



N. J. A. C. 12:132

(SAFETY REGULATION No. 57)



WET NITROCELLULOSE



Effective December 1, 1969

STATE OF NEW JERSEY
DEPARTMENT OF LABOR & INDUSTRY
BUREAU OF ENGINEERING & SAFETY
Trenton, N.J.

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FOREWORD

This Regulation is promulgated to establish reasonable standards for the storage, handling or use of alcohol, solvent or water wet nitrocellulose.

Rules and regulations on nitrocellulose were promulgated on January 9, 1948 and continued in effect to June, 1960 when they were made invalid by the repeal of the old Explosive Law.

This Regulation is promulgated by the Commissioner of Labor and Industry of the State of New Jersey under authority vested in him by Section 9 of the Worker Health and Safety Act, P.L. 1965, c. 154, N.J.S.A. 34:6A as follows:

The commissioner shall make and promulgate rules and regulations reasonably necessary to implement the purposes of this act. Such rules and regulations shall have the force and effect of law and shall be enforced in the manner provided in this act. . . .

The same statute provides authority for the commissioner to grant exceptions from the requirements of rules and regulations in accordance with Section 23 as follows:

The commissioner shall have the power and authority to grant exceptions from the literal requirements of rules and regulations promulgated under this act. Such exception shall be granted in any particular case only where it is clearly evident that it is necessary to prevent undue hardship or where existing conditions prevent compliance. In no case shall any exception be granted unless in the opinion of the commissioner reasonable protection of the health and safety of workers and the public will be maintained hereby. An application for an exception shall be filed in writing with the commissioner, setting forth specifically the requirements of the rules and regulations from which an exception is desired and the reason why enforcement of the applicable provisions of the rules and regulations is unreasonable. The commissioner shall grant or deny the exception within 30 days from the date of receipt by him of the application. The commissioner shall maintain a record of all exceptions granted and shall make such record reasonably available for public examination and shall mail a copy of all rulings granting exceptions to the members of the board.

Prior to promulgation, this Regulation was submitted to the New Jersey State Industrial Safety Committee, Public Hearing and the New Jersey Industrial Safety Board in accordance with requirements of the Act cited above.

SECTION 1

GENERAL PROVISIONS

1.1 PURPOSE

- 1.1.1 The purpose of this Regulation is to establish minimum standards for the safe storage, handling and use of wet nitrocellulose in the interest of life, health and safety of employees and the protection of property.

1.2 SCOPE

- 1.2.1 This Regulation shall apply to the storage, handling or use of wet nitrocellulose in any place of employment subject to the Worker Health and Safety Act, P.L. 1965, c. 154, N.J.S.A. 34:6A.
- 1.2.2 This Regulation shall not apply to the storage, use, or transportation of dry nitrocellulose except as provided in 3.1.4. Dry nitrocellulose shall be stored, used and transported in accordance with Safety Regulations:
 - No. 20, Explosive Permits and Fees.
 - No. 21, Transportation of Explosives.
 - No. 22, Storage of Explosives.
 - No. 23, Use of Explosives.

1.3 VALIDITY

- 1.3.1 Nothing in this Regulation shall be construed to prevent the enforcement of other rules, regulations and codes of the Bureau which prescribes more restrictive requirements.
- 1.3.2 Should any section, paragraph, sentence or word of this Regulation be declared for any reason to be invalid such decision shall not affect the remaining portions of this Regulation.

1.4 EXISTING INSTALLATIONS

- 1.4.1 Nitrocellulose installations within the scope of these Regulations which were installed on or before the effective date of these Reg-

ulations may be continued in service unless the continued operation of such equipment, systems and installations constitute a distinct hazard to life and property.

1.4.2 Maintenance of existing equipment shall be in accordance with these Regulations.

1.5 PLAN FILING

1.5.1 Plan filings for wet nitrocellulose projects shall be in accordance with Safety Regulation No. 30, Plan Filing.

SECTION 2

DEFINITIONS

APPROVED

Acceptable to the Commissioner. Devices having been tested and accepted for a specific purpose by a nationally recognized testing agency may be deemed to be acceptable.

BUILDING

A structure enclosed within exterior walls or fire walls, built, erected and framed of component structural parts, designed for the housing, shelter, enclosure and support of individuals, animals or property of any kind.

