

Elemental Microanalysis Ltd

# Certificate of Analysis

Spruce powder working standard  
Cat. No. B2213 – Certificate No. 295719

## General

This Analytical Standard (OAS) consists of a homogenous batch of wood (Spruce) powder for use as a routine working laboratory standard in the determination of C, N, H, O and of the stable isotopes  $^{13}\text{C}$ ,  $^{15}\text{N}$  and  $^{18}\text{O}$ .

## Values and Uncertainty

The uncertainty in the quoted value is expressed as  $\sigma$  (1 standard deviation), Confidence limits include those errors due to sampling variation, weighing, calibration and measurement.

This material may be used in method development, performance monitoring or as part of a quality control programme.

Values are traceable to primary standards issued by N.I.S.T. and I.A.E.A Vienna.

*It is not intended for this to be a substitute for such primary standards.*

## Results (dried basis)

<b>Nitrogen</b>	<b>% = 0.09</b>	<b><math>\sigma = 0.02\%</math></b>
	$^{15}\text{N}_{\text{V-AIR}} = -4.9\%$	<b><math>\sigma = 0.2\%</math></b>
<b>Carbon</b>	<b>% = 49.88</b>	<b><math>\sigma = 0.07\%</math></b>
	$^{13}\text{C}_{\text{V-PDB}} = -25.44\%$	<b><math>\sigma = 0.02\%</math></b>
<b>Oxygen</b>	<b>% = 42.93</b>	<b><math>\sigma = 0.13\%</math></b>
	$^{18}\text{O}_{\text{V-SMOW}} = +23.59\%$	<b><math>\sigma = 0.12\%</math></b>
<b>Hydrogen</b>	<b>% = 6.29</b>	<b><math>\sigma = 0.02\%</math></b>

## Expiration

The values quoted are valid until **14 Dec 2022** within the measurement uncertainties specified.

## Storage and Use

This OAS should be stored between 20°C to 25°C and should be kept tightly sealed away from light and moisture.

Data given above is based on dried material. Samples should be dried for a minimum of 24hrs at 70°C and stored in a dessicator prior to use.

## Information

The technical aspects involved in the preparation and issuance of this (In)Organic Analytical Standard (IAS/OAS) were carried out at Elemental Microanalysis Ltd, Okehampton, Devon EX20 1UB UK, Tel +44 1837 54446, Fax +44 1837 54544, Email [info@microanalysis.co.uk](mailto:info@microanalysis.co.uk).

For and on behalf of  
Elemental Microanalysis Ltd

Jon Davies  
Technical Manager