

**CHAPTER 2**

**INSPECTION OF MOTOR VEHICLES**

NOTES

## INSPECTIONS

\* Inspect a motor vehicle in accordance with AR 55-355, and prepare a DD Form 626 through item # 22.

The purpose for completing the DD Form 626 through item # 22 is due to the purpose of the form. The DD Form 626 is designed to serve as an inspection form at the origin of the shipment, both prior to, and after loading the vehicle. The DD Form 626 also serves as an inspection form at the destination of the shipment. This establishes a complete record of the condition of the vehicle from the origin and loading and the destination and offloading.

When the DD Form 626 is initiated, the vehicle to be loaded will be inspected thoroughly for deficiencies, all of which will be noted on the DD Form 626. If the vehicle is satisfactory, it can be loaded with ammunition. If the vehicle is not satisfactory, it will be returned to its parent command, and another vehicle in serviceable condition that meets the requirements for transporting explosives and hazardous cargo will be dispatched to the port.

The procedures outlined in AR 55-355, NAVSEA OP 3681, AMCR 385-100, and BOE 6000 will give you the guidance needed to perform a thorough inspection on all types of motor vehicles. Prior to a shipment being made, regardless of the vehicle involved, it must be inspected and a DD Form 626 must be initiated prior to the vehicle being loaded with ammunition or hazardous materials. When a vehicle is loaded and ready for departure, it must be inspected again for compatibility and a secure load, the DD Form 626 must be completed and signed.

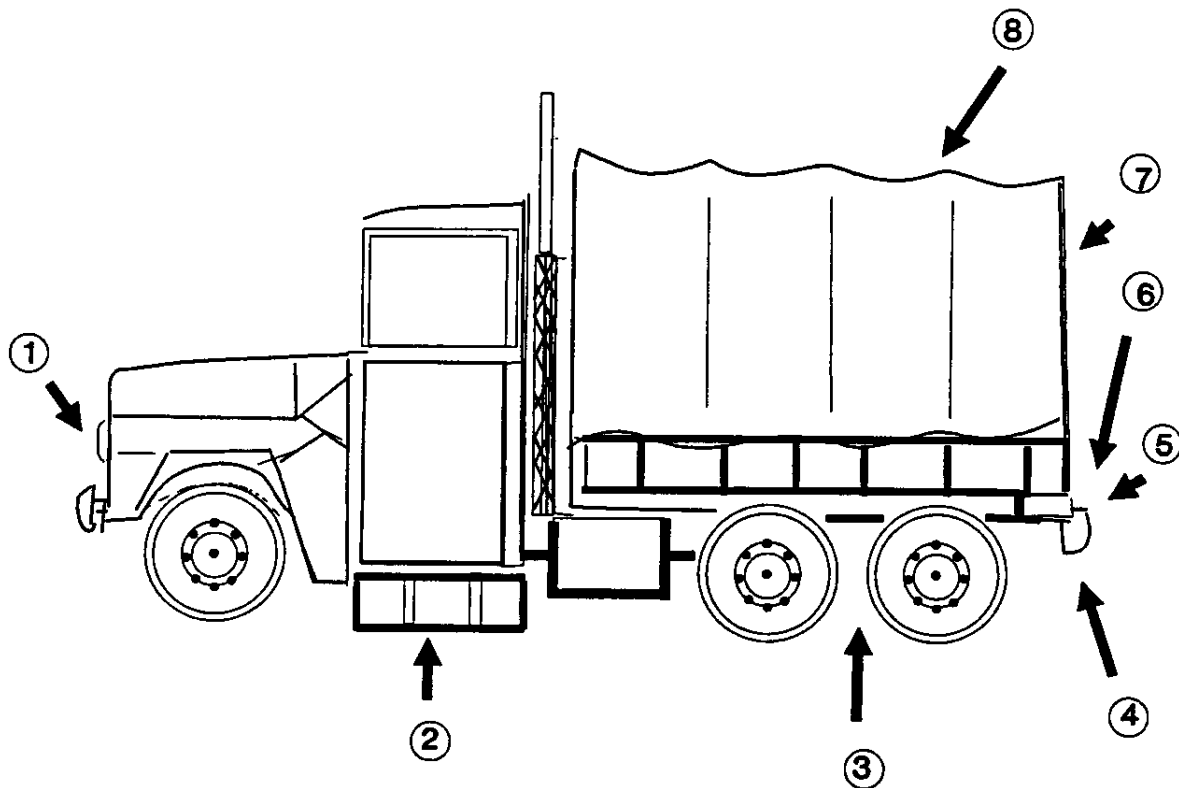
Figure 2-1 shows the inspection points of a motor vehicle.

Figure 2-2 shows a DD Form 626 (Front).

Figure 2-3 shows a DD Form 626 (Back).

Figure 2-4 shows a DD Form 836.

## VEHICLE INSPECTION POINTS



1. lights
2. Fuel tank, line, and inlet
3. Springs and associated parts
4. Tail lights
5. Coupling device
6. Reflector and lights
7. Cargo Space
8. Tarpaulin

Figure 2-1  
VEHICLE INSPECTION POINTS

MOTOR VEHICLE INSPECTION (TRANSPORTING HAZARDOUS MATERIAL)						
GBL. NO. N/A	ORIGIN		DESTINATION			
NAME OF CARRIER	1-505th Arty Bn					
NAME OF DRIVER	CPL Walker					
DATE AND HOUR	1 May 85, 0800					
INSTALLATION/ACTIVITY	ASP 3, Ft. Knox, KY					
DRIVER'S STATE PERMIT NO.	USA 0748-84					
MEDICAL EXAMINER'S CERTIFICATE AND DATE	N/A					
VEHICLE						
TYPE OF VEHICLE		TRUCK NUMBER	TRAILER(S) NUMBER	SLEEPER CAR		
<input checked="" type="checkbox"/> TRUCK <input type="checkbox"/> TRUCK AND FULL TRAILER <input type="checkbox"/> TRACTOR AND DOUBLE TRAILERS <input type="checkbox"/> TRACTOR AND CLOSED SEMI-TRAILER <input type="checkbox"/> TRACTOR AND FLAT-BED TRAILER		USA 1235467	N/A	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
		ORIGIN	ORIGIN	VALID LEASE		
		1-505 Arty Bn	N/A	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
		DESTINATION	DESTINATION	L.C.C. NUMBER		
		Range 7	N/A	N/A		
NOTE: All of the following items shall be checked on empty equipment prior to loading. Items with an asterisk (*) shall be checked on incoming loaded equipment.						
ITEM NO.	CHECK APPROPRIATE COLUMN (See reverse side for explanatory notes)	ORIGIN		DESTINATION		REMARKS (Explain unsatisfactory item; use reverse side if necessary)
		SAT	UNSAT	SAT	UNSAT	
1.	ENGINE, BODY, CAB AND CHASSIS CLEAN	X		X		correction of deficiencies entered here
2.	STEERING MECHANISM	X		X		
3.	HORN OPERATIVE	X		X		
4.	WINDSHIELD AND WIPERS	X		X		
5.	SPARE ELECTRIC FUSES AVAILABLE	X		X		
6.	REAR VIEW MIRRORS INSTALLED	X		X		
7.	HIGHWAY WARNING EQUIPMENT	X		X		
8.	FULL FIRE EXTINGUISHER INSTALLED	X		X		
9.	LIGHTS AND REFLECTORS OPERATIVE	X		X		
10.	EXHAUST SYSTEM	X		X		
11.	LIQUID PETROLEUM GAS POWERED VEHICLES	N/A		N/A		
12.	FUEL TANK, LINE AND INLET	X		X		
13.	COUPLING DEVICES - KINGPIN LOCK	N/A		N/A		
14.	ALL BRAKES OPERATIVE	X		X		
15.	LANDING GEAR ASSEMBLY OPERATIVE	N/A		N/A		
16.	SPRINGS AND ASSOCIATED PARTS	X		X		
17.	TIRES	X		X		
18.	CARGO SPACE	X		X		
19.	ELECTRIC WIRING	X		X		
20.	TAIL GATE AND DOORS SECURED	X		X		
21.	FIRE AND WATER RESISTANT TARPULIN	X		X		
22.	ANY OTHER DEFECTS (Specify)	X		X		
<input checked="" type="checkbox"/> APPROVED    (If rejected give reasons on reverse under "Remarks". Equipment shall be approved if deficiencies are corrected prior to loading.)		SIGNATURE (of Inspector)		SIGNATURE (of Inspector)		
<input checked="" type="checkbox"/> REFECTED		ORIGIN		DESTINATION		
ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE				ORIGIN	DESTINATION	
23.	MIXTURES OF MATERIAL PROHIBITED BY DOT RESS. ARE NOT LOADED ONTO THIS VEHICLE			X	X	
24.	LOAD IS SECURED TO PREVENT MOVEMENT			X	X	
25.	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERWEIGHT			X	X	
26.	SEAL(S) APPLIED TO CLOSED VEHICLE, FIRE AND WATER RESISTANT TARPULIN APPLIED ON OPEN VEHICLE			X	X	
27.	SPECIAL INSTRUCTIONS (DD Form 836) FURNISHED DRIVER			X	X	
28.	COPY OF VEHICLE INSPECTION (DD FORM 626) FURNISHED DRIVER			X	X	
29.	PROPER PLACARDS APPLIED			X	X	
30.	SHIPMENT MADE UNDER DOT EXCEPTION 868			N/A	N/A	
SIGNATURE (of Inspector) ORIGIN				SIGNATURE (of Driver) ORIGIN		
SIGNATURE (of Inspector) DESTINATION				SIGNATURE (of Driver) DESTINATION		

DD FORM 626  
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Figure 2-2. DD FORM 626 (Front)

