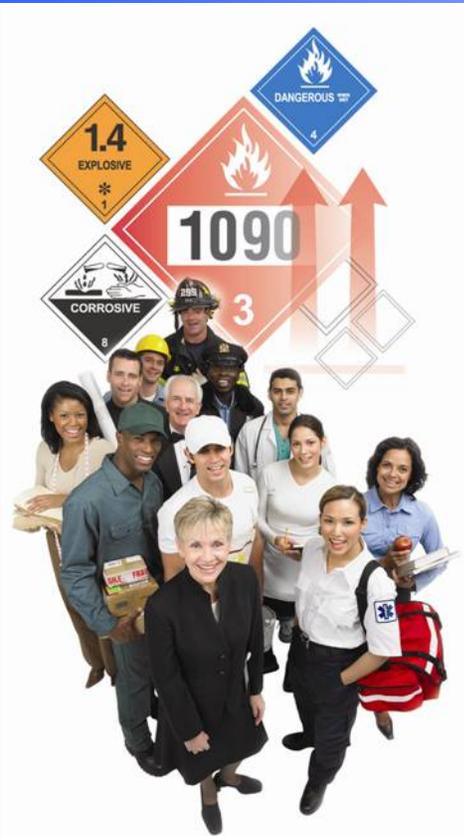




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Safety Administration

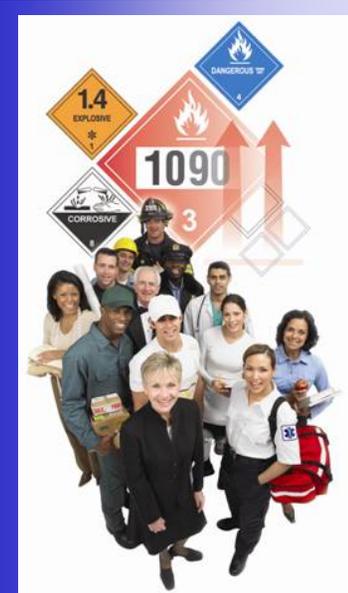


Package Selection, Marking, and Labeling Requirements



U.S. Department
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Hazardous Materials
Safety Administration



Package Selection,
Marking, and
Labeling

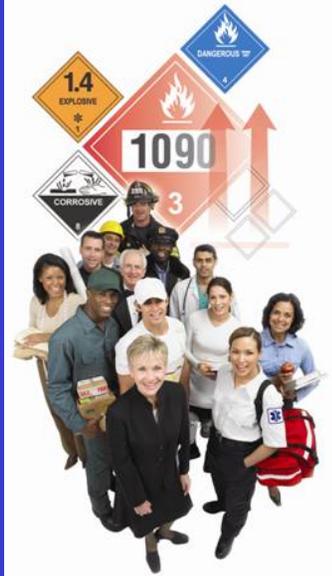
Objectives

- **Identify Applicable Parts of Hazardous Materials Regulations (HMR)**
- **Describe United Nations (UN) Packaging Standards and Codes**
- **Determine Hazard Communication Marking and Labels**



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Safety Administration



Package Selection,
Marking, and
Labeling

HMR 49 CFR

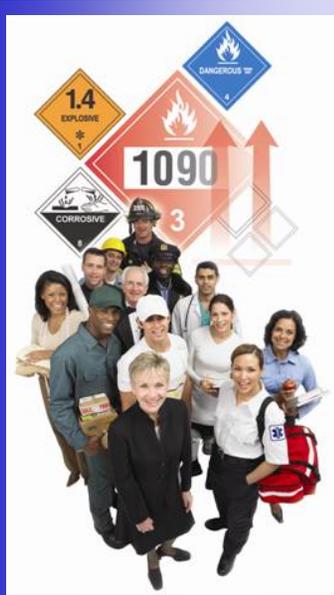
- **Part 172 –**
Subparts B, D and E
- **Part 173**
- **Part 178 –**
Subpart L and M





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Package Selection,
Marking, and
Labeling

Is The Material Hazardous?

- **Check Table §172.101 (HMT)**
- **Identify the HM by Proper Shipping Name – Column 2**

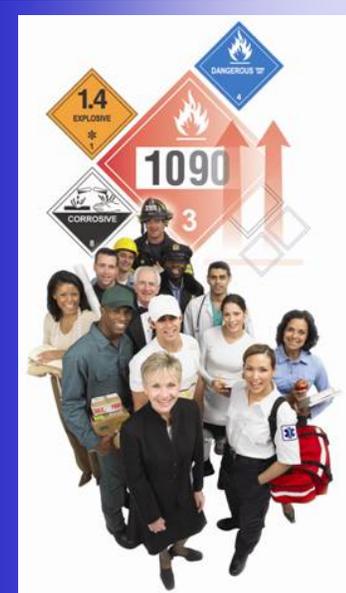
Symbols (1)	Hazardous Materials Descriptions and Proper Shipping Names (2)	Hazard Class or Division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102) (7)	(8) Packaging (§173.***)			(9) Quantity Limitations	
							Excep- tions (8A)	Non- bulk (8B)	Bulk (8C)	Passenger 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	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 II III	3 3 3	T11, TP1, TP27, 1B2, T7, TP1, TP8, TP28, B1, B52, IB3, T4, TP1, TP29	150 150 150	201 202 203	243 242 242	1L 5L 60L	30L 60L 220L
	Phosphoric acid solution	8	UN1805	III	8	A7, IB3, N34, T4, TP1	154	203	241	5L	60L

