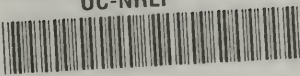


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**The American Railway Association**

**RULES**

AND THE

**Interstate Commerce Commission**

**REGULATIONS**

FOR THE

**Transportation of Explosives**

EFFECTIVE APRIL 13, 1909

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**The American Railway Association**

**REGULATIONS**

FOR THE

**Transportation of Inflammable Articles and Acids**

EFFECTIVE JULY 1, 1909

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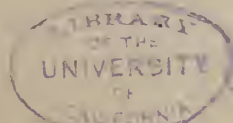
**JUNE, 1909**



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The American Railway Association

## RULES FOR THE TRANSPORTATION OF EXPLOSIVES.

### GENERAL NOTICE.

The safe transportation of explosives is largely influenced by the manner in which they are made and packed for shipment, as well as by the careful loading and staying (bracing, blocking) of packages and the intelligent handling of packages and of cars by railway employes.

The Interstate Commerce Commission's Regulations for the Transportation of Explosives place upon railroad carriers the duty of making the prescribed regulations effective and thoroughly instructing its employes in relation thereto.

In order to make the regulations effective, it is necessary for railway employes to acquire knowledge of their specific duties. Employes are specially designated to perform certain duties in connection with these regulations, and the paragraphs referred to in the rules given below should be studied carefully. It must be understood that this will not relieve any employe from responsibility for compliance with any requirement of the regulations when able to do so. All employes will be held strictly responsible for the proper instruction of all other employes under their control, and for the strict compliance by them with the regulations.

Violations of the regulations discovered in cars containing explosives must be reported to the proper official, who will forward report to the Chief Inspector of the Bureau of Explosives, 24 Park Place, New York.

### PARAGRAPH REFERENCES.

1301. The following regulations have specific reference to duties devolving on the **Station Agent**:

General Rules A, B, C and G. Paragraphs 1501, 1531 to 1536, 1664 to 1672, 1682, 1685 and 1696.

1302. A new explosive must not be accepted until it has been examined and pronounced safe for transportation by the Chief Inspector of the Bureau of Explosives.

1303. Should the services of a Local Inspector be required, application should be made by the agent to his Division Superintendent or other designated official, or by the shipper to the Chief Inspector of the Bureau of Explosives.

1304. The following regulations have specific reference to duties devolving on the **Employee Receiving Freight**:

General Rules A, B and C. Paragraphs 1501, 1531 to 1533, 1541 to 1648, 1668 to 1670 and 1682.

1305. The following regulations have specific reference to duties devolving on the **Employee Billing Freight**:

Paragraphs 1661, 1668 and 1669.

1306. The following regulations have specific reference to duties devolving on the **Employee Inspecting Cars**:

General Rule G. Paragraphs 1661, 1662, 1665, 1667, 1669, 1670 and 1694.

1307. The following regulations have specific reference to duties devolving on the **Employee Loading or Unloading Freight**:

General Rules D and G. Paragraphs 1531, 1532, 1534 to 1536, 1661 to 1663, 1665, 1666, 1667, 1671, 1674 to 1680, 1682, 1683, 1695 and 1940.

NOTE.—Articles that must not be loaded nor stored with explosives include:

1. Packages that bear labels described in Paragraph 1812;
2. Packages that have any of the characteristics mentioned in the definitions, Paragraphs 1801 to 1804, and from which labels are exempted by Paragraph 1814, or are improperly omitted;
3. Articles of well-known but minor inflammable risk, which are designated by \* in List No. 3, Paragraph 1805.

1308. Whoever loads the car must furnish the lumber and labor required for staying all shipments loaded by them, and this lumber should not be less than two (2) inches thick, except in cases where this thickness is manifestly not required, or unless otherwise specified by the Bureau of Explosives.

1309. The following regulations have specific reference to duties devolving on the **Yardmasters**:

General Rule G. Paragraphs 1684 to 1692, 1694, 1695 and 1697.

1310. The following regulations have specific reference to duties devolving on the **Conductors and Trainmen**:

General Rule G. Paragraphs 1662, 1667, 1673, 1684 to 1695 and 1697.

1311. Shipments of high explosives and powder must not be accepted by conductors at non-agency stations unless the conductor is instructed and qualified to perform the duties specified for station employes.

1312. The following regulations have specific reference to duties devolving on the **Wreck Crews**:  
Paragraph 1697.

## LOADING CHART.

Packages of explosives and other dangerous articles are considered and designated below as:

First.—**MORE DANGEROUS EXPLOSIVES**, designated a, b, c, d, e, f and g; must be properly loaded and stayed and transported in certified car placarded "Explosives" for any quantity, (except not more than 100 Blasting Caps, see Par. 1614.)

Second.—**LESS DANGEROUS EXPLOSIVES**, designated 1, 2 and 3; may be transported in box cars in good condition and must be placarded "Inflammable" for any quantity.

Third.—**RELATIVELY SAFE EXPLOSIVES**, designated 4, 5, 6, 7 and 8; may be treated as valuable merchandise and transported in box cars in good condition without placard.

Fourth.—**INFLAMMABLE ARTICLES, COMPRESSED GASES AND ACIDS**, designated 9, 10, 11 and 12; transported in suitable cars, placarded "Inflammable" or "Acid" according to labels on packages. (Non-Inflammable Gases, Light Green Label require no placard.)

		The following table shows the explosives and inflammables which must not be loaded or stored together. The letter X at an intersection of horizontal and vertical columns shows that these packages must not be loaded or stored together (for example: Blasting Caps (f) horizontal column must not be loaded or stored with High Explosive (b) vertical column.)																		
		Black Powder	High Explosive	Smokeless Powder for Small Arms	Wet Fulminate of Mercury	Blasting Caps (including Electric Blasting Caps)	Ammunition for Cannon, Explosive Projectiles, (or Explosive Projectiles)	Detonating Fuses	Ammunition for Cannon—Empty Projectiles	Smokeless Powder for Cannon	Fireworks	Small Arms Ammunition	Primers	Perousion Fuses	Time or Combination Fuses	Safety Fuse and Safety Squibs	Inflammable Liquid or Compressed Inflammable Gases, Red Diamond Label	Inflammable, Yellow Label	Acid, White Label	Compressed Non-Inflammable Gases, Light Green Label
		a	b	c	d	e	f	g	1	2	3	4	5	6	7	8	9	10	11	12
FIRST. More Dangerous Explosives	Black Powder										X									
	High Explosive				X	X	X				X									
	Smokeless Powder for Small Arms				X	X					X									
	Wet Fulminate of Mercury			X							X	X	X	X	X	X				
	Blasting Caps, (including Electric Blasting Caps)		X	X	X						X									
	Ammunition for Cannon, Explosive Projectiles, (or Explosive Projectiles)			X	X	X		X			X							X	X	X
	Detonating Fuses			X	X		X				X							X	X	X
	Ammunition for Cannon—Empty Projectiles					X					X							X	X	X
	Smokeless Powder for Cannon					X					X							X	X	X
	Fireworks		X	X	X	X	X	X	X	X	X							X	X	X
	Small Arms Ammunition					X														
	Primers					X														
Perousion Fuses					X															
Time or Combination Fuses					X															
Safety Fuse and Safety Squibs					X															
SECOND. Less Dangerous Explosives	Inflammable Liquid or Compressed Inflammable Gases, Red Diamond Label	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	Inflammable, Yellow Diamond Label	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	Acid, White Diamond Label	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	Compressed Non-Inflammable Gases, Light Green Label	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
THIRD. Relatively Safe Explosives																				
FOURTH. Inflammable Articles, Compressed Gases and Acids																				

NOTE.—When Ammunition for Cannon with Empty Projectiles, or Smokeless Powder for Cannon, requiring only the "Inflammable" placard, are properly loaded in a car with any of the "More Dangerous Explosives," only the "Explosive" placard will be used on the car.



## Interstate Commerce Commission

**REGULATIONS FOR THE TRANSPORTATION OF EXPLOSIVES.**

As Revised and Amended April 13, 1909. Prescribed under Act of May 30, 1908.

(The following comprise all the regulations which have been prescribed by the Commission, the paragraphs having been numbered to correspond with the rules and regulations of The American Railway Association.)

**GENERAL NOTICE.**

As the use of certain explosives is essential to various business activities throughout the country it is the duty of interstate railroad carriers to transport such explosives under proper regulations. It is also the duty of each such carrier to make the prescribed regulations effective and to thoroughly instruct its employes in relation thereto.\* It is the duty of express companies to transport under proper regulations samples of explosives for laboratory examination, as authorized by section 1 of the act of Congress approved May 30, 1908. (See Appendix, page 16.) When the explosives specified in this section are lawfully carried in an express or baggage car in the presence of an employe of the company, it will not be necessary to placard this car as prescribed herein for a freight car containing similar lading.

The Commission will make further provision as occasion may require for new explosives not included in or covered by the following regulations.†

**GENERAL RULES.**

A. Unless specifically authorized by these regulations, explosives must not be packed in the same outside package with each other or with other articles. Explosives, when offered for shipment by rail, must be in proper condition for transportation and must be packed, marked, loaded, stayed, and handled while in transit in accordance with these regulations. All packages of less than carload shipments must also be plainly marked on the outer covering or boxing (outside package) with the name and address of consignee. Empty boxes previously used for high explosives are dangerous and must not be again used for shipments of any character. Empty boxes which have been used for the shipment of other explosives than high explosives must have the old marks thoroughly removed before being accepted for the shipment of other articles. Empty metal kegs which have been used for the shipment of black powder not contained in an interior package must not be used after January 1, 1909, for shipment of any explosive.‡

B. Explosives, except such as are forbidden (see pars. 1501 and 1531 to 1536), must be received for transportation by railroads engaged in interstate commerce on and after October 15, 1903, provided the following regu-

lations are complied with, and provided their method of manufacture and packing, so far as it affects safe transportation, is open to inspection by a duly authorized representative of the initial carrier or of the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles, of The American Railway Association. Shipments of explosives that do not comply with these regulations will not be received. Shipments offered by the United States Government may be packed, including limitations of weight, as required by its regulations.‡

C. Before any shipment of explosives destined to points beyond the lines of the initial carrier is accepted from the shipper, the initial carrier must ascertain that the shipment can go forward via the route designated, and that delivery can be made at destination. To avoid unnecessary delays, arrangements must be made to furnish this information promptly to initial carrier. Shipments offered by connecting lines must be received subject to these regulations.‡

**TESTS FOR STRENGTH OF PACKAGE.**

D. Packages receive their greatest stresses in a direction parallel to the length of the car and must, therefore, be loaded so as to offer their greatest resistance in this direction. Cleats or handles, when prescribed for packages, must be so placed as not to interfere with close packing lengthwise in the car.§

E. When inexploding material of equal weight is substituted (sand for a granular explosive, dummy cartridges for high explosive cartridges), and the outside package is dropped on its end on to a foundation of solid brick or concrete from a height of four feet, the outside package must not open, nor rupture, nor must any portion of the contents escape therefrom.

F. In addition to standing the test in paragraph E, the design and construction of packages must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under the ordinary conditions incident to transportation. The results of experience, gained by an examination of packages on arrival at destination, must be recorded by the Bureau of Explosives, to the end that further use of any particular kind of package, shown by experience to be inefficient, may be prohibited by the Commission, even if it should stand the drop test prescribed by paragraph E.

G. Violations of these regulations discovered in cars containing explosives, or in the loading or staying of

\* See American Railway Association Rules for the Transportation of Explosives, General Notice and pars. 1301 to 1312.

† A. R. A. Rules 1301, 1302 and 1304.

‡ A. R. A. Rules 1301 and 1301. § A. R. A. Rule 1307.

ackages, must be corrected before forwarding the car. Report of all serious violations, with a statement of the present cause (such as defective packing, improper crating, rough treatment of car, etc.), must be made by the carrier to the chief inspector of the Bureau of Explosives.\*

#### GROUPING.

For transportation purposes, all explosives are divided into the following groups:

1. Forbidden explosives.
2. Black powder.
3. High explosives.
4. Smokeless powders.
5. Fulminates.
6. Ammunition.
7. Fireworks.

### Section I.—Information and Definitions.

#### GROUP 1.—FORBIDDEN EXPLOSIVES.

See paragraphs 1531 to 1536.

1501. The following are forbidden explosives: †

- ) **Liquid nitroglycerin.**
- ) **Dynamite**, containing over 60 per cent of nitroglycerin (except gelatine dynamite).
- ) **Dynamite** having an unsatisfactory absorbent, one that permits leakage of nitroglycerin under any conditions liable to exist during transportation or storage.
- ) **Nitro-cellulose** in a dry condition, in quantity greater than ten (10) pounds in one exterior package. (See pars. 1557 to 1560.)
- ) **Fulminate of Mercury in Bulk** in a dry condition, and fulminates of all other metals in any condition.
- ) **Fireworks** that combine an explosive and a detonator or blasting cap. (See pars. 1515 and 1644.)

