

STATE OF NEW JERSEY
DEPARTMENT OF LABOR AND INDUSTRY
Percy A. Miller, Jr., Commissioner

R U L E S A N D R E G U L A T I O N S

Chapter 9

KEEPING, USING OR STORING
NITROCELLULOSE

Issued in accordance with
the provisions of
Chapter 27, Laws of 1941

AN ACT
relating to the
Manufacture, Having, Keeping
Storage, Sale, Transportation and Use
of Explosives

Bureau of Engineering and Safety
C. George Krueger, Deputy Director
Division of Labor

Trenton, New Jersey - July 15, 1941
(tentative)

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NITROCELLULOSE

C O N T E N T S

<u>SECTION</u>		<u>PAGE</u>
9.1000	General.....	1
9.2000	Storage Structures.....	2
9.201	General Requirements.....	2
9.202	Structural Requirements.....	3
9.203	Automatic Sprinklers.....	3
9.204	Egresses.....	3
9.205	Heating.....	4
9.206	Electrical Equipment.....	4
9.207	Other Requirements.....	4
9.3000	Small Quantity Storage.....	5
9.301	Operating Building.....	5
9.302	Limited Storage in Building.....	5
9.4000	Receiving Shipments.....	5
9.401	Railroad.....	5
9.402	Boat or Barge.....	6
9.403	Motor Vehicle.....	6
9.5000	General Handling.....	6

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9.1000 GENERAL

- 9.101 A permit, issued by the Bureau of Explosives of the Department of Labor and Industry, is required for the storage of nitrocellulose and similar materials, in accordance with the provisions of Section 58, of Chapter 27, of the Laws of 1941, which states:

"Section 58: All persons engaged in keeping, using or storing any compound, mixture or material, in wet condition, or otherwise which upon drying out or undergoing other physical changes, may become an explosive within the definition of this act, shall report such material to the commissioner and obtain a permit in the manner prescribed in this act for the storage of explosives; such reports to contain:

- (a) The kind of compound, mixture or material kept or stored, and maximum quantity thereof.
- (b) Condition or state of compound, mixture or material.
- (c) Place where kept or stored.

The Commissioner may at any reasonable time cause an inspection to be made to determine whether the condition of the compound, mixture or material is as reported."

- 9.102 The dry, net weight is to be reported on application forms for storage permits.
- 9.103 IT IS PROHIBITED FOR ANY PERSON TO DELIVER, TRANSPORT, OR SELL NITROCELLULOSE TO ANY PERSON TO WHOM A PERMIT TO STORE NITROCELLULOSE HAS NOT BEEN ISSUED, OR TO PURCHASE NITROCELLULOSE WITHOUT A PERMIT TO STORE WHERE SUCH NITROCELLULOSE IS INTENDED TO BE STORED.

- 9.104 Nitrocellulose shall contain sufficient water, alcohol or other wetting agent to conform to I. C. C. Regulations.
- 9.105 No dry nitrocellulose, except that used in the permitted manufacture of explosives, shall be kept, used or stored.
- 9.106 Except only while being used in operations and as otherwise specified, no person shall keep or store nitrocellulose unless such nitrocellulose is completely encased in tight metallic container or a container of other approved material.
- 9.2000 STORAGE STRUCTURES
- 9.201 General Requirements
- 9.2011 Barrels or containers of nitrocellulose shall be kept or stored in approved storehouses in accordance with the following requirements, or as modified thereby.

<u>Quantities that May be Kept or Stored</u>		<u>Distance in Feet to</u>
<u>Pounds Over</u>	<u>Pounds Not Over</u>	<u>Property line, building or combustible material in the open</u>
50	1,000	50
1,000	5,000	75
5,000	10,000	100
10,000	50,000	150
50,000	100,000	200
100,000	200,000	250
200,000	300,000	300
300,000	400,000	350
400,000	500,000	400

- Exceptions. Modification will be permitted by reduction in distances shown in table, when (1) Storehouses are protected with an approved automatic sprinkler system; (2) An adjacent sprinklered building has non-combustible walls and cornice and fully protected wall openings; or, (3) An adjacent building has a parapeted blank masonry wall facing the storehouse.
- 9.2012 Barrels or containers of nitrocellulose may be stored at a detached permanent location in sheds of substantial construction, with sides removed. Such barrels or containers shall not be stored out-of-doors without such protection.
- 9.2013 No other materials shall be stored in storehouses, sheds or sections of buildings except as otherwise permitted, but in no case exceeding the I. C. C. classification for nitrocellulose.
- 9.2014 Not over 25,000 pounds of nitrocellulose shall be stored at locations

- 3 -

which seriously expose human habitations or in densely built up areas. Larger quantities of nitrocellulose in original barrels or containers, may be stored in sheds of substantial construction at a detached, isolated location.

