

5.5.3 PACKAGING SAMPLES

When packaging samples for shipment to the laboratory, remember that all bottles must be protected from breaking (especially glass bottles) and (or) leaking. The laboratory usually will return with the cooler reusable packing materials such as mesh bags, foam sleeves, and bubble wrap. Plastic bags and cardboard boxes will not be returned. **Do not use foam peanuts or vermiculite.**

When packaging samples:

1. Make sure bottle labels are waterproof and that information is legible.
2. Tighten all bottle caps to prevent leakage.
3. Line all shipping containers, including those without ice, with doubled heavy-duty plastic bags.
4. Use adequate packing material to prevent bottle breakage.
 - Ship all glass bottles in foam sleeves or wrap them with bubble wrap.
 - Enclose each sleeved FAM and RAM bottle in two sealable plastic bags.
 - Pack bottles so that they do not touch each other.

Sample integrity must be maintained. Ship samples with enough ice to keep chilled at 4°C or below without freezing until the sample is logged in at the laboratory.

5. Pack samples designated for chilling in coolers.
 - a. Use insulated ice chests (coolers) (1- to 5-gallon sizes are recommended). Larger volumes of chilled samples can be sent in coolers as long as the carrier's maximum weight and size restrictions are not exceeded. **Do not use broken or leaky coolers.**
 - b. Pack samples designated for chilling with ice.
 - The volume of ice should be equal to or greater than the volume occupied by samples (twice the volume of ice to samples is recommended during warm temperatures).
 - The amount of ice necessary will vary depending on the length of time in transit and ambient air temperature. Chilling the cooler and samples prior to shipment is recommended in hot weather.
 - **Do not use blue ice or other types of commercial refreezing containers that have freezing points below 0°C.** This can cause bottles to freeze and result in ruined samples or broken bottles.
 - Enclose ice and samples in doubled plastic bags. **Do not mix ice with water-absorbent packing materials.**
 - c. Seal cooler spouts or drains, preferably with silicone or epoxy.
6. Samples not requiring chilling can be shipped in heavy-duty cardboard boxes but may also be shipped in coolers.

DO NOT USE

- **foam peanuts or vermiculite as packing material.**
- **dry ice to keep samples chilled.**

7. When shipping multiple sets of samples in the same container, label each set of sample bottles with a different letter of the alphabet (A, B, C) so that bottles of each sample set will have the same letter.
 - Print the letter in the upper right-hand corner of the ASR form for that particular sample set.
 - Place all bottles from a sample set into a separate bag (such as plastic or mesh) or bind with a rubber band to keep them together.

8. All bottles for a particular schedule should be sent in the same shipping container, with some exceptions. Samples that do not need to be chilled can be packed and shipped in the cooler with chilled samples, provided the following exceptions do not apply. The ASR form must list only those samples that are being shipped with that form. On the ASR form, delete laboratory codes of any sample bottles not included in the same shipping container.
 - **Exception: Do not ship nutrient samples with samples that were treated with HNO₃.**
 - **Exception:** Do not ship FAM and RAM samples in the same container as FA or RA samples when requesting sample analysis for potassium and (or) chromium concentrations.
9. After samples and ice (if required) are placed in doubled plastic bags, close each bag separately with a knot.
10. Inside coolers:
 - Include a return address shipping label with the ASR form. This label must include a street address (not a post office box number), an account number, and the USGS District User Code (to bill return-shipping charges).
 - Label the inside of each cooler and cooler lid with a current return address and telephone number, using a permanent waterproof marker.
11. Include the ASR form for each sample set shipped in each cooler or box.
 - Remember to place the ASR form and temperature-check postcard into two sealable plastic bags to prevent water damage.
 - Tape the plastic bag containing the ASR form(s) and temperature-check card to the underside of the cooler lid, or place the sealed paperwork on top of samples packed in a cardboard box.