CONTRACT SERVICES

Safety Training Course N

COMPRESSED GAS AND FUEL CYLINDERS

Presented by

Contract Services

As part of the

Safety Pass Training Program for the Motion Picture and Television Industry

N

Second Edition
August 2017

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Safety Pass Training Program

The Entertainment Industry is committed to maintaining a safe and healthful working environment. To that end, all major studios have a safety representative on staff. In addition, all employers have a safety program in force. This Safety Pass Program has been designed to further promote safety and health and to prevent injuries, illnesses, and accidents on all productions, both on-lot and off-lot.

Studios and production companies may have more restrictive safety requirements than those mandated by local, state, or federal laws or regulations. They also may assign different duties or responsibilities to employees. Therefore, in addition to this Safety Pass training course, employees should refer to the safety manual and materials provided by their employers.

Employees must adhere to all safety rules and regulations. Failure of any employee to follow safety rules and regulations can lead to disciplinary action, up to and including discharge. However, no employee shall be discharged or otherwise disciplined for refusing to perform work that the individual reasonably believes is unsafe.

No safety training can comprehensively cover all possible unsafe work practices. Each production and its employees, therefore, should fully promote each employee's personal obligation to work safely in order to prevent accidents involving, and injuries to, the employee and to his/her fellow employees.

The Safety Pass Program derives from Federal and California Occupational Safety and Health Administration (OSHA) safety regulations. However, the material included in this workbook and its accompanying presentation should be used only as a general guideline. It is not intended as a legal interpretation of any federal, state, or local safety standard.

During the course of your employment, you may be acting as a supervisor or manager. In California, individuals with management authority and actual authority for the safety of a business practice could be convicted of a crime if they have actual knowledge of a serious concealed danger and fail to warn the affected employees and report the hazard. If a hazard exists, immediately notify the employer or studio safety department of the hazard and insure that potentially affected employees are informed of the danger and that steps are taken immediately to mitigate it.

Although the information contained in this training program has been compiled from sources believed to be reliable, the Alliance of Motion Picture and Television Producers, Contract Services Administration Trust Fund, Contract Services Administration Training Trust Fund, and the instructor make no guarantee nor warranty as to, and assume no responsibility for, the accuracy, sufficiency, or completeness of such information.

The Entertainment Industry is committed to maintaining a safe and healthful working environment.

Injury and Illness Prevention Program

This class is part of the employer's safety program.

Employers must provide workers a place of employment free from recognized hazards and must have a safety training program in place.

In the State of California, this program is known as an Injury and Illness Prevention Program (IIPP). One requirement of an IIPP is that every employee must be properly trained in safety.

The IIPP and Safety Pass training courses are part of the employer's safety program.

Contents

Scene 1
Compressed Gas Cylinders

This course covers safety rules and regulations for the use of compressed gas cylinders. Included is an overview of potential dangers, health hazards, and general safety procedures for working with, handling, storing, filling, or transporting cylinders.

The hazards of gasoline and diesel fuel, precautions for their use, and refueling operations are covered in Scene 7, *Gasoline and Diesel Fuel.*

Only individuals trained in safe handling of compressed gases and authorized by the employer may handle cylinders.

Types of Compressed Gas

There are three main types of compressed gases—liquefied, non-liquefied, and dissolved gas. Each type has unique characteristics.

Liquefied Gas

A liquefied gas becomes liquid at normal temperatures when it is under pressure in a cylinder. Inside the cylinder, it is in a liquid/vapor balance. As gas (vapor) is removed from the cylinder, liquid evaporates to replace the gas. Carbon dioxide and propane are examples of liquefied gases.

Non-Liquefied Gas

A non-liquefied gas is also known as a compressed or pressurized gas. The gas does not become liquid at normal temperatures, even at a very high pressure. Examples of non-liquefied gases are oxygen and helium.

Dissolved Gas

Acetylene is used in welding and brazing.

Acetylene is the dissolved gas most commonly used in the entertainment industry. Acetylene is very unstable; it can explode even at atmospheric pressure. It can be stored and used safely because the cylinder is fully packed with an inert, porous filler that is saturated with an acetone solution that dissolves the gas, making it stable.

Table 1.1 shows examples of gases commonly used in the entertainment industry and some of the hazards associated with each type of gas.

Table 1.1 Hazards and Uses of Compressed Gases

Gas	Physical State	Description	Hazard	Typical Industry Use
Argon	Compressed Gas	Colorless, Odorless	Simple Asphyxiant	Welding
Acetylene	Dissolved Gas	Colorless, Mild Garlic Odor	Extremely Flammable	Welding
Carbon Dioxide	Liquefied Gas	Colorless, Odorless	Cryogenic, Simple Asphyxiant	Creating Steam or Smoke Effects
Compressed Air	Compressed Gas	Colorless, Odorless	Pressure Hazard	Powering Tools, Some Cleaning Uses
Helium	Compressed Gas	Colorless, Odorless, Tasteless	Simple Asphyxiant	Filling Set Lighting Balloons
Hydrogen Gas	Compressed Gas	Colorless, Odorless, Tasteless	Extremely Flammable, Explosive	Powering Hydrogen Fuel Cells
Liquid Petroleum Gas (LPG or Propane)	Liquefied Gas	Colorless	Extremely Flammable, Simple Asphyxiant	Heating, Cooking, Powering Specialty Vehicles, Creating Special Effects
Nitrogen Gas	Compressed Gas	Colorless, Odorless, Tasteless	Simple Asphyxiant	Cleaning Camera Bodies and Lenses
Nitrogen, Liquid	Liquefied Gas	Colorless, Odorless, Tasteless	Cryogenic, Simple Asphyxiant	Creating Fog Effects
Oxygen	Compressed Gas	Colorless, Odorless, Tasteless	Oxidizer, Non-Flammable but Accelerates Combustion	Welding

Physical and Health Hazards

All compressed gas cylinders are hazardous because of the high pressure inside the cylinder. In addition, the contents can be explosive, flammable, toxic, or cause suffocation in confined spaces.

Pressure Hazards

Any compressed gas cylinder, even one containing compressed air, can cause serious damage if the cylinder is punctured or ruptured, the valve is knocked off, or the cylinder welds break. The released pressure can cause cylinders to become projectiles or to spin uncontrollably.

Explosion Hazards

Because of the pressure, cylinders may present an explosion hazard if heated. Compressed gas expands when heated, which can create enough pressure to cause either a forceful release of gas through the relief valve or a failure of the cylinder itself.

Fire Hazards

The contents of a cylinder may be flammable. For example, propane gas is extremely flammable and can cause flash burns and explosions. Acetylene gas is also extremely flammable and can form explosive mixtures with air.

The safety data sheet (SDS) for each gas will provide more information.

Health Hazards

The contents of a cylinder can be toxic and may have short- and long-term health effects. Many compressed gases are classified as simple asphyxiants—they may displace oxygen from air when they are present in high concentrations, but in low concentrations have no physiological effects.

Check the SDS for first aid measures for exposure and the specific health hazards of each gas.

Scene 2
Anatomy of a Cylinder

Cylinder Standards

Portable cylinders used for the storage and shipment of compressed gases are constructed and maintained in accordance with the standards of the Compressed Gas Association (CGA), the regulations of the U. S. Department of Transportation (DOT), and the guidelines of the American Society of Mechanical Engineers (ASME).

Cylinders are tested and approved using DOT regulations and standards. Cylinders must be requalified at regular intervals. The manufacture date and the requalification dates are permanently stamped on each cylinder.

CGA standards require compressed gas cylinders to have pressure relief devices installed and maintained. At a predetermined pressure, the relief device permits the gas to escape from the cylinder. Depending on the type of cylinder, this relief device may be a fragile disk that is intended to burst, a fusible plug that melts, a safety relief valve that opens, or a combination of these methods.

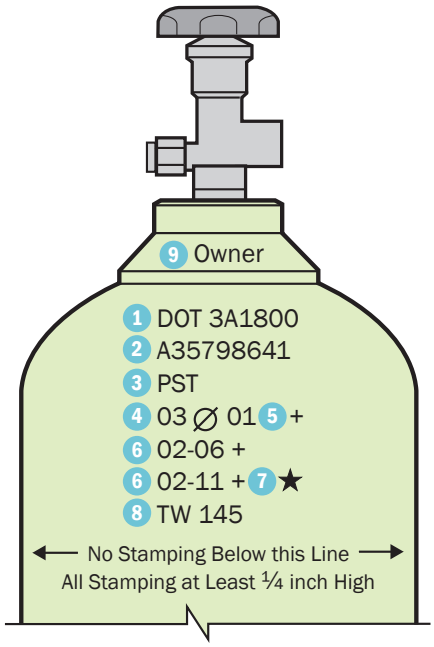
Types of Cylinders

Cylinders are designed and constructed with different specifications depending on their intended use, the type of gas they contain, and the pressure required for the particular gas (service pressure). Classifications are assigned by the DOT to reflect the different designs. For example, a cylinder that is rated as 3A or 3AA is constructed as a uniform steel cylinder that can withstand the high service pressure needed for nitrogen, oxygen, or helium; a rating of 4B or 4BA indicates a welded cylinder used for liquid petroleum gas (LPG or propane), which requires a much lower service pressure (Figure 2.1).

