Revised on 4-20-15

FIRE DEPARTMENT • CITY OF NEW YORK

STUDY MATERIAL FOR THE CITYWIDE CERTIFICATE OF FITNESS EXAMINATION

TO

SUPERVISE TEMPORARY STORAGE AND DISPENSING FLAMMABLE OR COMBUSTIBLE LIQUIDS AT CONSTRUCTION SITES (S-93)

SUPERVISE THE HANDLING AND DISPENSING FLAMMABLE OR COMBUSTIBLE LIQUIDS IN PORTABLE CONTAINERS (S-94)

Note: The S-93 and S-94 Certificate of Fitness are citywide C of Fs. **If you are responsible for supervising the storage of flammable or combustible liquids on premises, you should take the C-92 test.**

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NOE Revised 10/22/12

NOTICE OF EXAMINATION

Title: **Certificate of Fitness for supervising temporary storage and dispensing flammable and combustible liquids at construction sites (S-93).**

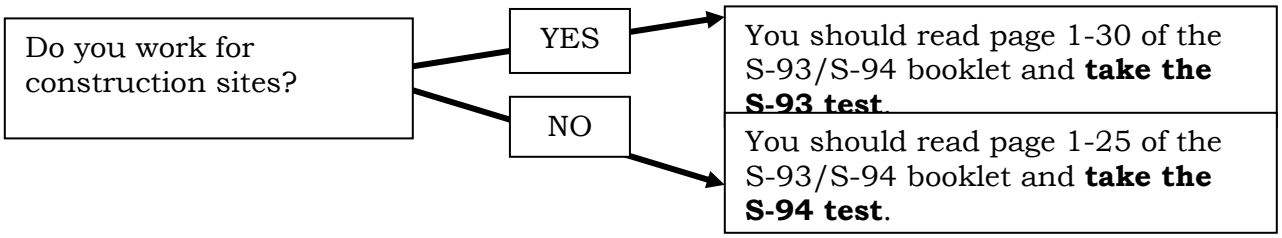
Certificate of Fitness for supervising, handling and dispensing flammable and combustible liquids in portable containers (S-94)

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

REQUIREMENTS FOR WRITTEN EXAM

Applicants who need to take the exam must apply in person and bring the following documents:

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicant must provide two forms of identifications; at least one identification must be government issued photo identification, such as a State-issued Driver's License or Non Driver's License or a passport.
4. 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, experience and the address where the applicant will work. If the applicants are self-employed or the principal of the company, they must submit a notarized letter attesting to their qualifications. For more info: http://www.nyc.gov/html/fdny/html/c_of_f/cof_requirements.shtml
5. Applicants must present a completed application for certificate of fitness (A-20 Form). http://www.nyc.gov/html/fdny/pdf/a20.pdf
6. Applicants not currently employed may take the exam without the recommendation letter. If the applicants pass the exam, FDNY will issue a temporary letter with picture for the job seeking purpose. The C of F card will not be issued unless the applicants are employed and provide the recommendation letter from his/her employer.
7. Special note:



The applicants who pass the S-93 Certificate of Fitness test are allowed to pay the additional $25 fee to obtain the S-94 Certificate of Fitness without taking the test.

8. **APPLICATION FEE:**

Pay the **$25** application fee in person by one of the following methods:

- Cash
- Credit card (*American Express, Discover, MasterCard, or Visa*)
- Debit card (*MasterCard or Visa*)
- Personal or company check or money order (*made payable to the New*

York City Fire Department)

For fee waivers submit: ***(Only government employees who will use their C of F for their work- related responsibilities are eligible for fee waivers.)***

- A letter requesting fee wavier on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency

A convenience fee of 2.49% will be applied to all credit card payments.

9. **EXAM INFORMATION**

   The **S-93** and **S-94** exam will consist of **20** multiple-choice questions, administered on a "touch screen" computer monitor. It is a time-limit exam. A passing score of at least 70% is required in order to secure a Certificate of Fitness. Call (718) 999-1988 for additional information and forms.

   Please always check for the latest revised booklet at FDNY website before you take the exam.
   http://www.nyc.gov/html/fdny/pdf/cof_study_material/s_94_st_mat.pdf

10. If all the requirements are meet and pass the exam a certificate will be issued the same day. Applicant who fails the exam will receive a failure report. To retake the exam applicants will need to submit a new application and payment.

RENEWAL REQUIREMENTS

This Certificate of Fitness must be renewed every ***THREE YEARS***. The renewal fee is **$15**. FDNY also reserves the right to require the applicants to take a re-examination upon submission of renewal applications.

You will receive a courtesy notice of renewal 90 days before the expiration date. However, it is your responsibility to renew your Certificate. It is very important to renew your C of F before it expires. Renewals submitted 90 days (up to one year) after the expiration date will incur a $25 penalty in addition to the renewal fee. Certificates expired over one year past expiration date will not be renewed. New exams will be required.

To change a mailing address:

- Submit a letter requesting the change of mailing address and a copy of your C of F with $5.00 fee.

To change a work location,

- Submit a letter from your current employer (on company letterhead) confirming that you are an employee and stating your new work location with a copy of your C of F and a $5.00 fee

To request a replacement certificate:

- Submit a driver's license or passport, social security number, mailing address and a $5.00 fee.

The certificate can be renewed **On-line**, **by Mail** or **in Person**.

- **Renewal online**

If you are an individual, make sure you have your 12 digit Certificate of Fitness Access ID. This can be found on your Renewal Notice. If you do not have your Renewal Notice, your Access ID is your 8 digit Certificate of Fitness number and the last four digits of your social security number. If you are submitting renewals on behalf of a company's employees, the company must be approved by FDNY and have an 8 digit Company Code. To request approval, email pubrenew@fdny.nyc.gov.

Renewal fee can be paid by one of the following methods:

- Credit card (American Express, Discover, MasterCard, or Visa)
- Debit card (MasterCard or Visa)
- E-check

A fee exempted applicants cannot renew online only by mail or in person.

If all the requirements are met, the certificate of fitness will be mailed out within 10 days.
For online renewal go to: https://paydirect.link2gov.com/FDNYCOF/ItemSearch

- **Renewal by mail**

Mail your Renewal Notice (if you did not receive a Renewal Notice, a copy of your certificate), along with your fee payment

Personal or company check or money order (made payable to the NYC Fire Department)

For fee waivers submit: ***(Only government employees who will use their C of F for their work- related responsibilities are eligible for fee waivers.)***

- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency

and if applicable, supporting documents to:

NYC Fire Department (FDNY)
Cashier's Unit
9 MetroTech Center, 1st Floor
Brooklyn, NY 11201

If all the requirements are met, the certificate of fitness will be mailed out within four to six weeks.

- **Renewal in person**

Submit your Renewal Notice (or if you did not receive a Renewal Notice, a copy of your certificate), along with your fee payment by one of the following methods:

- Cash
- Credit card (*American Express, Discover, MasterCard, or Visa*)
- Debit card (*MasterCard or Visa*)
- Personal or company check or money order (*made payable to the New York City Fire Department)*

For fee waivers submit: ***(Only government employees who will use their C of F for their work- related responsibilities are eligible for fee waivers.)***

- A letter requesting fee waiver on the Agency's official letterhead stating applicant full name, exam type and address of premises; ***AND***
- Copy of identification card issued by the agency

and if applicable, your supporting documents to:

NYC Fire Department (FDNY)
Cashier's Unit
9 MetroTech Center, 1st Floor
Brooklyn, NY 11201

If all the requirements are met, the certificate of fitness will be issued the same day.

A convenience fee of 2.49% will be applied to all credit card payments for original or renewal certificates.

<u>EXAM SITE</u>: FDNY Headquarters, 9 MetroTech Center, Brooklyn, NY. Enter through the **Flatbush Avenue entrance (between Myrtle Avenue and Tech Place)**.

