Supplementary Table 4. Stable isotope data for Ziegler Reservoir mastodon tusks.

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| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 17.1 | 60696 | 1 | 24.42‰ | 3.36‰ | - | - | - |
|  |  | 2 | 23.78‰ | 2.75‰ | - | - | - |
|  |  | 3 | 24.06‰ | 2.96‰ | - | - | - |
|  |  | 4 | 24.20‰ | 3.23‰ | - | - | - |
|  |  | 5 | 23.37‰ | 3.49‰ | - | - | - |
|  |  | 6 | 22.97‰ | 2.66‰ | - | - | - |
|  |  | 7 | 23.30‰ | 2.97‰ | - | - | - |
|  |  | 8 | 23.45‰ | 3.35‰ | - | - | - |
|  |  | 9 | 23.95‰ | 3.21‰ | - | - | - |
|  |  | 10 | 24.29‰ | 3.47‰ | - | - | - |
|  |  | 11 | 25.69‰ | 4.03‰ | - | - | - |
|  |  | 12 | 25.26‰ | 4.62‰ | - | - | - |
|  |  | 13 | 25.63‰ | 5.00‰ | - | - | - |
|  |  | 14 | 25.50‰ | 5.17‰ | - | - | - |
|  |  | Average | 24.28‰ | 3.59‰ |  |  |  |
|  |  | Std Dev | 0.91‰ | 0.81‰ |  |  |  |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.97‰ | -2.17‰ |
| Meas. = 5 | Std Dev | 0.02‰ | 0.08‰ |

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| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 30.017 | - | 1 | 20.97‰ | 0.68‰ | - | - | - |
|  |  | 2 | 21.93‰ | 1.04‰ | - | - | - |
|  |  | 3 | 21.70‰ | 0.48‰ | - | - | - |
|  |  | 4 | 20.87‰ | 0.16‰ | - | - | - |
|  |  | 5 | 24.08‰ | 0.57‰ | - | - | - |
|  |  | 6 | 23.69‰ | 0.89‰ | - | - | - |
|  |  | 7 | 22.07‰ | 0.90‰ | - | - | - |
|  |  | 8 | 21.10‰ | 0.57‰ | - | - | - |
|  |  | 9 | 21.85‰ | 1.02‰ | - | - | - |
|  |  | 10 | 21.78‰ | 1.46‰ | - | - | - |
|  |  | 11 | 23.91‰ | 2.11‰ | - | - | - |
|  |  | 12 | 24.43‰ | 2.09‰ | - | - | - |
|  |  | 13 | 24.28‰ | 2.30‰ | - | - | - |
|  |  | 14 | 23.22‰ | 2.52‰ | - | - | - |
|  |  | 15 | 22.26‰ | 2.66‰ | - | - | - |
|  |  | 16 | 22.57‰ | 2.66‰ | - | - | - |
|  |  | 17 | 22.46‰ | 2.66‰ | - | - | - |
|  |  | 18 | 24.29‰ | 3.20‰ | - | - | - |
|  |  | 19 | 24.95‰ | 4.20‰ | - | - | - |
|  |  | 20 | 25.19‰ | 4.34‰ | - | - | - |
|  |  | 21 | 25.80‰ | 4.49‰ | - | - | - |
|  |  | 22 (P. C.) | 25.69‰ | 3.57‰ | - | - | - |
|  |  | Average | 23.14‰ | 2.03‰ |  |  |  |
|  |  | Std Dev | 1.56‰ | 1.35‰ |  |  |  |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.20‰ |
| Meas. = 6 | Std Dev | 0.06‰ | 0.04‰ |

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| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 30.076 | - | 1 | 23.48‰ | -0.34‰ | - | - | - |
|  |  | 2 | - | - | - | - | - |
|  |  | 3 | 23.82‰ | -0.35‰ | - | - | - |
|  |  | 4 | 23.68‰ | -0.03‰ | - | - | - |
|  |  | 5 | 24.19‰ | -0.54‰ | - | - | - |
|  |  | 6 | 25.28‰ | 0.01‰ | - | - | - |
|  |  | 7 | 25.03‰ | 0.35‰ | - | - | - |
|  |  | 8 | 23.94‰ | 0.75‰ | - | - | - |
|  |  | 9 | 24.02‰ | 0.53‰ | - | - | - |
|  |  | 10 | 22.61‰ | 0.04‰ | - | - | - |
|  |  | 11 | 23.88‰ | 0.59‰ | - | - | - |
|  |  | 12 | 23.99‰ | 1.01‰ | - | - | - |
|  |  | 13 | 23.63‰ | 0.33‰ | - | - | - |
|  |  | 14 | 24.08‰ | 1.45‰ | - | - | - |
|  |  | 15 | 24.09‰ | 0.81‰ | - | - | - |
|  |  | 16 | 24.14‰ | 1.41‰ | - | - | - |
|  |  | 17 | 24.32‰ | 1.35‰ | - | - | - |
|  |  | 18 | 23.35‰ | 0.96‰ | - | - | - |
|  |  | 19 | 25.34‰ | 1.50‰ | - | - | - |
|  |  | 20 | 23.02‰ | 1.60‰ | - | - | - |
|  |  | 21 | 25.33‰ | 1.97‰ | - | - | - |
|  |  | 22 (P. C.) | 23.90‰ | 1.49‰ | - | - | - |
|  |  | Average | 24.05‰ | 0.71‰ |  |  |  |
|  |  | Std Dev | 0.72‰ | 0.74‰ |  |  |  |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.95‰ | -2.16‰ |
| Meas. = 5 | Std Dev | 0.04‰ | 0.07‰ |

