must have attached to both sides and both ends the "DANGEROUS" placard prescribed by § 174.552, and the doors if not tight must be stripped to prevent entrance of sparks.

(1) Packages of explosives shall be so braced and stayed as to prevent their movement and so as to prevent injury to them due to movement of other freight during transit.

NOTE 1: For recommended methods of blocking and bracing, see Bureau of Explosives' Pamphlet 6.

(c) Explosives, class B, may be carried in tight, closed truck bodies or trailers on flat cars provided all automatic heating or refrigerating machinery with which truck bodies or trailers are equipped shall be rendered inoperative. Packages of explosives shall be so braced and stayed as to prevent their movement and so as to prevent injury to them due to movement of other freight during transit. Ends, side walls, or doors of truck bodies or trailers shall not be relied upon to prevent the shifting of heavy loads unless adequately designed. "Dangerous" placards prescribed by § 174.552 must be securely attached to the car or truck body or trailer so as to be visible from both sides and ends of the car.

NOTE 1: For recommended methods of blocking and bracing see Bureau of Explosives' Pamphlet 6C.

[29 F.R. 18774, Dec. 29, 1964, as amended by Order 66, 30 F.R. 5747, Apr. 23, 1965]

§ 174.530 Cars for class C explosives.

(a) Explosives, class C, may be loaded into any closed car in good condition. With the exception of blasting caps and electric blasting caps, explosives, class C, may be loaded into any container car in good condition. No placards or car certificates are required.

(1) Packages of explosives shall be so braced and stayed as to prevent their movement and so as to prevent injury to them due to movement of other freight during transit.

NOTE 1: For recommended methods of blocking and bracing, see Bureau of Explosives' Pamphlet 6.

(b) Explosives, class C, may be carried in tight, closed truck bodies or trailers on flat cars provided all automatic heating or refrigerating machinery with which truck bodies or trailers are equipped shall be rendered inoperative. Packages of explosives shall be so braced and stayed as to prevent their movement and so as to prevent injury to them due to movement of other freight during transit. Ends, side walls, or doors of truck bodies or trailers shall not be relied upon to prevent the shifting of heavy loads unless adequately designed.

NOTE 1: For recommended methods of blocking and bracing see Bureau of Explosives' Pamphlet 6C.

[29 F.R. 18774, Dec. 29, 1964, as amended by Order 66, 30 F.R. 5747, Apr. 23, 1965]

§ 174.531 Lights.

(a) When necessary to use lights while handling explosives, it is recommended that where practicable incandescent electric lights be provided.

§ 174.532 Loading other hazardous materials.

(a) Shipments must be properly loaded in closed cars, container cars, or in tight closed truck bodies or trailers on flat cars, except as otherwise provided in Parts 170–189 of this chapter and cars placarded as prescribed, when accepted by carriers. Ends, side walls, or doors of truck bodies or trailers shall not be relied upon to prevent the shifting of heavy loads unless adequately designed.

NOTE 1: See Bureau of Explosives' Pamphlet No. 6 for recommended methods of blocking and bracing articles in cars. See loading and storage chart (§ 174.538) before loading labeled articles together or with explosives named in §§ 173.53 to 173.114 of this chapter.

NOTE 2: For recommended methods of blocking and bracing, in truck bodies or trailers on flat cars, see Bureau of Explosives' Pamphlet 6C.

(1) Shippers must furnish the material for staying packages of hazardous materials loaded by them.

(b) Flammable liquids or flammable gases must not be loaded, transported, or stored in cars equipped with any type of lighted heater or open-flame device, or in cars equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(1) Flammable liquids or flammable gases must not be loaded in truck bodies or trailers equipped with lighted heaters or any automatic heating or refrigerating apparatus when such truck bodies or trailers are loaded on flatcars.

(2) This prohibition does not apply and heating or refrigeration apparatus may be operated on motor vehicles loaded on flatcars when such motor vehicles are

loaded with flammable liquids or flammable gases, when the lading space is equipped with no electrical apparatus other than nonsparking or explosion-proof types, no combustion apparatus in the lading space, and no connection for return of air from the lading space to any combustion apparatus. The heating system must be such that no part of the lading is heated over 130° F., and conforms to § 393.77 of this title.

(3) Pyroforic liquids in cylinders. Cylinders containing pyroforic liquids, n.o.s., unless packed in strong wooden boxes and secured therein to protect valves, must be loaded with all valves and safety relief devices in the vapor space, and must be secured so that no shifting will occur in transit.

