

## **Chapter 4 TRANSPORTATION**

### **GENERAL INFORMATION**

Explosives pose additional risk to health, safety, and property during transportation. Therefore, special requirements have been developed for transporting various types of explosives by motor vehicle, over water, by rail, and by aircraft.

In general, shipments of explosives will comply with the Code of Federal Regulations CFR 49 and state and local (municipal) laws. Other regulations may also need to be addressed, such as those from the United States Coast Guard and port and harbor authorities.

### **TRANSPORTING EXPLOSIVES BY MOTOR VEHICLE**

#### **OPERATOR REQUIREMENTS**

Vehicle operators must hold a valid state commercial motor vehicle operator's license for the class of vehicle being operated, including any required hazardous materials endorsements. Vehicles transporting explosives shall be driven by drivers certified to transport explosives in accordance with CFR 49, Part 383 and must be qualified operators as per CFR 49, Part 391.

The driver must be familiar with the traffic regulations and state laws governing the transportation of explosives. This certified individual must remain in or near the vehicle at all times.

When transporting explosives, a written document describing the type and quantity of explosives shall be in the vehicle and readily available.

When the driver is at the vehicle's controls, the documents shall be:

- a. Within immediate reach while the driver is restrained by the lap belt.
- b. Either readily visible to a person entering the driver's compartment, or in a holder mounted to the inside of the door on the driver's side of the vehicle.

When the driver is not at the vehicle's controls, the shipping paper shall be:

- a. In a holder 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.

The following documents must be in the possession of the driver:

- a. A document with instructions on what to do in the event of an accident or delay. The name of the explosive hauled and names and phone numbers of all persons (Chemtrec) to contact in the event of an accident must be on this document.
- b. Proper shipping papers for hazardous materials (Hazardous Materials Bill of Lading, see Figure 4-1).
- c. A written route plan for the transportation of explosives.
- d. Copy of CFR 49 part 397, transportation of hazardous materials; driving and parking rules, Federal Motor Carrier Safety Regulations.

## **CFR 49 PART 397**

### **TRANSPORTATION OF HAZARDOUS MATERIALS; DRIVING AND PARKING RULES**

#### **Application of the rules in this part:**

- (a) Except as provided in paragraph (c) of this section, the rules in this part apply to each motor carrier engaged in the transportation of hazardous materials by a motor vehicle which must be marked or placarded in accordance with 177.823 of this title and to-
  - (1) Each officer or employee of the carrier who performs supervisory duties related to the transportation of hazardous materials; and
  - (2) Each person who operates or who is in charge of a motor vehicle containing hazardous materials.
- (b) Each person designated in paragraph (a) of this section must know and obey the rules in this part.
- (c) Intracity operations: The rules in this part do not apply to a driver or a vehicle wholly engaged in exempt intracity operations as defined in 390.16 of this chapter.

### **COMPLIANCE WITH FEDERAL MOTOR CARRIER SAFETY REGULATIONS**

A motor carrier or other person to whom this part is applicable must comply with the rules in Part 390 through 397 inclusive of this subchapter when he or she is transporting hazardous materials by a motor vehicle which must be marked or placarded in accordance with 177.823 of this title.

### **STATE AND LOCAL LAWS, ORDINANCES, AND REGULATIONS**

Every motor vehicle containing hazardous materials must be driven and parked in compliance with the laws, ordinances, and regulations of the jurisdiction in which it is being operated, unless they are at variance with specific regulations of the Department of Transportation which are applicable to the operation of that vehicle and which impose a more stringent obligation or restraint.

### **ATTENDANCE AND SURVEILLANCE OF MOTOR VEHICLES**

#### **Application of the rules in this part:**

- (a) Except as provided in paragraph (b) of this section, a motor vehicle which contains Class A or Class B explosives must be attended at all times by its driver or a qualified representative of the motor carrier that operates it.
- (b) The rules in paragraph (a) of this section do not apply to a motor vehicle which contains Class A or Class B explosives if all the following conditions exist: 58

## EXPLOSIVES — HAZARDOUS MATERIALS

### **Bill of Lading**

If Danger of Fire — EVACUATE AREA — Chemtrec 1-800-424-9300

**ACCIDENT — NOTIFY**

Fatal - Call D.O.T. Portland, Oregon  
1-503-221-4902

Other - Call Local Authorities

Date \_\_\_\_\_

Ship to: \_\_\_\_\_ Route Plan: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

NO. PKGS.	TYPE PKG.	PROPER SHIPPING NAME	AND	HAZARD CLASS	IDENT. NO.	EXEMPT PERMIT	GROSS WEIGHT
	Bxs	HIGH EXPLOSIVE		CLASS A EXPLOSIVE			
	Bxs	PROPELLANT EXPLOSIVE, LIQUID		CLASS B EXPLOSIVE			
	Bxs	PROPELLANT EXPLOSIVE, SOLID		CLASS B EXPLOSIVE			
	Bxs	BLASTING CAPS		CLASS EXPLOSIVE			
	Bxs	BLASTING CAPS - ELECTRIC		CLASS EXPLOSIVE			
	Bxs	DETONATORS		CLASS EXPLOSIVE			
	Bxs	DETONATORS - ELECTRIC		CLASS EXPLOSIVE			
	Bxs	DETONATING PRIMER		CLASS EXPLOSIVE			
	Bxs	DETONATING CORD		CLASS EXPLOSIVE			
	Bxs	CORDEAU DETONANT FUSE		CLASS C EXPLOSIVE			
	Bxs	FUSE, SAFETY		CLASS C EXPLOSIVE			
	Bxs	IGNITER CORD		CLASS C EXPLOSIVE			
	Bxs	FUSE LIGHTER		CLASS C EXPLOSIVE			
	Bags	AMMONIUM NITRATE - FUEL OIL MIXTURE		BLASTING AGENT			
	Bags			BLASTING AGENT			
	Bags	AMMONIUM NITRATE FERTILIZER		OXIDIZER	UN2067		
					TOTAL WEIGHT		

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

PLACARDS: — Supplied — Applied — A — B — DANGEROUS — NONE REQUIRED

(Circle as Required)

OXIDIZER, UN 2067 — BLASTING AGENT

SIGNATURE \_\_\_\_\_

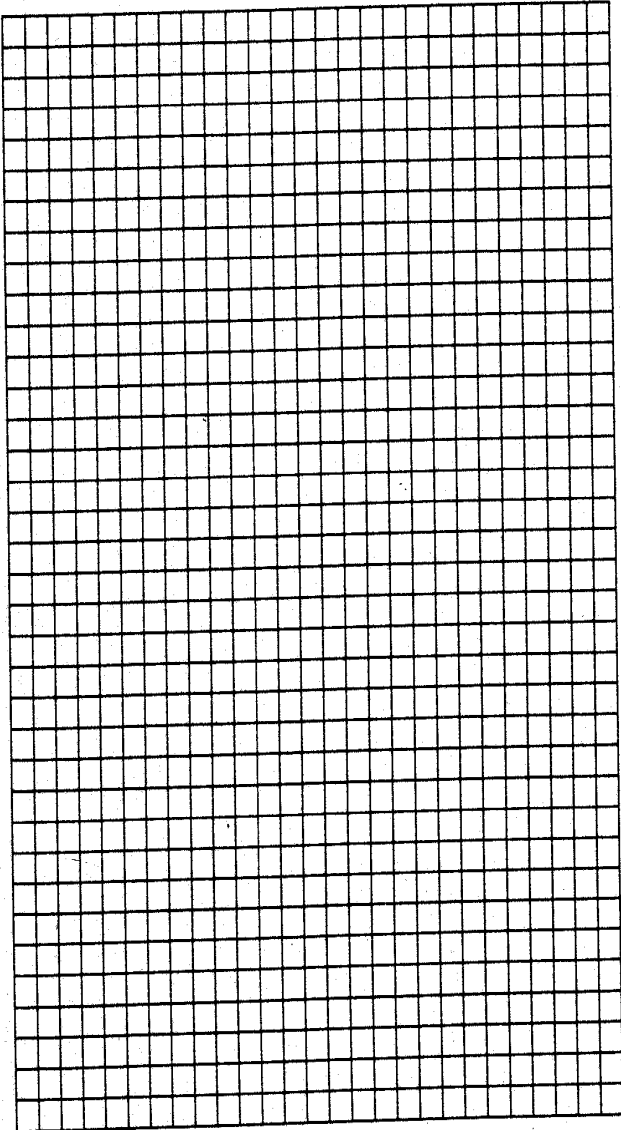
(Figure 4-1) Sample Hazardous Materials Bill of Lading.

Date: \_\_\_\_\_

Location: \_\_\_\_\_

Hole No.	Vertical Diameter in.	Horizontal Diameter in.	Height of Face (Ft.)	Depth of Hole (Ft.)	Spacing (Ft.)	Burden (Ft.)	Explosives			Total per Hole	Stemming (Ft.)	Type Detonator	Delay Period
							Grade Pounds	Grade Pounds	Grade Pounds				

Identify Job Location by station or dimension to known structure or object. Show North Point.



