroleum Products
	D-4239	S	Coal & Coke
	D-5016	S	Coal & Coke Ash
	D-1619	S	Carbon Black
TGA701	D-7582	Proximate	Coal & Coke
	D-7348	Loss on Ignition (LOI)	Combustion Residues
TruSpec CHN, CHN628	D-5291	C, H, N	Oil
	D-5373	C, H, N	Coal & Coke
AF700	D-1857	Ash Fusion	Coal & Coke Ash
AMA254	D-6722	Hg	Coal & Combustion Residues
CS-Series (C)	C1408-09	Carbon (Total)	Uranium Oxide Powders and Pellets
RHEN602	C1457-00 (2010)e1	Hydrogen	Uranium Oxide Powders and Pellets

**ISO (INTERNATIONAL ORGANIZATION FOR STANDARDIZATION)**

<i>Instruments</i>	<i>Method</i>	<i>Elements</i>	<i>Materials</i>
TCH-Series (N) ONH-Series (N)	10720	N	Steel and Iron
	15351	N	Steel and Iron
TCH-Series (O) ONH-Series (O)	22963	O	Titanium and Titanium Alloys
	17053	O	Steel and Iron
CS-Series (C)	9556	C	Steel and Iron
	10694	C	Soil
	10719	C	Steel and Iron
	21614	C	UO <sub>2</sub> , (U, Gd)O <sub>2</sub> , and (U, Pu)O <sub>2</sub>
	9891	C	UO <sub>2</sub>
	15349-2	C	Unalloyed Steel
CS-Series (S)	4935	S	Steel and Iron
	13902	S	Steel and Iron
	4689-3	S	Iron Ores
	7524	S	Nickel, Ferronickel and Nickel Alloys
	7526	S	Nickel, Ferronickel and Nickel Alloys
CS-Series (C/S)	15350	C, S	Steel and Iron
DH603	3690	H	Ferritic Steel Arc Weld Metal

**UOP**

<i>Instruments</i>	<i>Method</i>	<i>Elements</i>	<i>Materials</i>
CS-Series (C)	703	C	Catalysts

**AOAC (ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS)**

<i>Instruments</i>	<i>Method</i>	<i>Constituent</i>	<i>Materials</i>
FP628, FP-528, TruSpec N, TruMac N	990.03	Crude Protein	Animal Feed
	992.15	Crude Protein	Meat/Meat Products & Petfoods
	992.23	Crude Protein	Cereal Grain & Oil Seed Products
	993.13	Nitrogen	Fertilizer
	997.09	Nitrogen/Protein	Beer, Wort, Brewing Grains (Total Protein by Calculation)

**AOCS (AMERICAN OIL CHEMISTS SOCIETY)**

<i>Instruments</i>	<i>Method</i>	<i>Constituent</i>	<i>Materials</i>
FP628, FP-528, TruSpec N, TruMac N	BA4E-93	Protein	Oil Seeds

**ASBC (AMERICAN SOCIETY OF BREWING CHEMISTS)**

<i>Instruments</i>	<i>Method</i>	<i>Constituent</i>	<i>Materials</i>
FP628, FP-528, TruSpec N, TruMac N	Combustion	Protein	Barley
	Combustion	Protein	Malt
	Combustion	Protein	Brewers' Grains
	Combustion	Protein	Wort
	Combustion	Protein	Beer
	Combustion	Protein	Adjunct Materials, Cereals

**AACC (AMERICAN ASSOCIATION OF CEREAL CHEMISTS)**

<i>Instruments</i>	<i>Method</i>	<i>Constituent</i>	<i>Materials</i>
FP628, FP-528, TruSpec N, TruMac N	46-30	Protein	Cereal and Cereal Products

**AWS (AMERICAN WELDING SOCIETY)**

<i>Instruments</i>	<i>Method</i>	<i>Constituent</i>	<i>Materials</i>
RC-Series (H <sub>2</sub> O)	A4.4M:2001	Moisture	Welding Fluxes and Electrode Flux Coverings

**COMMENTS**

The USDA accepts the AOAC Method of crude protein in meats and meat products by combustion.