Iso-Analytical Limited

Report of Analysis

IA-R072- ^{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, USGS 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, $\delta^{2}H$ = -116.09 ‰ vs. V-SMOW-SLAP) as the calibration material. The $^{2}H/^{1}H$ isotope ratio in the laboratory standard was measured eight 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, $\delta^{13}C$ = -30.03 ‰ vs. V-PDB-LSVEC) as the calibration material. The $^{13}C/^{12}C$ isotope ratio in the laboratory standard was measured six times on four separate occasions.

Isotope Abundance

The laboratory standard IA-R072 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-R072	-148.61 ± 2.16	-29.27 ± 0.02

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 = 24 for ^{2}H and for ^{13}C

May 3, 2019 Steven T. Brookes Charles Belanger

Iso-Analytical, The Quantum, Phase 3, Marshfield Bank, Crewe, Cheshire, CW2 8UY, UK
Tel: +44 1270 509533, Fax +44 1270 509511, info@iso-analytical.com