REMARKS: (If blast was seismic recorded state by whom):

---



---



---



---



---

Time Loading Started \_\_\_\_\_ Finished \_\_\_\_\_ Fired \_\_\_\_\_

Type of Blasting Machine \_\_\_\_\_

Loading Wire \_\_\_\_\_ Connecting Wire \_\_\_\_\_

Plan of Connections \_\_\_\_\_

(Figure 4-2)

- (1) The vehicle is located on the property of a motor carrier, on the property of a shipper or consignee of the explosives, in a safe haven, or, in the case of a vehicle containing 50 pounds or less of either Class A or Class B explosives, on a construction or survey site; and
  - (2) The lawful bailee of the explosives is aware of the nature of the explosives the vehicle contains and has been instructed in the procedures he must follow in emergencies; and
  - (3) The vehicle is within the bailee's unobstructed field of view, or is located in a safe haven.
- (c) A motor vehicle which contains hazardous materials other than Class A or Class B explosives and which is located on a public street or highway or the shoulder of a public highway must be attended by its driver. However, the vehicle need not be attended while its driver is performing duties which are incident and necessary to his or her duties as the operator of the vehicle.
- (d) For purposes of this section:
- (1) A motor vehicle is attended when the person in charge of the vehicle is on the vehicle, awake, and not in a sleeper berth, or is within 100 feet of the vehicle and has it within his unobstructed field of view.
  - (2) A qualified representative of a motor carrier is a person who:
    - (a) Has been designated by the carrier to attend the vehicle;
    - (b) Is aware of the nature of the hazardous materials contained in the vehicle he attends;
    - (c) Has been instructed in the procedures he must follow in emergencies; and
    - (d) Is authorized to move the vehicle and has the means and ability to do so.
    - (e) Must be at least 21 years old.
  - (3) A safe haven is an area specifically approved in writing by local, state, or federal governmental authorities for the parking of unattended vehicles containing Class A or Class B explosives.
  - (4) The rules in this section do not relieve a driver from any obligation imposed by law relating to the placing of warning devices when a motor vehicle is stopped on a public street or highway.

**PARKING**

A motor vehicle which contains Class A or Class B explosives must not be parked under any of the following circumstances:

- (a) On or within five feet of the traveled portion of a public street or highway,
- (b) On private property (including premises of a fueling or eating facility) without the knowledge and consent the person who is in charge of the property and who is aware of the nature of the hazardous materials the vehicle contains, or
- (c) Within 300 feet of a bridge, tunnel, dwelling, building, or place where people work, congregate, or assemble, except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

A motor vehicle which contains hazardous materials other than Class A or Class B explosives must not be parked on or within five feet of the traveled portion of public street or highway except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

**ROUTES**

- (a) Unless there is no practicable alternative, a motor vehicle which contains hazardous materials must be operated over routes which do not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys. Operating convenience is not a basis for determining whether it is practical to operate a motor vehicle in accordance with this paragraph. This paragraph does not apply to radioactive materials.

- (b) Before a motor carrier requires or permits a motor vehicle containing Class A or Class B explosives to be operated, the carrier must prepare a written plan of a route that complies with the rules in paragraph "A" of this section for that vehicle and must furnish a copy of the written plan to the driver. However, the driver may prepare the written plan as agent for the motor carrier when the driver begins a trip at a location other than the carrier's terminal.

#### **FIRES**

- (a) A motor vehicle containing hazardous materials must not be operated near an open fire unless its driver has first taken precautions to ascertain that the vehicle can safely pass the fire without stopping.
- (b) A motor vehicle containing hazardous materials must not be parked within 300 feet of an open fire.
- (c) The "safe time" during which a fire on an explosives truck may be safely fought is: NEVER.

#### **SMOKING**

No person may smoke or carry a lighted cigarette, cigar, or pipe on or within 25 feet of:

- (a) A motor vehicle which contains explosives, oxidizing materials, or flammable materials; or
- (b) An empty tank motor vehicle which has been used to transport flammable liquids or gases and which, when so used, was required to be marked or placarded in accordance with the rules in 177.823 of this title.

#### **FUELING**

When a motor vehicle which contains hazardous materials is being fueled:

- (a) Its engine must not be operating; and
- (b) A person must be in control of the fueling process at the point where the fuel tank is filled.

#### **TIRES**

- (a) If a motor vehicle which contains hazardous materials is equipped with dual tires on any axle, its driver must stop the vehicle in a safe location at least once during each two hours or 100 miles of travel, whichever is less, and must examine its tires. The driver must also examine the vehicle's tires at the beginning of each trip and each time the vehicle is parked.
- (b) If, as a result of an examination pursuant to paragraph (a) of this section, or otherwise, a tire is found to be flat, leaking, or improperly inflated, the driver must cause the tire to be repaired, replaced, or properly inflated before the vehicle is driven. However, the vehicle may be driven to the nearest safe place to perform the required repair, replacement, or inflation.
- (c) If, as the result of an examination pursuant to paragraph (a) of this section, or otherwise, a tire is found to be overheated, the driver shall immediately cause the overheated tire to be removed and placed at a safe distance from the vehicle. The driver shall not operate the vehicle until the cause of the overheating is corrected.
- (d) Compliance with the rules in this section does not relieve a driver from the duty to comply with the rules in 397.5 and 397.7.

#### **INSTRUCTIONS AND DOCUMENTS**

- (a) A motor carrier that transports Class A or Class B explosives must furnish the driver of each motor vehicle in which the explosives are transported with the following documents:
- (1) A copy of the rules in this part; and
  - (2) (Reserved)
  - (3) A document containing instructions on procedures to be followed in the event of accident or delay. The documents must include the names and telephone numbers of persons (including representatives of carriers or shippers) to be contacted, the nature of the explosives being transported, and the precautions to be taken in emergencies such as fires, accidents, or leakages.

- (b) A driver who receives documents in accordance with paragraph (a) of this section must sign a receipt for them. The carrier shall retain the receipt in his files for one year at his or her principal place of business. However, upon a written request to, and with the approval of, the Director, Regional Motor Carrier Safety Officer for the region in which a motor carrier has his principal place of business, the carrier may maintain the receipts at a regional or terminal office. The addresses and jurisdictions of the Directors of Regional Motor Carrier Safety Offices are shown in 390.40 of this subchapter.
- (c) A driver of a motor vehicle which contains Class A or Class B explosives must be in possession of, be familiar with and be in compliance with:
- (1) The documents specified in paragraph "A" of this section;
  - (2) The documents specified in 177.817 of Chapter 1 of this title; and
  - (3) The written route plan specified in 397.9(b).

## **VEHICLE REQUIREMENTS**

### **Condition**

Thoroughly inspect all vehicles that transport explosives and correct all deficiencies before use. Vehicles, including engines, shall be clean, in good mechanical condition, and free of leaks. All safety equipment must be in good repair.

If vehicles do not have an enclosed bed, cover the bed with a flame and moisture-proof tarpaulin or other effective protection against moisture and sparks. All vehicles transporting explosives shall have tight floors. Cover any exposed spark-producing metal on the inside of the bed with wood or other non-sparking materials to prevent contact with explosive containers. Do not load explosives above the sides of an open-bed vehicle.

Secure any package containing explosives to prevent movement while vehicle is moving.

### **Fire Extinguishers**

Equip every motor vehicle used for transporting explosives with at least two 10-bc or higher rated fire extinguishers. Securely mount the extinguishers near the driver for immediate access. Only extinguishers listed or approved by the Underwriter's Laboratories, or Factory Mutual Liability Insurance Company of America are suitable for use on explosives-carrying vehicles. The rating is shown on the approved label.

### **Gross Weight Capacity**

Vehicles shall be strong enough to carry the load without exceeding rated weight capacity.

### **Placarding**

For all DOT placarding shall be in accordance with 49 CFR (Part 172.500, Subpart F Placarding). Mark or placard vehicles transporting explosives on both sides, front and rear (Table 4-2). When mixed loads are transported, display the placard for the most hazardous explosive. Explosives placards shall be square on-point (diamond shape) and measure 10 3/4 inches on each side. The placards shall be orange with a white border and the symbol and print shall be black.

The vehicle does not require placards when carrying blasting caps (fuse-type or electric) in quantities of 1000 or less, or just blasting agents or Class C explosives in quantities of 1000 pounds or less (Table 4-1).

When carrying 1000 pounds or less of unmixed components of explosives (two-component), placards are not required.

Blasting agents in quantities greater than 1000 pounds require "BLASTING AGENT" placards (Table 4-1). Other explosive materials in any quantity such as dynamite, mixed component explosives, primers, fireline explosives, or avalanche ammunition require "EXPLOSIVE A" placards (Table 4-2).

Blasting caps in quantities greater than 1000 require “EXPLOSIVE A” placards.

### **Loading and Unloading**

No explosives shall be loaded or unloaded from a vehicle with the engine running.

No bale hooks or other metal tools shall be used for the loading, unloading, or other handling of explosives. No package or other container of explosives, except barrels or kegs, shall be rolled. No packages of explosives shall be thrown or dropped during the process of loading, unloading, or handling. Special care shall be exercised to ensure that packages or other containers containing explosives shall not catch fire from sparks or hot gases from the exhaust or tail pipe.

