

# SC632 Sulfur/Carbon Determinator

## Specification Sheet

### Instrument Range @ 350 mg\*

Sulfur	10 ppm or 0.001% to 28%
Carbon	50 ppm or 0.005% to 100%

### Precision

Sulfur	5 ppm or 1% RSD (whichever is greater)
Carbon	25 ppm or 1% RSD whichever is greater

**Nominal Sample Weight** 350 mg for coal

**Analysis Time** 60 to 120 seconds (typical)

**Detection Method** Infrared absorption

**Chemical Reagents** Magnesium Perchlorate (Anhydrous)

**Gases Required** Oxygen, 99.5% pure, 40 psi  $\pm$  10% (2.8 bar), 3.5 lpm, 1.0 lpm purge

**Regulators Required** Oxygen, 0 to 125 psi (0 to 8.6 bar); CGA 540, 7/8-14 Male R.H.

**Furnace** 600 to 1500°C<sup>†</sup>  
 $\pm$  1% of setpoint and controlled through software;  
Concentric, ceramic with open end and lance tube

**Heating Elements** (6) 5/8" (1.6 cm) Silicon Carbide

**Operational Control** Windows<sup>®</sup>-based software on external PC

### Physical Dimensions<sup>‡</sup>

Height:	31 inch (79 cm)
Width:	13 inch (33 cm)
Depth:	26 inch (66 cm)

**Total Shipping Weight** 145 lb. (66 kg)

### Electrical Power Requirements

230 V~ ( $\pm$  10%; at max load), 50/60 Hz, single phase, 15A, 11,800 BTU/hr (idle), 25A, 19,700 BTU/hr (max)

### Part Numbers

SC632C	Sulfur/Carbon Determinator with external PC tower, Windows <sup>®</sup> -based operating software, 15-inch flat panel monitor, and start-up supplies
SC632LC	Same as SC632C above, with autoloader
S632C	Sulfur Determinator with external PC tower, Windows <sup>®</sup> -based operating software, 15-inch flat panel monitor, and start-up supplies
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C632C	Carbon Determinator with external PC tower, Windows <sup>®</sup> -based operating software, 15-inch flat panel monitor, and start-up supplies
C632LC	Same as C632C above, with autoloader

### Optional Accessories

528-203-250	Combustion Boats
502-434	Coal 0.75% Sulfur Reference Material
502-062	Soil 1% Carbon Set-Up Standard
501-291	Oxygen Regulator
751-300-150	4-place Balance Kit
620-400-110	50-position Autoloader

\*Adjusting sample size may extend instrument range.

<sup>†</sup>Furnace operation > 1450°C requires software registration. Contact LECO Service for more information.

<sup>‡</sup>Allow a 6-inch (15 cm) minimum access area around all units. V~ denotes VAC.



## Theory of Operation

The SC632 Series of Elemental Determinators are specifically designed to determine the sulfur and carbon content in a wide variety of organic materials such as coal, coke, and fuel oils, as well as some inorganic materials such as soil, cement, and limestone.

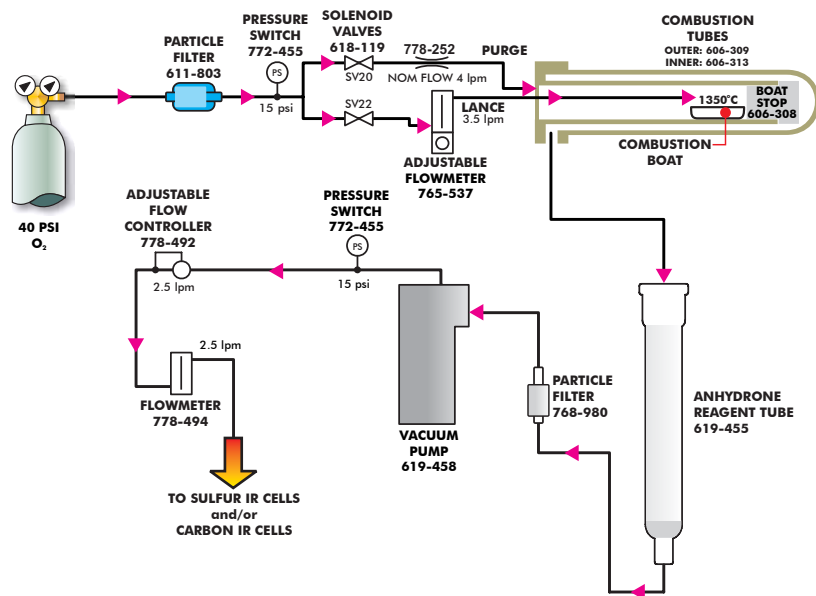
Analysis begins as a sample is weighed into a combustion boat, and placed in a pure oxygen environment typically regulated at 1350°C. The combination of furnace temperature and oxygen flow causes the sample to combust. All sample materials contained in the combustion boat go through an oxidative-reduction process that causes carbon and sulfur bearing compounds to break down and free the carbon and sulfur. The carbon then oxidizes to form CO<sub>2</sub> and the sulfur forms SO<sub>2</sub>.

Sample gases are first swept through the boat stop to the back of the inner combustion tube, then forward between the inner and outer combustion tubes. This allows the sample gases to remain in the high temperature zone for a longer period and permit efficient oxidation.

From the combustion system, the gases flow through an anhydrous tube to remove moisture, and through a flow controller that sets the flow of sample gases through the infrared detection cells. Two cells are used for each element, providing either a full or selective concentration range for sulfur, carbon, and/or sulfur and carbon detection.

An external PC with Windows®-based operating software manages all of the quantitative calculations and saves all of the data for future use by the operator.

## Flow Diagram



Specifications and part numbers may change.  
Consult LECO for latest information.

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