- 9.2015 No quantity of nitrocellulose in excess of 500,000 pounds shall be kept or stored in any one storehouse.

9.202 Structural Requirements

- 9.2021 Where storehouses are not in conformity with Section 9.2011 hereof, all walls shall be equivalent in fire-resistance to 4 inches of concrete, or three-eighth 8-inch tile. All openings in such walls shall be protected by shutters or doors equivalent in fire-resistance to a two-ply tin-clad fire door or shutter of approved construction. Skylights shall be protected in such a manner as to prevent radiated heat or flying brands from igniting the contents of the building. Roofs shall be suitably insulated with non-combustible heat insulating materials where necessary to prevent building up a temperature in excess of 160° F. in the storage house by heat from the sun's rays.
- 9.2022 A section of a building will be considered to be a suitable storehouse for the storage of nitrocellulose if such section is a separate room cut off by parapet wall equivalent in fire-resistance to 8-inches of reinforced concrete, with double, standard and approved fire doors on all openings to the storage section.
- 9.2023 A storehouse for nitrocellulose shall be well ventilated and may be of frame construction; roof and sides constructed of fire-resistive material; and suitable foundation to firm soil.
- 9.2024 Floors for nitrocellulose storehouses shall be tight; where wood is used, floors shall be blind nailed with non-ferrous nails. Other types of flooring shall have non-sparking surfaces.
- 9.2025 When required, explosion type, venting windows shall be provided with a ratio of one square foot of venting area to fifteen cubic feet of storehouse volume.
- 9.203 Automatic Sprinklers
- 9.2031 Automatic sprinkler protection for storehouses shall be provided on order of the commissioner and where ordered shall be of the open head deluge type, or the quick-acting closed type with head spacing on seven foot centers, both ways, and with an adequate water supply.
- 9.204 Egresses
- 9.2041 All storehouses shall be provided with at least two means of egress, located at opposite ends of the building.
- 9.2042 Locks on storehouse doors shall be of the panic bar or other approved type that will permit opening from the inside without the use of a key.

- 4 -

- 9.2043 Storehouses shall be kept closed and locked except where necessarily opened for the purpose of storing or removing nitrocellulose, or for inspections by persons lawfully entitled to enter same.
- 9.205 Heating
- 9.2051 Where storehouses or rooms are heated, the heating systems shall be operated only with hot water, or low pressure steam.
- 9.2052 Radiators shall be provided with sturdy guards to prevent containers of nitrocellulose from coming into contact with them.
- 9.2053 Heat supplied by unit heaters shall be deflected in a manner that will prevent the blowing of hot air directly on containers.
- 9.2054 Supply or return pipes within six feet of the floor shall be protected by substantial wire guards unless completely enclosed in asbestos, or other approved insulating material. No steam pipes should be installed under floors unless completely protected.
- 9.206 Electrical Equipment
- 9.2061 All electrical equipment in storehouses shall be explosive proof approved for Class I, Group D locations as provided in the National Electrical Code.
- 9.2062 Portable (extension cord) electric lighting is prohibited. Where necessary, electric hand lanterns, or flash-lights, approved for Class I, Group D locations as described in the National Electrical Code, may be used.
- 9.207 Other requirements
- 9.2071 All storehouses shall be in charge of a competent person who shall be at least twenty-one years of age, a citizen of the United States and is thoroughly familiar with the nature of nitrocellulose and these regulations. Only authorized persons shall have access to a storehouse.
- 9.2072 Nitrocellulose barrels, or containers shall not be opened in any storehouse.

NOTE: Sampling or weighing-out operations shall not be done in a main storage building, room or area, but at a separate location where the hazard of the open container can be controlled and where, should fire occur, it cannot spread to the main storage. After the sample has been removed the cover must be immediately replaced and secured in position.

- 9.2073 A maximum of two tiers will be permitted for the storage of nitrocellulose in barrels in any storehouse provided the heads of the barrels of the first tier are suitably protected.
- 9.2074 Where tiering is necessary in storehouses, they shall never be dropped, but shall either be rolled or lifted.

- 9.2075 No fire or open flame shall be permitted within twenty-five feet of a storehouse at any time.
- 9.2076 Smoking shall be prohibited in any building in which nitrocellulose is used.
- 9.2077 The quantity of nitrocellulose removed from the storehouses for use in operating buildings shall be limited to the minimum number of containers required for the normal charging of the mixers. When not in use all containers of nitrocellulose shall be closed in essentially the same manner as prior to opening and shall be returned to the storehouse.