Figure 2.1. 4BA cylinders used for propane.

Cylinder Markings

Cylinder markings (Figure 2.2) must be stamped into the cylinder with characters at least ¼" high.



1. DOT cylinder type and service pressure
2. Serial number
3. Manufacturer's inspection marking
4. Date of manufacture
5. + indicates cylinder may be 10% overcharged
6. Retest date (if applicable)
7. ☆ indicates 10-year retest interval
8. Tare weight—empty cylinder (not required on all cylinders)
9. Neck ring owner identification (optional)

Figure 2.2. Cylinders must be permanently marked.

Tare weight is a required marking on all cylinders containing liquid gases measured by weight, such as propane and liquid nitrogen.

Never use a cylinder if a series of Xs have been stamped over the DOT number and service pressure (Figure 2.3) or if it is marked "CONDEMNED" on the shoulder, top, or neck ring. These markings indicate that the cylinder has been condemned by a requalifier as unsafe and may not be refilled.

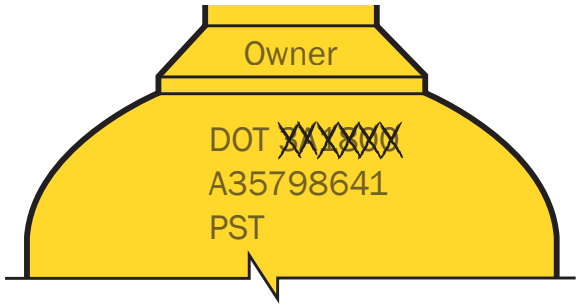


Figure 2.3. This cylinder has been condemned and is not safe for use.

Requalification Requirements

Most cylinders must be requalified periodically by a qualified cylinder testing facility. The retest period varies, depending on the contents of the cylinder. For example, cylinder types 3A or 3AA must be requalified every five years unless there is a star at the end of the date, which indicates a 10-year requalification interval. When used for propane, cylinder type 4B or 4BA must be retested within 12 years in most instances, but there are exceptions.

Table 2.1 shows the required requalification periods for cylinders commonly used in the motion picture industry.

Regardless of other periodic requalification requirements, a cylinder must be tested, inspected, and requalified if it is dented, cracked, or abraded, or if it shows evidence of corrosion, leakage, heat damage, or other damage.

Table 2.1 Cylinder Requalification Requirements

Cylinder Type	Use	Typical Service Pressure (68°F @ 1 atm)	Retest Pressure	Requalification Period (Years)
3A, 3AA High Pressure Steel	Nitrogen, Oxygen, Helium Gas	1800, 2015, or 2400 psi	5/8 × Service Pressure	5, 10, or 12 (depending on use)
4B, 4BA, 4BW, 4B240ET	LPG/Propane	240 psi	2 × Service Pressure	5, 10, or 12*
4L	Cryogenic Liquids	22-350 psi	Test Not Required	
8, 8AL	Acetylene Gas in Solution	250 psi		10**

*See §49CFR 180.209 (e), (f), and (j)
**Porous filler material in acetylene cylinders must be requalified no sooner than 5 years and no later than 20 years if cylinder is manufactured after 1/1/1991

Valves and Valve Protection

The DOT requires all cylinders with a water weight capacity of over 30 lbs. to have a valve protection cap, collar, or recess to protect the valve. Water weight capacity (measured in pounds) is the standard that DOT uses to determine how much the cylinder will hold.

Cylinders with less than 30 lbs. water weight capacity are not required to have a valve protection device (cap). For example, small acetylene tanks used for welding and brazing or small portable oxygen tanks do not need a valve cap.

If the cylinder requires a cap, it should be in place at all times, except when the cylinder is in use (Figure 2.4), even when the cylinder is considered empty.

Never tamper with or attempt to repair a cylinder valve. If a problem arises, contact the supplier.

Figure 2.4. Unprotected cylinder (left) and cylinder with valve protection (right).

Notes

Scene 3
Cylinder Use and Storage

Safe Use

The contents of any compressed gas cylinder must be clearly identified with the chemical or trade name of the gas (Figure 3.1). If the identifying label is missing or illegible, the cylinder should be marked "contents unknown", taken out of service, and returned to the supplier. Review the SDS to know the safety precautions for each gas and how to respond in the event of an emergency.

Figure 3.1. All cylinders must have the contents clearly identified.

Figure 3.1. Key

1. Gas name
2. Gas grade
3. United Nations numbering system for safe handling, transport, and storage
4. Signal word
5. Hazard statement
6. DOT hazard classification

Inspect all cylinders upon delivery and before each use.

Setting up Cylinders

Before each use, inspect the cylinder. Cylinders showing physical damage, rust, or fire damage must not be used. Take a damaged cylinder out of service, notify the supervisor, and return the cylinder to the supplier.

When setting up cylinders:

- Keep cylinder valves, couplings, regulators, and hoses free from oily or greasy substances.
- Never use oil or grease as thread lubricant.
- Inspect all parts before using.
- Do not hang equipment or personal items on a cylinder.

Regulators, Gauges, and Connectors

Pressure regulators and gauges are used to control the amount of pressure being released from cylinders. They must be compatible with the cylinder valves and be correct for the type of gas being used (Figure 3.2).

Before installing regulators, clear the valve of dust or dirt by "cracking" the valve open slightly and closing it immediately while standing to one side of the outlet, not in front of it. Do not crack the valve in an area where the gas might reach sparks, flames, or other sources of ignition.

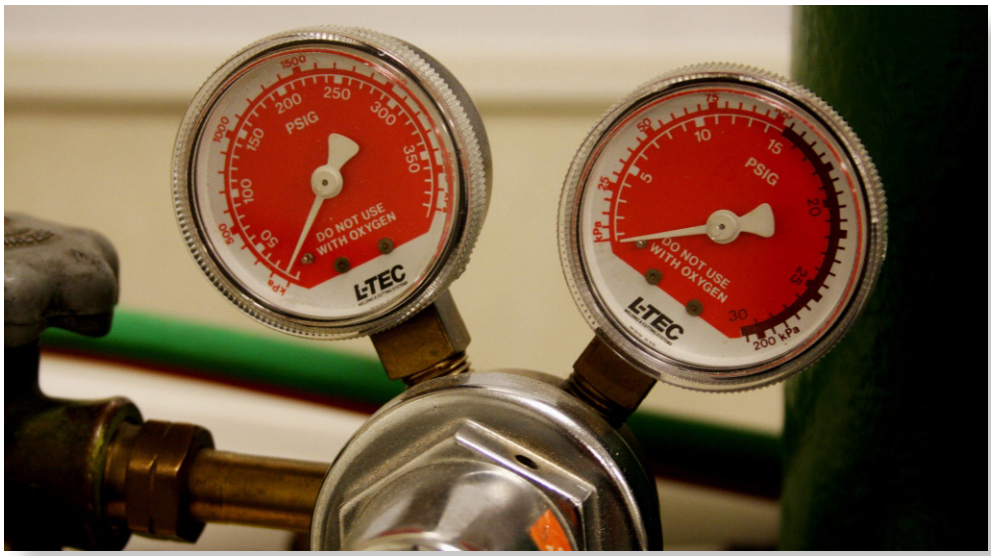


Figure 3.2. Gauges must be correct for the type of gas being used.

Whenever a cylinder is not in use, remove the regulator. Before removing it, close the cylinder valve and release the gas from the regulator.

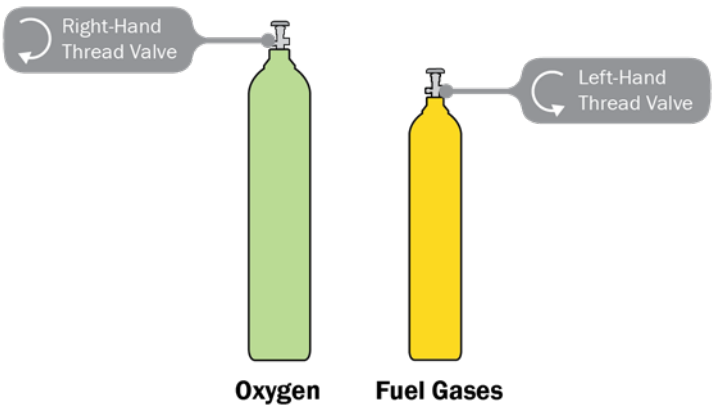
A connector must be compatible with the regulator. Assembling a fitting or using a regulator adapter is prohibited.

Connections come in different sizes and thread configurations. For example, fuel gas connectors used for welding and cutting have left-hand threads, while non-fuel connectors and some non-welding fuels use right-hand threads.

Hand tighten all connections; do not use a wrench (Figure 3.3).

Figure 3.3.
Hand-tighten connections.

Oxygen cylinders have right-hand threads, while fuel gases used for welding and cutting have left-hand threads. This helps prevent using the wrong regulator or connector.



