



**Section 35**  
**Safety Health**  
**and**  
**Environmental**  
**Manual**

**2024**

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**Compressed Gas Safety**

<b>BRIESER CONSTRUCTION GENERAL CONTRACTORS</b>		Developed:	6/24/2010
		Revised:	8/8/2017
<b>CORPORATE SAFETY, HEALTH &amp; ENVIRONMENTAL MANUAL</b>		Revision:	05
		Reviewed:	08/2023
STANDARD OPERATING PROCEDURE:	<b>Compressed Gas Safety</b>		
CROSS REFERENCE:	<b>29 CFR 1910.101, 1910.252, 1910.253, 29 CFR 1926.350</b>		

## Compressed Gas Safety

### PURPOSE

Assure that employees handling compressed gases are adequately trained in the inherent hazards of the cylinders and their contents, as well as proper handling, storage, and use according to OSHA requirements. Compressed gas cylinders can present a variety of hazards due to their pressure and /or contents. This chapter of the safety manual covers requirements which must be followed for the use of all compressed gases. In addition to the standard required work practices for inert gases, hazardous gases may require additional controls and work practices including, but not limited to, the use of gas cabinets, gas monitors, emergency shutoffs, proper equipment design, leak testing procedures, and the use of air supplying respirators for certain highly toxic gases.

### POLICY

It is the policy of Brieser Construction that all compressed gases be handled, stored, received, and used in a safe manner consistent with this chapter. Compressed air shall not be used for cleaning or blow down activities unless air pressure is regulated to below 30 psi and areas have been isolated from pedestrian traffic and effective chip guarding and personal protective equipment is implemented.

### DEFINITIONS

Any material that is under pressure can be dangerous if it is not handled properly. If the material is a compressed gas, it may be flammable, explosive, reactive, toxic or any combination of these. Because of the hazards of compressed gasses, it is important to know what you are working with, what its hazardous properties are and how to safely handle its container: **THE COMPRESSED GAS CYLINDER.**

The following compressed gasses require special treatment:

**OXYGEN:** While not flammable itself, oxygen increases the tendency of things around it to burn or explode. Keep oxygen cylinders away from combustible materials, flammable materials, and fire hazards, including oil or grease on your hands, clothes, and work area. Oxygen should not be used in place of compressed air.

**ACETYLENE AND HYDROGEN:** These both highly explosive gases that must be handled with extreme caution. Hydrogen escapes easily from threaded fittings that are not completely tight, and such leaks can ignite spontaneously from the friction of the escaping gas. Hydrogen has no odor to warn of a leak and burns almost invisibly.

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*Please follow safe handling procedures found on SDS for specific information on other gasses contained in compressed gas cylinders.*

## **RESPONSIBILITIES**

*The Program Administrator – Safety Director*

These people are responsible for:

- Maintaining the training records of all employees included in the training sessions.
- Reviewing and updating this program, as necessary.

*The Office/Equipment Manager*

- This department is responsible for: Ensure shop audits are being performed and to include elements from this section to comply with all Compressed Gas safety rules.
- Work with the Safety Department to continually improve compressed gas safety storage, use and handling.

*The Job Superintendent/Foreman*

This person is responsible for:

- Immediately responding to any employee concerns and requests for information.
- Ensure all compressed gas cylinders are in compliance with this section.

*Employees*

These people are responsible for:

- Read and understand this section of the Brieser Safety & Health Manual
- Use proper methods for storage, use and handling of all compressed gases used at project jobsites and while driving company vehicles containing compressed gases.