EXPLANATORY NOTES	
REFERENCES IN ITALICS BELOW ARE THE APPLICABLE PORTIONS OF THIS DOT MOTOR CARRIER SAFETY REGULATIONS (M.C.S.R.) AND THE CODE OF FEDERAL REGULATIONS (C.F.R.); DOD REQUIREMENTS ARE ESTABLISHED BY THE DEPARTMENT OF DEFENSE (DOD)	
THE INSTRUCTOR MUST BE FAMILIAR WITH THE CITED PORTIONS OF THE SAFETY AND EXPLOSIVE REGULATIONS	
<p><i>MEDICAL EXAMINER'S CERTIFICATE MUST NOT BE OVER 24 MONTHS OLD. (M.C.S.R.)</i></p> <p><i>Item 1. ENGINE, BODY, CAB AND CHASSIS CLEAN (e.g., no excessive oil or grease) - Inspect to see that engine and compartment are clean, check cab to see that no excessive grease is on cab and cab floor is free of debris; check under cab and chassis for excessive grease. (DOD Requirement)</i></p> <p><i>Item 2. STEERING MECHANISM-Inspect to see that steering mechanism is in good condition in proper adjustment, correctly and securely mounted, and whether the steering gear case is leaking lubricant. Pay particular attention to the pitman arm and tie rod assembly to see that they are securely mounted and not bent out of normal shape. (DOD Requirement)</i></p> <p><i>Item 3. HORN OPERATIVE-Inspect to see that horn is securely mounted and of sufficient volume to serve its purpose. (M.C.S.R.)</i></p> <p><i>Item 4. WINDSHIELD AND WIPERS- Inspect to are that the windshields of the tractors are free from breaks, cracks or defects which would make operation of the vehicle unsafe, that the view of the driver is not obscured by stickers, that wipers operate properly, and that wiper blades are of proper kind and in good condition. Defroster operative whom conditions require it. (M.C.S.R.)</i></p> <p><i>Item 5. SPARE ELECTRIC FUSES AVAILABLE-Check to see that at least one spare fuse for each kind and type of installed fuse is carried on vehicle as a spare, or it is equipped with an overload protective device (circuit breaker) (M.C.S.R.)</i></p> <p><i>Item 6. REAR VIEW MIRRORS INSTALLED-Every truck and truck tractor shall have installed two rear vision mirrors, one at each side firmly attached and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors must not be cracked or dirty. (M.C.S.R.)</i></p> <p><i>Item 7. HIGHWAY WARNING EQUIPMENT-This equipment must include either three red electric lanterns in operating condition and two red flags or three red emergency reflectors and two red flags with standards adequate to maintain them in an upright position, or three red emergency reflective triangles or three bidirectional emergency reflective triangles. Flame producing equipment prohibited. (M.C.S.R.)</i></p> <p><i>Item 8. FULL FIRE EXTINGUISHER INSTALLED-Inspect to see that one full fire extinguisher having an Underwriters' Laboratories rating of 10 B.C or more is securely mounted and readily accessible. (M.C.S.R)</i></p> <p><i>Item 9. LIGHTS AND REFLECTORS OPERATIVE-(Head-Stop-Trail-First and Rear Clearance)-Inspect all lights and switches, including clearance lights and turn signals; make sure they are not obscured by dirt or grease or have broken line; high and low beam switch must be operative EMERGENCY flashers operating on front and rear of vehicle. (M.C.S.R.)</i></p> <p><i>Item 10. EXHAUST SYSTEM-Inspect the exhaust system to see that no part is so located as would be likely to result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible part of the vehicle. The exhaust system shall discharge to the atmosphere at a location to the rear of the cab or, if the exhaust projects above the cab, at a location near the rear of the cab. (M.C.S.R.)</i></p> <p><i>Item 11. LIQUID PETROLEUM GAS POWERED VEHICLES-Inspect LPG burning system to insure compliance with DOT standards prescribed in 49 CFR 393.69 (M.C.S.R.)</i></p> <p><i>Item 12. FUEL TANK, LINE, AND INLET-Inspect tanks and fuel lines to see that they are in completely serviceable condition, free from leaks or evidence of leakage and surely mounted. Examine cap for defective gaskets or plugged vents. Inspect the filler necks to see that they are in completely serviceable conditions, security support.ed and not leaking at joints. (M.C.S.R.)</i></p>	<p><i>Item 13. COUPLING DEVICES-KINGPIN LOCK-Inspect without uncoupling to see that the fifth wheel rocker plate and bed are in good condition properly assembled and mounted, and adequately lubricated. Kingpin lock must operate freely and properly, lock security and not show excessive wear. (M.C.S.R.)</i></p> <p><i>Item 14. ALL BRAKES OPERATIVE- (Including hand brakes and air pressure warning devices) -Inspect for other grease leaks around drum flanges, pedal travel, air or vacuum line brake, moisture in tanks, compressor build up and governor cut off. Test for proper and adequate barked application. (M.C.S.R.)</i></p> <p><i>Item 15. LANDING GEAR ASSEMBLY OPERATIVE- Landing gear assembly must be in good condition, correctly assembled, adequately lubricated, and properly mounted.</i></p> <p><i>Item 16. SPRINGS AND ASSOCIATED PARTS-Examine visually the springs, suspension hanger mechanisms, torsion bar assemblies and auxiliary parts such as U-belts, shackles center bolts and hangers, for breakage, improper adjustment, and, as appropriate lack of lubrication, Air suspensions should not be leaking. (DOD Requirement)</i></p> <p><i>Item 17. TIRES-Examine all tires for cuts, bruises, breaks, and blisters. All tires with cuts or injuries extending into the cord body and those worn smooth in the center of the tread are not acceptable. Insure that stones are removed from between duals. Tires must be properly matched on dual-equipped tractors and trailers. (M.C.S.R.)</i></p> <p><i>Item 18. CARGO SPACE-Inspect to see that cargo space is clean and in good condition to prevent damage to lading from exposed bolts, nuts, screws, nails, or other inwardly projecting parts. Check floor to make sure it is tight and free of holes. Floors shall. not be permeated with oil or gasoline. (C.F.R.)</i></p> <p><i>Item 19. ELECTRIC WINING-Electric wining must be clean and properly secured, insulation must not be frayed or otherwise in poor condition. There must be no uninsulated wire or improper splices or connections. Wires and electric fixtures inside the body must be protected from the lading. (M.C.S.R.)</i></p> <p><i>Item 20. TAILGATE AND DOORS ON CLOSED EQUIPMENT SECURED-Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely (M.C.S.R.)</i></p> <p><i>Item 21. FIRE AND WATER RESISTANT TARPULIN-If shipment is made on open equipment, check to make sure the lading is properly covered with a fire and water resistant tarpaulin. Explosive material packed in fire and water resistant containers and transported on flat-bed vehicles are not required to be covered with fire and water resistant tarpaulins (C.F.R.)</i></p> <p><i>Item 22. ANY OTHER DEFECTS (Specify)-Self Explanatory.</i></p> <p><i>Item 23. MIXTURES OR MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS Check carefully to prevent loading of incompatible explosives. (C.F.R.)</i></p> <p><i>Item 24. LOAD IS SECURED TO PREVENT MOVEMENT- Self Explanatory.</i></p> <p><i>Item 25. WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED-Lading shall be distributed in accordance with the approved load plan, when available, or when not available, a plan agreed upon by the shipper and the carrier. The weight of the load shall not exceed the capacity of the vehicle established by the carrier. The gross axle weights and the gross vehicle weight shall not exceed the limits imposed by the states through which the vehicle is routed. The carrier shall inform the shipper of the state(s) law requirements. (DOD Requirement)</i></p> <p><i>Items 26., 27., and 28-Self Explanatory.</i></p> <p><i>Item 29. PROPER PLACARDS APPLIED-Four standard placards applicable to the load will be furnished the carrier and insure they are conspicuously displayed, one in front rear, and each side. (C.F.R.)</i></p> <p><i>Item 30. SHIPMENT MADE UNDER DOT EXCEPTION 868-This item will be checked when a shipment is made under the provisions of DOT Exception 868. When checked, it signifies that the shipment and that the driver is relieved from certifying to items 23., 24., and 25. (DOD Requirement)</i></p>
REMARKS	

Figure 2-3. DD FORM 626 (Rear)

<b>SPECIAL INSTRUCTIONS FOR MOTOR VEHICLE DRIVERS</b>		DATE 1 May 85
TO: (carrier's Name and trailer Number) 1-505th Arty Bn. Ft. Knox, Ky		FROM: (Installation Instrutions) ASP 3, Ft. Knox, Ky
BILL OF LADING NUBER N/A	THIS TRUCK IS LOADED WITH (Commodity description)	
TYPE PLACARDS REQUIRED Explosives A	High Explosive Ammunition	
<b>IN CASE OF FIRE</b>		<b>IN CASE OF ACCIDENT</b>
<p>1. If any part of the vehicle outside of actual contents catches fire, take vehicle to a clear or uninhabited area, if practicable, and/or at attempt to put fire out immediately with hand estinguishers or other available means. If practicable, ask someone to notify the fire dep[ar]tment. Call to the attentioni of fire or police persoonnel at the scene of the fire the information on this form.</p> <p>2. Fires may be fought until the flames reach the cargo, at which time firemen and other personnel lshould be withdrawn to a safe distance, as noted in 5 and l below.</p> <p>3. If in convoy, other trucks proceed to safe distance.</p> <p>4. Water may be used on this cargo <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (See Other Specific Precautions or Instruitions below).</p> <p>5. Firemen should not approach closer than <u>1200</u> feet* from the fire when the fire has reached the cargo. (See Other Specific precautions or Instruitions below)</p> <p>6. Public should not approach closer than <u>2000</u> feet* from fire.</p> <p>7. As soon as practical, notify the nearest military installation.</p>		<p>1. Set brake and block vehicle to prevent movement.</p> <p>2. Post flags by day, and red electric lanterns or reflectors by night, warning traffic approaching from each direction.</p> <p>3. Call for ambulance, if necessary.</p> <p>4. Notify nearest police.</p> <p>5. Notify nearest military installation if cargo is damaged.</p> <p>ADDITIONAL NOTIFICATION REQUIRED (By phone or wire as soon as possible)</p>
		<b>IN CASE OF BREAKDOWN</b>
		<p>1. Do not attempt to tow loaded vehicle.</p> <p>2. Post flags by day and red electric lanterns by night, warning traffic from each direction.</p>
<b>GENERAL PRECAUTIONS</b>		
<p>1. While operating over public roads, keep at least 300 feet from trucks loaded with explosives or other dangerous articles; a greater minimum distance must be maintained if required by state or municipal regulations.</p> <p>2. Protect the public from the hazards of the cargo.</p> <p>3. Do not allow smoking or use of matches or lighters in or near the vehicle.</p> <p>4. Obey all state and local traffic regulations.</p> <p>5. Do not exceed speed limits.</p>		<p>6. Stop at all railroad crossings.</p> <p>7. Use designated routes. Whenever possible, avoid congested residential or business area.</p> <p>8. Do not permit unauthorized persons to ride on vehicles.</p> <p>9. At other than carrier rest stops or interchange points, select safe parking space at stopping locations designated by the carrier. Vehicles carrying explosives should not group together at those stopping locations.</p>
<b>OTHER SPECIFIC PRECAUTIONS OR INSTURCTIONS</b>		
(The ammunition supply point vehicle inspector completes this form and gives it to the vehicle driver)		
Principally a missile fragment hazard. Maintainn the minimum distances as indicated above and be prepared to fight incipient fires started by the explosion.		
These instruitions must be transferred to each subsequent driver for turn-in at final destination. If more than 3 drivers are involved, the additional signatures should be make on an extra sheet and attached hereto.	SIGNATURE OF SHIPPER REPRESENTATIVE	SIGNATURE OF FIRST DRIVER
	SIGNATURE OF SECOND DRIVER	SIGNATURE OF THIRD DRIVER
* The distances shown are minimum; greater distances should be used whenever possible.		

