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An ampoule of CO2 submitted for AMS analysis. (Woods Hole Oceanographic Institution)

C02 Gas

We may require that you send a "contamination-check" sample of CO2, so we can verify that your laborato routinely process your gas samples in our Sample Prep Lab. Contamination check samples are prepared i not to (potentially) contaminate samples from other investigators.

We offer free analysis of one blank and one modern standard for submissions of CO2 in batches of 10 sar 12 actual samples submitted) and charge half price for the standards submitted with batches of less than 1 practice for submitters to include a modern and 14C-free or blank sample to assess the reliability of lab tec sample to CO2. Fees are not assessed for these standards and blanks as long as the number submitted n contain > 8 µmol (100 µg) carbon. If the sample is between 2 and 8 µmol of CO2 (24 - 100 µg C) it can be

quantifying the CO2.

We recommend submitting CO2 in 6 or 9 mm (outside dimension) flame-sealed Pyrex or quartz tubes with µmol of gas. Small samples are in the range of 2 - 9 µmol. Typically a portion of the gas is transferred for c 13C). A fee will be charged for archival of large sample splits. We prefer the 6 mm OD tubes because they 9 mm tubes can hold larger volumes and may be easier to flame-seal, but tend to shatter in the cracker. W gas submitted, preferably in µmol, before we can accept CO2 samples.

Please aim for a sealed pressure of less than 2 atmospheres and a flame-sealed tube length of 6-7 inches or paper (tightly attached) or use a permanent black marker to label the ampoule. Process used: Gas Sa

Photo of graphite samples, or pure carbon and Fe catalyst ready for pressing into an AMS target. (Woods Hole Oceanographic Institution)

Graphite

Potential submitters of graphite should first contact us for details on packing, fees and turnaround tim samples to NOSAMS.

Generally, as an initial test, we ask for 10 to no more than 15 loose graphite samples in a batch to de successfully analyze your graphite. These should all be primary or secondary standards and blanks analyze graphite prepared using Fe catalyst with a minimum of 2.5 mg Fe. Our suggested target wei 3.5 mg Fe. A client is allowed up to 30 free test samples to establish that we can successfully handle the normal fees apply. Based on the performance of the test batches, we will decide whether we can every five unknowns, one standard (OXI or OXII) is required. So, n/5 + 1 additional standards are rec where n is the number of unknowns. We typically analyze 2 process blanks per process type without should be assigned to each graphite sample submitted and each sample arrive labelled accordingly.

When we can successfully analyze loose graphite from a client, we can progress to receiving presse by starting with test batches of 10-15 targets. Process used Target Press.

Collecting a swipe sample. (Woods Hole Oceanographic Institution)

Contamination check and swipe samples

Swipe samples are used to check surfaces for above natural levels of 14C. Swipes and other materia radiocarbon content are analyzed in a separate preparation lab using a sealed-tube graphitization pr contamination. Fees for swipe or contamination check analysis may be waived if made in conjunctior submission.

To collect a swipe sample:

Pre-clean quartz filters by baking at 900o C for 2-3 hours. The preferred filter is 25 mm quartz but otl are acceptable if prebaked and indicated.

Choose areas to swipe that have seen a lot of handling such as doorknobs, ovens, refrigerators, fum

single swipe is sufficient for each surface. Place all your tools and supplies on a disposable work sur
aluminum foil or paper towel. Throw this away and replace in each new sampling location.
Moisten pre-baked filter with HPLC grade or better isopropyl alcohol. Gently rub the filter over the are
avoid breaking up the brittle filter if possible. Place the swipe in a prebaked glass container labeled w
object swiped, the date and any other pertinent information. Submit as you would a normal AMS sam
contamination check sampling is available.
Please contact Kathryn Elder regarding submission of contamination checks.

Gas Ion Source (Carbonate)

NOSAMS offers rapid radiocarbon analysis of carbonates (e.g., corals, carbonate sediments, etc.) at reduced cost and precisic each sample must contain between 3 and 4 mg of carbon (e.g., 30-35 mg of CaCO3). Typical analytical precision will be betwe minimum batch size is 25. However, smaller batches can be analyzed at our discretion and will incur a surcharge of $300 per s samples, please contact Mark Roberts to discuss the technique and so that we may provide the samples vials into which the sa

Reconnaissance Analyses

NOSAMS offers a reconnaissance type of analysis to U.S. federally funded researchers as a lower cost opportunity to survey t suite of samples with reduced analytical precision. An example of a project that benefits from reconnaissance work is determi collection of deep-sea corals in order to identify specimens for further, more precise analysis.

Submissions of this type must be solid organic or carbonate materials provided in batches of no less than 25 with each sample µmol (500 µg) of carbon and a maximum of 200 µmol (2.4 mg) C. We do not guarantee routine precision for this analysis type precision as shown in the table below.

Fm range	Estimated error	Radiocarbon age range (yrs)	Estimated Error (yrs)
0.5 - 1	+/- 0.015	< 5,600	+/- 250
0.1 - 0.5	+/- 0.010	18,500 – 5,600	+/- 400
0.05 - 0.10	+/- 0.005	24,000 – 18,500	+/- 700
0.01 - 0.05	+/- 0.005	37,000 – 24,000	+/- 3500

Biases may be introduced if the reconnaissance work involves simplified sample preparation prior to analysis e.g. bypassing cl Investigators considering reconnaissance work are strongly encouraged to contact NOSAMS staff to discuss the project prior Additional reductions in cost are available if the samples are prepared to graphite by the submitter. Facilities to prepare sample be provided to qualified investigators.

High Precision Analysis

High-precision is defined as a measurement made to an analytical precision of less than 2 per mille on a modern sample. For h surcharge applies. Investigators considering high-precision analyses must contact NOSAMS staff to discuss the project and pr submitting samples.

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