

Chapter 40: [Chemical Lifecycle Management](#)

# Portable Welding and Cutting Fuel Requirements

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URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/chemmanageReqCGCWelding.pdf>

## 1 Purpose

The purpose of these requirements is to ensure the safe handling and use of *compressed gas cylinders* (CGCs) used for welding and cutting. They cover handling, use, and storage. They apply to workers and supervisors.

## 2 Requirements

Because of their volatility, extra safety precautions must be observed when using the combination of gases required for welding or cutting operations. (For general CGC storage and handling, see [Chemical Lifecycle Management: Compressed Gas Cylinder Storage and Handling Requirements](#).)

### 2.1 Handling

- Do not handle CGCs roughly because the contents are under pressure.
- Fasten CGCs securely; chain or strap in an upright position to a wall or cart.
- Remove regulators and replace protective caps before moving or transporting CGCs.

### 2.2 Use

- Keep fire extinguishing equipment readily accessible near welding or cutting operations if combustible materials are present.
- Locate CGCs away from areas where they may be struck or subjected to physical damage. They must be a safe distance from arc welding, cutting operations, or any other source of heat, sparks, or flame.
- Periodically check connections for leaks to prevent fires or explosions. Use a direct-reading instrument, or apply soapy water to connections and check for bubbles. Repair leaks immediately.
- Use acetylene tanks only while in an upright position.
- Open cylinder valves as required by the type of gas.
  - Acetylene: open the valve no more than three-fourths of a turn so it can be closed quickly in case of emergency.
  - Oxygen: open the valve fully. While welding or cutting, leave the valve wrench in position.

- Set the appropriate operating pressure. Never set acetylene pressure over 15 psi. Follow the manufacturer's recommendations for the operating pressures appropriate to the metal being welded and for the tip size being used.
- Ensure reverse flow-check valves and flash arrestors are installed on the oxygen and acetylene lines to control flashbacks and backfires. The back-flow prevention valve may be on the tank or on the wand.
- Never allow the electrode, electrode holder, or any other electrically hot parts to touch a CGC.
- Ensure that gas delivery hoses are a different color for each gas (per [ANSI Z49.1](#)).
- Purge fuel and oxygen hoses individually before lighting up a torch tip.
- Be sure the CGC valves are closed and pressure is relieved from the hoses before leaving the work area.
- If a CGC is not going to be in use within the next 24 hours, see below for storage requirements.

### 2.2.1 Confined Space

- A confined entry permit must be applied for and received before using any gas in a confined space. (See [Confined Space: Entry Procedures](#).)
- When using shielding gases indoors or in a confined space, always use enough ventilation to ensure adequate oxygen levels.

### 2.2.2 Outdoor Use

- Regardless of location, indoors or outdoors, a hot work permit will always be required. (See [Fire and Life Safety: Fire Prevention Hot Work Procedures](#).)

## 2.3 Storage

Requirements for when acetylene and oxygen CGCs must be placed in storage depend on the job description or classification:

- **For welding done in conjunction with construction**, acetylene and oxygen can only be stored together for more than 24-hours if they are in a welding cart with a patented engineered steel fire barrier. Acetylene and oxygen CGCs in a regular welding cart must be placed in appropriate storage if these gases will not be used again within a 24-hour period.
- **For welding conducted for general industry purposes** (outside of construction areas): CGCs containing acetylene and oxygen may remain in a cart indefinitely as long as the cylinders remain in an upright position and the regulator remains in place on the CGCs.

## 3 Forms

The following are forms and systems required by these requirements:

- None

## 4 Recordkeeping

The following recordkeeping requirements apply for these requirements:

- None

## 5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 40, “Chemical Lifecycle Management”](#)
  - [Chemical Lifecycle Management: Compressed Gas Cylinder Storage and Handling Requirements](#) (SLAC-I-730-0A09S-030)
- [Chapter 6, “Confined Space”](#)
  - [Confined Space: Entry Procedures](#) (SLAC-I-730-0A21C-007)
- [Chapter 12, “Fire and Life Safety”](#)
  - [Fire and Life Safety: Fire Prevention Hot Work Procedures](#) (SLAC-I-730-0A12C-001)

### Other Documents

- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 4, “Construction Safety Orders”, Article 32, “Oxygen, Acetylene, and Fuel Gas” ([8 CCR 1739–1743](#))
- American National Standards Institute (ANSI) Z49.1, “Safety in Welding, Cutting and Allied Processes” ([ANSI Z49.1](#))