

**STUDY MATERIAL FOR THE
CERTIFICATE OF FITNESS
EXAMINATION FOR
EXPLOSIVES HANDLER
(E-16)**

NOTICE OF EXAMINATION FOR

Title: Examination for the Certificate of Fitness for Explosives Handler (E-16)

Date of Test: Applicants must arrive before 10:00 AM for processing. Tests are conducted Monday to Friday (except legal holidays) 9:00 A.M. to 2:30 P.M.

QUALIFICATION REQUIREMENTS

1. Applicants must be at least 21 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 the address of the site where the applicant will be/is employed. Self-employed applicants must submit a notarized letter.
4. Applicants must present two (2) forms of satisfactory identification i.e., driver's license and passport picture ID.
5. Applicants must present (3) passport-size photographs.
6. An examination is required for renewals of Certificate of Fitness, but may be waived at the discretion of the Fire Commissioner.
7. Applicants must submit evidence, before they take the test, that they hold a valid driver's license which permits **Commercial Use**.

APPLICATION INFORMATION

Application Fees: \$25.00 for originals; \$5.00 for renewals. The application fee may be paid 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 MetroTech Center, Brooklyn, NY 11201.

Fingerprint Fees: \$50.00 money order only, made out to **NYS Criminal Justice Services**. This fee is collected upon passing the test.

TEST INFORMATION

This is a two-part process. The first portion is a written exam given on a touch screen computer. The second portion is a technical oral examination. Applicants must pass both parts before being issued a Certificate of Fitness.

Written: The test is of the multiple-choice type. A passing score of at least 70% is Required.

Oral: This test is designed to determine their ability to supervise overall operations at the field sites. Applicants must be able to explain specific standards and safe operations in actual practice.

This study material will help you prepare for the written examination for the Certificate of Fitness for Storage, Handling and Use of Explosives. The study material includes information taken from the Fire Prevention Code and the Fire Prevention Directives of the Bureau of Fire Prevention, NYFD. The study material does not contain all of the information you need to know in order to work safely when storing, handling, or using explosives. 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 material.

You must pass both a multiple choice test and an oral test to qualify for the Certificate of Fitness. You must pass the multiple choice test before you take the oral test. A score of 70% correct is required in order to pass the multiple choice test. All questions on the multiple-choice test have four answer options. Only one answer option is correct for each question. If you do not answer a question or mark more than one option your answer will be scored as incorrect. Read each question carefully before marking your answer. There is no penalty for guessing on the multiple-choice test.

Sample Questions

1. All explosives and blasting caps must be stored in:

- (A) the blaster's truck.
- (B) a magazine.
- (C) the site supervisor's shed.
- (D) underground vaults.

The correct answer is **"B"**. You would press **"B"** on your touch screen monitor.

2. The word "EXPLOSIVES" painted on the rear of a truck carrying explosives must be painted in which color?

- (A) Black.
- (B) Red.
- (C) Green.
- (D) White.

The correct answer is **"D"**. You would press **"D"** on your touch screen monitor.

STORAGE, HANDLING AND USE OF EXPLOSIVES

The key to preventing explosives accidents is to follow proper blasting procedures. Safe blasting practices must be followed at all times. Safe practices are required from the moment explosives are delivered to the magazine to the inspection that is made after the blast.

There are several kinds of persons who work with explosives. It is important that each person know and understand what they are permitted to do. A person working with explosives should never try to do something that they have not been trained do. Every person who works with explosives must have a Certificate of Fitness. A person should not do anything with explosives unless they have a Certificate of Fitness for what they are doing.

The blaster is the most highly qualified person at the blasting site. The blaster has total responsibility for the use of explosives and record keeping. The blaster has responsibility for the safety of the public. The blaster is responsible for all work with explosives. The blaster plans the blasting work, supervises loading of the blast, and is responsible for setting off the blast. Only the blaster can give permission to fire a blast.

The Powder Carrier is essentially an "apprentice" blaster. The powder carrier helps to load holes with explosives. The powder carrier assists the blaster in preparing primer cartridges and in wiring charges.

Explosives Loaders help the blaster in tunnel and shaft work. The explosives loader helps load the tunnel face to prepare for the blast.