### **DETONATORS**

Exploding Bridgewire Detonators (EBWs) contain no primary explosives and therefore may be transported with other explosives when packaged in the original manufacturer’s container (see 49 CFR, 173.113 and 49 CFR 177.848 (DOT)).

Blasting caps, electric or fuse, contain a primary explosive and therefore may not be transported in the same vehicle with other explosives, unless packed in wooden or fiberboard boxes as per 49 CFR 173.66 and 173.68, and CFR 177.835. Boxes are in turn, loaded into portable containers or separate compartments that meet the requirements of the Institute of Makers of Explosives IME 22 Standard. When electric blasting caps are carried in a vehicle equipped with a two-way radio, the transmitter must be turned off when caps are placed into or removed from the portable container.

- A. Unless otherwise specified in this section, detonators must be packed in accordance with the following:
  - (1) They must be snugly packed in strong inside packaging.
  - (2) Inside packaging must be snugly packed in an outside packaging specified in paragraph "E" of this section.
  - (3) For devices containing no more than 10 grams of explosive (excluding ignition and delay charges):
    - (a) No more than 50 devices may be packed in one inside packaging;
    - (b) No more than 500 devices may be packed in one inside packaging; and
    - (c) The gross weight of the completed package may not exceed 150 pounds or the gross weight permitted by the specification for the outside packaging used, whichever is less.
- B. Detonators that are blasting caps (including percussion activated) or delay connectors in metal tubes, must be packed as specified in paragraph a of this section. In addition:
  - (1) They must be packed in inside packaging with the open ends of any device covered with an appropriate cushioning material;
  - (2) Inside packaging must be snugly packed in intermediate packaging consisting of cartons, or wrappings made of paper, plastic, or pasteboard;
  - (3) Intermediate packaging must be separated from the outside packaging by at least one inch of cushioning material; and
  - (4) For devices containing no more than three grams of explosive (excluding ignition and delay charges):
    - (a) No more than 110 devices may be packed in one inside packaging; and
    - (b) No more than 5000 devices may be packed in one outside packaging.
- C. Detonators that are electric blasting caps, delay connectors in plastic sheaths, or blasting caps with empty plastic tubing, must be packed as specified in paragraph (A) of this section, except that:
  - (1) Devices containing no more than three grams of explosive (excluding ignition and delay charges) may be packed as follows:
    - (a) No more than 100 devices may be packed in one inside packaging; and
    - (b) No more than 1000 devices may be packed in one outside packaging.
  - (2) Devices that are electric blasting camps with leg wires four feet long or longer, delay connectors in plastic sheaths, or blasting caps with empty plastic tubing 12 feet long or longer, and contain no more than



one gram of explosive (excluding ignition and delay charges) may be offered for transportation and transported in an IME Standard 22 container or compartment without the outside packaging specified in paragraph (E1) or (E2) of this section if:

- (a) The devices are packed as specified in paragraph (1) and (A.3. a) of this section;
  - (b) There are no more than 1000 detonators in the IME Standard 22 container or compartment; and
  - (c) No material is loaded on top of the IME Standard 22 container, or no material is loaded against the outside of the door of the IME Standard 22 compartment.
- (3) Inside packaging is not required for electric blasting caps when packed in inside pasteboard tubes, or when their leg wires are wound on spools with the caps either placed inside the spool or securely taped to the wire on the spool, so as to restrict freedom of movement of the caps and to protect them from impact forces.
- D. Detonators that are blasting caps with safety fuse, blasting caps with metal clad mild detonating cord, blasting caps with detonating cord, or blasting caps with shock tubes, must be packed in accordance with the requirements of paragraph a of this section, except that:
- (1) The blasting caps are not required to be attached to the safety fuse, metal clad mild detonating cord, detonating cord, or shock tube; and
  - (2) Inside packaging are not required if the packing configuration restricts freedom of movement of the caps and protects them from impact forces.
- E. Detonators with or without inside packaging as provided for in paragraphs (A) through (D) of this section, must be packed in the following outside packaging:
- (1) Specifications 14, 15A, 16A or 19B && 178.165, 178.168, 178.185, 178.191 of this subchapter.  
Wooden boxes.
  - (2) DOT Specification 12H, 23F, or 23H && 178.209., 178.214, 178.219 of this subchapter. Fiberboard box.
  - (3) IME Standard 22 container or compartment when the detonators conform with conditions and limitations specified in paragraph (C. 2) of this section.
- F. Each outside packaging containing detonators must be plainly marked “DETONATORS - HANDLE CAREFULLY” and bear the appropriate explosives label specified in 172.411 of this subchapter.
- G. Devices subject to this section and approved by an agency listed in 173.86(b) before January 1, 1980 may be transported subject to conditions of the approval and in accordance with regulations in effect on October 31, 1979, until December 31, 1985. Applicability of this paragraph is further limited to detonators packaged for transportation prior to January 1, 1985.  
[Amdt. 173-134, 44 FR 70730, Dec. 10, 1979, as amended by Amdt. 173-149, 46 FR 49892, Oct. 8, 1981; Amdt. 173-182, 50 FR 804, Jan. 7, 1985]

**STANDARD FOR THE SAFE TRANSPORTATION OF CLASS C DETONATORS (BLASTING CAPS) IN A VEHICLE WITH CERTAIN OTHER EXPLOSIVES**

**IME Safety Library Publications No. 22**

Class C detonators (blasting caps) and Class 1.1 or 1.2 or 1.3 explosives may be transported together on a vehicle using IME containers or compartments under the following conditions:

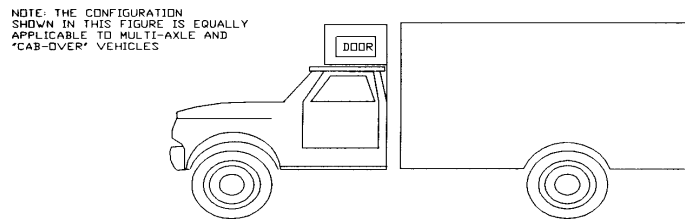
**Products**

- 1. As used in this standard, Class C detonators (blasting caps) include detonators approved for transportation as Class C explosives by the U.S. Department of Transportation (DOT).

2. As used in this standard, Class A or Class B explosives include all materials so described by regulation of the U.S. Department of Transportation in 49 CFR Part 173. As used, Class 1.1, 1.2 or 1.3 explosives do not include initiating explosives (e.g.: Class A detonators) and any explosives forbidden by the U.S. Department of Transportation in 49 CFR, Sections 171.101 and 173.51.

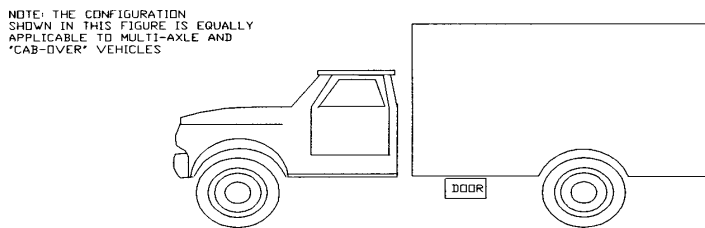
### IME Containers or Compartments

1. A portable IME contained place within and readily removable from the cargo-carrying space of the vehicle.
2. An IME container securely attached:
  - a. Above the cab of the vehicle.



(Figure 4-3) IME container above cab.

- b. To the vehicle frame under the cargo space.



(Figure 4-4) IME container under truck body.

3. A built-in IME compartment in the cargo space of the vehicle (Figure 4-7).
  - a. The IME container or compartment must provide for total enclosure of the contents.
  - b. The top, lid or door, sides and bottom of each IME container or compartment must be of laminate construction consisting of A/C grade or better exterior plywood, sheetrock and low-carbon steel. In order of arrangement, from inside to outside, the laminate must consist of the following with minimum thickness of each lamination as indicated: 1/2-inch plywood, 1/2-inch sheetrock, 1/8-inch low-carbon steel, and 1/2-inch plywood with the 1/4-inch plywood to the exterior of the IME container or compartment. See Figure 4-9 for details of laminate construction.

- c. The laminated materials must be securely bound together by waterproof adhesive or other equally effective means.
- d. The steel at the joints of laminations must be secured by continuous fillet welds.
- e. The interior surfaces of the IME container or compartment must be constructed so as to prevent contact of contents with the interior surfaces.
- f. There must be direct access to the IME container or into an IME compartment from outside the vehicle.
- g. Each IME container or compartment must have a snug-fitting continuous piano-type hinged lid or door and be equipped with locking or hinging mechanisms.
- h. Without permitting direct access to contents under normal conditions, the locking or hinging mechanisms must be constructed so as to prevent tampering.
- i. The exterior of the IME container or compartment must be weather-resistant.
- j. As an alternative to the construction requirement shown in paragraph (b) above, an IME container for use only for the transport of explosives must be constructed as follows:
  1. The top, lid or door, sides and bottom of each IME container must be of laminate construction consisting of a 1/2-inch plywood on the inside to outside, the laminate must consist of the following with the minimum thickness of each lamination as indicated in the following table constructed inside to outside in that order. See Figure 4-9 for details of laminate construction.
  2. The hardwood must be fastened together with wood screws, the 1/2-inch plywood must be fastened to the hardwood with wood screws, and the sheet metal must be attached to the exterior of the IME container with screws.

