

HAZMAT SOLUTIONS

COMPLIANCE AND TRAINING



INTRODUCTION

HAZARDOUS MATERIALS AND CDL ENDORSEMENT REQUIREMENTS

Hazardous materials (**HAZMAT**)- substances that can be dangerous to

- People
- Property
- Environment.

These materials include- Explosives, Gases, Flammable liquids/solids and other substances requiring careful handling.

Due to the risks involved, transport of hazardous materials are **strictly regulated** by **FEDERAL, STATE** and **LOCAL** authorities.



HAZARDOUS MATERIALS REGULATIONS (HMR)

Outlines the rules for transporting hazardous materials.

Can be found in *Title 49, Part 171-180* of the **Code of Federal Regulations (CFR)**.

Additionally, Federal Security regulations require a **SECURITY THREAT ASSESSMENT** for those applying for a **HAZMAT ENDORSEMENT** on their **COMMERCIAL DRIVERS LICENSE (CDL)**

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HAZMAT ENDORSEMENT REQUIREMENTS

To legally transport hazardous materials that require warning signs (placards) drivers must have a CDL with a HAZMAT Endorsement.

To obtain this endorsement drivers must:

- Pass written test on hazardous materials regulations
- Successfully complete **FEDERAL SECURITY THREAT ASSESSMENT** (incl. Background check & fingerprinting)
- Meet citizenship/legal residency requirements
- Pay required fees for testing and security clearance.

ONGOING TRAINING AND RECERTIFICATION

Drivers transporting hazardous materials must undergo **regular training & testing**:

- Employers **MUST** provide **HAZARDOUS MATERIALS TRAINING** to employees & maintain records of this training.
- **HAZMAT** training **MUST** be completed **at least once every 3 years**.
- Drivers handling **RADIOACTIVE MATERIALS** must carry training certificate dated within the last 2 years.
- **Some states/local areas** may require **special permits/route restrictions** for transporting hazardous materials.

RENEWING A HAZMAT ENDORSEMENT

To renew a CDL with a HAZMAT ENDORSEMENT, drivers **MUST**:

- **Pass HAZMAT knowledge test** again before every CDL renewal
- Maintain **VALID SECURITY THREAT ASSESSMENT**
- Complete required **background check & fingerprinting**.
- Submit **renewal application** and pay **ANY** applicable fees.

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INTENT OF THE REGULATIONS

Transporting hazardous materials comes with risks. Regulations are in place to **protect you, those around you, and the environment**. These rules cover how hazardous materials should be packaged, loaded, transported, and unloaded safely.

- Contain the Material
- Communicate the risk
- Ensure safe Drivers & Equipment

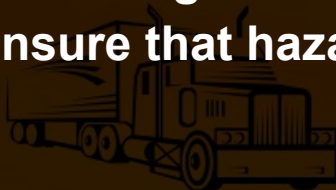


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CONTAINING THE MATERIAL

To **prevent leaks**, spills, or accidents, hazardous materials **MUST** be **properly contained during transport**. Regulations require shippers to use approved packaging and secure loading methods to keep materials safe. These containment rules help ensure that hazardous substances do not escape and cause harm.



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COMMUNICATING THE RISK

To keep everyone informed of the dangers, shippers must clearly label hazardous materials.

The **law requires** them to:

- Attach warning labels to packages.
- Provide proper shipping papers that describe the material being transported.
- Include emergency response information in case of an accident or spill.
- Use placards (large warning signs) on vehicles carrying hazardous loads.

These steps alert drivers, emergency responders, and the public to potential dangers, ensuring that hazardous materials are handled with the right precautions.

ENSURING SAFE DRIVERS & EQUIPMENT

Drivers who transport hazardous materials must be properly trained and licensed. To get a HAZMAT endorsement on a Commercial Driver's License (CDL), **drivers must pass a written test covering:**

- How to identify hazardous materials.
- The correct way to load and secure shipments.
- How to place and display placards on their vehicle.
- The safest way to transport hazardous materials.

Following these rules is crucial. Cutting corners or ignoring safety guidelines can lead to serious accidents, fines, and even jail time.

Before and during each trip, inspect your vehicle to make sure it is in safe working condition.

Law enforcement officers may stop and check:

- Your **shipping papers** to **verify** what you are transporting.
- Your **vehicle's placards** to ensure proper hazard communication.
- Your **CDL endorsement** to confirm you are qualified to transport hazardous materials.
- **Your knowledge** of hazardous materials regulations.

Following these safety steps will help you protect yourself and others while ensuring compliance with hazmat transportation laws.

WHO DOES WHAT?

Transporting hazardous materials involves **multiple parties**, each with specific **responsibilities** to **ensure safety, compliance, and proper handling**.

These parties include:

- The Shipper
- Carrier
- Driver



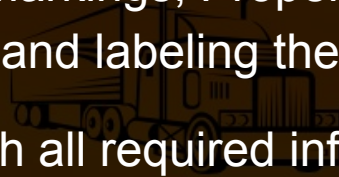
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THE SHIPPER

The shipper is responsible for preparing hazardous materials for transportation. This includes:

- ✓ Determining the correct classification of the material using hazmat regulations, including: Proper shipping name, Hazard class, Identification number, Correct packaging, Required labels and markings, Proper placards
- ✓ Properly packaging, marking, and labeling the shipment.
- ✓ Preparing shipping papers with all required information.
- ✓ Providing emergency response information for safety.
- ✓ Supplying placards when necessary.
- ✓ Certifying on the shipping papers that the shipment meets all regulations (unless cargo tanks are supplied by the driver or employer).



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THE CARRIER

The carrier is responsible for transporting hazardous materials from the shipper to their destination safely and in compliance with regulations. Their **responsibilities** include:

- ✓ Checking the shipment before transport to ensure:
 - The shipper has properly identified, marked, and labeled the materials.
 - The shipment is packaged correctly and meets all regulatory requirements.
- ✓ Refusing any shipment that does not meet regulations.
- ✓ Reporting any accidents or incidents involving hazardous materials to the appropriate government agencies.

THE DRIVER

The driver plays a key role in safely transporting hazardous materials while following all legal and safety requirements. Their **responsibilities** include:

- ✓ **Verifying** that the shipper has properly identified, marked & labeled the hazardous materials.
- ✓ **Refusing** to accept any **leaking packages** or improperly prepared shipments.
- ✓ Properly **placarding** the vehicle when required.
- ✓ **Transporting** the shipment safely & without unnecessary delays.
- ✓ Following all special regulations related to hazardous materials transportation.
- ✓ Keeping shipping papers & emergency response information in the correct location for easy access in case of an emergency or inspection.

By working together, the shipper, carrier & driver help ensure hazardous materials are transported safely, legally, and efficiently.

COMMUNICATION RULES

Transporting hazardous materials requires clear communication to ensure safety. Special words and phrases are used in hazmat regulations, and some may have different meanings than in everyday use.

Understanding these terms is important for passing your test and for handling hazardous materials safely.

The meanings of other important words are in the glossary at the end of this course.



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Hazard Classes

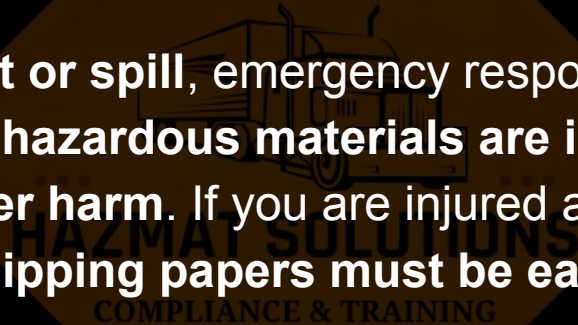
A hazardous material's hazard class defines the type of risk it poses. There are nine different hazard classes, each covering specific types of dangerous substances. The table below outlines these classes and examples.

HAZARDOUS MATERIALS CLASSIFICATION TABLE			
CLASS	DIVISION	HAZARD TYPE	EXAMPLES
1	1.1	Mass Explosives	Dynamite
	1.2	Projection Hazard	Ammunition, Flares
	1.3	Mass Fire Hazard	Display Fireworks
	1.4	Minor Explosive Hazard	Small Arms Ammunition
	1.5	Very Insensitive Explosives	Blasting Agents
	1.6	Extremely Insensitive Explosives	Detonating Devices
2	2.1	Flammable Gases	Propane
	2.2	Non-Flammable Gases	Helium
	2.3	Toxic Gases	Compressed Fluorine
3		Flammable Liquids	Gasoline
4	4.1	Flammable Solids	Wetted Ammonium Picrate
	4.2	Spontaneously Combustible	White Phosphorus
	4.3	Dangerous When Wet	Sodium
5	5.1	Oxidizers	Ammonium Nitrate
	5.2	Organic Peroxides	Organic Peroxide Type B
6	6.1	Toxic Materials	Potassium Cyanide
	6.2	Infectious Substances	Anthrax Virus
7		Radioactive Materials	Uranium
8		Corrosives	Battery Acid
9		Miscellaneous Hazards	Polychlorinated Biphenyls (PCBs)
None		ORM-D (Other regulated Material - Domestic)	Food Flavorings, Medicines
None		Combustible Liquids	Fuel Oil

Shipping Papers & Hazard Communication

A **shipping paper** is a document that **describes the hazardous materials** being **transported**. Examples include **shipping orders, bills of lading, and manifests**.

In the **event of an accident or spill**, emergency responders like firefighters and police **need to know what hazardous materials are involved** so they can **act quickly and prevent further harm**. If you are injured and cannot communicate, the hazardous materials **shipping papers must be easy to find**.