(c) Packages bearing labels must be loaded so they cannot fall and other packages cannot fall onto or slide against them. This requirement does not preclude the use of loading methods that are designed to permit limited movement of the load and that are approved in writing by the Federal Railroad Administrator. Packages bearing markings "This Side Up" or "This End Up" must be so loaded. Hazardous materials for which a flammable liquid, flammable gas, flammable solid, oxidizer, nonflammable gas, or a corrosive label (liquids only) is prescribed herein must not be loaded in the same car with explosives named in §§ 173.53 to 173.87 of this subchapter. (See loading and storage-chart § 174.538.) Packages bearing a flammable solid or an oxidizer label must not be loaded in the same end of a car with packages bearing a corrosive label (liquids only), except that shippers loading carload shipments who have obtained prior approval from the Department, may load materials together when it is known that the mixture of contents would not cause a dangerous evolution of heat or gas.

(d) Metal barrels or drums containing flammable liquids may be loaded on steel gondola or flat cars or into stock cars, but must not be loaded into hopper bottom cars.

(e) Empty cylinders, barrels, kegs, or drums, previously used for the shipment of any hazardous material as defined in Part 173 of this chapter, must have all openings including removable heads tight and vent holes properly closed before being offered for transportation. Small quantities of the material with which containers were loaded may remain in "empty" containers and when the vapors remaining therein are unstable, it is permissible to add sufficient inert gas to render the vapors stable.

(1) They may be loaded in open or stock cars when desired. Cars should not be placarded but lighted open-flame lanterns or other open-flame lights should be kept away.

(f) Carboys previously used for the shipment of corrosive liquids when presented to carriers for transportation in carload or less-than-carload shipments as "empty" carboys, must be thoroughly (completely) drained. Whenever practicable they should not be loaded with valuable or perishable freight.

(g) Matches: Carload lots of strike-anywhere (friction) matches must be loaded as compactly as possible to avoid motion within the car, especially lengthwise of the car. Protruding nails, metal band anchors or other projections on sidewalls, ends, door posts, studding, or car floors liable to puncture packages must be removed or adequately covered to prevent damage to containers of matches. Car doorways should be boarded on the inside to keep packages from contact with the doors, and the inside lining of the car should be supplemented when necessary by strips nailed to the car and close enough together to keep the boxes from being jammed against the studding and broken by high pressures on small areas. The strongest dimension of the box should be loaded lengthwise of the car. Partial layers of boxes should be interlocked with the lower layers. The cars used should be made secure against the entrance of sparks or rain and should be the strongest cars available.

(1) [Reserved]

(2) Carload lots of strike-anywhere matches handled subject to stop off privileges must be loaded in accordance with paragraph (g) of this section and when necessary the load must be rearranged and/or blocked and braced by each consignee before forwarding.

(3) Less-than-carload lots of "strike-anywhere" matches should be carefully loaded so that they cannot fall and so that other packages of freight cannot fall on or injure them. Whenever practicable the packages of matches should be placed to facilitate ready removal in case of fire. A smoking box of matches should not be broken open; the fire will cease of itself if air can be kept from it.

(4) Carload or less-than-carload lots of "strike-anywhere" matches which have been damaged by fire, or by water in extinguishing a fire, in transit or on carrier's property, must be reloaded in properly prepared cars, and braced or blocked before being forwarded to destination, to freight claim department or claim adjusters, or to original shipper or other parties for salvage. Great care should be taken to examine and repair damaged outside packages before reloading into car. All loose matches should first be destroyed. Individual interior boxes and paper-wrapped cartons or packages, should then be carefully placed in tight outside packages complying, as nearly as circumstances will permit, with container specifications; but under no condition shall the outside package be of less strength than required by specification 15A or 12C (§§ 178.168 or 178.206 of this chapter), nor of greater capacity than authorized. Charred cases must not be used. Boards used in repairing wooden cases must be so nailed that they will not allow any interior boxes, cartons, or packages to fall out. In the event that the individual boxes or paper-wrapped packages do not fit snugly in the outside package, the vacant spaces should be filled tightly with dry and clean cotton waste, or elastic wads of dry newspapers or dry waste paper.

(h) Corrosive liquids: Carboys of corrosive liquids must not be loaded into container cars. They must be so blocked, braced, or stayed that they cannot change position during transit when being handled with reasonable care. Carboys of nitric acid must not be loaded into box cars or in truck bodies or trailers on flat cars more than two tiers high, except that completely boxed carboys, specification 1D (§ 178.4 of this chapter), may be loaded three tiers high. Car doors may be cleated in an open position if desired. Flat or stock cars may be used for loading carboys of acids.