**SAFETY**

<b>HAZARD CLASS</b>	<b>PLACARD</b>
<b>Class A Explosives</b>	<b>EXPLOSIVES A<sup>1</sup></b>
<b>Class B Explosives</b>	<b>EXPLOSIVES B<sup>2</sup></b>
<b>Poison A</b>	<b>POISON GAS<sup>1</sup></b>
<b>Flammable Solid</b> (Dangerous When Wet Label Only)	<b>FLAMMABLE SOLID W<sup>3</sup></b>
<b>Radioactive Material:</b> Uranium hexafluoride, fissile (containing 0.7 pct or less U <sup>235</sup> )	<b>RADIOACTIVE<sup>4,5</sup></b> <b>RADIOACTIVE<sup>4</sup></b> <b>and</b> <b>CORROSIVE<sup>6</sup></b>
<b>Radioactive Material:</b> Uranium hexafluoride, low specific activity (containing 0.7 pct or less U <sup>235</sup> )	<b>RADIOACTIVE<sup>4,5</sup></b> <b>and</b> <b>CORROSIVE<sup>6</sup></b>

1. See sec. 172.510(a)
2. **EXPLOSIVES B** placard not required if the transport vehicle or freight container contains class A explosives and is placarded **EXPLOSIVES A** as required.
3. **FLAMMABLE SOLID "W"** placard is required only when the **DANGEROUS WHEN WET** label is specified in Sec. 172.101 for a material classed as a Flammable Solid.
4. Applies only to any quantity of packages bearing the **RADIOACTIVE** Yellow 111 label. (See Sec. 172.403)
5. For exclusive use shipments (See Sec. 173.403) of low specific activity radioactive materials transported in accordance with Sec. 173.425(b) or (c).
6. **CORROSIVE** placard not required for shipments of less than 1000 pounds gross weight.

(Figure 4-5) Placarding requirements.

Table 4-2.—Placarding requirements.

<b>HAZARD CLASS</b>	<b>PLACARD</b>
<b>Class C Explosives</b>	<b>DANGEROUS<sup>1,9</sup></b>
<b>Blasting Agents</b>	<b>BLASTING AGENTS<sup>9,10</sup></b>
<b>Nonflammable Gas</b>	<b>NONFLAMMABLE GAS<sup>6</sup></b>
<b>Nonflammable Gas (Chlorine)</b>	<b>CHLORINE<sup>7</sup></b>
<b>Nonflammable Gas (Fluorine)</b>	<b>POISON</b>
<b>Nonflammable Gas (Oxygen, cryogenic liquid)</b>	<b>OXYGEN</b>
<b>Flammable Gas</b>	<b>FLAMMABLE GAS<sup>8</sup></b>
<b>Combustible Liquid</b>	<b>COMBUSTIBLE<sup>3,4</sup></b>
<b>Flammable Liquid</b>	<b>FLAMMABLE</b>
<b>Flammable Solid</b>	<b>FLAMMABLE SOLID<sup>5</sup></b>
<b>Oxidizer</b>	<b>OXIDIZER<sup>9,10</sup></b>
<b>Organic Peroxide</b>	<b>ORGANIC PEROXIDE</b>
<b>Poison B</b>	<b>POISON</b>
<b>Corrosive Material</b>	<b>CORROSIVE<sup>6</sup></b>
<b>Irritating Material</b>	<b>DANGEROUS</b>

1. Applies only to a class C explosive required to be labeled with an **EXPLOSIVE C** label.
2. [Reserved]
3. **COMBUSTIBLE** placard required only when a material classed as a combustible liquid is transported in a packaging having a rated capacity of more than 110 gallons, a cargo tank, or a tank car.
4. A **FLAMMABLE** placard may be used on a cargo tank and a portable tank during transportation by highway and water and on a compartmented tank car containing materials classed as flammable liquid and combustible liquid.
5. Except when offered for transportation by water, a **FLAMMABLE** placard may be displayed in place of a **FLAMMABLE SOLID** placard except when a **DANGEROUS WHEN WET** label is specified for the material in Sec. 172.101 (See Table 4-1, this section.)
6. See Sec. 173.245(b) of this subchapter for authorized exceptions.
7. **CHLORINE** placard required only for a packaging having a rated capacity of more than 110 gallons; the **NONFLAMMABLE GAS** placard for packaging having a rated capacity of 110 gallons or less.
8. A **NONFLAMMABLE GAS** placard is not required on a motor vehicle displaying a **FLAMMABLE GAS** placard or an **OXYGEN** placard.
9. **BLASTING AGENTS, OXIDIZER and DANGEROUS** placards need not be displayed if a transport vehicle or freight container also contains Class A or B explosives and is placarded **EXPLOSIVES A** or **EXPLOSIVES B** as required.
10. Except for shipments by water, **OXIDIZER** placards need not be displayed if a freight container, motor vehicle, or rail car also contains blasting agents and is placarded **BLASTING AGENT** as required.

A transport vehicle or freight container containing two or more classes of materials requiring different placards specified in Table 4-2 may be placarded **DANGEROUS** in place of the separate placarding specified for each of those classes of material specified in Table 4-2. However, when 5,000 pounds or more of one class of materials is loaded therein at one loading facility, the placard specified for that class in Table 4-2 must be applied. This paragraph does not apply to a portable tank, cargo tank, or tank car.

When the gross weight of all hazardous materials covered by Table 4-2 is less than 1,000 pounds, no placard is required on a transport vehicle or freight container for the Table 4-2 materials. A Table 4-1 material must be placarded as specified in Table 4-1. This paragraph does not apply to portable tanks, cargo tanks, tank cars, transportation by air or water, or transport vehicles and freight containers subject to Sec. 172.505.

Each transport vehicle and freight container that contains a material subject to the "Poison-inhalation Hazard" shipping paper description must be placarded "**POISON**" on each side and each end in addition to the placard required in Sec. 172.504. Duplication of the **POISON** placards is not required nor display of the UN class numbers at the bottom of additional placards required by this section.

(Figure 4-6) Placarding requirements.

## **Trailers**

Do not haul explosives in small single-axle utility trailers. If a trailer is required for equipment, attach with a positive grounding system. Use a trailer only when needed for the job (i.e., compressor, tools, etc.).

Class A explosives may not be loaded into or carried on any vehicle if:

- a. More than two cargo-carrying vehicles are in the combination;
- b. Any full trailer in the combination has a wheel base of less than 184 inches.
- c. The other vehicle in the combination contains any initiating explosive.

## **REPAIR**

Do not take motor vehicles carrying explosives, blasting agents, or blasting supplies inside a garage or shop for repairs

## **ATTENDANCE AND SURVEILLANCE OF MOTOR VEHICLES**

A. Except as provided in paragraph (B) of this section, a motor vehicle which contains 1.1 or 1.2 explosives must be attended at all times by its driver or a qualified representative of the motor carrier that operates it.

B. The rules in paragraph (A) of this section do not apply to a motor vehicle which contains Class 1.1, 1.2 or 1.3 explosives if all of the following conditions exist:

1. The vehicle is located on the property of a motor carrier, on the property of a shipper or consignee of the explosives, in a safe haven, or, in the case of a vehicle containing 50 pounds or less of either 1.1 or 1.2 explosives, on a construction survey site; and
2. The lawful bailee\* of the explosives is aware of the nature of the explosives the vehicle contains and has been instructed in the procedures he or she must follow in emergencies; and

## **NOTICE**

Effective October, 1991 (voluntary compliance as of January 1991), many of the Department of Transportation's proper shipping names and all classifications were changed for domestic transportation. Although this system is now in effect, there are certain transition dates established to allow a smooth flow into the distribution channels.

