

**Hazmat Transportation
A Few Simple Options**



Batteries & Materials of Trade

"Congress finds with respect to hazardous materials transportation that -

"(1) approximately 4,000,000,000 tons of regulated hazardous materials are transported each year and approximately 1,200,000 movements of hazardous materials occur each day, according to Department of Transportation estimates;

"(2) the movement of hazardous materials in commerce is necessary to maintain economic vitality and meet consumer demands and must be conducted in a safe, secure, and efficient manner;

"(3) accidents involving, or unauthorized access to, hazardous materials in transportation may result in a release of such materials and pose a serious threat to public health and safety;

"(4) because of the potential risks to life, property, and the environment posed by unintentional releases of hazardous materials, consistency in laws and regulations governing the transportation of hazardous materials is necessary and desirable

Public Law 109-59, The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), 2005.

**Regulated by the U.S. Department of Transportation,
Pipeline and Hazardous Materials Safety Administration (PHMSA)**

Hazmat Transportation



What it is

**Transportation of
Hazardous Materials**

In Commerce (furtherance of a
commercial enterprise)

By:

- Air, – Vessel, or
- Rail, – Highway

Includes

- Preparing, – Loading
- Documenting – Moving &
- Offering, – Unloading

What it isn't

Personal Transport & Use

Onsite Handling

Waste Management

Although “hazardous waste” and
“environmentally hazardous
substances” are included by
reference for tracking purposes.

Purely Governmental Activity

But some, like the military, adopt
DOT rules into their own.

US Postal Service

Has its own set of rules

Hazardous material means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce... [49 CFR 171.8]

Nine Hazard Classes / 21 Divisions

- 1.x Explosive
- 2.1 Flammable gas
- 2.2 Compressed gas
- 2.3 Poison gas
- 3 Flammable liquid
- Combustible liquid
- 4.1 Flammable solid
- 4.2 Spontaneously combustible or
Pyrophoric
- 4.3 Dangerous when wet



- 5.1 Oxidizer
- 5.2 Organic peroxide
- 6.1 Toxic
- 6.2 Infectious material
- 7 Radioactive
- 8 Corrosive
- 9 Miscellaneous, includes:
 - Environmentally hazardous
 - Hazardous waste
 - Danger on aircraft or ship
 - Other

Steps to Hazardous Material Shipping & Transportation

1. Classify

- Determine hazard type(s) & degree
- Identify the “Proper shipping name” (only 2941 options)

2. Package

- Pick an option, determine specs.
- Level of regulation vs Size: “Bulk” vs “Nonbulk” vs “Exceptions”

3. Mark & Label the Packages

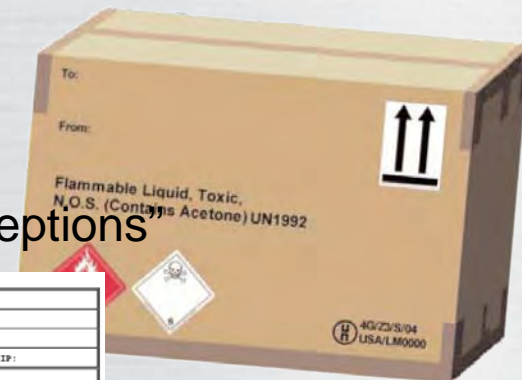
- Hazard Class Label.
- Shipping name & ID number

4. Paperwork

- Shipping paper
- Emergency Response Information

5. Placards

- On Bulk Packages / On transport Vehicles & Freight Container



SHIP TO:	SHIP FROM:		
STREET:	STREET:		
CITY:	CITY:		
STATE:	STATE:		
ZIP:	ZIP:		
ROUTE:	VEHICLE NUMBER:		
* Designates Hazardous Materials as defined in the Department of Transportation regulations governing the transportation of hazardous materials. The use of the column is an optional method for identifying hazardous materials on bills of lading per section 172.201 (A) (1) (iii) of title 49, Code of Federal Regulations. This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.			
SHIPPING PAPER			
NO. OF YRGS	*	DESC. OF ARTICLES, SPECIAL NAMES AND EXCEPTIONS	WEIGHT
	HN		



Steps to Hazardous Material Shipping & Transportation

6. Loading

- Compatibility/Segregation
- Securement
- Special Precautions

7. Transport

- Routing
- Operating Rules

8. Additional Concerns:

- Registration with PHMSA
- Hazmat Carrier Insurance
- CDL + Hazmat Endorsement
- Training: Shippers and Carriers (and any one who can “directly affect” safety)
- Security / Antiterrorism for higher hazard materials and larger shipments