To ensure proper communication, the regulations require:

- ✓ Shippers must correctly describe hazardous materials on the shipping papers and include an emergency response phone number.
- ✓ Carriers and drivers must keep hazardous materials shipping papers easily accessible by:
 - Placing tabs on hazardous materials shipping papers or keeping them on top of other papers.
 - Keeping emergency response information with the shipping papers.
- ✓ Drivers must store hazardous materials shipping papers in a safe and visible location:
 - In a pouch on the driver's door, OR
 - In clear view within easy reach while the seatbelt is fastened, OR
 - On the driver's seat when out of the vehicle.

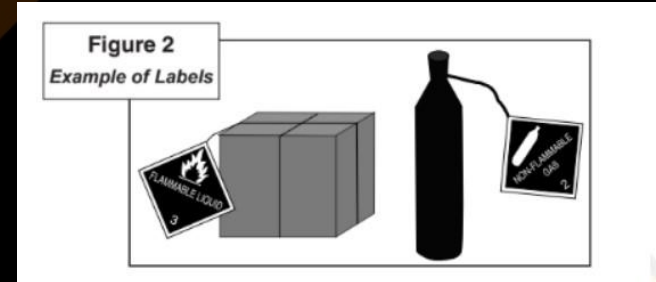
Following these communication rules helps ensure that hazardous materials are handled safely and efficiently, reducing risks for drivers, responders, and the public.

Package Labels

Shippers are required to place diamond-shaped hazard warning labels on most packages containing hazardous materials. These labels help identify the type of hazard the material presents, ensuring safe handling and transportation.

If a diamond-shaped label cannot fit directly on the package, the shipper must attach it to a tag that is securely fastened to the package. For example, compressed gas cylinders that do not have a flat surface for a label will have tags or decals instead.

These labels provide important safety information for drivers, emergency responders, and anyone handling the package.



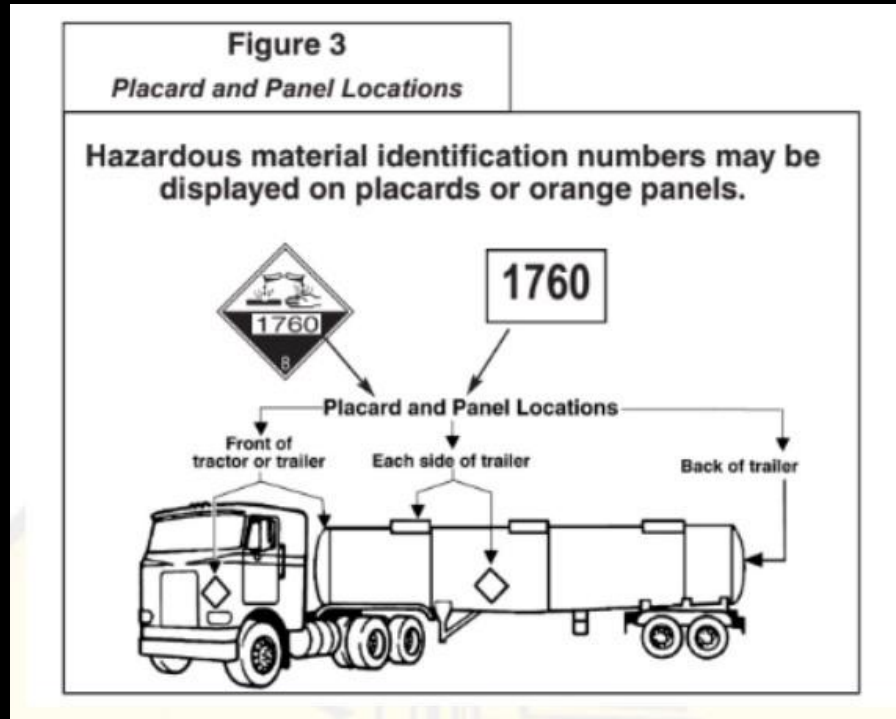
Lists of Regulated Products & Placards

Placards are warning signs placed on the outside of a vehicle to indicate that it is carrying hazardous materials. These signs **help emergency responders, law enforcement & the public quickly identify potential dangers.**

Placard Requirements:

- ✓ A placarded vehicle must have at least **four identical placards**, positioned on:
 - **The front**
 - **The rear**
 - **Both sides**
- ✓ Placards must be **readable from all four directions** to ensure clear visibility.
- ✓ Placards are **diamond-shaped** (square-on-point) and must measure **10 ¾ inches (273 mm) square**.
- ✓ Cargo tanks and bulk packaging must also display the identification (I.D.) number of the hazardous material they carry. This can be displayed on:
 - **Placards**
 - **Orange panels**
 - **White square-on-point markings** (same size as placards)

Proper placarding and labeling help ensure that hazardous materials are transported safely and in compliance with regulations.



When transporting hazardous materials, shippers, carriers, and drivers must check three important lists in the Hazardous Materials Regulations to determine if a material is classified as hazardous. Some materials appear on all three lists, while others may only be on one.

1] The Hazardous Materials Table (Section 172.101)

- This table provides the proper shipping name, hazard class, identification number, packaging requirements, and special instructions for hazardous materials.

2] List of Hazardous Substances and Reportable Quantities (Appendix A to Section 172.101)

- Identifies materials that require special reporting if they are released into the environment.

3] List of Marine Pollutants (Appendix B to Section 172.101)

- Includes materials that are considered hazardous to waterways and marine life

✓ Always check these lists before transporting any material to ensure you are following the correct regulations and safety measures.

Additionally, hazardous material identification numbers may be displayed on placards or orange panels for quick reference in case of an emergency.

Understanding the Hazardous Materials Table

The Hazardous Materials Table provides essential details about hazardous materials, including their proper shipping names, hazard classifications, identification numbers, packaging requirements, and labeling rules. Below is a breakdown of what each column in the table represents and how to use it.



Column 1: Shipping Mode and Special Information

This column provides symbols that indicate specific transportation requirements:

- (+) – The proper shipping name, hazard class, and packing group must be used even if the material doesn't meet the hazard class definition.
- (A) – The material is subject to hazardous materials regulations (HMR) only when transported by air (unless classified as a hazardous substance or hazardous waste).
- (W) – The material is subject to HMR only when transported by water (unless classified as a hazardous substance, hazardous waste, or marine pollutant).
- (D) – The shipping name is valid for domestic transportation but may not be correct for international transport.
- (I) – The shipping name is intended for international transport; a different name may be used for domestic transport.

49 CFR 172.101 Hazardous Materials Table									
Symbols	Hazardous Materials Description & Proper Shipping Names	Hazard Class or Division	Identification Numbers	PG	Label Codes	Special Provisions (172.102)	Packaging (173. ***)		
							Exceptions	Non Bulk	Bulk
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)
A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Column 2: Proper Shipping Name

- Lists the official shipping names of hazardous materials.
- Entries are in alphabetical order for easy reference.
- Names in regular type are official shipping names and must be used on shipping papers.
- Names in italics are not official shipping names and cannot be used for transportation.

49 CFR 172.101 Hazardous Materials Table									
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A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Column 3: Hazard Class or Division

Identifies the hazard class or division of the material.

- If a material is labeled “Forbidden”, it cannot be transported under any circumstances.
- Placards are determined based on:
 - ✓ The hazard class of the material.
 - ✓ The amount of the material being transported.
 - ✓ The total amount of all hazardous materials on the vehicle

49 CFR 172.101 Hazardous Materials Table									
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A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Column 4: Identification Number

- Each hazardous material has a UN (United Nations) or NA (North America) identification number.
- NA numbers are used for materials shipped within the U.S. and Canada only.
- The identification number must appear on:
 - ✓ The shipping papers.
 - ✓ The hazardous materials package.
 - ✓ Cargo tanks and bulk packaging.
- Emergency responders use this number to quickly identify hazardous materials in case of an accident.



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A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240


Column 5: Packing Group

- Identifies the degree of danger associated with a material.
- Hazardous materials are assigned to one of three packing groups:
 - Packing Group I – High danger
 - Packing Group II – Moderate danger
 - Packing Group III – Low danger

49 CFR 172.101 Hazardous Materials Table									
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A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Column 6: Required Labels

- Specifies which hazard warning labels must be placed on hazardous material packages.
- Some materials require multiple labels if they pose more than one hazard.
- If the table states NONE, no label is required.



Symbols	Hazardous Materials Description & Proper Shipping Names	Hazard Class or Division	Identification Numbers	PG	Label Codes	Special Provisions (172.102)	Packaging (173. ***)		
							Exceptions	Non Bulk	Bulk
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)
A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Column 7: Special Provisions

- Lists any special handling rules that apply to a material.
- If there is an entry in this column, refer to federal regulations for more details.

49 CFR 172.101 Hazardous Materials Table									
Symbols	Hazardous Materials Description & Proper Shipping Names	Hazard Class or Division	Identification Numbers	PG	Label Codes	Special Provisions (172.102)	Packaging (173. ***)		
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A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Column 8: Packaging Requirements

This column has three parts, showing:

- Packaging rules for shipments in non-bulk containers.
- Packaging rules for bulk shipments.
- Special packaging rules for air transportation.

49 CFR 172.101 Hazardous Materials Table									
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A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240

Why the Hazardous Materials Table is Important

Understanding how to use the Hazardous Materials Table is essential for safe and legal transportation. The information in this table helps shippers, carriers, and drivers:

- ✓ Identify hazardous materials correctly.
- ✓ Use proper packaging and labeling.
- ✓ Follow safety rules for different shipping methods.
- ✓ Ensure compliance with federal regulations.



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By using this table properly, you can reduce the risks associated with transporting hazardous materials and stay in compliance with the law

Appendix A to §172.101 The List of Hazardous Substances and Reportable Quantities

The Department of Transportation (DOT) and the Environmental Protection Agency (EPA) require reporting of spills involving hazardous substances. These substances are listed in the List of Hazardous Substances and Reportable Quantities (see Figure 5).