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| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 45.015 | - | 1 | 22.94‰ | -4.27‰ | - | - | - |
|  |  | 2 | 23.07‰ | -4.54‰ | - | - | - |
|  |  | 3 | 21.66‰ | -3.80‰ | - | - | - |
|  |  | 4 | ~~-0.45‰~~ | ~~-7.45‰~~ | - | - | - |
|  |  | 5 | 22.10‰ | -2.85‰ | - | - | - |
|  |  | 6 | 24.13‰ | -3.75‰ | 5.37‰ | -19.48‰ | 3.42 |
|  |  | 7 | 24.07‰ | -2.17‰ | 4.78‰ | -18.88‰ | 3.27 |
|  |  | 8 | 21.31‰ | -3.44‰ | 3.96‰ | -18.75‰ | 3.28 |
|  |  | 9 | 22.75‰ | -1.74‰ | 3.89‰ | -18.82‰ | 3.25 |
|  |  | 10 | 23.97‰ | -2.92‰ | 5.47‰ | -18.71‰ | 3.26 |
|  |  | 11 | 23.05‰ | -1.53‰ | 4.89‰ | -18.55‰ | 3.32 |
|  |  | 12 | ~~-4.56‰~~ | ~~-15.13‰~~ | 3.78‰ | -18.28‰ | 3.34 |
|  |  | 13 | 21.99‰ | -1.03‰ | 3.90‰ | -18.13‰ | 3.32 |
|  |  | 14 | 24.08‰ | -1.80‰ | 4.35‰ | -18.45‰ | 3.32 |
|  |  | 15 | 24.37‰ | -0.69‰ | 5.11‰ | -19.17‰ | 3.28 |
|  |  | 16 | 25.61‰ | -1.25‰ | 5.65‰ | -19.21‰ | 3.29 |
|  |  | 17 | 22.21‰ | -0.76‰ | 4.43‰ | -18.92‰ | 3.29 |
|  |  | 18 | 22.25‰ | -1.54‰ | 4.04‰ | -19.20‰ | 3.31 |
|  |  | 19 | 21.87‰ | -0.65‰ | 4.03‰ | -19.22‰ | 3.40 |
|  |  | 20 (P. C.) | 24.10‰ | -1.85‰ | 4.30‰ | -19.40‰ | 3.46 |
|  |  | Average | 23.09‰ | -2.25‰ | 4.53‰ | -18.88‰ | 3.32 |
|  |  | Std Dev | 1.17‰ | 1.27‰ | 0.64‰ | -0.41‰ | 0.06 |
|  |  |  | Strikethroughs indicate samples with low CO2 yield |  |  |  |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.96‰ | -2.19‰ |
| Meas. = 3 | Std Dev | 0.01‰ | 0.04‰ |

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| Standards (Dentin collagen) | δ15N(air N2) | δ13C (VPDB) |
| IAEA 600 Caffeine | Average | - | -27.77‰ |
| Measurements = 3 | Std Dev | - | 0.06‰ |
| IAEA-CH-6 Sucrose | Average | - | -10.45‰ |
| Measurements = 3 | Std Dev | - | 0.04‰ |
| USGS 25 | Average | -30.40‰ | - |
| Measurements = 3 | Std Dev | 0.12‰ | - |
| IAEA N2 | Average | 20.30‰ | - |
| Measurements = 3 | Std Dev | 0.14‰ | - |

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| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 48.530 | - | 1 | 23.76‰ | 0.89‰ | - | - | - |
|  |  | 2 | 23.35‰ | 0.88‰ | - | - | - |
|  |  | 3 | 22.84‰ | 0.32‰ | - | - | - |
|  |  | 4 | 21.85‰ | 0.10‰ | - | - | - |
|  |  | 5 | 21.78‰ | 0.13‰ | - | - | - |
|  |  | 6 | 21.66‰ | 0.22‰ | - | - | - |
|  |  | 7 | 22.95‰ | 0.03‰ | - | - | - |
|  |  | 8 | 23.03‰ | -0.18‰ | - | - | - |
|  |  | 9 | 23.72‰ | 0.07‰ | - | - | - |
|  |  | 10 | 22.85‰ | 0.07‰ | - | - | - |
|  |  | 11 | 22.33‰ | -0.21‰ | - | - | - |
|  |  | 12 | 21.53‰ | 0.17‰ | - | - | - |
|  |  | 13 | 21.83‰ | 0.23‰ | - | - | - |
|  |  | 14 | 21.45‰ | 0.59‰ | - | - | - |
|  |  | 15 | 22.89‰ | 0.27‰ | - | - | - |
|  |  | 16 | 24.29‰ | 0.28‰ | - | - | - |
|  |  | 17 | 25.10‰ | 0.42‰ | - | - | - |
|  |  | 18 | 24.91‰ | 0.29‰ | - | - | - |
|  |  | 19 | 22.56‰ | -0.02‰ | - | - | - |
|  |  | 20 | 22.08‰ | -0.32‰ | - | - | - |
|  |  | 21 | 22.77‰ | -0.23‰ | - | - | - |
|  |  | 22 | 23.21‰ | -0.15‰ | - | - | - |
|  |  | 23 (P. C.) | 24.81‰ | -1.28‰ | - | - | - |
|  |  | Average | 22.94‰ | 0.11‰ |  |  |  |
|  |  | Std Dev | 1.09‰ | 0.44‰ |  |  |  |