#### GROUP 2.—BLACK POWDER.

See paragraphs 1541 to 1545.

1502. Black (or brown) powder embraces all explosives having a composition similar to that of ordinary gunpowder, such as carbonaceous material, sulphur, and a salt of sodium or potassium. This group includes black powder, sporting, blasting, cannon, and the prismatic powder.

#### GROUP 3.—HIGH EXPLOSIVES.

See paragraphs 1551 to 1560.

1503. High explosives are all explosives more powerful than ordinary black powder, except smokeless powders and fulminates. Their distinguishing characteristic is their susceptibility to detonation by a commercial detonator, or blasting cap. Many high explosives are sensitive to percussion and to friction. Examples of high explosives are the dynamites, picric acid, picrates, chlorate powders, and nitrate of ammonia powders.

#### GROUP 4.—SMOKELESS POWDERS.

See paragraphs 1571 to 1579.

1504. Smokeless powders are those explosives from which there is little or no smoke when fired. The group

consists of smokeless powder for cannon and smokeless powder for small arms. Smokeless powder for cannon used in the United States at the present time consists of a nitro-cellulose colloid, and is safe to handle and transport. Smokeless powders for small arms may consist of nitro-cellulose, nitro-cellulose combined with nitroglycerin, picrate mixtures, or chlorate mixtures.

#### GROUP 5.—FULMINATE.

See paragraphs 1591 to 1593.

1505. This includes **Fulminate of Mercury** in bulk form—that is, not made up into percussion caps, detonators, blasting caps, or exploders.

#### GROUP 6.—AMMUNITION.

See paragraphs 1601 to 1622.

1506. **Small-arms Ammunition** consists usually of a paper or metallic shell, the primer, powder charge, and projectile, the materials necessary for one firing being all in one piece, such as is used in sporting or fowling pieces, or in rifle, pistol practice, etc.

1507. **Ammunition for Cannon** embraces all fixed or separate-loading ammunition packed in a single package in which the projectile weighs one pound or over, and is usually transported only for Government use. When the component parts are packed in separate outside packages, such packages will be shipped as smokeless powder for cannon, explosive projectiles, empty projectiles, primers or fuzes. Igniters composed of black powder may be attached to packages in shipments of smokeless powder.

1508. **Explosive Projectiles**, or loaded shells for use in cannon, are not liable to be exploded except by fire of considerable intensity, and the flying fragments would then be very dangerous.

1509. **Detonators** is the technical name for articles such as blasting caps, the use of which is to cause explosions of a high order, or "detonations." This means the instantaneous conversion of the entire explosive into gas instead of the gradual conversion known as "combustion." Dynamite "detonates" and smokeless powder for cannon "burns."

1510. **Blasting Caps** contain from 5 to 50 grains of dry fulminate of mercury, or a similar substance, packed in a thin copper cup and fired by a slow-burning safety fuze. When a small "bridge" of fine wire is embedded in the fulminate, held by a sulphur cast, and arranged to fire the fulminate by heating the bridge by means of an electric current, the cap is called an "electric blasting cap," or "electric cap," or "electric exploder."

1511. **Detonating Fuzes** are used to detonate the high explosive bursting charges of projectiles or torpedoes. In addition to a powerful detonator they may contain several ounces of a high explosive, such as picric acid or dry nitro-cellulose, all assembled in a heavy steel envelope, the flying fragments of which, in case of explosion, would be very dangerous. From their careful design, manufacture, and packing detonating fuzes are not liable to be exploded in transportation except by fire of considerable intensity.

\* R. A. Rules 1301 and 1306 to 1310,  
† R. A. Rules 1301 and 1304.

1512. **Primers, Percussion and Time Fuzes** are devices used to ignite the black powder bursting charges of projectiles, or the powder charges of ammunition. For small-arms ammunition the primers are usually called "small-arm primers" or "percussion caps."

## GROUP 7.—FIREWORKS.

See paragraphs 1641 to 1647.

1513. **Fireworks** include everything that is designed and manufactured, primarily, for the production of pyrotechnic effects. They consist of common fireworks and special fireworks.

1514. **Common Fireworks** include all that depend principally upon nitrates to support combustion and not upon chlorates; that contain no phosphorus and no high explosive sensitive to shock and friction; that produce their effect through color display rather than by loud noises. If noise is the principal object, the units must be small and of such nature and manufacture that they will explode separately and harmlessly, if at all, when one unit is ignited in a packing case. They must not be designed for ignition by shock or friction. Examples are Chinese firecrackers, Roman candles, pin wheels, colored fires, serpents, railway fusees, flash powders, etc.

1515. **Special Fireworks** include all that contain any quantity of red or white phosphorus, a fulminate, or other high explosive sensitive to shock or friction; or that contain units of such size that the explosion of one while being handled would produce a serious injury; or that require a special appliance or tool, mortar, holder, etc., for their safe use; or that may be exploded *en masse* in their packing cases; or that are intended for or may be ignited or exploded by shock or friction. Examples are giant firecrackers, bombs, salutes, toy torpedoes and caps, rockets, ammunition pellets fired in a special holder, railway torpedoes, etc.

## Section II.—Conditions of Acceptance and Shipment of Packages.

### GROUP 1.—FORBIDDEN AND CONDEMNED EXPLOSIVES.

1531. Forbidden explosives, as defined in paragraph 1501, and explosives condemned by the Bureau of Explosives, must not be accepted for shipment.\*

1532. Should any package of high explosives when offered for shipment show excessive dampness or be mouldy or show outward signs of any oily stain or other indication that absorption of the liquid part of the explosive is not perfect or that the amount of the liquid part is greater than the absorbent can carry, the packages must be refused in every instance. The shipper must substantiate any claim that a stain is due to accidental contact with grease, oil, or similar substance. In case of doubt, the package must be rejected. A shipment of leaking dynamite is liable to cause a dis-

\* A. R. A. Rules 1301, 1302, 1304 and 1307. A new explosive must not be received until pronounced safe for transportation by the Chief Inspector Bureau of Explosives.

aster in spite of careful handling; and storage, especially in warm and damp magazines, tends to cause leakage. Carriers must, for these reasons, examine with more than usual care all packages that have been stored or are offered for shipment during the summer months.†

### REPACKING OF DYNAMITE.

1533. Condemned dynamite must not be repacked and offered for shipment unless the repacking is done by a competent person in the presence and with the consent of a local inspector, or with the written authority of the chief inspector, of the Bureau of Explosives.‡

### DISPOSITION OF INJURED, CONDEMNED, AND STRAY PACKAGES.

1534. Packages found injured or broken in transit may be recovered when this is evidently practicable and not dangerous. A broken box of dynamite that cannot be recovered should be reenforced by stout wrapping paper and twine, placed in another strong box, and surrounded by dry, fine sawdust, or dry and clean cotton waste, or elastic wads made from dry newspaper. A ruptured can or keg should be enclosed in a grain bag of good quality and boxed or crated. Injured packages thus protected and properly marked may be forwarded.§

1535. Condemned packages of leaking dynamite should (1) be returned immediately to shipper if at point of shipment; or (2) disposed of to a dealer in dynamite or other person who is competent and willing to remove them from railway property, if leakage is discovered while in transit; or (3) removed immediately by consignee if shipment is at destination.

When disposition can not be made as above, the leaking boxes must be packed in other boxes large enough to permit, and the leaking box must be surrounded by at least 2 inches of dry, fine sawdust or dry and clean cotton waste, and be stored in station magazine or other safe place, until arrival of the local inspector or other authorized person, to superintend the destruction of the condemned material.¶

1536. When name and address of consignee are known, a stray shipment must be forwarded to its destination by the most practicable route, provided a careful inspection shows the packages to be in proper condition for safe transportation. Revenue and card waybills must be prepared and on them must be written or stamped

"Stray shipment, inspected at — station, — railroad — 13 —" except in cases where authority can be obtained by wire from the original forwarding station to stamp these waybills "Shippers' certificate file," etc. (See par. 1668.)

When a package in a stray shipment is not in proper condition for safe transportation (see par. 1534), or when name and address of consignee are unknown, disposition will be made as prescribed by paragraph 1535.§

† A. R. A. Rules 1301, 1304 and 1307.

‡ A. R. A. Rules 1301, 1303 and 1304. Should the services of a Local Inspector be required, application should be made by the agent to Division Superintendent or other designated official, or by the shipper to the Chief Inspector of the Bureau of Explosives.

§ A. R. A. Rules 1301 and 1307.

¶ A. R. A. Rules 1301, 1303 and 1307.

## GROUP 2.—BLACK POWDER.

541. **Packing.**—Packages containing less than twelve and a half ( $12\frac{1}{2}$ ) pounds of rifle, sporting, blasting, or cannon powders must be inclosed in a tight box, so that the filling holes of the packages shall be up, and the boxes must be marked on top, as prescribed by paragraph 1544.

542. Twelve and a half ( $12\frac{1}{2}$ ) pounds or over of black or brown powder must be packed in packages that comply with General Rules D, E, and F. Kegs less than 9 inches long must be boxed, as prescribed by paragraph 1541.

543. **Weight.**—Packages must not weigh over 100 pounds gross.

544. **Marking.**—Each outside package must be plainly marked, stamped, or stenciled to show the word, "BLACK" or "BROWN,"<sup>a</sup> and the use, "BLASTING," "RIFLE," "CANNON," "MORNING," etc., as "BLACK BLASTING POWDER," "BLACK RIFLE POWDER," etc. Additional marks, trade names, etc., may appear if desired by the owner. Satisfactory kegs marked "BLACK POWDER" or "COMMON BLACK POWDER," will be accepted until January 1, 1909.

545. **Car.**—A car containing shipments of black powder in any quantity must be certified and labeled as prescribed by paragraphs 1661 and 1666.

## GROUP 3.—HIGH EXPLOSIVES.

High explosives consisting of a liquid mixed with absorbent material must have the absorbent (wood or similar material) in sufficient quantity and of satisfactory quality, properly dried at the time of mixture, and the soda must be dried at the time of mixing to contain less than 1 per cent of moisture; and the ingredients must be uniformly mixed so that the liquid will remain thoroughly absorbed under the most unfavorable conditions incident to transportation.

Explosives containing nitroglycerin must have only mixed with the absorbent material a satisfactory amount of acid which must be in quantity sufficient to neutralize the acid neutralizing power of an amount of magnesium carbonate equal to one per cent of the nitroglycerin.

553. **Packing.**—High explosives, containing more than 10 per cent of nitroglycerin, must be packed in cartridges not exceeding four inches in diameter, or eight inches in length (does not apply to gelatine dynamite), and must not be packed in bags or sacks. Bags or sacks of high explosives, containing not more than 10 per cent of nitroglycerin, will be accepted as cartridges, but these bags must be strong and must be placed in the box with filling holes up. The covering of all cartridges, consisting of paper or other material, must be strong and so stated that it will not absorb the liquid constituent of the explosive.

Special shipments of "brown powder," having the composition of black powder, are made by or for the United States Govern-

1554. All boxes in which cartridges containing nitroglycerin are packed must be lined with a suitable material that is impervious to liquid nitroglycerin. Cardboard cartons closed at the bottom and made of strong and flexible material that is impervious to nitroglycerin form a satisfactory lining. At least one-quarter of an inch of dry sawdust or similar material must be spread over the bottom of the box before inserting the cartridges, and all the vacant space in the top must be filled with this material. The cartridges, except the bags or sacks authorized in paragraph 1553, must be so arranged in the boxes that when they are transported with the boxes top side up all cartridges will lie on their sides and never on their ends.

1555. The boxes must be strong (General Rules D, E, and F), the lumber throughout must be sound and free from loose knots and, when made with lock corners, must not be less than one-half inch in thickness. When nailed boxes are used, the ends must not be less than one inch, nor the sides, top, and bottom less than one-half inch in thickness. The limits for thickness refer to the finished box and not to the undressed lumber.

1556. High explosives, containing no explosive liquid ingredient, and not having, with their normal percentage of moisture, a sensitiveness to percussion greater than measured by the blow delivered by an eight-pound weight dropping from a height of five (5) inches on a compressed pellet of the explosive, three-hundredths of an inch in thickness and two-tenths of an inch in diameter, held rigidly between hard steel surfaces, as in the standard impact testing apparatus of the Bureau of Explosives, will be accepted for shipment when securely packed in bulk in tight packages that comply with General Rules D, E, and F. These explosives may also be packed in cartridges, and must be so packed when their sensitiveness is greater than the above limit.

1557. **Dry Nitro-cellulose.**—Inside packages containing not more than one pound each of dry nitro-cellulose, wrapped in strong paraffined paper, or other suitable spark-proof material, will be accepted for shipment if securely packed in an outside package that complies with General Rules D, E, and F, and is marked as prescribed in paragraph 1559. Outside packages must not contain more than ten (10) pounds of dry nitro-cellulose.

1558. **Weights.**—High explosives containing an explosive liquid ingredient must not exceed sixty-five (65) pounds, gross weight, in one outside package.