Appendix A, Table 1—Hazardous Substances Other Than Radionuclides	
Hazardous Substance	Reportable Quantity (RQ) pounds (kilograms)
Phenyl mercaptan @	100 (45.4)
Phenylmercury acetate	100 (45.4)
Phenylthiourea	100 (45.4)
Phorate	10 (4.54)
Phosgene	10 (4.54)
Phosphine	100 (45.4)
Phosphoric acid	5000 (2270)
Phosphoric acid, diethyl 4-nitrophenyl ester	100 (45.4)
Phosphoric acid, lead(2+) salt (2:3)	10 (4.54)
@ Indicates that the name was added by PHMSA because (1) the name is a synonym for a specific hazardous substance and (2) the name appears in the Hazardous Materials Table as a proper shipping name.	

Reportable Quantities (RQ)

- Column 2 of the List of Hazardous Substances shows the reportable quantity (RQ) for each material.
- If a hazardous substance is being transported in an amount equal to or greater than its reportable quantity in a single package, the shipper must:
 - ✓ Mark RQ on the shipping paper.
 - ✓ Mark RQ on the package.
- The letters "RQ" can be placed before or after the basic shipping description.
- If a spill occurs involving a reportable quantity, the driver or employer must report it to the proper authorities.

Appendix A, Table 1—Hazardous Substances Other Than Radionuclides	
Hazardous Substance	Reportable Quantity (RQ) pounds (kilograms)
Phenyl mercaptan ®	100 (45.4)
Phenylmercury acetate	100 (45.4)
Phenylthiourea	100 (45.4)
Phorate	10 (4.54)
Phosgene	10 (4.54)
Phosphine	100 (45.4)
Phosphoric acid	5000 (2270)
Phosphoric acid, diethyl 4-nitrophenyl ester	100 (45.4)
Phosphoric acid, lead(2+) salt (2:3)	10 (4.54)
® Indicates that the name was added by PHMSA because (1) the name is a synonym for a specific hazardous substance and (2) the name appears in the Hazardous Materials Table as a proper shipping name.	

Poison Inhalation Hazard (PIH) Requirements

If the words **"POISON INHALATION HAZARD"** appear on the shipping paper or package, special rules apply:

- ✓ The vehicle **must display "POISON INHALATION HAZARD"** placards.
- ✓ These **placards** must be used in **addition to the hazard class placard required** for the material.
- ✓ Even for small amounts, **both** the hazard class placard and the POISON INHALATION HAZARD placard **must be displayed**.

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By **following these rules**, you help ensure that hazardous substances are **properly** identified and that spills and hazards are reported **quickly** to prevent risks to health, safety, and the environment.

The Shipping Paper

A shipping paper is a document that **provides details** about a **hazardous materials shipment**. It contains **important information** needed for transportation, handling & emergency response.

What Must Be Included on a Shipping Paper?

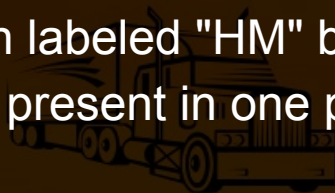
A shipping paper for hazardous materials **must** have the following:

- ✓ **Page Numbers** (if there are multiple pages):
 - The first page must indicate the total number of pages (e.g., "Page 1 of 4").
- ✓ **Proper Shipping Description** for each hazardous material.
- ✓ **Shipper's Certification:**
 - The shipper must sign the document to confirm that the shipment was prepared according to hazmat regulations.

Item Descriptions on the Shipping Paper

If a shipping paper includes both hazardous and non-hazardous materials, the hazardous materials must be clearly identified in one of the following ways:

- ✓ Listed first before non-hazardous items.
- ✓ Highlighted in a contrasting color.
- ✓ Marked with an "X" in a column labeled "HM" before the shipping name.
- ✓ If a reportable quantity (RQ) is present in one package, "RQ" may be used instead of "X".



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Basic Description of Hazardous Materials

The basic description of a hazardous material must be listed in the following order:

- ① Identification Number (UN/NA Number)
- ② Proper Shipping Name
- ③ Hazard Class or Division
- ④ Packing Group (PG) (if applicable, displayed in Roman numerals)

Example: UN1203, Gasoline, 3, PG II



Important Rules for the Description:

- The shipping name, hazard class, and ID number cannot be abbreviated, unless specifically allowed by regulations.
- The description must also include:
 - The total quantity and unit of measure (e.g., gallons, pounds, liters).
 - "RQ" if a reportable quantity is included.
 - If "RQ" is listed, the name of the hazardous substance must also be included.
 - If a material has a generic shipping name (such as "n.o.s." or "not otherwise specified"), the technical name of the hazardous substance must be provided.

Why the Shipping Paper is Important

The shipping paper serves as an official record of the hazardous materials being transported. It ensures:

- ✓ Compliance with hazmat regulations
- ✓ Safety in handling and transport
- ✓ Quick identification in case of an emergency

Following these guidelines ensures that hazardous materials are properly documented, transported safely, and handled correctly during transit.



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When transporting hazardous materials, shipping papers provide essential details for safety, compliance, and emergency response.

These documents must be accurate, complete, and easily accessible in case of an incident.

The diagram shows a shipping paper form with several callout boxes pointing to specific fields:

- "RQ" means that this is a reportable quantity (points to the RQ field in the table).
- Proper shipping name from Column 2 of the Hazardous Materials Table (points to the DESCRIPTION field in the table).
- ID Number from Column 4 of the Hazardous Materials Table (points to the HM field in the table).
- Hazard Class from Column 3 of the Table (points to the DESCRIPTION field in the table).

SHIPPING PAPER Page 1 of 1

TO: Wafers R US
88 Valley Street
Silicon Junction, CA

FROM: Essex Corporation
5775 Dawson Avenue
Coletta, CA 93117

QTY	HM	DESCRIPTION	WEIGHT
1 cyl	RQ	UN1076, Phosgene, 2.3, Poison, Inhalation Hazard, Zone A	25 lbs.

This is to certify that the above named materials are properly classified, described, packaged, marked, labeled and placarded and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Shipper: Essex Corp. Carrier: Knuckle Bros.
Per: Shultz Per:
Date: 6/17/88 Date:

SPECIAL INSTRUCTIONS:
24 hour Emergency Contact, Ed Shultz, 1-800-555-5555

Figure 6 - Example of Shipping Paper

Emergency Response Information

Emergency Response Telephone Number

- The shipper is responsible for providing a 24-hour emergency response telephone number on the shipping paper.
- This number allows emergency responders to quickly obtain information about the hazardous materials involved in a spill, fire, or other incident.

Emergency Response Information for Motor Carriers

- Shippers must also provide emergency response details for each hazardous material being shipped.
- This information must be usable away from the vehicle and must include:
 - Shipping name of the hazardous material
 - Health risks
 - Fire and explosion hazards
 - Emergency procedures for spills, fires, and leaks

Where to Find Emergency Information

- **The information can be on:**
 - The shipping paper
 - Another document containing the proper shipping name and technical name
 - A reference guide like the Emergency Response Guidebook (ERG)
- Motor carriers should carry an ERG in every vehicle transporting hazardous materials.
- In an emergency, the driver must provide this information to federal, state, or local authorities.

How to Properly Document Hazardous Materials on Shipping Papers

✓ Basic Description Order

Hazardous materials must be listed in this exact order on the shipping paper:

- 1 Identification Number (UN/NA Number)
- 2 Proper Shipping Name
- 3 Hazard Class or Division
- 4 Packing Group (PG) (if applicable, displayed in Roman numerals)

Example: UN1203, Gasoline, 3, PG II

✓ Special Documentation Rules

- **If a shipment includes both hazardous and non-hazardous materials, the hazardous materials must be clearly identified by:**

- Being listed first
- Highlighted in a contrasting color
- Marked with an "X" or "RQ" in the hazardous materials (HM) column

✓ Hazardous Waste Documentation

- For hazardous waste shipments, the word "WASTE" must be placed before the proper shipping name on the shipping paper.
- Example: UN1090, PG II, Waste Acetone, 3.

✓ Non-Hazardous Materials

- Non-hazardous materials must NOT be listed using a hazard class or ID number to avoid confusion.

Shipper's Certification

When a shipper packages hazardous materials, they must certify that the package meets all federal regulations.

- The signed certification appears on the original shipping paper.
- Exceptions: The shipper does not need to sign if:
 - They are a private carrier transporting their own product.
 - The package is provided by the carrier (e.g., cargo tanks).
- Drivers should trust the shipper's certification unless the package is visibly unsafe or does not comply with regulations.



Some companies may have additional rules for accepting hazardous shipments — always follow your employer's policies.

Package Markings and Labels

✓ Shippers must clearly mark hazardous material packages with:

- The name and address of the shipper or consignee.
- The hazardous material's shipping name and ID number (matching the shipping paper).
- Required labels that identify the material's hazard class.

✓ Additional Required Markings

- RQ (Reportable Quantity) or INHALATION HAZARD if required.
- Orientation arrows on liquid containers to indicate the correct upright position.
- Multiple labels placed close together, near the proper shipping name if a material has more than one hazard.

Recognizing Hazardous Materials



How to Identify a Hazmat Shipment:

- **Check the shipping paper for:**
 - A proper shipping name, hazard class, and ID number.
 - A highlighted entry or an "X" or "RQ" in the hazmat column.
- **Look for clues that hazardous materials are present:**
 - Type of business (paint dealer, chemical supplier, explosives company, etc.).
 - Diamond-shaped hazard labels or placards at the shipping location.
 - Cylinders, drums, or bulk containers, which are common for hazardous shipments.
 - Hazard class labels, proper shipping names, or ID numbers on packages.
 - Special handling instructions that indicate hazardous materials.