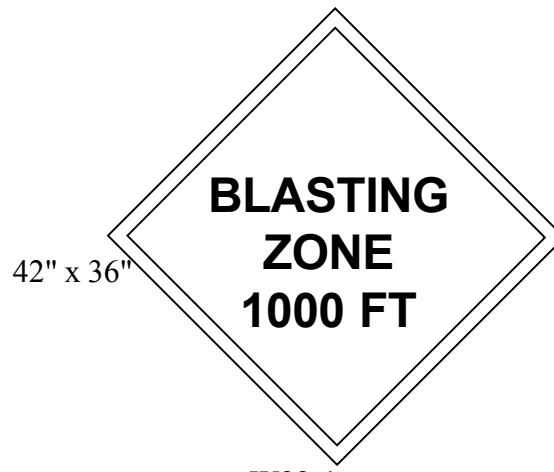
The following two charts provide 1) a comparison of the old and new classifications for explosives and 2) the transition periods for use of the new names and classifications. When you read through the IME's SLP's, please remember to refer to these charts to ensure compliance with applicable regulations:

<b>CHART 1</b>	
<b>OLD CLASSIFICATION</b>	<b>CURRENT CLASSIFICATION</b>
CLASS A EXPLOSIVES	DIVISION 1.1 or 1.2
CLASS B EXPLOSIVES	DIVISION 1.2 or 1.3
CLASS C EXPLOSIVES	DIVISION 1.4
BLASTING AGENTS	DIVISION 1.5
(NO APPLICABLE CLASS)	DIVISION 1.6

*(Figure 4-7)) Old and new classification of explosives.*

<b>CHART 2</b>	
<b>TRANSITION PERIOD</b>	
1 October 1992	All new explosives must be classified under the new regulations.
1 October 1993	Mandatory compliance with new classification and hazard communication requirements (except placarding).
1 October 1994	Mandatory use of new (UN) placards, except DOT placards may be used for domestic highway transportation. Package manufacturers will only be permitted to make non-bulk packaging which meet United Nations performance standards.
1 October 1996	Mandatory use of performance oriented packaging standards (UN) for non-bulk packaging.
1 October 2001	Mandatory use of new (UN) placards for all modes of transportation.

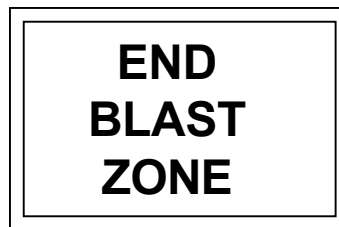
*(Chart 4-8) Transition periods for use of new names and classifications of explosives.*



W22-1  
48" x 48"

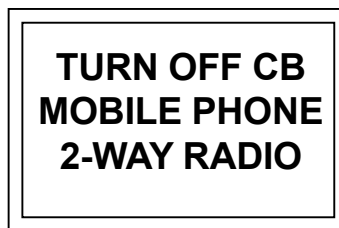


W22-2  
42" x 36"



W22-3  
42" x 36"

*(Figure 4-8) Blasting signs shall be covered or removed when blasting operations are not being conducted.*



*(Figure 4-10) New "Turn Off 2-Way Radio" signs shall be modified to read "Turn Off CB, Mobile Phone, 2-Way Radio." Modified signs may be used in place of the currently required sign immediately. Modified signs shall replace all currently required 2-way radio signs before January 1, 2000.*

In the event of breakdown or collision, secure the area and promptly notify the local fire and police departments for assistance.

Except in an emergency, do not park any vehicle transporting explosives, even though attended, on any public street adjacent to or in proximity to any bridge, tunnel, dwelling, building, or place where people work or assemble.



C. For purposes of this section:

1. A motor vehicle is attended when the person in charge of the vehicle is on the vehicle, awake, and not in a sleeper berth, or is within 100 feet of the vehicle and has it within his or her unobstructed field of view.
2. A qualified representative of a motor carrier is a person who:
  - (a) Has been designated by the carrier to attend the vehicle;
  - (b) Is aware of the nature of the hazardous materials contained in the vehicle he or she attends;
  - (c) Has been instructed in the procedures to be followed in emergencies; and
  - (d) Is authorized to move the vehicle and has the means and ability to do so.
3. A safe haven is an area specifically approved in writing by local, state, or federal governmental authorities for the parking of unattended vehicles containing 1.1 or 1.2 explosives.

D. The rules in this section do not relieve a driver from any obligation imposed by law relating to the placing of warning devices when a motor vehicle is stopped on a public street or highway.

**PARKING**

A motor vehicle which contains 1.1 or 1.2 explosives must not be parked:

1. On or within five feet of the traveled portion of a public street or highway;
2. On private property (including premises of a fueling or eating facility) without the knowledge and consent of the person who is in charge of the property and who is aware of the nature of the hazardous materials the vehicle contains; or
3. Within 300 feet of a bridge, tunnel, dwelling, building, or place where people work, congregate, or assemble, except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

**ROUTING AND SCHEDULING**

Unless there is no practical alternative, a motor vehicle which contains hazardous materials must be operated over routes which do not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys. Operating convenience is not a basis for determining whether it impractical to operate a motor vehicle in accordance with this paragraph.

Plan routes and schedules to avoid densely populated areas, heavy traffic, adverse road and weather conditions, and night driving. Where present, follow designated routes established by local authorities through congested areas.

**RAILROAD GRADE CROSSINGS**

Any placarded vehicle or one carrying any amount of chlorine, must stop at railroad crossings.

Stops must be made within 50 feet of the crossing, but no closer than 15 feet. When it is safe to cross the tracks, do so; do not shift gears while on the tracks.

Stops need not be made at:

- a. streetcar crossings or industrial switching tracks within municipalities.

- b. crossings where a police officer or flagman is directing traffic.
- c. crossings which are marked by a stop-and-go traffic light which is green.
- d. abandoned rail lines and industrial or spur line crossings clearly marked “exempt.”

#### **ACCIDENTS AND EXPLOSIVES**

In the event of an accident involving any motor vehicle transporting any explosives, every available means shall be employed to prevent individuals, other than those employed in the protection of persons or property or in the removal of hazards or wreckage, from congregating in the vicinity; such means shall also be employed to prevent smoking, to keep flame away, and to safeguard against the aggravation of the hazard present, and to warn other users of the highway. In the event that any motor vehicle laden with or carrying dangerous explosives is entangled with another or with any other object or structure following an accident, no attempt shall be made to disentangle either vehicle or the laden vehicle from the object or structure until the lading, together with any fragments thereof, be removed to a place at least 200 feet from the vehicle (and preferably 200 feet from any habitation). In the event of fire involving a motor vehicle laden with any explosive, every practical effort shall be made to give warning of danger of explosion to habitants in the vicinity and to other users of the highway.

#### **EMERGENCY SIGNALS (STOPPED VEHICLES)**

##### **Turn Signals**

Whenever a motor vehicle is stopped upon the traveled portion of a highway or the shoulder of a highway for any cause other than necessary traffic stops, the driver of the stopped vehicle shall immediately flash the two front and two rear turn signals simultaneously as a vehicular traffic hazard warning and continue the flashing until warning devices are placed. The flashing signals shall be used during the time the warning devices are picked up for storage before moving of the vehicle. The flashing lights may be used at other times while a vehicle is stopped in addition to, but not in lieu of, the warning devices required by the following paragraphs.

##### **Placement of Warning Devices**

**General Rules:** Except as provided in the Special Rules of this section, whenever a vehicle is stopped upon the traveled portion of a highway or the shoulder of a highway for any cause other than necessary traffic stops, the driver shall as soon as possible, but in any event within 20 minutes, place warning devices carried in the vehicle—either three emergency reflective triangles, three electric emergency lanterns, or three red emergency reflectors in the following manner:

- (a) One at the traffic side of the stopped vehicle, within 20 feet of the front or rear of the vehicle;
- (b) One at a distance of approximately 100 feet from the stopped vehicle in the center of the traffic lane or shoulder occupied by the vehicle and in a direction toward traffic approaching in that lane; and
- (c) One at a distance of approximately 200 feet from the stopped vehicle in the center of the traffic lane or shoulder occupied by the vehicle and in the direction in which traffic in that lane is moving.

##### **Special Rules:**

Business or residential districts - The placement of warning devices is not required within the business or residential district of a municipality, except during the time lighted lamps are required and when street or highway lighting is insufficient to make a vehicle clearly discernible at a distance of 500 feet to persons on the highway.

Hills, curves, and obstructions - If a motor vehicle is stopped within 500 feet of a curve, crest of a hill, or other obstruction to view, the driver shall place the required warning signal in the direction of the obstruction to view, by a distance of 100 feet to 500 feet from the stopped vehicle so as to afford ample warning to other users of the highway.

Divided or one-way roads - If a motor vehicle is stopped upon the traveled portion or the shoulder of a divided or one-way highway, the driver shall place the required warning devices, one warning device at a distance of 200 feet and one warning device at a distance of 100 feet in a direction toward approaching traffic in the center of the lane or shoulder occupied by the vehicle. The driver shall place one warning device at the traffic side of the vehicle within 10 feet of the rear of the vehicle.

### **Emergency Signals**

Flame-Producing - No driver shall attach or permit any person to attach a lighted fuse or other flame-producing emergency signal to any part of a motor vehicle transporting explosives.

Dangerous Cargoes - No driver shall use or permit the use of any flame-producing emergency signal for protecting any motor vehicle transporting explosives, Class 1.1, 1.2 or 1.3.

Flame-producing Devices Prohibited on Vehicles - Liquid burning emergency flares, fuses, oil lanterns, or any signal produced by a flame shall not be carried on any motor vehicle transporting explosives, Class 1.1, 1.2, 1.3.

### **DELIVERY**

Deliver explosives only to authorized persons and into approved magazines or approved temporary storage or handling areas. Do not park vehicle closer than 300 feet to buildings, bridges, tunnels, personnel, etc.

### **OTHER SAFETY MEASURES**

Never smoke within 100 feet of a motor vehicle transporting explosives. Do not drive, load, or unload the vehicle in a careless or reckless manner.

Unless state laws are more restrictive, two persons are permitted to ride in a vehicle transporting explosives.

