

Dry ice training-on line course 9-4-19

Dot considers dry ice a hazard.



D.O.T. - Dry Ice
Online Training

Regulatory Oversight

U.S. Department of Transportation (D.O.T.)

Regulates domestic shipments of hazardous materials under Title 49 of the Code of Federal Regulations.



Regulatory Oversight

The D.O.T. considers dry ice a hazard during air and water shipments only. Shipments of dry ice via ground transportation are not subject to the requirements of the D.O.T. hazardous materials regulations.

Federal Aviation Administration (F.A.A.)

The enforcement arm of the D.O.T. for hazardous materials being shipped via air.



D.O.T. - Dry Ice
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Regulatory Oversight

International Regulations

Dry ice is regulated internationally and during some domestic air shipments, under the International Civil Aviation Organization's (ICAO) Dangerous Goods Regulations, which are enforced by the International Air Transportation Association (IATA).



- ♦ Some carriers choose to follow the IATA regulations for all air shipments of dangerous goods
- ♦ It is the responsibility of the shipper to choose a carrier and adhere to the applicable regulations for regulated air shipments

A hazardous material/dangerous good is any material(s) or substance(s) that is capable of causing an unreasonable risk to health, safety, and property when transported in commerce.



Hazardous materials are grouped into nine hazard classes under D.O.T. and IATA regulations:

- ♦ Class 1: Explosives
- ♦ Class 2: Compressed Gas
- ♦ Class 3: Flammable liquids
- ♦ Class 4: Flammable solids
- ♦ Class 5: Oxidizing substances
- ♦ Class 6: Toxic/Infectious substances
- ♦ Class 7: Radioactive materials
- ♦ Class 8: Corrosive materials
- ♦ **Class 9: Miscellaneous hazards - which includes Dry Ice*



Training Requirements

Shippers of hazardous materials must be adequately trained prior to offering shipments in transit. Training/testing must be documented for received training and must be renewed every 2 years.

Training Topics

Training areas must include:

- ♦ D.O.T. General Awareness
- ♦ D.O.T. Function Specific Training
- ♦ D.O.T. Safety Training
- ♦ D.O.T. Security Awareness Training

Identification & Classification



Dry ice is classified as a Class 9 Miscellaneous hazard under D.O.T. and IATA regulations. It is considered hazardous for the following:

- ♦ Explosion Hazard
- ♦ Suffocation Hazard
- ♦ Contact Hazard

**MISCELLANEOUS
DANGEROUS
GOODS**

9

Identification & Classification



Explosion Hazard

- ♦ Dry ice gives off carbon dioxide gas as it sublimates, which may result in the buildup of pressure, and possibly rupturing, when stored in tightly sealed containers.



Suffocation Hazard

- ♦ Dry ice can create an oxygen-deficient atmosphere if stored in an area with poor ventilation.



Contact Hazard

- ♦ Dry ice has a very low contact temperature, which can cause burns similar to frostbite when directly contacting the skin.

Packing packaging Styrofoam cooler cardboard box

Packaging must consist of an insulated container, which is not affected by the dry ice (e.g., Styrofoam cooler), and a hard walled outer packaging (e.g., cardboard box)



Packaging

Packaging for shipments containing dry ice must be in accordance with IATA Packing Instruction 954 and/or D.O.T. packing regulation 173.217 when being offered for air shipment.

PACKING INSTRUCTION 954

FOR VARIATIONS: AM-09, AS-11, CA-08, CO-09, CS-09, CZ-04, IC-08, KE-06, LC-09, TY-06, VN-11

This instruction applies to UN 1845, Carbon dioxide, solid (dry ice) on passenger and Cargo Aircraft

Packaging Requirements of 5.0.2 must be met.

Packing Requirements

Packaging designed and constructed to permit the release of carbon dioxide gas and to prevent build-up of pressure that could rupture the packaging;

Shipper must make arrangements with the operator(s) for each shipment, to ensure ventilation requirements are followed;

Declaration requirements of Subsections 8.1 and 10.8.1 are only applicable when the Carbon dioxide, solid (dry ice) is used as a refrigerant for dangerous goods that require a Shipper's Declaration;

Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques. The information should be shown in the following order:

- (a) the shipping name (**Dry ice or Carbon dioxide, solid**);
- (b) the number of packages; and
- (c) the net weight of dry ice in each package.