Batteries: Rules & Reliefs

Hazard(s)

- **Lead: Toxicity & Environmental Hazard**
- **Acid: Corrosive**
- **Electrical shock / spark**
- **May generate H₂ gas**



Batteries: Rules & Reliefs

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identi-fication Numbers	PG	Label Codes	Special provisions (§ 172.102)	(8)			(9)		(10) Vessel stowage	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Loca-tion	Other
							Excep-tions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Barium permanganate	5.1	UN1448	II	5.1, 6.1	IB6, IP2, T3, TP33	152	212	242	5 kg	25 kg	D	56, 58, 138
	Barium peroxide	5.1	UN1449	II	5.1, 6.1	A9, IB6, IP2, T3, TP33	152	212	242	5 kg	25 kg	A	13, 52, 56, 75
	<i>Barium selenate, see Selenates or Selenites</i>												
	<i>Barium selenite, see Selenates or Selenites</i>												
	Batteries, containing sodium	4.3	UN3292	II	4.3		189	189	189	Forbidden	No limit	A	
	Batteries, dry, containing potassium hydroxide solid, <i>electric, storage</i>	8	UN3028	III	8	237	None	213	None	25 kg gross	230 kg gross	A	52
	Batteries, dry, sealed, n.o.s.					130							
W	Batteries, nickel-metal hydride see Batteries, dry, sealed, n.o.s. for nickel-metal hydride batteries transported by modes other than vessel	9	UN3496	9		340						A	48
	Batteries, wet, filled with acid, <i>electric storage</i>	8	UN2794	III	8		159	159	159	30 kg gross	No limit	A	146
	Batteries, wet, filled with alkali, <i>electric storage</i>	8	UN2795	III	8		159	159	159	30 kg gross	No limit	A	52, 146
	Batteries, wet, non-spillable, <i>electric storage</i>	8	UN2800	III	8		159a	159	159	No limit	No limit	A	
	Battery fluid, acid	8	UN2796	II	8	A3, A7, B2, B15, IB2, N6, N34, T8, TP2	154	202	242	1 L	30 L	B	
	Battery fluid, alkali	8	UN2797	II	8	B2, IB2, N6, T7, TP2, TP28	154	202	242	1 L	30 L	A	29
	<i>Battery lithium type, see Lithium batteries etc</i>												
	Battery-powered vehicle or Battery-powered equipment	9	UN3171	9		134	220	220	None	No limit	No limit	A	
	<i>Battery, wet, filled with acid or alkali with vehicle or mechanical equipment containing an internal combustion engine, see Vehicle, etc. or Engines, internal combustion, etc</i>												

Battery, wet, filled with acid / 8 / UN2794 / PG III /.../ 159 / 159
 Battery, wet, non-spillable / 8 / UN2800 / PG III /.../ 159a / 159

Batteries: Rules & Reliefs

Packaging: 49 CFR 173.159
Non-spillable, also can use
49 CFR 173.159a.

§ 173.159 Batteries, wet.

(a) Electric storage batteries, containing electrolyte acid or alkaline corrosive battery fluid (wet batteries), may not be packed with other materials except as provided in paragraphs (g) and (h) of this section and in §§173.220 and 173.222; and any battery or battery-powered device must be prepared and packaged for transport in a manner to prevent:

... continued on handout.



What Are They? [Definition 49 CFR 171.8]

1. Not a hazardous waste

2. Carried on a motor vehicle

- To protecting the health and safety of the operator or passengers
- To support the operation or maintenance of a motor vehicle (including its auxiliary equipment); or
- By a private motor carrier in direct support of a principal business that is other than transportation by motor vehicle.

Examples?



Completely Outside the System [49 CFR 173.6]

1. Meet the Definition
2. Keep within Hazard Class and Quantity Limits
3. Package as Required
4. Mark/Label as Required
5. “Inform” the Driver
6. Less than 200 kg (440 lbs) Total on the Vehicle



DOT Website

hazmat.dot.gov

Other Exemptions to Consider:

Diesel Fuel in Non-Bulk (<119 gallon): 49 CFR 173.150(f)

Engine or Battery-Powered Equipment: 49 CFR 173.220

Fuel Tanks for Permanently Mounted Portable Equipment:
Meeting FMCSA Requirements at 49 CFR 393, Subpart E

DOT Interpretations:

<http://phmsa.dot.gov/hazmat/regs/interps>

Hazardous Materials Information Center:

1-800-HMR-4922 or 1-800-467-4922