

Shipping Dry Ice - Class 9 Hazard

Safety Guidance for Working with Dry Ice



Do not touch. When handling dry ice use insulated gloves and safety goggles or a face shield to prevent contact with skin. Extreme cold temperatures can cause severe frostbite.



Do not store in confined spaces. Dry ice is frozen carbon dioxide that sublimates (transitions from solid to gas) upon warming up. This can cause the displacement of oxygen and lead to suffocation if proper ventilation is not present.



Do not place in airtight containers. As temperatures increase dry ice sublimates and without a way for the gas to escape expansion will occur. The pressure build-up associated with the expansion can cause an explosion.



Do not leave metal tools in contact with dry ice. The cryogenic properties of dry ice can cause metals to freeze rapidly which can result in damage or breakage.



Do not dispose of improperly. This includes putting dry ice down any sink, toilet, or anything else connected to plumbing. This could cause freezing and further damage to pipes, or explosive reaction when in contact with water. To dispose properly, let the dry ice sublimate in a well-ventilated space.

Checklist for Packing Shipments Containing Dry Ice

1. When shipped by air, dry ice is regulated as a dangerous good and the shipper must be currently USDOT-certified for shipping these materials.
 - a. In order to obtain certification, the self-assignable course and quiz located [here](#) in Oracle Learn, must be completed.
 - b. At that time, VU biosafety will issue the certificate that must be signed by a supervisor after they confirm the trainee understands the material. The certificate is valid for 2 years. If at the end of two years the person is continuing to ship dry ice, the training must be retaken, and a new certificate will be issued. The certificate must be kept on file and be made available to inspectors in the case of a USDOT inspection.
 - c. For additional resources regarding packing and shipping please refer to the shipping guides found on the [VU Biosafety website](#).
2. Certification to ship dry ice DOES NOT cover the shipment of other Hazardous Materials. The following are items that are not regulated as Hazardous Materials.
 - a. Nucleic acids (DNA or RNA)
 - b. Purified antibodies or non-toxic proteins
 - c. Mouse, insect, or other non-human, non-primate derived cells
 - d. Non-infectious microorganisms

STOP! If you are unsure about your item or are shipping any other hazardous material, please contact the VU Biosafety Team at vubiosafety@vanderbilt.edu for assistance. Once you have determined you are not shipping any other hazardous materials proceed to the next step.

3. Follow the **triple packing system** for assembling the package.

a. Primary Container: Holds the sample being shipped.

- Must be leakproof or siftproof.
- Lids must be sealed. For example, use a screw cap or snap cap secured with tape or parafilm.

b. Secondary Container: Contains contents of primary container in the event it was to fail.

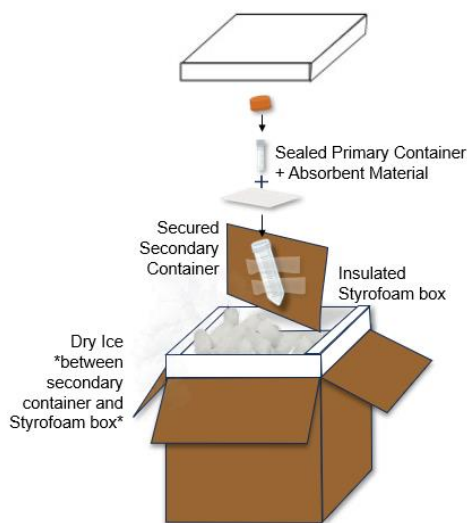
- Must contain sufficient absorbent material to absorb full liquid content of primary container.

c. Insulated Styrofoam Box: Dry ice should be placed between the secondary container and insulated styrofoam box.

- Because dry ice will sublimate during shipment ensure that the secondary container is physically secured to prevent shifting.
- DO NOT fully seal the insulated container with tape as this will prevent gases from escaping creating an explosion hazard.

d. Outer Package: The insulated styrofoam box should be placed in an appropriately sized cardboard box. DO NOT fully seal the box to allow for venting.

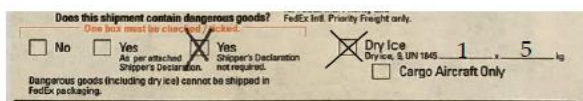
- If the styrofoam box does not fully fit in the cardboard box the extra space must be filled to prevent the styrofoam box from shifting.



Note: the styrofoam box cannot be shipped alone; it must be inside an outer package.

4. Label the package with the following: (all labels may be provided by your carrier):

- Class 9 diamond
- “UN 1845” and weight in whole kg
- Orientation arrows indicating top of the package.
- Waybill containing completed dry ice disclosure.



e. For recycled packages:

- Ensure box is structurally sound and not damaged.
- Remove or cover any information not pertaining to your packages (i.e. barcodes, company labels, other hazardous materials symbols etc.)

5. When shipping the package, it **cannot** be left at any of the publicly accessible drop locations around campus. Instead, the options are as follows:

- Schedule a pickup directly from the lab with the carrier. If you use FedEx, this may be done online or by phone using your department’s FedEx account information.
- Take the package to your carrier’s shipping center that will accept dry ice shipments. If you use FedEx, there are three shipping center locations in Nashville.
 - 33 Airways Blvd.
 - 1931 Air Lane Dr.
 - 127 Athens Way

Remember: To ship on dry ice, you must be currently certified!