STUDY MATERIAL FOR THE EXAMINATION FOR CERTIFICATE OF FITNESS FOR

USE OF LPG, AND NATURAL GAS FIRED HEATER AT CONSTRUCTION SITES

G-94

INSIDE THIS BOOKLET YOU WILL FIND THE FOLLOWING:

NOTICE OF EXAMINATION (NOE)

NOTICE OF EXAMINATION FOR

Title: **Consolidated Examination for the Certificate of Fitness for Use of LPG, and Natural Gas Fired Heaters at Construction sites (G-94)**

Date of Test: Written tests are conducted Monday to Friday (except legal holidays) 9:00 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. Applicants must present two (2) forms of satisfactory identification i.e., driver's license and passport picture ID.

APPLICATION INFORMATION

Application Fees: $25.00 for originals and $15.00 for renewals. The 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.

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) 999-1986 for additional information and forms.

This study material will help you prepare for the examination for the Certificate of Fitness for Handling and Using Liquefied Petroleum Gases (LPG). The study material includes information taken from the Fire Prevention Code of the Bureau of Fire Prevention. The study material does not contain all of the information you need to know to work with LPG. 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.

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 Fitness. Read each question carefully before marking your answer. There is no penalty for guessing.

Sample Questions

_____1. The safest method to ignite a heater fueled by LP Gas would be a:

A) wooden match.
B) flint striker.
C) cigarette lighter.
D) piece of burning newspaper.

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

_____2. LP Gas cylinders and connections should be protected against:

A) mechanical damage.
B) corrosion.
C) extreme weather conditions.
D) all of the above.

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

LIQUIFIED PETROLEUM GASES

Liquified petroleum gases (LP Gases or LPG) are often used as a fuel source. LP gases include propane, propylene, butane, and butylene. The most commonly used LP Gases are butane and propane. LP Gases are often referred to as "Bottled Gas". LPG is used in domestic, commercial, agricultural, and industrial settings. For example, propane is commonly used to heat areas at construction sites and as fuel for forklifts.

DESCRIPTION OF LIQUID PETROLEUM GAS

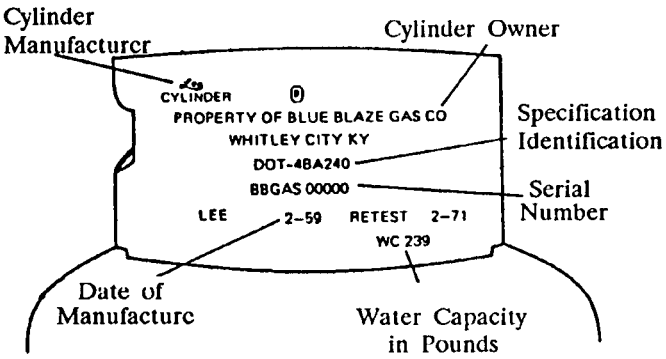
LP Gases are naturally colorless and odorless. They are given an odor by mixing a foul-smelling additive with the gas. The additive causes LP Gas to smell like rotten eggs. This odor allows a leak of LP Gas to be easily detected. LP Gases are extremely flammable and highly explosive if ignited in an enclosed area. LP Gases are non-toxic, however, they can cause suffocation. **LP Gases are heavier than air** and tend to fall to the ground and spread outwards. The use of LPG in a liquid form is prohibited in New York City.

LP Gas is stored under pressure inside especially designed cylinders. The LP Gas is usually stored inside the cylinder in a liquid state. Greater amounts of LP Gas can be stored when it is a liquid form. For most uses the gas changes into a vapor when it leaves the cylinder. When the gas changes into a vaporous state it expands to 269 times its original volume. The expansion rate causes a liquid LP Gas to be a much greater fire hazard than a vapor leak. A liquid LP Gas leak can cause an explosion even when in an outdoor location. Safety procedures must be strictly followed to reduce the danger potential of LP Gas.

DESCRIPTION OF CYLINDERS

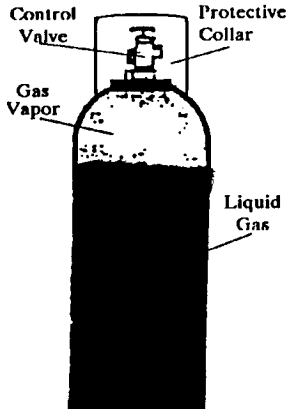
In New York City LP Gases must be stored in portable cylinders. Cylinders must be approved for use by the Federal Department of Transportation. **Cylinders must be re-tested every five years.** ***The Certificate of Fitness holder is responsible for checking the retest date and having the cylinder inspected, on time, by the supplier.***

Several markings are stamped on the protective collar or near the control valve on the approved cylinders. A cylinder should not be accepted if it does not meet the time frames set by the Fire Department. Typical markings are shown below.



