

FIRE DEPARTMENT • CITY OF NEW YORK



STUDY MATERIAL FOR THE EXAMINATION FOR

CERTIFICATE OF FITNESS

FOR

Supervision of Aerosol

A-49

ALSO INCLUDED IN THIS BOOKLET YOU WILL FIND THE FOLLOWING:
NOTICE OF EXAMINATION (NOE)

Aerosol Study Material
NOTICE OF EXAMINATION

Title: Examination for Certificate of Fitness for Supervision of Aerosol

Date of Test: Written tests are conducted Monday through Friday (except legal holidays) 8:00 AM to 2:30 PM.

QUALIFICATION REQUIREMENTS

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicants must present a letter of recommendation from his/her employer. The letter must be on official letterhead and must state the applicant's full name, character, physical condition, experience, and address of premises where applicant will be employed.
4. Applicant must provide two forms of government issued photo identification, such as a State-issued Drivers' License or Non-Drivers License or a passport.

APPLICATION INFORMATION

Application Fees: \$25.00 for originals and \$15.00 for renewals. The fee may be paid by credit card (no debit), in cash, money order, or personal check payable to New York City Fire Department. The \$25.00 fee must be payable by all applicants prior to taking the Certificate of Fitness test. Application forms are available at the Public Certification Unit, 1st floor, 9 Metro Tech Center, Brooklyn, NY 11201.

TEST INFORMATION

Test: The test will be of the written, multiple choice type. A passing score of at least 70% is required in order to secure a Certificate of Fitness. Call 718-999-1988, or 2504 for additional information and forms or email pubcert@fdny.nyc.gov.

Website: WWW.NYC.GOV/FDNY

Aerosol Study Material
About The Study Material

These study materials will help you prepare for the written examination for the certificate of fitness for supervision of Aerosol. The study materials include information taken from the New York City Fire Code (FC) and Fire Department rules. The study material does not contain all the information you need to know in order to perform the responsibilities of supervising the storage and display of aerosols. It is your responsibility to become familiar with all applicable laws, rules and regulations of the federal, state and city agencies having jurisdiction, even though such requirements are not included in this study material. You need to be familiar with Rules and the Fire Code § 2800 for storage, handling, and use of aerosol products, RCNY 2801-01 for the certificate of fitness, and NFPA 7.1, 7.2, 7.3, and 8 in order to adequately prepare for the exam. **It is critical that you read and understand this booklet to help increase your chance of passing this exam.**

About the Test

You must pass a multiple choice test to qualify for the certificate of fitness. A score of 70% correct is required in order to pass the test. All questions have four answer options. Only **one** answer is correct for each question. If you do not answer a question, or if you mark more than one answer to a single question, your answer to that question will be scored as incorrect. Read each question carefully before marking your answer. There is no penalty for guessing. This test is also available in the Z category, as **Z-49**, which does not require a letter of recommendation from an employer. This category is mainly for job-seeking purpose, and a passing grade will result in a letter issued by the FDNY stating that the test taker has passed the exam.

Sample Questions

1. Who was the first president of the United States?

- (A) George Washington.
- (B) Winston Churchill.
- (C) Abraham Lincoln.
- (D) Barack Obama.

The correct answer is "**A**". You would mark "**A**" on your touch-screen terminal.

2. What sports team plays at Madison Square Garden?

- (A) Yankees.
- (B) Mets.
- (C) Cardinals.
- (D) Knicks.

The correct answer is "**D**". You would mark "**D**" on your touch-screen terminal.

I. Introduction

Aerosol Study Material

This document outlines New York City Fire Department regulations for storing and retail displaying of aerosol products. Aerosols make use of propellants which allow for the dispensing of a variety of products. They contain propellants and chemicals which can be flammable and hazardous, especially under certain temperature and pressure conditions.

A Certificate of Fitness is needed for any establishment with an amount of more than **100 pounds** of combined aerosol products. This translates to:



AEROSOLS

Permit and C of F Calculations	
One Can Net Weight	Number of Cans
6 oz	267
7 oz	229
8 oz	200
10 oz	160
12 oz	134
14 oz	115
16 oz	100
20 oz	80
24 oz	67
Example of combination:	
10 oz and 16 oz	80 and 50, respectively

II. Definitions

AEROSOLS: Product dispensed by way of propellants, classified as follows:

- **Level 1:** Products with chemical heat of combustion **between 0 and 8,600** Btu/lb.

Examples of Level 1 products are water-based:



Shaving Gel



Whipped Cream



Some Air Fresheners

- **Level 2:** Products of chemical heat of combustion **between 8,601 and 13,000** Btu/lb.

Examples of Level 2 products are alcohol formulated based: hair sprays and insect repellents.