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## STORAGE AND HANDLING

- Inspections of compressed gas cylinders must be performed visually before use. Check all valve connections, hoses, clamps and regulators for excessive wear, damage, or incompatible parts. Remove from service if inspection does not pass.
- Always secure gas cylinders upright to a wall, cylinder truck, cylinder rack or post. This is especially important when gas is in use because the regulator is on the cylinder valve and the cap is not in place.
- Close the valve and replace the cylinder cap when the cylinder is not in use or being transported.
- Do not drop a cylinder, use them to hold up other objects, or let them strike each other violently. 1910.253(b)(5)
- Oxygen cylinders should be stored a minimum distance of 20 ft or have at least 5 ft high 1/2-hour fire rated wall from fuel gas cylinders and combustibles. 1910.253(b)(3)(ii)
- Never lift the cylinder by its valve, valve cap, chains, slings, or magnets. If a crane is needed to move several cylinders, the cylinders should be secured on a platform or cradle. A cylinder should never be dragged. Tilt the cylinder sideways and roll it along its bottom edge.
- Do not place cylinders in hallways or work areas. Assigned storage spaces should be located where cylinders will not be knock over or damaged by passing or falling objects and equipment.
- Keep cylinders away from radiators and other sources of heat, such as sparks, hot slag, and machining or foundry operations. Keep cylinders out of direct sunlight, or where they may get hotter than 130° F. Gasses expand when heated, the hotter a cylinder gets, the higher the gas pressure will become. A cylinder at 2200 psig and 70° F will increase in pressure to 2451 psig at 130° F.
- Before attaching a gas regulator to any cylinder other than Hydrogen or fuel gas, **“CRACK”** the cylinder valve by opening it slightly and close it immediately to remove any dirt and debris from the outlet, do not stand in front or point the outlet at anyone while cracking it. **DO NOT “CRACK” A HYDROGEN OR FUEL GAS CYLINDER.** Hydrogen is highly flammable and will ignite if it is released into the air too fast. Merely wipe out the outlet connections with a clean, dry, lint free cloth.

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- Always check the regulator before attaching it to a cylinder. If the connections do not fit together readily, the wrong regulator is being used.
- Always use a cylinder wrench or other tightly fitting wrench to tighten the regulator nut and hose connections. If a valve will not open by hand, call the gas distributor.
- Compressed gas cylinders with the regulators installed are considered by OSHA to be "connected for use." A "special truck" is a vehicle or cart used for the specific purpose of transporting the aforementioned "connected for use" compressed gas cylinders in the workplace. The "special truck" must be designed so that the following conditions can be met: 1) when cylinders are on the special trucks, they must be held in an erect or nearly erect position; and 2) protection of the cylinder valves and regulators must be provided. Brieser identifies "special trucks" in our organization as company welding trucks or welding trailers that are equipped with cylinder holders and outfitted with regulator guards such as in the picture below.



## **GENERAL PRECAUTIONS**

- Do not rely on the color of the cylinder to identify the gas inside. Suppliers used different color codes. Return any unidentifiable cylinders to the supplier.
- Do not use gas for any purposes other than for which it was intended.
- Never use a cylinder unless the gas it contains is clearly stenciled on it or marked with a decal. Altering or defacing the name, numbers or other markings on a gas cylinder is illegal and hazardous.
- Never hammer, pry, or wedge a stuck or frozen cylinder valve to loosen it. Do not use a wrench; use warm, not hot, water to free frozen cylinders from the ground.

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- Do not allow grease, oil, or other combustible materials to touch any part of a cylinder. This tip is especially important when oxygen cylinders are involved. Grease or oil that oxidizes very slowly in air will burst into flame in pure oxygen.
- Never hang tools, gloves, or spark lighters on top of the cylinder. They may interfere with the operation of the valve and prevent the gas from being shut off quickly in an emergency.
- Every air receiver shall be equipped with an indicating pressure gauge, so located as to be readily visible, and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves shall be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.
- All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition. Safety valves, indicating/controlling devices, and other safety appliances need to be constructed, located, and installed so they cannot be rendered inoperative by any means.
- The drain valve on air receivers shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver.