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| Samples 1-22 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.17‰ |
| Meas. = 6 | Std Dev | 0.04‰ | 0.08‰ |
|  |  |  |  |
| Samples 17-23 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.19‰ |
| Meas. = 4 | Std Dev | 0.05‰ | 0.05‰ |

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 56.015 | - | 1 | 21.54‰ | 1.30‰ | - | - | - |
|  |  | 2 | 21.12‰ | 1.14‰ | - | - | - |
|  |  | 3 | 22.48‰ | 1.24‰ | - | - | - |
|  |  | 4 | 23.65‰ | 1.40‰ | - | - | - |
|  |  | 5 | 23.75‰ | 1.22‰ | - | - | - |
|  |  | 6 | 23.28‰ | 1.16‰ | - | - | - |
|  |  | 7 | 21.74‰ | 1.48‰ | - | - | - |
|  |  | 8 | 20.95‰ | 1.12‰ | - | - | - |
|  |  | 9 | 21.17‰ | 1.18‰ | - | - | - |
|  |  | 10 | 21.27‰ | 0.94‰ | - | - | - |
|  |  | 11 | 23.50‰ | 1.03‰ | - | - | - |
|  |  | 12 | 23.92‰ | 0.98‰ | - | - | - |
|  |  | 13 | 24.10‰ | 1.17‰ | - | - | - |
|  |  | 14 | 23.79‰ | 1.35‰ | - | - | - |
|  |  | 15 | 22.69‰ | 1.48‰ | - | - | - |
|  |  | 16 | 21.40‰ | 1.42‰ | - | - | - |
|  |  | 17 | 21.27‰ | 1.21‰ | - | - | - |
|  |  | 18 | 21.32‰ | 1.40‰ | - | - | - |
|  |  | 19 | 23.37‰ | 2.17‰ | - | - | - |
|  |  | 20 | 25.47‰ | 3.00‰ | - | - | - |
|  |  | 21 | 25.51‰ | 3.39‰ | - | - | - |
|  |  | 22 | 24.38‰ | 3.01‰ | - | - | - |
|  |  | 23 | 22.76‰ | 3.32‰ | - | - | - |
|  |  | 24 | 21.98‰ | 3.59‰ | - | - | - |
|  |  | 25 | 22.58‰ | 3.38‰ | - | - | - |
|  |  | 26 (P. C.) | 24.49‰ | 3.35‰ | - | - | - |
|  |  | Average | 22.83‰ | 1.83‰ |  |  |  |
|  |  | Std Dev | 1.38‰ | 0.94‰ |  |  |  |

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| Samples 1-5, 7-26 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.88‰ | -2.23‰ |
| Meas. = 5 | Std Dev | 0.02‰ | 0.05‰ |
|  |  |  |  |
| Sample 6 (rerun for low yield first time) |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.19‰ |
| Meas. = 4 | Std Dev | 0.05‰ | 0.05‰ |

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 56.127 | - | 1 | 24.30‰ | 0.75‰ | - | - | - |
|  |  | 2 | 24.41‰ | 0.92‰ | - | - | - |
|  |  | 3 | 23.55‰ | 0.89‰ | - | - | - |
|  |  | 4 | 22.91‰ | 1.02‰ | - | - | - |
|  |  | 5 | 21.51‰ | 0.82‰ | - | - | - |
|  |  | 6 | 22.04‰ | 0.66‰ | - | - | - |
|  |  | 7 | 21.55‰ | 0.70‰ | - | - | - |
|  |  | 8 | 23.69‰ | 0.99‰ | - | - | - |
|  |  | 9 | 23.64‰ | 1.14‰ | - | - | - |
|  |  | 10 | 23.86‰ | 1.05‰ | - | - | - |
|  |  | 11 | 23.71‰ | 1.27‰ | - | - | - |
|  |  | 12 | 23.07‰ | 1.26‰ | - | - | - |
|  |  | 13 | 21.68‰ | 0.72‰ | - | - | - |
|  |  | 14 | 21.92‰ | 0.37‰ | - | - | - |
|  |  | 15 | 22.12‰ | 0.14‰ | - | - | - |
|  |  | 16 | 24.09‰ | 0.10‰ | - | - | - |
|  |  | 17 | 23.69‰ | 0.11‰ | - | - | - |
|  |  | 18 | 23.50‰ | 0.33‰ | - | - | - |
|  |  | 19 | 22.35‰ | -0.09‰ | - | - | - |
|  |  | 20 | 21.49‰ | -0.37‰ | - | - | - |
|  |  | 21 | 21.24‰ | -0.58‰ | - | - | - |
|  |  | 22 (P. C.) | 22.11‰ | -0.32‰ | - | - | - |
|  |  | Average | 22.84‰ | 0.54‰ |  |  |  |
|  |  | Std Dev | 1.05‰ | 0.55‰ |  |  |  |