Typical DOT Cylinder Markings

The cylinders are not filled to capacity with the LP Gas. **A vapor space is left in the cylinder to allow for expansion of the LP Gas**. This is necessary because LP Gas expands when it becomes warmer. **Standard portable LP Gas cylinders may be charged to a maximum of 100 pounds in weight.** When portable cylinders are moved they must be secured to a specially designed hand truck. LP Gas cylinders and the related equipment must be protected from extreme temperature and physical damage. High temperatures can cause the pressure inside the cylinder to increase to a dangerous level. Sometimes a cylinder is exposed to hot air blown by a heating appliance. If that is the case, a protective partition must be used to shield the cylinders. An example of a typical LP Gas cylinder is shown below.



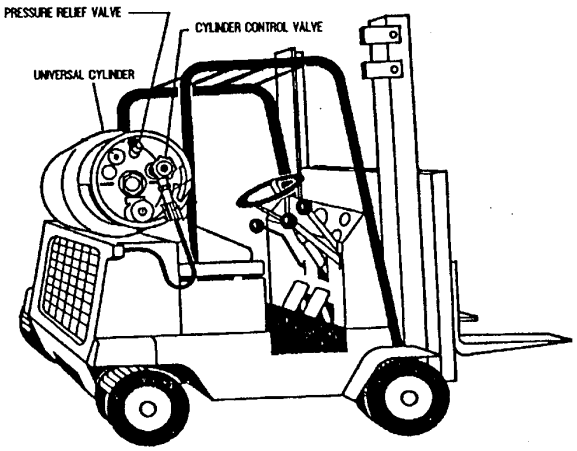
A Typical LP Gas Cylinder

The LP Gas is released from the cylinder by opening the control valve. **The control valve must be opened by hand.** The valve should be opened carefully to make sure that the valve is not damaged. The control valve is opened by turning the valve two full revolutions in a counter-clockwise direction. **The valve must never be forced open by using a wrench.** The valve must not be forced past the fully open position since that might damage the valve.

There are two types of LP Gas cylinders. One type is known as the **STANDARD**-type cylinder. A pressure relief valve is installed on the top of the standard LP Gas cylinder. The pressure relief valve opens when the pressure in the tank becomes too great for safe operation. The valve allows the excess pressure to escape into the atmosphere. The relief valve closes when the pressure in the cylinder returns to a safe level. The relief valve will operate properly only if the cylinder is in the upright position. If the cylinder is not upright, liquid gas will escape from the cylinder. Therefore the standard type cylinder must be kept in an upright position when it is being used or transported.

The other type of cylinder is called the **UNIVERSAL**-type cylinder. The universal type cylinder may be used either in an upright or a horizontal position. A special pressure relief valve is installed on the universal type cylinder. Universal type cylinders are used when it is difficult to maintain a standard type cylinder in an upright position. For example, a universal cylinder may be used to fuel

a forklift truck. The cylinder is usually strapped horizontally to the rear of the forklift truck as shown on the next page.



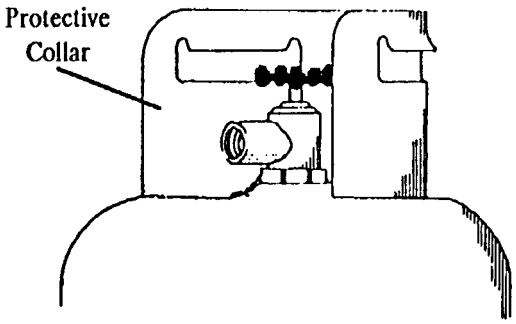
A Typical Forklift Truck

Excess Flow Check Valve

When LP Gas is used on a motor vehicle as an engine fuel for forklifts or used for other purpose, such as marking traffic lanes or cooking equipment in mobile units, the excess flow check valve must be an integral part of the LP Gas cylinder. If the LP Gas cylinder is not equipped with an internal excess flow check valve, it must be installed by the certificate of fitness holder. The excess flow check valve acts as a safety device when the control valve is open. It also shuts off the gas supply to the appliance (grill, heater, or forklift) when the regulator is physically damaged. For example, the excess flow check valve will shut off the gas supply if the cylinder falls and the regulator is damaged in the fall. The excess flow check valve may also shut off the gas supply when the cylinder control valve is opened to quickly.

