

## Certificate of Analysis (Elemental Composition)

Catalogue No: R60610  
Material Name: Protein (Casein) IRMS Standard OAS/Isotope  
Expiry Date: 15 June 2028

### Intended Use

This Organic Analytical Standard (OAS) consists of a homogenous batch of Sorghum Flour standard for use as a routine working microanalytical standard for the determination of Carbon, Nitrogen and Sulphur.

### 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/IEC17025 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 24 to 29 determinations.

The certified value for Carbon was determined by elemental analyser calibrated to Cystine 143d from National Institute of Standards and Technology (NIST), Maryland, USA.

The certified values for Sulphur were determined by elemental analyser calibrated to Rice Flour 1568a from National Institute of Standards and Technology (NIST), Maryland, USA.

Element Determined	Certified Value %	Uncertainty at 95%
Carbon	46.5	0.78
Nitrogen	13.32	0.40
Sulphur	0.751	0.083

### Storage

This OAS should be stored at temperatures 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.

### Expiry Date

This working standard should not be used after the date given above. Properly stored and unopened this standard will remain within the specified uncertainty up to and beyond the expiry date.

### General Information

This working standard is directly traceable to the international standard(s) given above. For GLP it is recommended that this working standard be verified prior to use. Certified values were determined by combustion TCD/FPD elemental analysis, combustion ion chromatography or acid digestion spectrophotometry. In no event shall OEA Laboratories Limited be liable for incidental or consequential losses or damages through the use of this product. For hazard information refer to Safety Data Sheets available upon request from OEA Laboratories Limited.

## Certificate of Analysis (Isotopic Composition)

Catalogue No: R60610  
Material Name: Protein (Casein) IRMS Standard OAS/Isotope  
Expiry Date: 15 June 2028

### Intended Use

This Organic Analytical Standard (OAS) consists of a homogenous batch of High Organic Content Sediment standard for use as a routine working microanalytical standard for the determination of the Carbon and Nitrogen isotopes  $^{13}\text{C}$ ,  $^{15}\text{N}$  and  $^{34}\text{S}$ .

### 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/IEC17025 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 15 determinations.

The certified value for Carbon was determined by EA-IRMS calibrated to IAEA-CH-6 (IAEA, Vienna)

The certified value for Nitrogen was determined by EA-IRMS calibrated to IAEA-N-1 (IAEA, Vienna)

Isotope	Certified Value	Uncertainty
		% at 95%
$\delta^{13}\text{C}$ V-PDB	-26.98	0.13
$\delta^{15}\text{N}$ AIR	+6.28	0.09
$\delta^{34}\text{S}$ V-CDT	+6.18	0.80

\* Note: The value for  $\delta^{34}\text{S}$  is uncertified and given for information purposes only.

### Storage

This OAS should be stored at temperatures 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.

### Expiry Date

This working standard should not be used after the date given above. Properly stored and unopened this standard will remain within the specified uncertainty up to and beyond the expiry date.

### General Information

This working standard is directly traceable to the international standard(s) given above. For GLP it is recommended that this working standard be verified prior to use. Certified values were determined by combustion TCD/FPD elemental analysis, combustion ion chromatography or acid digestion spectrophotometry. In no event shall OEA Laboratories Limited be liable for incidental or consequential losses or damages through the use of this product. For hazard information refer to Safety Data Sheets available upon request from OEA Laboratories Limited.