Hazardous Waste Manifest

When transporting hazardous waste, drivers must:

- ✓ Sign by hand and carry a Uniform Hazardous Waste Manifest.
 - ✓ Ensure the manifest includes:
 - The shipper's name and EPA registration number.
 - The names and registration numbers of carriers and the destination facility.
 - ✓ Each carrier must sign by hand before transporting the waste.
 - ✓ Treat the manifest as a shipping paper while transporting hazardous waste. ✓
- Only deliver hazardous waste to a registered carrier or approved disposal/treatment facility.
- ✓ Keep a signed copy of the manifest after delivery as proof of proper transport.

Placarding Requirements



Placards must be attached before driving a vehicle carrying hazardous materials.

- A vehicle with missing or incorrect placards may only be moved in an emergency to protect life or property.




Placard Placement

- Placards must be displayed on:
 - Both sides of the vehicle
 - Both ends of the vehicle
- Each placard must be:
 - Easily visible from the direction it faces.
 - Placed upright, so words and numbers are level and read from left to right.
 - At least 3 inches (76.2 mm) away from any other markings.
 - Free of obstructions (not covered by ladders, tarps, or equipment).
 - Clean and undamaged, so the color and message remain clear.

✓ How to Determine the Correct Placards

To choose the right placards, drivers must know:

- 1 The hazard class of the materials being transported.
- 2 The total amount of each hazardous material.
- 3 The total weight of all hazardous materials on the vehicle.

 Before driving, verify that the shipper provided the correct placards and that the packages have proper labels.

 If you are unsure about the material, ask the shipper or contact your company.

Placard Tables and When to Use Placards

Hazardous materials require placards to warn others about the dangers of the cargo. There are two placard tables—Table 1 and Table 2—that determine when placards are required.

Table 1: Always Requires Placards

Materials listed in Table 1 must be placarded regardless of the quantity being transported. If you are carrying even one package, you must display the correct placard.

PLACARD TABLE 1 - ANY AMOUNT	
IF YOUR VEHICLE CONTAINS ANY AMOUNT OF...	PLACARD AS...
1.1	EXPLOSIVE 1.1
1.2	EXPLOSIVE 1.2
1.3	EXPLOSIVE 1.3
2.3	POISON GAS
4.3	DANGEROUS WHEN WET
6.1 (PG I, inhalation hazard only)	POISON INHALATION HAZARD PLACARD
7 (Radioactive Yellow III label only)	RADIOACTIVE

Table 2: Placarding Based on Quantity

For Table 2 materials, placards are required only when transporting 1,001 lbs. (454 kg) or more, including the packaging.

- ◆ To determine if placards are required for Table 2 materials:

- ✓ Add up the total weight of all Table 2 hazardous materials from all shipping papers.
- ✓ If the total weight is 1,001 lbs. (454 kg) or more, placards are required.

✓ Using the "DANGEROUS" Placard Instead of Individual Placards

If you are transporting 1,001 lbs. (454 kg) or more of two or more different Table 2 hazard classes, you may use DANGEROUS placards instead of separate placards, as long as:

- No single hazard class material exceeds 5,000 lbs. (2,268 kg) in one location.
- If 5,000 lbs. (2,268 kg) or more of any one hazard class is loaded at a single location, you must use the specific placard for that material

PLACARD TABLE 2 - 1.001 LBS OR MORE

CATEGORY OF MATERIAL <i>(Hazard class or division number and additional description, as appropriate)</i>	PLACARD NAME
1.4	EXPLOSIVES 1.4
1.5	EXPLOSIVES 1.5
1.6	EXPLOSIVES 1.6
2.1	FLAMMABLE GAS
2.2	NON-FLAMMABLE GAS
3	FLAMMABLE
Combustible liquid	COMBUSTIBLE *
4.1	FLAMMABLE SOLID
4.2	SPONTANEOUSLY COMBUSTIBLE
5.1	OXIDIZER
5.2	ORGANIC PEROXIDE
6.1 (PG I or II, other than PG I Inhalation hazard)	POISON
6.1 (PG III)	KEEP AWAY FROM FOOD
6.2	(NONE)
8	CORROSIVE
9	CLASS 9**
ORM-D	(NONE)

* FLAMMABLE placard may be used in place of COMBUSTIBLE placard on a cargo tank or portable tank.

** Class 9 placard is not required for domestic transportation.

Special Placarding Rules

✓ **Poison Inhalation Hazard**

- If the words “INHALATION HAZARD” appear on the shipping paper or package, you must display a POISON INHALATION HAZARD placard in addition to any other required placards.

✓ **Exceptions for Certain Placards**

- If a vehicle is carrying Division 1.1 or 1.2 explosives and is already placarded with EXPLOSIVES 1.1 or 1.2 placards, you do not need to also display:

- EXPLOSIVES 1.5
- OXIDIZER
- DANGEROUS

- If a vehicle is displaying a Division 2.1 FLAMMABLE GAS placard, you do not need to display a Division 2.2 NON-FLAMMABLE GAS placard.
- If carrying oxygen, you may display a Division 2.2 OXYGEN placard instead of a NON-FLAMMABLE GAS placard.

Placard Display Requirements

- ◆ Placards that identify the primary hazard class must display the hazard class or division number in the lower corner of the placard.
- ◆ If a placard is used to identify a secondary hazard class, it must not display a hazard class or division number.
- ◆ Optional Placarding:
 - Placards may be displayed for hazardous materials even if not required, as long as the placard correctly identifies the hazard of the material being transported.

Following these rules ensures that hazardous materials are properly labeled and that emergency responders and other drivers can quickly recognize the risks associated with the cargo.

LOADING AND UNLOADING HAZARDOUS MATERIALS

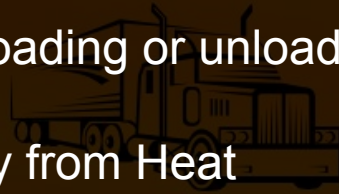
Proper loading and unloading procedures are essential for the safe transportation of hazardous materials. Failing to follow these rules can lead to accidents, spills, fires, and serious health risks.



HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

GENERAL LOADING REQUIREMENTS

- ✓ **Protect Hazardous Material Containers**
 - Avoid damaging containers when loading or unloading.
 - Do not use hooks or tools that could puncture, tear, or weaken packaging.
- ✓ **Secure the Vehicle**
 - Set the parking brake before loading or unloading to prevent movement.
- ✓ **Keep Hazardous Materials Away from Heat**
 - Many hazardous materials become more dangerous when exposed to heat.
 - Always load away from heat sources.
- ✓ **Check for Leaks or Damage**
 - Leaking containers must never be transported.



HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

GENERAL LOADING REQUIREMENTS

✓ Bracing Requirements

- If you see leaks or damaged packages, do not load them. Leaking hazardous materials can endanger you, your vehicle, and others.
- Certain hazardous materials must be braced to prevent movement during transport, including:
 - Class 1 (Explosives)
 - Class 2 (Gases)
 - Class 3 (Flammable Liquids)
 - Class 4 (Flammable Solids)
 - Class 5 (Oxidizers)
 - Class 8 (Corrosives)
 - Division 6.1 (Poisons)



HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

NO SMOKING WHILE LOADING AND UNLOADING

Smoking is strictly prohibited around the following hazardous materials:

- Class 1 - Explosives
- Class 2.1 - Flammable Gases
- Class 3 - Flammable Liquids
- Class 4 - Flammable Solids
- Class 5 - Oxidizers

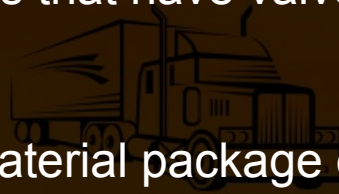


HAZMAT SOLUTIONS

Keep all sources of fire, sparks, and flames away from hazardous materials.

SECURING CARGO AGAINST MOVEMENT

- Containers must be properly secured to prevent falling, sliding, or bouncing during transportation.
- Be extra careful with containers that have valves or fittings, as they can be damaged easily.
- Do not open any hazardous material package during the trip.
- Never transfer hazardous materials from one package to another while in transit (except when emptying a cargo tank).



HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

CARGO HEATER RULES

Heaters create a fire hazard and must not be used when transporting certain materials

- Class 1 - Explosives
- Class 3 - Flammable Liquids
- Division 2.1 - Flammable Gases



HAZMAT SOLUTIONS

COMPLIANCE & TRAINING

⚠ Do not load these materials in cargo spaces with heaters unless you are familiar with

USE OF CLOSED CARGO SPACES

Certain hazardous materials must be transported in a closed cargo space and cannot overhang or be carried on a tailgate, including:

- Class 1 - Explosives
- Class 4 - Flammable Solids
- Class 5 - Oxidizers



Exceptions: If the packages are fire and water-resistant, or if they are covered with a fire- and water-resistant tarp, they may be transported in an open space.

PRECAUTIONS FOR SPECIFIC HAZARDS

EXPLOSIVES (CLASS 1)

- ✓ Turn off the engine before loading or unloading explosives.
- ✓ Inspect the cargo space for sharp objects (e.g., bolts, nails, broken panels) that could damage the explosives.
- ✓ Disable and drain fuel from cargo heaters before loading.
- ✓ Use a non-metallic or non-ferrous floor lining for Division 1.1, 1.2, or 1.3 (Class A or B) explosives.
- ✓ Do not use hooks, metal tools, or drop packages—explosives must be handled with extreme care.

HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

Transferring Explosives

- Do not transfer explosives from one vehicle to another on a public road unless in an emergency.
- If a transfer is necessary, set up red warning reflectors, flags, or electric lanterns to alert others.
- Never transport damaged explosives or packages showing dampness or oily stains.