Protective Cap or Collar

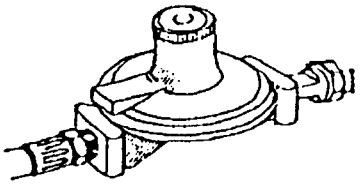
Every LP Gas cylinder must have either a protective cap or a collar. These devices protect the cylinder control valve from physical damage. The protective cap is shaped like an inverted cup. It is screwed on top of the cylinder. It must be in place when the cylinder is not in use. The protective collar is welded onto the top of the cylinder. The collar extends above the height of the cylinders control valve. An example of a cylinder with a protective collar installed is shown below.



A Typical Protective Collar

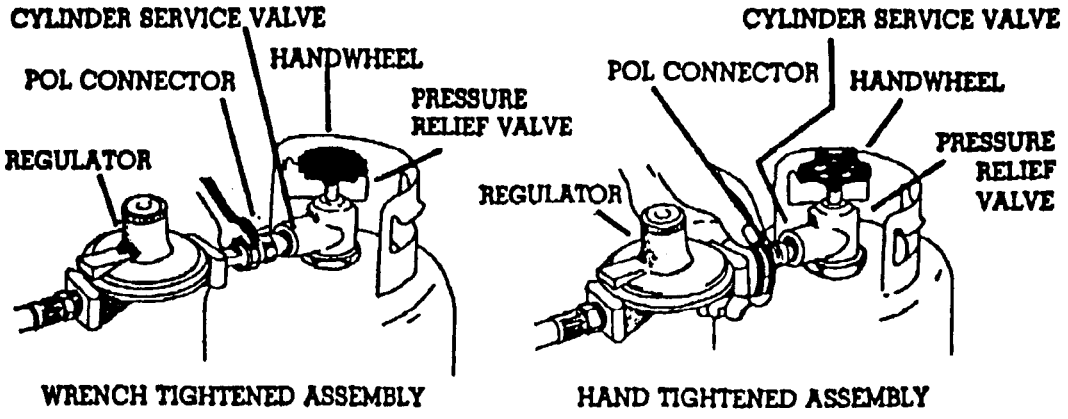
USING LP GASES

A regulator must be installed before any LP Gas cylinder is used to fuel any appliance. The regulator controls the discharge rate of LP Gas from the cylinder. The discharge rate of the regulator is factory-set and should never be adjusted. An example of a typical regulator is shown below.

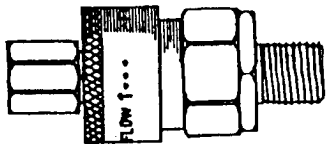


A Typical Regulator

The regulator is threaded into the control valve at the top of the cylinder. These connections have left-handed threads. They are tightened by turning the assembly counter-clockwise. Some connections may be tightened by hand only. Other connections must be tightened with a wrench. An example of each type of connection is shown on the following page.



A third kind of connection may be used to connect the regulator to the control valve. It is called a quick release connection. This allows the user to make the connection without the use of tools. An example of a quick release connection is shown below.



A Quick Release Connection

The regulator is also connected to a hose that supplies the LP Gas appliance. Only approved hoses designed for a working pressure of 350 psi. All regulating equipment, when using LP Gases, must be approved as well. Hoses and related equipment must be protected from wear and physical damage. A leak in the cylinder or related equipment could cause a fire or explosion.
The Certificate of Fitness holder must regularly inspect the cylinders, connections, and appliances for leaks. A foul smelling odor may indicate that there is a leak. When a leak is detected the cylinder control valve must be closed immediately. The cylinder must be isolated to a well-ventilated area, tagged, and returned to the supplier. The cylinder may not be used again until the leak is repaired. The damaged cylinder must be repaired and re-tested by an authorized person.