The net weight of the Carbon dioxide, solid (dry ice) must be marked on the outside of each package.

When used as a refrigerant for other than dangerous goods:

may be shipped in a unit load device or other type of pallet prepared by a single shipper provided that the shipper has made prior arrangements with the operator;

the unit load device, or other type of pallet must allow the venting of the carbon dioxide gas to prevent a dangerous build up of pressure (the marking and labeling requirements of Section 7 do not apply to the unit load device);

(c) the shipper must provide the operator with written documentation or where agreed with the operator, information by EDP or EDI techniques, stating the total weight of the dry ice contained in the unit load device or other type of pallet.

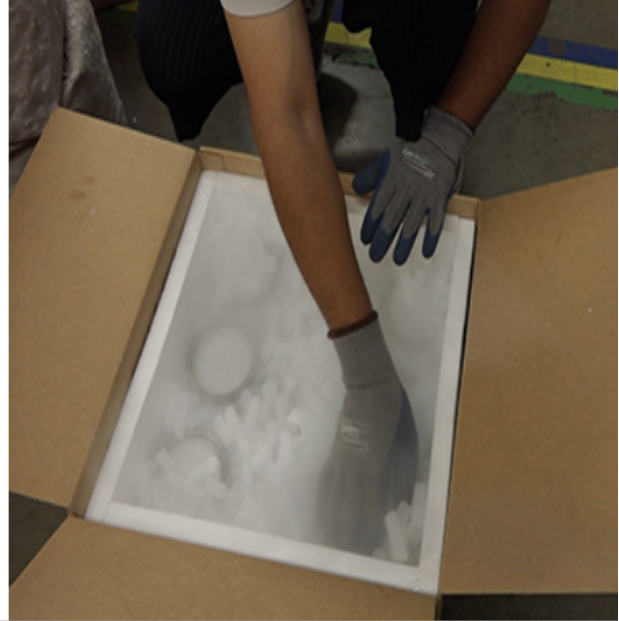
Max amount of dry ice is 200kg.



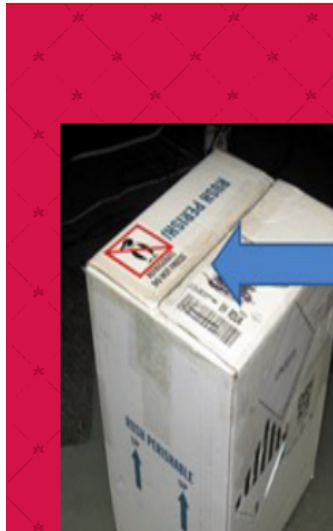
Items must be secured within the package to prevent unnecessary movement, even when dry ice sublimates.

- ♦ Foam bracing, packing peanuts, newspaper, & bubble wrap are suitable options.
- ♦ The item may be taped to an interior wall as well.
- ♦ Filling voids within the package will also allow the dry ice to last longer during transit.

The maximum amount of dry ice for any package is 200kg. There are no exceptions to this rule.



Do not seal the lid of the inner styrofoam container. Only seal where the flaps meet



Any package containing dry ice must permit the release of carbon dioxide vapor during transit.

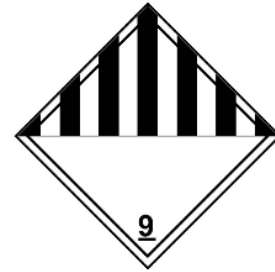
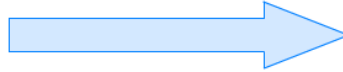


- ♦ Failure to do so can result in the package rupturing
- ♦ To ensure vapors can vent properly, do not seal the lid of the inner Styrofoam container
- ♦ Tape only the center of the outer cardboard packaging where the flaps meet on the top of the box

Label rules weather resistant

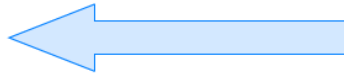
Hazard Label

- ♦ Packages containing dry ice as the only hazardous material, must be labeled with the Class 9 Miscellaneous hazard label.