DD FORM 836 1 MAY 71 REPLACES EDITON OF 1 JUN 66, WHICH MAY BE USED. ☆U. S. Government Printing Office: 1980-341-646/8082

Figure 2-4. DD FORM 836

§ 177.800

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**Part 177—CARRIAGE BY PUBLIC HIGHWAY****Subpart A—General Information and Regulations**

- Sec.
- 177.800 Purpose and scope of this part and responsibility for compliance and training.
- 177.801 Unacceptable hazardous materials shipments.
- 177.802 Inspection.
- 177.804 Compliance with Federal Motor Carrier Safety Regulations.
- 177.810 Vehicular tunnels.
- 177.816 Driver training.
- 177.817 Shipping papers.
- 177.823 Movement of motor vehicles in emergency situations.
- 177.827 Removed.

**Subpart B—Loading and Unloading**

- 177.834 General requirements.
- 177.835 Class 1 (explosive) materials.
- 177.837 Class 3 (flammable liquid) materials.
- 177.838 Class 4 (flammable solid) materials, Class 5 (oxidizing) materials, and Division 4.2 (pyroforic liquid) materials.
- 177.839 Class 8 (corrosive) materials.
- 177.840 Class 2 (gases) materials.
- 177.841 Division 6.1 (poisonous) and Division 2.3 (poisonous gas) materials.
- 177.842 Class 7 (radioactive) material.
- 177.843 Contamination of vehicles.

**Subpart C—Segregation and Separation Chart of Hazardous Materials**

- 177.848 Segregation of hazardous materials.

**Subpart D—Vehicles and Shipments in Transit; Accidents**

- 177.854 Disabled vehicles and broken or leaking packages; repairs.

**Subpart E—Regulations Applying to Hazardous Material on Motor Vehicles Carrying Passengers for Hire**

177.870 Regulations for passenger carrying vehicles.

AUTHORITY: 49 U.S.C. 5101-5127; 49 CFR 1.53.

**Subpart A—General Information and Regulations****§177.800 Purpose and scope of this part and responsibility for compliance and training.**

(a) *Purpose and scope.* This part prescribes requirements, in addition to those contained in parts 171, 172, 173, 178 and 180 of this subchapter, that are applicable to the acceptance and transportation of hazardous materials by private, common, or contract carriers by motor vehicle.

(b) *Responsibility for compliance.* Unless this subchapter specifically provides that another person shall perform a particular duty, each carrier, including a connecting carrier, shall perform the duties specified and comply with all applicable requirements in this part and shall ensure its hazmat employees receive training in relation thereto.

(c) *Responsibility for training.* A carrier may not transport a hazardous material by motor vehicle unless each of its hazmat employees involved in that transportation is trained as required by this part and subpart H of part 172 of this subchapter.

(d) *No unnecessary delay in movement of shipments.* All shipments of hazardous materials must be transported without unnecessary delay, from and including the time of commencement of the loading of the hazardous material until its final unloading at destination.

[Amdt. 177-79, 57 FR 20954, May 15, 1992, as amended by Amdt. 177-86, 61 FR 18933, Apr. 29, 1996]

**§177.801 Unacceptable hazardous materials shipments.**

No person may accept for transportation or transport by motor vehicle a forbidden material or hazardous material that is not prepared in accordance with the requirements of this subchapter.

[Amdt. 177-87, 61 FR 27175, May 30, 1996]



## Research and Special Programs Administration, DOT

§ 177.816

**§177.802 Inspection.**

Records, equipment, packagings and containers under the control of a motor carrier, insofar as they affect safety in transportation of hazardous materials by motor vehicle, must be made available for examination and inspection by a duly authorized representative of the Department.

[Amdt. 177-71, 54 FR 25015, June 12, 1989]

**§177.804 Compliance with Federal Motor Carrier Safety Regulations.**

Motor carriers and other persons subject to this part shall comply with 49 CFR parts 390 through 397 (excluding §§ 397.3 and 397.9) to the extent those regulations apply.

[Amdt. 177-81, 58 FR 50505, Sept. 27, 1993]

**§177.810 Vehicular tunnels.**

Except as regards Class 7 (radioactive) materials, nothing contained in parts 170–189 of this subchapter shall be so construed as to nullify or supersede regulations established and published under authority of State statute or municipal ordinance regarding the kind, character, or quantity of any hazardous material permitted by such regulations to be transported through any urban vehicular tunnel used for mass transportation.

[Amdt. 177-52, 46 FR 5316, Jan. 19, 1981, as amended by Amdt. 177-78, 55 FR 52710, Dec. 21, 1990; 62 FR 51560, Oct. 1, 1997]

**§177.816 Driver training.**

(a) In addition to the training requirements of § 177.800, no carrier may transport, or cause to be transported, a hazardous material unless each hazmat employee who will operate a motor vehicle has been trained in the applicable requirements of 49 CFR parts 390 through 397 and the procedures necessary for the safe operation of that motor vehicle. Driver training shall include the following subjects:

- (1) Pre-trip safety inspection;
- (2) Use of vehicle controls and equipment, including operation of emergency equipment;
- (3) Operation of vehicle, including turning, backing, braking, parking, handling, and vehicle characteristics including those that affect vehicle stability, such as effects of

braking and curves, effects of speed on vehicle control, dangers associated with maneuvering through curves, dangers associated with weather or road conditions that a driver may experience (e.g., blizzards, mountainous terrain, high winds), and high center of gravity;

(4) Procedures for maneuvering tunnels, bridges, and railroad crossings;

(5) Requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reporting; and

(6) Loading and unloading of materials, including—

(i) Compatibility and segregation of cargo in a mixed load;

(ii) Package handling methods; and

(iii) Load securement.

(b) *Specialized requirements for cargo tanks and portable tanks.* In addition to the training requirement of paragraph (a) of this section, each person who operates a cargo tank or a vehicle with a portable tank with a capacity of 1,000 gallons or more must receive training applicable to the requirements of this subchapter and have the appropriate State-issued commercial driver's license required by 49 CFR part 383. Specialized training shall include the following:

(1) Operation of emergency control features of the cargo tank or portable tank;

(2) Special vehicle handling characteristics, including: high center of gravity, fluid-load subject to surge, effects of fluid-load surge on braking, characteristic differences in stability among baffled, unbaffled, and multi-compartmented tanks; and effects of partial loads on vehicle stability;

(3) Loading and unloading procedures;

(4) The properties and hazards of the material transported; and

(5) Retest and inspection requirements for cargo tanks.

(c) The training required by paragraphs (a) and (b) of this section may be satisfied by compliance with the current requirements for a Commercial Driver's License (CDL) with a tank vehicle or hazardous materials endorsement.

(d) Training required by paragraph (b) of this section must conform to the requirements

## § 177.817

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of § 172.704 of this subchapter with respect to frequency and recordkeeping.

[Amdt. 177-79, 57 FR 20954, May 15, 1992, as amended by Amdt. 177-79, 58 FR 5852, Jan. 22, 1993]

**§177.817 Shipping papers.**

(a) *General requirements.* A carrier may not transport a hazardous material unless it is accompanied by a shipping paper that is prepared in accordance with §§ 172.200, 172.201, 172.202, and 172.203 of this subchapter.

(b) *Shipper certification.* An initial carrier may not accept a hazardous material offered for transportation unless the shipping paper describing the material includes a shipper's certification which meets the requirements in § 172.204 of this subchapter. Except for a hazardous waste, the certification is not required for shipments to be transported entirely by private carriage and for bulk shipments to be transported in a cargo tank supplied by the carrier.

(c) *Requirements when interlining with carriers by rail.* A motor carrier shall mark on the shipping paper required by this section, if it offers or delivers a freight container or transport vehicle to a rail carrier for further transportation:

- (1) A description of the freight container or transport vehicle; and
- (2) The kind of placard affixed to the freight container or transport vehicle.

(d) This subpart does not apply to a material that is excepted from shipping paper requirements as specified in § 172.200 of this subchapter.