LP Gas is highly explosive when it accumulates in one area. As a precaution LP Gas must only be used in well- ventilated areas. Fans may be used to ventilate a confined space. The LP Gas cylinder must not be placed underground or in a below grade location. **The cylinder must remain above ground at all times.**

Sometimes LP Gas is used to provide heat in buildings under construction. Heaters must only be used in a well- ventilated area and must not be placed on unprotected wood flooring. All cylinders must be secured in an upright position. **Combustible materials must be located at least 10 feet away from any LP Gas appliance or cylinder.**

STORAGE RULES

All LP Gas cylinders must be stored outdoors in a especially designed storage enclosure. The enclosure must protect the cylinders against extreme temperatures, tipping over, physical damage, and tampering. The enclosure must be located above ground in a well-ventilated area. The LP Gas storage must be accessible from the street. **It must be located at least 50 feet away from any building** occupied as a multiple dwelling**,** and at least 100 feet away from any school, hospital, church, or place of public assembly. Several **NO SMOKING** signs must be posted inside the storage enclosure. A sign must be posted on the outside of the enclosure. The sign should read:

DANGER - LP GAS
KEEP FIRE OR FLAME AWAY
NO SMOKING

Storage at Construction Sites

The maximum allowable quantity of LP Gas in any single storage enclosure on construction sites must not exceed 2500 pounds or a total capacity at any construction site must not exceed 5000 pounds. The distance between two storage enclosures on a construction site must be at least 50 feet. All LP Gas cylinders, full or empty, and which are not in use must be stored in an outdoors storage

enclosure located at least 25 feet of the building under construction. The storage enclosure must be kept securely locked when not in use. Flammable and combustible materials must be kept at a safe distance from the enclosure and must be located at least 50 feet from such enclosure.

The Certificate of Fitness holder is responsible for the safe storage and use of the LP Gas cylinders. Only cylinders in use are permitted inside a building under construction. No extra cylinders may be located in the building while work is in progress. **Absolutely no cylinders may be stored indoors overnight**. Cylinders must be taken outside at the end of each work day. All LP Gas cylinders should be marked **Flammable - LP Gas** or **Flammable - LPG**.

The LP Gas cylinders must be secured in the upright position, The protective caps must be in place and cylinder's valve must be closed when the cylinders are being transported or are not in use.

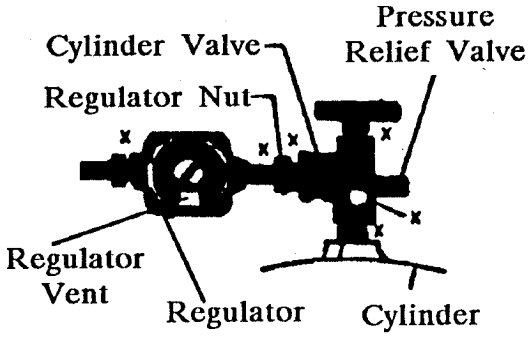
LP Gas storage enclosure must be protected by at least one 10-B/C fire extinguisher located outside of the enclosure. Each construction site storage enclosure shall be equipped with at least one 40-B/C rated, wheeled, fire extinguisher.

SAFETY REGULATIONS

LP Gas must only be used with approved LP Gas appliances. Connecting a cylinder to a non-approved appliance could result in serious injury.

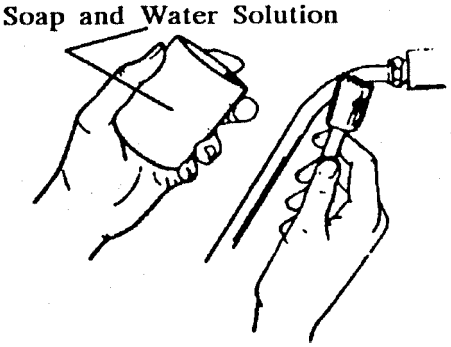
The Certificate of Fitness holder must take care when connecting and disconnecting the cylinders to appliances. The cylinders, valves, hoses, and related equipment should be inspected for physical damage. Special care should be taken to identify any defects that may cause a leak. Any defective components that are discovered must be either repaired or replaced before the equipment may be used again. For example, the Certificate of Fitness holder may repair a hose by cutting out the affected areas and splicing the hose. Taping is not an acceptable way to repair hoses. The Certificate of Fitness holder must not attempt to do any repairs on the regulators or the control valves. This equipment is very sensitive and must be repaired by the manufacturer only. The LP Gas cylinders must be replaced when they are empty. It is illegal to refill LP Gas cylinders in New York City.

After the new cylinder has been connected to the appliance, all connections must be checked for leaks. The areas that must be checked are marked with an **X** in the drawing on the following page.