|  |  |  |
| --- | --- | --- |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.97‰ | -2.17‰ |
| Meas. = 6 | Std Dev | 0.02‰ | 0.08‰ |

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 56.266 | - | 1 | 22.22‰ | 1.92‰ | - | - | - |
|  |  | 2 | 23.26‰ | 2.62‰ | - | - | - |
|  |  | 3 | 22.94‰ | 2.70‰ | - | - | - |
|  |  | 4 | 23.74‰ | 2.87‰ | - | - | - |
|  |  | 5 | 24.54‰ | 3.28‰ | - | - | - |
|  |  | 6 | 24.65‰ | 4.14‰ | - | - | - |
|  |  | 7 | 23.97‰ | 4.11‰ | - | - | - |
|  |  | 8 | 25.27‰ | 4.44‰ | - | - | - |
|  |  | 9 | 23.35‰ | 4.57‰ | - | - | - |
|  |  | 10 | 22.99‰ | 4.39‰ | - | - | - |
|  |  | 11 | 22.31‰ | 4.10‰ | - | - | - |
|  |  | 12 | 22.55‰ | 4.37‰ | - | - | - |
|  |  | 13 | 21.47‰ | 4.22‰ | - | - | - |
|  |  | 14 | 22.66‰ | 4.24‰ | - | - | - |
|  |  | 15 | 23.25‰ | 2.42‰ | - | - | - |
|  |  | 16 | 25.20‰ | 3.90‰ | - | - | - |
|  |  | 17 (P. C.) | 24.78‰ | 3.51‰ | - | - | - |
|  |  | Average | 23.48‰ | 3.64‰ |  |  |  |
|  |  | Std Dev | 1.11‰ | 0.84‰ |  |  |  |

|  |  |  |
| --- | --- | --- |
| Samples 1-5 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.97‰ | -2.17‰ |
| Meas. = 6 | Std Dev | 0.02‰ | 0.08‰ |
|  |  |  |  |
| Samples 6-17 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.17‰ |
| Meas. = 6 | Std Dev | 0.04‰ | 0.08‰ |

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 58.360 | - | 1 | 20.35‰ | -3.52‰ | - | - | - |
|  |  | 2 | 21.67‰ | -3.79‰ | - | - | - |
|  |  | 3 | 22.04‰ | -3.99‰ | 4.74‰ | -19.28‰ | 3.51 |
|  |  | 4 | 21.33‰ | -3.14‰ | 3.42‰ | -18.90‰ | 3.61 |
|  |  | 5 | 20.75‰ | -3.43‰ | 2.94‰ | -18.72‰ | 3.60 |
|  |  | 6 | 20.72‰ | -3.41‰ | 2.84‰ | -19.24‰ | 3.50 |
|  |  | 7 | 22.78‰ | -3.59‰ | 4.58‰ | -18.66‰ | 3.59 |
|  |  | 8 | 23.98‰ | -2.97‰ | 4.57‰ | -19.16‰ | 3.62 |
|  |  | 9 | 20.11‰ | -3.07‰ | 3.60‰ | -18.69‰ | 3.67 |
|  |  | 10 | 20.74‰ | -2.78‰ | 2.96‰ | -18.83‰ | 3.56 |
|  |  | 11 | 20.12‰ | -3.03‰ | 3.00‰ | -18.78‰ | 3.54 |
|  |  | 12 | 20.99‰ | -3.13‰ | 3.54‰ | -18.72‰ | 3.50 |
|  |  | 13 | 22.81‰ | -2.67‰ | 4.82‰ | -18.76‰ | 3.50 |
|  |  | 14 | 22.56‰ | -3.00‰ | 3.94‰ | -19.09‰ | 3.59 |
|  |  | 15 | 20.84‰ | -3.00‰ | 3.42‰ | -18.95‰ | 3.62 |
|  |  | 16 | 20.78‰ | -2.69‰ | 2.88‰ | -18.97‰ | 3.50 |
|  |  | 17 | 20.03‰ | -2.88‰ | 3.09‰ | -18.88‰ | 3.63 |
|  |  | 18 | 20.81‰ | -2.64‰ | 2.93‰ | -19.05‰ | 3.63 |
|  |  | 19 (P. C.) | 23.10‰ | -3.33‰ | 4.55‰ | -19.19‰ | 3.89 |
|  |  | Average | 21.40‰ | -3.16‰ | 3.64‰ | -18.93‰ | 3.59 |
|  |  | Std Dev | 1.16‰ | 0.38‰ | 0.74‰ | 0.20‰ | 0.10 |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.92‰ | -2.21‰ |
| Meas. = 6 | Std Dev | 0.08‰ | 0.08‰ |

