# Carbon / Sulfur Analyzer ELEMENTRAC CS-i

## General Information


The new carbon / sulfur analyzer ELEMENTRAC CS-i was developed for the accurate and safe analysis of carbon and sulfur in inorganic samples. The analyzer is equipped with a powerful induction furnace for sample combustion.

Up to four highly sensitive infrared (IR) cells allow the analyzer to determine both high and low carbon and sulfur concentrations in only one measurement run. The measuring range of each cell may be adapted to the user's specific requirements to ensure optimum measuring conditions for each application.

The analyzer is supplied with the new comprehensive and convenient ELEMENTS software, which features statistics, groupings, reports, diagnosis tools and many additional functions for ELEMENTRAC analyzers.

## Application Examples

alloys, carbides, cast iron, cement, ceramics, copper, glass, iron, minerals, ores, refractory metals, sand, steel, titanium, ...

## Product Advantages

- simultaneous carbon and sulfur determination with minimal sample preparation
- wide range of inorganic materials can be analyzed
- freely selectable configuration of each IR cell
- optional gold IR path for analysis of halogen or acid containing samples
- control of induction performance provides more precise analysis of samples with low melting temperature
- powerful (2.2 kW) induction furnace for temperatures above 2,000 °C
- NEW: automatic vacuum cleaning system ensures higher measurement precision and stability
- heated and easily accessible dust trap allows for improved sulfur detection
- optimized catalyst reactor permits more accurate carbon detection
- NEW: ELEMENTS software with comprehensive analysis and diagnosis tools (supporting data and application export, comment fields, and many more)
- single and multipoint calibration
- low maintenance
- robust design allows usage in production control and laboratory

## Features

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|---|---|
| Measured elements | carbon, sulfur |
| Samples | inorganic |
| Furnace alignment | vertical |
| Sample carrier | ceramic crucibles |
| Field of application | construction materials, engineering / electronics, geology / mining, glass / |

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| | |
|---|---|
| | ceramics, steel / metallurgy |
| Furnace | induction furnace, above 2,000 °C |
| Detection method | solid state infrared absorption |
| Number of IR cells | 1 - 4 |
| Material of IR path | aluminum (optional gold) |
| Typical analysis time | 40 seconds (nominal) |
| Chemicals required | magnesium perchlorate, platinum-based catalyst, sodium hydroxide |
| Gas required | compressed air (4 bar/ 60 psi)<br>oxygen 99.5 % pure (2 - 4 bar / 30 - 60 psi) |
| Power requirements | 230 V, 50/60 Hz, max. 15 A, 3450 W |
| Dimensions (W x H x D) | 52 x 84 x 75 cm |
| Weight | ~ 150 kg |
| Required equipment | balance (resolution 0.0001g),<br>monitor, PC |
| Optional accessories | Autoloader (for 36 or 130 crucibles),<br>carrier gas purification, halogen trap,<br>HTF-540 pre-heating furnace,<br>voltage stabilizer 5 KVA |

## Function Principle

Carbon / Sulfur Analyzer CS-i: Operation Operating the CS-i is simple and safe. After weighing the sample in a ceramic crucible, the weight is transferred from the interfaced balance to the PC. If required, sample weights can also be entered manually. Then an accelerator (such as iron or tungsten) is added and, after having placed the crucible on the pedestal, the analysis starts. The analysis time is 40 to 50 seconds. The detector signals and instrument parameters are displayed during analysis. Evaluation of the signals and display of the results are done automatically; the data can be transferred to a laboratory information management system (LIMS). The CS-i requires minimum maintenance. The particle filters and chemicals which need to be maintained are easily accessible. Carbon / Sulfur Analyzer CS-i: Measuring Principle In the induction furnace the sample is melted in a pure oxygen atmosphere, causing sulfur to react to sulfur dioxide (SO2) and carbon to a mixture of carbon monoxide (CO) and carbon dioxide (CO2). The combustion gases pass through a dust filter and moisture absorber for purification. In the next step the sulfur dioxide is detected in infrared cells. In the CS-i infrared cells with different sensitivities (high/low) can be adapted according to the user's requirements. Oxidation of both, carbon monoxide to carbon dioxide and sulfur dioxide to sulfur trioxide follow the sulfur measurement. The SO3 gas is removed with cellulose wool; the carbon content is detected by infrared cells which can be individually customized. The ELTRA CS-i analyzer can be equipped with up to 4 independent infrared cells.