Areas to Check for Leaks

These areas must be checked using a soap and water solution. First make sure that all connections are tight. Then open the cylinder valve. Each connection is checked by brushing a soap and water mixture on the connection. The connection should be checked to see if any air bubbles are present. If no air bubbles are visible there is no leak. However, if bubbles are present there may be a problem with the connection. The suspected fittings should be disconnected and cleaned. Then the connection is tightened and the checking procedure is repeated. If the bubbles are still visible there is a problem with the connection. The fittings should be repaired or replaced before the equipment is used again. **A lighted flame (for example, a match) should never be used when checking a connection for a leak.**



Occasionally, ice or moisture may build up on the regulator. Icy build-up indicates that the LP Gas is leaving the cylinder in a liquid state. This is caused by a dangerous defect in the cylinder. The cylinder must be returned to the supplier immediately. The cylinder may not be used until it is repaired by the supplier.

An LP Gas cylinder must not be rolled on its side or its rim. It must be moved only by using approved lifting equipment. Cylinders must never be dropped or thrown from any height. Empty cylinders must be handled in the same manner as full ones. They should be marked empty and stored separately from full cylinders. All empty cylinders must be promptly removed by vendors.

LP Gas cylinders may be moved within a building for tar kettle or torch operations on a roof. Such movement must be under the personal supervision of a certificate of fitness holder. Only building's freight elevators may be used and all LP Gas cylinders must be equipped with transportation plugs as well.

LP Gas cylinders must be connected and disconnected only by a Certificate of Fitness holder. Wherever possible connecting or disconnecting an LP Gas cylinder should be done outdoors. Only approved tools should be used when connecting the hose to the cylinder and the appliance. All valves on the appliance and the cylinder must be closed when changing the cylinder. This prevents the accidental leaking of gas into the atmosphere.

A sign explaining safe handling procedures for LP Gas must be posted near all LP Gas appliances. This sign must indicate the following:

a) How to handle LP Gas cylinders safely
b) How to connect all regulators, manifolds, and hoses to cylinders and appliances
c) How to detect LP Gas leaks safely
d) How to start up and shut down the appliance and related equipment
e) The names, address, and telephone number of a local supplier
f) The emergency telephone number of the local fire house

LP Gas cylinders may be transported only in approved vehicles. A transportation permit issued by the Bureau of Fire Prevention (FDNY) is required for each vehicle. LP Gas cylinders may be delivered only to sites displaying a permit or Letter of Authorization issued by the Fire Commissioner.

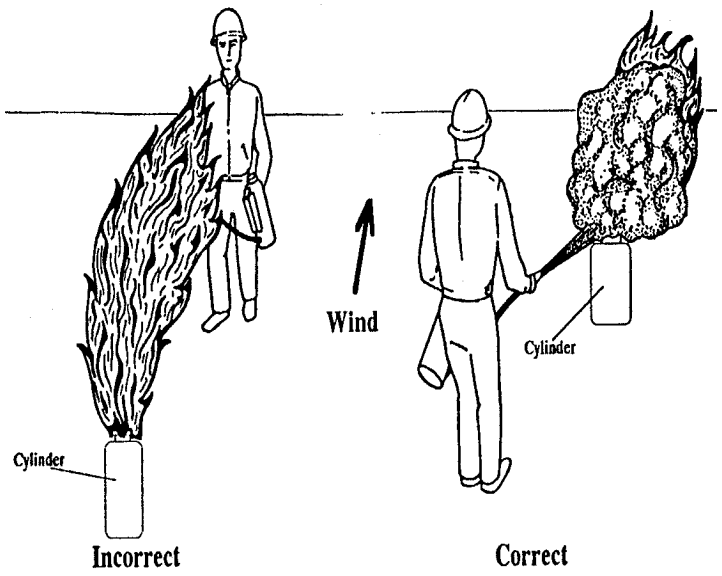
Under no circumstance may LP Gas cylinders be transported through tunnels. Alternate routes must be taken to avoid the tunnel. The Police Department will issue summons to anyone caught transporting a LP Gas cylinder through a tunnel.

At least one dry chemical or carbon dioxide fire extinguisher is required at all locations where LP Gas is used, stored or transported. In case of a fire, the local fire house must be called before any body else.