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| Standards (Dentin collagen) | δ15N(air N2) | δ13C (VPDB) |
| IAEA 600 Caffeine | Average | - | -27.77‰ |
| Measurements = 3 | Std Dev | - | 0.06‰ |
| IAEA-CH-6 Sucrose | Average | - | -10.45‰ |
| Measurements = 3 | Std Dev | - | 0.04‰ |
| USGS 25 | Average | -30.40‰ | - |
| Measurements = 3 | Std Dev | 0.12‰ | - |
| IAEA N2 | Average | 20.30‰ | - |
| Measurements = 3 | Std Dev | 0.14‰ | - |

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| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 60.057 | - | 1 | 22.12‰ | 0.54‰ | - | - | - |
|  |  | 2 | 22.96‰ | 0.11‰ | - | - | - |
|  |  | 3 | 22.81‰ | 0.66‰ | - | - | - |
|  |  | 4 | 24.57‰ | 0.99‰ | - | - | - |
|  |  | 5 | 24.28‰ | 0.65‰ | - | - | - |
|  |  | 6 | 24.48‰ | 1.50‰ | - | - | - |
|  |  | 7 | 22.73‰ | 0.26‰ | - | - | - |
|  |  | 8 | 22.14‰ | 0.65‰ | - | - | - |
|  |  | 9 | 21.49‰ | 0.43‰ | - | - | - |
|  |  | 10 | 21.83‰ | -0.53‰ | - | - | - |
|  |  | 11 | 22.33‰ | -0.01‰ | - | - | - |
|  |  | 12 | 24.10‰ | 0.48‰ | - | - | - |
|  |  | 13 | 23.44‰ | 0.09‰ | - | - | - |
|  |  | 14 | 24.37‰ | 0.74‰ | - | - | - |
|  |  | 15 | 22.72‰ | 0.03‰ | - | - | - |
|  |  | 16 | 23.16‰ | 0.33‰ | - | - | - |
|  |  | 17 | 21.84‰ | -0.04‰ | - | - | - |
|  |  | 18 | 22.60‰ | -0.27‰ | - | - | - |
|  |  | 19 | 22.12‰ | -0.48‰ | - | - | - |
|  |  | 20 | 24.57‰ | 0.02‰ | - | - | - |
|  |  | 21 | 23.80‰ | -0.34‰ | - | - | - |
|  |  | 22 | 23.80‰ | -0.32‰ | - | - | - |
|  |  | 23 | 22.54‰ | -0.32‰ | - | - | - |
|  |  | 24 | 22.51‰ | 0.20‰ | - | - | - |
|  |  | 25 (P. C.) | 22.17‰ | -0.92‰ | - | - | - |
|  |  | Average | 23.02‰ | 0.18‰ |  |  |  |
|  |  | Std Dev | 0.97‰ | 0.54‰ |  |  |  |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.96‰ | -2.18‰ |
| Meas. = 5 | Std Dev | 0.06‰ | 0.07‰ |

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| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 63.125 | - | 1 | 20.90‰ | -0.35‰ | - | - | - |
|  |  | 2 | 20.71‰ | 0.30‰ | - | - | - |
|  |  | 3 | 21.98‰ | 0.06‰ | - | - | - |
|  |  | 4 | 23.31‰ | 0.27‰ | - | - | - |
|  |  | 5 | 23.33‰ | -0.13‰ | - | - | - |
|  |  | 6 | 23.20‰ | 0.20‰ | - | - | - |
|  |  | 7 | 21.83‰ | 0.37‰ | - | - | - |
|  |  | 8 | 21.57‰ | 0.20‰ | - | - | - |
|  |  | 9 | 20.37‰ | -0.21‰ | - | - | - |
|  |  | 10 | 20.62‰ | -0.29‰ | - | - | - |
|  |  | 11 | 22.81‰ | 0.07‰ | - | - | - |
|  |  | 12 | 23.30‰ | -0.75‰ | - | - | - |
|  |  | 13 | 23.41‰ | -0.44‰ | - | - | - |
|  |  | 14 | 23.46‰ | -0.52‰ | - | - | - |
|  |  | 15 | 21.36‰ | -0.03‰ | - | - | - |
|  |  | 16 | 21.75‰ | 0.20‰ | - | - | - |
|  |  | 17 | 20.94‰ | -0.32‰ | - | - | - |
|  |  | 18 | 20.74‰ | -0.32‰ | - | - | - |
|  |  | 19 | 21.84‰ | 0.16‰ | - | - | - |
|  |  | 20 | 23.42‰ | 0.41‰ | - | - | - |
|  |  | 21 | 24.12‰ | 0.96‰ | - | - | - |
|  |  | 22 | 23.72‰ | 1.02‰ | - | - | - |
|  |  | 23 | 22.78‰ | 1.04‰ | - | - | - |
|  |  | 24 | 21.69‰ | 1.22‰ | - | - | - |
|  |  | 25 | 22.13‰ | 1.68‰ | - | - | - |
|  |  | 26 (P. C.) | 23.31‰ | 0.95‰ | - | - | - |
|  |  | Average | 22.25‰ | 0.22‰ |  |  |  |
|  |  | Std Dev | 1.14‰ | 0.60‰ |  |  |  |

