

# DATA BULLETIN

## *Determination of organic and inorganic carbon impurities in fluorite*

Fluorite ( $\text{CaF}_2$ ) is an important industrial mineral. It is widely used in the metal, chemical, ceramic, glass, and optical industry. Depending on the application different grades of fluorite are available. Carbon is, among other elements, one of the common impurities found in fluorite. With the soli TOC cube it is possible to determine the amount of organic and inorganic carbon in fluorite 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 fluorite samples were weighed into standard reusable crucibles without further sample preparation. Each sample was analyzed three times using a two step temperature program (TOC at 400 °C, TIC at 900 °C). For the calibration  $\text{CaCO}_3$  and a soil standard were used. The total carbon content is calculated as the sum of TOC and TIC. The average values and absolute standard deviations are given below.

ORIGIN OF FLUORITE	TOC <sub>400</sub> [%]	TIC <sub>900</sub> [%]	C [%]
Germany	0.061 ± 0.007	0.027 ± 0.001	0.088
Hong-Kong	0.150 ± 0.010	0.028 ± 0.001	0.178
Vietnam	0.070 ± 0.009	0.030 ± 0.004	0.100

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 fluorite 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: 20 mg fluorite



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