Hair Sprays



Insect Repellents

Aerosol Study Material

- **Level 3:** Products with chemical heat of combustion **greater than 13,000 Btu/lb.**

Examples of Level 3 products are hydrocarbon formulated based:



Carburetor Cleaner



Petroleum-based Aerosols

Note: It is unlawful to manufacture ANY Level aerosol product in New York City.

Aerosol products in cartons must be sorted and labeled. On at least one side of the carton the following words shall appear:

LEVEL __ AEROSOLS

CERTIFICATE OF FITNESS (C of F): A written statement issued by the NYC Fire Department certifying that the person to whom it is issued has passed an examination as to his or her qualifications or is otherwise deemed qualified to use or supervise the storage, handling and use of a material, conduct or supervise an operation, or supervise a facility for which such certificate is required by this code or the rules. It is valid for 3 years. It is required to produce the C of F when asked by an FDNY representative or Site Safety Manager or the Site Safety Coordinator.

AEROSOL CONTAINER: A metal can, or a glass or plastic bottle designed to dispense an aerosol.

AEROSOL WAREHOUSE: A building or occupancy used solely for the non-retail storage of aerosol products.

PROPELLANT: A gas which is liquefied or compressed in an aerosol container and works to expel the product in the container when the valve is actuated. A propellant is considered flammable if it mixes with air to form a flammable mixture or if a flame is created when mixed with air.

RETAIL DISPLAY AREA: An open area used for the purpose of viewing and purchasing merchandise. Individuals are generally free to roam around this area, which has items for sale on racks, shelves, or the floor.

III. Storage

A. Indoor Storage

All aerosol products shall be stored in a safe manner which abides by the New York City Fire Code. They can either be stored in storage cabinets or storage rooms, or in a separate storage warehouses. These aerosol products can also either be separated or combined with other storage items. The following guidelines apply for Level 2 and Level 3 aerosols. They refer to storage in either warehouses or separate storage rooms.

Note: Level 1 aerosols DO NOT have restrictions as to the amount or place of storage or the retail display of products.

Combined Storage:

Storing Level 2 and 3 aerosols in a manner which does not separate them from other storage items, the following guidelines shall be followed: (See Chart)

Protected storage means the area in which the aerosol is kept is properly covered by a wet-pipe sprinkler system. This system shall be extended at least 20 feet beyond the aerosol storage area.

Solid-pile storage refers to the physical stacking of aerosol products without racks or separations between the products.

Aerosol Levels	Maximum net weight per floor (pounds)		
	Solid-pile storage	Rack Storage	
	Unprotected	Protected*	Unprotected
2	2,500	12,000	2,500
3	1,000	12,000	1,000
2 and 3	2,500	12,000	2,500

* Sprinkler system protection shall comply with the requirements of NFPA 30B.

Separated Storage:

Fences



Proper use of fence enclosures.



Combustible products shall not be adjacent to fence enclosure.

Chain-link fences shall be used to enclose storage areas used for aerosol products ONLY. To ensure the proper strength and type of chain-link fence, these requirements shall be followed:

1. Minimum No. 9 gage steel wire fence woven into a maximum **two (2) inch** diamond mesh.
2. Fence shall run from the floor to the ceiling of the enclosed area.

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- Other combustible products shall be stored outside the area, at least **eight (8) feet** from the fence.
Exception: Combustible liquids may be stored in 1-quart metal containers or smaller.
- There must be at least two (2) exits from the fenced area.
- Access openings must have a self-closing device so that aerosol products cannot rocket through openings at any given moment.



Correct implementation of fence enclosure



Improper stacking of combustible cartons above aerosol storage area

Fence Separated Storage Aisles in Warehouses		
Storage Type	Minimum Aisle Distance	Maximum Distance Storage to Aisle
Solid-pile	4 feet between rows	25 feet
Racks with sprinkler system	4 feet between racks and other Level 2 and 3 aerosols	25 feet
Racks without sprinkler system	8 feet between racks and other Level 2 and 3 aerosols	25 feet

It is also highly recommended for approved fire extinguishers to be in close proximity to the enclosed aerosol fenced area, and within the storage facility. These are the minimum aisle distance requirements for warehouse separated storage.

B. General Purpose Warehouse Storage

Storage Separation	Maximum Separated Storage Area
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Aerosol products stored in a general purpose warehouses have size restrictions. They are limited to either a percentage of the building's area, or an actual area: (See chart)

Additionally, the warehouse must be protected by a *wet-pipe sprinkler system*.

Solid-pile, stacked storage is acceptable in the warehouse, but the maximum distance to the aisle shall be 25 feet, and the minimum width of the aisle four (4) feet.

If stored in racks, the aisles shall be at least eight (8) feet wide, and at least eight (8) feet between racks and solid-pile storage. Combustible products of another sort may be stored in these same warehouses.

