Iso-Analytical Limited

Report of Analysis

IA-R041 – $^{15}N/^{13}C$ L-Alanine Laboratory Standard

This laboratory standard is intended to provide a sample of known isotope composition with $^{15}N/^{14}N$ and $^{13}C/^{12}C$ 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 $^{15}N/^{14}N$ 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 $^{15}N/^{14}N$ isotope ratio in the laboratory standard was measured five times on three separate occasions.

The $^{13}C/^{12}C$ 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 $^{13}C/^{12}C$ isotope ratio in the laboratory standard was measured five times on three separate occasions.

Isotope Abundance

The laboratory standard IA-R041 is compared to Air for the $^{15}N/^{14}N$ isotope ratio and V-PDB for the $^{13}C/^{12}C$ isotope ratio. The isotope composition of the laboratory standard in ‰ relative to Air and V-PDB is:

Laboratory Standard	$\delta^{15}N_{Air}$ (‰) $\delta_m \pm \sigma_1$	$\delta^{13}C_{V\text{-}PDB}$ (‰) $\delta_m \pm \sigma_1$
IA-R041	-5.56 ± 0.14	-23.33 ± 0.10

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 ^{13}C and 15 for ^{15}N

February 16, 2005 Steven T. Brookes Charles Belanger

Iso-Analytical, Millbuck Way, Sandbach, Cheshire, CW11 3HT, UK
Tel: +44 1270 766771, Fax +44 1270 766709, info@iso-analytical.com