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HAZMAT Transportation Part 6a:
Carrier Requirements
for Highway

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Information about Highway Carrier Requirements is in **Part 177** of the Hazardous Materials Regulations (HMR).

General Highway Carrier Requirements

Before transporting hazardous materials, you must:

- Be registered with the Pipeline and Hazardous Materials Safety Administration (PHMSA) and federal, state and local government agencies that regulate the transportation of hazardous materials
- Inspect and accept only those hazardous materials (HAZMAT) that are classed, packaged, marked, labeled and described by the shipper in accordance with the HMR
- Ensure the transport vehicle has the correct placards/markings for the HAZMAT it contains, unless the:
 - Vehicle is escorted by a state or local government representative
 - Motor carrier has permission from the U.S. Department of Transportation (DOT)
 - Movement of the transport vehicle is necessary to protect life or property

Training

Owner-operators of motor vehicles that transport hazardous materials are required to receive training as specified in **Section 177.816** of the HMR. Cargo tank operators and operators of vehicles with portable tanks take additional specialized training. You can meet the owner-operator training requirements by obtaining a Commercial Driver's License (CDL) with a hazardous materials endorsement. You must complete recurrent HAZMAT training once every three years.

Other Regulations

In addition to the highway carrier requirements in Part 177 of the HMR, you must also comply with:

- Parts 383 and 390-397 of the Federal Motor Carrier Safety Regulations (FMCSR)
- Any relevant state, municipal and local laws

Shipping Papers

Shipping papers must accompany hazardous materials.

Shippers prepare and sign shipping papers, certifying that the HAZMAT shipment has been prepared in accordance with the HMR and offer the documentation to the carrier with the hazardous material.

Initial carriers ensure the documentation is properly completed and signed by the shipper, unless excepted in Section 172.204 of the HMR.

Motor carriers offering a freight container or transport vehicle to a rail carrier must include a description of the container or vehicle and the affixed placard on the shipping papers.

Any motor carrier receiving a copy of shipping papers must retain them for 1 year or 3 years if the material is classified as a hazardous waste.

In case of an accident or inspection, shipping papers must always be readily available and accessible. Distinguish shipping papers for hazardous materials from non-hazardous materials.

Store shipping papers in the required locations. While you are operating the vehicle and restrained by a seat belt, shipping papers must be:

- Within reach and readily visible to anyone entering the driver's compartment, or
- Mounted to the inside of the driver's door

When away from the controls, place the shipping papers:

- On the driver's seat, or
- Mounted to the inside of the driver's door

Hazardous Material (HAZMAT) Segregation Requirements

If incompatible hazardous materials were to leak and mix together during transportation, they might create a HAMZAT emergency. To prevent this, load, transport and store different classes of hazardous materials in accordance with the segregation table found in **Section 177.848** of the highway carrier requirements.

In the segregation table, locate the intersecting point of two hazard classes. At the intersection point, a(n):

- **Blank space** means the materials are compatible and no segregation or separation restrictions apply
- **Asterisk (*)** means you must load, transport and store Class 1 explosive materials in accordance with the Class 1 Compatibility Table
- **X** means you may not load, transport or store materials together in the same transport vehicle or storage facility
- **O** means that you must:
 - Only load, store and transport hazardous materials together when you separate them
 - NOT load Class 8 materials above or adjacent to Class 4 or 5 materials unless it's known that the mixture won't cause a fire or dangerous elevation of heat or gas

Class or Division	Notes	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PG 1 Zone A	7	8 Liquids Only
Explosives	1.1 1.2	A	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3	*	*	*	*	*	X		X	X	X	X	X	X	X	X	X		X
Explosives	1.4	*	*	*	*	*			O	O	O						O		O
Very insensitive explosives	1.5	A	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6	*	*	*	*	*													
Flammable gases	2.1		X	X	O	X			X	O							O	O	
Non-Azotic, non-flammable gases	2.2		X			X													
Poisonous gas Zone A	2.3		X	X	O	X	X				X	X	X	X	X	X			X
Poisonous gas Zone B	2.3		X	X	O	X	O				O	O	O	O	O	O			O
Flammable liquids	3		X	X	O	X			X	O					O		X		

Class 1 Compatibility Table

Compatibility group	A	B	C	D	E	F	G	H	J	K	L	N	S
A		X	X	X	X	X	X	X	X	X	X	X	X
B	X		X	X ₍₄₎	X	X	X	X	X	X	X	X	4/5
C	X	X		2	2	X	6	X	X	X	X	3	4/5
D	X	X ₍₄₎	2		2	X	6	X	X	X	X	3	4/5
E	X	X	2	2		X	6	X	X	X	X	3	4/5
F	X	X	X	X	X		X	X	X	X	X	X	4/5
G	X	X	6	6	6	X		X	X	X	X	X	4/5
H	X	X	X	X	X	X	X		X	X	X	X	4/5
J	X	X	X	X	X	X	X	X		X	X	X	4/5
K	X	X	X	X	X	X	X	X	X		X	X	4/5
L	X	X	X	X	X	X	X	X	X	X	1	X	X
N	X	X	3	3	3	X	X	X	X	X	X		4/5
S	X	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	X	4/5	

You must refer to the compatibility table when storing hazardous materials, such as several divisions of Class 1 explosive materials, on a transport vehicle. As with the segregation table, you read the Class 1 Compatibility Table by locating the intersection of two compatibility groups to determine the segregation requirements.