	Percentage of Building area	Area Limitations (square feet)
Separation Area (distance of 25 ft. around aerosol storage area)	15%	20,000
Fence enclosure	20%	20,000
1-hour fire-resistance rated walls	20%	30,000
2-hour fire-resistance rated walls	25%	40,000
3-hour fire-resistance rated walls	30%	50,000

C. Flammable Liquid Storage

Indoor Storage Rooms

Aerosol products may be stored in indoor storage rooms which also contain flammable liquid products.

These are the *maximum amounts* of aerosol allowed for rooms of **500 square feet or less:**

1. Net weight of **1,000 pounds** of Level 2 aerosols.
2. Net weight of **500 pounds** of Level 3 aerosols.
3. Net weight of **1,000 pounds** of combined Level 2 and 3 aerosols.

For rooms **greater than 500 square feet:**

1. Net weight of **2,500 pounds** of Level 2 aerosols.
2. Net weight of **1,000 pounds** of Level 3 aerosols.
3. Net weight of **2,500 pounds** of combined Level 2 and 3 aerosols. If a sprinkler system is in place, the maximum net weight of combined Level 2 and 3 aerosols allowed shall be **5,000 pounds**.

Liquid Warehouses

Maximum Net Weight

Stored Level 2 and 3 aerosols in liquid warehouses shall be separated from other products. The distance requirements for this separation shall be followed as stated in the separated fenced storage section.

The following requirements must also be followed:

- Spill control and drainage must be provided near the separated aerosol storage. Liquid flow must not be allowed within eight (8) feet of the aerosol storage area.
- The sprinkler system for the entire area must be designed for the highest level of aerosol in storage.
- Any fire doors or openings into the separated aerosol area shall have self-closing devices. These must be activated by the sprinkler water flow or another fire detection system.

D. Outdoor Storage

Level 2 and 3 aerosols stored outside shall be protected and separated from different types of exposure. Exposure can be defined as a variety of objects, which all have minimum distances from the aerosols which must be followed: (See Chart)

Exposure Objects	Minimum Distance from Aerosols
Public or Private Roads	20 feet
Buildings	50 feet
Exits to a public or private road	50 feet
Lot Lines	20 feet
Other flammable material outdoor storage	50 feet

E. Retail Storage

Storing of Level 2 and 3 aerosols in retail storage areas shall follow these restrictions:

Floor	Combined Storage (pounds)	Separated Storage Cabinets (pounds)
Basement or area bellow ground level	Not allowed	Not allowed
Ground Floor	2,500	5,000

Aerosol Study Material

Upper Floors	500	1,000
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Note: Aerosol storage is NOT permitted unprotected in ANY amounts at a basement/below ground level.

Retail Storage Adjacent to Display area

Level 2 and 3 aerosols may also be stored in storage areas directly next to the retail displays of the products. These shall be restrained to the following:

Maximum Net Weight for Storage next to Retail Display		
Floor	Combined Storage (pounds)	Separated Storage Cabinets (pounds)
Basement or area bellow ground level	Not allowed	Not allowed
Ground Floor	2,500	5,000
Upper Floors	500	1,000

IV. Retail Display

Level 2 and 3 aerosols placed on display for retail purposes must follow certain restrictions.

The amount of aerosol products displayed shall not exceed the quantities given. (See Chart) They shall also not amount to more than is needed for normal displaying and retail needs.

The terms *protected* and *unprotected* refer to areas thoroughly covered or not covered by a wet-pipe sprinkler system.

Floor	Maximum net weight per floor (pounds)	
	Unprotected	Protected
Basement or other area below ground	Not allowed	500
Ground Floor	2,500	10,000
Upper Floors	500	2,000



Examples of proper aerosol Retail Display

- Aerosols must not be stacked more than six (6) feet high from the bottom of the display.
Exception 1: If properly placed on fixed shelving, aerosols shall be placed up to eight (8) feet from the ground.
Exception 2: They may rise higher if properly protected as shown in Maximum net weight per floor Chart (See Chart).

Aerosol Study Material



- Aerosols shall be removed from combustible cartons in which they initially are.
Exception 1: Retail displays which make use of combustible cartons are allowed if only the bottom panel is left with a maximum of two (2) inches of the side panels.
Exception 2: If properly protected with a wet-pipe sprinkler system, cartons may remain on aerosols.



Aerosols in retail display with proper aisle distances on three sides.

- On three sides of an aerosol retail display area, there shall be 4 feet of aisle space.
Exception: An approved amount totaling less than **100 pounds** of aerosol products may be allowed within this restricted aisle space.
- Where required for the retail display of aerosols, a wet-pipe sprinkler system must be in place throughout the whole retail display area. Its design shall follow the Fire Code, the Construction Codes, and the Building Code. The minimum sprinkler system design allowed is that for an Ordinary Hazard Group 2 structure.