Explosives Handlers are the drivers of the trucks used to deliver explosives and blasting caps to the blast site. Explosives handlers are not permitted to do any other work with explosives.

The Magazine Keeper accepts delivery of explosives at the work site. The magazine keeper keeps records of explosives as they are received and used. The magazine keeper is responsible for the safe keeping of explosives in the magazines.

Transportation

Two persons holding Certificates of Fitness as explosives handlers must be on each vehicle transporting explosives. This is in case one person is injured, becomes ill, etc. The explosive handlers are responsible for seeing that the vehicle is in safe operating condition. They must also check that proper fire extinguishing equipment and flags are in place. Smoking while transporting explosives is strictly prohibited. Matches, lighters or metal tools are also not permitted on any vehicle transporting explosives.

Only specially designed vehicles may be used to transport explosives. All vehicles used to transport explosives in New York City must have a permit issued by the FDNY Explosives Unit. The vehicles used to transport explosive materials must always be kept in good condition. The condition of the vehicle and the cargo space should be checked every day. Special attention should be given to the condition of the tires, brakes, electrical system, and steering. The fire extinguishers should be checked daily to be sure that they are in good working order.

Explosives must be transported only in a vehicle with a totally enclosed body. The body must be at least four inches from the driver's cab. The body must be constructed of wood (usually oak). The outside of the body must be completely wrapped with noncombustible insulation. The outside of the body exterior is also covered with 22-gauge sheet metal. The only entrance into the body is through rear doors. The doors must be kept locked except when explosives are being placed into or removed from the body.

The vehicle transporting explosive materials must be painted red. The word "**EXPLOSIVES**" must be painted on both sides and the rear of the vehicle. The word "explosives" must be painted in white letters at least 12 inches high. At least one dry chemical fire extinguisher must be provided on the vehicle. The fire extinguisher must have at least 15 pounds capacity. The fire extinguisher must be located in or near the driver's cab. A red flag must be displayed on an erect pole at the center front of the vehicle when it is carrying. The flag must be at least 18 by 30 inches in size. The word "**DANGER**" must be on the flag. The letters must be at least 12 inches high.

Maintenance work should be done only on empty vehicles. Fueling the vehicle with gasoline should be done before the vehicle is loaded, or after the explosives have been unloaded.

The most direct route possible must be taken from the vendor's explosive storage area to the blast site. Transportation and delivery of explosives may be made only between sunrise and sunset. The route taken may not go through tunnels. The vehicle may not travel more than one city block over a subway or under an elevated roadway. Explosives may not be transported over any bridge connecting the boroughs of Brooklyn or Queens with the borough of Manhattan. Congested areas should be avoided to the fullest extent possible. Vehicles loaded with explosives may not be parked near buildings, along roadways or in parking lots. Vehicles loaded with explosives must never be left unattended.

A vehicle carrying explosives cannot have more than 1,000 pounds of explosives at one time. No more than 5,000 electric fuses or blasting caps can be carried at one time. A special permit is required if larger amounts must be transported. Vehicles used to carry explosives may not be used to carry equipment or other supplies. Only the explosives handlers may ride on the truck. Other persons are not permitted on the vehicle. Explosives may be delivered only to an approved and permitted site.

Storage

All explosives and blasting caps must be stored in magazines specially made for that purpose. A magazine must be approved and have a permit to store explosives. Magazines must be under the direct supervision of a magazine keeper holding a Certificate of Fitness. The only duties of the magazine keeper are to guard the magazine and to maintain accurate records.

The magazines must be kept locked when they have explosives or blasting caps in them. The magazines should be unlocked only when materials are delivered to the magazine, or are removed for delivery to the blast site. Only the magazine keeper, the blaster or the powder carrier may have access to the keys to the storage magazines. Only the magazine keeper, the blaster or the powder carrier may accept the delivery of explosives. The explosives handler should not deliver explosives to anyone else.

The amount of explosives that may be kept in a magazine depends on the class of the permit for the magazine. The permit must be kept in the magazine and ready for inspection. The explosives handler should check that a site has the right permit for the amount of explosives that is delivered. The classes of magazines and the maximum amount of explosives that may be stored are as follow.