§172.101 Hazardous Materials Table Excerpts



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Safety Administration



Package Selection,
Marking, and
Labeling

Column 8 Packaging (173.***)

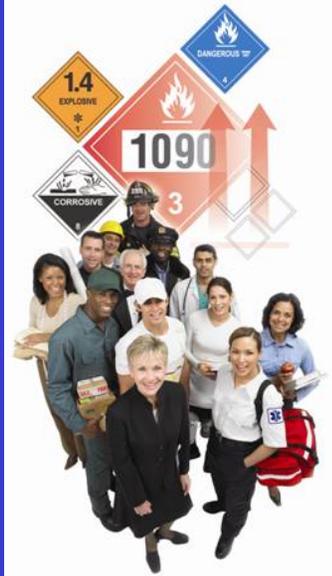
Symbols (1)	Hazardous Materials Descriptions and Proper Shipping Names (2)	Hazard Class or Division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special Provisions (\$172.102) (7)	(8) Packaging (\$173.***)			(9) Quantity Limitations	
							Excep- tions (8A)	Non- bulk (8B)	Bulk (8C)	Passenger 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	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

§172.101 Hazardous Materials Table Excerpts



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Package Selection,
Marking, and
Labeling

§173.203 Non-Bulk Packagings for Liquid Hazardous Materials in Packing Group III

- **Combination Packagings**
- **Single Packagings**



1A2 STEEL DRUM
removable head
used as combination packaging



1A1 STEEL DRUM
non-removable head
used as single packaging

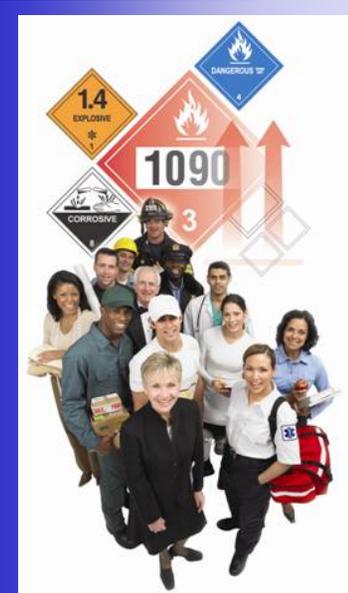


FIBERBOARD BOX
used as combination packaging
showing inner packagings



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Hazardous Materials
Safety Administration



Package Selection,
Marking, and
Labeling

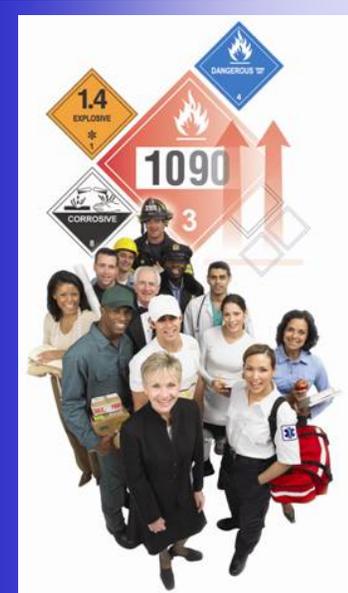
Other Requirements of §173.203

- **Packaging conforms to Subpart B of Part 173**
- **Packaging meets requirements of Part 178 at PG I, II or III level**
- **Comply with HMT Column 7, Special Provisions**



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**Package Selection,
Marking, and
Labeling**

Column 7 Special Provisions

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	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

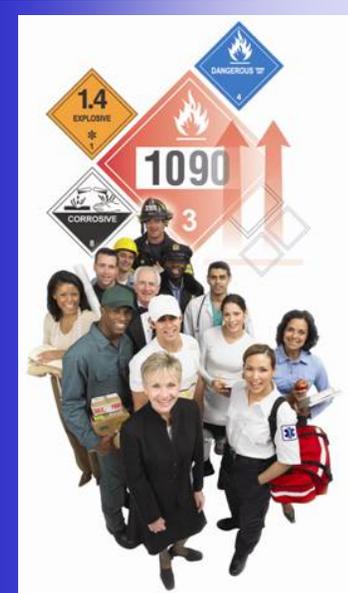
§172.101 Hazardous Materials Table Excerpts

§172.102



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Package Selection,
Marking, and
Labeling

Column 7 Special Provisions

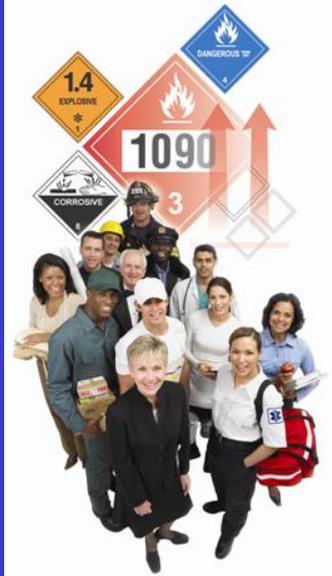
- **Identifies additional provisions for the specific hazardous material**
 - “1” means poisonous by inhalation, Hazard Zone A
- **May impose limitations or additional requirements on packaging**
 - A7 requires steel packaging to be corrosion resistant when shipped by air
 - N34 requires aluminum constructed materials not in contact with the hazardous material