(1) When less-than-carload shipments are loaded with other freight, the carboys must be placed near the doorway and must have wooden strips not less than 2 inches in height nailed to the car floor about 8 inches from the bracing. These strips must be arranged so that the liquid from a broken carboy will drain toward the doorway and outside the car. The space between the strips and the floor braces or blocking used for staying the carboy boxes must be covered with at least 1 inch thickness of clean and dry sand or earth, not sawdust or other combustible material.

(2) Nitric acid, when loaded with other acids or other corrosive liquids in carboys, must be separated from the other carboys. A 2 by 6 inch plank, set on edge, should be nailed across the car floor at least 12 inches from the nitric acid carboys and the space between the plank and the carboys of nitric acid should be filled with sand, sifted ashes, or other incombustible absorbent material.

(3) Electric storage batteries (wet) for shipment must be completely protected so that short circuits will be prevented and must not be loaded or stored with explosives.

(4) Shipments of electric storage batteries (wet), and electrolyte packed as required by § 173.258 of this chapter, must be so blocked and braced that they cannot change position during transit when cars are handled with reasonable care; and must be so loaded that other freight cannot fall onto or slide against them. They may be loaded on gondola or flat cars, but must not be loaded into hopper bottom cars.

(i) Compressed gases in cylinders: Cylinders containing compressed gases shall be securely lashed in an upright position so as to prevent their overturning; or loaded into racks securely attached to the car; or packed in boxes or crates of such dimensions as to prevent their overturning; or loaded in a horizontal position. Spec. DOT–4L cylinders must be loaded in an upright position and be securely braced.

(1) Cylinders containing compressed gases may be loaded into steel gondola or flat cars or into stock cars, but must not be loaded into hopper bottom cars.

(j) Radioactive materials:

(1) Shipments of low specific activity materials, as defined in § 173.389(c) of this chapter, must be loaded so as to avoid spillage and scattering of loose material. Loading restrictions are prescribed in § 173.392 of this chapter.

(2) Storage and loading restrictions are prescribed in § 174.586(h).

(3) Containers of radioactive material weighing 15,000 pounds or more may be loaded on flat cars. Gondola cars (drop-bottom cars not authorized) may be used for the following:

(i) Radioactive materials in containers weighing 5,000 pounds or more;

(ii) Strong wooden boxes with inside containers of solid radioactive material, securely braced and cushioned; and

(iii) Radioactive material in concrete-filled metal drums or in concrete vaults weighing 700 pounds or more.

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

(5) Persons should not remain unnecessarily in a car containing radioactive materials.

(k) Nitrates listed in § 173.182(b) of this subchapter must be loaded in clean closed cars, which must be free of loose boards, cracks, holes, or exposed decayed spots. Interior of cars must be swept clean and be free of any projections capable of damaging bags when the nitrate is so packaged. Doors of cars must have tight closures. Journals and boxes must be in good condition. (See § 174.541(a) (1) and (2) of this subchapter.)

(l) Poison gas; class A, by rail freight: Poison gases, class A, may be shipped by, for, or to, the Departments of the Army, Navy, or Air Force of the United States Government, when loaded and handled as follows:

(1) In metal drums, specification DOT 5A (§ 178.81 of this chapter) or WD 5A,[1] in box cars, gondola cars, or stock cars (flat bottom) in carload lots.

(2) In tanks, specification DOT 106A (§§ 179.300 and 179.301 of this chapter), mounted on or secured to multi-unit cars or gondola cars (flat bottom) in carload lots only.

(3) In bombs, in box cars or gondola cars (flat bottom) in carload lots only.

(4) In projectiles or ammunition for cannon with gas filled projectiles in box cars in carload or less-than-carload lots.

(5) Gas handlers. Each shipment of one or more carloads, as described in paragraphs (l)(1), (2), (3), and (4) of this section, shall be accompanied by a crew of qualified gas handlers, supplied with equipment to handle leaks or other container failure, which will permit the escape of gas. Gas handlers will remain with the shipment during the entire time that it is in the custody of the carrier. Gas handlers will, in the event of leakage or escape of gas, make repairs and perform decontamination, if necessary. If they need assistance they will advise the carrier's representative as to the nearest Department of Defense facility and aid required.

(6) Loading and bracing in cars. Drums must be loaded in cars having level floors. Cars equipped with metal corrugated ends or cars having bowed ends must be supplied with end wall bulkheads constructed in accordance with requirements for center gates. (See Sketch 1, Bureau of Explosives' Pamphlet No. 6.)