First Class	1,000 pounds
Second Class	500 pounds
Third Class	250 pounds
Fourth Class	100 pounds
Fifth Class	25 pounds

Only three deliveries may be made to the same site in one day. The amount delivered to a site cannot be more than what is permitted by the class of the magazine. For example, a site with a Fourth Class permit cannot receive more than 100 pounds of explosives in one delivery.

The total amount of explosives that can be delivered to a job site in one day depends on the class of permit. The total amount that is delivered cannot be more than three times the amount permitted for that site. For example, a site with a permit for a Third Class magazine could not receive a total of more than 750 pounds of explosives in one day.

Explosives and blasting caps may not be kept in the same magazine. Two separate magazines are required. One magazine is used to store explosives. Another magazine is used to store the blasting caps. The magazines for explosives and blasting caps should be at least 100 feet apart. A special variance is required if the magazines must be closer than 100 feet apart.

Blasting Procedures

On a blasting job, the blaster has total responsibility for the use of explosives, record keeping and public safety. The blaster must ensure that only safe procedures are used. The blaster must also make sure that workers at the job site perform only those duties for which they have a Certificate of Fitness.

Blasting must be done only between the hours of 7:00 a.m and 7:00 p.m., or between the hours of sunrise and sunset. Blasting may not be done during hours of darkness unless a special permit has been granted by the Fire Commissioner. Blasting is done only on Mondays through Fridays. A special permit is required to blast on Saturdays.

All types of detonators are sensitive to accidental initiation by heat or impact. Detonators should be handled carefully and protected from excessive heat. Electric detonators are also sensitive to extraneous electricity. This could come from radios, high voltage power lines, or electrical storms. Blasting operations should be suspended when an electrical storm approaches. Delivery of explosives and blasting caps should be suspended during an electrical storm.

Only authorized persons needed to perform the loading operation should be allowed at the blast site. A shot should be fired as soon as possible after loading is completed. An audible blast warning signal must be given before the shot is fired. The following signals are used.

One long whistle	3 minutes to blast
Two whistles	Ready to blast
Three short whistles	All clear

The warning procedure should be familiar to all personnel working in or near the blasting area. The warning procedure should be posted where it can be easily seen.

Workers should remain away from the blast area until all smoke, fumes and dust have cleared. The blast site must be inspected by the blaster before an "ALL CLEAR" is given. Workers should not return to the work area until an "all clear" signal is given.

Any explosives not used during the day must be returned to the vendor. If unused explosives cannot be returned at the end of the work day or before dark, the Bureau of Fire Prevention Explosives Unit should be notified.

FIRE EXTINGUISHERS

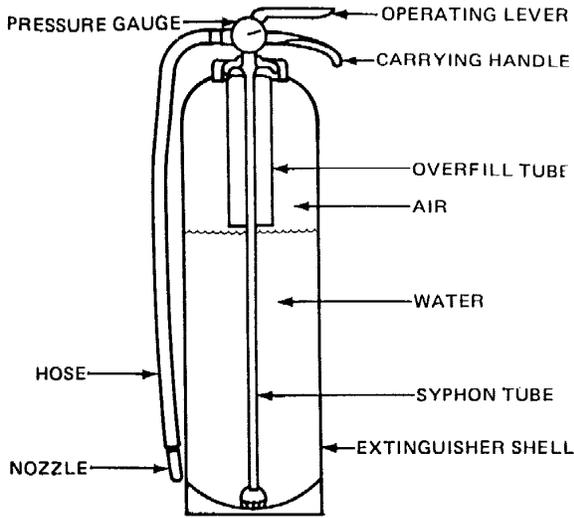
The user of explosives must be familiar with the different types of fire extinguishers that are present. The user must know how to operate the extinguishers in a safe and efficient manner. He/she must know the difference between the various types of extinguishers and when they should be used. The three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

Class A fires occur when ordinary combustible materials are ignited. For example, wood and paper fires are classified as class A fires. Water type extinguishers should be used to extinguish these fires. The water type extinguishers cool the fire while quenching the flame.