Prohibited Vehicle Combinations

- Do not transport Division 1.1 or 1.2 explosives in a triples or combination vehicle if:

The other vehicle contains hazardous materials like:

- Initiating explosives (Division 1.1A)
- Class 7 (Radioactive) materials labeled "Yellow III"
- Division 2.3 (Poison Gas) or Division 6.1 (Poisons)
- Hazardous materials in a portable tank or DOT 106A/110A tank



HAZMAT SOLUTIONS

COMPLIANCE & TRAINING

CORROSIVE MATERIALS (CLASS 8)

- ✓ Hand-loading corrosive liquids: Load breakable containers one by one, right-side up, and onto a flat surface.
- ✓ Stacking: Only stack containers if the lower tiers can support the weight.
- ✓ Nitric Acid: Never load it above other products or more than two high.
- ✓ Battery Storage: Load charged batteries upright, ensuring they won't spill or short-circuit.



HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

Do not load corrosives near or above:

- Division 1.4 - Explosives C
- Class 4.1 - Flammable Solids
- Class 5.1 - Oxidizers
- Division 2.3, Zone B - Poison Gases

Do not load corrosives with:

- Division 1.1 or 1.2 - Explosives A
- Division 2.3, Zone A - Poison Gases
- Division 4.2 - Spontaneously Combustible Materials
- Division 6.1, PGI, Zone A - Poison Liquids



HATMAT SOLUTIONS
COMPLIANCE & TRAINING

COMPRESSED GAS (CLASS 2)

- ◆ If the vehicle does not have racks for holding cylinders, the cargo space must be flat
- ◆ Cylinders must be:
 - Upright and secured If the vehicle does not have racks for holding cylinders, the cargo space must be flat.
 - Laying down but properly braced
 - Stored in racks attached to the vehicle
 - Placed in boxes that prevent rolling

Never transport containers with interconnections.

Do not place POISON or POISON GAS materials in the driver's cab, sleeper, or near food products

RADIOACTIVE MATERIALS (CLASS 7)

Special Handling Rules for Radioactive Shipments

- Some packages of Class 7 (Radioactive) materials are marked with a Transport Index (TI), which measures radiation levels.
- The shipper must label packages as Radioactive II or Radioactive III and include the transport index on the label.

✓ Transport Index Limits

- Radiation can pass through nearby packages, so the number of radioactive packages that can be transported together is controlled.
- The total transport index of all packages in one vehicle must not exceed 50.



HAZMAT SOLUTIONS

✓ Distance Rules for Radioactive Packages

- Class 7 packages must be kept away from people, animals, and unexposed film.
 - Example: A package with a Transport Index of 1.1 must be kept at least 2 feet away from people and cargo space walls.
 - Appendix A outlines the required separation distances based on transport index levels.
- Mixed Loads If you are unsure about handling radioactive shipments, consult the shipper or your employer for guidance.



COMPLIANCE & TRAINING

MIXED LOADS

Some hazardous materials cannot be transported together.

- The Segregation and Separation Chart in federal regulations provides a list of incompatible materials.
 - Figure 7 outlines common examples of materials that must be kept apart.
- ✓ Before loading, always verify that hazardous materials are compatible with each other to prevent dangerous reactions.

Figure 7 - Prohibited Loading Combinations	
DO NOT LOAD...	IN THE SAME VEHICLE WITH...
Division 6.1 or 2.3 (POISON or poison gas labeled material)	Animal or human food unless the poison package is overpacked in an approved way. Foodstuffs are anything you swallow. However, mouthwash, toothpaste, and skin creams are not foodstuff.
Division 2.3 (poisonous) gas Zone A or Division 6.1 liquids, PGI, Zone A	Division 5.1 (oxidizers), Class 3 (flammable liquid), Class 8 (corrosive liquids), Division 5.2 (organic peroxides), Division 1.1., 1.2, 1.3 (Class A or B) explosives, Division 1.5 (blasting agents), Division 2.1 (Flammable gases), Class 4 (flammable solids).
Charged storage batteries	Division 1.1 (Class A Explosives)
(continued)	

Prohibited Loading Combinations (continued)	
Division 1.4 (Detonating primers)	Any other explosives unless in authorized containers or packagings.
Division 6.1 (Cyanides or cyanide mixtures)	Acids, corrosive materials, or other acidic materials which could release hydrocyanic acid from cyanides. For example: Cyanides, Inorganic, n.o.s. Silver Cyanide Sodium Cyanide
Nitric acid (Class 8)	Other materials unless the nitric acid is not loaded above any other material and not more than two tiers high.

BULK PACKAGING

MARKING ,LOADING AND UNLOADING

Bulk packaging refers to large containers used to transport hazardous materials. Proper marking, loading, and unloading procedures help prevent spills, leaks, fires, and other hazards.



UNDERSTANDING BULK PACKAGING

◆ Cargo Tanks

- Permanently attached to the vehicle.
- Loaded and unloaded while still on the vehicle.

◆ Portable Tanks

- Not permanently attached to a vehicle.
- Loaded and unloaded while off the vehicle, then placed on a truck for transport.

◆ Common Cargo Tanks

- MC306 – Used for liquids.
- MC331 – Used for gases.



HAZMAT SOLUTIONS

COMPLIANCE & TRAINING

✓ ID Number Requirements

- Portable tanks, cargo tanks, and other bulk packaging (e.g., dump trucks) must display the hazardous material's ID number.
- The ID number is found in Column 4 of the Hazardous Materials Table
- It must be displayed using:
 - Black 100 mm (3.9 inch) numbers
 - On orange panels, placards, or a white diamond-shaped background (if no placard is required).



HAZMAT SOLUTIONS

CONTINUING TO IMPROVE

✓ Additional Markings

- Specification cargo tanks must display retest date markings.
- Portable tanks must show:
 - The lessee or owner's name.
 - The shipping name of the contents on two opposing sides.

✓ Letter Size for Shipping Name Markings

- Tanks larger than 1,000 gallons (3,785L): Letters must be at least 2 inches tall.
- Tanks smaller than 1,000 gallons (3,785L): Letters must be at least 1 inch tall.

HAZMAT SOLUTIONS

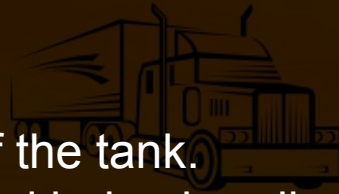
COMPLIANCE & TRAINING

Tank Loading Procedures

◆ Supervision During Loading/Unloading

A qualified person must be watching at all times when a cargo tank is being loaded or unloaded. This person must:

- ✓ Be alert.
- ✓ Have a clear view of the tank.
- ✓ Remain within 25 feet (7.6m) of the tank.
- ✓ Know the hazards of the material being handled.
- ✓ Know the emergency procedures.
- ✓ Be authorized and capable of moving the cargo tank if necessary.



HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

◆ **Manholes and Valves Must Be Closed**

- Before moving any tank with hazardous materials, all manholes and valves must be securely closed, even if there is only a small amount of material inside.
- This prevents leaks, spills, and environmental hazards.



HAZMAT SOLUTIONS

COMPLIANCE & TRAINING

Special Rules for Specific Hazardous Materials

Flammable Liquids (Class 3)

◆◆ Fire Prevention During Loading and Unloading

- Turn off the engine before loading or unloading flammable liquids.
- Only run the engine if it is needed to operate a pump.
- Properly ground the cargo tank before filling it through an open hole.
- Ground the tank before opening the filling hole and keep it grounded until the filling hole is closed.

HAZMAT SOLUTIONS

COMPLIANCE & TRAINING

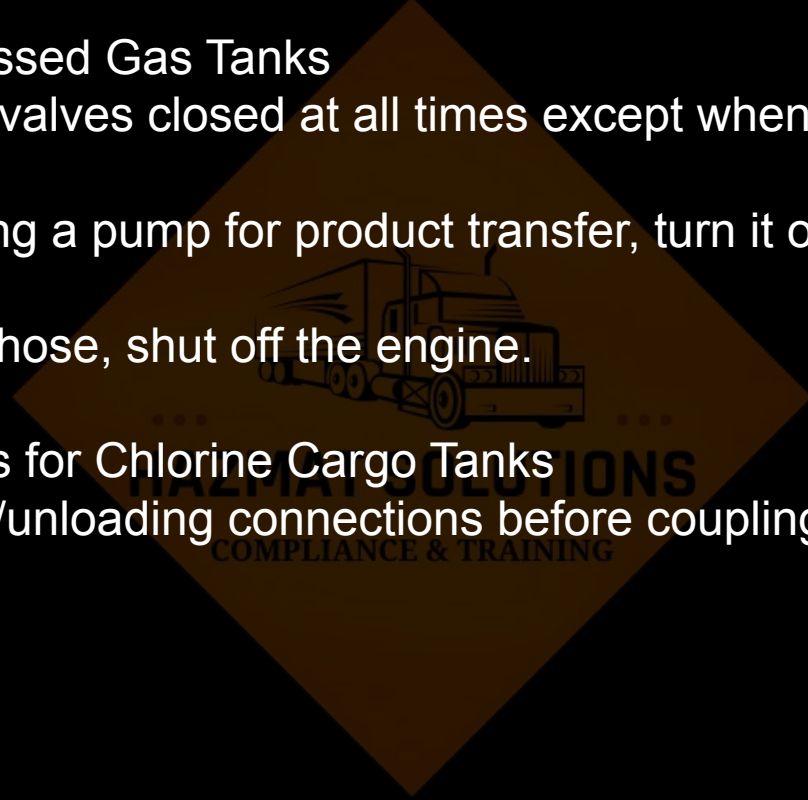
Compressed Gas (Class 2)

◆◆ Handling Compressed Gas Tanks

- Keep liquid discharge valves closed at all times except when actively loading or unloading.
- If your engine is running a pump for product transfer, turn it off immediately after transferring the material.
- Before unhooking the hose, shut off the engine.



◆◆ Safety Procedures for Chlorine Cargo Tanks

- Disconnect all loading/unloading connections before coupling, uncoupling, or moving a chlorine cargo tank.



