

SECTION 36

Compressed Gas Cylinders

1. Purpose

- 1.1. To establish guidelines which ensure that proper storage, handling, and use of compressed gas cylinders are practiced and maintained.

2. Definition of Compressed Gas Cylinder

- 2.1. A compressed gas cylinder specifically designed to contain gasses under pressure and having the capability of dispensing the gas by means of a control valve mechanism to assure the safe and proper use of the gas at a point of operation.

3. Storage of Compressed Gas Cylinders

- 3.1. Cylinders must be secured at all times in such a way as to avoid them being knocked over or damaged, must be stored in a vertical position, not stored in public hallways, and segregated based upon contents. 20 feet should be maintained between oxidizers and flammables or firewalls erected at least 5 feet high and with a fire rating of 30 minutes.
- 3.2. Cylinders must be protected from damage, corrosion, sunlight and kept away from heat sources.
- 3.3. Cylinders should be capped when they are not being used.
- 3.4. Cylinders shall be stored only in assigned areas and secured to prevent tipping.
- 3.5. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects or subject to tampering by unauthorized persons.
- 3.6. Empty cylinders shall have their valves closed.
- 3.7. Valve protection caps (where the cylinder is designed to accept a cap) shall always be in place, hand tight, except when cylinders are in use or connected for use.
- 3.8. Cylinders shall be kept away from radiators and other sources of heat.
- 3.9. Storage areas for full and empty cylinders must be designated and labeled. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways.
- 3.10. Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.
- 3.11. Hoses and connections should be inspected regularly for damage. Hoses should be stored in cool areas and protected from damage.

4. Safety Precautions

- 4.1. Read the label on all cylinders before use to identify the cylinder contents. If the label is not legible or is missing, do not assume that the cylinder contains a particular gas, but return the cylinder to the gas supplier. Observe all safety precautions set forth on the cylinder label.
- 4.2. Secure all cylinders to suitable cylinder carts, benches, walls, posts, or racks so that they cannot be knocked or pulled over accidentally.
- 4.3. Cylinders containing liquid oxygen, nitrogen, argon, helium, or hydrogen must be kept in an

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upright position and secured (**chained**) in that position to prevent them from being knocked over. (Rope is not acceptable. In fire rope will burn through causing cylinder to fall potentially causing it to become a horizontal projectile)

- 4.4. The proper personal protective equipment shall be worn by employees who handle and use compressed gas cylinders.
- 4.5. When a cylinder cap cannot be removed by hand, cylinder shall be tagged "Do Not Use" and returned to the designated storage area for return to vendor.
- 4.6. Visual and other inspections shall be conducted to determine that compressed gas cylinders are in a safe condition.
- 4.7. Cylinders must be equipped with the correct regulators. Regulators and cylinder valves should be inspected for grease, oil, dirt and solvents.
- 4.8. Leaking cylinders should be moved to an isolated, well-ventilated area, away from ignition sources. Soapy water should be used to detect leaks. If the leak is at the junction of the cylinder valve and cylinder, do not try to repair it. Contact the supplier and ask for response instructions.
- 4.9. Only tools provided by the supplier should be used to open and close cylinder valves
- 4.10. Cylinders should be marked as "MT" and dated when empty. Never mix gases in a cylinder and only professionals should refill cylinders. Empty cylinders must be handled as carefully as full cylinders.

5. Transportation and Handling of Compressed Gas Cylinders

- 5.1. When transporting cylinders, a suitable platform shall be used. **Slings or electric magnets shall not be used for this purpose.** Valve protection caps (where cylinder is designed to accept a cap) shall always be in place.
- 5.2. Cylinders must be transported in a vertical secured position using a cylinder basket or cart, and must not be rolled. Regulators should be removed and cylinders capped before movement. Cylinders should not be dropped or permitted to strike violently and protective caps are not used to lift cylinders.
- 5.3. Cylinders should be moved by tilting and rolling them on their bottom edges. Dragging and sliding cylinders should be avoided. When cylinders are transported by vehicle, they must be secured in position. Cylinders shall not be dropped or struck or permitted to strike each other violently.
- 5.4. Valve protection caps shall not be used for lifting cylinders from one vertical position to another. Before raising cylinders provided with valve protection caps from horizontal to a vertical position, the cap should be properly in place. The cap should be turned clockwise to insure that the cap is had tight.
- 5.5. A suitable cylinder truck, **chain** or other steadying device shall be used to keep cylinders from being knocked over while in use.
- 5.6. Unless cylinders are secured on a special truck, regulator shall be removed and valve

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protection caps, when provided for, shall be put in place before cylinders are moved.

- 5.7. Cylinders not having fixed hand wheels shall have key, handles, or nonadjustable wrenches on valve stems while these cylinders are in service.
- 5.8. Cylinder valves shall be closed before moving cylinders.
- 5.9. Cylinder valve shall be closed when work is finished.
- 5.10. Valves of empty cylinders shall be closed.
- 5.11. Only tools provided by the supplier should be used to open and close cylinder valves

6. Training

- 6.1. Employees must be trained on the proper use, handling and storage of compressed gas cylinders.

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- 6.2. Cylinders shall never be used as rollers or supports, whether full or empty.
The numbers and marking stamped into cylinders shall not be tampered with or changed.
- 6.3. Empty cylinders should be marked "Empty."
- 6.4. No person, other than the gas supplier, shall attempt to mix gases in a cylinder. No one, except the owner of the cylinder or authorized person(s) shall refill a cylinder.
- 6.5. No one shall tamper with or remove cylinder or valve safety devices.