BUREAU

The Bureau of Engineering and Safety,
Division of Labor,
Department of Labor and Industry,
State of New Jersey.

COMMISSIONER

Commissioner of the Department of Labor and Industry or his authorized representative.

DEPARTMENT

Department of Labor and Industry.

EMPLOYEE

Any person engaged in service to an employer for wages, salary or other compensation.

EMPLOYER

Any person or corporation, partnership, individual proprietorship, joint venture, firm, company or legal entity who engages the services of an employee and who pays his wages, salary, or other compensation; and any person exercising supervision of employees on an employer's behalf.

EXTINGUISHER RATING (1A, 2A, 3A or 4A)

The classification and rating system used to designate a particular size of portable fire extinguisher for a Class A fire in accordance with Portable Fire Extinguishers, NFPA No. 10-1968.

IMPORTANT BUILDING A building normally occupied by employees during working hours.

INDUSTRIAL TRUCK DESIGNATED AS DS, DY, EE, ES, EX, GS AND LPS Industrial trucks listed by a nationally recognized testing agency or otherwise approved, and identified by a letter symbol.

LABELED Equipment or materials to which has been attached a label of a nationally recognized testing agency that maintains periodic inspection of production of labeled equipment or materials and by whose labeling is indicated compliance with national recognized standards on the conduct of tests to determine suitable usage in a specified manner.

LISTED Equipment or materials included in a list published by a nationally recognized testing agency that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or materials meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

NATIONALLY RECOGNIZED TESTING AGENCY A laboratory such as the Underwriter's Laboratories, Inc., U. S. Bureau of Mines, Factory Mutual Laboratories or the American Gas Association Laboratories.

NFPA National Fire Protection Assoc.,
60 Batterymarch Street,
Boston, Mass. 02110.

NITROCELLULOSE A nitrated cellulose, either wood pulp or cotton linters.

DRY NITROCELLULOSE Nitrocellulose not complying with the definition of WET NITROCELLULOSE.

**WET
NITROCELLULOSE**

Nitrocellulose containing at least 25 percent by weight of alcohol or a solvent with flash point not lower than 30°F.

Collodion cotton containing at least 30 percent by weight of alcohol or a solvent with flash point not lower than 30°F.

Nitrocellulose flakes, colloided nitrocellulose granular or flake, containing at least 20 percent by weight of alcohol or a solvent with a flash point not lower than 30°F.

Nitrocellulose blocks containing at least 25 percent by weight of alcohol.

Nitrocellulose or collodion cotton, wet or nitrocellulose colloided granular or flake, wet, containing at least 20 pounds of water to 80 pounds of dry nitrocellulose.

**PLACE OF
EMPLOYMENT**

Any building or other premises occupied by an employer in or about which an employee is suffered or permitted to work.

PLAN FILING

Delivery in person or by mail of application, project data form, and fee; and when required drawings and other related data to the offices of the Bureau of Engineering and Safety for approval and deposit in its records.

PROPERTY LINE

The line of adjoining property or the nearest side of any public way.

QUALIFIED PERSON

A person selected and directed by an employer to perform a specific task or duty involving nitrocellulose, who has the degree of competence necessary to accomplish the work in a safe manner.

SHALL

Indicates a mandatory requirement.

USDOT

United States Department of Transportation
(the Interstate Commerce Commission)
Washington, D. C. 20590.

SECTION 3

STORAGE OF WET NITROCELLULOSE

3.1 BASIC RULES

- 3.1.1 Wet nitrocellulose shall be stored in storehouses in accordance with 3.2 or 3.3 or in operating buildings in accordance with 4.1.
- 3.1.2 Wet nitrocellulose stored in accordance with 3.2 or 3.3 shall comply with 3.4 through 3.11.
- 3.1.3 Wet nitrocellulose shall be stored in USDOT containers or other approved metallic containers with tight fitting lids, except that sample quantities not exceeding 2 pounds may be stored in glass or plastic containers.
- 3.1.4 Dry nitrocellulose shall not be stored, handled or used under this Regulation except in small quantities for analytical purposes.

3.2 STORAGE BY THE USER

- 3.2.1 Wet nitrocellulose stored by the user of wet nitrocellulose shall comply with 3.2.2 through 3.2.8.
- 3.2.2 Wet nitrocellulose shall be located in accordance with Table 3.2.2.

