CM220

Total Carbon Analysis

By Automated Combustion and Coulometric Detection

Applications include: *Soils and sediments, Geological materials, Sludges, Sulfur, Coals, Ceramic powders, Column packing materials*

The CM220 Total Carbon Analyzer is a complete analytical system capable of measuring total carbon in a wide variety of sample types and matrices. Combining a high-temperature combustion furnace with a highly sensitive CO_2 detector, the CM220 is capable of analyzing samples containing total carbon concentrations from ppm levels to 100% without user calibration. UIC's analyzers are rugged, accurate and adaptable to most TC applications. They are used extensively in industrial, research and educational laboratories worldwide. The CM220 system includes the following components pictured above:

CM5015 CO_2 Coulometer

- No user calibration
- Wide, linear dynamic range
- Readability to 0.01 ug Carbon
- User selectable display units
- 10" LCD Touch Screen
- SD Card data storage
- LIMS Compatible

CM5200 Autosampler Furnace

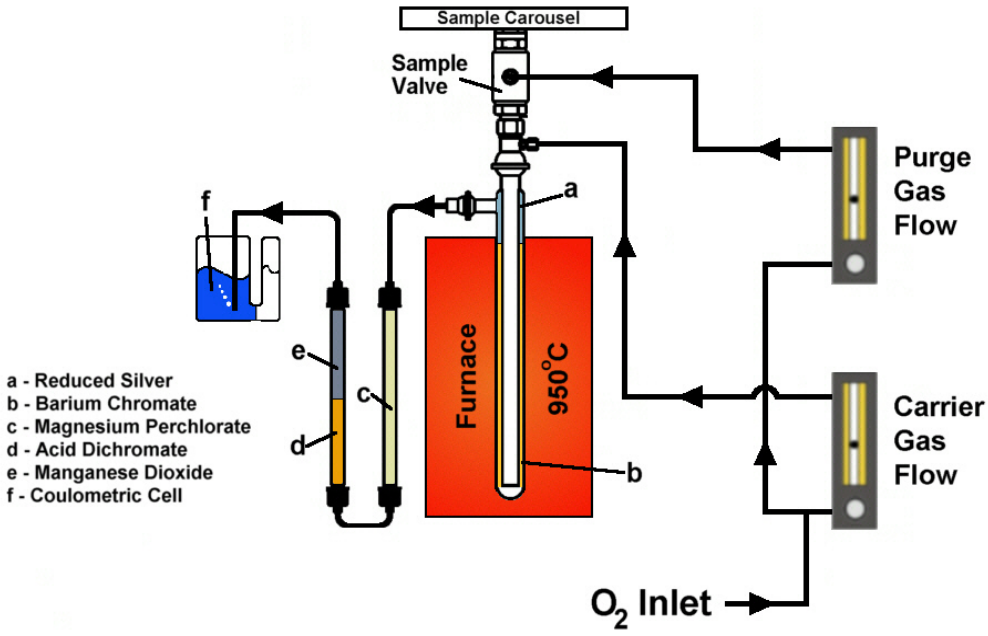
- Two independent combustion zones programmable up to 1100^{O}C
- 29 position sample carousel
- Post-combustion scrubbers for removal of interfering gases formed during sample combustion

Instrument Capabilities

A major advantage of the CM220 Total Carbon Analyzer is the use of coulometric detection. Employing the principles of Faraday's Law, the CM5015 CO_2 Coulometer automatically measures the absolute mass amount of carbon dioxide resulting from sample combustion. No user-calibration is required and linear detection is available from less than 1 ug carbon to over 10,000 ug carbon. Using this 100% efficient coulometric process, relative standard deviations of 0.2% or better are common for standard material. For smaller concentrations, an absolute deviation of approximately 1 ug C is typical.

Oxidation times vary with sample type and temperature although 5 to 7 minute analyses are typical.

Principles of Operation



Total Carbon

The sample is initially weighed into a tin “boat” which is folded and placed into the 29 position sample carousel. Upon operation, the tin boat containing the sample is dropped from the sample carousel into the sample valve. The sample valve is purged and the sample boat is dropped into the combustion tube where it is combusted in a high-temperature oxygen rich atmosphere. In that environment, all carbon within the sample is rapidly oxidized to CO_2. Interfering reaction products (including sulfur oxides, halides, water and nitrous oxides) are removed by the post-combustion scrubbers. The resulting carbon dioxide is then swept into the CM5015 CO_2 Coulometer where it is automatically measured using absolute coulometric titration.

Data Handling

Names, weights and sizes of up to 50 samples can be entered, to be used by the CM5015 in calculating the final result. Analytical progress is displayed on the 10” LCD touch screen in user-selectable units. Detailed analysis information is automatically saved to an on-board SD card after each sample. Data can also be transmitted through the standard serial and Ethernet ports to be captured on a personal computer or LIMS. In addition, a detailed report can be printed to the optional small format printer while each sample is running.

Ordering Information

CM220 - Total Carbon Autoanalyzer

Includes: CM5015 CO_2 Coulometer and CM5200 Autosampler Furnace. (P/N CM220-01 110V, 50/60Hz) (P/N CM220-02 220V, 50/60Hz)

Optional Equipment:

Printer – 3” format impact printer. Includes cable, power supply, paper and ribbon. (P/N CM124-078)

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