## **TRANSPORTING EXPLOSIVES WITH PACK STOCK**

Stock may carry explosives in remote areas with these restrictions:

- a. Animals must be in good physical condition, well-shod, well-trained for pack use, gentle, free of bad habits, and have been worked recently.
- b. Handlers shall be experienced in handling stock and be either certified or accompanied by a person certified for transporting and storing explosives.
- c. Pack saddles, ropes, and other equipment must be inspected and in good condition.
- d. Detonators and explosives must be packed on separate animals just before departure.
- e. Detonators must be packed in original containers with voids filled and well-wrapped and padded with nonmetallic articles, such as bed rolls and tents.
- f. Explosives must be packed in original cases and covered with a flame-proof and moisture-proof tarpaulin. Experienced packers must tie up bundles and rope them to pack saddles.
- g. Travel one-half hour after sunrise to one-half hour before sunset.

- h. Use of drugs or alcohol is prohibited.
- i. In lightning or storms, lead the pack string well off the trail, unload pack animals if time permits, and move the string a safe distance away. If there is not time to unload, securely tether the pack animals carrying explosives well off the trail and move the remaining string a safe distance away.
- j. Consult Tables 6-4 through 6-5 for the minimum distance a radio can be operated from the pack string. No placards are required for a pack string carrying explosives, but stenciling "EXPLOSIVES" on the mantee tarp is recommended.

### **TRANSPORTING EXPLOSIVES WITH TRAIL VEHICLES AND ATVs**

Motorized cargo carriers and ATVs may be used on limited jobs to move explosives in remote areas. Observe these restrictions:

- a. Never transport impact sensitive explosives with a two-wheel vehicle.
- b. Thoroughly inspect all carriers and ATVs and correct deficiencies before use. Carriers and ATVs, including engines, must be clean and in good mechanical condition.
- c. Equip all carriers and ATVs with approved spark arrester and one pressure-type dry powder or carbon dioxide fire extinguisher, rated 2-BC or better.
- d. Do not exceed manufacturer's recommended load rating. In no case shall the weight of explosives exceed 200 lbs.
- e. Never transport detonators in the same cargo carrier or ATV with other explosives.
- f. Detonators must be packed in original containers without voids, filled and well-wrapped and padded with non metallic articles such as bed rolls and tents.
- g. Use operators experienced in operating cargo carriers or ATVs. Operators must be certified to transport and store explosives or be accompanied by someone who is.
- g. When loads include other equipment, tools, and supplies, limit explosives to no more than 50 pounds. When transporting such mixed cargo, pack the explosive in a metal box with a minimum 1/2-inch sponge rubber lining, hinged lid, and hasp. Fill all voids in the box. Paint the box red and stencil the word "EXPLOSIVES" on top in two-inch high white letters. Secure the box to the bottom of the cargo deck or cargo rack away from the engine.
- h. Travel only between one-half hour after sunrise to one-half hour before sunset.
- i. Use of drugs or alcohol is prohibited while transporting explosives.
- j. Park the cargo carrier or ATV off the trail during lightning or storms; move all personnel a safe distance away.
- k. Consult tables 6-1 through 6-5 for the minimum distance a radio can be operated from a cargo carrier with explosives.
- l. No placards are required for ATVs carrying explosives, but stenciling "EXPLOSIVES" on the mantee tarp is recommended or post explosives placards scaled to the space available on the carrier or ATV.

### **TRANSPORTING EXPLOSIVES BY VESSEL**

Shipment of explosives and other dangerous articles aboard vessels (including lighters and barges) by commercial service shall conform to the regulations prescribed by the Department of Transportation and Code

of Federal Regulations (CFR) Title 49 Part 176 and CFR 46 and Bureau of Explosives Tariff 6000 series.

On any boat:

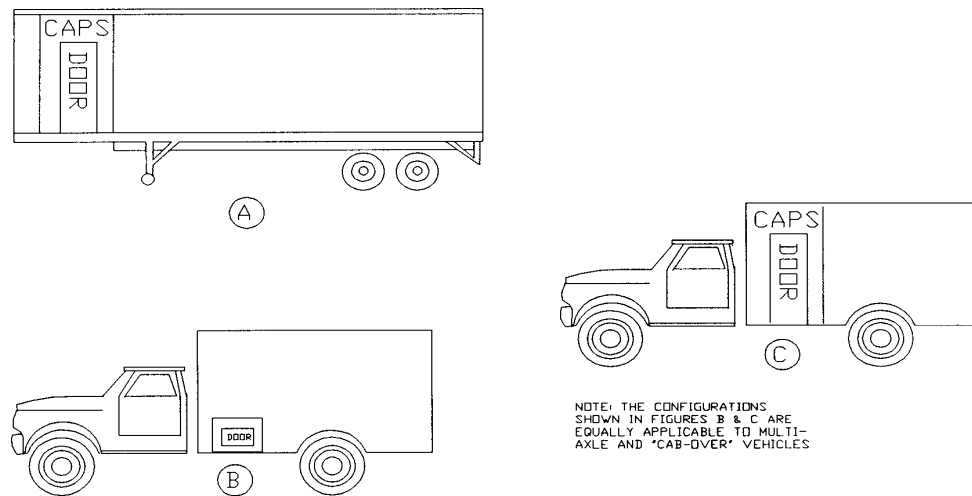
1. Explosives must be placed upon a wooden platform.
2. All blasting caps and detonators must be carried on deck as far forward as possible, in their original cartons, in a watertight, wood-lined, steel, portable cap magazine. However, in smaller vessels which experience severe bow impacts in rough waters, the detonator magazine should be carried abaft midship.
3. If small boats are involved, carry the explosives on one, the caps on the other. Or if transporting the explosives to a destination where they will be unloaded such as a barge, make one trip with the explosives, and a second trip carrying the caps.
4. Situate explosives away from loading booms or hoists, where they will not be exposed to falling objects. Keep them isolated from potential sources of static electricity, heat, and radio frequency energy.
5. A boat carrying explosives must fly the “Bravo” flag at the bow, however, since this is not likely to be understood by many boaters, “EXPLOSIVES” signs should also be used in congested waters.

## **TRANSPORTING EXPLOSIVES BY AIRCRAFT**

**Caution:** The following information applies only to field operations such as fire operations or projects, avalanche control, or special projects approved by the National Park Service. It does not apply to commercial aircraft operation, e.g.; any commercial airline under charter transporting fire personnel. For these types of operations, all the requirements of 49 CFR part 175 must be complied with. Refer to the OAS regulations for Department of the Interior aircraft operations (351 DM 1-3, 8).

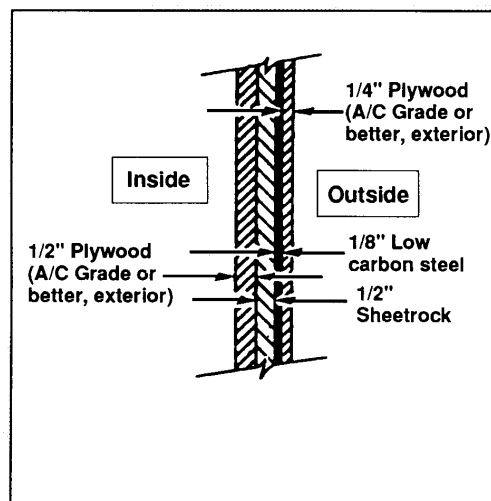
Explosive materials can be transported by aircraft when the following conditions are met:

- a. All explosives must be prepared and packaged under the supervision of a certified blaster and transported in undamaged original shipping containers. A shipper’s declaration for dangerous goods must be completed (Figure 4-10).
- b. High explosives must not be transported in the same container as detonators and must be separated from detonating materials. Detonating materials and explosives will be carried on different flights whenever possible and practical.
- c. For separation purposes, exploding bridgewire detonators (EBWs) may be carried inside aircraft while explosive materials are transported by internal or external load, provided the detonators are contained in the original manufacturers package or packaged in an IME container.
- d. Explosives that will react with oil, flames, acids, storage batteries, oxidizing or corrosive compounds will not be transported on the same flight with the reacting materials unless separation of the materials can be achieved to prevent possibility of contact between such materials.
- e. Explosives and detonators transported in the aircraft or on external cargo racks must be stowed separately, secured by tiedown straps, and be accessible for jettisoning whenever possible and practical. Detonators, or impact-sensitive explosives such as dynamites, shall not be carried in helicopter sling-loads.



(Figure 4-11) Examples of other IME containers.