TABLE 3.2.2

WET NITROCELLULOSE (DRY WEIGHT)		DISTANCE TO PROPERTY LINE, NEAREST IMPORTANT BUILDING OR COMBUSTIBLE MATERIAL
Pounds Over	Pounds Not Over	Feet
100	500	25
500	1,000	50
1,000	5,000	75
5,000	10,000	100
10,000	25,000	125
25,000	50,000	150

- 3.2.3 Wet nitrocellulose exceeding 50,000 pounds shall not be stored at locations which seriously expose adjacent places of employment or densely built up areas.
- 3.2.4 Wet nitrocellulose shall be in storehouses constructed of material having a fire resistance rating of not less than 2 hours.
- 3.2.5 All openings in walls shall be protected by fire doors or shutters of fire resistance equivalent to 3.2.4.
- 3.2.6 Sections of buildings cut off by walls of fireproof construction with approved fire doors on all openings may be used for storage.
- 3.2.7 Automatic sprinkler protection shall be provided for storehouses. The sprinkler protection shall be designed for extra hazardous occupancies in accordance with the Standard for the Installation of Sprinkler Systems, NFPA No. 13 - 1968.
- 3.2.8 Automatic venting shall be provided for the relief of hot gases and fumes (which may result from fire) in a ratio of one square foot of venting area to 50 cubic feet of storehouse volume.

3.3 STORAGE BY THE MANUFACTURER

- 3.3.1 Wet nitrocellulose stored by the manufacturer of wet nitrocellulose shall comply with 3.3.2 through 3.3.8.
- 3.3.2 Wet nitrocellulose shall be located in accordance with Table 3.3.2.

TABLE 3.3.2

WET NITROCELLULOSE (DRY WEIGHT)		DISTANCE OF PROPERTY LINE, NEAREST IMPORTANT BUILDING OR COMBUSTIBLE MATERIAL
Pounds Over	Pounds Not Over	Feet
100	500	25
500	1,000	50
1,000	5,000	75
5,000	10,000	100
10,000	25,000	125
25,000	50,000	150
Over 50,000		As approved by the Bureau

- 3.3.3 Not over 500,000 pounds of wet nitrocellulose shall be stored in any one section of a storehouse without separation of such sections by a blank wall having a fire resistance rating of not less than 3 hours.
- 3.3.4 Automatic sprinkler protection shall be provided for storehouses. The sprinkler protection shall be designed for extra hazardous occupancies in accordance with the Standard for the Installation of Sprinkler Systems, NFPA, No. 13 - 1968.
- 3.3.5 Wet nitrocellulose storehouses shall be constructed of at least noncombustible material.
- 3.3.6 No other material shall be stored with wet nitrocellulose in storehouses or sections of buildings.
- 3.3.7 Storehouses shall rest on suitable foundations on firm soil.
- 3.3.8 Automatic venting shall be provided for the relief of hot gases and fumes (which result from fire) in a ratio of one square foot of venting area to 50 cubic feet of storehouse volume.

3.4 SUPERVISION

- 3.4.1 All storehouses shall be in charge of a qualified person thoroughly familiar with the nature of wet nitrocellulose and this Regulation.
- 3.4.2 Only authorized persons shall have access to a storehouse.
- 3.4.3 Wet nitrocellulose containers shall not be opened in any storehouse.
- 3.4.4 Nitrocellulose storage shall be in closed and locked storehouses, be enclosed by a manproof fence, or be within a fenced plant area.

3.5 MANNER OF STORAGE

- 3.5.1 A maximum of three tiers shall be permitted for the storage of wet nitrocellulose containers provided the heads of the containers of the first and second tiers are provided with pallets or the containers are designed for nesting.
- 3.5.2 Where tiering is necessary, containers shall not be dropped, but shall be rolled, lifted or lowered onto a suitable mat.
- 3.5.3 The quantity of wet 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.

- 3.5.4 When not in use or when operations are shut down, all containers of wet nitrocellulose shall be closed in essentially the same manner as prior to opening and shall be returned to the storehouse.

3.6 PORTABLE FIRE EXTINGUISHERS

- 3.6.1 Portable fire extinguishers shall be provided for fighting incipient fires other than nitrocellulose fires in accordance with Table 3.6.1.