High explosives containing no liquid explosive ingredient as defined in paragraph 1556, must not exceed 125 pounds, gross weight, in one outside package.

The gross weight of an outside package containing dry nitro-cellulose, packed as defined in paragraph 1557, must not exceed 35 pounds.

1559. **Marking.**—The boxes must be plainly marked on top and on one side or end "HIGH

EXPLOSIVE—DANGEROUS." The top must be marked "THIS SIDE UP."

1560. **Car.**—For shipments of high explosives in any quantity, the car must be certified and placarded as prescribed by paragraphs 1661 and 1666.

#### GROUP 4.—SMOKELESS POWDER.

##### SMOKELESS POWDER FOR CANNON.

1571. **Packing.**—Smokeless powder for cannon must be packed in tight boxes free from loose knots and cracks, or in kegs, that comply with General Rules D, E, and F.

1572. **Weight.**—Packages must not weigh over 152 pounds gross.

1573. **Marking.**—Each package must be plainly marked on top "SMOKELESS POWDER FOR CANNON."

1574. **Car.**—Smokeless powder for cannon may be shipped in any box car in good condition. The car must be placarded "INFLAMMABLE" as prescribed by paragraph 1663.

##### SMOKELESS POWDER FOR SMALL ARMS.

1575. **Packing.**—Packages of less than nine (9) pounds of smokeless powder for small arms must be inclosed in a tight box so that the filling hole of each inside package will be up, and the box must be marked on top as prescribed by paragraph 1578.

1576. Quantities of nine pounds or over must be placed in packages that comply with General Rules D, E, and F. Kegs less than 9 inches long must be boxed as prescribed by paragraph 1541.

1577. **Weight.**—Packages weighing over 31 pounds gross will not be received unless packed under the supervision of and shipped for the use of the United States Government.<sup>a</sup>

Packages weighing not over 30 pounds gross each may be inclosed in an outside package, in which case the gross weight must not exceed 150 pounds.

1578. **Marking.**—Each outside package must be plainly marked on top "SMOKELESS POWDER FOR SMALL ARMS."

1579. **Car.**—Shipments of smokeless powder for small arms in any quantity require a car to be certified and placarded, as prescribed by paragraphs 1661 and 1666.

#### GROUP 5.—FULMINATE.

1591. **Packing.**—Fulminate of mercury in bulk must contain when packed not less than twenty-five (25) per cent of water and must in this wet condition be placed in a bag made of heavy cotton cloth of close mesh equal in quality and weight to the cotton twill used for pockets in high-grade clothing. There must be placed inside the bag and over the fulminate a cap

of the same cloth and of the diameter of the bag, and the bag must be tied securely and placed in a strong grain bag, which must in turn be tied securely and packed in the center of a cask or barrel in good condition and of the kind used for shipment of alcohol. The grain bag must not contain more than 150 pounds dry weight of fulminate, and it must be surrounded on all sides by tightly packed sawdust not less than six inches thick. The cask or barrel must be lined with a heavy close-fitting jute bag closed by secure sewing to prevent escape of sawdust. After the barrel is properly coopered it must be filled with water, the bung sealed; the barrel must be inspected carefully and all leaks stopped.

1592. **Marking.**—Each cask, or barrel, must be plainly marked "WET FULMINATE OF MERCURY—DANGEROUS."

1593. **Car.**—A car containing fulminate in any quantity must be certified and placarded as prescribed by paragraphs 1661 and 1666.

#### GROUP 6.—AMMUNITION.

##### SMALL-ARMS AMMUNITION.

1601. **Packing.**—Small-arms ammunition must be packed in pasteboard or other boxes, and these pasteboard or other boxes must be packed in strong outside boxes.

Small-arms ammunition, in pasteboard or other boxes and in quantity not exceeding a gross weight of 75 pounds, may be packed with nonexplosive and noninflammable articles, and with small-arms primers or percussion caps (see par. 1619), provided the shipment is certified (see par. 1668) and the outside package is marked as prescribed in paragraph 1602.

1602. **Marking.**—Each outside package or case must be plainly marked "SMALL-ARMS AMMUNITION."

1603. **Car.**—Small-arms ammunition may be shipped in any box car which is in good condition, without the placard prescribed by paragraph 1663.

##### AMMUNITION FOR CANNON.

1604. **Packing.**—Ammunition for cannon must be well packed and properly secured in strong boxes provided with cleats or handles.

1605. **Marking.**—Each outside package must be plainly marked "AMMUNITION FOR CANNON—EXPLOSIVE PROJECTILES," or "AMMUNITION FOR CANNON—EMPTY PROJECTILES," according as the projectiles do, or do not, contain a bursting charge.

1606. **Car.**—A car containing ammunition for cannon with explosive projectiles must be certified and placarded as prescribed by paragraphs 1661 and 1666. This is not required when projectiles are empty, but in this case cars must be protected by "INFLAMMABLE" placard, as prescribed by paragraph 1663.

<sup>a</sup>Packages for the shipment of small-arms smokeless powder conforming to present regulations and manufactured or purchased prior to the issuance of these regulations may be accepted for transportation until December 31, 1909.

**EXPLOSIVE PROJECTILES.**

1607. **Packing.**—Explosive projectiles must be packed in strong boxes, and each projectile must be properly secured. When the gross weight does not exceed 150 pounds the box must be provided with cleats or handles.

1608. **Weight.**—The gross weight of a box containing more than one projectile must not exceed 150 pounds.

1609. **Marking.**—Each exterior package must be plainly marked "EXPLOSIVE PROJECTILE," or "EMPTY PROJECTILE." No restrictions, other than proper marking, are necessary for the shipment of empty projectiles.

1610. **Car.**—For explosive projectiles in any quantity the car must be certified and placarded as prescribed by paragraphs 1661 and 1666.

**BLASTING CAPS.**

1611. **Packing.**—Blasting caps contain such a sensitive and dangerous explosive that very efficient packing is necessary.

Blasting caps must be packed in strong tin receptacles in which they must fit snugly, and the caps must be closed securely by teats projecting from a mat of suitable elastic material placed inside the box and over the caps. Not more than one hundred blasting caps must be packed in a single tin box. Individual separate tin boxes must then be packed snugly in paper or pasteboard cartons, and these must be packed in an inside box made of sound lumber not less than three-eighths of an inch in thickness (except in cases where it is made of hard wood with recessed corners, and the lid securely fastened down with at least four strong wires bound around the box, in which case the lumber must not be less than three-tenths of an inch in thickness). This inside wooden box must then be packed in an outside box made of sound lumber not less than 1 inch in thickness and free from loose knots and cracks. Tightly packed sawdust or excelsior, at least 1 inch thick at all points, must separate the inside from the outside wooden box. More than 20,000 blasting caps must not be placed in one outside package.

If the outside box is to contain not more than 100 caps, the inside box may be omitted, and the outside box may be made of  $\frac{1}{2}$ -inch lumber; but in any case the tin boxes in pasteboard cartons must be separated from the outside box at all points by at least 1 inch of tightly packed sawdust or excelsior. The tin box containing not more than 100 caps may be packed with safety fuze. (Par. 1648.)

Electric blasting caps must be packed in pasteboard cartons containing not more than 50 caps each. These cartons must be packed in a wooden box made of lumber not less than one-half inch in thickness.

All boxes containing more than 5,000 blasting caps or weighing more than 50 pounds, gross weight, must be provided with cleats or handles, and all lids must be securely fastened.

1612. **Weight.**—The gross weight of an outside package containing blasting caps or electric blasting caps must not exceed 150 pounds.

1613. **Marking.**—Each outside package must be plainly marked "BLASTING CAPS—HANDLE CAREFULLY," or "ELECTRIC BLASTING CAPS—HANDLE CAREFULLY." In addition each box must bear the marking "DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

1614. **Car.**—Certificate and placard as prescribed by paragraphs 1661 and 1666 are required for shipments of blasting caps in any quantity, except that a shipment of not more than 100 blasting caps may be transported in a box car in good condition without car certificate or placard.

**DETONATING FUZES.**

1615. **Packing.**—Detonating fuzes must be packed in strong, tight boxes provided with cleats or handles, and each fuze box must be well secured.

1616. **Weight.**—The gross weight of one outside package must not exceed 150 pounds.

1617. **Marking.**—Each outside package must be plainly marked "DETONATING FUZES—HANDLE CAREFULLY."

1618. **Car.**—A car containing detonating fuzes in any quantity must be certified and placarded as prescribed by paragraphs 1661 and 1666.

**PRIMERS, PERCUSSION AND TIME FUZES.**

1619. **Packing.**—Primers, percussion and time fuzes must be packed in strong, tight boxes, with special provision for securing individual packages of primers and fuzes against movement in the box.

Small-arms primers, containing anvils, must be packed after December 31, 1909, in cellular packages with partitions separating the layers and columns of primers, so that the explosion of a portion of the primers in the completed shipping package will not cause the explosion of all of the primers.

Percussion caps may be packed in metal or other boxes containing not more than 500 caps, but the construction of the cap, and the kind and quantity of explosives in each must be such that the explosion of a part of the caps in the completed shipping package will not cause the explosion of all of the caps.

Small-arms primers and percussion caps may form a part of the gross weight of 75 pounds of small-arms ammunition that may be packed with other articles as authorized by paragraph 1601.

1620. **Weight.**—The gross weight of one outside package must not exceed 150 pounds.

1621. **Marking.**—Each outside box must be plainly marked "SMALL-ARMS PRIMERS—HANDLE CAREFULLY," or "PERCUSSION CAPS—HANDLE CAREFULLY," or "CANNON PRIMERS—HANDLE CAREFULLY," or "COMBINATION PRIMERS—HANDLE CAREFULLY," or "PERCUSSION FUZES—HANDLE CARE-

FULLY," or "COMBINATION FUZES—HANDLE CAREFULLY," etc.

1622. **Car.**—Primers, percussion and time fuzes may be shipped in a box car which is in good condition without the placard prescribed by paragraph 1663.

## GROUP 7.—FIREWORKS.

### COMMON FIREWORKS.

1641. **Packing.**—Common fireworks must be in a finished state, exclusive of mere ornamentation, as supplied to the retail trade, and must be securely packed in strong, tight, spark-proof boxes.

1642. **Marking.**—Each outside package must be plainly marked "COMMON FIREWORKS—KEEP FIRE AWAY."

1643. **Car.**—Common fireworks may be shipped in a box car which is in good condition (par. 1663), but they must not be loaded in the same car with explosives or with inflammable articles (par. 1680).

A car containing any quantity of common fireworks must be protected by the "INFLAMMABLE" placard. (See par. 1663.)

### SPECIAL FIREWORKS.

1644. **Packing.**—Special fireworks must be in a finished state, exclusive of mere ornamentation, as supplied to the retail trade, and must not contain a blasting cap or detonator. (See par. 1501 (f).) They must be securely packed in strong, tight, spark-proof boxes, that comply with General Rules D, E, and F, provided with cleats or handles.

1645. **Weight.**—The gross weight of one outside package containing special fireworks must not exceed 200 pounds.

1646. **Marking.**—Each outside package, if it contains special or a mixture of common and special fireworks, must be plainly marked "SPECIAL FIREWORKS—HANDLE CAREFULLY—KEEP FIRE AWAY."

1647. **Car.**—Special fireworks may be shipped in any box car which is in good condition (par. 1663), but they must not be loaded in the same car with explosives or inflammable articles (par. 1680). A car containing any quantity of special or other fireworks must be protected by the "INFLAMMABLE" placard. (See par. 1663.)

## SAFETY FUSE AND SAFETY SQUIBS.

1648. Safety fuse and safety squibs, when properly boxed or packed in barrels, may be accepted for shipment and loaded in any car with any other kind of an explosive or inflammable substance or with other freight. If blasting caps are packed with safety fuse the outside package must be marked as prescribed by paragraph 1613. (See par. 1611.)

## Section III.—Selection and Preparation of Cars.

1661. The safe transportation of explosives depends very largely upon the kind and condition of the car in which they are loaded. For the transportation of—

- Black or brown powder,
- High explosives,
- Smokeless powder for small-arms,
- Fulminates,
- Blasting caps,
- Electric blasting caps,
- Ammunition for cannon—explosive projectiles,
- Explosive projectiles, or
- Detonating fuzes,

only certified and placarded box cars may be used. (See pars. 1662 and 1666.)\*

1662. Certified cars must be inspected inside and outside and must conform to the following specifications:

(a) Not less than 60,000 pounds capacity. Steel under-frame box cars or other box cars with friction draft gear should be used when available. On narrow-gauge and other railroads, all of whose freight cars are of less than 60,000 pounds capacity, explosives may be transported in cars of less than that capacity, provided the cars of greatest capacity and strength are used for this purpose.

(b) Must be equipped with air brakes and hand brakes in condition for service.

(c) Must have no loose boards or cracks in the roof, sides, or ends.