STUDY MATERIAL AND TEST DECRIPTION

This study material will help you prepare for 2 examinations for the Certificate of Fitness for supervising storage and dispensing flammable or combustible liquids citywide. The study material **will not be provided to you during the test. It is critical that you read and understand this booklet to help increase your chance of passing this exam.** The study material does not contain all of the information you need to know to supervise the storage and dispensing flammable and combustible liquids. It is your responsibility to become familiar with all applicable rules and regulations of the City of New York, even if they are not covered in this study material. You should read the Fire Code Chapter 27 and Chapter 34, and NFPA 30 which regulate the storage, handling and use of flammable or combustible liquids in order to adequately prepare for the exam.

The 2 examinations are listed below:

- Supervising temporary storage and dispensing flammable and combustible liquids at construction sites (**S-93**).
- Supervising handling and dispensing flammable and combustible liquids in portable containers (**S-94**).

General requirements for TWO C of F tests are on page 1-25, ALL examinees should be familiar with these pages. For the construction site applicants (S-93), page 26-30 are also covered.

If you are responsible for supervising **PERMANENT STORAGE of flammable or combustible liquids** on premises and the storage requires a FDNY permanent permit, you should take **the C-92 Certificate of Fitness test**: supervising storage, handling, and use of flammable or combustible liquids.

About the Test

All questions on the Certificate of Fitness examination are of the multiple choice type with four alternative answers to each question. Only one answer is most correct for each question. If you do not answer a question, or if you mark more than one alternative your answer will be scored as incorrect. A score of 70% is required on the examination in order to qualify for the Certificate of License. Read each question carefully before marking your answer. There is no penalty for guessing.

Sample Questions

1. Who was the first president of the United States?
   (A) George Washington.
   (B) Madonna.
   (C) Abraham Lincoln.
   (D) Elvis Presley.

   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) Nets
   (C) Cardinals.
   (D) Knicks.

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

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PART I. GENERAL REGULATIONS

INTRODUCTION

This document outlines New York City Fire Department regulations for temporary storage and dispensing flammable and combustible liquids. According to the FDNY regulations, a Certificate of Fitness is needed for general supervision of the storage and personal supervision of the dispensing of flammable and combustible liquids.

The Certificate of Fitness holder must keep the Certificates of Fitness upon his or her person or otherwise readily available for inspection by any representative of the Department, at all times while conducting or supervising the material, operation or facility for which the certificate is required.

Types of Permits

(1) Site-specific permit

Such permit authorizes the permit holder to store, handle and use flammable and combustible liquids at a specific premises or location. A site-specific permit may be a permanent permit or a temporary permit. Permanent permits are valid for 12 months only. Every permit or renewal shall require an inspection and shall expire after twelve months. Temporary permits may be valid from one day to 12 months depending on the construction/operation needed. For example, a 3-month temporary permit may be issued to a construction site.

(2) Citywide permit

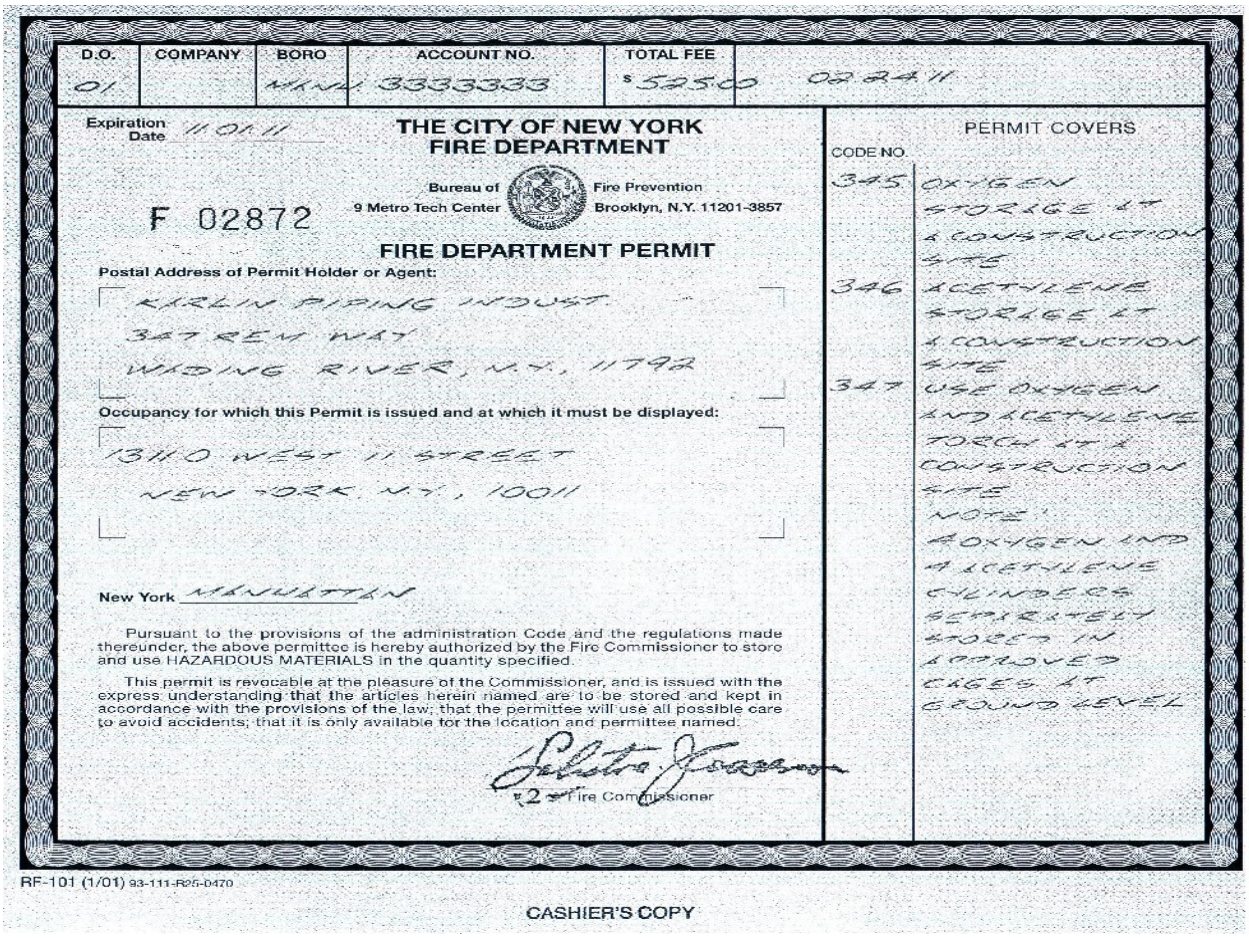
Such permit authorizes the permit holder to store, handle, use, sell or transport hazardous materials, or conduct an operation on a citywide basis, for which a permit is required by Fire Department. A citywide permit is valid to store, handle, use, sell or transport hazardous materials or to conduct an operation at one or more locations provided the duration of such activity at any individual location does not exceed 30 days. Periods of activity in excess of 30 days at any one location shall require a site-specific permit.

Permits are not transferable and any change in occupancy, operation, tenancy or ownership must require that a new permit be issued. The Certificate of Fitness holder is responsible for making sure that all fire safety regulations and procedures are obeyed on the premises. Permits and Certificates of Fitness shall be readily available on the premises for inspection by Fire Department representatives.

A permit is required for the following situation:

1. To store, handle or use amounts of **Class I liquids**, other than paints, varnishes, lacquers, gasoline and other petroleum-based Class I liquids, in excess of **5 gallons**, except that a permit is not required for the storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, or watercraft.
2. **To store, handle or use amounts of gasoline and other petroleum-based Class I liquids other than paints, varnishes and lacquers, in excess of 2½ gallons**, except that a permit is not required for the storage or use of gasoline or other petroleum-based Class I liquids in the fuel tank of a motor vehicle, aircraft, or watercraft.

