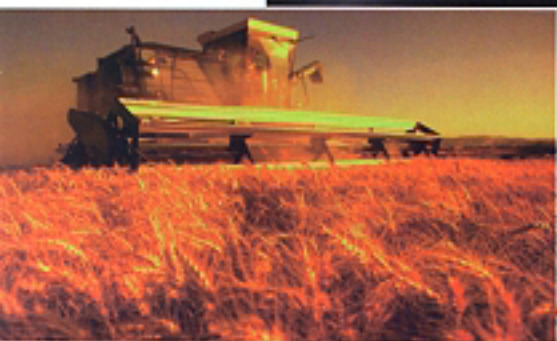
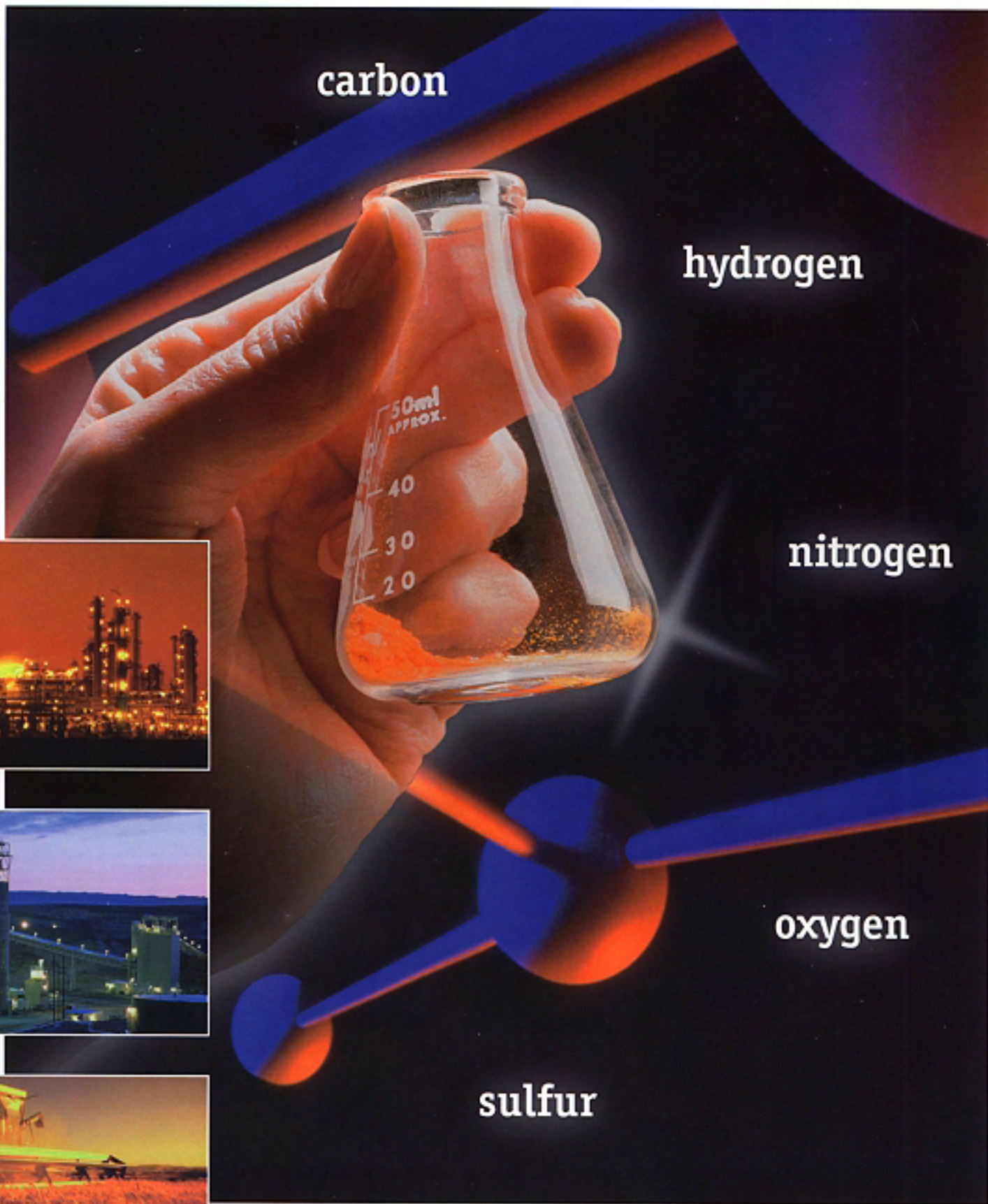


Model CE-440 Rapid Analysis Elemental Analyzer





The CE-440: Ideal For Any Lab, Any Sample, Any Time.

Whether you are analyzing organic compounds, pharmaceuticals, fuels or oils, petrochemicals, refractories or polymers, determining the Carbon, Hydrogen, Nitrogen, Oxygen, and Sulfur content is one of your lab's most basic and essential needs. So is the need for dependable results and maximum throughput. This is why you want the CE-440 Elemental Analyzer.