§172.102



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Package Selection,
Marking, and
Labeling

Performance-Oriented Packaging



1A2 STEEL DRUM
used as combination packaging

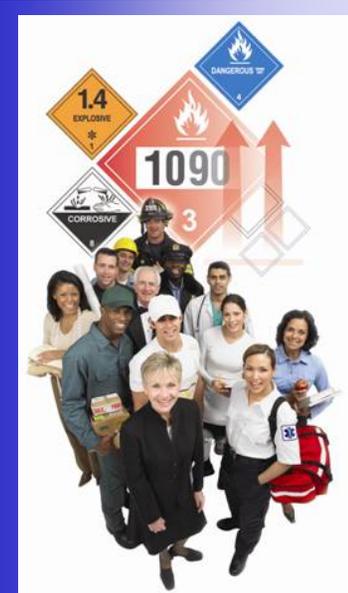


1A1 STEEL DRUM
used as single packaging



U.S. Department
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Safety Administration



Package Selection,
Marking, and
Labeling

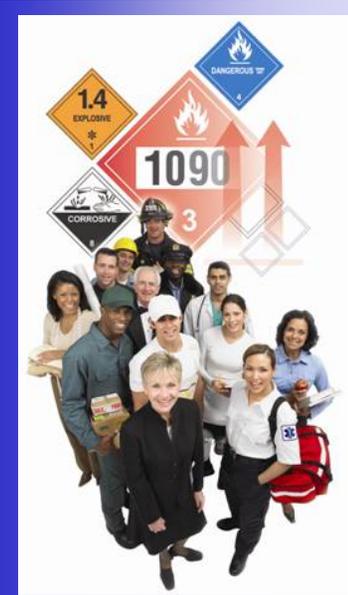
Required Tests for Non-Bulk Packagings and Packages

- **Drop Test – §178.603**
 - All packagings
- **Leakproofness Test – §178.604**
 - All packagings intended for liquids
- **Hydrostatic Test – §178.605**
 - Metal, plastic and composite intended for liquids
- **Stacking Test – §178.606**
 - All packaging other than bags
- **Vibration Standard – §178.608**
 - All packaging



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Package Selection,
Marking, and
Labeling

Closure Requirements

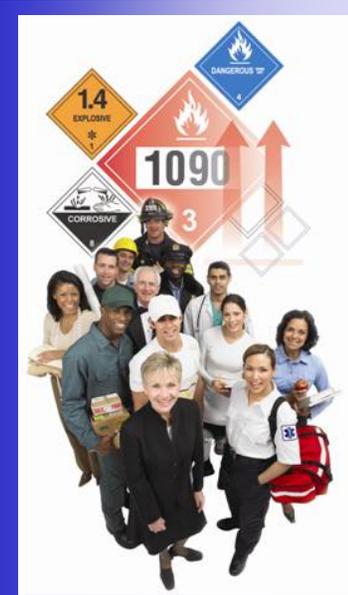
DOT Specification or UN standard packaging must be closed in accordance with the instructions provided by the packaging manufacturer or subsequent distributor.

§173.22 (a)(4)



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Package Selection,
Marking, and
Labeling

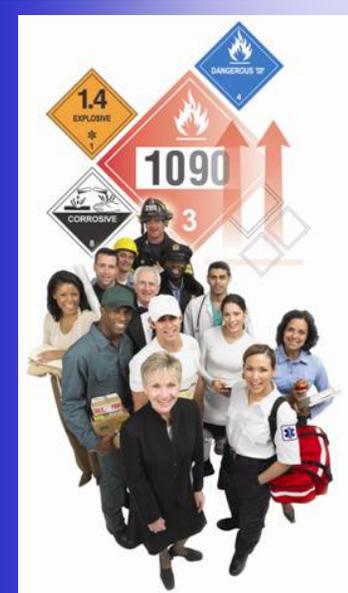
UN Specification Marking Requirements Part 178 Subpart L

- **Manufacturers test and mark packagings according to UN Standards**
- **Specified Codes used for marking**
- **Markings must be durable, legible and placed according to Subpart L**



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Package Selection,
Marking, and
Labeling

Identification Code for UN Standard Packaging

SINGLE PACKAGING



Z – PGIII
(minor danger)

Y – PGII
(medium danger)

X – PGI
(great danger)

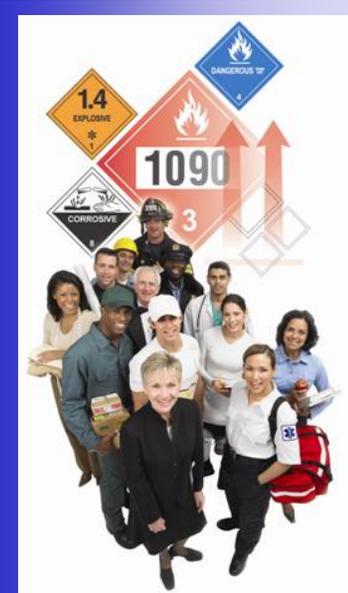
U n 1A1/Z1.4/150/05
USA/0000

§178.502; §178.503



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Package Selection,
Marking, and
Labeling