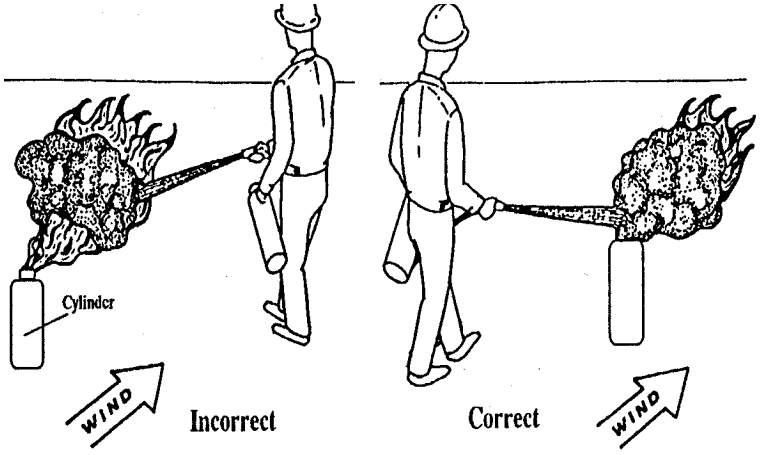
FIRE EXTINGUISHING PRACTICES

Fire extinguishers must be used in accordance with the instructions painted on the side of the extinguisher. A dry chemical or carbon dioxide must be used on a LP Gas fire.

Special care must be taken when extinguishing a LP Gas fire caused by a leak. The easiest way to extinguish the fire is to shut off the gas supply until the flame is extinguished. The flame must be approached from an upwind direction. This will prevent the Certificate of Fitness holder from being burned by the flames. Never approach a fire from a downwind direction. The correct ways to approach a fire are shown below.



The dry chemical stream must be directed toward the point where the flame begins. Do not direct the chemical stream at the center of the flame. This will not extinguish the fire. The correct way to direct the dry chemical stream is shown below.



The gas supply must be shut off as soon as the flame is extinguished. Never attempt to extinguish the flame unless the gas supply may be shut off after the fire is extinguished. When it is not possible to shut off the gas supply, allow the flame to burn itself out. This is safer than allowing the LP Gas to leak out. A LP Gas leak could result in a serious explosion if it were ignited.

FIRE EXTINGUISHERS

The Certificate of Fitness holder must be familiar with the different types of fire extinguishers available at the work site. The Certificate of Fitness holder must know how to operate the extinguishers in a safe and efficient manner. The Certificate of Fitness holder must also know the

difference between the various types of extinguishers and when they may be used. A description of the three 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), for which the quenching-cooling effect of quantities of water or solutions containing large percentages of water is most effective in reducing the temperature of the burning material below its ignition temperature..

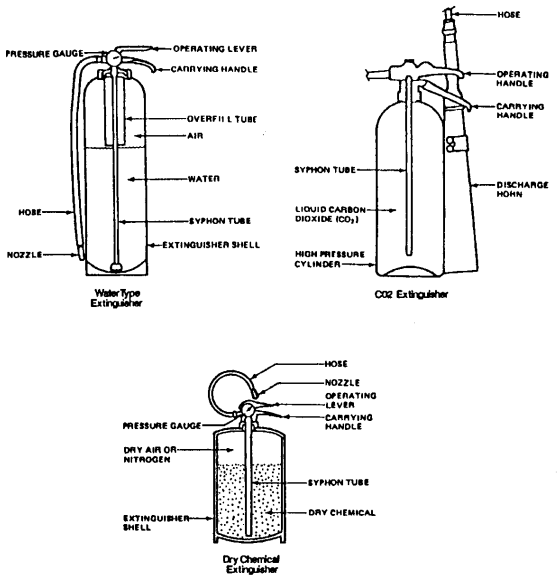
Class B fires are caused by flammable petroleum products or other flammable liquids, greases, etc., for which the blanketing-smothering effect of oxygen-excluding media such as CO_2, dry chemical or foam is most effective.

Class C fires involve electrical equipment. The electrical non-conductivity of the extinguishing media is of first importance. These fires must be extinguished with non-conductive media such as CO_2 or dry chemical.

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 Class A, B, or C fires. Examples of Water type, C02 and Dry Chemical extinguishers are shown below.

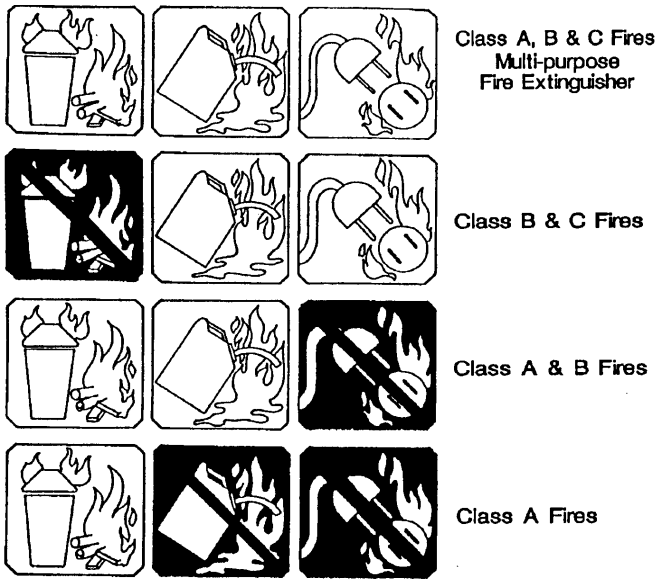
Examples of typical fire extinguishers are shown on the following page.



