Packaging Requirements for Dry Ice Standard Operating Procedure

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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. In addition to the information in this document, refer the IATA/DOT Requirements for Packing Instructions (PI) 904 and the document ACCEPTANCE CHECKLIST FOR DRY ICE for more information.

Communication

- Contact the carrier to ensure proper ventilation will be available for the package and to determine if the carrier has additional requirements from those specified in the PI 904
- Coordinate logistics of the shipment with the recipient. Take into account local holidays or closings that might delay package receipt.

Dry Ice Amount

Refer to package manufacturer's recommendations to determine the correct amount of dry ice to include in your shipment. The actual time will vary depending on the package used and the volume and density of the dry ice. In general, however, dry ice will sublimate from a solid to a gas at a rate of 5-10 pounds (2.27-4.54 kg) per 24 hours when shipped in an appropriate insulated cooler.

Package Information

Use commercially available packaging systems intended for dry ice. Do not use plastics that can be rendered brittle or permeable by the temperature of dry ice. The package used to ship dry ice **must** be:

- Insulated
- Capable of venting gas to prevent the build-up of pressure
- Free from damage and of adequate strength for intended use
- Strong enough to withstand the loading and unloading normally encountered in transport
- Constructed and closed in order to prevent any loss of contents that might be caused by vibration or changes in temperature, humidity or altitude

You may choose to reuse a dry ice shipping box for future shipments. However:

- Deface all markings, labels, addresses, barcodes and carrier labels on the box
- 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.

Packing Instructions

- Never seal dry ice in a container with an airtight seal such as a container with a threaded lid, ziplock bag,

or cooler

- Place the dry ice outside the sealed primary and secondary receptacles
- Secure the secondary packaging such that the original orientation of the primary receptacle is maintained after the dry ice melts
- Add additional packing materials such as peanuts or crumpled paper (to minimize the volume of air to which the dry ice is exposed in order to slow the rate of sublimation)
- Pack the insulated package in outer cardboard box
- Tape ONLY the center of the cardboard box where the flaps meet on top of the box



UPS Packaging Quantity Limits

Packages **must** not contain more than 200 kg of dry ice.

Packages Containing	Requirement
Dry Ice	[1]Less than the total weight of the shipment
Substances or Materials for diagnostic or medical purposes	UPS "Blue Label" 
Non-medical substances or non-hazardous materials	2.5 kg (5.5 pounds or less) **NOTE:** if greater than 2.5kg (5.5 pounds) a separate UPS hazardous material agreement is required. Contact UM Procurement for additional details.

Carrier's Airbill

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The carrier's airbill **must** include the statement "Dry ice, Class 9, UN1845, number of packages X net weight of dry ice in kilograms.

Federal Express (FedEx) has a check box on their airbill to satisfy this requirement. Other carriers use slightly different formats. Airbill's created electronically **must** include the same information. Check the airbill to ensure this information is included prior to sending shipment.



- A - Ship "from" and "to" information
  - The full name and address of the shipper ("From") and consignee ("To") must be clearly printed on the airbill and must be the same as on the package.
- B - Priority Service
  - It is highly recommended that all packages with dry ice be shipped priority overnight whenever possible.
- C - Packaging
  - Identify the type of packaging used. Dangerous goods, including dry ice, cannot be shipped in FedEx boxes or packaging, as such "Other" would be marked on the FedEx Airbill.
- D - Special Handling

- Dry ice is a dangerous good but a Shipper's Declaration is not required. For FedEx Airbills, check the appropriate box.

- E - Nature and Quantity of Goods
  - Check the Dry Ice box. Enter the: Total number of packages with dry ice The net weight of dry ice per package in kilograms.

IATA/DOT Marking and Labeling Requirements

The outermost container **must** be labeled with a hazard Class 9 Miscellaneous Dangerous Good label, UN 1845, and net weight of dry ice in kilograms.



Additional Carrier Requirements

FedEx has no additional restrictions for shipping dry ice.

UPS requires the UPS Blue Dry Ice label in addition to the IATA/DOT requirements for marking and labeling:



Shipments of dry ice and other dangerous goods without an approved contract with UPS are prohibited. Shippers **must** establish contracted services with UPS in order to ship dangerous goods.

Labeling and Marking Diagram

The following diagram shows how the package **must** look to ensure it meets IATA and DOT regulations

NOTE: 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 at (734) 647-1143 if you have any questions regarding classifying your shipment.