Identification Code for UN Standard Packaging

COMBINATION PACKAGING



Removable Head

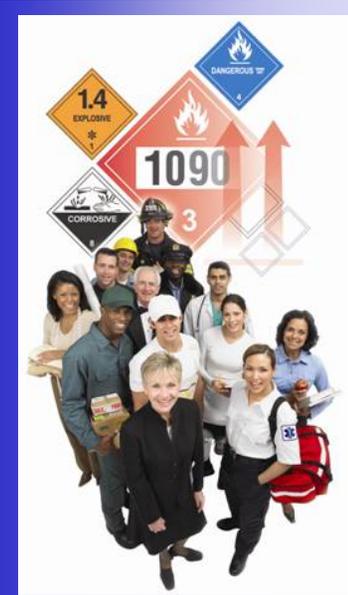
Inner Packaging

**U n 1A2/Z40/S/05
USA/0000**



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Package Selection,
Marking, and
Labeling

Marking Specification Packagings

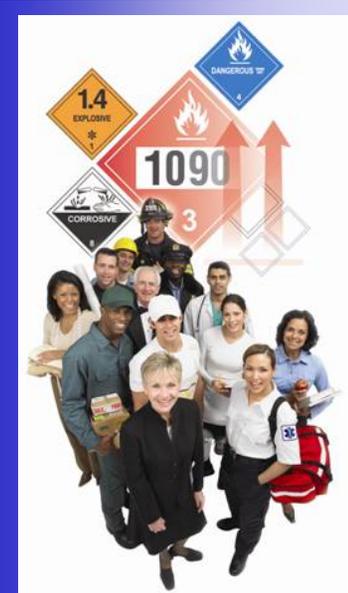
- **Durable**
 - Stamped
 - Embossed
 - Burned
 - Printed or otherwise marked
- **Legible**
 - Readily visible
- **Size**
 - Relative to packaging size
- **Location**
 - On non-removable component

§178.503(a)



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Package Selection,
Marking, and
Labeling

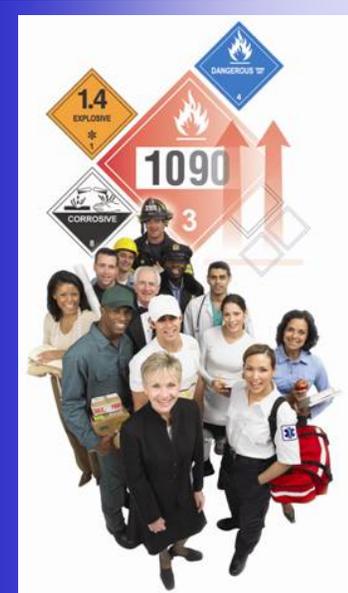
Markings that Communicate the Hazard

- **49 CFR Part 172 Subpart D Applicability**
 - Each person offering a hazardous material for transportation
 - Each carrier when assigned the function by Subpart D
- **General Markings that Identify the Hazardous Material Shipment**
 - Proper shipping name
 - UN identification number
 - Consignee or Consignor



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Package Selection,
Marking, and
Labeling

General Hazard Communication Markings



Proper Shipping Name
Identification Number
Orientation Arrows

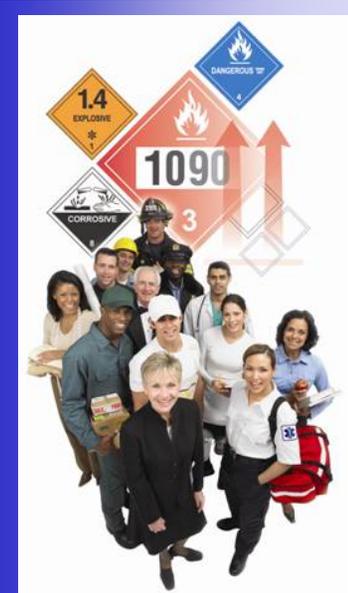
Consignor/Consignee

§172.301



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Pipeline and
Hazardous Materials
Safety Administration



Package Selection,
Marking, and
Labeling

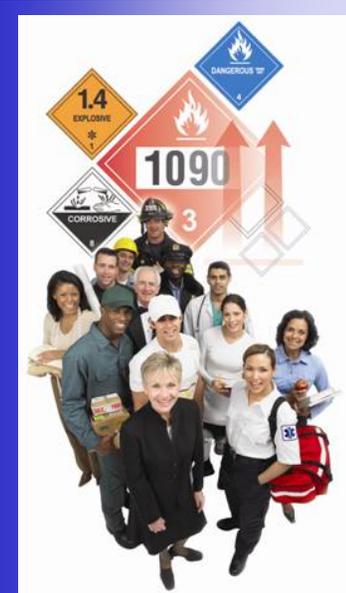
Additional Hazard Communication Markings

- **Technical Names – §172.301(b)**
- **Inhalation Hazard – §172.313(a)**
- **Marine Pollutant – §172.322**
- **RQ (Hazardous Substance) – §173.324**