3. To store, handle or use amounts of **Class II or Class III liquids** with a flash point of 300°F or less, other than paints, varnishes and lacquers, in excess of **10 gallons**, except that a permit is not required for the storage or use of Class II or Class III liquids with a flash point of 300°F or less in the fuel tank of a motor vehicle, aircraft, or watercraft.
4. To store, handle or use amounts in excess of **20 gallons of Class I, Class II or Class III liquids** having a flash point of 300°F or less that are commonly used for **painting, varnishing, staining or other similar purposes**, including paint, varnish and lacquer.
5. **To store, handle or use amounts in excess of 70 gallons of petroleum based Class III liquids with a flash point exceeding 300°F.**
6. To store and/or use **fuel oil** stored on a **barge or marine vessel** moored to or anchored at privately owned waterfront property.
7. To store and use **fuel oil** on **mobile heating trailers**.



D.O.	COMPANY	BORO	ACCOUNT NO.	TOTAL FEE
01		MANH	3333333	$525.00

02 24 11

Expiration Date 11 01 11

THE CITY OF NEW YORK
FIRE DEPARTMENT

Bureau of Fire Prevention
9 Metro Tech Center Brooklyn, N.Y. 11201-3857

F 02872

FIRE DEPARTMENT PERMIT

Postal Address of Permit Holder or Agent:
KIRLIN PIPING INDUST.
347 REM WAY
WIDING RIVER, N.Y., 11792

Occupancy for which this Permit is issued and at which it must be displayed:
1311 0 WEST 11 STREET
NEW YORK, N.Y., 10011

New York MANHATTAN

Pursuant to the provisions of the administration Code and the regulations made thereunder, the above permittee is hereby authorized by the Fire Commissioner to store and use HAZARDOUS MATERIALS in the quantity specified.

This permit is revocable at the pleasure of the Commissioner, and is issued with the express understanding that the articles herein named are to be stored and kept in accordance with the provisions of the law; that the permittee will use all possible care to avoid accidents; that it is only available for the location and permittee named.

Fire Commissioner

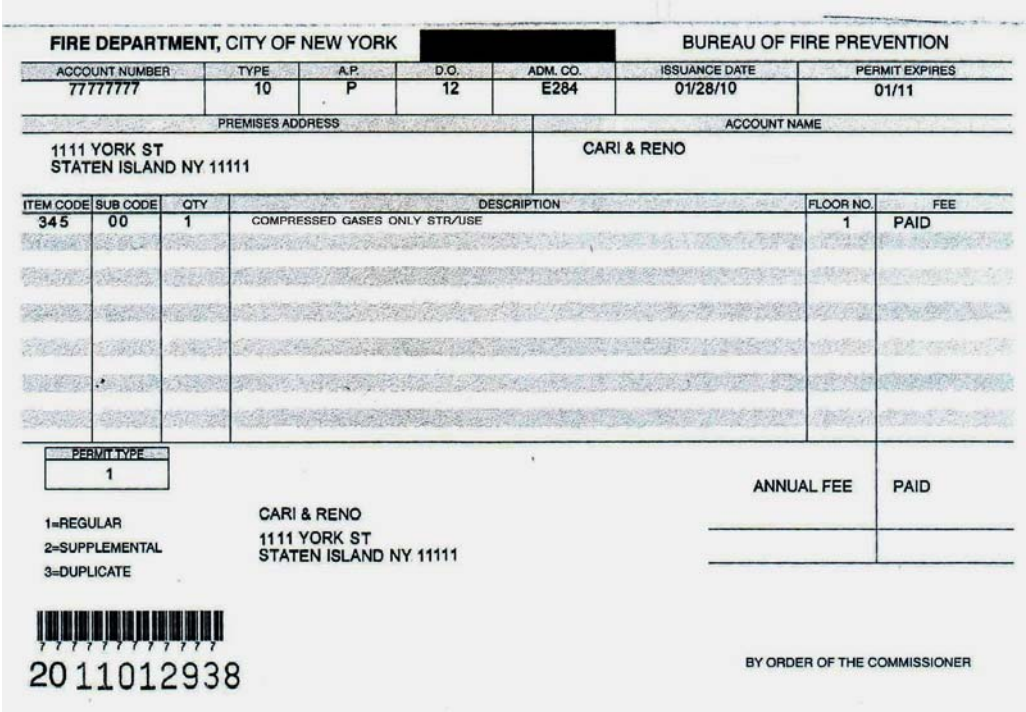
PERMIT COVERS

CODE NO.	
345	OXYGEN STORAGE AT A CONSTRUCTION SITE
346	ACETYLENE STORAGE AT A CONSTRUCTION SITE
347	USE OXYGEN AND ACETYLENE TORCH AT A CONSTRUCTION SITE NOTE: OXYGEN AND ACETYLENE CYLINDERS SEPARATELY STORED IN APPROVED CAGES AT GROUND LEVEL

RF-101 (1/01) 93-111-R25-0470

CASHIER'S COPY

An example of FDNY temporary permit



FIRE DEPARTMENT, CITY OF NEW YORK [redacted] BUREAU OF FIRE PREVENTION

ACCOUNT NUMBER	TYPE	A.P.	D.O.	ADM. CO.	ISSUANCE DATE	PERMIT EXPIRES
77777777	10	P	12	E284	01/28/10	01/11

PREMISES ADDRESS	ACCOUNT NAME
1111 YORK ST STATEN ISLAND NY 11111	CARI & RENO

ITEM CODE	SUB CODE	QTY	DESCRIPTION	FLOOR NO.	FEE
345	00	1	COMPRESSED GASES ONLY STR/USE	1	PAID

PERMIT TYPE: 1

1=REGULAR
2=SUPPLEMENTAL
3=DUPLICATE

CARI & RENO
1111 YORK ST
STATEN ISLAND NY 11111

ANNUAL FEE PAID

20 11012938

BY ORDER OF THE COMMISSIONER

An example of FDNY permanent permit

No citywide permit authorizing the storage and use of flammable or combustible liquids shall be valid for:

1. The storage, handling or use of gasoline in quantities exceeding 5 gallons.
2. The storage, handling or use of flammable liquids in quantities exceeding 250 gallons.
3. The storage, handling or use of combustible liquids in quantities exceeding 300 gallons.
4. The storage, handling or use of any paint, varnish, or other flammable or combustible liquid commonly used for painting, varnishing, lacquering, staining, waxing or other finishing operations in quantities exceeding 200 gallons, except as otherwise limited in Fire Code Chapter 15 for floor finishing operations.

Material Safety Data Sheets (MSDS)

Material Safety Data Sheet (MSDS) information should be readily available. The material safety data sheet (MSDS) contains specific information about the health and physical hazards of the material used, as well as safe work practices and required protective equipment. It may also describe the material's physical characteristics and procedures that should be followed in case of an emergency. For example, the MSDS may list appropriate and inappropriate extinguishing agents. The Certificate of Fitness holder must refer to the MSDS when questions arise about how to handle, use, or store hazardous chemicals or materials. The MSDS may also be requested by health care personnel to facilitate proper medical care in the event of chemical exposure.

Class of Flammable and Combustible Liquids

For the current fire code, there are 3 classes of flammable liquids and 3 classes of combustible liquids defined as the following table.

Class of Flammable and Combustible Liquids

		Flash point	Boiling point	Examples
Flammable liquids (Class I liquids)	**Class IA**	< 73°F	< 100°F	Gasoline, Acetaldehyde, Ethyl ether, formate, Pentane
	Class IB	< 73°F	≥ 100°F	Acetone, Ethanol, Methyl alcohol, Propyl alcohol
	Class IC	≥ 73°F but < 100°F	Not Applicable	Turpentine, Butyl alcohol, Hydrazine, Styrene
Combustible liquids (Class II & III liquids)	**Class II**	≥ 100°F but < 140°F	Not Applicable	Kerosene, **Diesel**, WD-40 lubricant
	Class IIIA	≥ 140°F but < 200°F	Not Applicable	Butyric Acid, Creostoe Oil
	Class IIIB	≥ 200°F	Not Applicable	Formalin, Glycerine, Picric acid, Propylene glycol

1. DEFINITION

CARGO TANK. A vehicle other than a railroad tank car or marine vessel, with a tank mounted thereon or built as an integral part thereof, used for the transportation of flammable or combustible liquids, LPG or other hazardous materials, including self-propelled vehicles and full trailers and semi-trailers, with or without motive power, and carrying part or all of the load.

