



How to Use the Hazardous Materials Regulations

Presenter Name

**Title, Region
Field Operations**

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

Month/Year



Primary Goal of the Hazardous Materials Regulations (HMR)

Safety



Protecting the Public





Preparing Shipments for All Environments





What If This Was Hazmat?



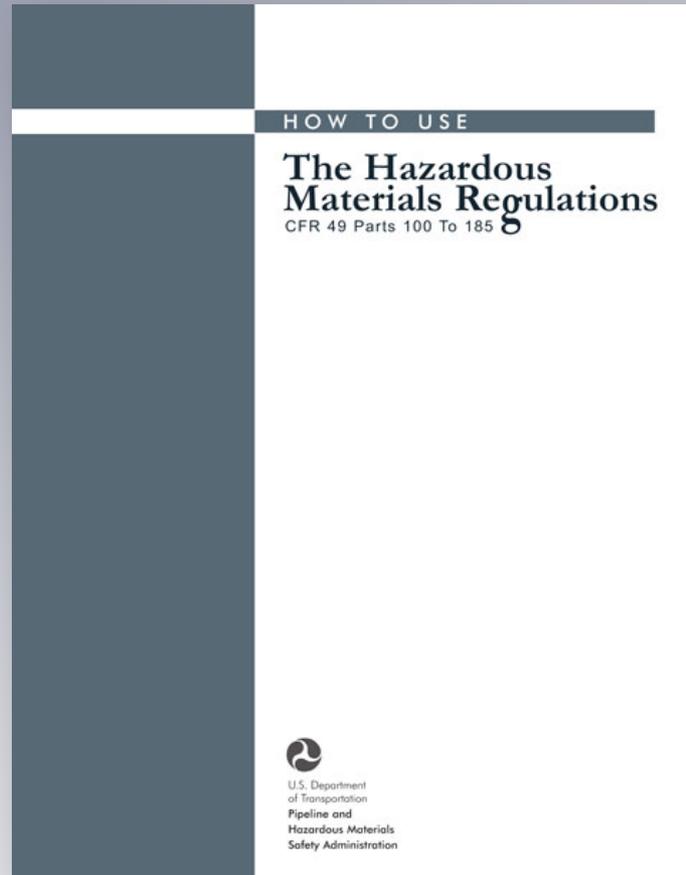


“Incidents Occur”