Typical Fire Extinguishers

Usually 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. The Certificate of Fitness holder should become familiar with the instructions for the extinguisher at his/her work site.

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.



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.

3 RCNY §11-05

Use of Natural Gas Fired Heaters at Construction Sites

(a) Applicability

This section applies to the use at construction sites of portable heaters fueled by piped natural gas.

(b) Definitions

For purposes of this section, the following terms shall have the following meanings:

Natural gas. A mixture of hydrocarbon gases and vapors, consisting principally of methane in gaseous form.

Natural gas fired heater. Any appliance used for the generation of heat that is not permanently installed on the premises under construction and that is connected to, and fueled by, piped natural gas.

Piped natural gas. Natural gas supplied by means of piping connected to a public utility.

Plumber. A licensed master plumber, as that term is defined by the New York City Building Code (as set forth in New York City Administrative Code §26-141[e]), or a person working under the direct and continuing supervision of a licensed master plumber, as authorized by said code (as set forth in New York City Administrative Code §26-142).

(c) General Prohibitions

(1) It shall be unlawful to store or use a natural gas fired heater at a construction site for human comfort or any other purpose other than construction-related curing and drying.

(2) It shall be unlawful to store or use a natural gas fired heater at a construction site for construction-related curing and drying without a Department permit.

(3) It shall be unlawful to store or use a natural gas fired heater at a construction site where:

(i) any portion of the building under construction is occupied;

(ii) the portion of the building under construction is located within:

(A) 10 feet of any opening in walls of occupied adjacent structures or buildings; or

(B) 50 feet of any building occupied for educational, health care or religious purposes, place of public assembly or other place of public gathering;

(iii) there is no shut-off valve for the piped natural gas service to the building under construction installed outside of the building in accordance with the requirements of Section P115.5 of Reference Standard RS-16 of the New York City Building Code; or

(iv) the natural gas pipe building supply pressure is greater than one-half (½) pound per square inch gauge.

(d) Permit Requirements

(1) A permit shall be obtained from the Department prior to any storage or use of natural gas fired heaters at a construction site. The permit shall be issued in the name of the owner of the property, upon application of the owner or a registered architect, professional engineer or contractor on the owner's behalf.

(2) Permit applications shall be filed with the Department's Bureau of Fire Prevention at Fire Department Headquarters. The permit application shall include such information and documentation as the Department may prescribe, including but not

limited to a completed application form, and a copy of the work permit issued by the New York City Department of Buildings authorizing the installation of temporary natural gas piping (or other form of Department of Buildings approval acceptable to the Department).

(3) Permits shall be granted for a period of up to one year. The annual permit fee shall be $210.

(e) Supervision, Inspection and Recordkeeping Requirements

(1) Natural gas fired heaters at a construction site shall be under the personal supervision of a plumber or a person holding a certificate of fitness for such activity whenever such heaters are in use. At all other times, natural gas fired heaters at a construction site shall be under the general supervision of such plumber or certificate of fitness holder.

(2) The plumber or certificate of fitness holder shall periodically inspect all natural gas fired heaters that are in use. Such inspections shall be conducted as frequently as needed to ensure the safe operation of the heaters, considering the nature and location of the curing or drying operation and surrounding activities at the construction site, but in no event less than once every four (4) hours. All natural gas fired heaters that are connected for use but not in use, and all natural gas piping and equipment installed at the construction site, including the outdoor gas service line shut-off valve, shall be inspected at least once every work day. The plumber or certificate of fitness holder shall ensure that all such appliances, piping and equipment are in a safe condition and proper working order and are otherwise installed, maintained and operated in compliance with the requirements of this section.

(3) A record of all inspections required by this subdivision, including any corrective action taken, shall be made in a bound log book kept at the construction site and made available for inspection by a Department representative.

(f) Natural Gas Piping and Control Valve Requirements. In connection with the use of natural gas fired heaters at construction sites:

(1) Temporary natural gas piping shall comply with all requirements of Section P115.0 of Reference Standard RS-16 of the New York City Building Code.