(d) The doors must shut so closely that no sparks can get in at the joints, and, when necessary, they must be stripped. The stripping for flush doors should be on the inside and nailed to the door frame where it will form a shoulder against which the closed door is pressed. The opening under the doors should be similarly closed.

(e) The journal boxes and trucks must be carefully examined and put in such condition as to reduce to a minimum the danger of hot boxes or other failure necessitating the setting off of the car before reaching destination. The lids or covers of journal boxes must be in place.

(f) The car must be carefully swept out before it is loaded. Holes in the floor or lining must be repaired and special care taken to have no projecting nails or bolts or exposed pieces of metal which may work loose or produce holes in packages of explosives during transit.

(g) When the car is to be fully loaded with explosives or when explosives are loaded over exposed draft bolts or kingbolts, these bolts must have short pieces of solid, sound wood (2-inch plank), spiked to the floor over them to prevent possibility of their wearing into the packages of explosives.

(h) The roof of the car must be carefully inspected from the outside for decayed spots, especially under or near the running board, and such spots must be covered to prevent their holding fire from sparks. A car with a roof generally decayed, even if tight, must not be used.

\* A. R. A. Rules 1305, 1306 and 1307.

(i) When explosives are to be carried in a "way car" one should be selected with flush doors in good condition or with doors fitting so tightly that stripping will not be necessary.

(k) The carrier must have car examined to see that it is properly prepared, and must have a "Car Certificate" signed in triplicate upon the prescribed form (par. 1665) before permitting the car to be loaded.

(l) Cars not in proper condition, as above specified, must not be furnished to the shipper or used for the transportation of explosives.\*

668. Carload or less than carload lots of—

- Small-arms ammunition,
- Primers,
- Percussion fuzes,
- Time or combination fuzes,
- Ammunition for cannon—empty projectiles,
- Smokeless powder for cannon, or
- Fireworks,

to be loaded in any box car which is in good condition, so which sparks cannot enter, and whose roof is not in danger of taking fire through unprotected decayed wood. These cars may be used without being certified and placarded as prescribed by paragraphs 1661 and 1666; but those containing—

- Ammunition for cannon—empty projectiles,
- Smokeless powder for cannon, or
- Fireworks,

must be protected by the "INFLAMMABLE" placard (see par. 1940), and the doors must be stripped when necessary.†

**PLACARDING OF CARS AND CERTIFICATION OF CONTENTS.**

1664. Uniform practice is important, and the prescribed forms of car certificates and placards must be used.‡

1665. **Car Certificate.**—The following certificate (prescribed by par. 1662 k), printed on strong tag board measuring 7 x 7 inches, must be duly executed in triplicate by the carrier, and by the shipper if he loads the shipment. The original must be filed by the carrier at the forwarding station, and the other two must be attached to the outside of the car doors, one on each side, the lower edge of the certificate 4½ feet above the floor level.§

\* A "way car" is one from which shipments are unloaded by the train crew.

\* A. R. A. Rules 1306, 1307 and 1310. † A. R. A. Rule 1307.

‡ A. R. A. Rule 1301. § A. R. A. Rules 1301, 1306 and 1307.

**CAR CERTIFICATE.**

No. 1. ....STATION,.....19

I hereby certify that I have this day personally examined.....car No..... and that the roof and sides have no loose boards, holes, or cracks, or unprotected decayed spots liable to hold sparks and start a fire; that the kingbolts or draft bolts are properly protected, and that there are no uncovered irons or nails projecting from the floor or sides of the car which might injure packages of explosives; also, that the floor is in good condition and has this day been cleanly swept before the car was loaded; that I have examined all the axle boxes, and that they are properly covered, packed, and oiled, and that the air brakes and hand brakes are in condition for service.

.....  
\* *Railway Employee Inspecting Car.*

No. 2. ....19

I hereby certify that I have this day personally examined the above car, that the floor is in good condition and has been cleanly swept, and that the roof and sides have no loose boards, holes, cracks, or unprotected decayed spots liable to hold sparks and start a fire; that the kingbolts and draft bolts are protected, and that there are no uncovered irons or nails projecting from the floor or sides of the car which might injure packages of explosives; that the explosives in this car have been loaded and stayed, and that the car has been placarded according to paragraphs 1661, 1666, and 1674 to 1683, inclusive, of the Regulations for the Transportation of Explosives prescribed by the Interstate Commerce Commission; that the doors fit so tightly or have been stripped so that sparks cannot get in at the joints or bottom.

.....  
\* *Shipper or Duly Authorized Agent.*

.....  
\* *Railway Employee Inspecting, Loading and Staying.*

**NOTE.**—Both certificates must be signed. Certificate No. 1 by the representative of the carrier. For all shipments loaded by the shipper, he, or his authorized agent, and the representative of the carrier must sign certificate No. 2. When the car is not loaded by shipper certificate No. 2 must be signed only by the representative of the carrier. A shipper should decline to use a car not in proper condition.

\* A. R. A. Standard Certificate, Rules 1301, 1306 and 1307.

666. **Placard.**—Each car containing any of the explosives specified in paragraph 1661, and in any quantities must be protected by attaching to the inside of the car on both sides and ends, the lower

edge 4½ feet above the car floor, a standard placard, 12 x 14 inches, on which will appear in conspicuous red and black printing, on strong tagboard, the following notice:¶



# EXPLOSIVES

(To be printed in red.)

HANDLE CAREFULLY

KEEP FIRE AWAY

(To be printed in red.)

Station

19

## CONDENSED RULES FOR HANDLING THIS CAR.

1. This car must not be placed in a passenger train; nor in a mixed train if avoidable.
2. Cars containing explosives must be near center of train and may be together if desired; must be at least fifteen cars from engine and ten cars from caboose when length of train will permit.
3. Cars containing explosives must be placed between box cars which are not loaded with inflammable articles, charcoal, cotton, acid, lumber, iron, pipe, or other articles liable to break through end of car from rough handling.
4. A steel underframe car containing explosives may be placed between steel hopper cars in train.
5. The air and hand brakes on this car must be in service.
6. In shifting, have a car between this car and engine whenever possible, and do not cut this car off while in motion.
7. Avoid all shocks to this car and couple carefully.
8. Avoid placing it near a possible source of fire.
9. Engines on parallel track must not be allowed to stand opposite or near this car when it can be avoided.

\*Agents at Destination and Transfer Stations, Yardmasters and Conductors are responsible that these cards are removed from car as soon as the explosives are unloaded.

\* A. R. A. Standard Placard, Rules 1301, 1307 and Regulation 1695.

1667. A car containing any of the explosives (as prescribed in par. 1661) must not be permitted to leave a station or siding without having the certificates and placard prescribed in paragraphs 1665 and 1666 securely and properly affixed.\*

1668. **Shippers' Certificate.**—Before any package containing one or more of the following articles:

- Black or brown powder,
- High explosives,
- Smokeless powder for cannon,
- Smokeless powder for small-arms,
- Fulminates,
- Small-arms ammunition,
- Ammunition for cannon—explosive projectiles,
- Ammunition for cannon—empty projectiles,
- Explosive projectiles,
- Empty projectiles,
- Detonating fuzes,
- Blasting caps,
- Electric blasting caps,
- Primers (naming kind),
- Percussion fuzes,
- Time or combination fuzes,
- Common or special fireworks,
- Safety fuse, or
- Safety squibs,

can be accepted, the shipper must prepare and deliver to the carrier a shipping order on which each article is entered under its proper name, as specified in this paragraph, and over the signature of shipper or his duly authorized agent, must be printed, written, or stamped, and made part of the shipping order, the following certificate:

This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation, according to the regulations prescribed by the Interstate Commerce Commission.

The carrier must see that the shipment is properly described and that the correct gross weight is given on

the revenue waybill. The carrier must also cause to be written or stamped on the face of the card and revenue waybill:

“Shippers' Certificate on File with Initial Carrier.”

The card waybill, for a car containing any quantity of the explosives named in paragraph 1661, must also have plainly stamped across the top, the word “EXPLOSIVES.”†

1669. The carrier must see that the shipping order for explosives is kept at stations where the shipments originate on a separate file, together with all original Car Certificates that pertain to that station. The duplicate and triplicate Car Certificates taken from cars unloaded at any station may be destroyed if there are no violations of these regulations to report. (See paragraph G, General Rules.)‡

## SHIPMENTS FROM CONNECTING LINES.

1670. Cars containing explosives, as specified in paragraph 1661, which are offered by connecting lines must be carefully inspected, without unnecessary disturbance of lading, by the receiving line to see that these regulations have been complied with, and the car must not be forwarded until all discovered violations are corrected.

Shipments of explosives offered by connecting steamship lines must comply with these regulations, and revenue waybill must bear the indorsements prescribed by paragraph 1668.§

## HANDLING OF EXPLOSIVES.

1671. In handling packages of explosives at stations and in cars the greatest care must be taken to prevent their falling or getting shocks. They must not be thrown, dropped, nor rolled.\*¶

† A. R. A. Rules 1301, 1304 and 1305.

‡ A. R. A. Rules 1301, 1304, 1305 and 1306.

§ A. R. A. Rules 1301, 1304 and 1306.

\* A. R. A. Rules 1301 and 1307.

\* A. R. A. Rules 1301, 1306, 1307 and 1310.

72. The carrier must choose careful men to handle explosives, must see that the platform and the feet of the car are as free as possible from grit, and must take all reasonable precautions against fire. Unauthorized persons must not be allowed to have access to explosives at any time while they are in the custody of the carrier. Suitable provision must be made, outside of the station, when practicable, for the safe storage of explosives, and every effort possible must be made to reduce the time of their storage. Prompt removal by consignee must be required, to avoid unnecessary danger.\*

73. Shipments of high explosives and powder should be unloaded at a nonagency station unless the consignee is there to receive them, or unless satisfactory storage facilities are provided at that point for their reception.†

### LOADING IN CAR.

74. Boxes of explosives when loaded in the car, must rest on their bottoms. A car must not contain more than 70,000 pounds gross weight of explosives.‡ The weight limit does not apply to shipments of ammunition.

75. Explosives packed in round kegs, except when otherwise ordered, must be loaded on their sides with heads towards the ends of the car; and they must not be placed in the aisle opposite the doors unless the doorways are protected on the inside as high as the lading. Large casks, barrels, or drums may be loaded on their sides or ends as will best suit the conditions.‡

76. Packages containing any of the explosives for transportation of which a certified and placarded car is prescribed (par. 1661) must be stayed (blocked and secured) by whoever loads the car, to prevent change of position by the ordinary shocks incident to transportation. Special care must be used to prevent packages from falling to the floor or from having anything fall on them during transit. To prevent delays on day-freight trains, when there is more than one shipment of explosives loaded in a "peddle" or "way-car," each shipment should be stayed separately. If the lading is broken down to unload a shipment of explosives the remaining packages must be restayed.§

77. Detonating fuzes or blasting caps, or electric blasting caps, must not be loaded in a car or stored with high explosives of any kind, including explosive projectiles, nor with wet nitro-cellulose, nor with smoke-powder for small arms.‡

78. Fulminates in bulk must not be loaded with any explosive or inflammable article.‡

79. When necessary, detonating fuzes may be assembled in explosive projectiles shipped by the United States Government.

A. R. A. Rule 1301.

A. R. A. Rules 1310 and 1311.

A. R. A. Rule 1307.

A. R. A. Rules 1307 and 1308. Whoever loads the car must furnish lumber and labor required for staying all shipments loaded by him, and this lumber should not be less than two (2) inches thick, except in cases where this thickness is manifestly not required, or unless otherwise specified by the Bureau of Explosives.

1690. Fireworks must not be loaded in the same car with any other explosive or inflammable substance, except small-arms ammunition, primers, percussion fuzes, time or combination fuzes, safety fuze, and safety squibs.‡

1692. Inflammable substances of all kinds, acids, matches, fireworks, drugs, chemicals, and cylinders containing compressed gases in liquid or gaseous state, whether protected by labels or not, must not be placed in a car containing explosives (except small-arms ammunition, primers, percussion fuzes, time or combination fuzes, safety fuze, and safety squibs); nor must explosives be stored on railway property near these articles.‡

When practicable certain and separate days should be assigned for receiving from shippers less than carload lots of explosives.¶

1693. In a car containing explosives all packages of other freight must be so loaded and stayed as to prevent all injury of packages of explosives during transit. When it is possible, explosives should be loaded so as to avoid transfer stations.¶

### HANDLING CARS CONTAINING EXPLOSIVES.

1684. Cars containing explosives must not be hauled in a passenger train; nor in a mixed train when this can be avoided. The phrase "cars containing explosives" as used in this and subsequent paragraphs, excepting paragraph 1697, refers to the explosives specified in paragraph 1661. This does not apply to explosives lawfully transported in a baggage or express car in a passenger train, in accordance with section 1 of the act of Congress, approved May 30, 1908.\*\*

1685. EXPEDITING SHIPMENTS OF EXPLOSIVES.—Every possible effort must be made to expedite the movement of cars containing explosives.††

1686. IN THROUGH ROAD TRAINS.—Cars containing explosives, must be placed near the center of the train, and two or more such cars may be placed together if desired. They must be at least fifteen (15) cars from the engine and ten (10) cars from the caboose when the length of train will permit.