Reference Material





HMR General Areas

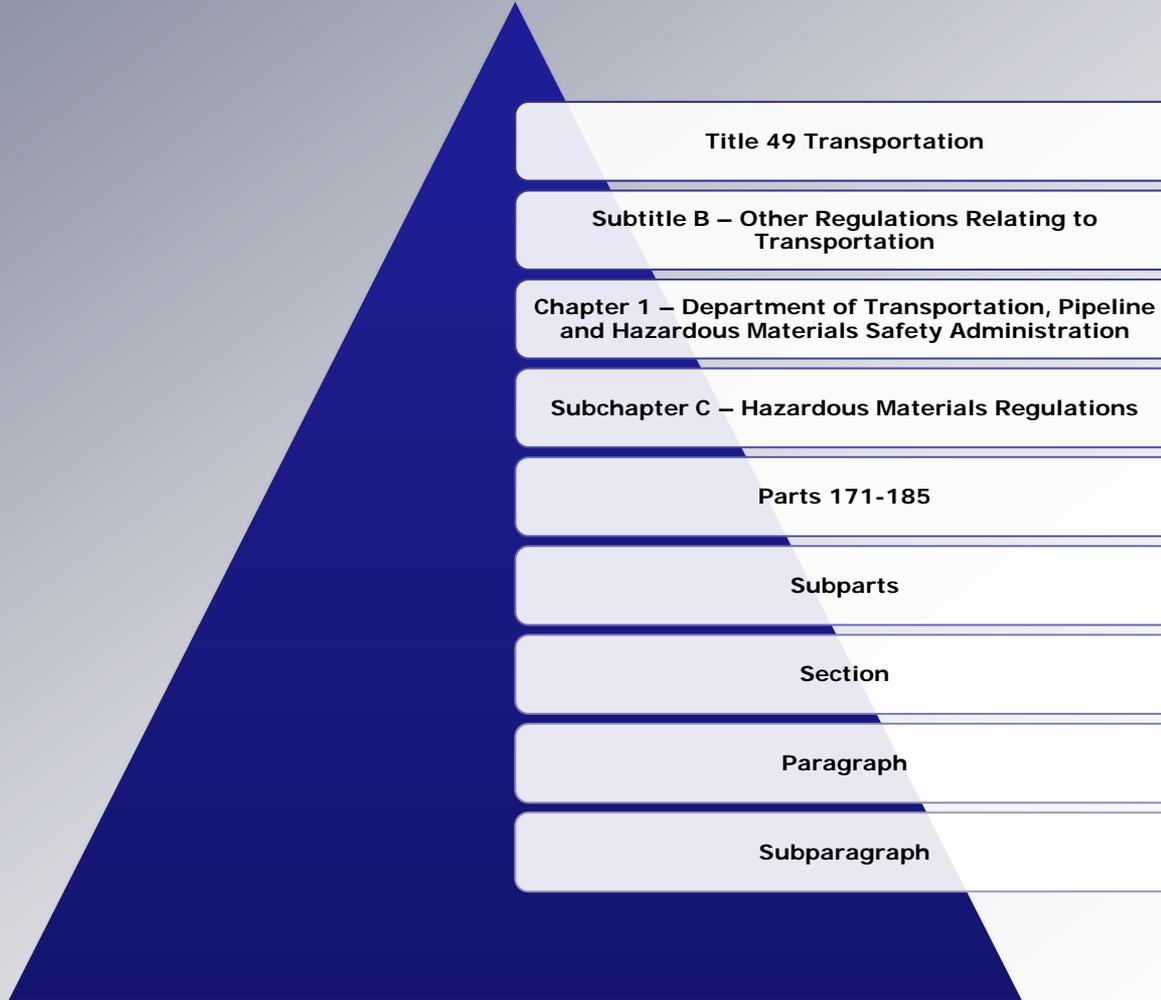
The HMR is divided into four general areas:

1. Identification and Classification
2. Hazard Communication
3. Packaging Requirements
4. Operational Rules



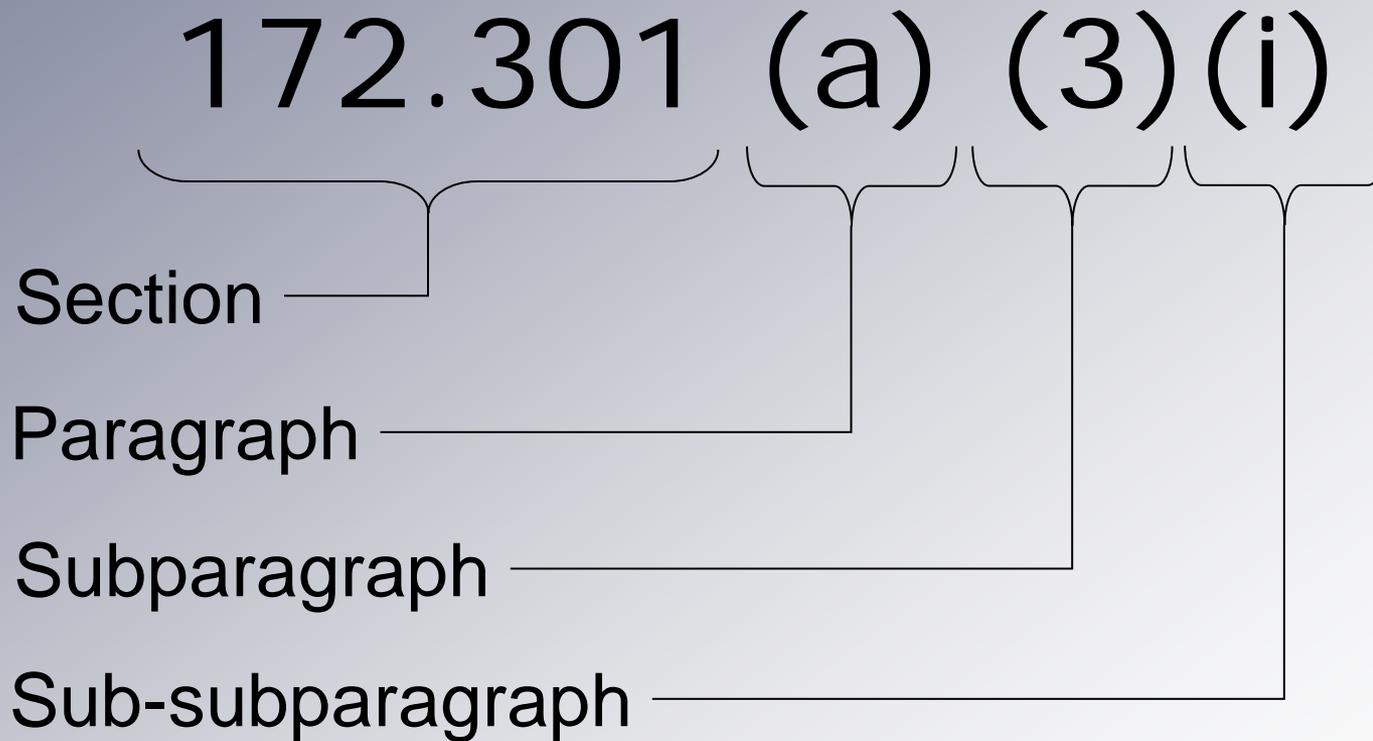


HMR Breakdown





Structure of the HMR





Rules of Construction §171.9

- Singular words include the plural and plural words include the singular
- Masculine words include the feminine
- “Must” and “shall” mean required
- “Should” means recommended, but not required
- “May” means permitted, but not required
- “No person may” means no person is required, authorized, or permitted to...
- “Includes” means includes, but not limited to



The Hazardous Material Table

§172.101

Symbols (1)	Hazardous Materials Descriptions and Proper Shipping Names (2)	Hazard Class or Division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102) (7)	(8) Packaging (§173.***)			(9) Quantity Limitations	
							Excep- tions (8A)	Non- bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo air- craft only (9B)
	Acrolein, stabilized	6.1	UN1092	I	6.1, 3	1, B9, B14, B30, B42, B72, B77, T22, TP2, TP7, TP13, TP38, TP44	None	226	244	Forbidden	
	Copper cyanide	6.1	UN1587	II	6.1	IB8, IP2, IP4, T3, TP33	None	204	242	25kg	100kg
G	Flammable liquid, n.o.s.	3	UN1993	I	3	T11, TP1, TP27, 1B2, T7, TP1, TP8, TP28, B1, B52, IB3, T4, TP1, TP29	150	201	243	1L	30L
				II	3		150	202	242	5L	60L
				III	3		150	203	242	60L	220L
	Phosphoric acid solution	8	UN1805	III	8	A7, IB3, N34, T4, TP1	154	203	241	5L	60L



Table Provisions (PREAMBLE)

- Preamble is the road map.
- Key references for each column listed.
- When all else fails go back!
- [49 CFR 172.101 Subpart B](#)



Column 1

Symbols

- + → Affixes Proper Shipping Name, Hazard Class & Packing Group (Pure Materials Only)
- A → Air Transportation
- D → Domestic Transportation
- I → International Transportation
- W → Vessel (Water) Transportation
- G → Generic & Hazard Class, n.o.s. PSN Requiring Constituent Identification

§ 172.101(b)



Column 2

Hazardous Materials Descriptions and Proper Shipping Names

- Alphabetical listing of hazardous materials descriptions and proper shipping names
- Proper shipping names
 - Roman type
 - Singular or plural
- Words in *italic* are not part of the proper shipping name

§ 172.101(c)



Examples of PSN

- *Anhydrous ammonia, see*

Ammonia, Anhydrous

- **Acetone**

- *Ammunition, rocket see*

Warheads, rocket



More Examples

- Hydrogen, compressed
- Hydrogen cyanide, stabilized
with less than 3 percent water
- ***Hydroxyl amine iodide*** – “Forbidden”