(e) *Shipping paper accessibility-accident or inspection.* A driver of a motor vehicle containing hazardous material, and each carrier using such a vehicle, shall ensure that the shipping paper required by this section is readily available to, and recognizable by, authorities in the event of accident or inspection. Specifically, the driver and the carrier shall:

- (1) Clearly distinguish the shipping paper, if it is carried with other shipping papers or other papers of any kind, by either distinctively tabbing it or by having it appear first; and
- (2) Store the shipping paper as follows:

(i) When the driver is at the vehicle's controls, the shipping paper shall be: (A) Within his immediate reach while he is restrained by the lap belt; and (B) either readily visible to a person entering the driver's compartment or in a holder which is mounted to the inside of the door on the driver's side of the vehicle.

(ii) When the driver is not at the vehicle's controls, the shipping paper shall be: (A) In a holder which is mounted to the inside of the door on the driver's side of the vehicle; or (B) on the driver's seat in the vehicle.

[Amdt. 177-35, 41 FR 16130, Apr. 15, 1976, as amended by Amdt. 177-35A, 41 FR 40691, Sept. 20, 1976; Amdt. 177-48, 45 FR 47670, Nov. 10, 1980; Amdt. 177-65, 50 FR 11055, Mar. 19, 1985; Amdt. 177-72, 53 FR 17160, May 13, 1988]

**§177.823 Movement of motor vehicles in emergency situations.**

(a) A carrier may not move a transport vehicle containing a hazardous material unless the vehicle is marked and placarded in accordance with part 172 or as authorized in § 171.12a of this subchapter, or unless, in an emergency:

- (1) The vehicle is escorted by a representative of a state or local government;
- (2) The carrier has permission from the Department; or
- (3) Movement of the transport vehicle is necessary to protect life or property.

(b) *Disposition of contents of cargo tank when unsafe to continue.* In the event of a leak in a cargo tank of such a character as to make further transportation unsafe, the leaking vehicle should be removed from the traveled portion of the highway and every available means employed for the safe disposal of the leaking material by preventing, so far as practicable, its spread over a wide area, such as by digging trenches to drain to a hole or depression in the ground, diverting the liquid away from streams or sewers if possible, or catching the liquid in containers if practicable. Smoking, and any other source of ignition, in the vicinity of a leaking cargo tank is not permitted.

(c) *Movement of leaking cargo tanks.* A leaking cargo tank may be transported only the minimum distance necessary to reach a place where the contents of the tank or compart-

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## § 177.834

ment may be disposed of safely. Every available means must be utilized to prevent the leakage or spillage of the liquid upon the highway.

[Amdt. 177-35, 41 FR 16130, Apr. 15, 1976, as amended by Amdt. 177-67, 50 FR 41521, Oct. 11, 1985; Amdt. 177-86, 61 FR 18933, Apr. 29, 1996]

## §177.827 Removed.

Removed by Direct Final rule published in the Federal Register dated September 2, 1997. No confirmation of the effective date was published as of October 1, 1997.

## Subpart B—Loading and Unloading

NOTE: For prohibited loading and storage of hazardous materials, see § 177.848.

## §177.834 General requirements.

(a) *Packages secured in a vehicle.* Any tank, barrel, drum, cylinder, or other packaging, which contains any Class 3 (flammable liquid), Class 2 (gases), Class 8 (corrosive), Division 6.1 (poisonous), or Class 7 (radioactive) material must be secured against movement within the vehicle on which it is being transported, under conditions normally incident to transportation.

(b) [Reserved]

(c) *No smoking while loading or unloading.* Smoking on or about any motor vehicle while loading or unloading any Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), or Division 2.1 (flammable gas) materials is forbidden.

(d) *Keep fire away, loading and unloading.* Extreme care shall be taken in the loading or unloading of any Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), or Division 2.1 (flammable gas) materials into or from any motor vehicle to keep fire away and to prevent persons in the vicinity from smoking, lighting matches, or carrying any flame or lighted cigar, pipe, or cigarette.

(e) *Handbrake set while loading and unloading.* No hazardous material shall be loaded into or on, or unloaded from, any motor vehicle unless the handbrake be securely set and all other reasonable precautions be taken

to prevent motion of the motor vehicle during such loading or unloading process.

(f) *Use of tools, loading and unloading.* No tools which are likely to damage the effectiveness of the closure of any package or other container, or likely adversely to affect such package or container, shall be used for the loading or unloading of any Class 1 (explosive) material or other dangerous article.

(g) *Prevent relative motion between containers.* Containers of Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), Class 8 (corrosive), Class 2 (gases) and Division 6.1 (poisonous) materials, must be so braced as to prevent motion thereof relative to the vehicle while in transit. Containers having valves or other fittings must be so loaded that there will be the minimum likelihood of damage thereto during transportation.

(h) *Precautions concerning containers in transit; fueling road units.* Reasonable care should be taken to prevent undue rise in temperature of containers and their contents during transit. There must be no tampering with such container or the contents thereof nor any discharge of the contents of any container between point of origin and point of billed destination. Discharge of contents of any container, other than a cargo tank, must not be made prior to removal from the motor vehicle. Nothing contained in this paragraph shall be so construed as to prohibit the fueling of machinery or vehicles used in road construction or maintenance.

(i) *Attendance requirements.*

(1) *Loading.* A cargo tank must be attended by a qualified person at all times when it is being loaded. The person who is responsible for loading the cargo tank is also responsible for ensuring that it is so attended.

(2) *Unloading.* A motor carrier who transports hazardous materials by a cargo tank must ensure that the cargo tank is attended by a qualified person at all times during unloading. However, the carrier's obligation to ensure attendance during unloading ceases when:

(i) The carrier's obligation for transporting the materials is fulfilled;

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(ii) The cargo tank has been placed upon the consignee's premises; and

(iii) The motive power has been removed from the cargo tank and removed from the premises.

(3) A person "attends" the loading or unloading of a cargo tank if, throughout the process, he is awake, has an unobstructed view of the cargo tank, and is within 7.62 meters (25 feet) of the cargo tank.

(4) A person is "qualified" if he has been made aware of the nature of the hazardous material which is to be loaded or unloaded, he has been instructed on the procedures to be followed in emergencies, he is authorized to move the cargo tank, and he has the means to do so.

(5) A delivery hose, when attached to the cargo tank, is considered a part of the vehicle.

(j) *Manholes and valves closed.* A person may not drive a cargo tank and a motor carrier may not permit a person to drive a cargo tank motor vehicle containing a hazardous material regardless of quantity unless:

(1) All manhole closures are closed and secured; and

(2) All valves and other closures in liquid discharge systems are closed and free of leaks.

(k) {Reserved}

(l) *Use of cargo heaters when transporting certain hazardous material.* Transportation includes loading, carrying, and unloading.

(1) *When transporting Class 1 (explosive) materials.* A motor vehicle equipped with a cargo heater of any type may transport Class 1 (explosive) materials only if the cargo heater is rendered inoperable by:

(i) Draining or removing the cargo heater fuel tank; and

(ii) disconnecting the heater's power source.

(2) *When transporting certain flammable material—*

(i) *Use of combustion cargo heaters.* A motor vehicle equipped with a combustion cargo heater may be used to transport Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials only if each of the following requirements are met:

(A) It is a catalytic heater.

(B) The heater's surface temperature cannot exceed 54 °C (130 °F) - either on a thermo-

statically controlled heater or on a heater without thermostatic control when the outside or ambient temperature is 16 °C (61 °F) or less.

(C) The heater is not ignited in a loaded vehicle.

(D) There is no flame, either on the catalyst or anywhere in the heater.

(E) The manufacturer has certified that the heater meets the requirements under paragraph (l)(2)(i) of this section by permanently marking the heater "MEETS DOT REQUIREMENTS FOR CATALYTIC HEATERS USED WITH FLAMMABLE LIQUID AND GAS."

(F) The heater is also marked "DO NOT LOAD INTO OR USE IN CARGO COMPARTMENTS CONTAINING FLAMMABLE LIQUID OR GAS IF FLAME IS VISIBLE ON CATALYST OR IN HEATER."

(G) Heater requirements under § 393.77 of this title are complied with.

(ii) *Effective date for combustion heater requirements.* The requirements under paragraph (l)(2)(i) of this section govern as follows:

(A) Use of a heater manufactured after November 14, 1975, is governed by every requirement under (l)(2)(i) of this section;

(B) Use of a heater manufactured before November 15, 1975, is governed only by the requirements under (l)(2)(i) (A), (C), (D), (F) and (G) of this section until October 1, 1976; and

(C) Use of any heater after September 30, 1976, is governed by every requirement under paragraph (l)(2)(i) of this section.

(iii) *Restrictions on automatic cargo-space-heating temperature control devices.* Restrictions on these devices have two dimensions: Restrictions upon use and restrictions which apply when the device must not be used.

(A) *Use restrictions.* An automatic cargo-space-heating temperature control device may be used when transporting Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials only if each of the following requirements is met:

(1) Electrical apparatus in the cargo compartment is nonsparking or explosion proof.

(2) There is no combustion apparatus in the cargo compartment.

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(3) There is no connection for return of air from the cargo compartment to the combustion apparatus.

(4) The heating system will not heat any part of the cargo to more than 54 °C (129 ° F).

(5) Heater requirements under § 393.77 of this title are complied with.

(B) *Protection against use.* Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials may be transported by a vehicle, which is equipped with an automatic cargo-space-heating temperature control device that does not meet each requirement of paragraph (1)(2)(iii)(A) of this section, only if the device is first rendered inoperable, as follows:

(1) Each cargo heater fuel tank, if other than LPG, must be emptied or removed.

(2) Each LPG fuel tank for automatic temperature control equipment must have its discharge valve closed and its fuel feed line disconnected.

(m) Tanks constructed and maintained in compliance with Spec. 106A or 110A (§§ 179.300, 179.301 of this subchapter) that are authorized for the shipment of hazardous materials by highway in part 173 of this subchapter must be carried in accordance with the following requirements:

(1) Tanks must be securely chocked or clamped on vehicles to prevent any shifting.

(2) Equipment suitable for handling a tank must be provided at any point where a tank is to be loaded upon or removed from a vehicle.

(3) No more than two cargo carrying vehicles may be in the same combination of vehicles.