U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration



Package Selection, Marking, and Labeling

Technical Names



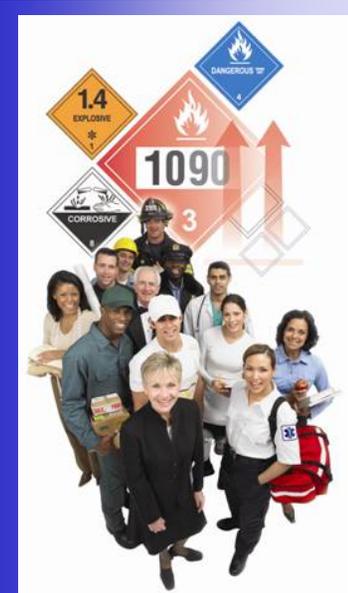
Symbols (1)	Hazardous Materials Descriptions and Proper Shipping Names (2)	Hazard Class or Division (3)	Identification Numbers (4)	PG (5)	Label Codes (6)	Special Provisions (§172.102) (7)	(8) Packaging (§173.***)			(9) Quantity Limitations	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger aircraft/rail (9A)	Cargo aircraft only (9B)
G	Flammable liquid, n.o.s.	3	UN1993	I	3	T11, TP1, TP27, 1B2, T7, TP1, TP8, TP28, B1,	150	201	243	1L	30L
				II	3	TP8, TP28, B1, B52, IB3, T4, TP1, TP29	150	202	242	5L	60L
				III	3		150	203	242	60L	220L

§172.301(b)



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Safety Administration



Package Selection,
Marking, and
Labeling

Inhalation Hazard



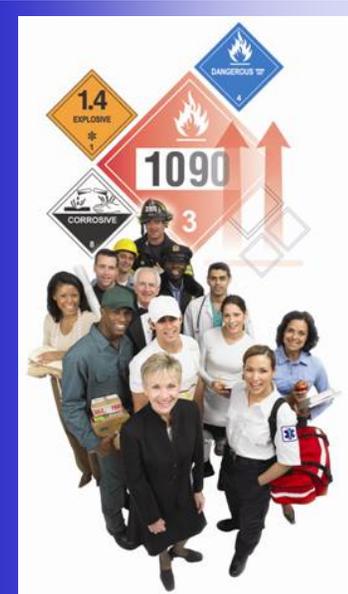
Optional with label

§172.313



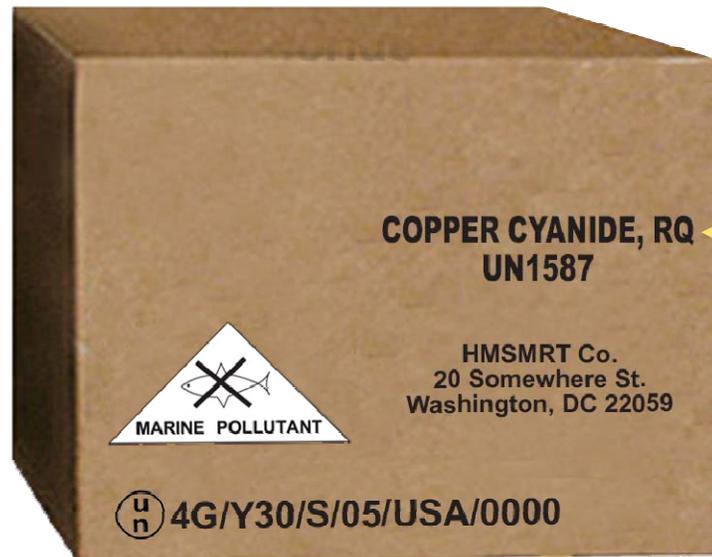
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Pipeline and
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Safety Administration



Package Selection,
Marking, and
Labeling

Hazardous Substance and Marine Pollutants

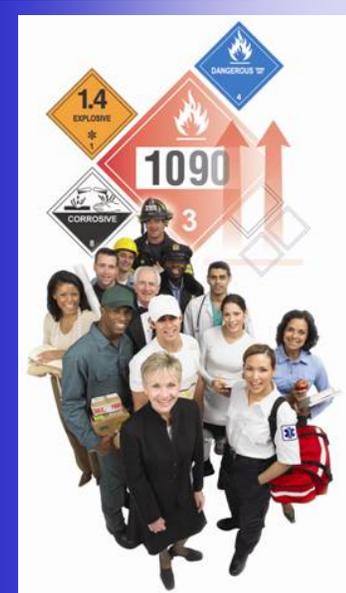


§172.322, §172.324



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Package Selection,
Marking, and
Labeling

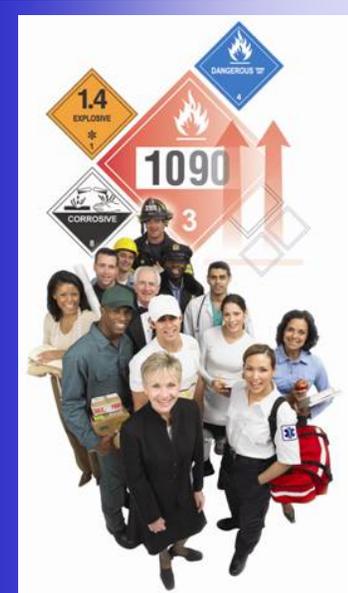
Additional Requirements of Subpart D

- **Prohibited marking – §172-303**
- **Limited Quantities – §172.301**
- **Special Permits/Exemption – §172.301(c)**
 - DOT-SP
 - DOT-E
- **Authorized abbreviations – §172.308**
- **Class 7 (radioactive) – §172.310**
- **Liquid hazardous materials – §172.312**
 - Combination packagings 
- **ORM-D – §173.316**
- **Explosives – §172.320**
- **Infectious Substance – §172.323**



