
Compressed Gas Cylinder Handling, Securement, and Storage

1.0 Objective & Intent

The objective of this SOP is to establish mandatory safety protocols for the handling, securement, and storage of compressed gas cylinders to prevent catastrophic failures such as cylinder rupture, uncontrolled gas release, fire, explosion, and asphyxiation. This procedure ensures compliance with WorkSafeBC OHS Regulation Part 12 (Tools, Machinery and Equipment) and Part 5 (Chemical Agents and Biological Agents), specifically addressing the risks associated with high-pressure gas containers in a cabinet and millwork manufacturing environment.

2.0 Operational Scope

This procedure applies to all personnel involved in receiving, moving, using, or storing compressed gas cylinders within the facility, including but not limited to welding stations, cutting areas, maintenance shops, and storage yards. It covers all compressed gas cylinders including oxygen, acetylene, propane, argon, carbon dioxide, and compressed air. This SOP applies to all shifts, contractors, and temporary workers.

3.0 Hazard Identification & Mandatory PPE

- High-pressure cylinder rupture due to impact, heat exposure, or improper handling
- Uncontrolled gas release leading to asphyxiation, fire, or explosion
- Oxygen enrichment or displacement in confined spaces
- Chemical burns from cryogenic liquids or corrosive gases
- Crush injuries from falling or rolling cylinders
- CSA-Approved Steel Toed Boots with puncture-resistant soles
- Safety glasses with side shields or full-face shield when connecting/disconnecting regulators
- Leather or cut-resistant gloves rated for chemical handling
- High-visibility vest when moving cylinders through active work areas
- Hard hat when working under overhead hazards or in storage areas

4.0 Required Safety Equipment & Tools

- Approved cylinder cart with chain or strap restraint (rated for cylinder size and weight)
- Cylinder valve protection cap (must be in place during transport and storage)
- Regulator and pressure gauge set specific to the gas type
- Leak detection solution (soapy water or electronic leak detector)
- Fire extinguisher rated for Class B and C fires (minimum 10 lb ABC dry chemical)
- Cylinder securing chains or non-synthetic straps for storage racks
- Warning signs: 'No Smoking', 'Flammable Gas', 'Oxidizer' as applicable

5.0 Step-by-Step Safety Procedure

1. Inspect the cylinder upon receipt: verify the hydrostatic test date is current, check for dents, bulges, corrosion, or damaged valve protection cap. Reject any cylinder with visible defects and return to supplier.
2. Confirm the cylinder label and colour coding match the intended gas. Never rely on colour alone; read the label. Ensure the valve outlet is clean and free of debris.
3. Secure the cylinder to a dedicated cylinder cart using the built-in chain or strap before moving. Keep the valve protection cap hand-tightened during transport. Do not roll, drag, or slide cylinders.
4. Position the cylinder upright and secure it to a fixed wall bracket, bench, or storage rack using two independent chains or straps placed at one-third and two-thirds of the cylinder height. Ensure the cylinder cannot tip, roll, or be knocked over.
5. Remove the valve protection cap only when the cylinder is secured and ready for use. Attach the regulator by hand-tightening the nut, then use a wrench to snug it. Never use a wrench to overtighten.
6. Open the cylinder valve slowly while standing to the side of the regulator. Open acetylene valves no more than 1.5 turns. Use a leak detection solution on all connections; if bubbles appear, close the valve, depressurize, and retighten or replace components.
7. When not in use, close the cylinder valve completely, bleed the system pressure from the regulator, and remove the regulator. Replace the valve protection cap immediately.
8. Store cylinders in a well-ventilated, dry area away from heat sources, open flames, and combustible materials. Separate oxygen cylinders from fuel gas cylinders by at least 6 metres or a 1-hour fire-rated wall. Store empty cylinders separately and mark them as 'Empty'.
9. Post the appropriate hazard warning signs in the storage area. Ensure all cylinders are secured at all times, even when empty. Conduct a weekly inspection of all stored cylinders for leaks, damage, and proper securement.
10. In the event of a leak or uncontrolled release, evacuate the area immediately, activate the emergency alarm, and call 911. Do not attempt to repair a leaking cylinder valve. Isolate the area and wait for trained emergency responders.

Regulatory Disclaimer: This document is a generic safety template provided for educational and informational purposes only. It does not constitute professional engineering, legal, or regulatory compliance advice. The end-user assumes all liability for validating all safety protocols against specific machinery manufacturer manuals and local occupational health and safety regulations (e.g., WorkSafeBC, CSA standards) before deployment.