Such cars must be placed between box cars which are not loaded with inflammable articles, charcoal, cotton, acid, lumber, iron, pipe, or other articles liable to break through end of car from rough handling.

When explosives are loaded in steel underframe cars, such cars may be placed in train between steel hopper cars. All cars containing explosives must have air and hand brakes in service.\*\*

1687. IN SHIFTING AND LOCAL FREIGHT TRAINS.—Cars containing explosives, must be coupled in the air service and placed as near the center of the train as possible.\*\*

\* At stations where it is necessary to handle explosives at night it is recommended that incandescent electric lights be provided.

† A. R. A. Rule 1304.

\*\* A. R. A. Rules 1306 and 1310.

†† A. R. A. Rules 1301, 1309 and 1310.

1688. **HANDLING IN YARDS.**—When handling cars containing explosives, in yards or on sidings, they must, unless it is practically impossible, be coupled to the engine protected by a car between, and they must never be cut off while in motion.

They must be coupled carefully and all unnecessary shocks must be avoided. Other cars must not be allowed to strike a car containing explosives. They must be so placed in yards or on sidings that they will be subject to as little handling as possible, removed from all danger of fire, and, when avoidable, engines on parallel tracks must not be allowed to stand opposite or near them.\*

1689. Under no circumstances must a car known to require the "EXPLOSIVES" placard be taken from a station, including transfer stations, or a siding, unless it is properly carded as per paragraphs 1661 and 1666, nor unless the car is in proper condition.\*

1690. When a car containing explosives is in a train, the carrier must make proper provision for notifying its train and engine employes of the presence and location of such car in the train before leaving the initial station.\*

1691. Such cars must be frequently inspected to see that the carding is intact. Whenever any of these cards become detached or lost in transit they must be replaced on arrival at the next division terminal yard.\*

1692. Unless otherwise arranged for, when a car containing explosives, is to be transferred, unloaded, or stored for any purpose, at a given junction, station, or yard, the carrier must provide for due notice to such station, by wire, of the probable time of arrival and the number of cars (not car numbers), in order that proper provision may be made at that point for handling the same.\*

1693. At points where trains stop cars containing explosives and adjacent cars must be examined to see if they are in good condition and free from hot boxes or other defects liable to cause damage. If cars containing explosives are set out short of destination for any cause, the carrier must arrange that proper notice be given to prevent accident.†

1694. Whenever a car containing explosives is opened for any purpose inspection must be made of the packages of explosives to see that they are properly stayed and in good condition and that no box of dynamite is standing on its end or side. Upon the discovery of leaking dynamite or loose powder the defective packages must be carefully removed to a safe place. Loose powder or other explosives must be swept up and carefully removed. If the floor is wet with nitroglycerin, the car is unsafe to use and a local inspector of the Bureau of Explosives should be immediately called to superintend the thorough mopping and

washing of the floor with a warm, saturated solution of concentrated lye or sodium carbonate. If necessary, the car must be placed on an isolated siding and proper notice given.‡ (See pars. 1534 and 1535.)‡

1695. The certificates and placards prescribed in pars. 1665 and 1666 must be removed from the car as soon as the explosives are unloaded.§

1696. Carriers must see that all shippers of explosives in their territory are furnished with copies of these regulations.¶

### IN CASE OF A WRECK.

1697. In case of a wreck involving a car containing explosives, the first and most important precaution is to prevent fire. Although most of the group, "high explosives," may burn in small amounts quietly and without causing a disastrous explosion, yet everything possible must be done to keep fire away. Before beginning to clear a wreck in which a car containing explosives is involved, all unbroken packages should be removed to a place of safety, and as much of the broken packages as possible gathered up and likewise removed, and the rest saturated with water. Many explosives are readily fired by a blow or by the spark produced when two pieces of metal or a piece of metal and a stone come violently together. In clearing a wreck, therefore, care must be taken not to strike fire with tools, and in using the crane or locomotive to tear the wreckage in pieces the possibility of producing sparks must be considered. With most explosives thorough wetting with water practically removes all danger of explosion by spark or blow; but with the dynamites, wetting does not make them safe from blows. With all explosives, mixing with wet earth renders them safer from either fire, spark, or blow. In case "fulminate" has been scattered by a wreck, after the wreck has been cleared the top surface of the ground should be removed and, after saturating the area with oil, replaced by fresh earth. If this is not done, when the ground and fulminate become dry, small explosions may occur when the mixed material is trodden on or struck.¶¶

1940.\*\* A white placard, of diamond shape, printed on strong tagboard, measuring 15 inches on each diagonal, and bearing in red and black letters the following inscription,†† "INFLAMMABLE—KEEP LIGHTS AND FIRES AWAY—HANDLE CAREFULLY," must be placed on each outside end and side of a car containing any quantity of smokeless powder for cannon, or ammunition for cannon with empty projectiles, or fireworks.††

§ A. R. A. Rules 1307, 1309 and 1310.

¶ A. R. A. Rule 1301.

¶¶ A. R. A. Rules 1309, 1310 and 1312.

\*\* I. C. C. No. 1868.

†† See Regulations for Transportation of Inflammables, etc., par. 1940, and A. R. A. Standard Inflammable Placard.

‡‡ A. R. A. Rule 1307.

\* A. R. A. Rules 1309 and 1310.

† A. R. A. Rule 1310.

‡ A. R. A. Rules 1306, 1309 and 1310.

# APPENDIX.

ACT OF MAY 30, 1908.

to promote the Safe Transportation in Interstate Commerce of Explosives and Other Dangerous Articles, and to provide penalties for its violation.

enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That it shall be unlawful to transport, carry, or convey any dynamite, gunpowder, or other explosive between a place in any foreign country and a place within the United States, or a place in any State, Territory, or District of the United States, and a place in any other State, Territory, or District thereof, on any vessel or vehicle of any description operated as a common carrier, which vessel or vehicle is carrying passengers: *Provided*, That it shall be lawful to transport on any such vessel or vehicle, small arms ammunition in any quantity, and such torpedoes, rockets, or other signal devices as may be essential to promote safety in operation, and properly packed and marked for examination, not exceeding a net weight of one-half pound each, and not exceeding twenty samples at one time in a single vessel or vehicle; but such samples shall be carried in that part of a vessel or vehicle which is intended for the transportation of passengers for hire: *And provided further*, That nothing in this section shall be construed to prevent the transportation of military or naval forces with their accompanying munitions of war on passenger equipment vessels or vehicles.

2. That within ninety days from the passage of this Act the Interstate Commerce Commission shall formulate regulations for the transportation of explosives, and said regulations shall be binding upon all common carriers engaged in interstate commerce to transport explosives by land, and violations of them shall be subject to the penalties hereinafter provided. The Interstate Commerce Commission, on its own motion or upon application made by any interested party, may make changes or modifications of the regulations for the safe transportation of explosives, made desirable by new information or altered conditions, and such changed regulations shall have all the force of the original regulations. The regulations for the safe transportation of explosives referred to in this section shall be in accord with the best known practicable means for insuring safety in transit, covering the packing, marking, loading, handling while in transit, and the precautions necessary to determine whether the material when offered is in proper condition for transport. The regulations for the safe transportation of explosives shall take effect three months after their formulation and publication by the Interstate Commerce Commission, and shall be subject to be reversed, set aside or modified.

3. That it shall be unlawful to transport, carry, or convey any nitroglycerin, fulminate in bulk in dry condition, or other explosive between a place in a foreign country and a place within the United States, or a place in one State, Territory, or District thereof, on any vessel or vehicle of any description operated as a common carrier in the transportation of passengers or articles of commerce by land or water.

4. Every package containing explosives or other dangerous articles when presented to a common carrier for shipment shall be plainly marked on the outside thereof the contents thereof, and it shall be unlawful for any person to deliver, for interstate or foreign transportation, to any common carrier engaged in interstate commerce by land or water, or to cause to be delivered, or to carry, any explosive, or other dangerous article, under any false or deceptive marking, description, invoice, shipping order, or other declaration, or without informing the agent of such carrier of the true character thereof, at or before the time such delivery or carriage is made.

5. That every person who knowingly violates, or causes to be violated, any of the foregoing provisions of this Act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished for each offense by a fine not exceeding two thousand dollars, or imprisonment not exceeding eighteen months, or by both such fine and imprisonment, in the discretion of the court.

6. That this Act shall take effect immediately, and all Acts or parts of Acts in conflict therewith are hereby repealed, except so much as may be necessary to carry into effect the provisions of the forty-four hundred and twenty-two of the Revised Statutes of the United States, which shall remain in full force and effect.

Approved, May 30, 1908.

ACT OF MARCH 4, 1909, EFFECTIVE JANUARY 1, 1910.

An act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March 4, 1909, to take effect on and after the first day of January, 1910, the act is amended as follows: "An act to promote the safe transportation in interstate

commerce of explosives and other dangerous articles, and to provide penalties for its violation," approved May 30, 1908, is repealed, and the following sections of the said act to codify, revise, and amend the penal laws of the United States are substituted therefor:

Sec. 232. It shall be unlawful to transport, carry, or convey, any dynamite, gunpowder, or other explosive, between a place in a foreign country and a place within or subject to the jurisdiction of the United States, or between a place in any State, Territory, or District of the United States, or place noncontiguous to but subject to the jurisdiction thereof, and a place in any other State, Territory, or District of the United States, or place noncontiguous to but subject to the jurisdiction thereof, on any vessel or vehicle of any description operated by a common carrier, which vessel or vehicle is carrying passengers for hire: *Provided*, That it shall be lawful to transport on any such vessel or vehicle small arms ammunition in any quantity, and such fuses, torpedoes, rockets, or other signal devices, as may be essential to promote safety in operation, and properly packed and marked samples of explosives for laboratory examination, not exceeding a net weight of one-half pound each, and not exceeding twenty samples at one time in a single vessel or vehicle; but such samples shall not be carried in that part of a vessel or vehicle which is intended for the transportation of passengers for hire: *Provided further*, That nothing in this section shall be construed to prevent the transportation of military or naval forces with their accompanying munitions of war on passenger equipment vessels or vehicles.

Sec. 233. The Interstate Commerce Commission shall formulate regulations for the safe transportation of explosives, which shall be binding upon all common carriers engaged in interstate or foreign commerce which transport explosives by land. Said Commission, of its own motion, or upon application made by any interested party, may make changes or modifications in such regulations, made desirable by new information or altered conditions. Such regulations shall be in accord with the best known practicable means for securing safety in transit, covering the packing, marking, loading, handling while in transit, and the precautions necessary to determine whether the material when offered is in proper condition for transport. Such regulations, as well as all changes or modifications thereof, shall take effect ninety days after their formulation and publication by said Commission and shall be in effect until reversed, set aside, or modified.

Sec. 234. It shall be unlawful to transport, carry, or convey, liquid nitroglycerin, fulminate in bulk in dry condition, or other like explosive, between a place in a foreign country and a place within or subject to the jurisdiction of the United States, or between place in one State, Territory, or District of the United States, or a place noncontiguous to but subject to the jurisdiction thereof, and a place in any other State, Territory, or District of the United States, or place noncontiguous to but subject to the jurisdiction thereof, on any vessel or vehicle of any description operated by a common carrier in the transportation of passengers or articles of commerce by land or water.

Sec. 235. Every package containing explosives or other dangerous articles when presented to a common carrier for shipment shall have plainly marked on the outside thereof the contents thereof; and it shall be unlawful for any person to deliver, or cause to be delivered, to any common carrier engaged in interstate or foreign commerce by land or water, for interstate or foreign transportation, or to carry upon any vessel or vehicle engaged in interstate or foreign transportation, any explosive, or other dangerous article, under any false or deceptive marking, description, invoice, shipping order, or other declaration, or without informing the agent of such carrier of the true character thereof, at or before the time such delivery or carriage is made. Whoever shall knowingly violate, or cause to be violated, any provision of this section, or of the three sections last preceding, or any regulation made by the Interstate Commerce Commission in pursuance thereof, shall be fined not more than two thousand dollars or imprisoned not more than eighteen months, or both.

Sec. 236. When the death or bodily injury of any person is caused by the explosion of any article named in the four sections last preceding, while the same is being placed upon any vessel or vehicle to be transported in violation thereof, or while the same is being so transported, or while the same is being removed from such vessel or vehicle, the person knowingly placing, or adding or permitting the placing of such articles upon any such vessel or vehicle, to be so transported, shall be imprisoned not more than ten years.

Sec. 345. This Act shall take effect on and after the first day of January, nineteen hundred and ten.

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# The American Railway Association REGULATIONS FOR THE TRANSPORTATION OF INFLAMMABLE ARTICLES AND ACIDS.