TABLE 3.6.1

MINIMUM EXTINGUISHER RATING	TRAVEL DISTANCE TO EXTINGUISHER Feet	AREA TO BE PROTECTED PER EXTINGUISHER Square Feet
3A	75	3,000
4A	75	4,000
6A	75	6,000

- 3.6.2 Where the floor area is less than that specified in Table 3.6.1, at least one extinguisher of the minimum size recommended shall be provided.
- 3.6.3 The protection requirements may be fulfilled with extinguishers of higher rating provided the travel distance to such larger extinguishers shall not exceed 75 feet.

3.7 EGRESSES

- 3.7.1 All storehouses over 150 square feet in area shall be provided with at least two means of egress, remotely located from each other.
- 3.7.2 Locks on storehouse doors when provided shall be of the panic bar or other approved type that will permit opening from the inside without the use of a key.

3.8 HEATING

- 3.8.1 Where storehouses are heated, heating shall be by hot water or steam not exceeding 5 psig.
- 3.8.2 Radiators shall be provided with sturdy guards or so located that containers of wet nitrocellulose cannot come in contact with them.

- 3.8.3 Heat supplied by unit heaters or other blower type heaters shall be deflected in a manner that will prevent the blowing of hot air directly on containers.
- 3.8.4 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.
- 3.8.5 No steam pipes shall be installed under floors.

3.9 ELECTRICAL EQUIPMENT

- 3.9.1 All electrical equipment in storehouses shall be approved for Class I, Division 2 locations as provided in the National Electrical Code, NFPA No. 70 - 1968.
- 3.9.2 Portable (extension cord) electric lighting, electric hand lanterns or flash-lights, approved for Class I, Division 2 locations shall be used.

3.10 IGNITION SOURCES

- 3.10.1 No fire or open flame shall be permitted within 50 feet of a storehouse at any time except as permitted by 5.5 for repairs involving hot work.
- 3.10.2 Smoking shall be prohibited in any building in which wet nitro-cellulose is used or stored.
- 3.10.3 Only power operated industrial trucks designated as DS, DY, EE, ES, EX, GS and LPS may be used in wet nitrocellulose storehouses.

3.11 VENTILATION

- 3.11.1 Storehouses shall be well ventilated with openings at floor and roof or ceiling level designed to provide natural or mechanical ventilation of at least 6 air changes per hour.

SECTION 4

STORAGE AND HANDLING IN OTHER THAN STOREHOUSES

4.1 STORAGE IN OPERATING BUILDINGS OF THE USER

- 4.1.1 Wet nitrocellulose stored in operating buildings of the user shall not exceed an aggregate capacity of 50 pounds.
- 4.1.2 Wet nitrocellulose shall be stored in metallic containers, which shall be kept in an approved metallic cabinet.

4.2 WEIGHING AND MIXING ROOMS

- 4.2.1 Weighing and mixing rooms based upon the quantity of nitrocellulose in the room shall be separated from storehouses by distances as provided in Table 3.2.2.
- 4.2.2 Weighing operations shall not be performed in the storehouse or storage section, but 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 part of the contents of a container has been removed, the cover shall be immediately replaced and secured in position.

4.3 RECEIVING SHIPMENTS BY RAILROAD

- 4.3.1 If there is any evidence of broken or ruptured containers or loose nitrocellulose, the barrels, drums, or containers shall be thoroughly dampened with water as well as the interior of the railroad car before attempting to remove any of the material.
- 4.3.2 Water shall be used sparingly to avoid washing nitrocellulose into a hidden location.

4.4 RECEIVING SHIPMENTS BY BOAT OR BARGE

- 4.4.1 The space shall be very carefully inspected before moving any other cargo, to make sure that none of the shipping containers have been damaged sufficiently to allow the solvent or water in

the container to evaporate, or the contents to spill, or run onto the floor or deck.

- 4.2.2 In the 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, shall be thoroughly wet down before removing same.

4.5 RECEIVING SHIPMENTS BY TRUCK

- 4.5.1 With truck shipment, care shall be taken to see that the sides and floors of the truck are free from holes, or other openings which might allow any of the nitrocellulose, in case of a spill, to fall onto the exhaust pipe, engine, muffler or brake bands.
- 4.5.2 No container shall be moved while the engine is running.