Hazardous Materials Driving and Parking Rules

Transporting hazardous materials requires strict adherence to parking, driving, and safety regulations to protect people, property, and the environment.

 Never park within 5 feet (1.5m) of the traveled part of the road when carrying Division 1.1, 1.2, or 1.3 (Class A or B) explosives.  Do not park within 300 feet (91.4m) of: ✓ A bridge, tunnel, or building ✓ A place where people gather ✓ An open fire

 If you must park to perform job-related tasks, keep it as brief as possible

⊘ Do not park on private property unless the owner is aware of the hazard.

- ◆ A parked vehicle carrying explosives must always be watched.
- You can only leave the vehicle unattended if it is parked in a safe haven—a designated, secure location approved by local authorities.
- ◆ Someone else may watch the vehicle for you only if it is parked at:
 - ✓ The shipper's property
 - ✓ The carrier's property
 - ✓ The consignee's property

Parking Rules for Placarded Vehicles (Not Carrying Explosives)



You may park a placarded vehicle (that is not carrying explosives) within 5 feet (1.5m) of the road only if necessary for work and only for a short period.



Additional Parking Restrictions:

- ✓ Someone must always watch the vehicle when parked on a public roadway or shoulder.
- ✓ Never uncouple a trailer with hazardous materials and leave it unattended on a public street.
- ✓ Do not park within 300 feet (91.4m) of an open fire.

Attending Parked Vehicles

- ◆ **The person attending a placarded vehicle must:**
 - ✓ Be inside the vehicle, awake, and not in the sleeper berth, OR
 - ✓ Be within 100 feet (30.5m) of the vehicle and have a clear view of it.
 - ✓ Know the hazards of the materials being transported.
 - ✓ Be trained on emergency procedures.
 - ✓ Be capable of moving the vehicle in case of an emergency.

No Flares Near Hazardous Materials



If your vehicle breaks down and you need to use warning signals, never use flares or fuses near:

- ✓ A tank carrying Class 3 (flammable liquids) or Division 2.1 (flammable gas) — even if the tank is empty.
- ✓ A vehicle loaded with Division 1.1, 1.2, or 1.3 (Class A or B) explosives.



Instead, use reflective triangles or red electric lights.

Route Restrictions for Hazardous Materials



Some states and counties require special permits to transport hazardous materials or waste.



Local laws may restrict certain routes, including tunnels, bridges, and specific roadways.



Before starting your trip:

- ✓ Confirm if you need permits or must follow specific routes.
- ✓ Ask your dispatcher about restrictions (if working for a carrier).
- ✓ Independent truckers should check with state agencies before traveling.



While driving a placarded vehicle, avoid:

- ✓ Highly populated areas
- ✓ Crowds
- ✓ Tunnels
- ✓ Narrow streets and alleys

- ◆ If transporting Division 1.1, 1.2, or 1.3 explosives, you must have a written route plan.
 - The carrier provides this plan in advance.
 - If picking up explosives outside your employer's terminal, you must write your own route plan before transport.
 - Always keep a copy of the route plan with you.
 - Explosives must only be delivered to authorized persons or stored in locked, approved areas.

◆ For radioactive materials, carriers must:

- ✓ Select the safest route for transport.
- ✓ Provide the driver with a route plan.

⊘ Never drive a placarded vehicle near an open fire unless you can safely pass without stopping.

No Smoking Rules


 **Do not smoke within 25 feet (7.6m) of:**

- ✓ A placarded cargo tank carrying Class 3 (flammable liquids) or Division 2.1 (flammable gases).
- ✓ Any vehicle transporting:
 - Class 1 - Explosives
 - Class 3 - Flammable Liquids
 - Class 4 - Flammable Solids
 - Class 5 - Oxidizers




No smoking, lighted cigarettes, cigars, or pipes near these materials

Refueling a Vehicle Carrying Hazardous Materials

-  Turn off the engine before refueling a vehicle containing hazardous materials.
- ✓ Someone must be present at the nozzle at all times, controlling the fuel flow

Fire Extinguisher Requirements

-  All placarded vehicles must have a fire extinguisher with a UL rating of at least 10 B:C.

Tire Inspection Rules

- ◆ For placarded vehicles, check tires:
 - ✓ At the start of each trip.
 - ✓ Each time the vehicle is parked.
- ✓ Use a tire pressure gauge to check tire inflation.
- 🚨 Do not drive with a leaking or flat tire—except to reach the nearest safe location for repairs.
- 🚫 If a tire overheats, remove it and place it at a safe distance from the vehicle.
 - ◆ Follow all parking and attending rules when checking, repairing, or replacing tires

Where to Keep Shipping Papers and Emergency Response Information



Shipping papers must be easily accessible in case of an emergency.



While driving, keep shipping papers:

- ✓ Within your reach while wearing a seatbelt, OR
- ✓ In a pouch on the driver's door.



When not driving, leave shipping papers:

- ✓ On the driver's seat, OR
- ✓ In the driver's door pouch.



Emergency response information must be kept in the same location as shipping papers.



Never accept a hazardous materials shipment without properly prepared shipping papers.

Additional Requirements for Explosives (Division 1.1, 1.2, or 1.3)

Carriers must provide drivers with:

- ✓ A copy of Federal Motor Carrier Safety Regulations (FMCSR), Part 397.
- ✓ Written emergency instructions, including:
 - Names and phone numbers of emergency contacts (shippers, carriers, agents).
 - Description of explosives being transported.
 - Precautions for emergencies (fires, accidents, leaks).

Drivers must:

- ✓ Sign a receipt for these documents.
- ✓ Carry and be familiar with:
 - Shipping papers.
 - Emergency instructions.
 - Written route plan.
 - FMCSR, Part 397.

Special Equipment Requirements for Chlorine Cargo Tanks

 Drivers transporting chlorine in cargo tanks must have:

- ✓ An approved gas mask in the vehicle.
- ✓ An emergency kit for controlling leaks in dome cover plate fittings

Stopping at Railroad Crossings

 You must stop 15 to 50 feet (4.6 to 15.2m) before the nearest railroad track if:

- ✓ Your vehicle is placarded.
- ✓ You are carrying any amount of chlorine.
- ✓ You have cargo tanks (loaded or empty) used for hazardous materials.

 Proceed only when you are sure the tracks are clear and no train is approaching.

 Do not shift gears while crossing railroad tracks.

Following these driving and parking rules will help ensure safe and compliant transportation of hazardous materials while protecting yourself and others on the road.

Hazardous Materials Emergencies

Handling hazardous materials requires immediate and proper response in case of accidents, leaks, fires, or spills. Following correct procedures can save lives, protect the environment, and prevent costly damages.

Emergency Response Guidebook (ERG)

The Department of Transportation (DOT) provides an Emergency Response Guidebook (ERG) to help firefighters, police, and industry workers handle hazardous materials incidents.



Why It's Important:

- ✓ The ERG is indexed by proper shipping name and hazardous materials ID number.
- ✓ Emergency responders use shipping papers, labels, and placards to identify hazards quickly.
- ✓ Ensuring accurate documentation helps emergency teams respond effectively.

Key Actions in an Emergency

At the Scene of an Accident

As a professional driver, your role in an emergency is to:

- ✓ Keep people away from the scene.
- ✓ Limit the spread of hazardous materials (if it's safe to do so).
- ✓ Warn emergency responders about the hazardous material involved.
- ✓ Provide shipping papers and emergency response information.

✓ Emergency Checklist:

- ✓ Check if your driving partner is safe.
- ✓ Keep your shipping papers with you at all times.
- ✓ Keep people far away and upwind of the accident.
- ✓ Warn others of the danger.
- ✓ Call for emergency assistance immediately.
- ✓ Follow your employer's emergency procedures.
- ✓ Prevent smoking and keep open flames away.

Fire Emergencies

Handling Fires Involving Hazardous Materials

- Only control minor truck fires if you have the proper training and equipment.
- Never attempt to fight a hazardous materials fire unless trained and wearing protective gear.

If You Discover a Fire:

- ✓ Call for help immediately.
- ✓ Use a fire extinguisher only for small fires (before they spread to cargo).
- ✓ Before opening trailer doors, check if they are hot. If hot, do not open them—a fire inside may intensify.
- ✓ If the cargo is on fire, do NOT attempt to fight it.
- ✓ Warn others and keep people away.
- ✓ Provide shipping papers to emergency personnel upon arrival.

Hazardous Materials Leaks and Spills

🔍 If You Discover a Leak:

- ✓ Identify the hazardous material using shipping papers, labels, or package markings.
- ✓ DO NOT touch any leaking material—many hazardous substances can cause serious injury or death.
- ✓ DO NOT smell the material—toxic gases can impair your sense of smell or be lethal.
- ✓ If the leak is from another vehicle, drive to the nearest safe location and call emergency responders.
- ✓ Never eat, drink, or smoke near a leak or spill.
- ◆ If a Leak is Coming from Your Vehicle:
 - ✓ Do NOT continue driving unless absolutely necessary for safety.
 - ✓ If possible, move off the road and away from populated areas.
 - ✓ Only move your vehicle if it's safe to do so.



If Hazardous Materials Are Spilling from Your Vehicle:

- ✓ Park immediately.
- ✓ Secure the area and keep bystanders away.
- ✓ Stay at the scene and send someone else for help.
- ✓ Provide emergency responders with:
 - A description of the emergency.
 - Your exact location and direction of travel.
 - Your name, carrier's name, and terminal location.
 - The proper shipping name, hazard class, and ID number of the material involved.

◆ Write this information down for the person seeking help to ensure emergency responders bring the right equipment.

- ⊘ Never move your vehicle if it will spread contamination or worsen the situation.
- ⊘ Do not attempt to repack leaking containers unless trained and equipped to do so.
- ⊘ Contact your dispatcher or emergency personnel for instructions.