(4) Compliance with §§ 174.200 and 174.204 of this subchapter for combination rail freight, highway shipments and for trailer-on-flat-car service is required.

(n) Specification 56, 57, IM 101, and IM 102 portable tanks, when loaded, may not be stacked on each other nor placed under other freight during transportation by motor vehicle.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

**§177.835 Class 1 (explosive) materials.**

(See also § 177.834 (a) to (j).)

(a) *Engine stopped.* No Class 1 (explosive) materials shall be loaded into or on or be unloaded from any motor vehicle with the engine running.

(b) *Care in loading, unloading, or other handling of Class 1 (explosive) materials.* No bale hooks or other metal tools shall be used for the loading, unloading, or other handling of Class 1 (explosive) materials, nor shall any package or other container of Class 1 (explosive) materials, except barrels or kegs, be rolled. No packages of Class 1 (explosive) materials shall be thrown or dropped during process of loading or unloading or handling of Class 1 (explosive) materials. Special care shall be exercised to the end that packages or other containers containing Class 1 (explosive) materials shall not catch fire from sparks or hot gases from the exhaust tailpipe.

(1) Whenever tarpaulins are used for covering Class 1 (explosive) materials, they shall be secured by means of rope, wire, or other equally efficient tie downs. Class 1 (explosive) materials placards or markings required by § 177.823 shall be secured, in the appropriate locations, directly to the equipment transporting the Class 1 (explosive) materials. If the vehicle is provided with placard boards, the placards must be applied to these boards.

(c) *Class 1 (explosive) materials on vehicles in combination.* Division 1.1 or 1.2 (Class A explosive) materials may not be loaded into or carried on any vehicle or a combination of vehicles if:

(1) More than two cargo carrying vehicles are in the combination;

(2) Any full trailer in the combination has a wheel base of less than 184 inches;

(3) Any vehicle in the combination is a cargo tank which is required to be marked or placarded under § 177.823; or

(4) The other vehicle in the combination contains any:

(i) Substances, explosive, n.o.s., Division 1.1A (explosive) material (Initiating explosive),

(ii) Packages of Class 7 (radioactive) materials bearing "Yellow III" labels,

(iii) Division 2.3 (poisonous gas) or Division 6.1 (poisonous) materials, or

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(iv) Hazardous materials in a portable tank or a DOT specification 106A or 110A tank.

(d) [Reserved]

(e) *No sharp projections inside body of vehicles.* No motor vehicle transporting any kind of Class 1 (explosive) material shall have on the interior of the body in which the Class 1 (explosive) materials are contained, any inwardly projecting bolts, screws, nails, or other inwardly projecting parts likely to produce damage to any package or container of Class 1 (explosive) materials during the loading or unloading process or in transit.

(f) *Class 1 (explosive) materials vehicles, floors tight and lined.* Motor vehicles transporting Division 1.1, 1.2, or 1.3 (Class A or Class B explosive) materials shall have tight floors; shall have that portion of the interior in contact with the load lined with either non-metallic material or non-ferrous metals, except that the lining is not required for truck load shipments loaded by the Departments of the Army, Navy or Air Force of the United States Government provided the Class 1 (explosive) materials are of such nature that they are not liable to leakage of dust, powder, or vapor which might become the cause of an explosion. The interior of the cargo space must be in good condition so that there will not be any likelihood of containers being damaged by exposed bolts, nuts, broken side panels or floor boards, or any similar projections.

(g) No detonator assembly or booster with detonator may be transported on the same motor vehicle with any Division 1.1, 1.2 or 1.3 (Class A or Class B explosive) material (except other detonator assemblies, boosters with detonators or detonators), explosives for blasting or detonating cord Division 1.4 (Class C explosive) material. No detonator may be transported on the same motor vehicle with any Division 1.1, 1.2 or 1.3 (Class A or Class B explosive) material (except other detonators, detonator assemblies or boosters with detonators), explosives for blasting or detonating cord, Division 1.4 (Class C explosive) material unless—

(1) It is packed in a specification MC 201 (§ 178.318 of this subchapter) container; or

(2) The package conforms with requirements prescribed in § 173.63 of this subchap-

ter, and its use is restricted to instances when—

(i) There is no Division 1.1, 1.2, or 1.3 (Class A or Class B explosive) material or blasting agent loaded on the motor vehicle; and

(ii) A separation of 61 cm (24 inches) is maintained between each package of detonators and each package of detonating cord; or

(3) It is packed and loaded in accordance with a method approved by the Department. One method approved by the Department is as follows:

(i) The detonators are in packagings as prescribed in § 173.63 of this subchapter which in turn are loaded into suitable containers or separate compartments. Both the detonators and the container or compartment must meet the requirements of the Institute of Makers of Explosives' Standard (IME Safety Library Publication No. 22).

(h) *Lading within body or covered tailgate closed.* Except as provided in paragraphs (g), (k), and (m) of this section, dealing with the transportation of liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, all of that portion of the lading of any motor vehicle which consists of Class 1 (explosive) materials shall be contained entirely within the body of the motor vehicle or within the horizontal outline thereof, without overhang or projection of any part of the load and if such motor vehicle has a tailboard or tailgate, it shall be closed and secured in place during such transportation. Every motor vehicle transporting Class 1 (explosive) materials must either have a closed body or have the body thereof covered with a tarpaulin, and in either event care must be taken to protect the load from moisture and sparks, except that subject to other provisions of these regulations, Class 1 (explosive) materials other than black powder may be transported on flat-bed vehicles if the explosive portion of the load on each vehicle is packed in fire and water resistant containers or covered with a fire and water resistant tarpaulin.

(i) *Class 1 (explosive) materials to be protected against damage by other lading.* No motor vehicle transporting any Class 1 (explosive) material may transport as a part of its load any metal or other articles or mate-

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rials likely to damage such Class 1 (explosive) material or any package in which it is contained, unless the different parts of such load be so segregated or secured in place in or on the motor vehicle and separated by bulkheads or other suitable means as to prevent such damage.

(j) *Transfer of Class 1 (explosive) materials en route.* No Division 1.1, 1.2, or 1.3 (Class A or Class B explosive) material shall be transferred from one container to another, or from one motor vehicle to another vehicle, or from another vehicle to a motor vehicle, on any public highway, street, or road, except in case of emergency. In such cases red electric lanterns, red emergency reflectors or red flags shall be set out in the manner prescribed for disabled or stopped motor vehicles. (See Motor Carrier Safety Regulations, part 392 of this title.) In any event, all practicable means, in addition to these hereinbefore prescribed, shall be taken to protect and warn other users of the highway against the hazard involved in any such transfer or against the hazard occasioned by the emergency making such transfer necessary.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

**§177.837 Class 3 (flammable liquid) materials.**

(See also § 177.834 (a) to (j).)

(a) *Engine stopped.* Unless the engine of a cargo tank motor vehicle is to be used for the operation of a pump, no Class 3 material shall be loaded into, or on, or unloaded from any cargo tank motor vehicle while the engine is running.

(b) *Bonding and grounding containers other than cargo tanks prior to and during transfer of lading.* For containers which are not in metallic contact with each other, either metallic bonds or ground conductors shall be provided for the neutralization of possible static charges prior to and during transfers of Class 3 (flammable liquid) materials between such containers. Such bonding shall be made by first connecting an electric conductor to the container to be filled and subsequently connecting the conductor to the container from which the liquid is to come, and not in any

other order. To provide against ignition of vapors by discharge of static electricity, the latter connection shall be made at a point well removed from the opening from which the Class 3 (flammable liquid) material is to be discharged.

(c) *Bonding and grounding cargo tanks before and during transfer of lading.*

(1) When a cargo tank is loaded through an open filling hole, one end of a bond wire shall be connected to the stationary system piping or integrally connected steel framing, and the other end to the shell of the cargo tank to provide a continuous electrical connection. (If bonding is to the framing, it is essential that piping and framing be electrically interconnected.) This connection must be made before any filling hole is opened, and must remain in place until after the last filling hole has been closed. Additional bond wires are not needed around All-Metal flexible or swivel joints, but are required for nonmetallic flexible connections in the stationary system piping. When a cargo tank is unloaded by a suction-piping system through an open filling hole of the cargo tank, electrical continuity shall be maintained from cargo tank to receiving tank.

(2) When a cargo tank is loaded or unloaded through a vapor-tight (not open hole) top or bottom connection, so that there is no release of vapor at a point where a spark could occur, bonding or grounding, is not required. Contact of the closed connection must be made before flow starts and must not be broken until after the flow is completed.

(3) Bonding or grounding is not required when a cargo tank is unloaded through a non-vapor-tight connection into a stationary tank provided the metallic filling connection is maintained in contact with the filling hole.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

**§177.838 Class 4 (flammable solid) materials, Class 5 (oxidizing) materials, and Division 4.2 (pyroforic liquid) materials.**

(See also § 177.834 (a) to (j).)

(a) *Lading within body or covered; tailgate closed; pick-up and delivery.* All of that portion of the lading of any motor vehicle trans-

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porting Class 4 (flammable solid) or Class 5 (oxidizing) materials shall be contained entirely within the body of the motor vehicle and shall be covered by such body, by tarpaulins, or other suitable means, and if such motor vehicle has a tailboard or tailgate, it shall be closed and secured in place during such transportation: *Provided, however*, That the provisions of this paragraph need not apply to "pick-up and delivery" motor vehicles when such motor vehicles are used in no other transportation than in and about cities, towns, or villages. Shipment in water-tight bulk containers need not be covered by a tarpaulin or other means.

(b) *Articles to be kept dry.* Special care shall be taken in the loading of any motor vehicle with Class 4 (flammable solid) or Class 5 (oxidizing) materials which are likely to become hazardous to transport when wet, to keep them from being wetted during the loading process and to keep them dry during transit. Special care shall also be taken in the loading of any motor vehicle with Class 4 (flammable solid) or Class 5 (oxidizing) materials, which are likely to become more hazardous to transport by wetting, to keep them from being wetted during the loading process and to keep them dry during transit. Examples of such dangerous materials are charcoal screenings, ground, crushed, or pulverized charcoal, and lump charcoal.