Hazard Class or Division

Column 3

- Designation of hazard class or division or “Forbidden”
- A basic description of each hazard class can be found in § 173.2
- **Examples:**
 - 1.2 → Explosives (with a projection hazard)
 - 2.3 → Poisonous gas
 - 3 → Flammable and combustible liquid
 - 4.1 → Flammable Solid
 - 7 → Radioactive material

§ 172.101(d)



Identification Numbers

Column 4

- Identification number is assigned to each proper shipping name
- “UN” - United Nations
 - Considered appropriate for domestic and international transportation
- “NA” – North America
 - Domestic transportation
 - Transportation To and From Canada Only

§ 172.101(e)



Column 5

PG

Specifies one or more packing groups assigned to a material

Packing Group I	PG I	Great Danger
Packing Group II	PG II	Medium Danger
Packing Group III	PG III	Minor Danger

§ 172.101(f)



Assigning Packing Groups

- Class 2
- Class 7
- Class 6.2 (other regulated medical wastes)
- ORM-D

More than one PG assigned?

Flash Point, Reactivity



Determining Packing Group?

- **49 CFR 173 Subpart D**
 - Flammability (Flash Point)
 - Reactivity (SADT, H₂O, O₂)
 - Toxicity (LD 50/LC 50)
 - Corrosiveness (Time/Damage)



Column 6

Label Codes

- Specifies codes which represent hazard warning labels
 - See “Label Substitution Table” in §172.101(g)
- If more than one code is present:
 - The first indicates the primary hazard
 - Additional codes indicates subsidiary hazards

§ 172.101(g)



Column 7

Special Provisions

- Specifies codes for special provisions – see § 172.102 for the meaning of the provisions
- Code descriptions
 - Numbers Only = All Applications
 - A = Air Transport Only
 - B = Bulk Transport Only
 - H = Highway Transport Only
 - N = Non-Bulk Transport Only
 - R = Rail Transport Only
 - T = IM Tanks Only
 - W = Water Transport Only

**§ 172.101(h)
172.102**



Example Special Provision Codes

- **A2** Single Packaging(s) not permitted on passenger aircraft
- **B25** Package must be made of monel or nickel
- **N41** Metal construction not allowed to contact materials
- **1** Poison by inhalation Hazard Zone A



EXAMPLES Special Provision Codes Cont...

- **A1** - Single packages permitted on passenger aircraft
- **B9** – Bottom openings not Authorized
- **N33** – Aluminum drums not authorized
- **24** – Alcoholic Beverages Greater than 70%
By volume (Dad’s Moonshine shipments)



Column 8

Packaging (173.***)		
Exceptions (8A)	Non-Bulk (8B)	Bulk (8C)

- **Identifies the applicable packaging reference:**
 - Column 8A - Packaging Exceptions (limited quantities)
 - Column 8B - Non-Bulk Packaging requirements
 - Column 8C - Bulk Packaging requirements
 - *****Note***** If “None” listed, you can not use that method

§ 172.101(i)



EXAMPLE for “ACETAL”

- **Exception - 150**
 - LTD QTY, Consumer Commodities, limitations per package/overpack
- **Non Bulk - 202**
 - Outer package, Inner package
- **Bulk - 242**
 - Rail cars, Cargo tanks, Portable tanks and IBCs to be used



Column 9

Quantity Limitations	
Passenger aircraft/rail (9A)	Cargo aircraft only (9B)

- Columns specify the maximum quantities (kgs) per package
- “Forbidden”
- Quantity limitation is “net” unless otherwise specified
- If “Forbidden” on passenger-carrying aircraft, but permitted on cargo aircraft, it must be labeled with the CARGO AIRCRAFT ONLY label (§172.448)



§ 172.101(j)



Column 10

Vessel stowage	
Location (10A)	Other (10B)

- Column 10A specifies authorized stowage locations on board cargo and passenger vessels
- Column 10B specifies codes for stowage requirements – see §176.84 for code meanings

§ 172.101(k)