Emergency Procedures for Specific Hazard Classes

Class 1 - Explosives

💣 If carrying Division 1.1, 1.2, or 1.3 explosives and involved in an accident:


- ✓ Warn others of the danger.
- ✓ Keep bystanders away.
- ✓ Do not allow smoking or open flames near the vehicle.
- ✓ If a fire occurs, warn everyone of the explosion risk.
- ✓ Remove explosives from vehicles in an accident and place them at least 200 feet (61m) away.

Class 2 - Compressed Gases


 If compressed gas is leaking:

- ✓ Warn others and keep bystanders away.
- ✓ Only emergency personnel should approach the leak.
- ✓ Notify the shipper if compressed gas is involved in an accident.
- ✓ Do not transfer flammable compressed gas on a public roadway (except for road construction/maintenance).

Class 3 - Flammable Liquids

 If transporting flammable liquids and involved in an accident:

- ✓ Prevent bystanders from gathering.
- ✓ Warn people of the fire risk.
- ✓ Do not continue driving with a leaking tank unless necessary to reach a safe location.

 Flammable liquids should never be transferred between vehicles on a public road unless it's an emergency.

Class 4 - Flammable Solids & Class 5 - Oxidizers

 If spilled:

- ✓ Warn others of the fire hazard.
- ✓ Do not open smoldering packages—move them away if possible.
- ✓ Remove unbroken packages if it reduces the fire risk.

Class 6 - Poisonous Materials & Infectious Substances

 Handling Poisonous Materials:

- ✓ Poisonous materials can also be flammable—take additional precautions.
- ✓ No smoking, open flames, or welding near these substances.
- ✓ Warn others of the inhalation risk.
- ✓ If a poison gas (Division 2.3) or poison liquid (Division 6.1) leaks, the vehicle must be checked for contamination before reuse.
- ✓ Never accept damaged packages of infectious substances (Division 6.2).

Class 7 - Radioactive Materials



If radioactive material spills or leaks:

- ✓ Notify your dispatcher or supervisor immediately.
- ✓ Do NOT touch or inhale any material.
- ✓ Do not use the vehicle until it has been cleaned and checked with a survey meter.

Class 8 - Corrosive Materials



If spilled:

- ✓ Avoid injury by handling carefully.
- ✓ Wash exposed vehicle surfaces with water.
- ✓ After unloading, wash the interior before reloading.
- ✓ If the leak is dangerous, pull off the road and contain the spill safely.

Required Notifications

📍 **The National Response Center (NRC) must be notified if an incident involves:**

- ✓ A fatality.
- ✓ Hospitalization of an injured person.
- ✓ Property damage over \$50,000.
- ✓ Evacuations lasting more than one hour.
- ✓ Road closures of more than one hour.
- ✓ Fire, spills, or contamination of radioactive or infectious substances.
- ✓ Any situation posing a continuing danger to life.

📞 National Response Center (NRC): (800) 424-8801

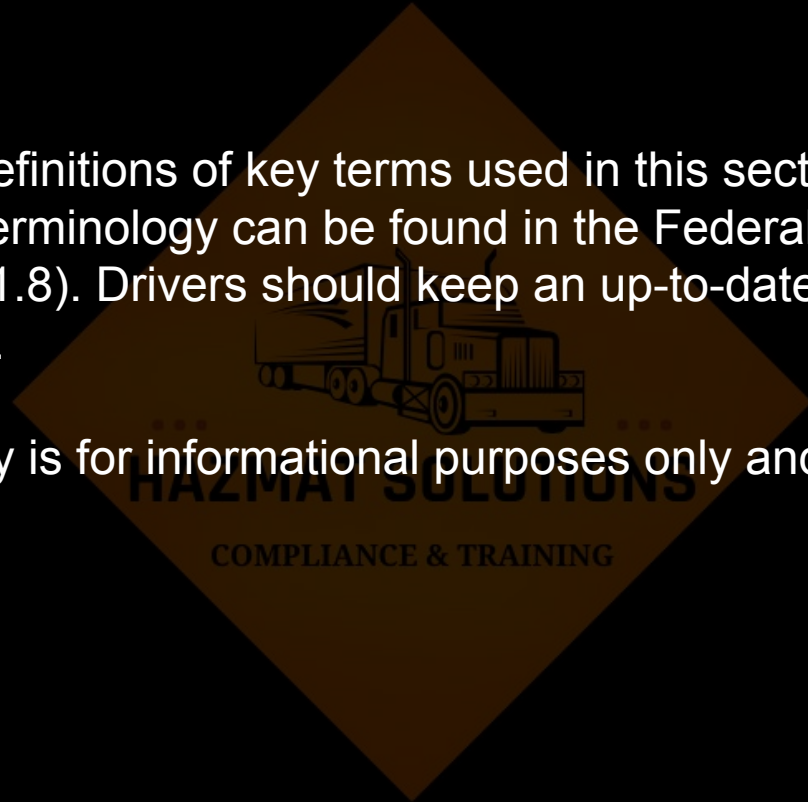
📞 CHEMTREC (Chemical Transportation Emergency Center): (800) 424-9300

✅ Following these emergency procedures ensures a safer response to hazardous material incidents and minimizes risks to people and the environment

Hazardous Materials Glossary

This glossary provides definitions of key terms used in this section. A complete glossary of hazardous materials terminology can be found in the Federal Hazardous Materials Regulations (49 CFR 171.8). Drivers should keep an up-to-date copy of these regulations for reference.

◆◆ Note: This glossary is for informational purposes only and will not be included in your test



Definitions from 49 CFR 171.8

Bulk Packaging

A bulk packaging is a container used to transport hazardous materials without an intermediate form of containment.

It includes transport vehicles and freight containers and meets one of the following criteria:

- ✓ For Liquids: Holds more than 450 liters (119 gallons).
- ✓ For Solids: Holds more than 400 kg (882 pounds) or more than 450 liters (119 gallons).
- ✓ For Gases: Holds more than 454 kg (1,000 pounds) of compressed gas (as defined in 49 CFR 173.115)

Definitions from 49 CFR 171.8

Cargo Tank

A cargo tank is a bulk container designed for transporting liquids or gases and meets the following criteria:

- ✓ Primarily designed to carry liquids or gases.
- ✓ Permanently attached to a motor vehicle OR
- ✓ Large enough to be loaded/unloaded while still on the vehicle.
- ✓ Not classified as a cylinder, portable tank, tank car, or multi-unit tank car tank.

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COMPLIANCE & TRAINING

Definitions from 49 CFR 171.8

Carrier

A carrier is any person or company engaged in transporting goods or passengers by:

- ✓ Land or water (as a common, contract, or private carrier).
- ✓ Civil aircraft.

Consignee

The consignee is the person or business receiving the shipment.

Division

A division is a subcategory within a hazard class (e.g., Class 1 explosives have multiple divisions for different types of explosives).



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Definitions from 49 CFR 171.8

EPA (Environmental Protection Agency)

The U.S. Environmental Protection Agency (EPA) is responsible for regulating hazardous waste and environmental safety.

FMCSR (Federal Motor Carrier Safety Regulations)

The FMCSR outlines rules and safety standards for commercial motor vehicle operators, including those transporting hazardous materials.

Definitions from 49 CFR 171.8

Freight Container

The FMCSR outlines rules and safety standards for commercial motor vehicle operators, including those transporting hazardous materials.

A freight container is a reusable transport container with a volume of at least 64 cubic feet (1.8 cubic meters), designed for lifting with contents intact and primarily used to hold multiple packages during transport.

Fuel Tank

A fuel tank is a container that holds fuel for a vehicle's propulsion or for operating equipment attached to the vehicle. It is not considered a cargo tank.



HAZMAT SOLUTIONS

Definitions from 49 CFR 171.8

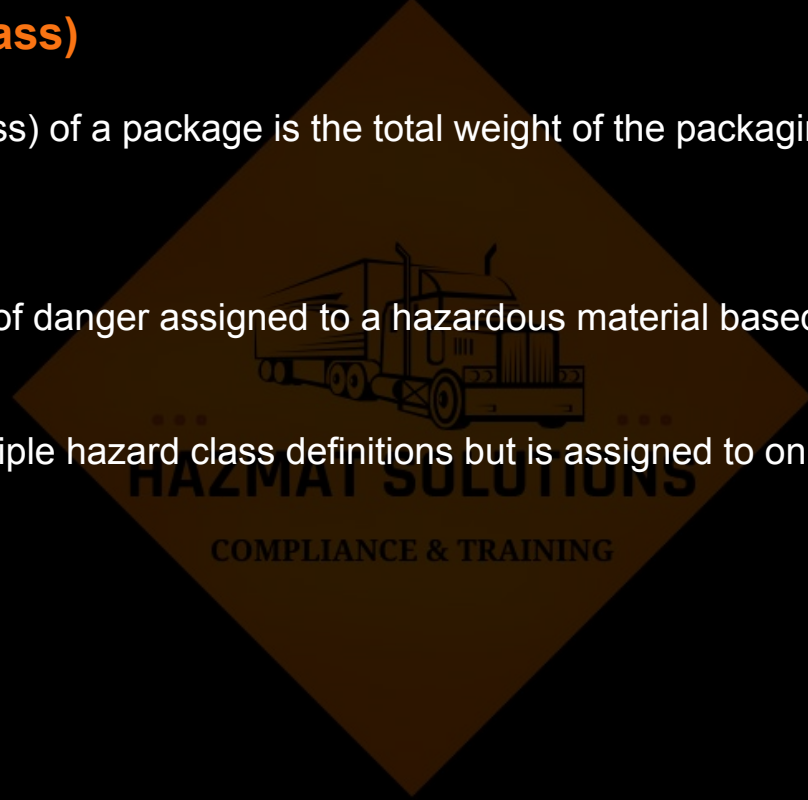
Gross Weight (Gross Mass)

The gross weight (or gross mass) of a package is the total weight of the packaging plus its contents.