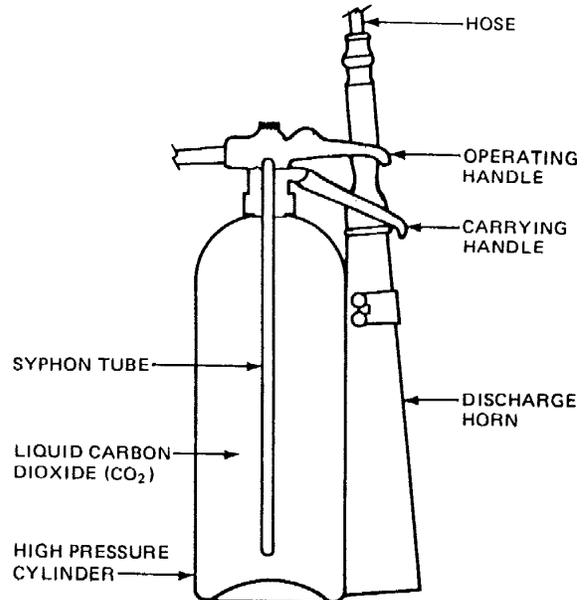
Class B fires occur when flammable liquids or greases are ignited. These fires must be extinguished by smothering the flame. The flame may be smothered using CO₂, dry chemical or foam extinguishers. Water type extinguishers are not effective for class B fires.

Class C fires occur when electrical equipment catches fire. These fires must be fought with fire extinguishers that do not conduct electricity. CO₂ and dry chemical extinguishers must be used to extinguish electrical fires. Foam and water type extinguishers must not be used to extinguish electrical fires.

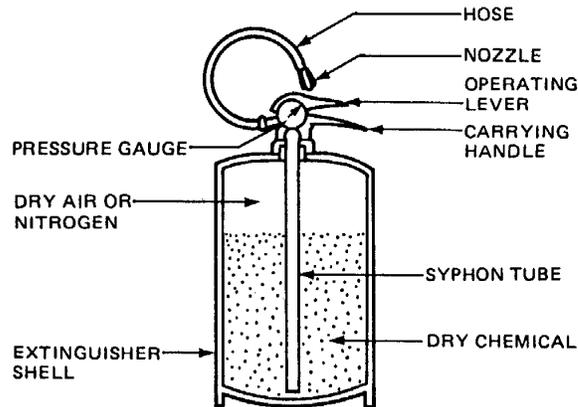
Examples of Water type, CO₂ and Dry Chemical extinguishers are shown on the next page.



Water Type Extinguisher



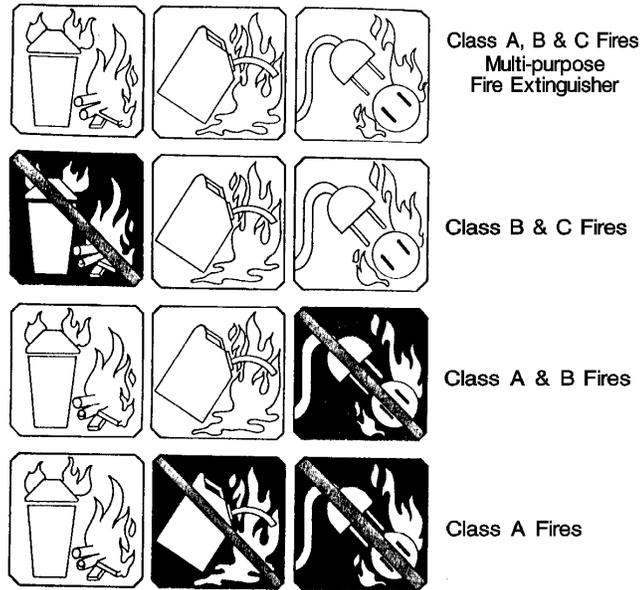
CO2 Extinguisher



Dry Chemical Extinguisher

Typical Fire Extinguishers

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



Typical Symbols Painted on Fire Extinguishers

The symbol with the shaded background and the slash indicate that when the extinguisher must not be used. The explosives user must understand these symbols.

Generally, operation instructions are clearly painted on the side of the fire extinguisher. They clearly describe how to use the extinguisher in case of an emergency. An example of these instructions are shown below.



Operation Instructions for a Fire Extinguisher