Label must not cover any required markings

Label must not wrap around to another side of the box



Label Requirements

- ♦ The hazard label must meet the size requirements of the applicable regulations
 - ♦ All labels must be weather-resistant and durable

If liquids in package need arrows in appropriate direction. UN1845 class 9



Next to the Class 9 hazard label, the package must be marked with the proper shipping name, identification number, and the net weight of dry ice in kilograms (kg).

- ♦ Markings and labels must appear on the same vertical side of the package, not on the top or bottom of the package
- ♦ "Carbon dioxide, solid, UN 1845, (net weight of dry ice) KG"
OR
- ♦ "Dry ice, UN 1845, (net weight of dry ice) KG"
- ♦ In addition to the markings and labels listed, the package must display the name, address, and phone number of both the shipper and receiver of the package
- ♦ If liquids are being shipped in the package, orientation arrows must be displayed in the appropriate direction

Documentation: Declaration of dangerous goods not required if dry ice is only hazard

When dry ice is the only hazard present in the package,
a Declaration of Dangerous Goods is not required.

Air Waybill

- ♦ The air waybill must indicate the presence of dry ice
- ♦ Some carriers provide areas where shippers can list the amount of dry ice in the package



The image shows a FedEx USA Airbill form. A red oval highlights the 'Dry Ice' section, which includes a checked box for 'Dry Ice' and a field for '1' in the 'Number of Packages' column and '6' in the 'Net Weight (kg)' column. Another red oval highlights the 'Special Services' section, where 'Dry Ice' is also checked.

Documentation. Description of goods

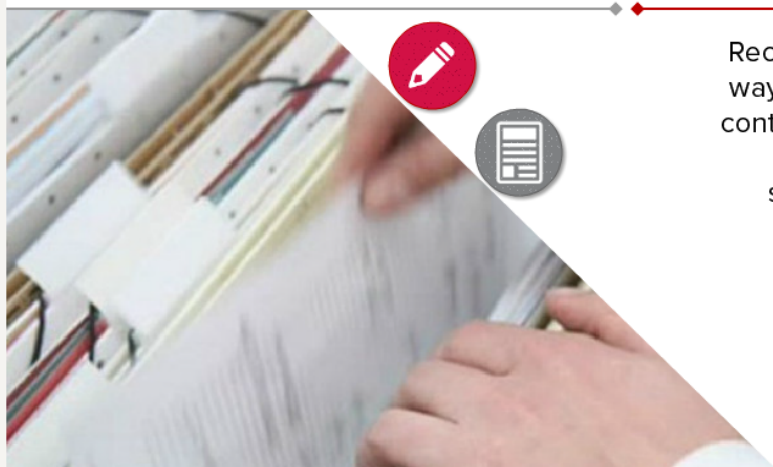
If shipping papers do not have a dry ice check box and space to list the quantity being shipped, the following must be indicated in the "Description of Goods" section of the air waybill.

- ♦ "Dry ice" or "Carbon dioxide, solid"
- ♦ "UN 1845"
- ♦ Number of packages
- ♦ Net weight in kg



The image shows an Airborne Express form. A red oval highlights the 'Description of Goods' section, which contains the text: 'Dangerous Goods Shippers Declaration not required DRY ICE, 9, UN 1845, III, 1 X 5 KGS, 904'. Another red oval highlights the 'Special Instructions' section, which also contains the same text.

Record keeping. 5 years,



Records should include a copy of the air waybill/shipping paper, a list of package contents, and who prepared the package for shipment, if different from the shipper's name on the air waybill.

- ♦ Shipper must retain records of shipments for a minimum of 5 years
- ♦ Any other relevant paperwork in association with the shipment should be kept as well

Contact OSU office of environmental health and safety for questions

If you have any further questions regarding D.O.T. - Shipping Dry Ice, please contact the OSU Office of Environmental Health and Safety.



www.ehs.osu.edu



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