COMBUSTIBLE LIQUID. For purposes of transportation, a combustible liquid, as defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point at or above 100°F (38°C), classified as follows:

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

Class IIIB. Liquids having closed cup flash points at or above 200°F (93°C).

CONTAINER. For solid and liquid hazardous materials, a vessel of 60 gallons (227 L) or less in capacity used for storage or transportation. For compressed gases, a cylinder, pressure vessel or tank designed for pressures greater than one atmosphere at 68°F (20°C). Pipes, piping systems, engines and engine fuel tanks associated with solid or liquid hazardous materials or compressed gases, shall not be deemed to be containers if in active use.

DISPENSING. The pouring or transferring by other means of any material from a container, tank or similar vessel, which would release dusts, fumes, mists, vapors or gases to the atmosphere, unless such release is prevented by a device, equipment or system designed for that purpose.

FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE SYSTEM. A flammable or combustible liquid storage tank and all devices, equipment and systems associated with such tank, including the tank, piping, valves, fill connection, vent lines, pumps and any other ancillary equipment, except liquid motor fuel storage and dispensing systems and flammable and combustible liquid storage systems at a bulk plant or terminal used for bulk transfer operations.

FLAMMABLE LIQUID. For purposes of transportation, a flammable liquid defined in the regulations of the United States Department of Transportation, as set forth in 49 CFR Section 173.120. For all other purposes, a liquid, other than a compressed gas or cryogenic fluid, having a closed cup flash point below 100°F (38°C), classified as follows:

Class IA. Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).

Class IB. Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

GENERAL SUPERVISION. Supervision by the holder of any department certificate who is responsible for performing the duties of the certificate holder but need not be personally present on the premises at all times.

HANDLING. The movement of a material in its container, the removal of the material from its container, or any other action or process that may affect the material, other than its storage or use.

INCOMPATIBLE MATERIALS. Materials that, if mixed or combined, could explode, generate heat, gases or other byproducts, or react in a way hazardous to life or property.

LIQUID. A material having a melting point that is equal to or less than 68°F (20°C) and a boiling point that is greater than 68°F (20°C) at 14.7 psia (101 kPa). When not otherwise identified, the term "liquid" includes both flammable and combustible liquids.

MATERIAL SAFETY DATA SHEET (MSDS). A document prepared in accordance with the regulations of the United States Department of Labor, as set forth in 29 CFR Part 1910.1200 or a federally approved state OSHA plan which sets forth information concerning a hazardous material.

OUTDOOR CONTROL AREA. An outdoor area that contains hazardous materials in amounts not exceeding the maximum allowable quantities of Table 2703.1.1(3) or 2703.1.1(4).

PERSONAL SUPERVISION. Supervision by the holder of any department certificate who is required to be personally present on the premises, or other proximate location acceptable to the department, while performing the duties for which the certificate is required.

PROCESS TRANSFER. The transfer of flammable or combustible liquids between cargo tanks or tank cars and containers, tanks piping and other equipment that is to be used in process operations.

SAFETY CAN. An approved container (e.g. approved metal safety cans must meet the requirement of ANSI/UL 30, Standard for Metal Safety Cans) with a capacity of not more than 5-gallons (19 L) and equipped with a spring-closing lid and spout cover designed to relieve internal pressure when exposed to fire.

TANK, ATMOSPHERIC. A storage tank designed to operate at pressures from atmospheric through 1.0 pound per square inch gauge measured at the top of the tank.

TANK, PORTABLE. A container of more than 60-gallon (227 L) capacity, and designed to be loaded into or on or temporarily attached to a transport vehicle or marine vessel and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. It does not include any cargo tank or tank car. It is not intended for fixed installation.

Tank, TEMPORARY. The capacity of temporary aboveground tanks containing flammable or combustible liquids shall not exceed 660 gallons (2498 L) at construction sites. Tanks shall be of the single-compartment design, shall be constructed of steel, and shall meet the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 613 and 614.

TANK, PRIMARY. A listed atmospheric tank used to store liquid.

TANK, PROTECTED ABOVEGROUND. An atmospheric aboveground tank listed in accordance with UL 2085 or equivalent standard that is provided with integral secondary containment, protection from physical damage, and an insulation system intended to reduce the heat transferred to the primary tank when the tank is exposed to a high intensity liquid pool fire.

2. STORAGE

The storage of any liquids shall not be stored near or be allowed to obstruct physically the route of egress. Containers shall be stored in an upright position.

Flammable and combustible liquid shall only be stored in **metal containers** of a type meeting the requirements of the regulations of the United States Department of Transportation, as set forth in 49 CFR Part 178, or in containers of an approved design.

The outdoor storage area must be graded in a manner to divert possible spills away from building or other exposures or must be surrounded by a curb at least 6 inches high

2.1 Quantity limits for containers storage

It shall be unlawful to store flammable and combustible liquids in containers with individual capacity greater than **60 gallons**. Only the approved containers complying with NFPA30 must be used for Class I, Class II, and Class IIIA liquids. **It shall be unlawful to store flammable and combustible liquids in portable tanks, intermediate bulk containers and fiber drums.**

2.2 Liquid storage cabinets

Where the Fire Department requires that liquid containers be stored in storage cabinet, such cabinets and storage shall be in accordance with the followings:

The cabinet must be listed in accordance with UL 1275. All cabinets must be provided with a conspicuous label in red letters on contrasting background which reads: FLAMMABLE-KEEP FIRE AWAY. The door must be **well fitted, self-closing and equipped with a three-point latch**. The bottom of the cabinet must be **liquid-tight** to a height of at least 2 inches.

The combined total quantity of liquids in a cabinet shall **not exceed 120 gallons** or the manufacture's recommendations whichever is less. **Maximum 3 cabinets is allowed to be located in a single fire area**, additional cabinets are allowed to be located in the same fire area if the additional cabinets (or groups of up to 3 cabinets) are separated from other cabinets or groups of cabinets by at least **100** feet.

Quantities of flammable and combustible liquids requiring a permit, used for maintenance purposes and the operation of equipment, shall be stored in liquid storage cabinet. Quantities not requiring a permit are allowed to be stored outside of a cabinet when in approved containers and locations.

2.3 Empty containers

Empty containers shall be considered as full containers. The storage of empty containers previously used for the storage of flammable or combustible liquids shall be stored as required for filled containers. **Empty containers shall be removed from the premises as soon as practical, but at least daily.**

2.4 Protections and clearance from combustibles

Storage areas shall be protected against tampering or trespassers or other approved control measures. Posts or other means shall be provided to protect outdoor storage tanks from vehicular damage.

The storage location shall be kept free from vegetation and other combustible waste. **Rubbish and other combustible waste shall not be allowed to accumulate within 15 feet of a flammable or combustible liquid storage location.** Brush, grass, vines, weeds and other vegetation capable of being ignited that is located within 15 feet of a flammable or combustible liquid storage location shall be regularly mowed or pruned and the clippings removed from the premises.

2.5 Tank Storage

Prior to a change in contents, the commissioner may require testing of a tank for leaks and documentation of compatibility. Tanks that have previously contained Class I liquids shall not be loaded with Class II or Class III liquids until such tanks and all piping, pumps, hoses and meters connected thereto have been completely drained and flushed.