Confirm that the regulator, gauge, and any connectors are compatible.

Cylinder Repair
If a cylinder needs repair, notify a supervisor and return the cylinder to the supplier.

Using Cylinders

Compressed cylinders are designed to be used in an upright position. The exception to this rule is for liquefied fuel gas (propane), which must be used, stored, or transported in a position so that the safety relief device is in direct contact with the vapor space in the cylinder, which may be upright or horizontal (Figure 3.4).

To quickly close the valve, the hand wheel, key, or handle used for opening the cylinder valve should be kept on the valve stem when the cylinder is in use.

Individual cylinders must be secured to a fixed object when in use, unless they are secured in a cylinder cart.

Cylinders should be protected from heat. The internal cylinder temperature must not exceed 120°F for safe use.

Do not take cylinders containing oxygen or fuel gases into confined spaces.

Figure 3.4.
Industrial truck LPG fuel tank mounted horizontally.

When Work Begins

When ready to begin work, stand to one side of the regulator, away from the gauge face, and open the valve slowly to prevent damage to the regulator. Table 3.1 shows recommended valve opening guidelines.

Table 3.1 Recommended Valve Openings

Fuel gases	Do not open more than 1½ turns to allow for quick closing
Acetylene	Preferably not opened more than ¾ of a turn
Non-fuel gases	Open all the way for proper seating of the valve

Purge hoses of gas after connecting to a cylinder to remove possible contamination before beginning work.

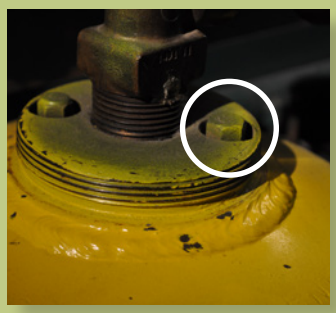


Figure 3.5.
Gland nut on cylinder.

Check for leaks. If a cylinder is leaking, try tightening the regulator first and then the gland nut, which is found at the base of the valve (Figure 3.5). If it is still leaking, move it to a safe outdoor location away from ignition sources and notify the supplier, the employer, and the safety department. If the cylinder cannot be moved outside safely, evacuate the area and immediately notify the fire department, the employer, and the safety department.

When Work Is Finished

When work has concluded or paused for any substantial period of time:

- Close the valve
- Purge the hose of gas
- Remove the regulator and replace the valve cap

Never empty a cylinder completely. Leave a small amount of gas in the cylinder to maintain a slight positive pressure. This prevents air from being drawn back into the cylinder, which can cause contamination and corrosion. Cylinders should be considered empty when the pressure gauge reads approximately 25 psi.

Precautions When Welding

Keep cylinders far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire resistant shields must be provided. Do not place cylinders where they can become part of an electrical circuit.

Before work begins, confirm that approved flashback arrestors (Figure 3.6) are installed on oxygen and fuel gas cylinders.

Figure 3.6. Flashback arrestors.

Never allow a flame or arc to come in contact with any part of a compressed gas system.

Check for leaks with soapy water; never use a match or a lighter.

Using Manifold Systems

Manifold systems are used to run lines from multiple compressed gas cylinders to a single piece of equipment (Figure 3.7). They are used to supply a steady source of gas when usage is high.

When working with manifold systems:

- Connect and properly secure all lines, valves, and cylinders; check for leaks.
- Use hoses and parts approved and labeled for the product being used.
- Use spark-resistant tools to tighten hard lines of manifold systems.
- Confirm that a single hand wheel, key, or handle is in place to open and close cylinders.
- Do not place anything on top of the manifold.
- When not in use, manifold and header-hose connections must be capped.

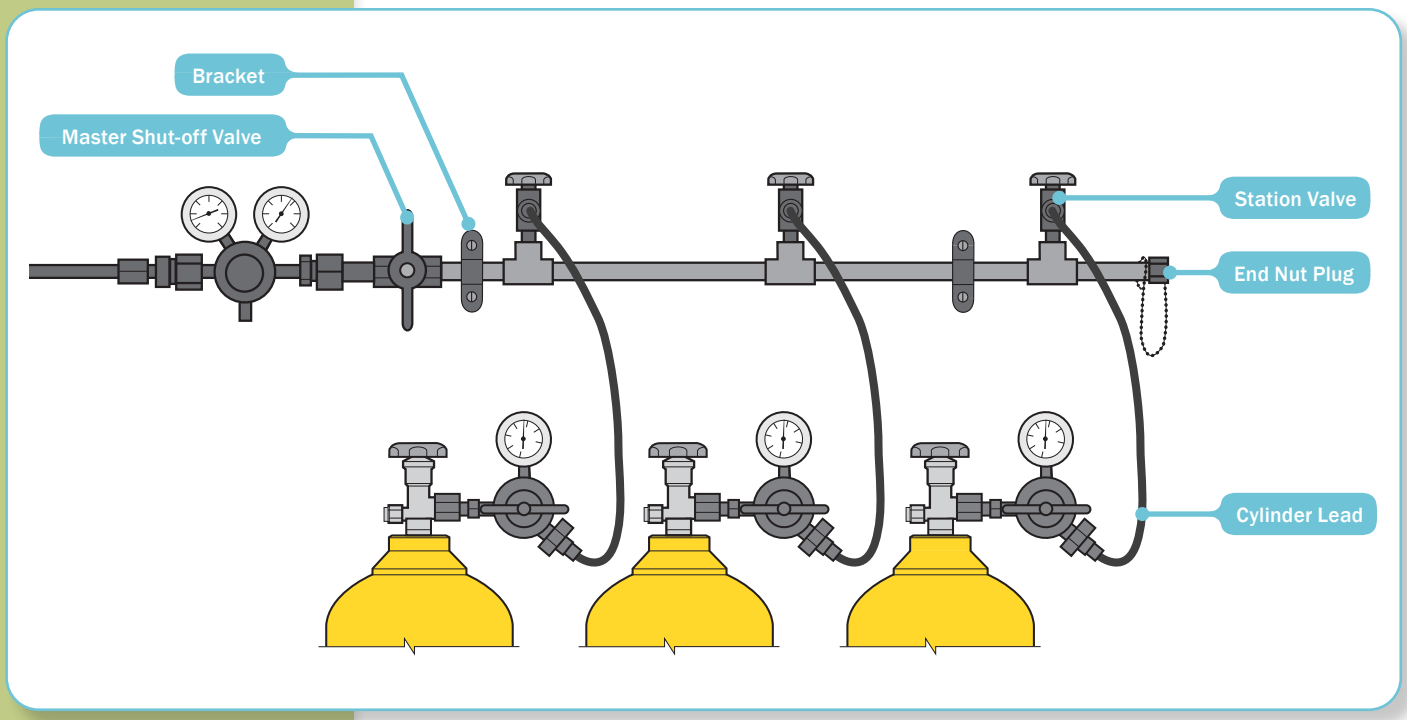


Figure 3.7. Manifold system.

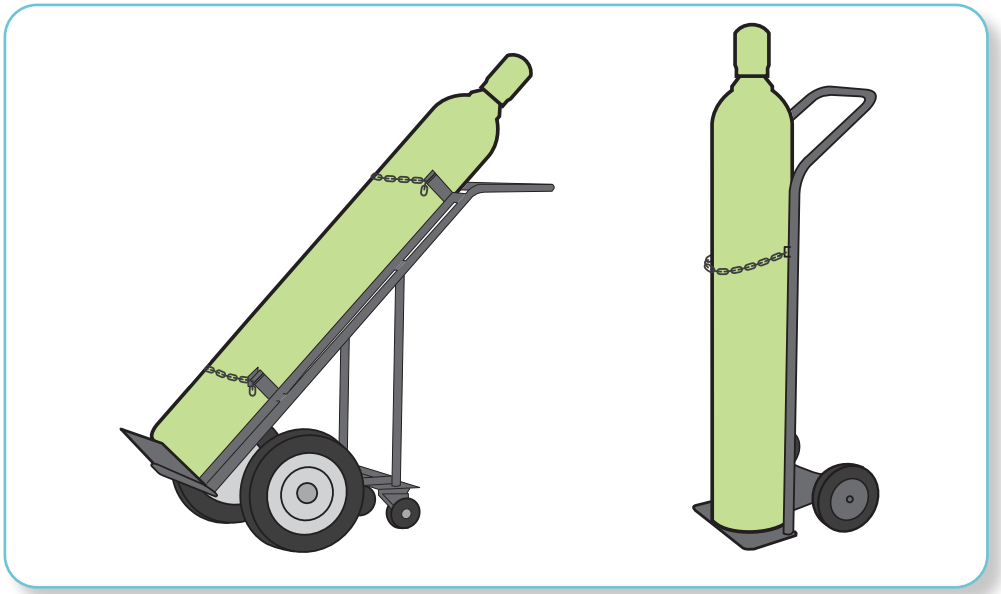


Figure 3.8. Cylinder cart.