The CE-440 uses a thermal conductivity detection method for measuring carbon, hydrogen, and nitrogen after combustion and reduction. This method gives rapid and highly accurate measurements over a very wide range of elemental compositions, with most measurements completed in less than 5 minutes. Combine that with the CE-440's 64-sample carousel and you will achieve peak throughput. The CE-440's advanced Windows®-based software, with data storage, statistical analysis, flexible report generation and continuous diagnostic and automatic maintenance alerts, controls and monitors all instrument functions. This simplifies operation for consistent operator-to-operator results, no matter what sample types you analyze. Plus, due to its low gas and reagent consumption, the CE-440 offers the lowest cost per sample in the industry.

For the CHN/O/S analyzer offering the best performance and price, we invite you to examine the CE-440 for yourself.

CE-440 Benefits

- Rapid analysis for high productivity – analysis time of less than 5 minutes
- Unique combustion technique makes possible the analysis of any sample type, from volatiles to refractories
- Stable thermal conductivity detectors provide linear response with superior precision and accuracy
- Windows®-based software with data storage for statistical analysis and flexible report generation
- Horizontal sample injection removes interfering residue between each sample run
- Continuous diagnostics and automatic maintenance alerts
- Low reagent consumption – industry's lowest cost per sample

SPECIFICATIONS

Accuracy: With standard organic compounds, +/- 0.15% absolute plus +/- 0.15% relative

Sample Size: Typically 1-5 mg; up to 500 mg for samples with low carbon content

Analysis Time: Less than 5 minutes for CHN

Controller: IBM-compatible PC with Windows/Windows 95

Automation: 64 sample carousel or single sample with ability to re-weigh for ash

Range: 100 ppm to 100%

Detector: Thermal conductivity

System Sensitivity: +/- 1 microvolt

Analytical Sensitivity: Less than 1 microgram

Power: 110/220 V, 60/50 Hz, 10 amp, single phase

Weight: 125 lbs. / 57 kg.

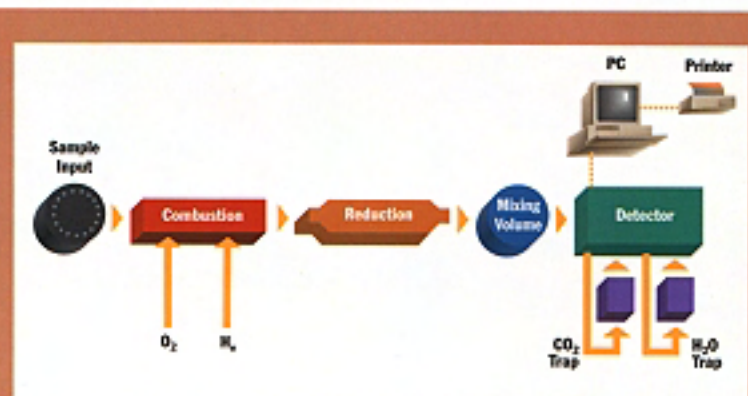
Dimensions: 32" wide x 28" deep x 13" high (81 x 71 x 33 cm)

Bottled Gases Required: Helium 99.99%, Oxygen 99.99%

About Our Company.

Exeter Analytical, Inc. is a company with a rich heritage of specializing in the manufacture of elemental analyzers for a wide range of research, industrial and academic applications. Our customers include some of the largest companies in the fields of pharmaceuticals, petrochemicals and agriculture.

Our CHN/O/S application laboratory stands ready to assist you in getting the best results on your samples. Our experienced and knowledgeable applications chemists and engineering staff are always available to provide in-depth support and consultation on any CE-440 application.



Model CE 440 Principles of Operation

The samples to be analyzed are weighed in consumable tin or aluminum capsules. The capsule is injected into a high temperature furnace and combusted in pure oxygen under static conditions. At the end of the combustion period, a dynamic burst of oxygen is added to ensure total combustion of all inorganic and organic substances. If tin capsules are used for the sample container, an initial exothermic reaction occurs raising the temperature of combustion to over 1800°C.

The resulting combustion products pass through specialized reagents to produce carbon dioxide (CO₂), water (H₂O) and nitrogen (N₂) and oxides of nitrogen. These reagents also remove other interferences including halogens, sulfur, and phosphorous. The gases are then passed over copper to scrub excess oxygen and reduce oxides of nitrogen to elemental nitrogen. After scrubbing, the gases enter a mixing volume chamber to ensure a homogeneous mixture at constant temperature and pressure.

The mixture then passes through

a series of high-precision thermal conductivity detectors, each containing a pair of thermal conductivity cells. Between the first two cells is a water trap. The differential signal between the cells is proportional to the water concentration, which is a function of the amount of hydrogen in the original sample. Between the next two cells is a carbon dioxide trap for measuring carbon. Finally, nitrogen is measured against a helium reference.

Sulfur is measured separately, as sulfur dioxide, by replacing the combustion and reduction reagents. Oxygen is also measured separately by pyrolysis in the presence of platinumized carbon. The oxygen is finally measured as carbon dioxide. Both analyses are easily carried out and require a simple change of reagent tubes. In this way the analysis of either sulfur or oxygen is not compromised by trying to determine several elements at the same time. Parameters and reagents are optimized for the element undergoing analysis.

EAI

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