**NOTE**

**Under certain conditions, otherwise harmless gases can kill. Inert gases such as argon, helium, carbon dioxide and nitrogen can asphyxiate a person. Always use these gases in well-ventilated areas.**

**CHECK MANUFACTURER’S GUIDELINES FOR ADDITIONAL SAFETY MATERIAL OR CONTACT A COMPETENT PROFESSIONAL**



**Brieser**  
**CONSTRUCTION**

**BRIESER CONSTRUCTION  
SAFETY & HEALTH MANUAL  
SECTION 35  
COMPRESSED GAS  
SAFETY TRAINING**

Score: \_\_\_\_\_ %

Employees Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Company: \_\_\_\_\_ Instructor: \_\_\_\_\_  
Job Title: \_\_\_\_\_

Answer the following questions "True" or "False" by circling the appropriate letter.

- T F 1. Compressed air shall not be used for cleaning or blow down activities unless air pressure is regulated to below 20 psig and areas have been isolated from pedestrian traffic.
- T F 2. Always secure gas cylinders upright to a wall, cylinder truck, cylinder rack or post.
- T F 3. Oxygen cylinders should be stored a minimum distance of 20 ft or have at least 5 ft high 1/2-hour fire rated wall from fuel gas cylinders and combustibles.
- T F 4. Before attaching a gas regulator to any cylinder other than Hydrogen or fuel gas, "CRACK" the cylinder valve by opening it slightly and close it immediately to remove any dirt and debris from the outlet, do not stand in front or point the outlet at anyone while cracking it.
- T F 5. **DO NOT "CRACK" A HYDROGEN OR FUEL GAS CYLINDER.** Hydrogen is highly flammable and will ignite if it is released into the air too fast. Merely wipe out the outlet connections with a clean, dry, lint free cloth.
- T F 6. The best way to identify the gas contained in a cylinder is to know the standard colors for gases and simply observe what color the cylinder is?
- T F 7. Inert gases such as argon, helium, carbon dioxide and nitrogen are ok to use in a confined space?
- T F 8. Never use a cylinder unless the gas it contains is clearly stenciled on it or marked with a decal.
- T F 9. Do not allow grease, oil, or other combustible materials to touch any part of a cylinder.
- T F 10. Never hang tools, gloves, or spark lighters on top of the cylinder. They may interfere with the operation of the valve and prevent the gas from being shut off quickly in an emergency.

*Answers*



**Brieser Construction**  
**Section 35 Test**

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|---|---|--|
| T | F | 1. Compressed air shall not be used for cleaning or blow down activities unless air pressure is regulated to below 20 psig and areas have been isolated from pedestrian traffic. <i>Pg. 2</i>  |
| T | F | 2. Always secure gas cylinders upright to a wall, cylinder truck, cylinder rack or post.   |
| T | F | 3. Oxygen cylinders should be stored a minimum distance of 20 ft or have at least 5 ft high 1/2-hour fire rated wall from fuel gas cylinders and combustibles.   |
| T | F | 4. Before attaching a gas regulator to any cylinder other than Hydrogen or fuel gas, “ <b>CRACK</b> ” the cylinder valve by opening it slightly and close it immediately to remove any dirt and debris from the outlet, do not stand in front or point the outlet at anyone while cracking it. |
| T | F | 5. <b><u>DO NOT “CRACK” A HYDROGEN OR FUEL GAS CYLINDER.</u></b> Hydrogen is highly flammable and will ignite if it is released into the air too fast. Merely wipe out the outlet connections with a clean, dry, lint free cloth.  |
| T | F | 6. The best way to identify the gas contained in a cylinder is to know the standard colors for gases and simply observe what color the cylinder is? <i>Pg. 5</i>   |
| T | F | 7. Inert gases such as argon, helium, carbon dioxide and nitrogen are ok to use in a confined space? <i>Pg. 5</i>  |
| T | F | 8. Never use a cylinder unless the gas it contains is clearly stenciled on it or marked with a decal.  |
| T | F | 9. Do not allow grease, oil, or other combustible materials to touch any part of a cylinder.   |
| T | F | 10. Never hang tools, gloves, or spark lighters on top of the cylinder. They may interfere with the operation of the valve and prevent the gas from being shut off quickly in an emergency.  |