Moving Cylinders

Safety precautions when moving a cylinder:

- Valve cap must be in place.
- Never roll a cylinder on its side or use it as a roller to move or support heavy objects.
- Never lift a cylinder by the valve or valve cap.
- Move upright—do not allow more than a 45° angle from vertical.

Cylinders should be moved using suitable carts (Figure 3.8) to which they are securely fastened. However, in lieu of cylinder carts, cylinders may be moved a short distance by tilting and rolling them on their bottom edges while still keeping them upright. Do not roll them over electrical cables, wet surfaces, or sloped areas.

Storing Cylinders

Because of the hazards associated with compressed gas, precautions for storage are necessary.

Figure 3.9. Cylinders must be strapped or chained to protect against tipping or movement. Some locations may require two straps or chains, especially in areas prone to earthquakes.

Cylinders must be stored in a manner to prevent them from tipping, falling, or rolling. They may be stored in a rack or cage, as long as they are properly secured against movement (Figure 3.9). Typically, they are strapped or chained to a fixed object to restrict movement.

Cylinder carts may not be used for long-term storage, which in most cases means longer than a 24-hour period. If the cylinder is designed with a valve cap, it must be in place during storage.

The cylinder storage area must be posted with "No Smoking" signs.

Different gases should be stored separately. Identify all cylinders as full, in use, or empty (Figure 3.10), and separate empty cylinders from full cylinders. Do not keep cylinders in unventilated enclosures such as lockers or cupboards.

Figure 3.10. Tags indicate the status of cylinders — full, in use, or empty.

Store cylinders in an upright position, unless they are designed to be used in the horizontal position. An assigned storage area should be designated that is away from elevators, walkways, or stairs and where cylinders will not be knocked over or damaged by passing or falling objects.

Inside buildings, cylinders must be stored in well-protected, well-ventilated, dry locations at least 20 ft. from highly combustible materials.

Outdoors, cylinders are allowed to be stored in the open. However, they should be protected from dampness, corrosion, and heat sources. Enclosures, vehicles, or other cylinder storage areas should not exceed 125°F. Trunk and passenger areas of vehicles can quickly exceed this temperature during sunny or hot weather. Protection from direct sunlight should be provided where ambient temperatures approach 125°F.

Whether stored inside or outside, do not store cylinders containing flammable gases near highly flammable solvents, combustible waste material, unprotected electrical connections, gas flames, or other sources of ignition. Do not store cylinders where they will be exposed to flammable liquids such as gasoline. The area should have signs that identify the gases stored and list any applicable safety precautions.

In California, oxygen cylinders must be separated from fuel gas cylinders and other combustibles during storage (Figure 3.11). The separation can be by either a minimum distance of 20 ft. or by using a fire-resistant partition that is 5 ft. high or at least 18 in. above the tallest cylinder. The partition must be constructed to have a one-hour burn-through rating.[1]

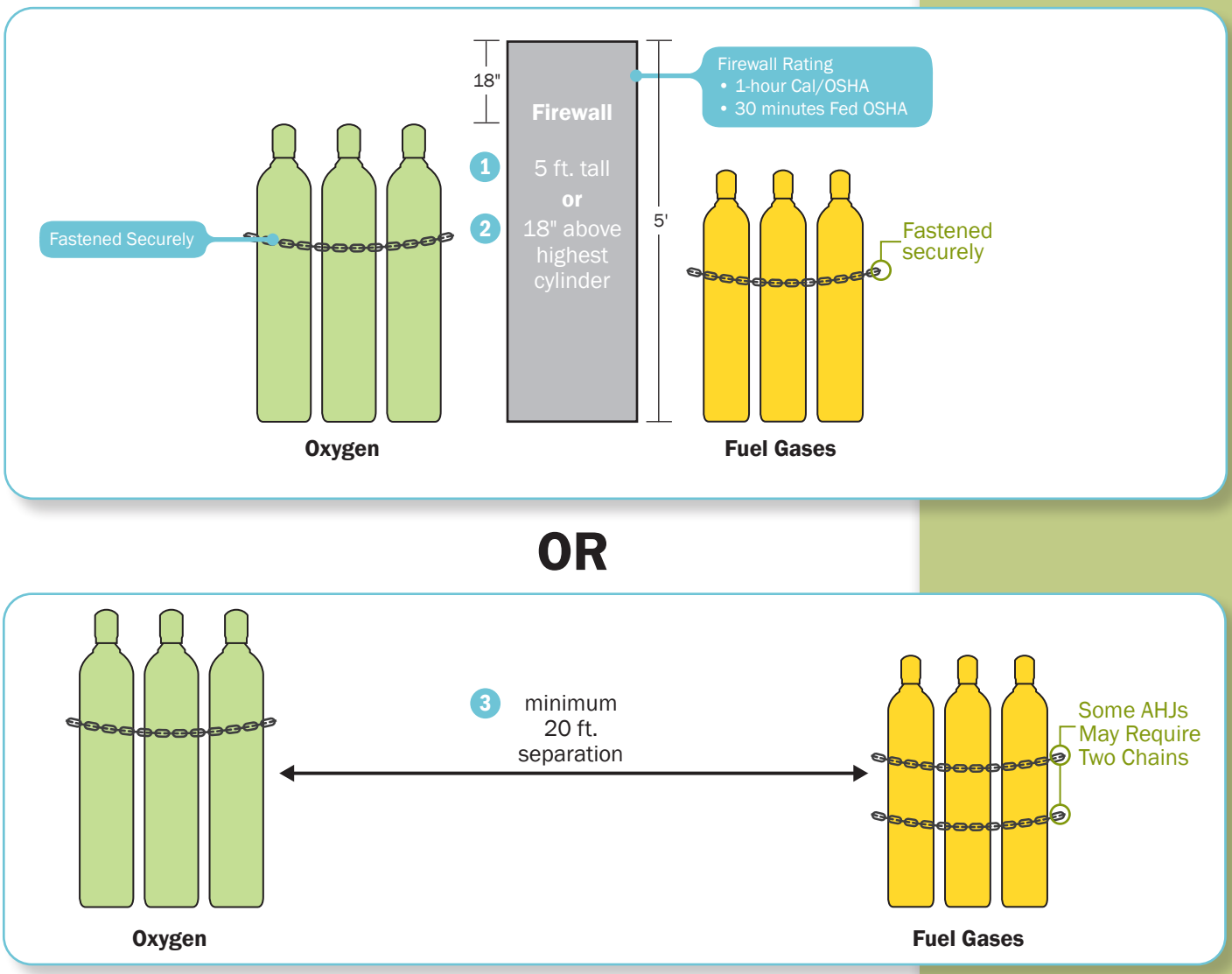


Figure 3.11. Oxygen must be separated from fuel gases during storage by a firewall or a minimum distance of 20 ft.

1. Federal regulations require the fire barrier to be 5 ft. tall and have a 30 minute fire-resistance rating.

Storing LPG Cylinders

LPG cylinders should be stored outdoors or in a well-ventilated area.

When stored outside, propane cylinders must be protected against vehicle impact and located away from doors and automotive fuel dispensers. At locations open to the public, cylinders must be protected by an enclosed, six-foot-tall industrial-type fence, a lockable, ventilated enclosure of metal construction, or an alternative method that is acceptable to the authority having jurisdiction (AHJ).

As with all cylinders, the storage area must be marked with "No Smoking" signs (Figure 3.12) and the tanks must be secured—either strapped or chained to an immovable object or stored in an approved propane cage (Figure 3.13). Cylinders should be kept at least 25 ft. away from heat or ignition sources. The local AHJ may require greater clearance.

The maximum quantity of propane allowed in one storage location within a building not frequented by the public is 300 lb. The limit is reduced to 200 lb. if the building is frequented by the public.

Figure 3.12. Signage is required in the cylinder storage area.

Check with studio facilities or the safety department for specific requirements for indoor and outdoor cylinder storage. Employers or the local AHJ may have additional restrictions.

Figure 3.13. Approved propane cage.

Scene 4
Oxidizing and Flammable Gases

Oxygen is an element that is found in water, in most rocks and minerals, and in numerous organic compounds. It is capable of combining with most other elements and is a key component required for combustion.

Fire and explosion are the primary hazards associated with flammable gases. Flammable gases can be ignited by static electricity or by a heat source, such as a flame or a hot object. Another hazard is asphyxiation (suffocation). Most vapors from flammable gases are heavier than air and will accumulate near the ground and displace oxygen.

Oxygen

While oxygen itself is not flammable, it makes other material ignite at a lower temperature and burn hotter and faster.

Use regulators that have the words "use no oil" printed on the face of the regulator (Figure 4.1). Keep all oxygen valves, gauges, regulators, pipes, and fittings free of oil, grease, graphite, or any other organic or combustible substance. Elevated temperature, pressure, or contamination from oil residue may cause a fire or explosion in the regulator or cylinder.

Valves on oxygen cylinders should be opened fully to prevent leakage around the valve stem. The valve may not seat properly if it is not fully open. When pressurizing oxygen, stand to one side of the regulator gauge face because there is a danger of fire or explosion.