9.3000 SMALL QUANTITY STORAGE

9.301 Operating Building

- 9.3011 Small quantities of nitrocellulose not to exceed an aggregate total of ten pounds, may be used in an operating building provided that the nitrocellulose is kept in approved metallic containers and stored in approved metallic cabinets provided with doors, when not in use.

9.302 Limited Storage in Building

- 9.3021 Not more than fifty pounds of nitrocellulose in small size, closed metallic containers may be kept in a storeroom provided such storeroom:

9.30211 Is used for no other purpose.

9.30212 Is remote from all means of egress, and portions of building where persons are employed.

9.30213 Is of fireproof construction of a type to afford a protection of at least two hours.

9.30214 Is provided with automatic sprinkler protection.

9.30215 Is provided with approved venting to outer air in the form of ducts and room venting to outer air in proportion of one square foot of venting area to twenty-four cubic feet of room volume.

9.4000 RECEIVING SHIPMENTS

When nitrocellulose is received-

- 9.401 By Railroad: The doors on both sides of the freight car must be opened at least two hours and preferably longer before attempting to unload the car. If there is any evidence of broken or ruptured containers or loose nitrocellulose, the barrels, drums, or containers must be thoroughly dampened with water as well as the interior of the car before attempting to remove any of the material, except during freezing weather when procedure outlined in Section 9.402 should be followed.

NOTE: Only sufficient water should be applied to dampen the exterior of the drums, interior of car, and any material which may be on the drums, containers or floors. It should be used sparingly to avoid creating a slipping hazard.

- 9.402 By Boat or Barge: The cargo space in which the nitrocellulose is stored should be thoroughly dampened with water. (See Section 9.401). If this is not possible, the space should be very carefully inspected before moving any other cargo, to make sure that none of the shipping containers have been injured sufficiently to allow the solvent or water in the container to evaporate, or the contents to spill, or run onto the floor or deck. In event nitrocellulose is found to have spilled from the container or a container to have been sufficiently damaged to allow the contents to become dry, the spilled contents in the container, if possible, should be thoroughly wet down before removing same.
- 9.403 By Automobile Truck: The requirements established above for car or boat shipments to be carefully followed in case of a truck shipment with the further requirement that care be taken to see that the sides and floor of the truck are free from holes, or other openings which might allow any of the nitrocellulose to fall onto the exhaust pipe, engine, muffler or brake bands, etc. No containers shall be moved while engine is running.
- 9.5000 GENERAL HANDLING
- 9.500 Drums, barrels or other containers used for transporting nitrocellulose must be carefully handled. They shall not be dropped or dragged over other containers, or on the floor while containing any of this material, but shall be removed and carried by suitable trucks, or other equipment, or rolled from place to place.
- 9.501 Employees whose clothing may contain, or be covered with nitrocellulose, or dust of similar materials, must not answer fire alarms, assist in fighting fire, or leave the plant until they have changed their clothing or thoroughly removed all such material from same.
- 9.502 The carrying of matches, use of torches, and other flame devices is prohibited except in cases of repair, alteration, etc., and then only when adequate precaution has been taken.
- 9.503 When necessary to use skids, the drums shall be rolled down the barrel skids by using a rope parbuckle, or other suitable means in order to prevent development of frictional heat which might ignite contents. They shall not be allowed to slide down skids. A soft mat, preferably of rope, shall be used at the bottom of the skids.

- 7 -

- 9.504 No barrels shall be allowed to strike each other during the unloading process.
- 9.505 All tools used in handling nitrocellulose shall be of brass, or other approved non-sparking, non-ferrous material.
- 9.506 All shipping, storage or handling containers when emptied must be thoroughly cleaned of all nitrocellulose, this to include the interior, the heads or covers, chimes, clamping rings, or other fastening or closing devices, gaskets, etc., and exterior must also be entirely free from all deposits, coatings, or flyings of nitrocellulose.
- 9.507 When closing drums, barrels or other containers for the transportation of nitrocellulose, or replacing barrel lids, clamping or closure rings, gaskets, etc., care must be taken to see that all particles of nitrocellulose which may become dry and ignite by impact, or friction are removed.
- 9.508 The gaskets of all shipping containers used for this material must be in good condition and make an air-tight joint when the covers are secured in place.
- 9.509 All metal parts of equipment handling nitrocellulose wet with solvent must be securely bonded together and positively grounded to prevent static accumulations during manufacturing processes.
- 9.510 When metal drums are used for transporting nitrocellulose, they shall be constructed according to I. C. C. specifications.