APPROVED MAY 19, 1909; EFFECTIVE JULY 1, 1909.

## GENERAL NOTICE.

Shippers' certificates and labels are prescribed herein, to facilitate compliance with Section 4 of an Act of Congress, approved May 30, 1908, which requires shippers of explosives and other dangerous articles to plainly mark the contents on each package and to inform the carrier of the true character thereof; and also to comply with the requirements of the Interstate Commerce Commission's Regulations for the transportation of explosives.

## GENERAL ORDER.

A. Shipments of the articles referred to herein will be received for transportation on the ..... R.R., on and after July 1, 1909, provided the methods of packing and contents of packages, so far as they affect safety in transportation, are open to inspection by the authorized representative of this company or of the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles.

B. Shipments destined to points on or beyond the lines of this company and shipments offered by connecting lines will be accepted subject to these regulations.

C. Shipments of articles covered by these regulations may be transported by express service, subject to the regulations of express companies, approved by the Bureau of Explosives.

## DEFINITIONS.

1801. **Inflammable Liquids.—Red Label.**—This group includes any material, compound, or mixture, that gives off inflammable vapors (as determined by flash point from Tagliabue's Open Cup Tester, as used for test of burning oils) at or below a temperature of 80° F. (For examples and quantities, see List No. 1, Paragraph 1805.)

1802. **Inflammables.—Yellow Label.**—This group includes: (1) Materials subject to spontaneous combustion; and (2) materials, other than acids, that are liable to *cause* fires by friction, by concussion, by absorption of moisture, by contact with organic matter, or otherwise. (For examples, see List No. 1, Paragraph 1805.)

1803. **Compressed Gases or Liquids.**—This group includes the following gases:

- |   |   |   |
|---|---|---|
| Inflammable Gases.<br>Red Label.<br>(Inflammable Placard on car.) | } | Acetylene Gas.<br>Coal Gas.<br>Ethyl Chloride.<br>Hydrogen Gas.<br>Pintsch Gas. |
|---|---|---|

- |   |   |   |
|---|---|---|
| Non-Inflammable Gases.<br>Light Green Label.<br>(No Placard required on car.) | } | Anhydrous Ammonia.<br>Carbonic Acid (Carbon Dioxide) Gas.<br>Chlorine Gas.<br>Compressed Air.<br>Nitrous Oxide (Dental Gas).<br>Oxygen Gas.<br>Sulphur Dioxide. |
|---|---|---|

NOTE.—Hydrogen and Oxygen Cylinders are shipped in pairs for Calcium Lights.

1804. **Acids.—White Label.**—This group includes the following substances:

- Acid, Hydrochloric. (Muriatic Acid.)
- Acid, Hydrofluoric. (Etching Acid.)
- Acid, Sulphuric. (Oil of Vitriol.)
- Acid, Nitrating. (Mixed Sulphuric and Nitric.)
- Acid, Nitric. (Aqua Fortis.)
- Bromine.
- Phosphorus, Trichloride.
- Sulphur, Chloride.

## PRINCIPAL INFLAMMABLE ARTICLES AND ACIDS.

1805.‡ The following list (No. 1) shows the principal inflammable articles and acids covered by these regulations, and the quantities which may be shipped in one package without a label when certified "No Label Required." (See Pars. 1814 and 1815.)

LIST NO. 1.

INFLAMMABLE LIQUIDS.—RED LABEL.

NAME.	Flash Point. (May vary with purity.)	Maximum quantity (see Pars. 1814 and 1815) in one package which may be certified "No Label Required."
	Deg. F.	
Acetone.....	35	1/3 gallon.
Alcohol, denatured.....	40-55	1 " "
Alcohol, grain (ethyl alcohol)..	57	1 " "
Alcohol, wood (methyl alcohol)..	45	1 " "
Amyl Acetate.....	70-95	1 " "
Benzene.....	20	1 1/2 " "
Benzole.....	20	1 1/2 " "
Benzine.....	*Zero	1 1/2 " "
Carbon Bisulphide.....	*Zero	No exemption.
Coal Tar Naphtha (light oil)....	20	1/2 gallon.
Collodion.....	*40	1 1/2 " "
Columbian Spirits.....	45	1 " "
Cologne Spirits.....	60	5 gallons.
Ether.....	*Zero	5 pounds.

\* At or below. ‡ See Note, page 22.

FLAMMABLE LIQUIDS.—RED LABEL.—Continued.

NAME.	Flash Point. (May vary with purity.)	Maximum quantity (see Pars. 1814 and 1815) in one pack- age which may be certified. "No Label Required."
Acetate	Deg. F. 40	1 gallon.
Chloride	*Zero	3 doz. 4 1/2 oz. tubes.
Methyl Ketone	30	1/2 gallon.
Nitrite	*Zero	1/2 "
ene	*Zero	1/2 "
Wines (proof spirits over proof)	60-80	1 "
Carbon (Pintsch gas drips)	*Zero	1/2 "
(Nitro-Cellulose solution)	20-70	1/2 gallon.
(Shellac)	40-70	1 "
er Cement	*Zero	1/2 "
d Bronze	*40	1/2 "
tha	*Zero	1/2 "
tha Cement	*Zero	1/2 "
-Cellulose, solution	20-70	1/2 "
-Cellulose, wet with sol-		
	40	5 pounds.
al Spirits	57	1 gallon.
lycerin Spirits	†60	No exemption.
(bronzing, aluminum and d)	*20-70	1/2 gallon.
leum Ether	*Zero	1/2 "
leum Naphtha	*Zero	1/2 "
leum Spirit	*Zero	1/2 "
Spirits	60-80	1 "
xylene (see Nitro-Cellulose)		
ylene	*Zero	1/2 "
er Cement	*Zero	1/2 "
er Solution	*Zero	1/2 "
ac, liquid	40-70	1 "
ole Cotton (see Nitro-Cellu- le)		
Glonoin (Nitroglycerin Spirits)	†60	No exemption.
l.		
ene	55	1 gallon.
l Spirit	45	1 "

or below. † Approximate.

INFLAMMABLES.—YELLOW LABEL.—Continued.

NAME.	Maximum quantity (see Pars. 1814 and 1815) in one pack- age which may be certified. "No Label Required."
Cotton Waste, oily†	No exemption.
Desiccated Leather (fertilizer ingredi- ent)	10 pounds.
Dried Fish or Fish Scrap (fertilizer ingre- dient)	10 "
Fillerine (fertilizer ingredient)	10 "
Garbage Tankage (fertilizer ingredient).	10 "
Gas Purifying Waste (fertilizer ingre- dient)	10 "
Gun Cotton (see Nitro Cellulose)	
Iron Mass, spent	10 "
Iron Sponge, spent	10 "
Magnesium Powder	5 "
Matches, friction	No exemption.
Metallic Potassium	" "
Metallic Sodium	" "
Negative Cotton (see Nitro-Cellulose)	
Nitrates, in bags	No exemption.
Nitrate of Soda, in bags	" "
Nitrate of Potash, in bags	" "
Nitre, in bags	" "
Nitro-Cellulose, dry (see High Explosives)	
Nitro-Cellulose, wet with water	No exemption.
Phosphorus, yellow	" "
Potash, chlorate	25 pounds.
Potassium Peroxide	No exemption.
Potash, permanganate	25 pounds.
Pyroxylin (see Nitro-Cellulose)	
Saltpetre, in bags	No exemption.
Sodium Peroxide	" "
Soluble Cotton (see Nitro-Cellulose)	
Soot	10 pounds.
Zinc Dust	10 "
Zinc Flue Dust	10 "

† Cotton Waste, oily with linseed oil, must not be shipped.

NOTE.—Labels must be applied to at least 10 per cent. of bags containing Inflammables, in L. C. L. shipments.

INFLAMMABLES—YELLOW LABEL.

NAME.	Maximum quantity (see Pars. 1814 and 1815) in one pack- age which may be certified. "No Label Required."
empty, used for Nitrate of Soda	No exemption.
am Peroxide	" "
um Phosphide	5 pounds.
coal, ground	10 "
coal, lump	10 "
rates	25 "
mic Acid (anhydrous)	10 "
dion Cotton (see Nitro-Cellulose)	

ACIDS—WHITE LABEL.

NAME.	Maximum quantity (see Pars. 1814 and 1815) in one pack- age which may be certified. "No Label Required."
Acid, Hydrochloric (Muriatic)	5 pints.
Acid, Hydrofluoric (etching acid)	5 "
Acid, Nitrating (mixed Sulphuric and Nitric)	No exemption.
Acid, Nitric	" "
Acid, Sulphuric (Oil of Vitriol)	5 pints.
Bromine	No exemption.
Phosphorus Trichloride	5 pints.
Sulphur Chloride	5 "

LIST NO. 2 DOUBTFUL ARTICLES.

Partial list of general names\* of groups of articles that will require: (1) Shippers' Certificate, (2) Notation as to labels applied or not required and (3) Waybill endorsements, Par. 1873. (See Par. 1815.)

mobile Supplies, N. O. S.	Cement, roofing.	Compounds, polishing, N. O. S.
king, N. O. S.	Cement, liquid, N. O. S.	Compounds, type cleaning.
king, stove, liquid.	Chemicals, N. O. S.	Compounds, vulcanizing.

NOTE.—When practicable to avoid it, safe articles should not be described by general names that suggest doubtful characteristics.



## LIST NO. 2—DOUBTFUL ARTICLES.—Continued.

Compounds, wall cleaning.	Nitrotoluol (may be Trinitrotoluol, a high explosive).	Preparations, insect and vermin destroying.
Compounds, waterproofing.	Oil, N. O. S.	Preservers, iron, steel or wood.
Crude Oil.	Paints, N. O. S.	Removers, paints, oil or varnish.
Dip, sheep.	Paste, shoe.	Shellac, liquid, N. O. S.
Disinfectants, liquid, N. O. S.	Petroleum products, N. O. S.	Softeners, leather.
Drier, paint and Japan, N. O. S.	(See List No. 3.)	Solvents.
Drugs, N. O. S.	Pitch Roof Coating.	Stain, furniture.
Eradicator, paint or grease.	Polish, floor, liquid.	Stain, leather.
Extracts, N. O. S. (see List No. 3).	Polish, furniture.	Strontia.
Gas Oil.	Polish, liquid, N. O. S.	Turpentine Substitutes.
Laboratory Supplies, N. O. S.	Polish, metal.	Varnish, N. O. S.
Liniments.	Polish, stove, liquid.	Varnish and Paint Removers.
Liquids, N. O. S.		
Matches, N. O. S.		

## LIST NO. 3—EXCEPTED ARTICLES.

The following articles, when properly described by one of the names given in this list, may be accepted without requiring the notation "No Label Required" and without the Shippers' Certificate prescribed by Paragraph 1815. The waybill endorsement prescribed by Paragraph 1873 will not be required for these articles:

