Iso-Analytical Limited

Report of Analysis

IA-R002- ^{2}H and ^{13}C Mineral Oil Laboratory Standard

This laboratory standard is intended to provide a sample of known isotope composition with $^{2}H/^{1}H$ and $^{13}C/^{12}C$ isotope ratios stated in parts per thousand difference (‰) from V-SMOW 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 $^{2}H/^{1}H$ isotope ratio of the laboratory standard was measured by elemental analyser continuous-flow isotope ratio mass spectrometry using NBS-22 (Mineral Oil) as the calibration material. The $^{2}H/^{1}H$ isotope ratio in the laboratory standard was measured six 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 NBS-22 (Mineral Oil) as the calibration material. The $^{13}C/^{12}C$ isotope ratio in the laboratory standard was measured six times on three separate occasions.

Isotope Abundance

The laboratory standard IA-R002 is compared to V-SMOW for the $^{2}H/^{1}H$ isotope ratio and V-PDB for the $^{13}C/^{12}C$ isotope ratio. The isotope composition of the laboratory standard in ‰ relative to V-SMOW and V-PDB is:

Laboratory Standard	$\delta^{2}H_{V\text{-}SMOW}$ (‰) $\delta_m \pm \sigma_1$	$\delta^{13}C_{V\text{-}PDB}$ (‰) $\delta_m \pm \sigma_1$
IA-R002	-111.2 ± 1.4	-28.06 ± 0.03

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 = 17 for ^{2}H and 18 for ^{13}C

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