SECTION 5

SAFETY PRECAUTIONS

5.1 MOVING CONTAINERS

5.1.1 Drums, barrels or other containers used for transporting wet nitrocellulose shall be carefully handled.

5.1.2 Containers of wet nitrocellulose shall not be dropped, dragged over other containers, or dragged on the floor, but shall be removed and carried by suitable trucks or other equipment, or rolled from place to place, or lowered onto a suitable mat.

5.1.3 When necessary to use skids, the drums shall be rolled down the barrel skid or other suitable means in order to prevent development of frictional heat. They shall not be allowed to slide down skids. A soft mat, preferably of rope, shall be used at the bottom of the skids.

5.2 CONTAMINATED CLOTHING

5.2.1 Employees whose clothing may contain, or be covered with wet nitrocellulose shall 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 their clothing.

5.3 CLEAN CONTAINERS

5.3.1 All shipping, storage, or handling containers when emptied shall be thoroughly cleaned of all wet nitrocellulose. This shall include the interior, the heads or covers, chimes, clamping rings, fastening or closing devices and gaskets. The exterior of containers shall be entirely free from all deposits, coatings, or flyings of wet nitrocellulose.

5.3.2 When closing drums, barrels or other containers for the transportation of wet nitrocellulose, or replacing barrel lids, clamping wet nitrocellulose which may become dry and ignite by impact or closure rings, care shall be taken to see that all particles of or friction are removed.

- 5.3.3 The gaskets of all shipping containers used for this material shall be in good condition and make an air-tight joint when the covers are secured in place.

5.4 GROUNDING

- 5.4.1 Process equipment handling wet nitrocellulose shall be securely bonded together and grounded to prevent static accumulations.

5.5 IGNITION SOURCES

- 5.5.1 The carrying of matches, use of torches, and other flame devices shall be prohibited near wet nitrocellulose storage except in cases of repair or alteration and then only when adequate precaution has been taken.
- 5.5.2 All nitrocellulose containers shall be removed from the area before repair or alterations involving hot work are begun.

5.6 SPILLS

- 5.6.1 Spills of wet nitrocellulose shall be promptly wetted with water and such material shall be disposed of promptly by use or by burning in the open at suitable detached location.

LAW REPRINTS

Construction Safety Act—P. L. 1962, c. 45
Explosives Act—P. L. 1960, c. 55
Fireworks Regulation Law—P. L. 1930, c. 42 and P. L. 1937, c. 51
High Voltage Proximity Act—P. L. 1948, c. 249 and P. L. 1966, c. 261
Liquefied Petroleum Gas Act—P. L. 1958, c. 43
Mine Safety Act—P. L. 1954, c. 197
Railroad and Airline Sanitation—P. L. 1966, c. 112
Railroad Diesel Locomotive Ventilation—P. L. 1966, c. 119
Transportation of Dangerous Articles—P. L. 1950, c. 128
Worker Health and Safety Act—P. L. 1965, c. 54

INDUSTRIAL SAFETY GUIDES

No.	Title
1—	Lift Safely
3—	Protection for the Eyes and Head
4—	Safety Awards Program
5—	First Aid Fire Protection Equipment
6—	Simple Mechanics for the Safety Man
7—	Accident Prevention
8—	Chemistry for the Safety Man
9—	Portable Electric Power Tools
10—	Safety Committee
11—	Accident Investigation
12—	Static Electricity

OTHER PUBLICATIONS

Annual Analysis of Work Injuries in New Jersey

AVAILABILITY OF PUBLICATIONS

All publications are distributed free except as follows:

1. There is a charge of 50¢ per copy for Chapter 180, Construction Safety Code.
2. There is a charge of 10¢ for each copy of any one publication in excess of ten.
3. There is a charge of \$5.00 per copy for Chapter 115, The Standard Building Code of New Jersey which is available from the N. J. Department of Community Affairs, P. O. Box No. 2768, Trenton, New Jersey.

Checks for Labor and Industry publications should be made payable to the Commissioner of Labor and Industry.

All requests except for Chapter 115 should be addressed to:

Department of Labor and Industry
Bureau of Engineering and Safety
Post Office Box V
Trenton, New Jersey 08625