Acetic Acid.	Cotton Seed Oil (Cotton Oil).	*Oil Turpentine, rectified.
Acid, dry (except Picric Acid, which is <i>High Explosive</i> ).	Creosote.	Oils, Essential.
Acid Phosphate.	Creosote Oil.	*Oil Well Cables (see Par. 1894).
Aerated Beverages.	Cylinder Oil.	Oleo Oil.
Ale.	Dyes.	Olive Oil
Ammonia or Aqua Ammonia (not compressed).	*Electrolyte (Dilute Sulphuric Acid not exceeding 30% strength).	Oxalic Acid.
Animal Food.	Embalming Fluid.	Packing House Tankage.
*Ashes (see Par. 1894).	*Empty Barrels (see Par. 1904).	*Paints, varnishes, japans, or driers, dry or containing only liquids excepted in this list. (Describe as " <u>Name</u> ") as per Excepted List."
Axle Grease.	Entomocide.	Palm Oil.
Balsam, crude.	Essential Oils.	*Medicines, dry, or liquid in glass not exceeding one quart in each vessel. (Describe as "Medicines as per Excepted List.")
*Barrels, empty (see Par. 1894).	Eucalyptol.	Perfumery, in bottles, or dry.
*Bay Rum.	*Excelsior (see Par. 1894).	Petroleum Products, as specified herein:
Beef Scrap (poultry food).	*Extracts, flavoring (in bottles not containing more than one quart each). (Describe as "Extracts as per Excepted List".)	Asphalt } without solvents.
Beer.	Fertilizer, complete or manipulated.	Asphaltum }
Beer Tonic.	*Fibre (see Par. 1894).	Axle Grease.
Benzaldehyde.	Fish Oil.	Carrier's Grease.
*Bitters.	Floor Polish, solid.	Distillates.
Bitumen.	*Gin.	Grease.
Blacking, curriers.	Ginger Ale.	Household Lubricant.
Blacking, shoe.	Glue.	Miners' Wax.
Blacking, stove (dry or paste).	Glutrin.	Paraffine Wax.
*Blacks (Bone, Carbon, Drop, Frankfurt, Ivory and Lamp).	Glycerine.	Petrolatum.
*Brandy.	Hay, baled (well cured).	Pitch.
*Brimstone (see Par. 1894).	*Hay, loose (see Par. 1894).	Residuum.
*Calcium Carbide (in tight metal vessels) (see Par. 1894).	*Headlight Oil.	Tailings.
*Camphor (see Par. 1894).	*Hemp (see Par. 1894).	Tar.
Candles, or Candle Stock.	*Illuminating Oils.	Belt Oil.
Carbolic Acid.	*Jute (see Par. 1894).	*Coal Oil.
Castoria.	Kainit.	Cordage Oil.
Castor Oil.	Lactic Acid.	Cycle Oil.
Caustic Soda.	Lard Oil.	Felt Oil.
*Celluloid.	*Lime (see Par. 1894).	Floor Oil.
Champagne.	Linoleum.	Fuel Oil.
Charcoal in bottles.	Linseed Oil.	Gloss Oil.
*Charged Storage Batteries.	Liquor, iron.	Hard Oil.
China Wood (or Nut) Oil.	*Liquors, potable.	Harness Oil.
*Chipped Bone (see Par. 1894).	Lubricating Grease.	Hoof Oil.
Chloride of Calcium.	Lubricating Oil.	*Illuminating Oil.
Chloride of Lime.	Machine Oil.	*Kerosene Oil.
Chloroform.	Madeira Wine.	Neatsfoot Oil.
Cider.	Malt Extract.	Leather Oil.
Claret Wine.	Matches, Safety.	Lubricating Oil.
Coal Tar.	Mirbane Oil.	*Miner's Oil.
Cocoa Butter.	Montanin (disinfectant).	Paraffine Oil.
Cocoa Nut Oil.	*Moving Picture Films.	Putty Oil.
Cod Liver Oil (plain or in emulsion).	Muriate of Ammonia.	*Refined Oil.
*Coke (see Par. 1894).	Muriate of Potash.	Roadbed Oil.
Cordials.	Nastro Fluid.	Sewing Machine Oil.
Corn Oil.	Neatsfoot Oil.	Soap Oil.
*Cotton,	Nitrates, in tight boxes or barrels.	Tanners' Oil.
*Cotton Batting,	*Oakum (see Par. 1894).	
*Cotton Wadding,	Oil Cloth.	
*Cotton Waste, not oily,	Oiled Clothing.	

\* Articles which must not be loaded nor stored with explosives (Par. 1682), nor in cars adjacent to cars containing explosives. (Rule 1307.)

## LIST NO. 3--EXCEPTED ARTICLES.—Continued.

Tobacco Oil.	Safety Matches.	Sulphates.
Transformer Oil.	Sal-ammoniac.	*Sulphur (see Par. 1894).
Transit Oil.	Salt Cake.	Tallow Oil.
Twine Oil.	Sanctuary Oil.	Tan Extracts.
Wool Oil.	*Sawdust (see Par. 1894).	Tannic Acid.
ographic Films.	Sherry Wine.	Tar, coal.
Tar.	Shoe Blacking or Polishes.	Tar, pine.
h, dry or paste.	Signal Oil.	Tar Roofing Paper.
h, floor, solid.	Silicate of Soda.	Terebene.
h, shoe.	Slaughter House Tankage.	Toilet Waters.
er.	Soda Ash.	*Tow (see Par. 1894).
Wine.	Soda Cake.	*Turpentine.
ble Spirits.	Sperm Oil.	Vaseline.
xylin Plastics.	Spindle Oil.	Vault Cement.
(see Par. 1894).	Steamed Bone or Animal Refuse.	Vinegar.
lue of Copper.	Stearic Acid.	Waterproof Cloth.
e Wine.	Stove Blacking or Polish (dry or	Wax.
.	paste).	*Whiskey.
n Oil.	Stratena (cement).	Wines.
.	*Straw (see Par. 1894).	Witch Hazel.

## LABELS.

Unless exempted on account of quantity or kind of packing, all packages containing articles having characteristics include one or more of those covering the definitions (Paragraphs 1801 to 1804), must conspicuously be labeled by the shipper.

—Any article that has, or is suspected of having, one or more characteristics mentioned, that cannot be properly described by the definite names in List No. 1, or by one of the general names in List No. 2, and that is not included in the excepted List must be promptly reported to the proper official, who will report to the Chief Inspector, Bureau of Explosives, 24 Park Street, New York City, for investigation and ruling.

Labels must be of diamond shape, with each diagonal (not sides)  $5\frac{1}{2}$  inches long. The color is *red* for inflammable liquids, and compressed inflammable gases, and *light green* for inflammable solids, *light green* for non-inflammable compressed gases, and *white* for acids.

The wording will be in black letters and as shown in Paragraphs 28 to 32, unless a modified wording with an identification number and name of shipper is authorized by the Chief Inspector of the Bureau of Explosives to special conditions.

—To promote education of shippers in the requirements of Federal law, labels have heretofore been furnished by railway companies, but on and after October 1, 1909, they must be furnished by shippers. (See Section 4 of Act of Congress, approved May 30, 1908, Revised Penal Laws of the United States.)

## LABEL EXEMPTIONS.

Labels will not be required on:

Outside packages in carload lots to be unloaded by consignee; but the cars must be placarded.

Outside packages containing paint or varnish (with flash point not lower than 50° F.) in securely closed metal vessels packed in strong boxes, crates or barrels, provided the vessels

articles which must not be loaded nor stored with explosives (Par. 1682), nor in cars adjacent to cars containing explosives. (Rule

1815.—As the maximum quantity that can be accepted without a label will depend on circumstances, such as flash point, quantity, kind of package, method of packing, etc., the Chief Inspector of the Bureau of Explosives is authorized to make the necessary examinations and tests and to prescribe this quantity for the articles tested. The material required for any test, made on application of a shipper, must be delivered by him without charge to the "Chemical Laboratory, Bureau of Explosives, South Amboy, New Jersey," and a reasonable charge for the services of laboratory employes must be paid.

contain not more than five gallons each. When the flash point is from 40° to 50° F., each vessel must not contain more than one gallon.

(c) Outside packages containing an article in quantity exempted by List No. 1. When several articles are included in one outside package labels must be applied when their combined quantity exceeds the lowest limit prescribed for any one of them.

(d) Outside packages containing articles in List No. 3.

NOTE.—Shipping orders for any article from which labels are exempted by sub-paragraphs (a), (b) and (c) above, must show thereon the shipper's certificate prescribed by Paragraph 1815.

## SHIPPING ORDERS.

1815. A shipping order for any article whose characteristics are covered by the definitions (Pars. 1801 to 1804), or that can be properly designated by one of the names in List No. 1 or List No. 2 (Par. 1805), though designated by a trade or other name, must show over the shipper's signature, as per sample below, and whether labels are required or not, the following certificate:

This is to certify that the articles in this shipment are properly described, packed and marked, and that all necessary labels have been attached to packages, as required by Paragraphs 1801 to 1807, inclusive, of the Regulations for the Transportation of Inflammable Articles and Acids.

The shipping order must also show opposite the name of the article the kind of label applied or "No Label Required." For carload lots, loaded by the shipper, it must show the kind of placard applied to the car, or "No Placard Required."

NOTE.—Placards for cars will be furnished by railway companies. Cars to be loaded by shippers must be cleanly swept before being loaded with inflammable articles.

SAMPLE SHIPPING ORDER.

Railroad Company

THIS SHIPPING ORDER must be legibly filled in, in Ink, in Indelible Fencil, or in Carbon, and returned by the Agent.

Shippers No. \_\_\_\_\_ Agents No. \_\_\_\_\_

Receipt is subject to the conditions and tariffs in effect on the date of issue of this Shipping Order, at New York City, N.Y., Feb. 10, 1909

John Doe, the property of \_\_\_\_\_, is being shipped by rail to \_\_\_\_\_, subject to the conditions and tariffs in effect on the date of issue of this Shipping Order, at New York City, N.Y., Feb. 10, 1909

The Rate of Freight from \_\_\_\_\_ to \_\_\_\_\_ per 100 Lbs.

Destination to Richard Roe, Sampsonville, Iowa, Keats

Special Air Line Despatch, Car Initial \_\_\_\_\_, Car No. \_\_\_\_\_

Table with columns: No. Packages, Description of Articles and Special Marks, Weight, Class or Rate, Check Colours, and Remarks.

John Doe, Shipper, Charles Jones, Agent

NOTE.—Any written or printed request for transportation, similar to a regular shipping order, such as a dray ticket or a switching order or ticket, must also bear the shipper's certificate and label, or placard notation, on the original and all copies delivered to railway employes.

PACKING.

STRENGTH OF PACKING BOXES.

1821. When properly loaded in cars and protected by such staving as may be necessary, outside and inside packing cases must be strong enough to stand without rupture or leakage all ordinary shocks incident to transportation. When the experience of the Bureau of Explosives shows that any packing fails to meet this requirement, its further use will be prohibited. Broken or leaking packages will not be accepted.

INFLAMMABLE LIQUIDS.—RED LABEL.

1822. Except as noted in 1823, 1824 and 1825, all articles in this group must be packed: (1) In well stoppered bottles of not to exceed one gallon capacity; or, (2) in boxed carboys or demijohns well stoppered; or, (3) in strong and tight barrels; \* or preferably (4) in strong metal drums or vessels, or tank cars. All inside packages must be securely closed to prevent leakage or escape of contents and protected against breakage by shock. Bottles must be protected by corrugated paper wrappings or other elastic packing. A liquid with flash point below 80° F. must not be accepted in a can, unless crated or boxed. Tank cars containing inflammable liquids must be of an approved design, and they must be provided with satisfactory safety valves.

\*NOTE.—Second-hand barrels must be carefully inspected and well coopered.

1823. Nitro-Cellulose wet with solvent must contain not less than 30 per cent. of a solvent whose flash point is not less than 40° F., and must be packed in strong, tinned or galvanized iron vessels, of the milk can type, with a satisfactory means for keeping them securely closed.

1824. Spirits of Nitroglycerin must not contain more than 10 per cent. of Nitroglycerin in solution, and must be packed in tightly stoppered cans or glass bottles containing not more than one gallon of liquid each, and surrounded by a satisfactory absorbent.

1825. The more volatile liquids, such as Carbon Bisulphide, Ether, Ethyl Chloride, etc., must be packed properly in well sealed metal tubes, cans, cylinders or drums. They may be packed in well stoppered bottles containing not more than five pints, or in glass tubes of not more than four and one-half ounces capacity.

1826. Packages containing inflammable liquids must not be entirely filled. Sufficient interior space must be left vacant to permit expansion of liquid and vapor, and to prevent distortion of containers when heated to a temperature of 120° F.

INFLAMMABLES.—YELLOW LABEL.

1834. Packages must be tight and strong, and the interior packages must be so cushioned and secured that no rupture of either package can result from the ordinary shocks incident to transportation.

1835. Metallic Sodium or Potassium, in quantity not greater than one pound, must be placed in neutral oil, and this in a well stoppered bottle protected by a tin box, or these substances may be packed in a hermetically sealed tin cylinder.

1836. Yellow Phosphorus must be packed in water in sealed metal cases.

1837. Charcoal and charred Animal Products must be cooled before loading into a car. This cooling must be equivalent to that secured by spreading and exposing to the air for at least three days after removal from kiln or furnace.

1838. Nitro-Cellulose, uniformly wet with not less than 25 per cent. of water, must be wrapped in waterproof material, securely packed in a strong and tight box, keg or barrel, and marked "WET NITRO-CELLULOSE—25 PER CENT. WATER."

1839. Friction Matches must be packed in pasteboard, wooden or metallic boxes, containing not more than 1,000 matches each; if packed loosely, or with the heads lying in all directions, not to exceed 2,000 matches may be packed in one carton or inside package; the inside packages must be packed in strong outside cases, or boxes, plainly marked "FRICTION MATCHES."

COMPRESSED GASES.—RED OR LIGHT GREEN LABEL.

1841 (a). Cylinders must not contain gases that may combine chemically, and must be made of tough steel that will not break up into flying fragments when a cylinder explodes.

(b). By water jacket, or other suitable tests, each cylinder containing liquified gases must be subjected, at least once in four years, to a uniform interior pres-

re not less than one and one-quarter times the interior pressure that would result from heating the cylinder uniformly, in its maximum charged condition, to a temperature of 130° F. Each cylinder containing non-liquefied gases or gases in solution must be subjected at least once in four years to a uniform interior pressure not less than twice the charging pressure for such cylinder, corresponding to a temperature of 70° F. A cylinder must be condemned when it leaks, when the permanent expansion is due to local weakness or when it is uniform and exceeds 5% of the total expansion. This test is based on the assumption that the weight of gas charged into any cylinder will not, at a temperature of 130° F., cause an interior pressure in excess of three-fourths of the elastic limit of the weakest part of the cylinder.

The manufacturer must not offer for transportation cylinders filled with such charging densities of any gas which would produce failure in the test prescribed for that gas.