Step-wise Compliance Process

STEP 2 SYMBOL	STEP 1 CLASSIFY	STEP 4 LABELING	STEP 3 DETERMINE PACKAGING	STEP 5 AIR/RAIL	STEP 6 WATER								
§172.101 Hazardous Materials Table													
(1) Symbols	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class or Division	(4) Identification Numbers	(5) PG	(6) Label Codes	(7) Special provisions	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							(8A) Excep- tions	(8B) Non- bulk	(8C) Bulk	(9A) Passenger aircraft/rail	(9B) Cargo aircraft only	(10A) Location	(10B) Other
	Sodium peroxide.....	5.1	UN1504	I	5.1.....	A20, N34.....	None....	211....	None...	Forbidden	15 kg....	B	13, 75, 106
	Sodium peroxoborate, anhydrous	5.1	UN3247	II	5.1.....	152....	212....	240....	5 kg.....	25 kg....	A	13, 25, 106
	Sodium Persulfate.....	5.1	UN1505	III	5.1.....	A1.....	152....	213....	240....	25 kg.....	100 kg...	A

STEP	TASK	HMT COLUMN	STEP	TASK	HMT COLUMN	
1	Determine proper shipping name*	2	4	Determine labels	6	
	Hazard class or division	3		5	Determine air/rail quantity limits	9A & 9B
	Identification number	4			6	Determine water requirements
	Packing group (PG)	5		*Note: Check the Appendices. The material may also be a hazardous substance (Appendix A) or a marine pollutant (Appendix B).		
2	Determine symbol	1				
3	Determine Packaging	8				
	Exceptions	8A				
	Non-Bulk Packaging	8B				
	Bulk Packaging	8C				
	Determine if any special provisions for the material apply	7				



Identify the Material

- Proper Shipping Name (**Col. 2**)
- Hazard Class or Division (**Col. 3**)
- Identification Number (**Col. 4**)
- Packing Group, (**Col. 5**)(if appropriate)

DON'T FORGET TO CHECK THE APPENDICES TO THE HMT (172.101)

Appendix A – The hazardous material may also be a **hazardous substance**

Appendix B – The hazardous material may also be a **marine pollutant**



HAZARDOUS SUBSTANCE

- **Listed in Appendix A**
- **Defined:**
 - Placed in transportation
 - Meets or exceeds RQ listed per/pkg
 - (package plus contents, gross)
 - *In pounds and KGs*
 - Once it becomes a HAZARDOUS SUBSTANCE now considered HAZMAT
 - Name of Substance with RQ listed with PSN



MARINE POLLUTANT

- **Listed in Appendix B**
 - Marine Pollutants
 - 10% by volume
 - Severe Marine Pollutants (PP)
 - 1% by volume
 - If no other HAZMAT traits (Class 1-8)
 - *UN 3077 Environmentally hazardous substance, liquid/solid n.o.s, 9*



Step 2: Check Symbols

- Determine if restrictions (+, A, D, G, I or W) apply **(Col. 1)**

Step 3: Determine Packaging

- Check special provisions **(Col. 7)**
- Determine authorized packaging **(Col. 8A, 8B, 8C)**



Step 4: Label the Package

- Determine the required hazard warning label(s) (Col. 6)
- Furthermore:
 - Mark the package (§172.300)
 - Determine placarding requirements (§172.500)



Step 5: Check Air or Rail Limitations

- If transporting by air and/or rail, determine packaging limitations (**Col. 9A, 9B**)