(7) Drums must be loaded not more than one tier (layer) high and with filling holes up. They must be loaded as closely together as possible both crosswise and lengthwise and so blocked and braced as to maintain their relative positions during transit.

(8) Drums with filling holes in heads must be loaded on their bottoms. They may be loaded in rows, lengthwise of the car and any space between the sides of car and the nearest row of drums must be "filled in" with wooden boards or lumber nailed to sides of car sufficient in length and width to contact both hoops of drums, or, drums may be loaded across car in staggered stacks of which the number of drums in alternate stacks is reduced by one drum. All drums in stacks following the first stack loaded in end of car must be placed tightly into the angle of space formed by the sidewalls of the drum in the preceding stack. Any space between the sides of car and the drums in stacks having the greater number of drums, must be "filled in" with wooden boards or lumber nailed to sides of car sufficient in length and width to contact both hoops of drums.

[1] War Department specification container.

(9) Drums with filling holes in sides must be loaded on their sides with filling holes up. They must be loaded lengthwise of the car in rows and any space between sides of car and the nearest row of drums must be "filled in" with wooden boards or lumber nailed to sides of car sufficient in length and width to contact both hoops of drums.

(10) Drums must be loaded in box car from ends of car toward space between car doors, and there braced by center gates and wedges. (See Sketch 1, Bureau of Explosives Pamphlet No. 6.)

(11) Doorways of box cars must be protected by one of the methods prescribed in Sketch 1, Bureau of Explosives Pamphlet No. 6A.

(12) Tanks must be securely mounted on cars especially provided for them or on gondola cars prepared with substantial wooden frames and blocks.

(13) Bombs, projectiles, and cannon ammunition must be loaded, blocked and braced as shown in Bureau of Explosives Pamphlet 6A. When shipments are loaded in gondola cars they must be securely blocked and braced and not loaded higher than the sides of the car.

(m) Material marked as or known to be poison (class A or B) must not be transported in the same car with material which is marked as or known to be foodstuffs, feeds, or any other edible material intended for consumption by humans or animals.

(n) Specification 56 or 57 (§§ 178.251, 178.252, 178.253 of this chapter) portable tanks containing hazardous materials may not be stacked on each other nor may any other freight be stacked on them during transportation.

[29 FR 18774, Dec. 29, 1964. Redesignated, 32 FR 5606, Apr. 5, 1967 and amended by Order 66, 30 FR 5747, Apr. 23, 1965; Order 74, 32 FR 5275, Mar. 29, 1967; Amdt. 174–1, 33 FR 14931, Oct. 4, 1968; Amdt. 174–5, 34 FR 18554, Nov. 21, 1969; Amdt. 174–60, 37 FR 2886, Feb. 9, 1972; Amdt. 174–14, 37 FR 5949, Mar. 23, 1972; Amdt. 173–70, 38 FR 5313, Feb. 27, 1973; Amdt. 174–21, 39 FR 12752, Apr. 8, 1974; Amdt. 174–23, 39 FR 33532, Sept. 18, 1974]

§ 174.533 Truck bodies or trailers on flat cars.

(a) Truck bodies or trailers containing explosives, class B, explosives, class C, or hazardous materials as provided in Parts 170–189 of this chapter must be of such design and so loaded that they will not rupture or become seriously damaged under conditions normally incident to transportation and must be so secured on the flat car that they cannot permanently change position during transit. Packages of explosives and hazardous materials contained therein must be loaded and braced as provided by §§ 174.529, 174.530, and 174.532. Placards must be applied when prescribed by §§ 174.541 and 174.542.

(b) Truck bodies or trailers equipped with automatic heating or refrigerating equipment employing any fuel or article classed as a hazardous material in Parts 170–189 of this chapter may be loaded and transported on flat cars if such equipment is of a type approved by the Bureau of Explosives. They must be so braced and stayed on the flat car that they cannot permanently change position during transit.

(c) Cargo tanks containing hazardous materials may not be transported in trailer-on-flat-car service except under conditions approved by the Federal Railroad Administrator.

[29 F.R. 18774, Dec. 29, 1964, as amended by Amdt. 174–8, 35 F.R. 17950, Nov. 21, 1970]

§ 174.534 Portable containers or tanks.

(a) Portable containers or tanks must be of such design and so loaded and stayed in closed cars, in gondola cars, on flat cars, or in truck bodies or trailers on flat cars so they cannot permanently change position, rupture, or become seriously damaged under conditions normally incident to transportation. Ends, sidewalls, or doors of truck bodies or trailers shall not be relied upon to prevent shifting of portable containers or tanks.