(c) *Lading ventilation, precautions against spontaneous combustion.* Whenever a motor carrier has knowledge concerning the hazards of spontaneous combustion or heating of any article to be loaded on a motor vehicle, such article shall be so loaded as to afford sufficient ventilation of the load to provide reasonable assurance against fire from this cause; and in such a case the motor vehicle shall be unloaded as soon as practicable after reaching its destination. Charcoal screenings, or ground, crushed, granulated, or pulverized charcoal, in bags, shall be so loaded that the bags are laid horizontally in the motor vehicle, and so piled that there will be spaces for effective air circulation, which spaces shall not be less than 10 cm (3.9 inches) wide; and air spaces shall be maintained between rows of bags. Bags shall not be piled closer than 15 cm (5.9

inches) from the top of any motor vehicle with a closed body.

(d)—(e) [Reserved]

(f) Nitrates, except ammonium nitrate having organic coating, must be loaded in closed or open type motor vehicles, which must be swept clean and be free of any projections capable of injuring bags when so packaged. When shipped in open typemotor vehicles, the lading must be suitably covered. Ammonium nitrate having organic coating must not be loaded in all-metal vehicles, other than those made of aluminum or aluminum alloys of the closed type.

(g) A motor vehicle may only contain 45.4 kg (100 pounds) or less net mass of material described as "Smokeless powder for small arms, Division 4.1".

(h) Division 4.2 (pyrophoric liquid) materials in cylinders. Cylinders containing Division 4.2 (pyrophoric liquid) materials, unless packed in a strong box or case and secured therein to protect valves, must be loaded with all valves and safety relief devices in the vapor space. All cylinders must be secured so that no shifting occurs in transit.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

**§177.839 Class 8 (corrosive) materials.**

(See also § 177.834(a) through (j).)

(a) *Nitric acid.* No packaging of nitric acid of 50 percent or greater concentration may be loaded above any packaging containing any other kind of material.

(b) *Storage batteries.* All storage batteries containing any electrolyte must be so loaded, if loaded with other lading, that all such batteries will be protected against other lading falling onto or against them, and adequate means must be provided in all cases for the protection and insulation of battery terminals against short circuits.

[Amdt. 177-87, 61 FR 27175, May 30, 1996]

**§177.840 Class 2 (gases) materials.**

(See also § 177.834 (a) to (j).)

(a) *Floors or platforms essentially flat.* Cylinders containing Class 2 (gases) materials shall not be loaded onto any part of the floor or platform of any motor vehicle which is not



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essentially flat; cylinders containing Class 2 (gases) materials may be loaded onto any motor vehicle not having a floor or platform only if such motor vehicle be equipped with suitable racks having adequate means for securing such cylinders in place therein. Nothing contained in this section shall be so construed as to prohibit the loading of such cylinders on any motor vehicle having a floor or platform and racks as hereinbefore described.

(1) *Cylinders.* To prevent their overturning, cylinders containing Class 2 (gases) materials must be securely lashed in an upright position; loaded into racks securely attached to the motor vehicle; packed in boxes or crates of such dimensions as to prevent their overturning; or loaded in a horizontal position. Specification DOT-4L cylinders must be loaded in an upright position and securely braced.

(2) *Cylinders for hydrogen, cryogenic liquid.* A Specification DOT-4L cylinder containing hydrogen, cryogenic liquid may only be transported on a motor vehicle as follows:

(i) The vehicle must have an open body equipped with a suitable rack or support having a means to hold the cylinder upright when subjected to an acceleration of 2 "g" in any horizontal direction;

(ii) The combined total of the hydrogen venting rates, as marked, on the cylinders transported on one motor vehicle may not exceed 60 SCF per hour;

(iii) The vehicle may not enter a tunnel; and

(iv) Highway transportation is limited to private and contract carriage and to direct movement from point of origin to destination.

(b) *Portable tank containers* containing Class 2 (gases) materials shall be loaded on motor vehicles only as follows:

(1) Onto a flat floor or platform of a motor vehicle.

(2) Onto a suitable frame of a motor vehicle.

(3) In either such case, such containers shall be safely and securely blocked or held down to prevent movement relative to each other or to the supporting structure when in transit, particularly during sudden starts and stops and changes of direction of the vehicle.

(4) Requirements of paragraphs (1) and (2) of this paragraph (b) shall not be construed as prohibiting stacking of containers provided

the provisions of paragraph (3) of this paragraph (b) are fully complied with.

(c) [Reserved]

(d) *Engine to be stopped in cargo tanks, except for transfer pump.* No Division 2.1 (flammable gas) material shall be loaded into or on or unloaded from any cargo tank with the engine running unless the engine is used for the operation of the transfer pump of the vehicle. Unless the delivery hose is equipped with a shut-off valve at its discharge end, the engine of the motor vehicle shall be stopped at the finish of such loading or unloading operation while the filling or discharge connections are disconnected.

(e) Chlorine cargo tanks shall be shipped only when equipped (1) with a gas mask of a type approved by the The National Institute of Occupational Safety and Health (NIOSH) Pittsburgh Research Center, U.S. Department of Health and Human Services for chlorine service; (2) with an emergency kit for controlling leaks in fittings on the dome cover plate.

(f) A cargo tank motor vehicle used for transportation of chlorine may not be moved, coupled or uncoupled, when any loading or unloading connections are attached to the vehicle, nor may it be left without the power unit attached unless the vehicle is chocked or equivalent means are provided to prevent motion. For additional requirements, see § 173.315(o) of this subchapter.

(g) Each liquid discharge valve on a cargo tank, other than an engine fuel line valve, must be closed during transportation except during loading and unloading.

(h) The driver of a motor vehicle transporting a Division 2.1 (flammable gas) material that is a cryogenic liquid in a package exceeding 450 liters (119 gallons) of water capacity shall avoid unnecessary delays during transportation. If unforeseen conditions cause an excessive pressure rise, the driver shall manually vent the tank at a remote and safe location. For each shipment, the driver shall make a written record of the cargo tank pressure and ambient (outside) temperature:

(1) At the start of each trip,

(2) Immediately before and after any manual venting,

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- (3) At least once every five hours, and
- (4) At the destination point.

(i) No person may transport a Division 2.1 (flammable gas) material that is a cryogenic liquid in a cargo tank unless the pressure of the lading is equal to or less than that used to determine the marked rated holding time (MRHT) and the one-way travel time (OWTT), marked on the tank in conformance with § 173.318(g) of this subchapter, is equal to or greater than the elapsed time between the start and termination of travel. This prohibition does not apply if, prior to expiration of the OWTT, the tank is brought to full equilibration as specified in paragraph (j) of this section.

(j) Full equilibration of a cargo tank transporting a Division 2.1 (flammable gas) material that is a cryogenic liquid may only be done at a facility that loads or unloads a Division 2.1 (flammable gas) material that is a cryogenic liquid and must be performed and verified as follows:

- (1) The temperature and pressure of the liquid must be reduced by a manually controlled release of vapor; and
- (2) The pressure in the cargo tank must be measured at least ten minutes after the manual release is terminated.

(k) A carrier of carbon monoxide, cryogenic liquid must provide each driver with a self-contained air breathing apparatus that is approved by the National Institute of Occupational Safety and Health; for example, Mine Safety Appliance Co., Model 401, catalog number 461704.

(Approved by the Office of Management and Budget under control number 2137-0542)

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967; 62 FR 51560, Oct. 1, 1997]

**§177.841 Division 6.1 (poisonous) and Division 2.3 (poisonous gas) materials.**

(See also § 177.834 (a) to (j).)

(a) *Arsenical compounds in bulk.* Care shall be exercised in the loading and unloading of "arsenical dust", "arsenic trioxide", and "sodium arsenate", allowable to be loaded into sift-proof, steel hopper-type or dump-type motor-vehicle bodies equipped with water-proof,

dust-proof covers well secured in place on all openings, to accomplish such loading with the minimum spread of such compounds into the atmosphere by all means that are practicable; and no such loading or unloading shall be done near or adjacent to any place where there are or are likely to be, during the loading or unloading process assemblages of persons other than those engaged in the loading or unloading process, or upon any public highway or in any public place. Before any motor vehicle may be used for transporting any other articles, all detectable traces of arsenical materials must be removed therefrom by flushing with water, or by other appropriate method, and the marking removed.

(b) [Reserved]

(c) *Division 2.3 (poisonous gas) or Division 6.1 (poisonous) materials.* The transportation of a Division 2.3 (poisonous gas) or Division 6.1 (poisonous) material is not permitted if there is any interconnection between packagings.

(d) [Reserved]

(e) A motor carrier may not transport a package:

(1) Bearing or required to bear a POISON or POISON INHALATION HAZARD label in the same motor vehicle with material that is marked as or known to be a foodstuffs, feed or edible material intended for consumption by humans or animals unless the poisonous material is packaged in accordance with this subchapter and is:

- (i) Overpacked in a metal drum as specified in § 173.25(c) of this subchapter; or
- (ii) Loaded into a closed unit load device and the foodstuffs, feed, or other edible material are loaded into another closed unit load device;

(2) Bearing or required to bear a POISON, POISON GAS or POISON INHALATION HAZARD label in the driver's compartment (including a sleeper berth) of a motor vehicle; or

(3) Bearing a KEEP AWAY FROM FOOD label with materials marked as or known to be foodstuffs, feed, or any other edible material intended for consumption by humans or animals unless the package bearing the KEEP AWAY FROM FOOD label is separated in a

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manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials with foodstuffs, feed, or any other edible material would not occur.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967; 62 FR 1217, Jan. 08, 1997]

**§177.842 Class 7 (radioactive) material.**

(a) The number of packages of Class 7 (radioactive) materials in any transport vehicle or storage location must be limited so that the total transport index number does not exceed 50. The total transport index of a group of packages and overpacks is determined by adding together the transport index number on the labels on the individual packages and overpacks in the group. This provision does not apply to exclusive use shipments described in §§ 173.441(b), 173.457, and 173.427 of this subchapter.

