

Iso-Analytical Limited

Report of Analysis

IA-R001 – ¹⁵N/¹³C Wheat Flour Laboratory Standard

This laboratory standard is intended to provide a sample of known isotope composition with ¹⁵N/¹⁴N and ¹³C/¹²C isotope ratios stated in parts per thousand difference (‰) from Air and the V-PDB (Pee Dee Belemnite) isotope ratio standards, respectively. This laboratory standard is not certified, but is provided to allow routine checking of the overall quality of measurements performed by continuous-flow isotope ratio mass spectrometry, and may be used as part of a quality control program. It is not intended for use as a substitute for calibration materials or inter-comparison materials distributed by NIST or IAEA.

Analysis

The ¹⁵N/¹⁴N isotope ratio of the laboratory standard was measured by elemental analyser continuous-flow isotope ratio mass spectrometry using IAEA-N-1 (Ammonium Sulphate) as the calibration material. The ¹⁵N/¹⁴N isotope ratio in the laboratory standard was measured five times on four separate occasions.

The ¹³C/¹²C isotope ratio of the laboratory standard was measured by elemental analyser continuous-flow isotope ratio mass spectrometry using IAEA-CH6 (ANU Sucrose) as the calibration material. The ¹³C/¹²C isotope ratio in the laboratory standard was measured five times on three separate occasions.

Isotope Abundance

The laboratory standard IA-R001 is compared to Air for the ¹⁵N/¹⁴N isotope ratio and V-PDB for the ¹³C/¹²C isotope ratio. The isotope composition of the laboratory standard in ‰ relative to Air and V-PDB is:

Laboratory Standard	$\delta^{15}\text{N}_{\text{Air}} (\text{‰})$ $\delta_m \pm \sigma_1$	$\delta^{13}\text{C}_{\text{V-PDB}} (\text{‰})$ $\delta_m \pm \sigma_1$
IA-R001	+2.55 ± 0.22	-26.43 ± 0.08

Note: $\delta_m = \sum_{i=1}^n \delta_i/n$; $\sigma_1 = \sqrt{\sum_{i=1}^n (\delta_m - \delta_i)^2/(n-1)}$; n = 15 for ¹³C and 20 for ¹⁵N

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