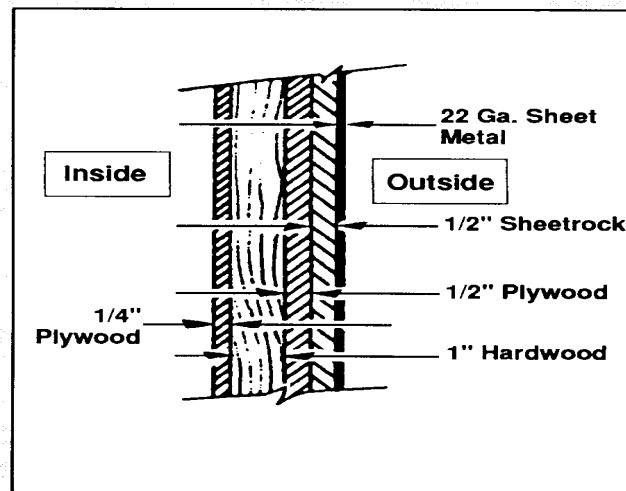
- f. No passengers other than those absolutely necessary for the completion of the mission involving the transport or use of explosives will be allowed on a flight transporting explosive materials.
- g. All explosives, ammunition, and detonating materials must be transported under the control or direction of a qualified or certified person.
- h. Flights transporting high explosives or detonating materials, will not be conducted over densely populated areas or in congested airways. During the approach and landing phase, the aircraft



(Figure 4-12) IME container construction.

operator shall request appropriate vectors when under radar control to avoid heavily populated areas. Wherever Class A or B explosives are transported and a danger exists to people on the surface, advance permission from the owner or operator of any manned airport used must be obtained (See Figure 4-11).

- i. Thermite grenades will remain in the original outside shipping containers while in transit. Any unused thermite that has been removed from its inside sealed canister will be returned to the inside canister, repacked and closed in the original outside shipping container prior to loading aboard the aircraft.
- j. No aerial dispensing of an explosive device will be conducted unless the dispensing method and/or dispensing device has been approved and accepted by the NPS. See part (n).
- k. The pilot shall assure that no smoking, or the use of any open flame or spark-producing device, will be allowed while transporting explosives, ammunition, or initiating devices.
- l. All packages containing explosives must be labeled on the outside of the package with the appropriate Hazardous Materials warning labels.
- m. In fire operations, only those explosives approved for use as a fireline explosive will be loaded on aircraft. In special operations, only the less sensitive explosives will be loaded on aircraft (i.e., water gels, emulsions, two-component, det cord).
- n. When dynamite and blasting caps are carried for avalanche control flights, the explosives must be handled and, at all times, be under the control of the blaster who is licensed under appropriate authority identified in writing to the FAA Civil Aviation Security Office responsible for the operator's overall aviation security program or the FAA Civil Aviation Security Office in the region where the operator is located.
- o. Any aircraft carrying explosives and making a forced landing for minor repairs will not unload its cargo, but will be repaired at a safe distance in accordance with storage requirements. Any aircraft forced down for major repairs will store its explosives cargo at a safe distance in accordance with the applicable quantity-distance tables.
- p. Any aircraft carrying explosives making a landing for refueling purposes will not unload its cargo, but will be refueled in accordance with the quantity-distance requirements.
- q. Prior to takeoff or landing of an aircraft loaded with explosives, the pilot will, in requesting the airdrome control tower for taxiing, takeoff and/or parking instructions, notify the control tower as to the contents of the aircraft and request special consideration and priority be given the aircraft in landing, takeoff and/or parking.
- r. The quantity-distance tables will be observed in parking aircraft loaded with ammunition and explosives and such aircraft will be adequately guarded.
- s. Explosive placards will be displayed when an aircraft loaded with explosives is parked and during all loading and unloading operations. Appropriate fire symbols shall be placed alongside the placards at all airfields.



(Figure 4-13) Laminate construction.



**SHIPPER'S DECLARATION FOR DANGEROUS GOODS**

Shipper				Air Waybill No.  Page      of      Pages  Shipper's Reference Number <i>(optional)</i>		
Consignee				(Empty space for consignee details)		
Two completed and signed copies of this Declaration must be handed to the operator				<b>WARNING</b>  Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.		
<b>TRANSPORT DETAILS</b>				Shipment type: <i>(delete non-applicable)</i> <input type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE		
This shipment is within the limitations prescribed for: <i>(delete non-applicable)</i>		Airport of Departure				
PASSENGER AND CARGO AIRCRAFT	CARGO AIRCRAFT ONLY					
Airport of Destination:						
<b>NATURE AND QUANTITY OF DANGEROUS GOODS</b>						
Dangerous Goods Identification				Quantity and type of packing	Packing Inst.	Authorization
Proper Shipping Name	Class or Div- sion	UN or ID No.	Subsidiary Risk			
Additional Handling Information						
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labelled, and are in all respects in the proper condition for transport by air according to the applicable International and National Government Regulations.				Name/Title of Signatory  Place and Date  Signature <i>(see warning above)</i>		

(Figure 4-14) Shipper's declaration for dangerous goods.

## Operating Authority For Aircraft Carrying Explosives

Approval to operate aircraft carrying explosives must be obtained in advance from airport authorities under provisions of 49 CFR 1/5.320.

Authority to operate at \_\_\_\_\_ Airport has been obtained from \_\_\_\_\_ who is \_\_\_\_\_ by telephone restrictions apply to operation at this airport:

Approach and Departure Routes \_\_\_\_\_

\_\_\_\_\_

Landing and Take Off \_\_\_\_\_

\_\_\_\_\_

Parking/Refueling \_\_\_\_\_

\_\_\_\_\_

Loading and /or Unloading \_\_\_\_\_

\_\_\_\_\_

By USFS or BLM Officer

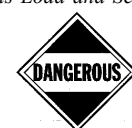


Signed \_\_\_\_\_ Title \_\_\_\_\_

Time \_\_\_\_\_ Date \_\_\_\_\_

I hereby certify that the contents of this shipment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and in proper condition for carriage by air according to applicable Department of Transportation Regulations. This shipment is within the limitations prescribed for cargo only aircraft.

(Figure 4-15) Operating authority for aircraft carrying explosives.