3. HANDLING AND DISPENSING

3.1 Liquid Transfer

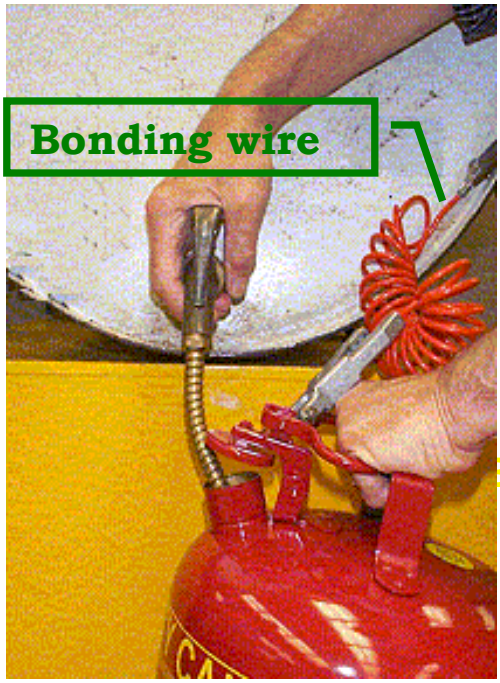
Liquid transfer equipment and methods for transfer of Class I, II and IIIA liquids shall be subject to the approval of the commissioner.(definition, FC104.2)(Department representatives) Positive-displacement pumps shall be provided with pressure relief discharging back to the tank, pump suction or other approved location, or shall be provided with interlocks to prevent over-pressure. Any piping, hoses and valves used in liquid transfer operations shall be subject to the approval of the commissioner or listed for the intended use. **Compressed gases shall not be used to pressurize containers or tanks to provide for transfer**. Container-filling operations for Class I liquids involving conveyor belts or other automatic-feeding operations shall be designed to prevent static accumulations.

A. **Class I and II liquids or Class III liquids in containers exceeding 5.3 gallons capacity** that are at a temperature higher than 20°F less than their flash points shall **not be dispensed by gravity**, but shall be transferred by one of the following methods:
    1. From safety cans complying with the requirements of UL 30.
    2. Through an approved closed piping system.
    3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.
    4. Approved engineered liquid transfer systems.

    Example: Turpentine having a flash point of 95°F would NOT be allowed to be dispensed by gravity if the material temperature was to exceed 75°F.

B. The following liquids shall not be transferred into containers unless the nozzle and containers are **electrically interconnected**:
    (1) Any Class I liquids;
    (2) The Class II or III liquids at a temperature higher than 20°F less than their flash points

    Acceptable methods of electrical interconnection include:
    1. Metallic floor plates on which containers stand while filling, when such floor plates are electrically connected to the fill stem; or
    2. Where the fill stem is bonded to the container during filling by means of a bond wire.



3.2 Liquid Handling Devices.

Discharge devices shall be of a type that **do not develop an internal pressure** on the container. Pumping devices or approved self-closing faucets used for dispensing liquids shall not leak and shall be well-maintained. Individual containers shall not be interconnected and shall be kept closed when not in use.

Any containers filled with motor fuel at a motor fuel dispensing facility is only allowed to have a maximum individual capacity of 2.5 gallons.

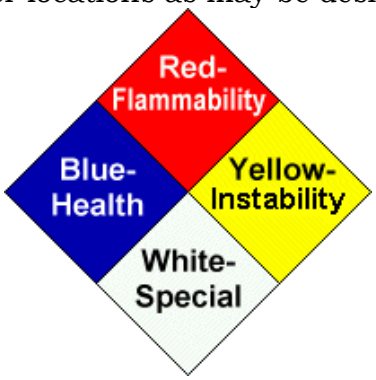
Motor fuel liquids in portable containers shall not be dispensed into portable tanks or cargo tanks. Portable containers shall not be filled while located inside the trunk, passenger compartment or truck bed of a vehicle or upon a watercraft. This is to make sure that no motor fuel is accidentally spilled into the trunk of the vehicle. No motor vehicle, motorcycle or watercraft shall be fueled from a portable container while inside a building or structure.

Examples of an approved gasoline container

4. LABELING AND SIGNS

4.1 NFPA Diamond Sign

Unless otherwise exempted by the commissioner, hazard identification (diamond) signs are required for specific materials as set forth in NFPA 704. These signs shall be conspicuously affixed on stationary containers and aboveground tanks and at entrances to locations where hazardous materials are stored, handled or used, including dispensing, in quantities requiring a permit, including locations where such materials are dispensed, and at such other locations as may be designated by the commissioner.



The NFPA National Fire Protection Association (www.nfpa.org), a private, non-profit organization that produces technical data related to fire protection and prevention, including the widely used NFPA diamond containing codes representing chemical hazards. 704 diamond (sometimes called the "fire diamond") is a standard placard used to quickly identify a chemical's level of hazard. The diamond sign is divided into 4 quadrants:

- Within the blue, red, and yellow quadrants a number from 0 to 4 indicates the degree of risk associated with the chemical. The higher the number, the higher the risk.
- For some chemicals, the white quadrant contains symbols indicating special hazards.

The meaning of each code number and symbol is shown on the following page.

Where more than one chemical is present in a building or specific area, professional judgment shall be exercised to indicate ratings using the following methods:

(1) Composite Method. Where many chemicals are present, a single sign shall summarize the maximum ratings contributed by the material(s) in each category and the special hazard category for the building and/or the area. That is, it shows the highest value in each hazard category for any chemical at that location. It may be that one chemical poses the highest health hazard, while another poses the highest flammability hazard.

(2) Individual Method. Where only a few chemicals are present or where only a few chemicals are of concern to emergency responders (taking into account factors including physical form, hazard rating, and quantity), individual signs shall be displayed. The chemical name shall be displayed below each sign.

(3) Composite–Individual Combined Method. A single sign shall be used to summarize the ratings via the Composite Method for buildings or other areas containing numerous chemicals. Signs based on the Individual Method shall be used for rooms or smaller areas within the building containing small numbers of chemicals.

Interpreting NFPA 704 Codes

Quadrant	Code	Meaning
Health Hazard	4	Materials that, under emergency conditions, can be lethal.
	3	Materials that, under emergency conditions, can cause serious or permanent injury.
	2	Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
	1	Materials that, under emergency conditions, can cause significant irritation.
	0	Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials
Flammability Hazard	4	Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.
	3	Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions.
	2	Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air.
	1	Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur.
	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.
Instability (Reactivity) Hazard	4	Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures.
	3	Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction but that require a strong initiating source or must be heated under confinement before initiation.
	2	Materials that readily undergo violent chemical change at elevated temperatures and pressures.
	1	Materials that in themselves are normally stable but that can become unstable at elevated temperatures and pressures.
	0	Materials that in themselves are normally stable, even under fire conditions.

Quadrant	Code	Meaning
Special Hazard	"**W**"	The materials that react violently or explosively with water (water reactivity rating of 2 or 3).
	"**OX**"	The materials that possess oxidizing properties. The severity of the hazard posed by an oxidizer can be divided in to 4 classes from Classes 1 through 4. The adding of the quantification of the oxidation helps to better define the hazard. For example, for the material categorized as a Class 2 oxidizer (e.g. calcium chlorite) can be marked "**OX 2**" to better define the hazard.

4.2 Warning Signs and Labels

Signage for identification and warning such as for the inherent hazard of flammable liquids or prohibiting smoking shall be provided. Signs and markings shall not be obscured or removed, shall be in English as a primary language or in symbols allowed by this code, shall be durable, and the size, color and lettering shall be acceptable to the commissioner. The commissioner may require warning signs for the purpose of identifying the hazards of manufacturing, storing, handling or using flammable liquids, including the dispensing or mixing of such liquids. Additional sign regulations for construction sites are referred to page 29.

(1) Warning signs
Tanks and containers for aboveground storage of liquids shall be conspicuously marked with the name of the product which they contain and the words: FLAMMABLE—KEEP FIRE AND FLAME AWAY. Tanks shall bear the additional marking: KEEP 50 FEET FROM BUILDINGS.

(An example of the warning sign)

(2)No-smoking signs

Signs shall be posted in storage areas prohibiting open flames and smoking. "No Smoking" signs shall be required even in institutions that totally prohibit smoking. The signs shall be provided in English as a primary language and conspicuously posted in the following locations:
a.) In rooms or areas where hazardous materials are stored or used.
b.) Within 25 feet of outdoor hazardous material storage, handling and use areas, including dispensing areas.

c.) Facilities or areas within facilities in which smoking has been entirely prohibited.
The Fire Department has published an approved "No Smoking" sign as set forth in Fire Department Rules. However, the Fire Department does not mandate that this design be used. Other legible, durable signs, clearly communicating the "no smoking" requirement, may be used, but are subject to Fire Department enforcement action if found to be inadequate.

Examples of acceptable sign

(2) Labels
Individual containers, packages and cartons shall be identified, marked, labeled and placarded in accordance with federal regulations and applicable state laws.