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| Samples 1-22 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.19‰ |
| Meas. = 4 | Std Dev | 0.05‰ | 0.05‰ |
|  |  |  |  |
| Samples 23-26 |  |  |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.88‰ | -2.23‰ |
| Meas. = 5 | Std Dev | 0.02‰ | 0.05‰ |
|  |  |  |  |
| Samples 2, 15 (rerun for low yield first time) |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.17‰ |
| Meas. = 6 | Std Dev | 0.04‰ | 0.08‰ |

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| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 64.013 | - | 1 | 23.10‰ | 1.50‰ | - | - | - |
|  |  | 2 | 24.16‰ | 1.75‰ | - | - | - |
|  |  | 3 | 22.68‰ | 1.61‰ | - | - | - |
|  |  | 4 | 22.33‰ | 1.08‰ | - | - | - |
|  |  | 5 | 20.39‰ | 1.14‰ | - | - | - |
|  |  | 6 | 21.76‰ | 1.16‰ | - | - | - |
|  |  | 7 | 21.24‰ | 1.63‰ | - | - | - |
|  |  | 8 | 24.23‰ | 1.94‰ | - | - | - |
|  |  | 9 | 20.82‰ | 1.60‰ | - | - | - |
|  |  | 10 | 21.63‰ | 1.75‰ | - | - | - |
|  |  | 11 | 20.52‰ | 1.46‰ | - | - | - |
|  |  | 12 | 21.91‰ | 2.18‰ | - | - | - |
|  |  | 13 | 22.14‰ | 2.20‰ | - | - | - |
|  |  | 14 | 24.28‰ | 2.81‰ | - | - | - |
|  |  | Average | 22.23‰ | 1.70‰ |  |  |  |
|  |  | Std Dev | 1.33‰ | 0.47‰ |  |  |  |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.96‰ | -2.14‰ |
| Meas. = 4 | Std Dev | 0.03‰ | 0.04‰ |

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| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 68.050 | - | 1 | 24.03‰ | 4.29‰ | - | - | - |
|  |  | 2 | 24.32‰ | 4.31‰ | - | - | - |
|  |  | 3 | 23.78‰ | 4.20‰ | - | - | - |
|  |  | 4 | 23.44‰ | 4.54‰ | - | - | - |
|  |  | 5 | 22.46‰ | 4.23‰ | - | - | - |
|  |  | 6 | 22.18‰ | 4.39‰ | - | - | - |
|  |  | 7 | 22.33‰ | 3.77‰ | - | - | - |
|  |  | 8 | 23.13‰ | 3.64‰ | - | - | - |
|  |  | 9 | 23.45‰ | 4.10‰ | - | - | - |
|  |  | 10 | 24.36‰ | 4.14‰ | - | - | - |
|  |  | 11 (P. C.) | 25.98‰ | 5.37‰ | - | - | - |
|  |  | Average | 23.59‰ | 4.27‰ |  |  |  |
|  |  | Std Dev | 1.10‰ | 0.45‰ |  |  |  |

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| --- | --- | --- |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.97‰ | -2.17‰ |
| Meas. = 5 | Std Dev | 0.02‰ | 0.08‰ |

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| --- | --- |
| Sample | Enamel carbonate |
| Bulk samplerun 3X | δ18O (VSMOW) | δ13C (VPDB) |
| 1 | 19.10‰ | -7.70‰ |
| 1 | 19.14‰ | -7.76‰ |
| 1 | 18.59‰ | -7.92‰ |
| Average | 18.94‰ | -7.79‰ |
| Std Dev | 0.31‰ | 0.11‰ |

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| Standards (Enamel carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.88‰ | -2.23‰ |
| Meas. = 2 | Std Dev | 0.03‰ | 0.01‰ |

