



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

DOE-Idaho Transportation Citizens Advisory Board

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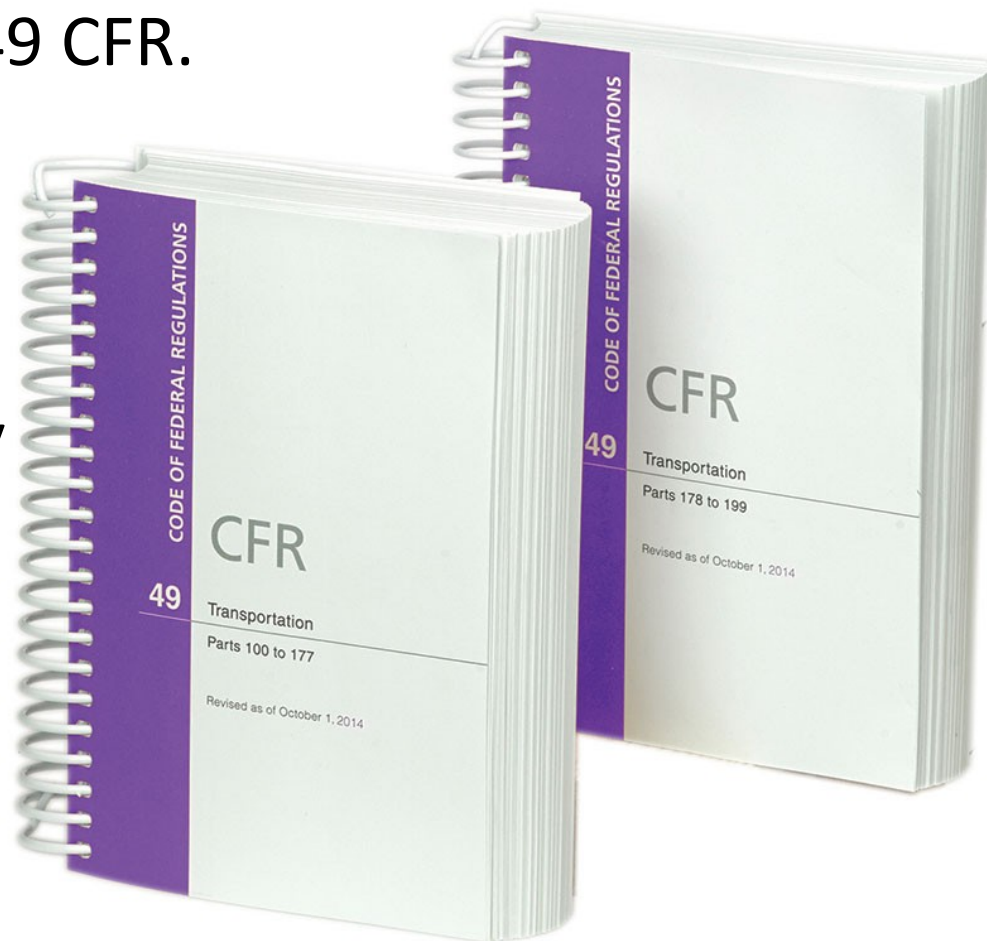
Topics

- Transportation Regulations
- Shipment Classes
- Shipping Containers
- Marking and Labeling
- Transportation at the Idaho National Lab



Transportation Regulations

- Department of Transportation Hazardous Materials Regulations (HMR) in 49 CFR.
- DOE O 460.1 -
Packaging and
Transportation Safety



Two Questions:

- Is the material listed in the HazMat Table in the DOT regulations?
- Is the quantity in one package greater than the Reportable Quantity (RQ) amount?