Do not use oxygen to blow dust off clothing because oxygen-saturated cloth is highly flammable.

If a regulator is difficult to thread onto a cylinder, use thread sealing tape that is specifically designed for use with pressurized oxygen. If the difficulty continues, replace the regulator or cylinder, and report it to your supervisor and supplier.

Figure 4.1. Oxygen regulator.

Acetylene

Acetylene is a colorless, highly flammable gas that is unstable and very shock sensitive (explosive). Use extreme caution. Never drop or bang the cylinder—it may explode.

To safely use and store acetylene in cylinders, the compressed gas is dissolved in an acetone solution. The cylinder is filled with porous material that absorbs the acetone solution and controls the release of the acetylene gas (Figure 4.2).

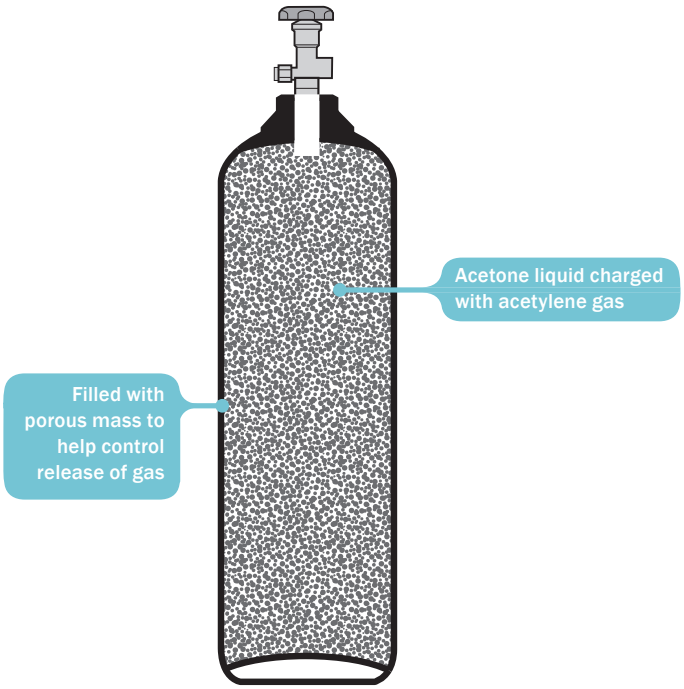


Figure 4.2. Acetylene cylinders are packed with a porous material to control the release of acetylene.

The recommended regulator working pressure for acetylene is 7.5 psi and must never exceed 15 psi (Figure 4.3). When acetylene is released at high pressures, an explosion can result.

Use acetylene cylinders in the upright position only. When placed on its side, cylinder safety features are defeated and the cylinder can release liquid rather than gas, which may damage the regulator and create dangerous conditions.

Any acetylene leak is dangerous.

Figure 4.3.
Acetylene regulator.

Hydrogen

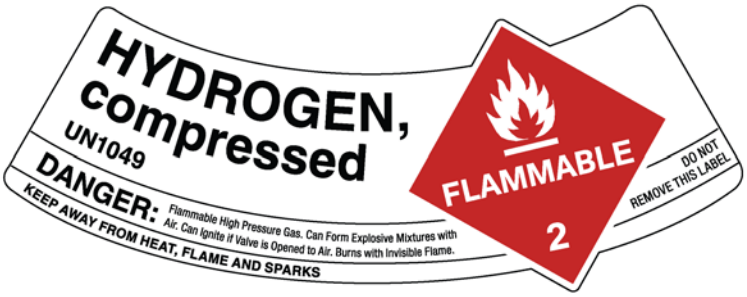


Figure 4.4. All cylinders must be legibly marked with the contents.

Hydrogen is a highly flammable gas that is colorless, odorless, tasteless, and lighter than air (Figure 4.4). It is used in fuel cells that generate electricity from the interaction of hydrogen with oxygen from the air. In the motion picture industry, these fuel cells are used to power some portable lighting systems.

Hydrogen gas is extremely flammable and is easily ignited by open flames, electrical sparks, and static electricity. It burns with an almost invisible flame and may form explosive mixtures with air.

Liquid Petroleum Gas

Liquid petroleum gas (LPG), commonly known as propane, is a product refined from crude oil or natural gas. It is an extremely flammable liquid that may also cause freeze burns or frostbite on skin. It is heavier than air and may pool on the ground or floor, or flow into an open pit, hole, or trench. Propane is naturally odorless, but odor is added during processing to enable detection of leaks.

Propane is used in two forms: vapor service and liquid service. The use for each form is different and not interchangeable. In fact, using the wrong form of propane is hazardous and should not be attempted.

Vapor service cylinders, known as consumer propane cylinders, are used for various types of products such as gas BBQ grills, patio heaters, and catering truck stoves. Liquid service, known as industrial truck LPG fuel, is used to provide engine fuel for forklifts, scissor lifts, aerial boom lifts, and other vehicles.

Using LPG Fuel

Visual Inspection of All LPG Cylinders

Before using or refilling a cylinder, examine it for the following conditions:

- Leaks, cracks, bulges, serious dents, gouges, or pits
- Defective or damaged valve, leaking pressure relief device, or damaged protective collar
- Evidence of physical abuse, fire or heat damage, or excessive rust or corrosion
- Out of date requalification

Cylinders that show any defect or are past the requalification date must be taken out of service and sent to a supplier or manufacturer for retesting and repair.

Consumer Propane Cylinders (Vapor Service)

Consumer propane cylinders (Figure 4.5) are designed to be upright at all times. The cylinder should be securely fastened in the upright position so it will not tip on its side, which could cause venting of liquid propane.

Precautions when working with consumer propane cylinders:

- Wear the proper PPE (safety glasses, gloves, work boots) when refilling or changing cylinders.
- Inspect the cylinder, hoses, and connections.
- Make sure the connections are secured properly.
- Open the valve slowly, and always close the valve completely when finished.

Figure 4.5. Consumer propane cylinder (vapor service).

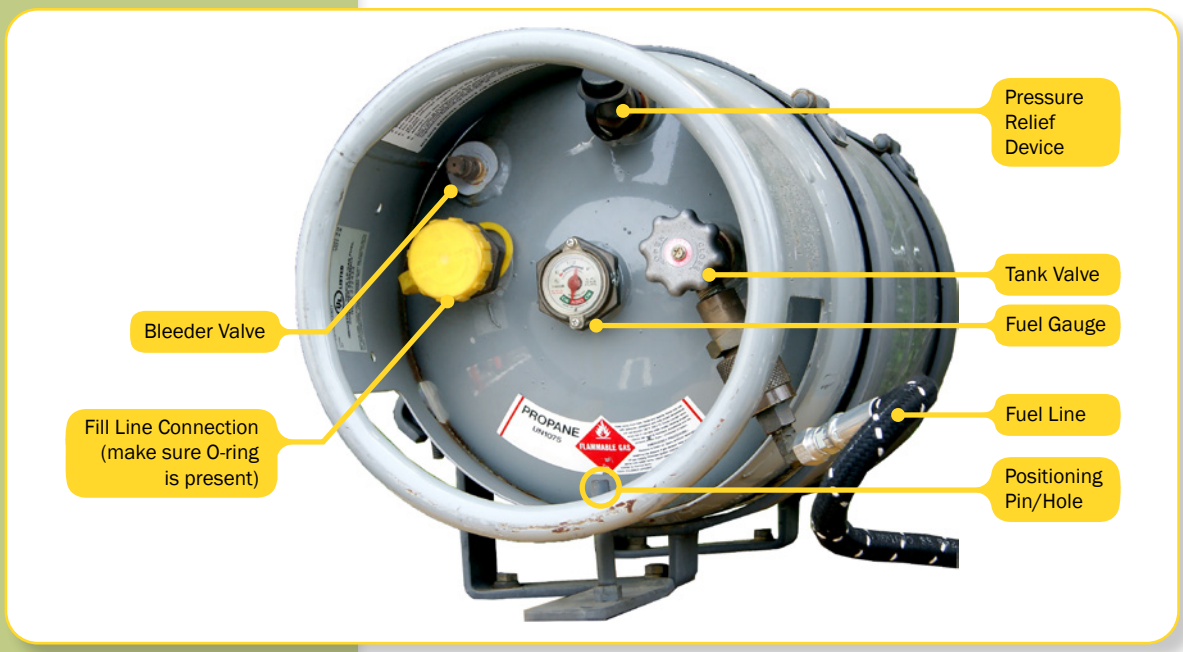


Figure 4.6. LPG fuel cylinder with the pressure relief valve at the top and the positioning pin engaged properly.

Liquefied Fuel Gas Cylinders (Liquid Service)

Liquefied fuel gas cylinders are designed to be used in a horizontal position with the pressure relief valve positioned at the top, connecting with the vapor space of the cylinder (Figure 4.6).

Inspect the fuel cylinder before starting the vehicle. Confirm the following:

- The cylinder is in good condition and positioned properly, with the positioning pin on the vehicle engaged into the positioning hole in the collar of the cylinder.
- The fuel line is in good condition and securely connected to the fuel cylinder.
- The fuel level in the cylinder is adequate to complete the task.