(b) Packages of Class 7 (radioactive) material bearing "RADIOACTIVE YELLOW-II" or "RADIOACTIVE YELLOW-III" labels may not be placed in a transport vehicle, storage location or in any other place closer than the distances shown in the following table to any area which may be continuously occupied by any passenger, employee, or animal, nor closer than the distances shown in the table to any package containing undeveloped film (if so marked), and must conform to the following conditions:

(1) If more than one of these packages is present, the distance must be computed from the following table on the basis of the total transport index number determined by adding together the transport index number on the labels on the individual packages and overpacks in the vehicle or storeroom.

(2) Where more than one group of packages is present in any single storage location, a single group may not have a total transport index greater than 50. Each group of packages must be handled and stowed not closer than 6 meters (20 feet) (measured edge to edge) to any other group. The following table is to be used in accordance with the provisions of paragraph (b) of this section:

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Total transport index	Minimum separation distance in meters (feet) to nearest undeveloped film in various times of transit					Minimum distance in meters (feet) to area of persons, or minimum distance in meters (feet) from dividing partition of cargo compartments
	Up to 2 hours	2-4 hours	4-8 hours	8-12 hours	Over 12 hours	
None	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
0.1 to 1.0	0.3 (1)	0.6 (2)	0.9 (3)	1.2 (4)	1.5 (5)	0.3 (1)
1.1 to 5.0	0.9 (3)	1.2 (4)	1.8 (6)	2.4 (8)	3.4 (11)	0.6 (2)
5.1 to 10.0	1.2 (4)	1.8 (6)	2.7 (9)	3.4 (11)	4.6 (15)	0.9 (3)
10.1 to 20.0	1.5 (5)	2.4 (8)	3.7 (12)	4.9 (16)	6.7 (22)	1.2 (4)
20.1 to 30.0	2.1 (7)	3.0 (10)	4.6 (15)	6.1 (20)	8.8 (29)	1.5 (5)
30.1 to 40.0	2.4 (8)	3.4 (11)	5.2 (17)	6.7 (22)	10.1 (33)	1.8 (6)
40.1 to 50.0	2.7 (9)	3.7 (12)	5.8 (19)	7.3 (24)	11.0 (36)	2.1 (7)

Note: The distance in this table must be measured from the nearest point on the nearest packages of Class 7 (radioactive) material.

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(c) Shipments of low specific activity materials and surface contaminated objects, as defined in § 173.403 of this subchapter, must be loaded so as to avoid spillage and scattering of loose materials. Loading restrictions are set forth in § 173.427 of this subchapter.

(d) Packages must be so blocked and braced that they cannot change position during conditions normally incident to transportation.

(e) Persons should not remain unnecessarily in a vehicle containing Class 7 (radioactive) materials.

(f) Each fissile material, controlled shipment (as defined in § 173.403 of this subchapter) must be transported in accordance with one of the methods prescribed in § 173.457 of this subchapter. The transport controls must be adequate to assure that no fissile material, controlled shipment is transported in the same transport vehicle with any other fissile Class 7 (radioactive) material shipment. In loading and storage areas each fissile material, controlled shipment must be segregated by a distance of at least 6 meters (20 feet) from any other package required to bear one of the "Radioactive" labels described in § 172.403 of this subchapter.

(g) For shipments transported under exclusive use conditions the radiation dose rate may not exceed 0.02 mSv per hour (2 mrem per hour) in any position normally occupied in the motor vehicle. For shipments transported as exclusive use under the provisions of § 173.441(b) of this subchapter for packages with external radiation levels in excess of 2 mSv (200 mrem per hour) at the package surface, the motor vehicle must meet the requirements of a closed transport vehicle (§ 173.403 of this subchapter). The total transport index for packages containing fissile material may not exceed 100.

[Amdt. 177-85, 60 FR 50334, Sept. 28, 1995]

#### §177.843 Contamination of vehicles.

(a) Each motor vehicle used for transporting Class 7 (radioactive) materials under exclusive use conditions in accordance with § 173.427(b)(3) or (c) or § 173.443(c) of this subchapter must be surveyed with radiation detection instruments after each use. A vehicle may not be returned to service until the ra-

diation dose rate at every accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less and the removable (non-fixed) radioactive surface contamination is not greater than the level prescribed in § 173.443(a) of this subchapter.

(b) This section does not apply to any vehicle used solely for transporting Class 7 (radioactive) material if a survey of the interior surface shows that the radiation dose rate does not exceed 0.1 mSv per hour (10 mrem per hour) at the interior surface or 0.02 mSv per hour (2 mrem per hour) at 1 meter (3.3 feet) from any interior surface. These vehicles must be stenciled with the words "For Radioactive Materials Use Only" in lettering at least 7.6 centimeters (3 inches) high in a conspicuous place, on both sides of the exterior of the vehicle. These vehicles must be kept closed at all times other than loading and unloading.

(c) In case of fire, accident, breakage, or unusual delay involving shipments of Class 7 (radioactive) material, see § 177.861.

[Amdt. 177-3, 33 FR 14933, Oct. 4, 1968, as amended by Amdt. 177-35, 41 FR 16131, Apr. 15, 1976; Amdt. 177-57, 48 FR 10247, Mar. 10, 1983; Amdt. 177-78, 55 FR 52712, Dec. 21, 1990; Amdt. 177-85, 60 FR 50335, Sept. 28, 1995]

### Subpart C—Segregation and Separation Chart of Hazardous Materials

#### §177.848 Segregation of hazardous materials.

(a) This section applies to materials which meet one or more of the hazard classes defined in this subchapter and are:

- (1) In packages which require labels in accordance with part 172 of this subchapter;
- (2) In a compartment within a multi-compartmented cargo tank subject to the restrictions in § 173.33 of this subchapter; or
- (3) In a portable tank loaded in a transport vehicle or freight container.

(b) When a transport vehicle is to be transported by vessel, other than a ferry vessel, hazardous materials on or within that vehicle must be stowed and segregated in accordance with § 176.83(b) of this subchapter.

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(c) In addition to the provisions of paragraph (d) of this section, cyanides or cyanide mixtures may not be loaded or stored with acids.

(d) Hazardous materials may not be loaded, transported, or stored together, except as provided in this section, and in accordance with the following Table:

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SEGREGATION TABLE FOR HAZARDOUS MATERIALS

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 and 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	X	X
Explosives ..... 1.4		.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	X
Very insensitive explosives. 1.5	A	.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive ex- plosives. 1.6		.	.	.	.	.	X	X	X	X	X	X	X	X	X	X	X	X	X
Flammable gases ..... 2.1		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Non-toxic, non-flammable gases. 2.2		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poisonous gas Zone A ..... 2.3		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poisonous gas Zone B ..... 2.3		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flammable liquids ..... 3		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flammable solids ..... 4.1		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spontaneously combustible materials. 4.2		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dangerous when wet materials. 4.3		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oxidizers ..... 5.1	A	X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Organic peroxides ..... 5.2		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poisonous liquids PG I zone A. 6.1		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Radioactive materials ..... 7		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Corrosive liquids ..... 8		X	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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(e) Instructions for using the segregation table for hazardous materials are as follows:

(1) The absence of any hazard class or division or a blank space in the Table indicates that no restrictions apply.

(2) The letter "X" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation.

(3) The letter "O" in the Table indicates that these materials may not be loaded, transported, or stored together in the same transport vehicle or storage facility during the course of transportation unless separated in a manner that, in the event of leakage from packages under conditions normally incident to transportation, commingling of hazardous materials would not occur. Notwithstanding the methods of separation employed, Class 8 (corrosive) liquids may not be loaded above or adjacent to Class 4 (flammable) or Class 5 (oxidizing) materials; except that shippers may load truckload shipments of such materials together when it is known that the mixture of contents would not cause a fire or a dangerous evolution of heat or gas.

(4) The "\*" in the Table indicates that segregation among different Class 1 (explosive) materials is governed by the compatibility table in paragraph (f) of this section.

(5) The note "A" in the second column of the Table means that, notwithstanding the requirements of the letter "X", ammonium nitrate (UN 1942) and ammonium nitrate fertilizer may be loaded or stored with Division 1.1 (Class A explosive) or Division 1.5 (blasting agents) materials.

(6) When the § 172.101 Table or § 172.402 of this subchapter requires a package to bear a subsidiary hazard label, segregation appropriate to the subsidiary hazard must be applied when that segregation is more restrictive than that required by the primary hazard. However, hazardous materials of the same class may be stowed together without regard to segregation required for any secondary hazard if the materials are not capable of reacting dangerously with each other and causing combustion or dangerous evolution of heat, evolution of flammable, poisonous, or as-

phyxiant gases, or formation of corrosive or unstable materials.

(f) Class 1 (explosive) materials shall not be loaded, transported, or stored together, except as provided in this section, and in accordance with the following Table:



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COMPATIBILITY TABLE FOR CLASS 1 (EXPLOSIVE) MATERIALS

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
B	X	X			X	X	X	X	X	X	X	X	4/5
C	X	X	X		2	X	X	X	X	X	X	3	4/5
D	X	X	2	X	2	X	X	X	X	X	X	3	4/5
E	X	X	2	X	X	X	X	X	X	X	X	3	4/5
F	X	X	2	X	X	X	X	X	X	X	X	3	4/5
G	X	X	2	X	X	X	X	X	X	X	X	3	4/5
H	X	X	2	X	X	X	X	X	X	X	X	3	4/5
J	X	X	2	X	X	X	X	X	X	X	X	3	4/5
K	X	X	2	X	X	X	X	X	X	X	X	3	4/5
L	X	X	2	X	X	X	X	X	X	X	X	3	4/5
N	X	X	2	X	X	X	X	X	X	X	X	3	4/5
S	X	X	2	X	X	X	X	X	X	X	X	3	4/5

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(g) Instructions for using the compatibility table for Class 1 (explosive) materials are as follows:

(1) A blank space in the Table indicates that no restrictions apply.