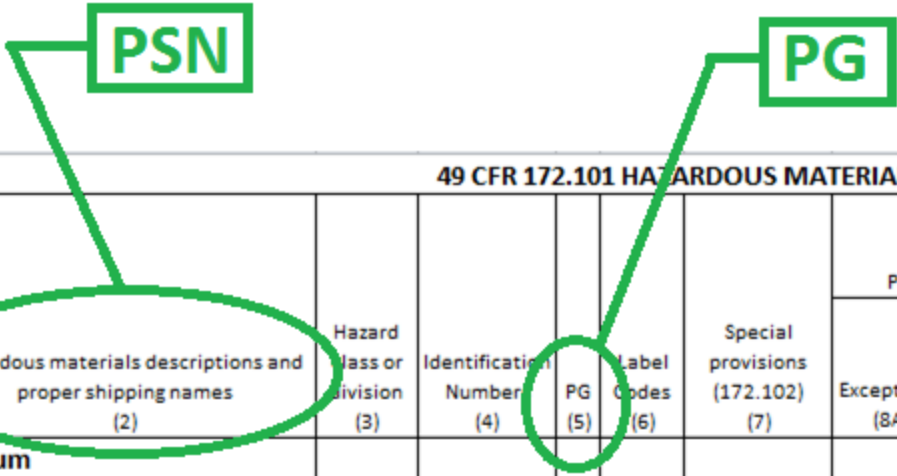
DOT Hazard Classes:

- Class 1: Explosives
- Class 2: Gases
- Class 3: Flammable Liquids
- Class 4: Flammable Solids
- Class 5: Oxidizers
- Class 6: Poisons
- Class 7: Radioactive
- Class 8: Corrosive
- Class 9: Miscellaneous



Shipping Classes

- **Proper Shipping Name:** The PSN represents the hazardous materials inside the package.
- **Packing Group:** A grouping according to the degree of danger presented by the hazardous materials.



49 CFR 172.101 HAZARDOUS MATERIALS TABLE

Symbols (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard Class or Division (3)	Identification Number (4)	PG (5)	Label Codes (6)	Special provisions (172.102) (7)	(8) Packaging (173.***)			(9) Quantity Limitations (see §§173.27 and 175.75)		(10) Vessel stowage	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo aircraft only (9B)	Location (10A)	Other (10B)
	Sodium hydrosulfite, <i>see Sodium dithionite</i>												
	Sodium hydroxide, solid	8	UN1823	II	8	IB8, IP2, IP4, T3,	154	212	240	15 kg	50 kg	A	52.

General Requirements for Hazardous Material Packaging. Packages must be:

- able to contain the material
- compatible with the material
- authorized for the material
- closed according to manufacturer's instructions
- filled appropriately



Packaging Identification Coding System

Ⓢ 1A2 / X435 / S / 15 / USA / SDCC / 1.5-1.2-1.5

- Each of these characters specifies a different piece of information about the container.
- Codes are stamped into the bottom of containers. May be required on the side if over a specified weight.



Radioactive Material Packaging Groups

- Excepted Packaging
- Industrial Packages: IP-I, IP-II, and IP-III
- Type A
- Type B



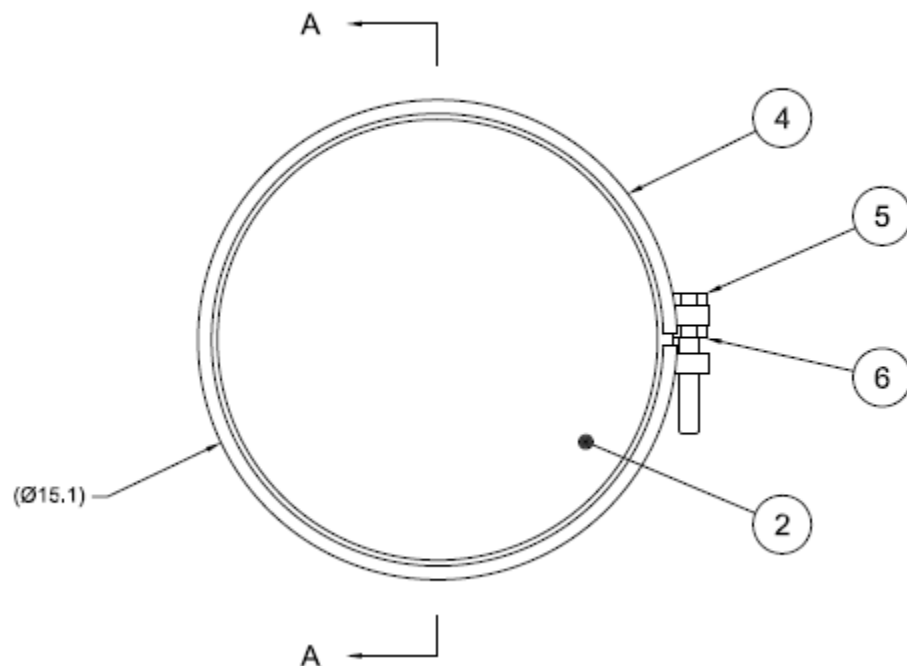
DOT has packaging requirements for:

- **Construction**

- Size
- Material
- Welding
- Design

- **Testing**

- Drop
- Leak Proof
- Stacking
- Hydrostatic
- Vibration



Type A containers are identified by “USA DOT 7A, Type A”

Type A containers are subject to these additional tests:

- Drop
- Water Spray
- Puncture
- Compression

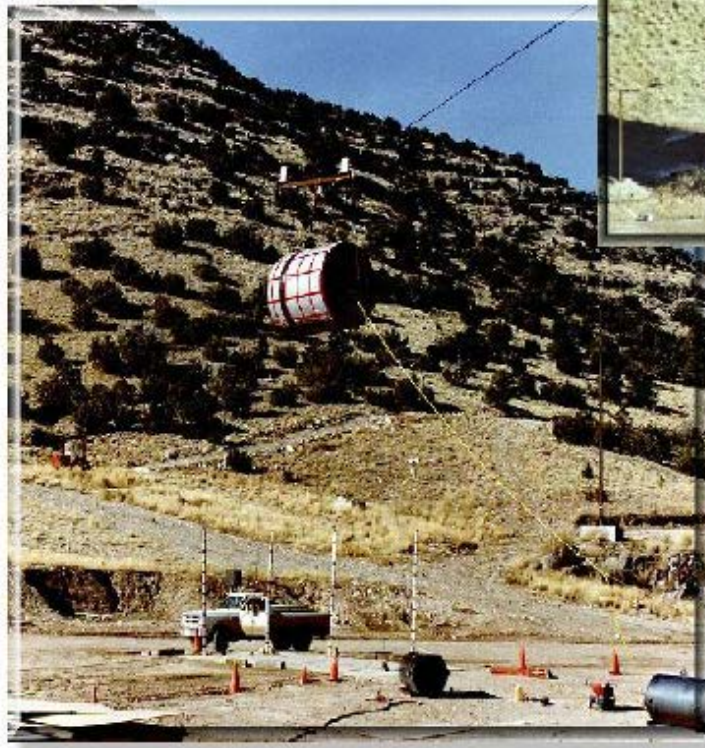


Shipping Containers

Type B containers are for materials with an activity level higher than the Type A limits specified in the DOT regulations. They are certified by either the DOE or the Nuclear Regulatory Commission.

They are subjected to these additional tests:

- Drop
- Puncture
- Fire
- Immersion



[Drop Test](#)

Marking and Labeling

There are several markings required on each package containing hazardous material. The basic marking requirements are:

- Proper Shipping Name
- Identification Number
- Shipper or Receiver's name and address

All markings must be:

- Durable
- In English
- Unobscured
- Displayed on a background of sharply contrasting color



Marking and Labeling

Labels, based on DOT hazard class, must also be applied to packages. Labels are required for the primary, and subsidiary hazards.

Radioactive labels have 3 categories:

- White - I
- Yellow - II
- Yellow - III



Marking and Labeling

Placards, also based on DOT hazard class, are applied to the outside of the shipping vehicle (trailer, rail car, etc.)

Placards are not always required. Some examples:

- Infectious Substances
- Limited Quantities

Radioactive Placards are required for:

- Rad Yellow-III Labels
- Exclusive Use Shipments
- High Surface Does Rate



Transportation at INL



Low-Level Waste Shipment – Industrial Packaging

Transportation at INL



Low-Level Waste Shipment – Type A Boxes

Transportation at INL



TRU Waste Shipment – Type B Container (TRUPACT-II)

Transportation at INL



TRU Waste Shipment – Type B Container (RH-72B)

Questions?