(2) Temporary natural gas piping shall be installed in such a manner and at such locations as will minimize the risk of damage from the construction activity occurring at the construction site.

(3) Temporary natural gas piping shall be clearly marked "Natural Gas" at least once every 30 feet, and at least once in each room or other separate area.

(4) A shut-off valve shall be installed at each natural gas pipe outlet that is to be used for a natural gas fired heater with a flexible hose connection. A maximum of four (4) heaters may be connected to each such shut-off valve.

(5) All shut-off valves required by this subdivision shall be hand operable and of the quarter-turn type.

(6) All valves required by this subdivision shall be installed in unobstructed locations where they are clearly visible and readily accessible. Access shall be provided to any valve located more than seven (7) feet above floor level by means of a fixed or otherwise stable stair, ladder or platform.

(7) The outdoor gas service line shut-off valve shall be clearly marked with metal tags or in another permanent manner.

(8) Defective gas piping, tubing and fittings (including valves, strainers, filters) shall be replaced and not repaired. An adequate supply of spare parts and material shall be available on the premises for replacement.

(g) Natural Gas Fired Heater Requirements. In connection with the use of natural gas fired heaters at construction sites:

(1) Natural gas fired heaters shall be of a type accepted by the New York City Department of Buildings Division of Materials and Equipment Acceptance or previously approved by the New York City Board of Standards and Appeals, unless such approval is amended or repealed by the New York City Commissioner of Buildings.

(2) All electrical wiring and equipment associated with the use of natural gas fired heaters shall be installed in conformance with the New York City Electrical Code.

(3) Flexible hoses used for connecting natural gas fired heaters to natural gas pipe outlets:

(i) shall be suitable for natural gas service and of a type designed for a working pressure of not less than three hundred and fifty pounds per square inch;

(ii) shall not exceed 20 feet in length;

(iii) shall be installed with a shut-off valve between the end of the hose and the heater;

(iv) shall not pass through any walls, partitions, ceilings or floors, or any other concealed location;

(v) shall not extend from one room to another, except through an opening where the door has been removed or secured from movement, and shall not be installed in such other manner or at such other locations as would expose the hose to crimping, wear or damage or constitute a falling or tripping hazard;

(vi) shall not be used for any other purpose; and

(vii) shall be maintained in a safe condition.

(4) At least one copy of the manufacturer's operating and maintenance instructions for the natural gas fired heaters shall be readily available at the construction site.

(h) Natural Gas Fired Heater Operating Requirements. In connection with the use of natural gas fired heaters at construction sites:

(1) Natural gas fired heaters:

(i) shall be used only in well-ventilated areas;

(ii) shall be placed on a noncombustible foundation; and

(iii) shall be placed at a safe distance from combustible materials, including combustible building construction, in accordance with the approved use of the natural gas fired heater set forth in the acceptance of the New York City Department of Buildings Division of Materials and Equipment Acceptance or the approval of the New York City Board of Standards and Appeals, and in accordance with the manufacturer's operating instructions; and

(iv) shall be placed at least 20 feet from flammable liquids, combustible liquids and compressed gas cylinders.

(2) Smoking shall be prohibited within ten (10) feet of any natural gas fired heater in use or connected for use. "NO SMOKING" signs shall be posted conspicuously throughout the areas where smoking is prohibited.

(3) When the curing or drying is to take place within a temporary enclosure, only non-combustible panels, flame-resistant tarpaulins or similar fire-retardant materials shall be used for such enclosure. The enclosure shall be secured from movement by wind or other causes. Natural gas fired heaters shall not be placed closer than ten (10) feet from any surface of the enclosure.

(4) Temporary lighting used in connection with curing or drying operations shall be equipped with heavy duty electrical cords and guards to prevent accidental contact with the bulb. Such lighting shall be removed from the area as soon as they are no longer needed.

(5) A portable combustible gas leak detector shall be readily available on the premises.

(6) At least one portable (1) fire extinguisher having a minimum 20-B:C rating shall be provided on each floor of the construction site at a location not more than 30 feet from where a heater is in use or connected for use. A travel distance of up to 50 feet is allowed if a fire extinguisher having a minimum 40-B:C rating is provided.

(i) Modification

Whenever circumstances, conditions, limitations, or surroundings are unusual, or such as to render it impracticable to comply with any or all of the foregoing provisions, the Commissioner may waive or modify such provisions to such extent as he or she may deem necessary, consistent with public safety.