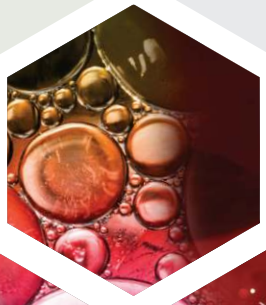
812 Series

Carbon and Moisture Determinator



















LECO

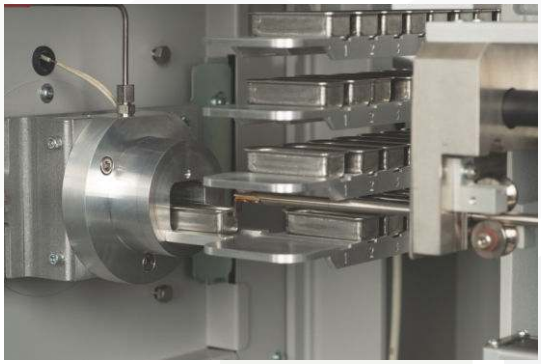
EMPOWERING RESULTS

Carbon and Moisture Determinator

The 812 Series is the next generation of multiphase analyzers, delivering fast, reliable determination of carbon and moisture in a wide range of organic and inorganic materials. An efficient horizontal furnace design, enhanced active cooling, and optimized temperature control reduce cycle time for ramped analyses, delivering results up to 50% faster than previous-generation systems. The accessible front- and side-entry design simplifies sample loading, maintenance, and routine operation, while accommodating a variety of material types and form factors. In a single run, the 812 Series quantifies total carbon and moisture and thermally differentiates their various phases, providing valuable insight into material composition without the need for time-consuming or hazardous sample preparation. The result is faster answers, deeper material insight, and greater confidence in every analysis.

Speed and Efficiency: Up to 50% faster ramp-up and 30% faster cool-down.*

Reduce the wait time between samples and start-up. These improvements mean your lab can process more samples per shift, helping you clear backlogs and increase your return on investment.





Enhanced Analytical Performance:
10x improvement in carbon and 20x improvement in water limit of detection.*

Detect even the lower levels of carbon and moisture with improved precision. This increase in sensitivity allows you to meet the strictest low-moisture specifications for advanced alloys and high-purity powders where traditional methods fall short.

**Versus the RC612*

Benefits & Features

Usability: Front- and side-access for easier maintenance plus Cornerstone® software for streamlined operation.

Designed with the operator in mind, the new chassis provides total access for routine service in seconds. Combined with our intuitive Cornerstone software, your team can spend less time managing the instrument and more time producing results.





Reliability: Thermal Differential approach, which reduces equipment wear by eliminating harsh sample preparation steps like acid digestion.

By using staged heating rather than harsh chemicals or constant high-heat stress, we've extended the life of internal components. You get a cleaner, safer lab environment without the hassle of hazardous acid handling or frequent part replacements.

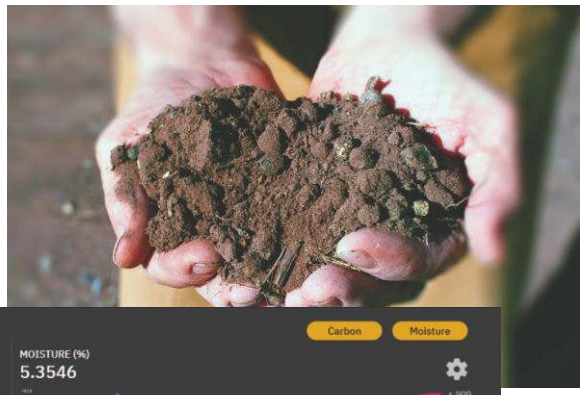
Flexibility: Programmable multi-atmosphere furnace supporting fixed or ramped heating in either oxygen or nitrogen.

By optimizing to your specific method of requirements rather than forcing a rigid setup, you get enhanced speciation capability. This allows you to run multiple analytical solutions on a single, adaptable platform.