After December 31, 1913, all cylinders must be plainly stamped under the cylinder number, with the date of the next test—for example, 4-09, for April, 1909—or otherwise durably marked to show compliance with this rule.

(c). Acetylene gas must be dissolved in acetone, and other cylinders must be filled with moulded asbestos sections. No substitute for acetone or asbestos must be used without approval in writing from the Bureau of Explosives.

1842. After December 31, 1914, each cylinder containing liquefied gases, or gases under more than 300 pounds per square inch pressure, must be equipped with a satisfactory safety device that will prevent explosion of the cylinder when it is placed in a fire. By December 31, 1910, not less than 20% of the cylinders offered for transportation must be equipped with safety devices, and an additional 20% must be so equipped annually thereafter. All new cylinders manufactured hereafter must be equipped with them.

1843. When cylinders containing inflammable materials are not boxed for shipment, the safety device and discharge valve must be safe from injury during transit and of a design and construction of the cylinder approved by the Bureau of Explosives, or they must be protected by strong metal caps that cannot be detached by rolling the cylinder.

#### ACIDS.—WHITE LABEL.

1851. Bottles of Bromine must be surrounded by incombustible packing material, such as whiting, mineral wool or sifted ashes, and the stoppers must be well cured.

1852. Hydrofluoric acid must be packed in india rubber or ceresine bottles, hermetically sealed, or in lead carboys, well stoppered, and the bottles and carboys must be packed in strong cases, barrels or casks; or Hydrofluoric acid may be packed in tight hard wood barrels lined with asphaltum. The barrels must be securely stoppered and carefully inspected by shipper.

1853. Sulphuric or Hydrochloric acids, and Liquid Chlorides must be packed in earthen jars, or glass bottles, or strong carboy bottles, without local defects, all

well stoppered to prevent leakage, or in drums, or tank cars. Jars or bottles must be packed in a strong case and well cushioned; carboy bottles must be packed in cases provided with strong handles or cleats, and the necks of carboys must be protected.

1854. Nitric acid of gravity below 1.43 must be packed as prescribed in ¶ 1853 for Sulphuric or Hydrochloric acid, except that the bottles, jars or carboy bottles must be covered by a suitable, incombustible and liquid-proof material, or well cushioned by elastic incombustible packing, such as sections of old rubber hose.

1855. When the gravity of Nitric acid is 1.43, or above, the bottles, jars or carboys must, in addition to the elastic packing, be covered by a suitable incombustible and liquid-proof material, or surrounded by a sufficient quantity of incombustible packing material, such as mineral wool, whiting, ashes, etc.

1856. Mixed Nitric and Sulphuric acids must be shipped in iron drums or tank cars securely closed.

1857. Not more than one pint of an acid must be packed in the same compartment of an outside package that contains one or more substances with which the acid might, on rupture of inside packages, combine chemically and cause either a dangerous generation of heat or a combination of gas and corrosive materials that might injure a railway employe handling the package.

#### DIRECTIONS FOR RAILWAY EMPLOYES.

1871. Agents must utilize their general knowledge of the business of shippers in their territory to supply the shippers with copies of these regulations and see that they comply therewith.

The forwarding agent must see, for a shipment offered at his station and known to contain inflammable substances, or compressed gases or liquids, or acids, that the proper labels appear, and that the shipping order, or switching ticket, bears the proper certificate and label or placard notation.

The shipping orders and switching tickets bearing these certificates must be kept on a separate file, or in such a manner as to facilitate their examination.

1872. For shipments of articles not included in the list No. 3 of excepted articles (¶ 1805) and concerning which a reasonable doubt exists as to propriety of acceptance without a shipper's certificate and notation as to labels (Par. 1815), the agent should first ascertain whether the shipper is familiar with the definitions (Par. 1801 to 1804) and with the characteristics of his shipment. If the shipper is informed in these respects, and insists that neither certificate nor label is necessary, the agent should forward the shipment and report the case to the proper official for ruling by the Bureau of Explosives.

It should be borne in mind that the spirit of the regulations assumes, in the first instance, the fairness of the shipper after he has become familiar with the requirements, and that the object of the regulations is to secure safety without imposing undue obstacles to traffic.

1873. The revenue waybill prepared from the shipping order for the articles subject to these regulations and transfer billing to connections must properly de-

scribe these articles by name, and state the color of label applied, or "No Label Required." For carload shipments it must show the kind of placard applied, or "No Placard Required." On its face must be written or stamped, whether the packages require labels or not, the words:

"Shippers' Certificate on File with Initial Carrier."

1874 (a). The card waybill, or running slip, for any car, which under these regulations should bear the inflammable or acid placards, must have plainly stamped or written across the top the words "Inflammable" or "Acid."

(b) When the original movement is over a switching line, the switching ticket, and copies thereof, prepared by the shipper or by the agent under the shipper's written authority, must bear the shipper's certificate and the placard notation prescribed by Paragraph 1815; for other switching movement, the switching ticket prepared by a railway employe must show the kind of placard or "No Placard Required," and on its face must be written or stamped:

"Shippers' Certificate on File with Initial Carrier."

1875. Card waybills, running slips or switching tickets, for filled or empty tank cars, unless plainly marked with a name on excepted list (List No. 3, ¶ 1805), must be endorsed to show the kind of placard applied, or "No Placard Required." At a point from which an empty tank car is returned without shippers' certificate, the agent must know whether the tank car requires a placard under the regulations, and he must endorse the memorandum or other waybill accordingly.

1876. An astray shipment of inflammable articles, gas cylinders or acids, must be forwarded to destination, if known, provided a careful inspection shows the package to be in proper condition for safe transportation. If package is unlabeled and exact nature of contents is unknown, the red label which gives the greatest protection should be applied. The "stray bill" must show the color of label applied and be endorsed as follows:

"Stray shipment, inspected at....Station,....R.R....190...."

1877. Prompt removal of all inflammable articles and acids and similar articles must be enforced by the agent to decrease danger from storage and to avoid violating State or municipal laws or ordinances.

1878. Packages of inflammable articles or acids when offered for shipment and not properly labeled and certified must not be accepted.

1879. Shipments offered by connecting water or other transportation lines must comply with these regulations. Packages must be properly certified and labeled and the revenue waybills must bear the endorsements prescribed by Par. 1873.

#### LOADING.

1891. A car placarded "Inflammable," or known to contain inflammable material, must not be entered with a lighted lantern, torch or other fire until both car doors have been opened and sufficient time allowed for ventilation and escape of any vapors. The presence of these vapors will generally be indicated by characteristic odors.

1892. Packages of Matches must be so loaded or stayed that they will not fall or be damaged by other freight.

1893. Carboy bottles must be so blocked and braced that they cannot change position during transit. Less than carload shipments, in addition to being securely blocked and braced, should be loaded near the doorway and must have wood strips, not less than one inch thick, nailed to the car floor six inches from the carboy bottles and so arranged that acid from a broken package will not spread, but will drain toward the doorway and outside the car. The space between the carboys and strips must be covered liberally with clean, dry sand. Sawdust or other combustible material must not be used.

1894. Crude Camphor, Cotton, Cotton Batting, Cotton Wadding, Cotton Waste, Excelsior, Fibre, Hay, Hemp, Jute, Oakum, Oil Well Cables, Rags, Sawdust (fine), Sulphur, Tow and Straw, or other articles liable to be ignited by sparks, should, when practicable, be loaded in tight cars, with doors stripped, and carload lots of these articles must not be placed next to cars placarded "Explosives."

Lime, in bulk, and Calcium Carbide should be placed in a car with tight roof. Lime, Coke, Chipped Bone, Ashes and other substances liable to be hot when offered for shipment must not be loaded until thoroughly cooled.

NOTE.—Shippers' certificate, labels and placards will not be required for these articles.

1895. Cars that are to be loaded with inflammable articles must be cleanly swept before loading.

#### PLACARDS AND HANDLING CARS.

1901. Agents must keep on hand an adequate supply of labels and placards. Lost or detached labels must be replaced from information given on revenue waybill. Placards will be furnished to shippers for attachment to cars loaded by them, and labels will be furnished on demand until October 1, 1909.

1902. The railway agent, or an employe designated by him, must attach the proper placard, or verify the attachment of it by the shipper, as soon as he receives a tank, or other car containing an inflammable material or an acid.

1903. As soon as the lading requiring the placard is removed from cars, placards must be removed by agents, yardmasters, or conductors; but the inflammable placard must remain on *tank* cars until such cars are known to have been cleaned by steam. When a tank car is cleaned with naphtha instead of steam the inflammable placard must remain thereon until the tank car is again filled with some substance which does not require such cars to be placarded.

1904. Empty barrels, used previously for the shipment of an inflammable liquid (¶ 1801), do not require certificates nor labels, but fire must be kept away from them, and they should be loaded in open or stock cars when practicable.

1905. A conductor must not move a car known to require placards from a station or siding until the proper placards are attached. Placards lost in transit must be replaced in a similar manner.

906. Tank cars placarded "INFLAMMABLE" must be placed in trains, if possible, at least five cars from the engine and five cars from the caboose. When length of train does not permit this, they must be placed as far as possible from the middle of the train as practicable.

907. When cars protected by "INFLAMMABLE" placards are received or held in yards, particularly at night, Yardmasters must see that train and yard employees are informed of the position of such cars, and that all necessary precautions are taken to prevent accidents. These precautions must include provision for quickly isolating them in case of fire.

908. In classification yards, and in switching, it must be determined by inspection and trial, that such a car has its brakes in first class order before a draft containing it is cut; and a tank car placarded "Inflammable"

must not be started down a ladder track, incline or hump, until the preceding car has cleared the ladder. It must also clear the ladder before another car is allowed to follow.

1909. Cars bearing "Inflammable" placards and cars adjacent to them must be watched with extra care to discover hot journals.

1940. A placard, of diamond shape, printed on strong, thin white paper for pasting on tank cars and on strong tagboard for tacking to wooden cars, measuring 15 inches on each diagonal, and bearing in red and black letters the following inscription, must be securely attached to each outside end and side of a car containing any quantity of Smokeless Powder for Cannon, or Ammunition for Cannon with Empty Projectiles, or Fireworks, or one or more packages protected by the *red*, or the *yellow*, diamond label:

INFLAMMABLE PLACARD.



1941. There must be securely attached to each outside end and side of a car containing one or more packages protected by the *white* diamond label, a placard, of diamond shape, on strong, thin white paper for pasting on tank cars and on strong tagboard for tacking to wooden cars, measuring 12 inches on each diagonal and bearing in black letters the following inscription:

**WRECKS.**

1945. In case of a wreck involving a car containing inflammable freight, it should be assumed that packages are broken and that leakage has occurred which may cause fire if lighted lanterns or other flames are taken into or near these cars. As much of the train as possible should be moved to a place of safety. A car

**ACID PLACARD.**

1942. Inflammable or Acid Placards will not be required on Express or Baggage cars in charge of an express messenger or railway employe.

1943. Labels and placards must conform to standards, and samples will be furnished by the Chief Inspector of the Bureau of Explosives on request.

1944. Violations of these regulations must be reported to the proper official, who will forward report to the Chief Inspector of the Bureau of Explosives, 24 Park Place, New York.

containing inflammable freight should be opened for ventilation, and packages protected by red labels and cylinders of compressed gases should be removed to a safe place. Substances spilled from broken packages protected by yellow label should also be removed. Cylinders of compressed gases may be exploded if they are exposed to fire or struck a sharp blow, and the flying fragments would then be dangerous. Inflammable liquids spilled from broken packages or tank cars should be well covered with dry earth before a lighted lantern, torch or an engine is used in the vicinity. Acids spilled in cars should be covered with dry earth and the car floor thoroughly swept.

## LABELS.

FACSIMILE OF RED LABEL FOR INFLAMMABLE LIQUIDS.





FACSIMILE OF YELLOW LABEL FOR INFLAMMABLES.



FACSIMILE OF RED LABEL FOR INFLAMMABLE GASES.

**CAUTION TO  
RAILWAY EMPLOYEES**

Compressed ..... (Print Name of Substance) .....

**INFLAMMABLE**

**Keep Cool and Do Not Drop**

Shipper has certified on his Shipping Order  
to compliance with all Regulations that  
apply to this package.

FACSIMILE OF LIGHT GREEN LABEL FOR NON-INFLAMMABLE GASES.

**CAUTION TO  
RAILWAY EMPLOYEES**

Compressed ..... (Print Name of Substance)

**NON-INFLAMMABLE**

**Keep Cool and Do Not Drop**

Shipper has certified on his Shipping Order  
to compliance with all Regulations that  
apply to this package.



FACSIMILE OF WHITE LABEL FOR ACIDS.

**NOTICE**

**HANDLE CAREFULLY**

**A C I D**

**DO NOT LOAD WITH EXPLOSIVES OR  
INFLAMMABLES PROTECTED  
BY YELLOW LABELS**

Shipper has certified on his Shipping Order to  
compliance with all Regulations that  
apply to this package.



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