



EAST TENNESSEE STATE UNIVERSITY

Guidance Document for Shipping Materials with Dry Ice

Introduction

Dry ice is a hazardous material and is regulated by both the U.S. Department of Transportation (DOT) and the International Air Transport Association (IATA). Specific procedures are required for handling, packaging and shipping materials refrigerated with dry ice and this training must be documented.

This guide is intended for dry ice shipments in which **no other hazardous materials, infectious substances or diagnostic specimens are included**. Please contact EH&S at 439-6029 if you need assistance with classifying your shipment.

Training Requirements

Federal regulations mandate training for all personnel handling dry ice shipments or signing any type of shipping documentation (such as a FedEx Airbill).

Hazard Identification

Dry ice is classified by DOT and IATA as a “miscellaneous” hazard, Class 9. Dry ice is considered hazardous during transportation for the following reasons:

1. **Explosion hazard:** Dry ice releases a large volume of carbon dioxide gas as it sublimates. If packaged in a container that does not allow for release of the gas, it may explode, causing personal injury or property damage.
2. **Suffocation hazard:** A large volume of carbon dioxide gas emitted in a confined space may displace oxygen and create an oxygen deficient environment.
3. **Contact hazard:** Dry ice is a cryogenic material that causes severe frostbite upon contact with skin.

Packaging

Packaging dry ice properly minimizes the risk to personnel transporting the material.

Gas Venting: Packages must allow for release of carbon dioxide gas. Dry ice must never be sealed in a container with an airtight seal such as container with a threaded lid or plastic cooler.

Package Integrity: A package containing dry ice must be of adequate strength for intended use. It must be strong enough to withstand the loading and unloading normally encountered in transport. It must also be constructed and closed in order to prevent any loss of contents that might be caused by vibration or changes in temperature, humidity or altitude.

Package Materials: Do not use plastics that can be rendered brittle or permeable by the temperature of dry ice. Use commercially available packaging systems intended for dry ice shipments.

Airbill: The airbill must include the statement “Dry ice, 9, UN1845, number of packages X net weight in kilograms. FedEx has a check box on their airbill to satisfy this requirement. Other carriers use slightly different formats. Check the airbill to ensure this information is included prior to sending shipment.

Labeling: The outermost container must be labeled with a hazard class 9 label, UN 1845, and net weight of dry ice in kilograms. The maximum allowable net quantity of dry ice allowed per package is 200 kg.

IMPORTANT NOTE FOR UPS SHIPMENTS. In addition to the UPS Blue Dry Ice label, a hazard class 9 label and the UN 1845 marking must also be on the package.

Additional Information

- **Do not** write “specimens” or “diagnostic specimens” on the outer box. Diagnostic specimens are subject to specific packaging and training requirements that are not covered in this guidance document. Please contact EH&S at 439-6029 if you have any questions regarding classifying your shipment.
- You may choose to reuse a dry ice shipping box for future shipments. Ensure all markings, labels, addresses, barcodes and carrier labels are defaced. Use caution if reusing a box that had previously been used for shipments of infectious substances or diagnostic specimens. Only reuse a box if you can personally verify it is not contaminated and its integrity is intact.
- Ensure all samples are secured so that they cannot move freely inside the package when the dry ice sublimates. Use cardboard dividers or Styrofoam to separate samples. Fragile containers such as glass tubes or vials must be individually wrapped or separated so as to prevent contact between them.
- Minimize the volume of air to which the dry ice is exposed in order to slow the rate of sublimation. If there is any air space after filling the package, fill it with additional packing materials such as peanuts or crumpled paper.
- Shipments are generally recommended to contain 5-10 pounds (2.27-4.54 kg) of dry ice per 24 hours. Refer to package manufacturer’s recommendations for the correct amount of dry ice to use for your shipment.
- The sender should coordinate logistics of the shipment with the recipient. Take into account local holidays or closings that might delay package receipt.
- Dry ice shipments can be made with many carriers such as FedEx, Airborne Express. Note: UPS, and the United States Postal Service (USPS) have extremely restrictive policies regarding shipments of hazardous materials, including dry ice.