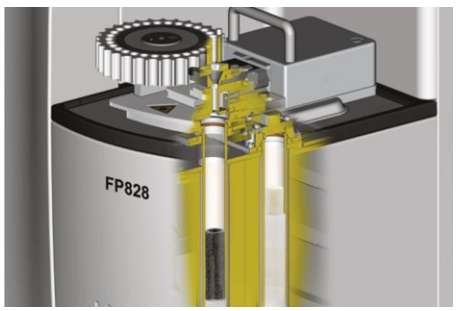
CHN828 with S832 Add-On

Combining a LECO CHN828 with an S832 will give your laboratory the capability to determine the amount of carbon, hydrogen, nitrogen, and sulfur present in a multitude of organic matrices from food/feeds and soils to fuels. This system supports the analysis of carbon, hydrogen, and nitrogen in a sample using the CHN828 with the sulfur analysis being performed using a separate sample in the S832 add-on. The CHN and S analyses can be performed either independently or simultaneously. This system combines the power and performance of both systems without compromise and increases the flexibility of the lab, all while reducing bench space requirements.

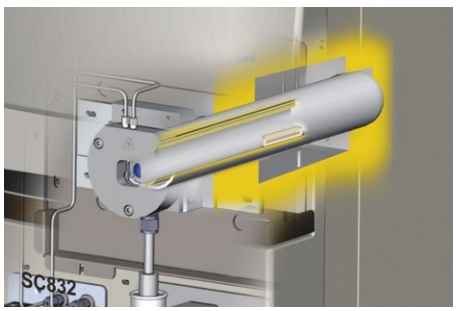
System Highlights

- Supports carbon, nitrogen, hydrogen, and sulfur analysis within a single system
- Independent CHN and S instruments support simultaneous operation providing CHN and S results in 4 minutes
- Extended and consistent reagent lifetimes regardless of sample mass, matrix, or carbon content, including a CHN reduction reagent tube lifetime of over 4,000 samples
- Reagent-free primary furnaces providing exclusive oxygen environment and temperature control up to 1,050 °C for the CHN828 and 1,450 °C for the S832
- Independent automation for both the CHN828 with rugged 30-sample position autoloader with optional expanded capacity for up to 120 samples and S832 add-on with a 100-sample option
- CHN and S analysis compliant with ASTM-, ISO-, and AOAC-approved methods of analysis
- Single computer and monitor for reduced cost and bench space; shared optional analytical balance

832 Autoloader



828 Furnace



832 Furnace

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Theory of Operation

LECO CHN828 carbon, hydrogen, and nitrogen determinator, when combined with the S832 add-on sulfur determinator, becomes an extremely flexible system for the determination of CHN and S in a multitude of organic matrices from food/feeds and soils to fuels. The versatility of this CHN and S system enables the optimization of efficiency and productivity with unmatched sample throughput coupled with superior instrument uptime. Each determinator can be operated independently or simultaneously by switching between two instances of CORNERSTONE® brand software on the single PC.

For the CHN828, analysis begins as the sample is weighed into a tin capsule or encapsulated within tin foil and placed into the loader. A fully automated analysis sequence transfers the sample to a sealed purge chamber, where atmospheric gas is removed. The purged sample is transferred automatically into a reticulated ceramic crucible within the furnace. To ensure complete and rapid combustion (oxidation) of the sample, the furnace environment is composed of pure oxygen with a secondary oxygen flow being directed to the sample within a reticulated crucible via a quartz lance. The combustion gases are swept from the furnace through an afterburner containing reagent to scrub sulfur compounds from the gas stream prior to collection in the ballast volume. The gases equilibrate and mix within the ballast before a representative aliquot of the gas is extracted and introduced into a flowing stream of inert gas for analysis. The aliquot gas is carried to a non-dispersive infrared (NDIR) cell for the detection of carbon (as carbon dioxide) and a thermal conductivity cell (TC) to detect nitrogen (N). The ballast gas is also transferred to a H_2O NDIR cell for the determination of hydrogen. Unlike NDIR cells, TC cells are chemically non-specific, so a series of reagents and scrubbers are used to ensure quantitative detection of N without chemical interference. A heated reduction tube, filled with copper, is used to convert nitrogen oxide species (NO_x) to N_2 and remove excess oxygen. Carbon dioxide (CO_2) is removed by LECOSORB® and water vapor (H_2O) is removed by Anhydrone.

For the S832 add-on, analysis begins as a sample is weighed into a combustion boat and placed into the furnace typically regulated at 1,350 °C with a pure oxygen environment. The sample combusts, releasing carbon as CO_2 gas with the sulfur forms being oxidized and released as SO_2 gas. After a preset time, additional oxygen is introduced via a ceramic lance directly above the sample to accelerate the combustion of refractory materials. The combustion gases are swept to the back of the furnace and then forward through the inner and outer furnace tubes, allowing the combustion gases to remain in the high temperature zone of the furnace ensuring efficient oxidation. Upon exiting the furnace, the combustion gases flow through Anhydrone tubes removing water vapor (H_2O) and on to the flow controller, setting the flow of the combustion gases through the NDIR sulfur and/or carbon detection cells.

Specifications

For full instrument specifications, refer to the 828 Series and 832 Series specification sheets. For full optional 832 Series autoloader specifications, refer to the 832 Series Autoloader specification sheets.

Part Numbers

CHN828-MC	Carbon/Hydrogen/Nitrogen CHN828 performance model with dual loop aliquot (10 cm and 3 cm), software, PC, and touch-screen display
S832-A	Sulfur 832 instrument for add-on to an existing 828 Series *Cornerstone* Instrument

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

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