

# Certificate of Analysis

## (Elemental Composition)

Synthetic High Organic Content Sediment IRMS Standard  
For TC, TOC, N and S.  
Cat No. B2251 – Certificate No. 464310

### General

This analytical standard consists of a homogenous batch of synthetic high organic content sediment for use as a routine working microanalytical standard for the determination of carbon, nitrogen and sulfur.

### Certified Values and Uncertainty

The uncertainty in the certified value is expressed as expanded uncertainty,  $U$ , at 95% confidence and is calculated in accordance with ISO/IEC 17025 according to GUM (Guidelines to Uncertainty in Measurement). Confidence limits include those due to sampling variation, weighing, calibration and measurement errors. The certified values are based upon the results of 30 determinations.

The certified values for carbon, nitrogen and sulfur were determined by elemental analyser and calibrated to Cystine 143d from National Institute of Standards and Technology (NIST).

<i>Element</i>	<i>Certified value (%w/w)</i>	<i>Uncertainty (±%)</i>
<b>Carbon</b>	<b>7.39</b>	<b>0.12</b>
<b>Nitrogen</b>	<b>0.566</b>	<b>0.02</b>
<b>Sulfur</b>	<b>0.605</b>	<b>0.03</b>
<b>TOC</b>	<b>7.07</b>	<b>0.05</b>

### Expiration of Certification

The certification of this standard is valid until 1 June 2028 within the measurement uncertainties specified.

### Storage and use

This standard should be stored between 20°C to 25°C and should be kept tightly sealed away from light and moisture. It is non-hygroscopic under normal conditions and can be used without preliminary drying.

### Certification Information

The technical aspects involved in the manufacture, preparation and issuance of this analytical standard were carried out at Elemental Microanalysis Ltd, Okehampton, Devon EX20 1UB UK, Tel +44 1837 54446. <https://elementallab.co.uk>

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For and on behalf of  
Elemental Microanalysis Ltd

David Castle  
R&D and Applications Specialist



# Certificate of Analysis

## (Isotopic Composition)

Synthetic High Organic Content Sediment IRMS Standard  
For TC, TOC, N and S.  
Cat No. B2251 – Certificate No. 464310

### General

This analytical standard consists of a homogenous batch of synthetic high organic content sediment for use as a routine working microanalytical standard for the determination of the carbon, nitrogen and sulfur isotopes  $^{13}\text{C}$  (TC and TOC),  $^{15}\text{N}$  and  $^{34}\text{S}$ .

### Certified Values and Uncertainty

The uncertainty in the certified value is expressed as  $\sigma$  (1 standard deviation).

The certified values for carbon and nitrogen were determined by EA-IRMS using USGS40 and 41a.

The certified value for sulfur was determined by EA-IRMS using IAEA-S-1, S-2 and S-3.

<i>Isotope</i>	<i>Certified value (‰)</i>	<i>SD (<math>\sigma</math>)</i>	<i>Determinations</i>
$\delta^{13}\text{C}_{\text{VPDB}}$ (TC)	-24.41	0.17	n=21
$\delta^{15}\text{N}_{\text{AIR}}$	0.58	0.26	n=39
$\delta^{34}\text{S}_{\text{VCDT}}$	6.46	0.56	n=51
$\delta^{13}\text{C}_{\text{VPDB}}$ (TOC)	-25.95	0.14	n=21

### Expiration of Certification

The certification of this standard is valid until 1 June 2028 within the measurement uncertainties specified.

### Storage and use

This standard should be stored between 20°C to 25°C and should be kept tightly sealed away from light and moisture. It is non-hygroscopic under normal conditions and can be used without preliminary drying.

### Certification Information

The technical aspects involved in the manufacture, preparation and issuance of this analytical standard were carried out at Elemental Microanalysis Ltd, Okehampton, Devon EX20 1UB UK, Tel +44 1837 54446. <https://elementallab.co.uk>

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