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| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 70.018 | - | 1 | 23.03‰ | 0.08‰ | - | - | - |
|  |  | 2 | 22.53‰ | -0.23‰ | - | - | - |
|  |  | 3 | 21.89‰ | -0.43‰ | - | - | - |
|  |  | 4 | 22.95‰ | 0.15‰ | - | - | - |
|  |  | 5 | 20.94‰ | -0.50‰ | - | - | - |
|  |  | 6 | 22.16‰ | -0.70‰ | - | - | - |
|  |  | 7 | 23.44‰ | 0.27‰ | - | - | - |
|  |  | 8 | 24.29‰ | 0.41‰ | - | - | - |
|  |  | 9 | 24.73‰ | 0.48‰ | - | - | - |
|  |  | 10 | 23.60‰ | -0.08‰ | - | - | - |
|  |  | 11 | 21.95‰ | -0.24‰ | - | - | - |
|  |  | 12 | 22.57‰ | 0.32‰ | - | - | - |
|  |  | 13 | 21.40‰ | -0.02‰ | - | - | - |
|  |  | 14 | 21.41‰ | -0.11‰ | - | - | - |
|  |  | 15 | 22.29‰ | -0.39‰ | - | - | - |
|  |  | 16 | 24.11‰ | 0.91‰ | - | - | - |
|  |  | 17 | 24.01‰ | 0.64‰ | - | - | - |
|  |  | 18 | 24.24‰ | 0.64‰ | - | - | - |
|  |  | 19 | 23.06‰ | 0.99‰ | ~~2.21‰~~ | ~~-24.60‰~~ | 7.09 |
|  |  | 20 | 22.98‰ | 0.07‰ | 3.59‰ | -19.59‰ | 4.05 |
|  |  | 21 | 22.03‰ | 0.18‰ | 3.64‰ | -19.62‰ | 3.97 |
|  |  | 22 | 22.14‰ | 0.25‰ | 3.45‰ | -19.51‰ | 3.29 |
|  |  | 23 | 21.64‰ | 0.08‰ | 3.72‰ | -19.52‰ | 3.57 |
|  |  | 24 | 22.39‰ | 0.36‰ | 4.35‰ | -19.54‰ | 3.83 |
|  |  | 25 | 24.05‰ | 0.61‰ | 5.13‰ | -19.46‰ | 3.84 |
|  |  | 26 | 24.35‰ | 1.06‰ | 5.01‰ | -19.57‰ | 4.10 |
|  |  | 27 | 26.66‰ | 1.91‰ | ~~4.72‰~~ | ~~-20.42‰~~ | 4.22 |
|  |  | 28 | 23.93‰ | 0.80‰ | ~~3.94‰~~ | ~~-22.74‰~~ | 5.55 |
|  |  | 29 | 22.79‰ | 0.15‰ | 4.41‰ | -19.47‰ | 3.98 |
|  |  | 30 | 23.22‰ | 0.37‰ | 3.87‰ | -19.33‰ | 3.84 |
|  |  | 31 | 22.62‰ | 0.49‰ | 4.09‰ | -19.24‰ | 3.90 |
|  |  | 32 | 22.45‰ | 0.42‰ | 4.05‰ | -19.16‰ | 4.07 |
|  |  | 33 | 22.42‰ | 0.17‰ | 3.74‰ | -19.59‰ | 3.50 |
|  |  | 34 | 24.37‰ | 0.73‰ | 4.33‰ | -19.43‰ | 3.91 |
|  |  | 35 | 24.70‰ | 1.77‰ | 4.38‰ | -19.58‰ | 4.18 |
|  |  | 36 | 25.12‰ | 2.36‰ | ~~-4.55‰~~ | ~~-23.90‰~~ | 8.28 |
|  |  | 37 (P. C.) | 25.05‰ | 6.75‰ | ~~-5.27‰~~ | ~~-28.40‰~~ | 24.42 |
|  |  | Average | 23.18‰ | 0.56‰ | 4.13‰ | -19.47‰ | 3.86 |
|  |  | Std Dev | 1.25‰ | 1.23‰ | 0.51‰ | 0.14‰ | 0.25 |
|  |  |  |  |  | Strikethroughs indicate samples with epoxy contamination, which is reflected in higher C:N ratios |

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| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.98‰ | -2.17‰ |
| Meas. = 9 | Std Dev | 0.03‰ | 0.04‰ |

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| Standards (Dentin collagen) | δ15N(air N2) | δ13C (VPDB) |
| IAEA 600 Caffeine | Average | - | -27.77‰ |
| Measurements = 3 | Std Dev | - | 0.02‰ |
| IAEA-CH-6 Sucrose | Average | - | -10.45‰ |
| Measurements = 3 | Std Dev | - | 0.01‰ |
| USGS 25 | Average | -30.40‰ | - |
| Measurements = 3 | Std Dev | 0.07‰ | - |
| IAEA N2 | Average | 20.30‰ | - |
| Measurements = 3 | Std Dev | 0.09‰ | - |

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| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 76.085 | - | 1 | 23.64‰ | 1.16‰ | - | - | - |
|  |  | 2 | 23.14‰ | 1.43‰ | - | - | - |
|  |  | 3 | 23.33‰ | 1.21‰ | - | - | - |
|  |  | 4 | 23.50‰ | 1.50‰ | - | - | - |
|  |  | 5 | 21.08‰ | 0.95‰ | - | - | - |
|  |  | 6 | 21.83‰ | 0.91‰ | - | - | - |
|  |  | 7 | 21.11‰ | 0.66‰ | - | - | - |
|  |  | 8 | 22.29‰ | 0.98‰ | - | - | - |
|  |  | 9 | 23.65‰ | 1.59‰ | - | - | - |
|  |  | 10 | 24.49‰ | 1.20‰ | - | - | - |
|  |  | 11 | 24.19‰ | 1.20‰ | - | - | - |
|  |  | 12 | 23.16‰ | 1.08‰ | - | - | - |
|  |  | 13 | 21.97‰ | 1.04‰ | - | - | - |
|  |  | 14 | 21.26‰ | 0.53‰ | - | - | - |
|  |  | 15 | 22.03‰ | 0.56‰ | - | - | - |
|  |  | 16 | 22.45‰ | 0.61‰ | - | - | - |
|  |  | 17 | 24.09‰ | 1.33‰ | - | - | - |
|  |  | 18 | 23.98‰ | 1.35‰ | - | - | - |
|  |  | 19 | 23.90‰ | 1.38‰ | - | - | - |
|  |  | 20 | 22.67‰ | 1.69‰ | - | - | - |
|  |  | 21 (P. C.) | 22.32‰ | 1.70‰ | - | - | - |
|  |  | Average | 22.86‰ | 1.15‰ |  |  |  |
|  |  | Std Dev | 1.06‰ | 0.36‰ |  |  |  |