Next, open the cylinder valve slowly ¾ to 1½ turns to allow adequate propane to the engine and quick closure if a problem develops. Look, listen, and smell for leaks.

If propane is seen, heard, or smelled, close the valve immediately. This is an indication that the cylinder is leaking from the connection or fuel line. Carefully check both, using soapy water to locate the leak. If the connection cannot be secured or if the fuel line continues to leak, do not attempt to use the vehicle. Close the valve and report the problem to your supervisor.

If there are no leaks, the propane is ready to be used as a fuel source.

When finished using the vehicle, turn off the engine and close the cylinder valve. Do not walk away and leave the valve open.

When changing industrial truck fuel cylinders:

- Wear safety glasses and gloves.
- Close the valve on the fuel cylinder.
- Purge the system of remaining fuel by starting and running the vehicle engine until it stops.
- Loosen the fuel line from the cylinder and release the securing clamp.
- Carefully remove the empty fuel cylinder.
- Lift the full cylinder carefully onto the vehicle, ensuring the positioning pin is engaged and the cylinder is securely clamped to the vehicle.
- Ensure that the fuel line connector O-ring is present, in good condition, and properly seated; then connect the fuel line to the cylinder.
- Slowly open the valve ¾ to 1½ turns, listening and smelling for leaks.

If the fuel line is leaking, close the valve, slowly unscrew the fuel line to bleed off pressure, and then disconnect it. Check the condition of the O-ring again. Reconnect the fuel line to the cylinder and open the valve slowly. If leaking continues, shut off the valve, disconnect the fuel line, and notify your supervisor.

Catering Vehicles

Catering vehicles may use either the liquid or vapor form of propane. Cylinders must be installed in a cabinet with proper ventilation or on the outside of the vehicle. The vehicle must have at least one approved portable fire extinguisher rated 10 BC.

Fire Precautions When Working with Propane

- Remove ignition sources from the work area—sparks from tools, static electricity, smoking
- Hand tighten the fuel line connections of LPG cylinders; do not use tools.
- Fill LPG cylinders in a well-ventilated area to prevent the buildup of flammable vapors.

Only personnel specifically authorized by the employer may refill LPG cylinders.

Working with Bulk LPG Storage Tanks

Only trained and authorized personnel should fill cylinders from bulk LPG storage tanks (Figure 4.7). Training will be provided by the employer and should include fire prevention precautions, how to fill the cylinders without overfilling them, and procedures for an accidental spill and emergency shutdown.

At least one fire extinguisher with a minimum rating of 18 BC is required at the filling site.

Refill propane cylinders in a well-ventilated area.

Figure 4.7. Bulk storage tank.

Filling Cylinders from Bulk Storage Tanks

LPG cylinders are filled in two ways: by weight or by volume.

When filled by weight, the maximum capacity is permanently marked on the LPG cylinder in terms of water capacity (Figure 4.8). The authorized employee will fill the cylinder using a conversion table (Figure 4.9) and a scale.

Propane cylinders with a capacity of 4–40 lb. must be equipped with an overfill prevention device (OPD) valve. The OPD valve prevents overfilling the cylinder. It is recognized by the triangular hand wheel at the top of the valve itself (Figure 4.10).

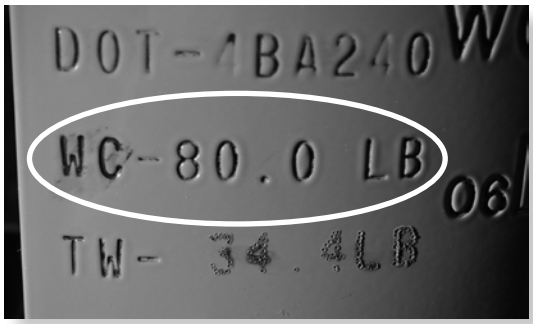


Figure 4.8. Water capacity is permanently stamped into the cylinder.

CYLINDER FILLING CAPACITY CHART

W.C.	LBS. PROPANE	W.C.	LBS. PROPANE
2.39	1	59.7	25
4.78	2	71.7	30
11.9	5	83.6	35
23.9	10	95.6	40
35.8	15	119.5	50
47.8	20	239	100

Figure 4.9. Conversion table used when filling LPG cylinder by weight.

Do not attempt to refill any cylinder unless specifically trained by the employer.

Figure 4.10. The triangular hand wheel indicates that the cylinder is equipped with an OPD valve. The valve operates inside the tank by stopping the flow of propane when the cylinder is full.

The OPD valve is a secondary safety mechanism designed to stop flow into the cylinder during the filling process, not a safety mechanism during cylinder usage. It does not restrict flow out of the cylinder and will allow liquid propane into gas lines and hoses if the cylinder is tipped over or inverted.

For a cylinder that is filled by volume, such as those used on forklifts, the bleeder valve should be open during filling. The bleeder valve is designed so that liquid or mist will come out of the opened valve when the cylinder is filled to its maximum safe capacity.

Once filled, all valves, including the bleeder valve, should be closed and the cylinder checked for leaks.

Notes

Scene 5
Inert Gases

Argon, carbon dioxide, nitrogen, and helium are inert (non-flammable) gases that are odorless, tasteless, and non-toxic.

Figure 5.1. Inert gases, such as argon, are used in the welding process.

Argon and Carbon Dioxide

Argon and carbon dioxide are commonly used as shielding gases to protect metals from oxidation during arc welding. The gases may be mixed by the supplier or they may be sold individually (Figure 5.1). Check the label before using the cylinder to confirm that the gas mixture is correct for the specific application.

Nitrogen and carbon dioxide gas in liquid form require additional safety precautions.

Nitrogen

Nitrogen gas is used in the movie and television industry as a pressurized gas to clean cameras and lenses. It is preferred over compressed air for this use because of its lack of moisture. Nitrogen gas is also used as a shielding gas during welding.

Helium

Helium is lighter than air and is used in the entertainment industry to inflate balloons used as light sources on exterior and interior sets. Although it is the most common compressed gas used to inflate lighting balloons, there are also some balloons that use a helium/air mixture for inflation.

Working with Inert Gases

Use inert gases with adequate ventilation. They may displace oxygen in a room, creating a risk of suffocation, and because they are odorless and colorless, they are often undetectable. Lack of oxygen may cause vertigo, headache, or speech difficulties, which may occur without any preliminary physical signs.

Use a pressure-reducing regulator designed for the type of gas being used. Use hoses and equipment designed to withstand the pressure being discharged. Wear PPE when using or moving cylinders, which will be detailed in Section 8 of the SDS.

Precautions When Using Helium with Lighting Balloons

Follow manufacturer recommendations for inflation pressure. Each manufacturer may have different requirements relating to fabric type and function of the balloon, whether a cloud or a light source. Often procedures are different for each shape of balloon (cubes, ellipses, tubes, spheres). Also, if the balloon is filled with a mixture of helium and air, the recommended pressure may be different.

Inflate balloons slowly. As the balloon fills, the lighting/wiring harness should be constantly checked for positioning. Monitor the tag lines and any reflectors in the harness. Maintain control of the balloon envelope as it fills.

Use a shut-off valve at the balloon end of the filling hose. When filling the balloon, the ability to shut-off the flow of helium and not overfill the balloon is important. Sunlight, operating temperature, ambient air temperature, air density, and altitude all have an effect on the balloon pressure. A delay going back to the tank to shut off the flow can lead to problems and mistakes.

Be aware of overhead hazards. Obstacles such as energized power lines, trees, ceilings with fire sprinklers, or hot lighting fixtures can interfere with balloons.

Do not vent the helium into anyone's breathing zone. Helium displaces oxygen. Because helium is lighter than air, the standard practice is to place the opening (the bottom plate) pointing up to let the helium escape in a well-ventilated area where there is no risk of displacing oxygen. Some balloons have access plates large enough for a person to enter, which presents a considerable hazard if someone enters the balloon while it is inflated. A pure helium environment causes immediate incapacitation, so an operator must never enter a balloon while it is inflated.

Scene 6
Cryogenic Liquefied Gases

Cryogenic liquids are gases at room temperatures and atmospheric pressures. However, at low temperatures, they are in a liquid state. These liquids are extremely cold and have boiling points less than -238°F. Even the vapors and gases released from cryogenic liquids are very cold.

Different cryogens become liquids under different conditions of temperature and pressure, but all have two properties in common: they are extremely cold, and small amounts of liquid can expand into very large volumes of gas.

One of the hazards associated with cryogenic gases is the risk of a boiling liquid expanding vapor explosion (BLEVE) caused by the rupture of a vessel containing a pressurized cryogenic liquid. Unusual or accidental conditions such as an external fire or damage to the cylinder may cause a very rapid pressure rise. The rapid expansion of the liquid converting into a gas causes pressure to build up and can cause a release of the contents or an explosion of the container.