Carbon Applications

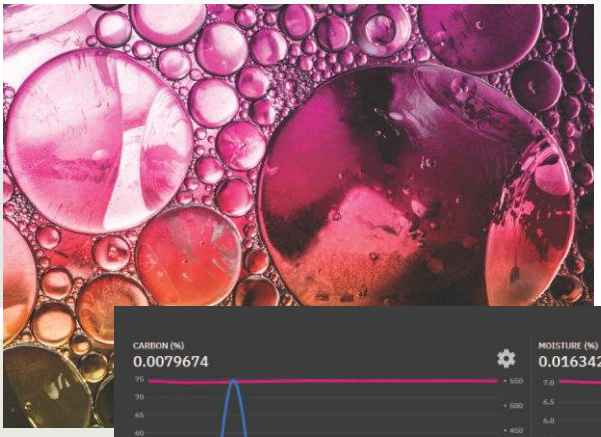
Carbon by Thermal Differentiation / Soil Analysis / Waste Analysis



Carbon is the master variable of soil productivity, serving as the primary indicator of nutrient retention, microbial vitality, and carbon sequestration potential. The ability to accurately quantify soil organic carbon is the baseline for sustainable land management.

- TOC, ROC, and TIC Differentiation
- Rugged Reliability
- Rapid Throughput
- Defensible Data





Surface Carbon / Residual Hydrocarbons

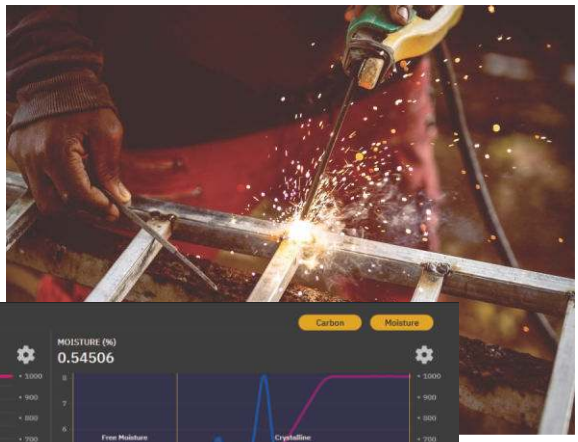
A surface is only as good as its last cleaning step. Residual oils and lubricants can compromise downstream processes, leading to poor coating adhesion, weak welds, and expensive batch rejections. Testing for surface carbon is a proven method to quantify "invisible" contaminants that can lead to product failure.

- Temperature-Based Surface Carbon Measurement
- Direct Measurement
- Dual-Phase Verification
- Quantitative Results



Moisture Applications

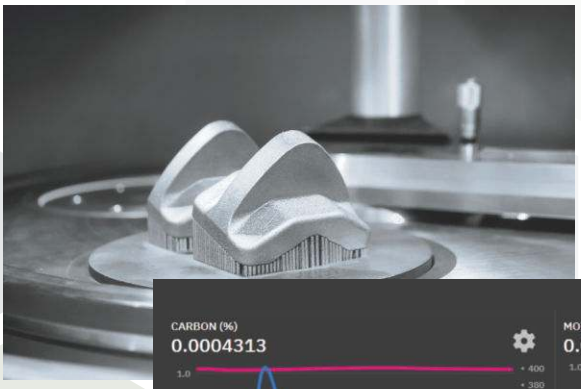
Moisture / Welding Consumables



In welding, trapped moisture is the leading cause of hydrogen cracking. The heat of the welding arc pulls water from the flux and drives it into the weld, compromising the strength of the entire joint. Effective moisture analysis is important for preventing hydrogen-induced "cold cracking" and costly weld defects, ensuring both the structural safety of large-scale projects and alignment with AWS/ISO regulatory standards.

- High Throughput
- Excellent Sensitivity
- Free vs. Bound Moisture
- Intuitive Workflow





Powder Metal Moisture

In powder metallurgy and additive manufacturing, the high surface area of metal powders makes them prone to moisture absorption, which can compromise part consistency. During sintering, trapped moisture introduces hydrogen that causes internal porosity, promotes oxidation that weakens particle bonding, and leads to powder clumping that disrupts uniform flow. Monitoring moisture is essential to prevent structural voids and preserve the chemical purity of finished components.