V. Fire Protection Systems

Fire Extinguishers:







Fire extinguishers are recommended to be within close travel distance to the aerosols within the establishment.

At least one portable fire extinguisher having a minimum 10-B: C rating shall be provided in the storage area. Portable fire extinguishers shall be located in conspicuous locations, along normal travel paths, within a 30 foot travel distance, where they will be readily accessible and immediately available for use.

Travel Distance is the actual walking distance from any point to the nearest fire extinguisher.

According to the **National Fire Protection Association and New York City Fire Department Rule**, fire extinguishers are categorized according to their compatibility with the fuel they are expected to extinguish. Fuels include four basic groups: wood, liquids, metals, and animal fats; the hazard is electrical conductivity.

Further, extinguishers are designated by alphabetical letters and symbols as shown in the table below.

Classes	Symbol	Material
Class A 		Class A fire extinguishers are designed to fight fires caused by common ordinary combustibles, such as wood, paper, some plastics and textiles. To extinguish a Class A fire, these extinguishers utilize either the heat-absorbing effects of water or the coating effects of certain dry chemicals.
Class B 		Class B fire extinguishers are designed to fight fires originating from flammable or combustible liquids and gases such as oil, gasoline, etc. These fire extinguishers work by starving the fire of oxygen and interrupting the fire chain by inhibiting the release of combustible vapors.
Class C 		Class C fire extinguishers are effective on fires that involve live electrical equipment which require the use of electrically nonconductive extinguishing agents. (Once the electrical equipment is deenergized, extinguishers for Class A or B fires may be used.)

Visual inspection is a "quick check" that a portable fire extinguisher is available and will operate. It is intended to give reasonable assurance that the portable fire extinguisher is fully charged and operable.

This is done by verifying that:

- Fire extinguishers are in their assigned place;
- Fire extinguishers are not blocked or hidden;
- it has not been actuated or tampered with;
- Fire extinguishers show no visual sign of damage or abuse that prevents its operation;
- Pressure gauge reading or indicator in the operable range or position;
- Ensure that the fire extinguishers tags are current;
- Pin and seals are in place;
- Nozzles are free of blockage.

Basically, inspection means a visual examination of the portable fire extinguisher. In addition, fire extinguisher maintenance should be done annually and consists of complete examination of the unit, and involves disassembly and inspection of each part and replacement where necessary. This annual inspection must be performed by a Certificate of fitness holder of full service shop of portable extinguisher (W-96). It involves internal examination and replacement of defective parts.

VI. Emergency Procedures

Notifications:

The person responsible for the supervision of storage and retail display of aerosol products should notify the site safety manager and the FDNY immediately (Call 911) if a fire occurs or if an unsafe condition is created.

The following numbers are the FDNY borough dispatcher:

Manhattan	212-570-4300
Bronx	718-430-0200
Brooklyn	718-965-8300
Queens	718-476-6200
Staten Island	718-494-4296

Inspection:

A person responsible for the supervision of storage and retail display of aerosol products is prohibited to perform any illegal activities and/or create an unsafe condition, such as:

- Store aerosol products near any high-hazard commodities.
- Allow open flames near the aerosol products.
- Fail to label cartons of aerosol with their proper classification level number.

Supervision*

The **handling and use** of aerosols in quantities requiring a permit shall be performed under the **personal supervision** of a person holding a certificate of fitness. Personal supervision means that the Certificate of Fitness holder must be on the premise at the time of handling (e.g. upon aerosols delivery) and use of aerosols. The **storage** of aerosols in quantities requiring a permit shall be under the **general supervision** of a person holding a certificate of fitness. General supervision means that the Certificate of Fitness holder supervises storage and does not have to be on the premise at all times. It does, however, require the COF holder to be responsible for ensuring compliance at their location at all times. Locations may certify numerous individuals to supervise operations at the same location. Individuals may be certified to multiple locations by applying and paying \$25 for each applicant.

Failure to meet all requirements will subject the location and COF holders to fines, and criminal penalties or both.

Where Certificates of Fitness are required, FDNY permits are necessary. Inspections are arranged by contacting the District Office at the Bureau of Fire Prevention. The FDNY permits are only issued to those locations meeting the requirements of the Fire Code and Rules.

*Note:

RULES OF THE FIRE DEPARTMENT OF THE CITY OF NEW YORK

§ 2801-01(c) Aerosols

Supervision. The handling and use of aerosols in quantities requiring a permit shall be performed under the personal supervision of a person holding a certificate of fitness. The storage of aerosols in quantities requiring a permit shall be under the general supervision of a person holding a certificate of fitness.