Tanks more than 100 gallons in capacity, which are used for the storage of Class I, II or IIIA liquids, shall bear a label and placard identifying the material therein. Placards shall be in accordance with NFPA 704.

5. PORTABLE FIRE EXTINGUISHERS AND EMERGENCY RESPONSES

5.1 Fire Extinguishers

Fire extinguishers must be located in conspicuous locations where they will be readily accessible and immediately available for use. Fire extinguishers having a gross weight not exceeding 40 pounds must be installed so that the top of the extinguisher is not more than 5 ft above the floor. Hand-held fire extinguishers having a gross weight exceeding 40 pounds shall be installed so that their tops are not more than 3.5 feet above the floor. The clearance between the floor and the bottom of installed hand-held extinguishers shall not be less than 4 inches. In other words, **no fire extinguisher is allowed to be on the floor.** Additional regulations of fire extinguishers for construction sites are referred to page 30.

Fire extinguisher in a construction site.

A stackable and portable stand is convenient for temporary extinguisher installation.

As best practice, the bottom of the fire extinguisher must be at least 4 inches above the floor.

In the event of a fire extinguisher has been discharged, a fully charged replacement is required before work can resume. Portable fire extinguishers are important in preventing a small fire from growing into a catastrophic fire, however, they are not intended to fight large or spreading fires. By the time the fire has spread, fire extinguishers, even if used properly, will not be adequate to extinguish the fire. Such fires should be extinguished by the building fire extinguishing systems or trained firefighters only.

In case of any fire, 911 must be called. Fire extinguishers must be used in accordance with the instructions painted on the side of the extinguisher. They clearly describe how to use the extinguisher in case of an emergency. The Certificate of Fitness holder should be familiar with the use of portable fire extinguishers. When it comes to using a fire-extinguisher just remember the acronym P.A.S.S. to help make sure you use it properly. P.A.S.S. stands for Pull, Aim, Squeeze, Sweep. An example of these instructions is depicted in the picture.

5.1.1 Different types of fire extinguishers

The Certificate of Fitness holder must be familiar with the different types of fire extinguishers that are present. He/she must know how to operate the extinguishers in a safe and efficient manner. He/she must know the difference between the various types of extinguishers and when they should be used. A description of the five classes of fires and the appropriate extinguishers are described below.

Class A fires are caused by ordinary combustible materials (such as wood, paper, and cloth). 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 fires are caused by flammable or combustible liquids and gases such as oil, gasoline, etc. To extinguish a Class B fire, the blanketing-smothering effect of oxygen-excluding media such as CO_2, dry chemical or foam is most effective.

Class C fires involve electrical equipment. These fires must be fought with fire extinguishers that do not conduct electricity. Foam and water type extinguishers must not be used to extinguish electrical fires. After the power has been isolated from the electrical equipment, extinguishers for Class A or B fires may be used.

Class D fires are caused by ignitable metals, such as magnesium, titanium, and metallic sodium, or metals that are combustible under certain conditions, such as calcium, zinc, and aluminum. Generally, water should not be used to extinguish these fires.

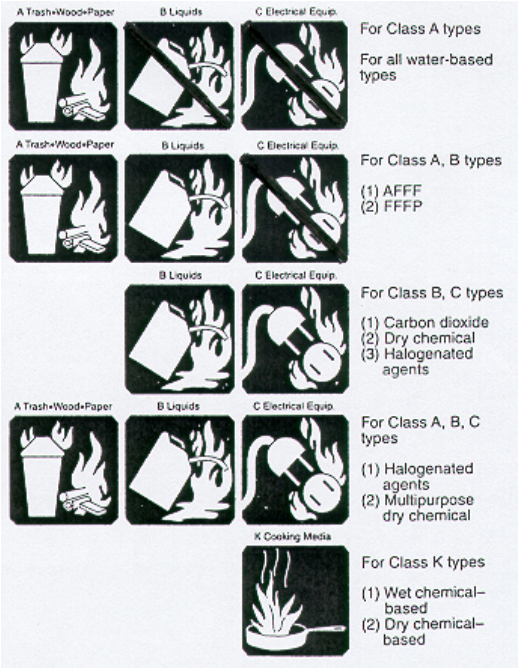
A multi-purpose dry chemical fire extinguisher may be used to extinguish more than 2 Classes fires. Examples of some fire extinguishers are shown below.

Examples of fire extinguishers

10-B:C (10BC)	3-A:40-B:C(3A40BC)	3-A:40-B:C(3A40BC), wheeled

Symbols may also be painted on the extinguisher. The symbols indicate what kind of fires the extinguisher may be used on. Examples of these symbols are shown below.

CLASSES OF FIRES	TYPES OF FIRES	PICTURE SYMBOL
A	Wood, paper, cloth, trash & other ordinary materials.	
B	Gasoline, oil, paint and other flammable liquids.	
C	May be used on fires involving live electrical equipment without danger to the operator.	
D	Combustible metals and combustible metal alloys.	
K	Cooking media (Vegetable or Animal Oils and Fats)	



Fire Extinguisher Identification Symbols

The symbol with the shaded background and the slash indicates when the extinguisher must not be used. The Certificate of Fitness holder must understand these symbols. All fire extinguishers should be kept in good working order at all times.

5.1.2 Fire extinguisher inspections

The extinguishers are required to be inspected monthly. This inspection is a "quick check" that a fire extinguisher is available and will operate. It is intended to give reasonable assurance that the fire extinguisher is fully charged and operable. This is done by verifying that it is in its designated place, that it has not been actuated or tampered with, and that there is no obvious or physical damage or condition to prevent its operation. The information of the monthly inspection record must include the date the inspection was performed, the person performing the inspection, and those portable fire extinguishers found to require corrective action. Such recordkeeping must be either attached to the extinguisher or on an inspection checklist maintained on file. Labels or markings indicating fire extinguisher use, or classification, or both shall be placed on the front of the fire extinguisher. At least once per year, all fire extinguishers must be maintained by a FDNY approved company and a W-96 Certificate of Fitness holder.

Monthly inspection tag.

5.2 Emergency Procedures

5.2.1 Fire notification

Anyone becoming aware of any fire is required to immediately notify the emergency operator (911) or, depending upon the borough in which the property is located, insert one of the following the Fire Department Dispatcher numbers:

Manhattan properties	(212) 999-2222
Bronx properties	(718) 999-3333
Brooklyn properties	(718) 999-4444
Queens properties	(718) 999-5555

Staten Island properties (718) 999-6666

The New York City Fire Department will respond. No supervisor or other person shall issue any directive or take any action to prevent or delay the reporting of a fire or other emergency to the department. You should also notify the building's designated fire safety person who is familiar with the building and can meet the responding emergency units upon their arrival, and direct them quickly to the fire area.

The Certificate of Fitness holder must know the locations of manual fire alarm system pull stations and portable fire extinguishers and how to operate them. In addition to calling 911, you should also activate the fire alarm system manual pull station, if available. Activation of the manual pull station will sound the alarm in the building.

The Certificate of Fitness holder should know how to respond when an individual's clothing has caught fire. The most important instruction for the case of clothing fires: immediately drop to the floor and roll. If the person is panicking and running, other people in the area should immediately knock that person to the floor and roll that person around to smother the flames. If the safety shower is near, the use of this shower would also be an effective way to smother the flames. If after smothering the fire, if the clothing that caught fire can be removed, remove it. If the clothes are burnt onto your skin, do not remove the clothes but soak with water and keep cool. In all cases, immediately seek medical attention.

5.2.2 Spill notification

In case of a major spill, the Certificate of Fitness holder must notify the Fire Department by phone immediately. The Certificate of Fitness holder must know the telephone number of the Fire Department Dispatcher number in the borough where the building is located. These phone numbers must be posted near the phones most likely to be used in case of an emergency.

6. COMMON FLAMMABLE AND COMBUSTIBLE LIQUIDS

The following paragraphs give a brief overview of the flammable and combustible liquids that are commonly used in the workplace. The name of each flammable and combustible liquid is followed by its hazard signal classification for flammability, instability (reactivity), and health.