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| --- | --- | --- |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.95‰ | -2.18‰ |
| Meas. = 5 | Std Dev | 0.04‰ | 0.04‰ |

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| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| 82.179 | - | 1 | 23.24‰ | -2.64‰ | - | - | - |
|  |  | 2 | 20.68‰ | -2.53‰ | - | - | - |
|  |  | 3 | 19.96‰ | -2.77‰ | - | - | - |
|  |  | 4 | 20.64‰ | -2.56‰ | - | - | - |
|  |  | 5 | 21.31‰ | -2.67‰ | - | - | - |
|  |  | 6 | 23.26‰ | -2.35‰ | - | - | - |
|  |  | 7 | 21.00‰ | -3.15‰ | - | - | - |
|  |  | 8 | 22.12‰ | -2.58‰ | - | - | - |
|  |  | 9 | 22.09‰ | -2.52‰ | - | - | - |
|  |  | 10 | 21.59‰ | -2.42‰ | - | - | - |
|  |  | 11 | 23.62‰ | -2.01‰ | - | - | - |
|  |  | 12 (P. C.) | 24.89‰ | -1.62‰ | - | - | - |
|  |  | Average | 22.03‰ | -2.49‰ |  |  |  |
|  |  | Std Dev | 1.46‰ | 0.38‰ |  |  |  |

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| --- | --- | --- |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.96‰ | -2.14‰ |
| Meas. = 6 | Std Dev | 0.03‰ | 0.04‰ |

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | Sample | Dentin carbonate | Dentin collagen |
| Field ID | DMNS # | numbered toward pulp cavity (marked P. C. where preserved) | δ18O (VSMOW) | δ13C (VPDB) | δ15N(air N2) | δ13C (VPDB) | C:N |
| Loc. 8 | - | 1 | 23.37‰ | 1.43‰ | - | - | - |
|  |  | 2 | 23.60‰ | 2.08‰ | - | - | - |
|  |  | 3 | 24.31‰ | 2.21‰ | - | - | - |
|  |  | 4 | 25.89‰ | 3.37‰ | - | - | - |
|  |  | 5 | 25.42‰ | 3.83‰ | - | - | - |
|  |  | 6 | 25.03‰ | 3.86‰ | - | - | - |
|  |  | 7 | 25.80‰ | 4.16‰ | - | - | - |
|  |  | 8 | 24.95‰ | 3.93‰ | - | - | - |
|  |  | 9 | 25.13‰ | 3.77‰ | - | - | - |
|  |  | 10 | 25.26‰ | 3.84‰ | - | - | - |
|  |  | 11 | 25.71‰ | 4.18‰ | - | - | - |
|  |  | 12 | 26.56‰ | 4.79‰ | - | - | - |
|  |  | 13 | 25.73‰ | 4.49‰ | - | - | - |
|  |  | 14 | 24.37‰ | 3.68‰ | - | - | - |
|  |  | 15 | 23.77‰ | 3.54‰ | - | - | - |
|  |  | 16 | 24.99‰ | 3.99‰ | - | - | - |
|  |  | 17 | 24.56‰ | 3.49‰ | - | - | - |
|  |  | 18 | 25.09‰ | 4.27‰ | - | - | - |
|  |  | 19 | 25.70‰ | 4.77‰ | - | - | - |
|  |  | 20 | 25.81‰ | 4.76‰ | - | - | - |
|  |  | 21 | 24.34‰ | 4.04‰ | - | - | - |
|  |  | 22 | 24.37‰ | 4.09‰ | - | - | - |
|  |  | 23 | 24.59‰ | 4.17‰ | - | - | - |
|  |  | 24 | 25.78‰ | 3.52‰ | - | - | - |
|  |  | 25 (P. C.) | 28.23‰ | 5.28‰ | - | - | - |
|  |  | Average | 25.13‰ | 3.82‰ |  |  |  |
|  |  | Std Dev | 1.02‰ | 0.86‰ |  |  |  |

|  |  |  |
| --- | --- | --- |
| Standards (Dentin carbonate) | δ18O (VPDB) | δ13C (VPDB) |
| NBS 19 | Average | 1.99‰ | -2.19‰ |
| Measurements = 6 | Std Dev | 0.03‰ | 0.05‰ |