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Package Selection,
Marking, and
Labeling

Column 8A Excepted Packagings

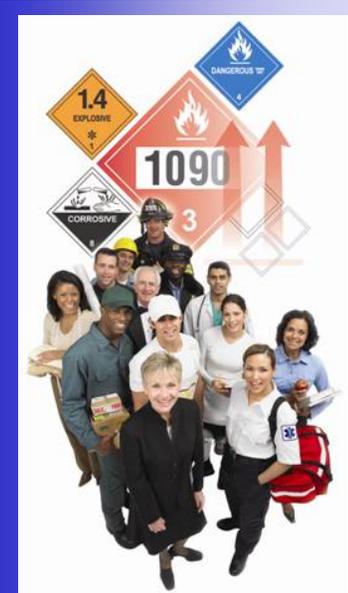


CONSUMER COMMODITIES



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Pipeline and
Hazardous Materials
Safety Administration



Package Selection,
Marking, and
Labeling

Display of Markings

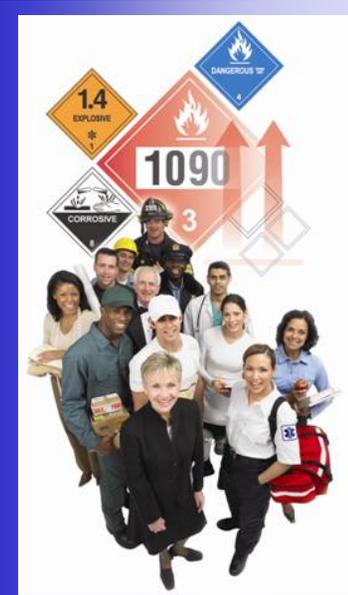
- **Durable**
- **English**
- **Affixed to surface or label, tag or sign**
- **Sharply contrasting background**
- **Un-obscured by labels or other**
- **Located away from other marking such as advertising**
- **Only authorized abbreviations**

§172.304



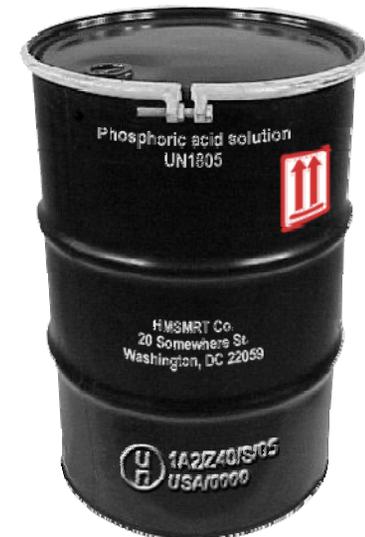
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Package Selection,
Marking, and
Labeling

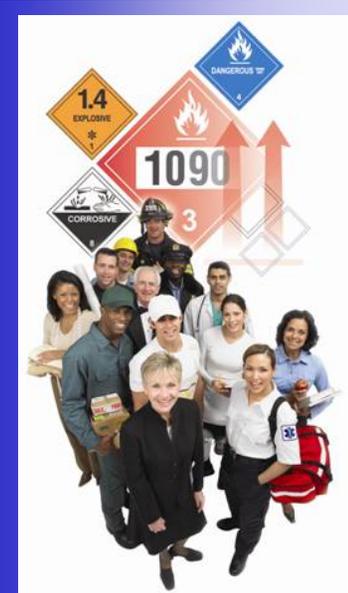
Display of Markings





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Package Selection,
Marking, and
Labeling

Hazard Labels

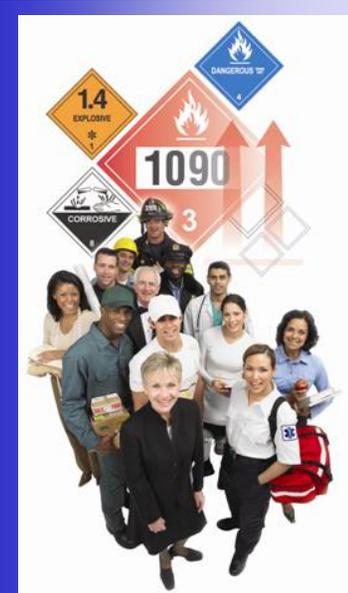
- **49 CFR Part 172 Subpart E Applicability**
 - Each person offering a hazardous material for transportation
 - Exceptions - §172.400a
- **Hazard Labels**
 - Primary Hazard Class
 - Subsidiary Risk
- **Other Labels**
 - Cargo Aircraft Only





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**Package Selection,
Marking, and
Labeling**

Selecting Hazard Labels

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	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,	150	201	243	1L	30L
				II	3	B52, IB3, T4, TP1, TP29	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