The Certificate of Fitness holder must know the properties of each of these liquids and their handling and storage requirements. He or she must also know the procedures that must be followed when dealing with fire or spill emergencies for these liquids.

It is recommended that all personnel wear proper protective equipments (PPE) including rubber safety gloves, chemical safety goggles when handling the flammable or combustible liquids.

6.1 Flammable Liquids

(A) <u>Gasoline (Class IA Liquid)</u>
(Hazard Signal: 1 Health 3 Flammability 0 Instability)

Gasoline is a toxic translucent, petroleum-derived liquid that is primarily used as a fuel in internal combustion engines. It consists mostly of organic compounds obtained by the fractional distillation of petroleum, enhanced with a variety of additives. Some gasoline also contains ethanol as an alternative fuel. In North America, the term "gasoline" is often shortened in colloquial usage to "gas", whereas most current or former Commonwealth nations use the term "petrol"

<u>Handling and Storage</u>

- ***Handling Precautions:***
  USE ONLY AS A MOTOR FUEL. DO NOT SIPHON BY MOUTH. Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion. Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist

when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product).

- ***Storage:***
  Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Store in a well-ventilated area. Avoid storage near incompatible materials.

Fire Hazards

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Health Hazard

- ***Inhalation:***
  Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.
- ***Skin Contact:***
  Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.
- ***Eye Contact:***
  Moderate irritant. Contact with liquid or vapor may cause irritation.
- ***Chronic Exposure:***
  Contains benzene, a regulated human carcinogen. Benzene has the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with systemic toxicity.

(B) Turpentine (Class IC liquid)

(Hazard Signal: 1 Health 3 Flammability 0 Instability)

Turpentine is a fluid with a strong odor obtained by the distillation of resin obtained from trees, mainly pine trees. The two primary uses of turpentine in industry are as a solvent and as a source of materials for organic synthesis. As a solvent, turpentine is used for thinning oil-based paints, for producing varnishes. Turpentine is also used as a source of raw materials in the synthesis of fragrant chemical compounds.

Handling and Storage

- ***Handling Precautions:***
  Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory

equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

- ***Storage:***
  Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Fire Hazards
Flammable in presence of oxidizing materials.

Health Hazards
- ***Inhalation:***
  May cause dizziness, headache, watering of the eyes, irritation of the respiratory tract, nausea, depression of the central nervous system, and serious irritation to the kidneys. Severe overexposure may cause unconsciousness.
- ***Skin Contact:***
  This material is a skin irritant.
- ***Eye Contact:***
  This material is a severe eye irritant.
- ***Chronic Exposure:***
  Reports have associated repeated and prolonged overexposure to solvents with neurological and other physiological damage. May cause jaundice, bone marrow damage, liver damage, anemia, nausea, skin irritation, headache, dizziness, some loss of memory, heart palpitations, and kidney damage, central nervous system damage, mental confusion, convulsions, coma, and death.

6.2 Combustible Liquids

(A) Kerosene (Class II liquid)
(Hazard Signal: 2 Health 2 Flammability 0 Instability)

Kerosene is a thin, clear combustible hydrocarbon liquid formed from hydrocarbons. In field settings, it is also referred to kerosine or fuel oil #1. Kerosene is widely used to power jet-engined aircraft (jet fuel) and some rockets, but is also commonly used as a heating fuel and for fire toys. Kerosene has an ignition quality similar to Numbers 1 and 2 Diesel Fuel. But Kerosene is too thin to work well as an engine fuel.

Handling and Storage
- ***Handling Precautions:***
  Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

- ***Storage:***
  Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Fire Hazards
Flammable in presence of open flames and sparks, of heat.

Health Hazards
- ***Inhalation:***
  Inhalation causes irritation to respiratory tract. Symptoms may include coughing, shortness of breath, burning sensation in chest, headache, nausea, weakness, restlessness and incoordination, drowsiness and coma.
- ***Skin Contact:***
  Causes irritation to skin. Symptoms include redness, itching, and pain. May cause dermatitis.
- ***Eye Contact:***
  May cause severe irritation and pain.

(B) WD-40 Lubricant (Class II liquid)
(Hazard Signal: 2 Health 2 Flammability 0 Instability)

WD-40 is the trademark name of a United States-made water-displacing spray. WD-40 stands for "Water Displacement – 40th Attempt". It was originally designed to repel water and prevent corrosion, and later was found to have numerous household uses.

Handling and Storage
- ***Handling Precautions:***
  Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.
- ***Storage:***
  Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight.

Fire Hazards
Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

Health Hazards

- ***Inhalation:***
  High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.
- ***Skin Contact:***
  Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.
- ***Eye Contact:***
  Contact may be irritating to eyes. May cause redness and tearing.

(C) Diesel (Class II liquid)
(Hazard Signal: 0 Health 2 Flammability 0 Instability)

Diesel in general is any liquid fuel used in diesel engines. The most common is a specific fractional distillate of petroleum fuel oil. Diesel fuel is refined into several sub-catagories or grades. From highest to lowest viscosity are Number 1 Diesel Fuel (1-D), Number 2 Diesel Fuel (2-D) and Number 4 Fuel Diesel (4-D). Number 4 Fuel Diesel Fuel is used in low and medium speed engines that operate at a constant or near-constant speed, such as stationary powerplants or railroad locomotives. Numbers 1 and 2 Diesel Fuel are the primary fuel for mobile diesel engine applications. Volatility is one of the primary factors which distinguish #1 from #2 diesel fuel. No. 1 diesel typically has greater volatility than No. 2. Number 1 Diesel Fuel is commonly labeled at the pump as "Premium Diesel". While Number 2 Diesel Fuel has a higher lubricating quality than Number 1 Diesel, its thickness can cause rough starting in a cold engine and rough-running in cold weather.

Home heating oil is closest to Number 2 diesel fuel in ignition quality and lubricating ability. But home heating oil is not intended to be used in an internal combustion engine because it may not have the smoke suppressants, ignition accelerators and biocides.

Handling and Storage

- ***Handling Precautions:***
  Handle as a combustible liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion. Diesel fuel, and in particular low and ultra low sulfur diesel fuel, has the capability of accumulating a static electrical charge of sufficient energy to cause a fire/explosion in the presence of lower flashpoint products such as gasoline. The accumulation of such a static charge occurs as the diesel flows through pipelines, filters, nozzles and various work tasks such as tank/container filling, splash loading, tank cleaning; product sampling; tank gauging; cleaning, mixing, vacuum truck operations, switch loading, and product agitation. There is a greater potential for static charge accumulation in cold temperature, low humidity conditions
- ***Storage:***
  Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product

containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Store in a well-ventilated area.

Fire Hazards

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Health Hazards

- ***Inhalation:***
  Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death. WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.
- ***Eye Contact:***
  Contact with liquid or vapor may cause mild irritation.
- ***Skin Contact:***
  May cause skin irritation with prolonged or repeated contact. Practically non-toxic if absorbed following acute (single) exposure. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.
- ***Chronic Exposure:***
  Similar products produced skin cancer and systemic toxicity in laboratory animals following repeated applications.

PART II. SPECIAL REGULATIONS FOR CONSTRUCTION SITES

7. CONTAINER AND TANK STORAGE

7.1 Container Storage

Fuel for equipments at construction sites shall be **stored in an approved outdoor area**, and shall be moved in approved containers **not to exceed 5 gallons**. Any containers filled with motor fuel at a motor fuel dispensing facility is only allowed to have a maximum individual capacity of 2.5 gallons. In other words, metal containers having a capacity greater than 2.5 gallons and up to of 5 gallons can be only filled at a construction site from temporary tanks.

Motor fuel liquids in portable containers shall not be dispensed into portable tanks or cargo tanks. Portable containers shall not be filled while located inside the trunk, passenger compartment or truck bed of a vehicle or upon a watercraft. This is to make sure that no motor fuel is accidentally spilled into the trunk of the vehicle. No motor vehicle, motorcycle or watercraft shall be fueled from a portable container while inside a building or structure.