Hazard Class

A hazard class is the category of danger assigned to a hazardous material based on definitional criteria in 49 CFR Part 173.

◆◆ A material may meet multiple hazard class definitions but is assigned to only one primary hazard class.



Definitions from 49 CFR 171.8

Hazardous Materials

A hazardous material is any substance or material identified by the U.S. Secretary of Transportation as posing a risk to health, safety, or property when transported.



This includes:

- ✓ Hazardous substances
- ✓ Hazardous waste
- ✓ Marine pollutants
- ✓ Elevated temperature materials Hazardous Substance



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💡 Hazardous materials are designated under 49 CFR Sections 172.101 and 172.102 and must meet the hazard class definitions in 49 CFR Part 173

Definitions from 49 CFR 171.8

Hazardous Substance

A hazardous substance is any material that meets all of the following criteria:

- ✓ Listed in Appendix A to 49 CFR 172.101.
- ✓ Present in one package at or above its reportable quantity (RQ).
- ✓ If in a mixture or solution:
 - For radionuclides, it meets specific concentration limits in Appendix A.
 - For non-radionuclides, its concentration by weight meets or exceeds the RQ limits in the hazardous materials regulations.

COMPLIANCE & TRAINING

Appendix A


RQ POUNDS (KILOGRAMS)	CONCENTRATION BY WEIGHT	
	PERCENT	PPM
5,000 (2270)	10	100,000
1,000 (454)	2	20,000
100 (45.4)	0.2	2,000
10 (4.54)	0.02	200
1 (0.454)	0.002	20

This definition does not apply to petroleum products that are lubricants or fuels (see 40 CFR 300.6).

Definitions from 49 CFR 171.8

Hazardous Waste

Hazardous waste is any material subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency (EPA) under 40 CFR Part 262.

 Hazardous waste must be properly documented, packaged, and transported according to EPA and DOT regulations.

Limited Quantity Marking

A limited quantity is the maximum amount of a hazardous material that qualifies for specific labeling or packaging exceptions.

✓ Exceptions vary based on the material and are outlined in the applicable regulations.

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Definitions from 49 CFR 171.8

Marking

A marking includes any required descriptive name, ID number, instructions, cautions, weight, specification, or UN mark placed on hazardous material packaging.

✓ Markings ensure proper identification and safe handling during transportation.

Mixture

A mixture is a material composed of two or more chemical compounds or elements.

 Mixtures may require special classification based on their chemical properties and hazards.



HAZMAT SOLUTIONS

Definitions from 49 CFR 171.8

Name of Contents

The name of contents refers to the proper shipping name of a hazardous material as specified in 49 CFR 172.101.

- ✓ The proper shipping name must appear on shipping papers and package markings.

Non-Bulk Packaging

Non-bulk packaging refers to containers smaller than bulk packaging and meeting one of the following criteria:


- ✓ For **Liquids**: Holds 450 liters (119 gallons) or less.
- ✓ For **Solids**: Holds less than 400 kg (882 pounds) and 450 liters (119 gallons) or less.
- ✓ For **Gases**: Holds 454 kg (1,000 pounds) or less, as defined in 49 CFR 173.115.

 Non-bulk packaging is commonly used for smaller shipments of hazardous materials.

Definitions from 49 CFR 171.8

N.O.S. (Not Otherwise Specified)

N.O.S. means "Not Otherwise Specified" and is used for hazardous materials that do not have a more specific classification in the regulations.

 Shippers must include a "Technical Name" with an N.O.S. entry to specify the material being transported.

Outage or Ullage

Outage (or ullage) refers to the empty space left in a container to allow for liquid expansion. It is usually expressed as a percentage of the total volume.

✓ Proper outage is important for safety in bulk liquid transportation.



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Definitions from 49 CFR 171.8

Portable Tank

A portable tank is a bulk packaging designed to be loaded onto, carried on, or temporarily attached to a transport vehicle or ship.

- ✓ Portable tanks have skids, mounts, or accessories for mechanical handling.
- 🚚 They are different from cargo tanks, tank cars, or trailers carrying compressed gas cylinders.

Proper Shipping Name

The proper shipping name is the official hazardous material name listed in 49 CFR 172.101.

- ✓ Must be written in Roman (regular) print, not italics.
- ✓ Required on shipping papers, package markings, and labels.



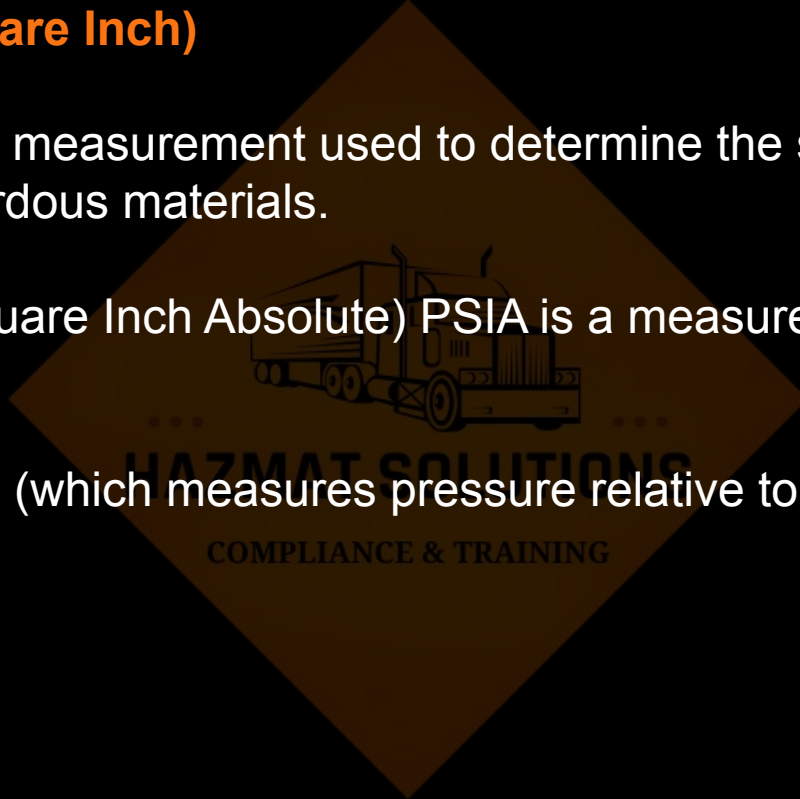
Definitions from 49 CFR 171.8

P.S.I. (Pounds per Square Inch)

PSI is a unit of pressure measurement used to determine the strength of containers and packaging for hazardous materials.

P.S.I.A. (Pounds per Square Inch Absolute) PSIA is a measurement of pressure relative to a perfect vacuum.

✓ PSIA differs from PSI (which measures pressure relative to atmospheric pressure).




Definitions from 49 CFR 171.8

Reportable Quantity (RQ)

An RQ (Reportable Quantity) is the minimum amount of a hazardous substance that requires immediate reporting if spilled or released.

✓ The RQ values for hazardous materials are listed in Column 3 of Figure 5 in 49 CFR 172.101.

 If an RQ is exceeded in a spill, the incident must be reported to the National Response Center (NRC) at (800) 424-8801.

RSPA (Research and Special Programs Administration) RSPA was the former name of the Pipeline and Hazardous Materials Safety Administration (PHMSA) under the U.S. Department of Transportation (DOT).

 PHMSA oversees hazardous materials transportation safety regulations.

Definitions from 49 CFR 171.8

Shipper's Certification

A Shipper's Certification is a legal statement on shipping papers confirming that the hazardous material has been properly classified, packaged, marked, and labeled.

 The shipper must sign one of the following statements:

- ✓ U.S. Domestic Shipments: "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."
- ✓ International Shipments: "I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packed, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national government regulations."
- ◆ The shipper is legally responsible for ensuring compliance with hazardous materials regulations.


Definitions from 49 CFR 171.8

Shipping Paper

A shipping paper is any document used to record and communicate information about hazardous materials shipments.

 Examples include:

- ✓ Bills of lading
- ✓ Manifests
- ✓ Other legally required shipping documents

 Shipping papers must include the proper shipping name, hazard class, ID number, and emergency response information.




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Definitions from 49 CFR 171.8


Technical Name

A technical name is the scientific or chemical name of a hazardous material as recognized in technical publications and regulations.

 Required for materials classified under "N.O.S." entries in the Hazardous Materials Table. Transport Vehicle A transport vehicle is any cargo-carrying vehicle used to transport hazardous materials by land, rail, or other modes.

 Examples include:

- ✓ Automobiles, vans, and trucks
- ✓ Semi-trailers and tank cars
- ✓ Railcars and cargo containers

 Each cargo unit (such as a trailer or railcar) is considered a separate transport vehicle

HAZMAT SOLUTIONS
COMPLIANCE & TRAINING

Definitions from 49 CFR 171.8

UN Standard Packaging

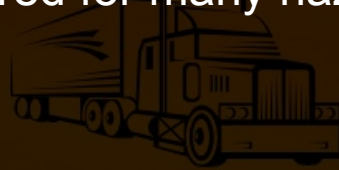
UN Standard Packaging refers to hazardous materials packaging that meets United Nations safety and durability standards under Subpart L and M of 49 CFR Part 178.

- ✓ UN-approved packaging is required for many hazardous materials shipments.

UN (United Nations)


The United Nations (UN) is an international organization that sets global safety standards for hazardous materials transportation.

- ✓ UN standards ensure safe packaging, handling, and transportation worldwide.



Why This Glossary Matters

Understanding these terms ensures compliance with hazardous materials regulations and helps drivers, shippers, and emergency responders communicate effectively.

 Always refer to your current copy of 49 CFR for detailed definitions and regulatory updates.