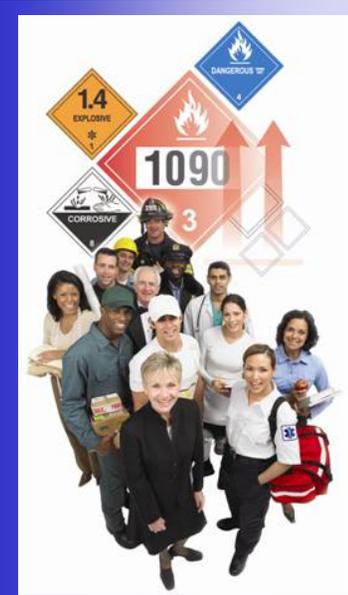
§172.101 Hazardous Materials Table Excerpts

§172.402



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Package Selection,
Marking, and
Labeling

Labeling for Subsidiary Risks



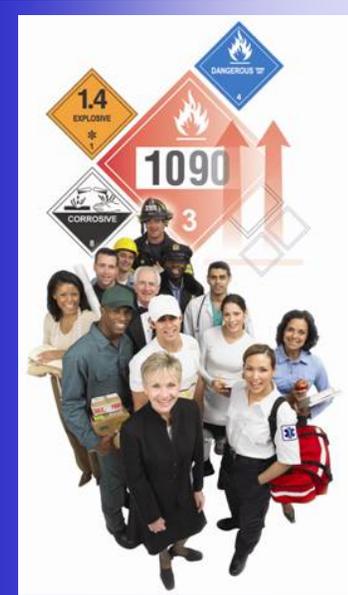
**Note: ALL primary AND subsidiary labels
MUST have the hazard class or division
number displayed on each label**

§172.402



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Hazardous Materials
Safety Administration



Package Selection,
Marking, and
Labeling

Label Restrictions

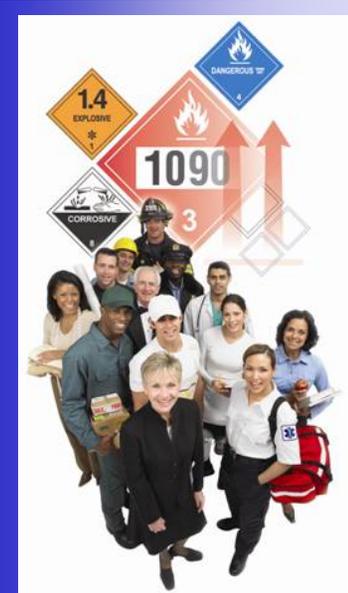
- **Package contains a hazardous material**
- **Label represents the hazardous material inside package**
- **Label meets specification requirements of HMR**

§172.401



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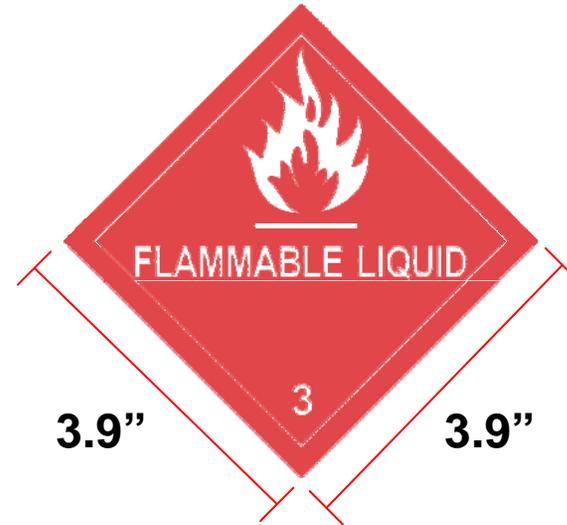


Package Selection,
Marking, and
Labeling

Label Specifications

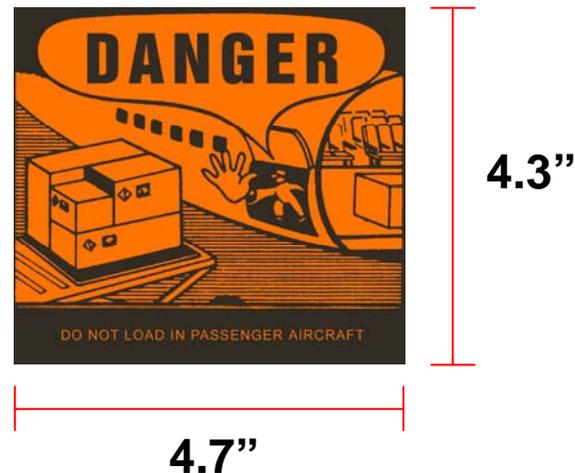
- **Hazard labels**

- Design
- Size
- Color



- **Cargo Aircraft Only**

- Rectangle
- Danger

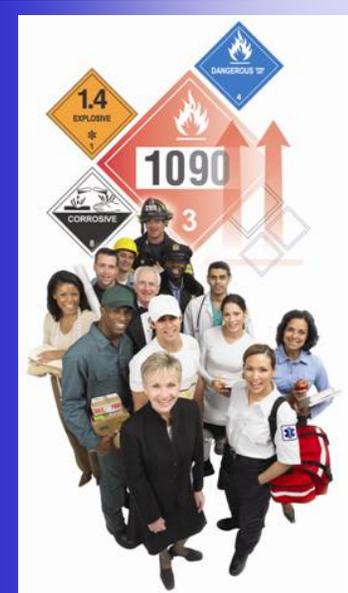


§172.407



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Package Selection,
Marking, and
Labeling