Liquid Nitrogen

Liquid nitrogen, also known as LN_2, is a non-flammable, liquefied gas used in the movie and television industry for ground hugging fog effects. Liquid nitrogen can be hazardous and should be handled with caution. Because of the extremely low temperature of liquid nitrogen, any object touched by the liquid will be extremely cold and should be handled carefully.

Liquid Carbon Dioxide

Carbon dioxide (CO_2) is commonly used for special effects such as steam, dense fog, or smoke.

Do not use cryogenic liquids unless properly trained and authorized by the employer.

Working with Cryogenic Liquids

As mentioned previously, a small amount of cryogenic liquid can evaporate into a very large volume of gas, which may displace oxygen in a room. Use these liquids in a well-ventilated room or area.

If cryogenic liquids are used to produce fog effects, do not lie down in the fog or allow it to engulf your breathing zone. The oxygen level may be affected and fellow crew members may not be able to see you if a problem develops.

Some cryogenic liquids can be toxic to humans in high concentrations. As with any chemical, check the SDS for precautions and for first aid measures appropriate to the particular liquid.

Because of the extremely cold temperatures of cryogenic liquids, contact with skin, eyes, or clothing can cause frostbite-like burns or tissue damage. Avoid contact with the liquid or mist. Wear appropriate PPE. The required protection will be detailed in Section 8 of the SDS.

Treat these products and any object cooled by them with extreme caution. Many materials, such as rubber, carbon steel, and plastic, are brittle at very low temperatures and may not be appropriate to use with cryogenic liquefied gases.

Cryogenic liquids may cause an explosion in sealed containers if not vented properly. If the container is left uncovered, oxygen may condense from the air and create a volatile and highly flammable mixture. When transferring from a cylinder to a smaller container, use an approved cryogenic liquid container (Dewar flask or bottle), and do not seal it.

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Dewar flask (or bottle).
A double-walled container with a high-vacuum space between the walls to reduce heat transfer into the liquid, protected in a metal outer container. They are designed to safely vent the gas from the evaporating liquid.

Notes

Scene 7
Gasoline and Diesel Fuel

Gasoline and diesel fuels are used in the movie industry as a fuel source for vehicles, portable generators, and fuel-powered tools.

Gasoline is a flammable liquid, which ignites easily and burns vigorously. Both the liquid and the vapors are highly flammable. Gasoline vapors may explode under certain conditions.

Diesel fuel is also classified as a flammable liquid, however, the vapors are not as easily ignited as gasoline vapors.

Working with Gasoline and Diesel Fuel

Because of the highly flammable nature of gasoline and diesel fuel, they are easily ignited by open flames, electrical sparks, and static electricity. Do not use or store fuels near heat, sparks, or open flames. Smoking is prohibited in the fueling area.

Fuel passing through a hose creates static electricity. When filling containers, a spark from static electricity can cause the liquid or vapor to ignite.

To reduce the chance of static buildup while fueling:

- Use an approved container with a vapor tight cap
- Place it on the ground
- Manually control the nozzle during filling
- Keep the metal nozzle in contact with the container
- Fill the container slowly

Do not fill the container while it is inside a vehicle or in the bed of a truck. When transporting a portable gasoline container, secure it against movement.

Fuel vapors are harmful if inhaled and the liquid can be fatal if swallowed. Use only in a well-ventilated area. Avoid breathing the vapors, fumes, or mist. Keep containers closed when not in use. Do not eat or drink while handling fuel.

Because fuel is an environmental hazard, avoid release to the environment. If fuel spills on the container, make sure it evaporates before placing the container in a vehicle. Report fuel spills immediately to a supervisor. Section 6 of the SDS will have measures for accidental release.

Fuel is a skin irritant with repeated exposure. Wear the proper PPE. Wash hands thoroughly after handling fuel.

First Aid for Gasoline and Diesel Exposure

Inhalation or suffocation: If a worker becomes dizzy or loses consciousness while working with gasoline or diesel fuel, immediately move the individual to a well-ventilated area and summon medical aid. If breathing has stopped, call the **on-lot emergency number** or 911.

Skin contact: Remove contaminated clothing and shoes. Wash skin thoroughly with plenty of soap and water or waterless hand cleaner. Get medical attention immediately. Wash clothing and clean shoes before reuse.

Eye contact: Immediately flush eyes with water while holding the eyelids open. Remove contact lenses during initial flushing and continue flushing for at least 15 minutes. Seek medical attention if irritation persists.

Refueling Operations

A permit from the AHJ is required for all refueling trucks. The truck must meet DOT standards and have a spill kit onboard.

Be aware of ignition sources when transferring fuels. Never transfer contents around hot work.

When preparing to refuel a vehicle, turn off the engine, set the parking brake, exit the vehicle, and chock the wheels.

During refueling operations:

- Bond vehicle to the refueling truck.
- Remain with the vehicle that is being refueled at all times during the transfer.
- Limit fueling hose length to no more than 50 ft.
- Do not top off.
- Avoid breathing vapors.

Bonding is usually accomplished with a static line. In some cases, the dispensing nozzle has a wire-braided hose that bonds the nozzle to the dispensing tank when the nozzle makes physical contact with the fill spout. This is acceptable only if the spout is equipped with an anti-flashback screen or flapper.

bonding.
The process of making an electrical connection between objects or containers to ensure that there will be no difference in electrical potential between the two containers, and therefore, no static spark.

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Bonding is also required when fueling generators and when transferring liquid from larger containers, such as drums, into portable containers.

A dry chemical or carbon dioxide fire extinguisher rated at least 10 BC is required to be with the refueling vehicle.

Smoking is prohibited within 50 feet of a refueling vehicle.

Filling Portable Containers

Do not fill containers inside a vehicle or on the bed of a truck. When containers are filled on interior carpeting, floor matting, or truck bed liners, a static electric spark can occur, which may explosively ignite the gasoline.

To reduce the possibility a spark from static build-up, an individual should:

- Place the portable container on the ground before filling
- Touch a metal object before fueling
- Keep the nozzle in contact with the portable container while fueling (Figure 7.1)
- Be careful not to overfill the container

Common fuel container colors:

- **Red** for gasoline
- **Yellow** for diesel
- **Blue** for kerosene

Figure 7.1. Use approved safety cans for fuel and keep the nozzle in contact with the container while filling.

Fuel Spills

Never allow fuel to go into a storm drain or onto the ground. Spilled fuel may be considered a hazardous material spill, requiring special cleanup procedures and notification of specific government agencies. Contact the employer or safety department immediately for guidance. Do not attempt to cleanup a fuel spill without proper training and the correct PPE.

Waste fuel must be disposed of properly because it is considered both a hazardous material and an environmental hazard. Check with the employer or safety department for guidelines.

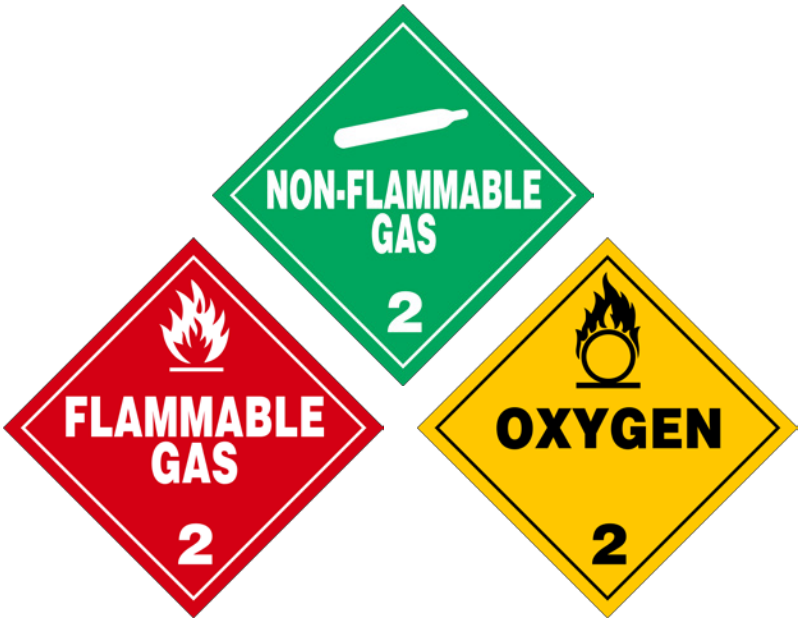
Personal Protective Equipment

Always wear the proper PPE for the level of exposure.

- Neoprene or nitrile rubber gloves are recommended for repeated or prolonged skin exposure.
- Safety glasses with side shields or goggles are recommended where there is a possibility of splashing or spraying.
- A respirator may be needed depending on exposure levels and duration.

Specific information can be found in section 8 of the SDS for the fuel being used.

Notes



Scene 8
Transportation

Transporting Gasoline and Diesel Fuel

In California, flammable liquid containers may not be larger than five gallons each and no more than ten gallons total may be carried in one vehicle. Federal law requires gasoline transported as a material of trade to be in approved containers no larger than eight gallons.

Check with the safety or transportation department for additional guidelines in determining transportation restrictions and for help in meeting DOT and California requirements.

