

# DATA BULLETIN

## *Organic and inorganic carbon analyses in fluorapatite*

Fluorapatite,  $\text{Ca}_5(\text{PO}_4)_3\text{F}$ , is industrially used for the production of phosphoric acid. It is available from two major geological sources, volcanic and sedimentary ores. Impurities in the form of organic and inorganic carbon can influence the production process of phosphoric acid. With the soli TOC cube it is possible to determine the amount of organic and inorganic carbon in fluorapatite in a single measurement. This can be achieved by a temperature ramp method that discriminates between different carbon fractions. Furthermore, the high fluoride content does not deteriorate the performance of this analytical method.

Different fluorapatite samples were weighed into standard reusable crucibles without further sample preparation. Each sample was analyzed five times using a two step temperature program (TOC at 400 °C, TIC at 900 °C). For the calibration  $\text{CaCO}_3$  was used. The average values and absolute standard deviations of the measurements are given below.

SAMPLE	TOC <sub>400</sub> [%]	TIC <sub>900</sub> [%]
Fluorapatite-1	0.073 ± 0.004	0.839 ± 0.014
Fluorapatite-2	0.214 ± 0.006	1.881 ± 0.014
Fluorapatite-3	0.839 ± 0.021	1.949 ± 0.024

The results show that all samples could be analyzed with a high precision, despite the low carbon content and high fluorine content of the samples. Moreover, subsequent analyses on the soli TOC cube without maintenance show that the instrument is not affected by analyzing fluorine containing samples.

The soli TOC cube provides a precise, adjustable temperature profile for reproducible measurements of the different carbon fractions. The software allows for implementing predefined methods in addition to custom programming of the heating rate and hold times. This ensures that even the most difficult analyses can produce precise measurement of each individual component.

### INSTRUMENT:

soli TOC cube

### DETAILS:

mode: TOC-TIC

sample: 100 mg fluorapatite



**Elementar Analysensysteme GmbH**  
Elementar-Straße 1  
63505 Langenselbold (Germany)  
phone: +49 (0) 6184 9393-0  
info@elementar.de | www.elementar.de