Placement of Labels

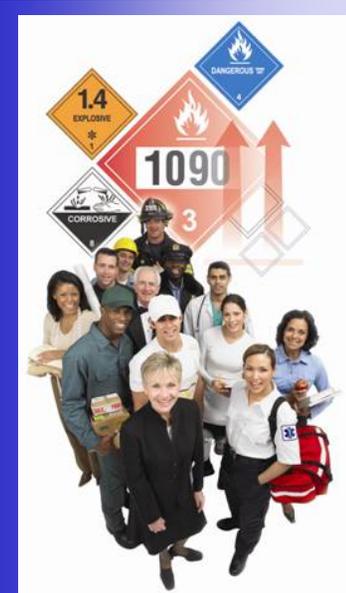
- **On package surface other than bottom**
- **Same surface near proper shipping name**
- **Affixed to tag**
- **Hazard labels**
 - **Primary and subsidiary label displayed next to each other**
 - **Within 6 inches**
- **Contrasting background**
- **Visible – not obscured**

§172.406



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Package Selection,
Marking, and
Labeling

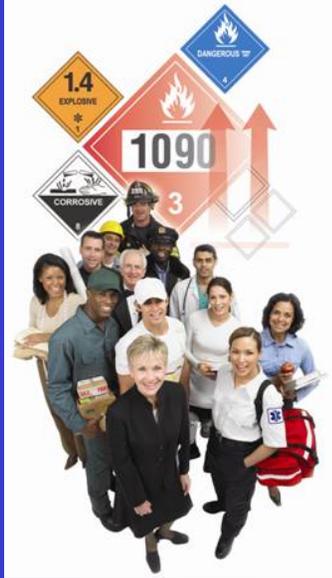
Completed Examples





U.S. Department
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Pipeline and
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Safety Administration



Package Selection,
Marking, and
Labeling

Where to Find More Information . . .

PHMSA Office of Hazardous Materials Safety - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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

PHMSA Pipeline and Hazardous Materials Safety Administration

HOME | PHMSA HOME | SITE MAP | CONTACT | SEARCH

Office of Hazardous Materials Safety

RULES AND REGULATIONS | SPECIAL PERMITS & APPROVALS | TRAINING INFORMATION | PUBLICATIONS & REPORTS | E-HAZMAT ON-LINE PURCHASES & PAYMENTS | RISK MANAGEMENT | ENFORCEMENT

- Who and Where We Are
- Got a Question?
- New Additions and Updates
- What's Hot in OHM
- News and Discussion
- Incidents
- HMT State and Local Education
- Hazard Registration
- Emergency Response Guidebook
- International Standards
- HMEP Grants
- Other Transportation Links
- NTSB Recommendations
- Available Documents and Files

[Hurricane Katrina Emergency Exemptions](#)

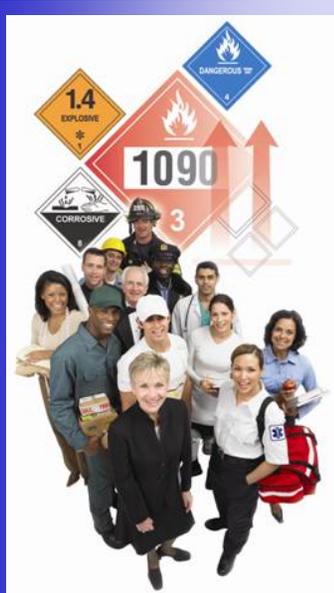
[Hurricane Rita Emergency Exemptions](#)

<http://hazmat.dot.gov>



U.S. Department
of Transportation

Pipeline and
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Package Selection,
Marking, and
Labeling

How Can You Reach Us?

Hazardous Materials

INFO-LINE

1-800-HMR49-22

(1-800-467-4922)

Hours of Operation: 9 am – 5 pm ET



DOT/PHMSA Photo

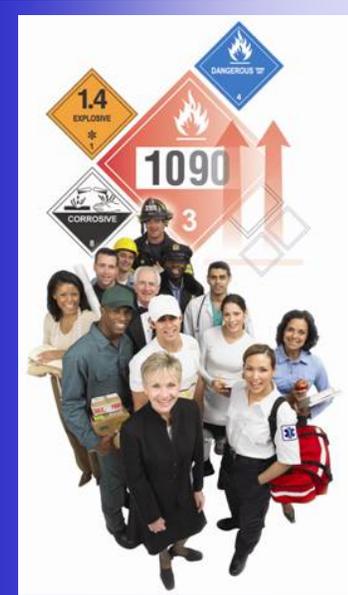
- Obtain answers to HMR questions
- Request copies of Federal Register, exemptions or training materials
- Report HMR violations
- Fax on Demand

E-mail: infocntr@dot.gov



U.S. Department
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**Pipeline and
Hazardous Materials
Safety Administration**



**Package Selection,
Marking, and
Labeling**

**Got A
Question?**