Transport flammable liquids in approved containers only.

Transporting Cylinders

Regulators should be removed and valve protection caps put in place before transporting cylinders.

When in a vehicle, all cylinders containing Class 2 gases, including small-sized cylinders, must be securely restrained in an upright or horizontal position to prevent the cylinders from shifting, overturning, or being ejected from the vehicle.

Class 2 flammable gases must be transported upright, unless contained in a cylinder designed to be used in a horizontal position, such as an industrial truck LPG fuel cylinder, as long as the pressure relief valve is in direct contact with the vapor space of the cylinder. Consumer propane cylinders must be transported in the upright position.

Cylinders with cryogenic liquids, such as liquid nitrogen or carbon dioxide, must be transported in an upright position.

A good practice is to separate non-fuel cylinders, such as oxygen, from fuel gas cylinders when transporting. Avoid transporting fuel gas cylinders in closed vehicles, especially where gases can accumulate such as the passenger compartment or trunk of a car.

Requirements for Vehicles Transporting Cylinders

When transporting Class 2 cylinders, no shipping paperwork is required by either the California Vehicle Code or the DOT if **all** of the following conditions are met (materials of trade exemption):

- The weight of individual cylinders is 220 lb. or less
- The aggregate gross weight of all materials is 440 lb. or less
- The cylinders are not being transported for a fee

If **any** of these conditions are **not** satisfied, then shipping papers are required.

Nationwide, if the aggregate gross weight of Class 2 cylinders and contents is 1001 lb. or more, then all of the following conditions must be met:

- Drivers have a hazardous material endorsement on their commercial driver license
- Shipping papers are carried in the vehicle
- A copy of the transportation company's Hazardous Material Transportation License (HMTL) is carried in the vehicle
- DOT warning placards appear on all four sides of the vehicle

Other classes of hazardous materials may have different requirements regarding weight, packaging, and documentation.

Notes

Scene 9

Storage of Flammable Liquids

Flammable liquids and aerosols must be stored properly. Approved safety cans, metal containers, and DOT-approved metal drums or tanks are required for the storage and handling of flammable liquids. All containers, drums, and tanks must be labeled with the contents and have hazard warnings.

Never store or transport flammable or combustible liquids in uncovered containers.

safety can.
A container with a capacity of 5 gallons or less and equipped with a spring-closing lid and spout cover, a means to relieve internal pressure, and a flash-arrest screen.

Quantity Restrictions

The maximum allowable container size for safety cans and approved containers is five gallons. However, for Category 1 liquids (see Table 9.1), the maximum allowable size is only two gallons for a safety can and one gallon for a container.

The maximum allowable size for metal drums is 60 gal., and for portable tanks, the limit is 660 gal. Flammable liquids of one gallon or less may be stored in the original container.

Other than metal drums and portable tanks, if the total amount of flammable liquids and aerosols stored is more than 25 gal., the containers must be stored in approved cabinets (Figure 9.1).

Not more than 120 gal., collectively, of flammable liquids may be stored in one storage cabinet. Of this total, not more than 60 gal. may be of category 1, 2, and/or 3. Not more than three storage cabinets may be located in a single fire area. In an industrial occupancy, additional cabinets may be located in the same fire area if the additional cabinets are separated by at least 100 ft.

Storage cabinets must be marked in lettering at least 2 in. high:

WARNING. FLAMMABLE — KEEP FIRE AWAY

Figure 9.1. Approved storage cabinet for flammable liquids.

fire area.
An area of a building separated from the remainder of the building by construction having a fire resistance of at least one hour.

Classification of Flammable and Combustible Liquids

Table 9.1 Cal/OSHA and Fed OSHA Classifications of Flammable Liquids

Flammable liquids Any liquid with a flashpoint at or below 199.4°F

Category	Flashpoint	Example
Category 4	Flashpoint above 140 °F and at or below 199.4°F	Pine Oil (disinfectant) Naphthalene (cleaning agent)
Category 3	Flashpoint 73.4–140°F	Paint Thinner Kerosene Diesel Fuel
Category 2	Flashpoint below 73.4°F and a boiling point above 95°F	Acetone Isopropyl Alcohol Nail Polish Remover
Category 1	Flashpoint below 73.4°F and a boiling point at or below 95°F	Gasoline
DOT Classifications		
Class 3 Flammable liquids	Flash point of not more than 141°F	
Class 3 Combustible liquids	Flash point above 141°F and below 200°F	

Notes

Flammable Liquid Rating Standards

Substance	Flash Point	GHS	Fed OSHA Flammable Aerosols	Fed OSHA	Cal-OSHA	NFPA	HMIS®	DOT (Bulk)
Motor oil, Olive oil, Biodiesel	199.4°F+				**Combustible Liquid** Flash point at or above 199.4°F(93°C)	**1** Flash point above 200°F	**1** Flash point above 200°F	
mythyl cyclohexa-none	140°F to 199.4°F	**Category 4** Flash points above 140°F (60°C) and below 199.4°F (93°C)		**Category 4** Flash points above 140°F (60°C) and below 199.4°F (93°C)	**Category 4** Flash points above 140°F (60°C) and below 199.4°F (93°C)	**2** Liquids having a flash point at or above 100°F but below 200°F	**2** Liquids having a flash point at or above 100°F but below 200°F	**Class 3 †** Combustible liquids flash point above 60.5°C (141°F) and below 93°C (200°F)
Paint thinner, Kerosene, Diesel	100°F to 140°F	**Category 3** Flash points above 73.4°F (23°C) and at or below 140°F (60°C)		**Category 3** Flash points above 73.4°F (23°C) and at or below 140°F (60°C)	**Category 3** Flash points above 73.4°F (23°C) and at or below 140°F (60°C)			**Class 3** Flammable liquids liquid having a flash point of not more than 60.5°C (141°F), or any material in a liquid phase with a flash point at or above 37.8°C (100°F) that is intentionally heated and offered for transportation or transported at or above its flash point
Turpentine	73°F to 100°F					**3** Flash points below 73°F and boiling points above 100°F, as well as liquids with flash points between 73°F and 100°F.	**3** Flash points below 73°F and boiling points above 100°F, as well as liquids with flash points between 73°F and 100°F.	
Gasoline	Below 73°F	**Category 2** Flash points below 73.4°F (23°C) and having a boiling point above 95°F (35°C)	Contains >1% flammable components, or the heat of combustion is ≥20 kJ/g (=Category 2)	**Category 2** Flash points below 73.4°F (23°C) and having a boiling point at or above 95°F (35°C)	**Category 2** Flash points below 73.4°F (23°C) and having a boiling point at or above 95°F (35°C)			
Propane		**Category I** Flash points below 73.4°F (23°C) and having a boiling point at or below 95°F (35°C)	Contains ≥85% flammable components and the chemical heat of combustion is ≥30 kJ/g: (=Category 1)	**Category I** Flash points below 73.4°F (23°C) and having a boiling point below 95°F (35°C)	**Category I** Flash points below 73.4°F (23°C) and having a boiling point below 95°F (35°C)	**4** Flash points below 73°F and boiling points below 100°F	**4** Flash points below 73°F and boiling points below 100°F	

OSHA and CAL/OSHA EXCEPTIONS

When a Category 3 liquid with a flash point at or above 100°F (37.8°C) is heated for use to within 30°F (16.7°C) of its flash point, it shall be handled in accordance with the requirements for a Category 3 liquid flash point below 100°F (37.8°C).

1) When a Category 4 flammable liquid is heated for use to within 30°F (16.7°C) of its flash point, it shall be handled in accordance with the requirements for a Category 3 liquid with a flash point at or above 100°F (37.8°C).

2) When liquid with a flash point greater than 199.4°F (93°C) is heated for use to within 30°F (16.7°C) of its flash point, it shall be handled in accordance with the requirements for a Category 4 flammable liquid.

Notes

Industry Safety Resources

Safety Bulletins

Safety Bulletins are researched, written, and distributed by the Industry Wide Labor-Management Safety Committee for use by the motion picture and television industry. The Industry Wide Labor-Management Safety Committee is composed of Guild, Union, and Management representatives active in industry safety and health programs.

These Safety Bulletins are guidelines recommended by the Safety Committee. They are not binding laws or regulations. State, federal, and/or local regulations, where applicable, override these guidelines. Modifications in these guidelines should be made, as circumstances warrant, to ensure the safety of the cast and crew.

The Committee and these Safety Bulletins are representative of the commitment of both Labor and Management to safe practices in the motion picture and television industry. The members of the Committee and all those who contributed to its work have devoted a great deal of time and effort to these guidelines because of the importance of safety to our industry.

Current safety bulletins are available on the CSATF website:

http://www.csatf.org/bulletintro.shtml

24-Hour Industry Safety Hotline

The 24-hour industry safety hotline number directs callers to an automated system that will assist them in reaching the desired Studio Safety Hotline.

888-7-SAFELY

A list of the Studio Safety Hotlines can also be found on the CSATF website:

http://www.csatf.org/studio_safety_hotlines.pdf

Safety is everyone's responsibility.