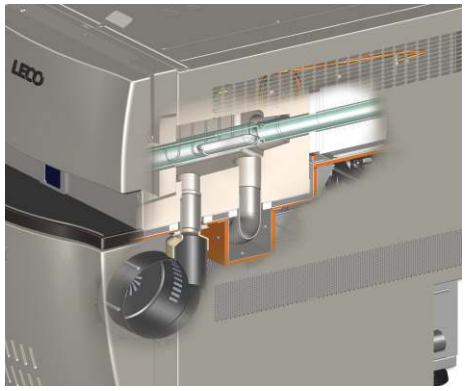


- Rapid Analysis
- Minimal Sample Preparation
- Lower Limits of Detection
- User-Friendly Operation

Thermal Performance

Smarter Furnace Control. Faster Results.

Developed using advanced machine learning modeling techniques, LECO's proprietary furnace control algorithm is engineered to deliver highly predictable thermal performance across the entire temperature profile. Combined with a high-flow cooling architecture, the system achieves rapid temperature transitions, accurate setpoint attainment, and exceptional hold stability while minimizing overshoot. Reduced heating and cooling times enable greater laboratory productivity and more efficient sample processing.



Cycle Time Comparison

ISO 17505

2.5 Minute Speed Gain

	RC612	812 Series
Heating Time	16.5 min	16.5 min
Cooling Time	11.0 min	8.5 min
Total Time	27.5 min	25.0 min

*Versus the RC612

Surface Carbon

2.0 Minute Speed Gain

	RC612	812 Series
Heating Time	8.0 min	7.0 min
Cooling Time	6.5 min	5.5 min
Total Time	14.5 min	12.5 min

Total Moisture

7.0 Minute Speed Gain

	RC612	812 Series
Heating Time	24.5 min	20.0 min
Cooling Time	11.0 min	8.5 min
Total Time	35.5 min	28.5 min

Consumables and Options



Most Popular Consumables
- Quartz Boat (Standard & Large)
- Nickel Boats
- Nickel Liners (10/pkg)
- Combustion Tube

Optional Autoloader
- 100 Sample Capacity
- Non-Sequential Analysis
- Integrated Analyzed Sample Containment





Gas Regulators
LECO offers High Purity Gas Cylinder Regulators for use with its full line of high-performance elemental analyzers, calorimeters, thermogravimetric analyzers, and spectrometers. For more information, reference form number 209-222.

Balances
LECO has partnered with Sartorius® to bring you a complete line of precision balances for use with LECO elemental determinators. Ideal for everyday use in any laboratory, each model offers a variety of functions for fast and accurate sample measurement. For more information, reference form number 209-197.



Models

CM812 Carbon and Moisture Determinator
C812 Carbon Determinator
M812 Moisture Determinator

Standards Compliance

ISO/EN 17505, EN 15936 / ISO 10694, AWS A4.4M:2001 (R2016)

LECO – Your Source for Total Analytical Solutions



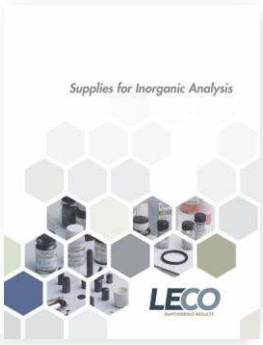
ONH Series: Oxygen/Nitrogen/Hydrogen by Fusion

- Oxygen, nitrogen, and hydrogen by inert gas fusion
- State-of-the-art infrared and thermal conductivity detectors with no moving parts and no manual adjustments
- Custom software interface designed specifically for touchscreen operation
- User-friendly *Cornerstone* brand software

GDS Atomic Emission Spectrometers

- Spectral range from 120 to 800 nm
- Continuous profile of concentration/thickness
- Large, dynamic range with concentrations from ppm to 100% by weight
- Short analysis time (minutes)





Inorganic Consumables

Get the best results from your LECO instrument by using genuine LECO consumables. Visit www.leco.com for featured items, specials, and ordering information (form number 203-959).

LECO, Cornerstone, and SmartLine are registered trademarks of LECO Corporation.

LECO Corporation
3000 Lakeview Avenue | St. Joseph, MI 49085 | 800-292-6141 | Phone: 269-985-5496
info@leco.com | www.leco.com | ISO-9001:2015 Certified | LECO is a registered trademark of LECO Corporation.

EMPOWERING RESULTS

© 2026 LECO Corporation