(2) The letter "X" in the Table indicates that explosives of different compatibility groups may not be carried on the same transport vehicle.

(3) The numbers in the Table mean the following:

(i) "1" means an explosive from compatibility group L shall only be carried on the same transport vehicle with an identical explosive.

(ii) "2" means any combination of explosives from compatibility groups C, D, or E is assigned to compatibility group E.

(iii) "3" means any combination of explosives from compatibility groups C, D, or E with those in compatibility group N is assigned to compatibility group D.

(iv) "4" means § 177.835(g) when transporting detonators.

(v) "5" means Division 1.4S fireworks may not be loaded on the same transport vehicle with Division 1.1 or 1.2 (Class A explosive) materials.

(h) Except as provided in paragraph (i) of this section, explosives of the same compatibility group but of different divisions may be transported together provided that the whole shipment is transported as though its entire contents were of the lower numerical division (i.e., Division 1.1 being lower than Division 1.2). For example, a mixed shipment of Division 1.2 (Class A explosive) materials and Division 1.4 (Class C explosive) materials, both of compatibility group D, must be transported as Division 1.2 (Class A explosive) materials.

(i) When Division 1.5 (blasting agent) materials, compatibility group D, are transported in the same freight container as Division 1.2 (Class A explosive) materials, compatibility group D, the shipment must be transported as Division 1.1 (Class A explosive) materials, compatibility group D.

[Amdt. 177-78, 55 FR 52712, Dec. 21, 1990, as amended at 56 FR 66283, Dec. 20, 1991; 57 FR 45465, Oct. 1, 1992; 57 FR 47513, Oct. 16, 1992; Amdt. 177-78, 57 FR 59310, Dec. 15, 1992; Amdt. 177-82, 58 FR 50237, Sept. 24, 1993; Amdt. 177-83, 59

FR 49134, Sept. 26, 1994; Amdt. 177-87, 61 FR 27175, May 30, 1996]

### Subpart D—Vehicles and Shipments in Transit; Accidents

#### §177.854 Disabled vehicles and broken or leaking packages; repairs.

(See also Forbidden articles, § 177.821).

(a) *Care of lading, hazardous materials.* Whenever for any cause other than necessary traffic stops any motor vehicle transporting any hazardous material is stopped upon the traveled portion of any highway or shoulder thereof, special care shall be taken to guard the vehicle and its load or to take such steps as may be necessary to provide against hazard. Special effort shall be made to remove the motor vehicle to a place where the hazards of the materials being transported may be provided against. See §§ 392.22, 392.24, and 392.25 of this title for warning devices required to be displayed on the highway.

(b) *Disposition of containers found broken or leaking in transit.* When leaks occur in packages or containers during the course of transportation, subsequent to initial loading, disposition of such package or container shall be made by the safest practical means afforded under paragraphs (c), (d), and (e) of this section.

(c) *Repairing or overpacking packages.* (1) Packages may be repaired when safe and practicable, such repairing to be in accordance with the best and safest practice known and available.

(2) Packages of hazardous materials that are damaged or found leaking during transportation, and hazardous materials that have spilled or leaked during transportation, may be forwarded to destination or returned to the shipper in a salvage drum in accordance with the requirements of § 173.3(c) of this subchapter.

(d) *Transportation of repaired packages.* Any package repaired in accordance with the requirements of paragraph (c)(1) of this section, except as provided in §§ 177.855(c), 177.856(c), and 177.858(b), may be transported to the nearest place at which it may safely

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be disposed of only in compliance with the following requirements:

(1) The package must be safe for transportation.

(2) The repair of the package must be adequate to prevent contamination of or hazardous admixture with other lading transported on the same motor vehicle therewith.

(3) If the carrier is not himself the shipper, the consignee's name and address must be plainly marked on the repaired package.

(e) *Disposition of unsafe broken packages.* In the event any leaking package or container cannot be safely and adequately repaired for transportation or transported, it shall be stored pending proper disposition in the safest and most expeditious manner possible.

(f) *Stopped vehicles; other dangerous articles.* Whenever any motor vehicle transporting Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), Class 8 (corrosive), Class 2 (gases), or Division 6.1 (poisonous) materials, is stopped for any cause other than necessary traffic stops upon the traveled portion of any highway, or a shoulder next thereto, the following requirements shall be complied with during the period of such stop:

(1) For motor vehicles other than cargo tanks used for the transportation of Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials and not transporting Division 1.1, 1.2, or 1.3 (Class A or B explosive) materials, warning devices must be set out in the manner prescribed by § 392.22 of this title.

(2) For cargo tanks used for the transportation of Class 3 (flammable liquid) or Division 2.1 (flammable gas) materials, whether loaded or empty, and vehicles transporting Division 1.1, 1.2, or 1.3 (explosive) materials, warning devices must be set out in the manner prescribed by § 392.25 of this title.

(g) *Repair and maintenance of vehicles containing certain hazardous materials—*

(1) *General.* No person may use heat, flame or spark producing devices to repair or maintain the cargo or fuel containment system of a motor vehicle required to be placarded, other than COMBUSTIBLE, in accordance with subpart F of part 172 of this subchapter. As used in this section, "containment system" in-

cludes all vehicle components intended physically to contain cargo or fuel during loading or filling, transport, or unloading.

(2) *Repair and maintenance inside a building.* No person may perform repair or maintenance on a motor vehicle subject to paragraph (g)(1) of this section inside a building unless:

(i) The motor vehicle's cargo and fuel containment systems are closed (except as necessary to maintain or repair the vehicle's motor) and do not show any indication of leakage;

(ii) A means is provided, and a person capable to operate the motor vehicle is available, to immediately remove the motor vehicle if necessary in an emergency;

(iii) The motor vehicle is removed from the enclosed area upon completion of repair or maintenance work; and

(iv) For motor vehicles loaded with Division 1.1, 1.2, or 1.3 (Class A or B explosive), Class 3 (flammable liquid), or Division 2.1 (flammable gas) materials, all sources of spark, flame or glowing heat within the area of enclosure (including any heating system drawing air therefrom) are extinguished, made inoperable or rendered explosion-proof by a suitable method. *Exception:* Electrical equipment on the vehicle, necessary to accomplish the maintenance function, may remain operational.

(h) *No repair with flame unless gas-free.* No repair of a cargo tank used for the transportation of any Class 3 (flammable liquid) or Division 6.1 (poisonous liquid) material, or any compartment thereof, or of any container for fuel of whatever nature, may be repaired by any method employing a flame, arc, or other means of welding, unless the tank or compartment shall first have been made gas-free.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

### Subpart E—Regulations Applying to Hazardous Material on Motor Vehicles Carrying Passengers for Hire

#### §177.870 Regulations for passenger carrying vehicles.

(a) *Vehicles transporting passengers and property.* In addition to the regulations in parts 170–189 of this subchapter the follow-

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ing requirements shall apply to vehicles transporting passengers and property.

(b) *No Class 1 (explosive) materials or other hazardous materials on passenger-carrying vehicles, exceptions.* No hazardous materials except small-arms ammunition, emergency shipments of drugs, chemicals and hospital supplies, and the accompanying munitions of war of the Departments of the Army, Navy, and Air Force of the United States Government, are authorized by parts 170–189 of this subchapter to be transported on motor vehicles carrying passengers for hire where other practicable means of transportation is available.

(c) *Class 1 (explosive) materials in passenger-carrying space forbidden.* No Class 1 (explosive) material, except small-arms ammunition, may be carried in the passenger-carrying space of any motor vehicle transporting passengers for hire.

(d) *Hazardous materials on passenger carrying vehicles; quantity.* Where no other practicable means of transportation is available the following articles in the quantities as shown may be transported in motor vehicles carrying passengers for hire in a space other than that provided for passengers: Not to exceed 45 kg (99 pounds) gross weight of any or all of the kinds of Class 1 (explosive) materials permitted to be transported by passenger-carrying aircraft or rail car may be transported on a motor vehicle transporting passengers: *Provided, however,* That samples of Class 1 (explosive) materials for laboratory examination, not to exceed two samples, or a total of no more than 100 detonators, Division 1.4 (Class C explosive) materials at one time in a single motor vehicle, may be transported in a motor vehicle transporting passengers.

(e) *Articles other than Class 1 (explosive) materials on passenger-carrying vehicles.* The gross weight of any given class of hazardous material other than Class 1 (explosive) materials shall not exceed 45 kg (99 pounds), and the aggregate weight of all such other dangerous articles shall not exceed 225 kg (496 pounds). This provision does not apply to non-toxic, nonflammable refrigerants, when such refrigerant is for servicing operations of a motor carrier on whose motor vehicles the refrigerant is used.

A cylinder secured against movement while in transit and not exceeding 113 kg (250 pounds) gross weight may be transported.

(f) *Division 6.1 (poisonous) or Division 2.3 (poisonous gas) materials on passenger-carrying vehicles.* No motor carrier may transport any extremely dangerous Division 6.1 (poisonous) or Division 2.3 (poisonous gas) material, or any paranitroaniline, in any amount, in or on any bus while engaged in the transportation of passengers; or any less dangerous Division 6.1 (poisonous) material, which is other than a liquid, in any amount exceeding an aggregate of 45 kg (99 pounds) gross weight in or on any such bus.

(g) *Class 7 (radioactive) materials.* In addition to the limitations prescribed in paragraphs (b) and (e) of this section, no person may transport any Class 7 (radioactive) material requiring labels under §§ 172.436, 172.438, and 172.440 of this subchapter in or on any motor vehicle carrying passengers for hire except where no other practicable means of transportation is available. Packages of Class 7 (radioactive) materials must be stored only in the trunk or baggage compartment of the vehicle, and must not be stored in any compartment occupied by persons. Packages of Class 7 (radioactive) materials must be handled and placed in the vehicle as prescribed in § 177.842.

[29 FR 18795, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]