

RC-412 Multiphase Carbon/Hydrogen/Moisture Determinator



The RC-412 analyzes various forms of carbon while accurately determining hydrogen/moisture content in a wide variety of organic/inorganic materials.

Flexibility

Qualitative and quantitative analyses can be performed with the RC-412. The ability to ramp furnace temperatures gives the RC-412 the flexibility to distinguish free and crystalline moisture in materials like mold powders, aggregates, and many other chemical compounds. Results can be expressed in weight percent, milligrams per square foot or milligrams per decimeter—an ideal feature for surface carbon analysis of sheets, tubes, and coils. The RC-412 has also been successfully used for free carbon determination in materials like silicon carbide.

Superior Design

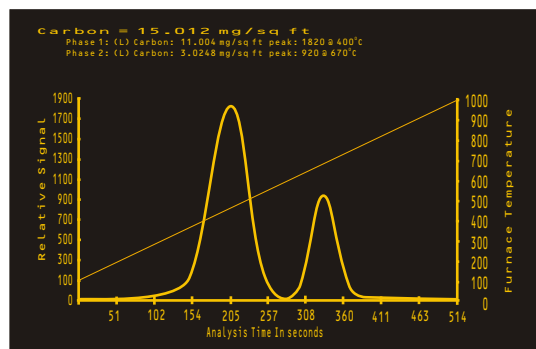
A state-of-the-art furnace control system allows temperature ramping from 25° to 1100°C. Multiple sources of carbon can often be differentiated by controlling temperature and furnace atmosphere. During analysis all forms of carbon (except some carbides like SiC) in the sample material oxidize, converting them to CO₂. During oxidization organic samples also produce H₂O. The presence of organic carbon may be verified by finding coincident peaks in H₂O and CO₂. In an inert (N₂) atmosphere, both H₂O and CO₂ will be detected, but organic carbon will not be detected.

Simple Operation

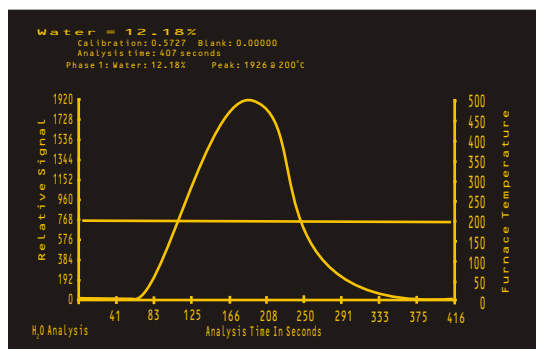
Simply enter the starting temperature, ending temperature, ramp rate and the holding time between phases and the RC-412 takes over and does the work. Up to ten different ramping phases can be programmed into the system. Available options include an interfaced analytical balance, a data transmit kit to peripheral devices, and an external keyboard.

Features

- Furnace ramping
- Oxidizing/Inert atmosphere
- High and low range carbon cells
- Moisture detection specific to H₂O, not weight loss



Observe the furnace ramping during the analysis of surface carbon.



Single temperature phase for moisture showing stable baseline and complete evolution at 200°C.



Typical Results

Sample	Weight (g)	% H ₂ O at 105°C	% H ₂ O at 1000°C	% Total H ₂ O
Welding Flux	4.0356	0.0049	0.0415	0.0464
	4.0448	0.0055	0.0397	0.0452

Sample	Weight (g)	% H ₂ O at 105°C	% H ₂ O at 900°C	% Total H ₂ O	% C at 105°C	% C at 900°C	% Total C
Aggregates	0.4998	0.00301	0.313	0.316	0.0943	1.39	1.49
	0.5095	0.00269	0.312	0.315	0.0800	1.41	1.49
	0.4857	0.00248	0.316	0.318	0.0723	1.40	1.47

Sample	Area (mg/ft ²)	C (mg/ft ²) at 400°C	C (mg/ft ²) at 600°C	Total Surface C (mg/ft ²)
Steel Sheet	0.02951	1.83	0.53	2.37
	0.03038	1.76	0.77	2.53
	0.03038	2.07	0.51	2.58

Options

LECO 250 Balance assures sensitivity to 0.1 mg.



Sample ID entry is further simplified with the addition of a Remote Bar Code Reader.



Add the Data Transmit Interface in RS-232 ASCII format for transmission to remote computers.

Specification sheet for the RC-412 available by requesting form number 209-060-001.

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Spectroscopy Group

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