Examples of an approved gasoline container is shown below:

7.2 Temporary Tanks.

The capacity of temporary aboveground tanks containing flammable or combustible liquids shall not exceed 660 gallons. Tanks shall be of the single-compartment design, shall be constructed of steel, and shall meet the requirements of the New York State Department of Environmental Conservation regulations, as set forth in 6 NYCRR Parts 613 and 614.

Fill openings shall be equipped with a locking closure device. **Fill openings shall be separate from vent openings**. Tanks shall be provided with a method of normal and emergency venting. Emergency vents shall be arranged to discharge in a manner which prevents localized overheating or flame impingement on any part of the tank in the event that vapors from such vents are ignited.

Tanks containing flammable or combustible liquids shall be kept outdoors and at least **50 feet from buildings, combustible material and combustible waste**. Additional distance shall be provided when necessary to ensure that vehicles, equipment and

containers being filled directly from such tanks will not be less than 50 feet from structures or combustible storage.

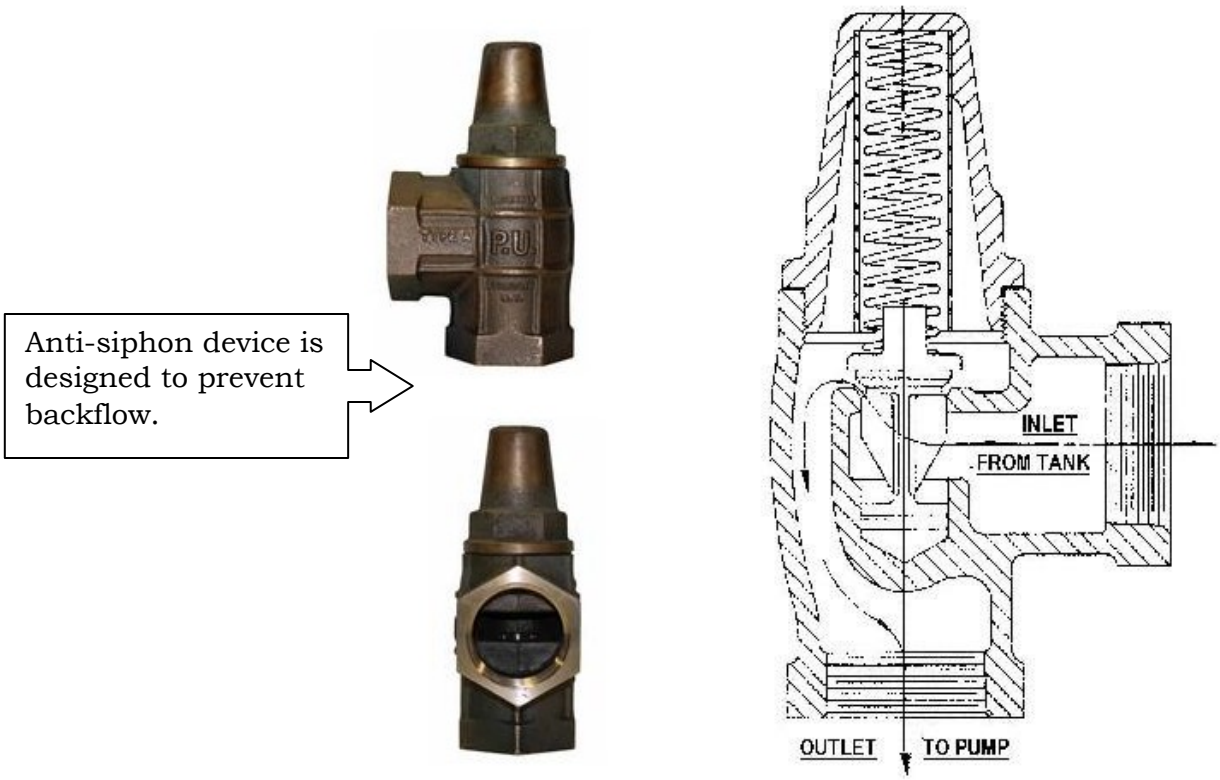
7.2.1 Tanks with top openings only

Tanks shall be provided with top openings only, except for the tanks used for aerial crane refueling operations. The Certificate of Fitness (P-54) is required for supervising the crane refueling operations at construction site.

Tanks with top openings shall be mounted as follows:

1. On well-constructed metal legs connected to shoes or runners designed so that the tank is stabilized and the entire tank and its supports can be moved as a unit; or
2. For stationary tanks, on a stable base of timbers or blocks approximately 6 inches in height which prevents the tank from contacting the ground.

Tanks with top openings only shall be equipped with a tightly and permanently attached, approved pumping device having an approved hose of sufficient length for filling construction equipment or containers to be served from the tank. Either the pump or the hose shall be equipped with a padlock to its hanger to prevent tampering. **An antisiphoning device shall be provided in the pump discharge unless a self-closing nozzle is used.** Siphons or internal pressure discharge devices shall not be used.



Example of an anti-siphon valve

Example of a temporary tank with top openings.

8. OTHER SPECIAL REGULATIONS

For combustible liquids storage areas, they must be provided with a hazard identification sign that complies with the requirements of NFPA Standard 704 (refer to page 11-13 of this booklet). For flammable liquids storage areas, a warning sign made of a durable material stating Danger-Flammable Liquids be posted in any area where flammable liquid is being stored (refer to page 13 of this booklet).

8.1 "Non-smoking" Signs

All construction sites are required by New York City Building Code Section BC3307.3.2 to be enclosed with a fence. Smoking is prohibited within the area enclosed by such fence, including in construction trailers and other indoor or outdoor areas.

"No Smoking" signs should be posted at all sliding and swinging gate openings, and any other openings allowing for access to the site by persons or vehicles. Within the fenced enclosure, signs should be posted at appropriate locations throughout the construction site sufficient to provide notice to persons entering or working on the site of the prohibition against smoking, including at the entrances to buildings, one or more locations on each floor of such buildings, and any indoor or outdoor areas on the construction site at which persons congregate.

In buildings undergoing alteration, where no fenced enclosure is required pursuant to BC3307.3.2, smoking is prohibited in all areas of the building in which alteration work is or will be conducted under the application filed with the Department of Buildings. "No Smoking" signs should be posted at all entrances to areas of the building undergoing alteration, and any place within those areas where persons would congregate.

In addition, smoking is prohibited at all locations, and at all times, where hazardous operations are conducted, or flammable or combustible materials or explosives are stored, handled or used. "No Smoking" signs must be posted in the immediate area of such operations and materials.

Durable warning signs should be noticeably posted.

No Smoking Sign

Unacceptable Warning Sign

8.2 Fire Extinguishers

Portable fire extinguishers with a minimum rating of 20-B:C shall be provided at the following locations:

1. At each stairway on all floor levels where combustible materials are being stored or combustible waste is being generated.
2. At the entrance of each storage and construction shed.
3. Additional portable fire extinguishers with a minimum rating of 20-B:C shall be provided where flammable and combustible liquids are stored, handled and used.

8.3 Internal–combustible-powered Equipment

All internal-combustion-powered construction equipment shall be used in accordance with the following requirements:

1. Equipment shall be located so that **exhausts do not discharge against combustible material**.
2. Exhausts shall be piped to the outdoors.
3. Equipment **shall not be refueled while in operation**.

8.4 Construction Site Fire Safety Manager (S-56 C of F holder)

The FDNY now requires a Construction Site Fire Safety Manager (CSFSM) on all New York City projects for ensuring compliance with the requirements of the fire code. The Fire Safety Manager shall conduct an inspection of the construction site and all fire safety measures on at least a daily basis, and maintain a record of same in a bound log book or other approved system of recordkeeping. A Construction Site Fire Safety Manager shall be present at the construction site at all times when construction, demolition and alteration work is being conducted. The Fire Safety Manager shall ensure that construction site personnel are acquainted with the operation of portable fire extinguishers and other fire protection equipment on the construction site.

For flammable or combustible liquid, the construction site fire safety manager must ensure that proper signage and fire extinguishers are provided at the designated location (refer to page 11-18 and page 29-30 of this booklet).