### HAZARDOUS MATERIALS LOAD AND SEGREGATION CHART

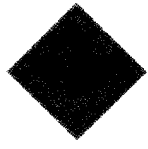
CLASS	CLASS OR DIVISION	PLACARD HEIGHT	NOTES	HAZARDOUS MATERIALS LOAD AND SEGREGATION CHART															
				2.1	2.2	2.3 GAS		2.3 GAS		6.1 LIQUIDS		6.1 LIQUIDS							
				2.1	2.2	ZONE A	ZONE B	3	4.1	4.2	4.3	5.1	5.2	7	8				
1	EXPLOSIVES *Add division number and compatibility group	1.1 1.2	ANY QUANTITY	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X
	EXPLOSIVES *Add division number and compatibility group	1.3	ANY QUANTITY		*	*	*	*	*	X	X	X			X	X	X	X	X
	EXPLOSIVES *Add compatibility group	1.4	1001 Lbs.		*	*	*	*	*	O	O	O			O				O
	VERY INSENSITIVE EXPLOSIVES	1.5	1001 Lbs.	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X
	EXTREMELY INSENSITIVE EXPLOSIVES	1.6	1001 Lbs.		*	*	*	*	*										
2	FLAMMABLE GASES	2.1	1001 Lbs.		X	X	O	X		X	O						O	O	
	NON-TOXIC NON-FLAMMABLE GASES	2.2	1001 Lbs.	B	X			X											
	POISONOUS GAS ZONE A (TOXIC GAS placard may be used)	2.3	ANY QUANTITY		X	X	O	X	X						X	X	X	X	X
	POISONOUS GAS ZONE B (TOXIC GAS placard may be used)	2.3	ANY QUANTITY		X	X	O	X	O						O	O	O	O	O
3	FLAMMABLE LIQUIDS	3	1001 Lbs.		X	X	O	X		X	O							X	
4	FLAMMABLE SOLIDS	4.1	1001 Lbs.		X			X		X	O							X	O
	SPONTANEOUSLY COMBUSTIBLE	4.2	1001 Lbs.		X	X	O	X		X	O							X	X
	DANGEROUS WHEN WET MATERIALS	4.3	ANY QUANTITY		X	X		X		X	O							X	O
	OXIDIZERS	5.1	1001 Lbs.	A	X	X		X		X	O	O						X	O
	ORGANIC PEROXIDES	5.2	1001 Lbs.		X	X		X		X	O							X	O
6	POISONOUS LIQUIDS PG 1 ZONE A INHALATION HAZARD (TOXIC placard may be used)	6.1	ANY QUANTITY	E	X	X	O	X	O						X	X	X	X	X
7	RADIOACTIVE MATERIALS	7	ANY QUANTITY (yellow III label)		X			X		O									
8	CORROSIVE LIQUIDS	8	1001 Lbs.		X	X	O	X		X	O				O	X	O	O	X
COMBUSTIBLE LIQUIDS				Over 119 Gal.	C	§177.848 (e) INSTRUCTIONS FOR USING THE SEGREGATION TABLE FOR HAZARDOUS MATERIALS ARE AS FOLLOWS:													
CLASS 6.1 POISON PG I OR II OTHER THAN PG 1 INHALATION HAZARD (TOXIC placard may be used)				1001 Lbs.	C	<p>(1) The absence of any hazard class or division or a blank space in the Table indicates that no restrictions apply.</p> <p>(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.</p> <p>(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.</p> <p>(4) The "X" in the Table indicates that segregation among different Class 1 (explosive) materials is governed by the requirements in paragraph (f) of this section.</p> <p>(5) The note "A" in the third column of the Table means that, notwithstanding the requirements of the letter "X", ammonium nitrate fertilizer may be loaded or stored with Division 1.1 (Class A explosive) or Division 1.5 (blasting agents) materials.</p> <p>(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 asphyxiant gases, or formation of corrosive or unstable materials.</p>													
CLASS 9 MISCELLANEOUS				1001 Lbs.	C														
NOTES					MIXED LOADS				§172.505 PLACARDING FOR SUBSIDIARY HAZARDS										
<p>A. See instructions §177.848(e)(5).</p> <p>B. For domestic transportation of oxygen, compressed or oxygen, refrigerated liquid, the oxygen placard may be used in place of NON-FLAMMABLE GAS placard (§172.504(f)(7)).</p> <p>C. No applicable segregation restrictions in §177.848(d).</p> <p>D. For domestic transportation, a Class 9 placard is not required. A bulk packaging containing a Class 9 material must be marked with the appropriate identification number displayed on a Class 9 placard, an orange panel or a white square-on-cube configuration as required by subpart D of this part (§172.504(f)(9)).</p> <p>E. Packages with POISON or HARMFUL KEEP AWAY FROM FOOD labels may not be transported with foodstuffs, feed or any other edible material, intended for use for side.</p>					<p>DANGEROUS</p> <p>Placard 454 kg (1001 lbs.) gross weight of two or more categories of hazardous materials listed in Table 2. A freight container, unit load device, transport vehicle or rail car which contains nonbulk packages with two or more categories of hazardous materials that require different placards specified in Table 2 may be placarded with DANGEROUS placards instead of the separate placarding specified for each of the materials in Table 2. However, when 2,268 kg (5000 lbs.) or more of one category of material is loaded thereon at one loading facility, the placard specified in Table 2 for that category must be applied.</p> <p>Division 1.1 (explosives)</p> <p>Division 1.2 (explosives)</p> <p>Division 1.3 (explosives)</p> <p>Division 1.4 (explosives)</p> <p>Division 1.5 (blasting agents)</p> <p>Division 1.6 (explosives)</p> <p>Division 2.1 (flammable gas)</p> <p>Division 2.2 (non-flammable gas)</p> <p>Class 3 (flammable liquid)</p> <p>Class 4.1 (flammable solid)</p> <p>Class 4.2 (spontaneously combustible)</p> <p>Division 5.1 (oxidizer)</p> <p>Division 5.2 (organic peroxide)</p> <p>Division 6.1, PG I &amp; II other than PG 1 INHALATION HAZARD (poison)</p> <p>Division 6.1, PG II (keep away from food)</p> <p>Class 8 (corrosive)</p> <p>Class 9 (miscellaneous)</p>				<p>may be required by §172.504(e) of this subpart, each transport vehicle, portable tank or freight container that contains 454 kg (1001 pounds) or more gross weight of flammable or low specific activity uranium hexafluoride shall be placarded with a CORROSIVE placard on each side and each end.</p> <p>(c) Each transport vehicle, portable tank, freight container or unit load device that contains a material which has a subsidiary hazard of being dangerous when wet, as defined in §173.124 of this subchapter, shall be placarded with DANGEROUS WHEN WET placards, on each side and each end, in addition to the placards required by §172.504.</p> <p>(d) Hazardous materials that possess secondary hazards may exhibit subsidiary placards that correspond to the placards described in this part, even when not required by this part (see also §172.510(d)(4) of this subpart).</p> <p>(a) Each transport vehicle, freight container, portable tank or unit load device that contains a poisonous material subject to the "Poison-Instillation Hazard" shipping description of §172.203(a)(3) must be placarded with a POISON or POISON GAS placard, as appropriate, on each side and each end, in addition to any other placard required for that material in §172.504. Duplication of the POISON or POISON GAS placard is not required.</p> <p>(b) In addition to the RADIOACTIVE placard which</p>										
<p>PLACARDS NOT REQUIRED FOR:</p> <p>1. 6.2 INFECTIOUS SUBSTANCE (Labels only)</p> <p>2. RADIOACTIVE I, II (Labels only)</p> <p>3. ORM-D</p> <p>4. Any hazardous material identified on shipping papers as a "limited quantity."</p>									 										

Copyright 1996 & Published by J. J. KELLER & ASSOCIATES, INC., Neenah, WI 54957-0368 • USA • (800) 327-6868

41-FB

(Figure 4-16) Hazardous Materials Load and Segregation Chart, side one.

**HAZARDOUS MATERIALS LOAD AND SEGREGATION CHART**

COMPATIBILITY TABLE FOR CLASS 1 (EXPLOSIVE) MATERIALS														CLASS 1 EXPLOSIVE PLACARDS	
COMPATIBILITY GROUP	A	B	C	D	E	F	G	H	J	K	L	N	S	DIVISIONS 1.1, 1.2 & 1.3	DIVISION 1.4
	A		X	X	X	X	X	X	X	X	X	X	X	X	 <p>The Division number and compatibility group are printed in black ink where the '1' is shown. Placard any quantity of Division number 1.1, 1.2 or 1.3 material.</p> <p>* Division Numbers and Compatibility Group</p> <p>1.1A 1.2B 1.2L 1.1B 1.2C 1.3C 1.1C 1.2D 1.3F 1.1D 1.2E 1.3G 1.1E 1.2F 1.3H 1.1F 1.2G 1.3J 1.1G 1.2H 1.3K 1.1J 1.2J 1.3L 1.1L 1.2K</p>
B	X		X	4	X	X	X	X	X	X	X	X	4/5		
C	X	X		2	2	X	X	X	X	X	X	X	3		
D	X	4	2		2	X	X	X	X	X	X	X	3		
E	X	X	2	2		X	X	X	X	X	X	X	3		
F	X	X	X	X	X		X	X	X	X	X	X	4/5		
G	X	X	X	X	X	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		
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			

**§177.848 (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.

HAZARDOUS MATERIALS SHIPPING PAPERS										§172.505 PLACARDING FOR SUBSIDIARY HAZARDS	
TO: Shipper Street, Destination, Zip		FROM: Shipper Street, Origin, Zip		Vehicle Number		U.S. DOT Hazard Reg. No.				  	<p>(a) Each transport vehicle, freight container, portable tank, unit load device, or rail car that contains a poisonous material subject to the "Poison-Inhalation Hazard" shipping description of §172.203(m)(3) must be placarded with a POISON INHALATION HAZARD or POISON GAS placard, as appropriate, on each side and each end, in addition to any other placard required for that material in §172.504. Duplication of the POISON INHALATION HAZARD or POISON GAS placard is not required.</p> <p>(b) In addition to the RADIOACTIVE placard which may be required by §172.504(e) of this subpart, each transport vehicle, portable tank or freight container that contains 454 kg (1001 pounds) or more gross weight of fissile or low specific activity uranium hexafluoride shall be placarded with a CORROSIVE placard on each side and each end.</p> <p>(c) Each transport vehicle, portable tank, freight container or unit load device that contains a material which has a subsidiary hazard of being dangerous when wet, as defined in §173.124 of this subchapter, shall be placarded with DANGEROUS WHEN WET placards, on each side and each end, in addition to the placards required by §172.504.</p> <p>(d) Hazardous materials that possess secondary hazards may exhibit subsidiary placards that correspond to the placards described in this part, even when not required by this part (see also §172.519(b)(4) of this subpart).</p>
No. Shipping Units	HM	Kind of Package, Description of Article, or HAZARDOUS MATERIALS - PROPER SHIPPING NAME	HAZARD CLASS	ID Number	Packing Group	WEIGHT (net and gross)	RATE	HAZARDOUS MATERIALS - PROPER SHIPPING NAME			
<p>Generally, whenever a hazardous material is transported its description must appear on the shipping paper.</p> <p>The description must adhere to these requirements:</p> <ol style="list-style-type: none"> <li>If a hazardous material and a non-hazardous material are described on the same shipping paper, the hazardous material must be:             <ol style="list-style-type: none"> <li>listed first</li> <li>shown in a contrasting color (highlighted on a reproduction)</li> <li>identified with an "X" or "RQ" before the proper shipping name in the column marked "HM".</li> </ol> </li> <li>Entry must be legible and printed in English.</li> <li>Unless specifically authorized or required, the description may not contain codes or abbreviations.</li> <li>Additional information must follow the basic description.</li> <li>If more than one page is required, the first page must indicate such, for example, "page 1 of 4."</li> <li>Shipping paper must show an emergency response telephone number, if required.</li> <li>Shipping paper must contain shipper's certification, if required.</li> </ol> <p>A shipping description must include:</p> <ol style="list-style-type: none"> <li>proper shipping name (column 2, Hazardous Materials Table)</li> <li>hazard class or division (column 3, Hazardous Materials Table)</li> <li>identification number (column 4, Hazardous Materials Table)</li> <li>packing group (column 5, Hazardous Materials Table)</li> <li>except for empty packagings, the total quantity, including unit for measurement, of the hazardous material.</li> </ol>											

(Figure 4-17)