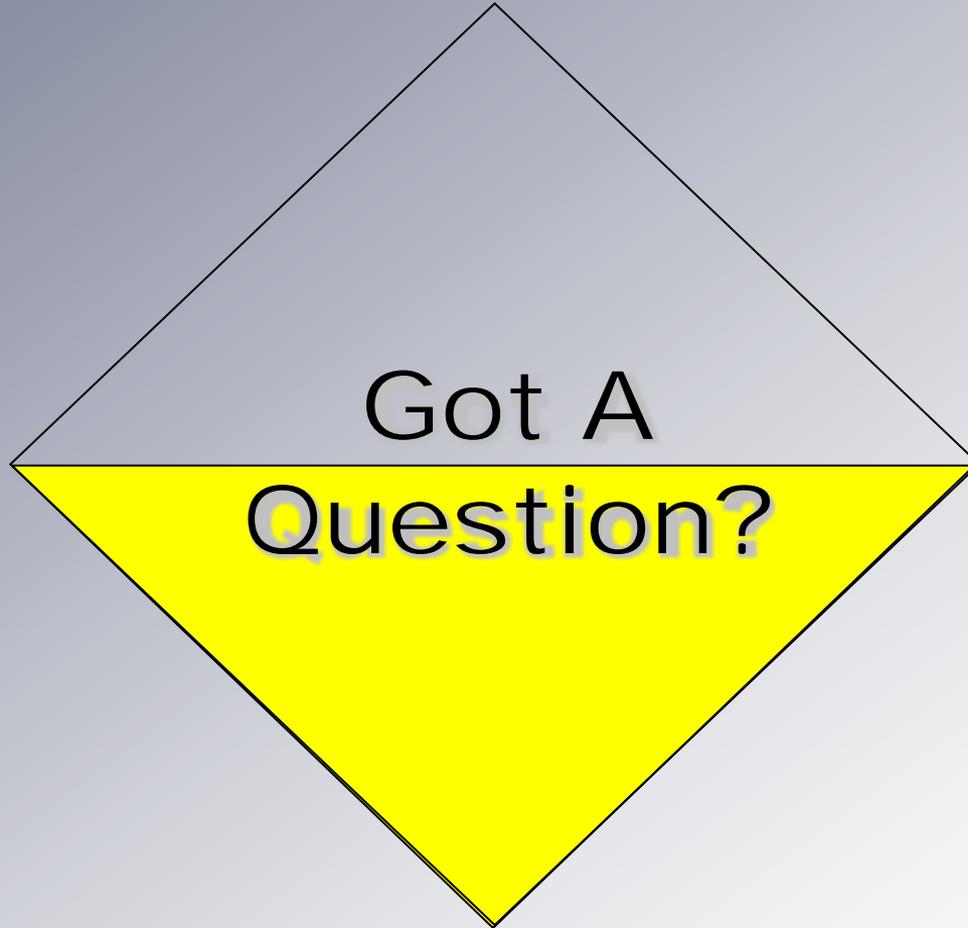
Step 6: Check Water Limitations

- If transporting by water, determine vessel shipment requirements (**Col. 10A, 10B**)



Additional Requirements

- **Shipper's Certification**
- **Other hazard communication**
 - Shipping papers
 - Additional labeling
 - Emergency Response Information
 - Emergency Telephone Number





Where to Find More Information...

PHMSA
Pipeline and Hazardous Materials
Safety Administration

U.S. Department of Transportation

Contact Us | FAQs | Site Map

PHMSA Home | Pipeline Safety | Hazardous Materials Safety

Go Advanced Search

2012 EMERGENCY RESPONSE GUIDEBOOK
A Guidebook for First Responders, Drawing the Latest Federal and State Hazardous Materials Transportation Initiatives

DOT Distributes Over 2 Million New Hazardous Materials Emergency Guidebooks to Nation's First Responders

1 2 3 4 5

Hazmat News | **Most Viewed Info**

Safety Advisories

- > [PHMSA Continues Push to Clarify & Update Hazmat Rules](#)
- > [2011 Hazmat Penalty Action Report](#)
- > [Hazmat Harmonization Rule on Air Packaging Issued](#)
- > [PHMSA seeks comment on transportation of lithium batteries](#)
- > [PHMSA Proposes Updating Hazmat Rules to Better Balance Safety Standards and Regulatory Requirements](#)

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PHMSA/Hazmat Resources

Regulations & Rulemakings
PHMSA regulates and ensures the safe movement of hazardous materials.

Data & Reports
PHMSA tracks data on the frequency of failures, incidents and accidents.

Permits & Approvals

<http://hazmat.dot.gov>



Hazardous Material Info-Center

1-800-HMR-4922

(1-800-467-4922)

E-mail: infocntr@dot.gov

Hours of Operation: 9 am – 5 pm ET



- Obtain answers to HMR questions
- Request copies of Federal Register, special permits or training materials
- Report HMR violations
- Fax on Demand