- If the intersecting space is **blank**, no restrictions apply
- An **X** indicates you cannot transport these compatibility groups on the same vehicle
- **Numbers** have various meanings depending on their location in the table

Compatibility Group

Table 2—Scheme of Classification of Explosives, Combination of Hazard Division with Compatibility Group

Hazard division	Compatibility group													
	A	B	C	D	E	F	G	H	J	K	L	N	S	A-S
1.1	1.1A	1.1B	1.1C	1.1D	1.1E	1.1F	1.1G		1.1J		1.1L			9
1.2		1.2B	1.2C	1.2D	1.2E	1.2F	1.2G	1.2H	1.2J	1.2K	1.2L			10
1.3			1.3C			1.3F	1.3G	1.3H	1.3J	1.3K	1.3L			7
1.4		1.4B	1.4C	1.4D	1.4E	1.4F	1.4G						1.4S	7
1.5				1.5D										1
1.6												1.6N		1
Total	1	3	4	4	3	4	4	2	3	2	3	1	1	35

When transporting explosive materials from the same compatibility group but different hazard division, you can identify and placard the materials according to the lower numerical division.

- Example: Division 1.2B and Division 1.4B materials can be transported and placarded as Division 1.2B materials
- Exception: Division 1.2D and 1.5D materials must be identified as Division 1.1D materials

Loading, Unloading and Transporting Hazardous Materials

HMR Part 177, Subpart B lists the highway carrier regulations for loading and unloading hazardous materials. These regulations will help you minimize the likelihood of a HAZMAT incident occurring.

General Requirements

Prior to loading and unloading hazardous materials:

- Set the vehicle's handbrake
- Turn off the vehicle's engine

- Gather the proper tools
- Refrain from smoking when handling Class 1, 3, 4, 5 or Division 2.1 materials
- Keep materials away from fire, sparks or hot gases produced by exhaust pipes

During the loading process:

- Position and secure hazardous materials according to orientation markings
- Block and brace hazardous materials to prevent them from shifting during transit
- Adhere to the cargo heating and temperature-control device requirements

Tank Requirements

Unless an exception applies, a **qualified person** must be present:

- Before and during the loading and unloading of hazardous materials from a cargo tank
- When unloading an intermodal (IM) or UN portable tank while it remains on a transport vehicle with the motive power unit attached (Note: Prior to unloading an IM or UN portable tank, make sure you meet the conditions in HMR Section 177.834)

While monitoring the loading and unloading of cargo tanks, the qualified person must:

- Be knowledgeable about:
 - The materials being loaded or unloaded
 - Emergency protocol in case an incident occurs
- Have a clear view of the cargo tank and delivery hose
- Be within 25 feet (7.62 meters) of the cargo tank

Special Requirements

Special loading and unloading requirements apply to most classes of hazardous materials. These requirements are in Sections 177.835 through 177.842 of the HMR and Section 397.5 of the FMCSR.

The transport index (TI) should be identified on each package of **radioactive materials**. It represents the radiation reading taken from the package at a distance of 1 meter (a little over 3 feet) away. Limit the number of Class 7 radioactive packages so the total TI does not exceed 50.

Use the table in Section 177.842 to determine the minimum separation distance between radioactive materials and any person, animal and package of undeveloped film.

Special Situations

In the event you're driving a cargo tank and it begins to leak:

- Exit the roadway immediately, or within a short distance to a safe location
- Turn off the vehicle's engine
- Get to a safe location and notify others

If you discover a damaged and/or leaking HAZMAT container during transit, consider what hazards materials are present. Only attempt a repair if you are qualified and it is safe to do so. In a true emergency, seek the assistance of a qualified spill response team.

Anytime your vehicle breaks down or you encounter a situation in which you must stop and pull off the roadway, take steps to guard the vehicle and the hazardous contents by:

- Activating the vehicle's flashing lights
- Displaying emergency signals in accordance with FMCSR (392.22, 392.24 and 392.25)

Emergency Response Guidebook

The DOT Emergency Response Guidebook (ERG) is for first responders to use during the initial phase of a transportation incident involving hazardous materials or dangerous goods.

When responding to an incident involving hazardous materials or dangerous goods, first responders will:

- Identify the hazard by finding the identification (ID) number and proper shipping name on shipping papers, placards and panels
- Assess the situation, which includes determining wind direction
- Obtain support from additional resources
- Respond safely

Passenger-Carrying Vehicles

Specific restrictions and limitations for motor carriers operating passenger-carrying vehicles (e.g., motorcoaches) can be found in Section 177.870 of the Highway Carrier Requirements. The carrier can only transport the following when other hazardous materials are not being transported:

- Small-arms ammunition
- Emergency shipments of drugs
- Chemicals and hospital supplies
- Munitions of war for the U.S. Armed Forces

Reporting HAZMAT Incidents

Reportable incidents include those in which the release of hazardous materials, infectious substances, marine pollutants or radioactive materials cause:

- The general public to be evacuated for an hour or more
- A major transportation artery or facility to be closed for at least an hour
- Person(s) to be injured or killed

If the incident involves infectious substances:

- Notify the National Response Center or the Centers for Disease Control and Prevention within 12 hours from the time of the reportable incident
- Provide the Department of Transportation's Pipeline and Hazardous Materials Safety Administration with a detailed written account of the incident