



Compressed gases are dealt with under the OSHA Standard (29CFR1910.101) which can be found at:
<https://www.osha.gov/SLTC/compressedgasequipment/standards.html>

One of the OSHA websites names the Stony Brook University websites as a very complete discussion of this subject, so for your convenience, I recommend if you want very good information on this subject, go to:
<http://www.sunysb.edu/facilities/ehs/occupational/cg.shtml>

The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tank cars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965, which is incorporated by reference as specified in Sec. 1910.6.

Further, if you will be involved in the transportation of larger quantities of compressed gases, it is mandatory you read the training requirements under the Hazardous Materials Regulations entitled Code of Federal Regulations, Title 49, Subpart H, 172.700-172.704 from the Pipeline and Hazardous Materials Safety Administration (PHMSA) at this website:
<https://www.ecfr.gov/cgi-bin/text-idx?SID=95ea2117ed9c73ebadc81adaa10b7233&mc=true&node=sp49.2.172.h&rqn=div6>

After reading the referenced Stoneybrook website, one should know all of the important information on this subject; however, as a convenience, the major requirements are summarized below:

CYLINDER STORAGE

Cylinder storage has safety implications. Remember these guidelines when storing cylinders:

1. Store cylinders upright.
2. Group cylinders by compatibilities of gas.
3. Store full and empty cylinders apart and have them tagged or labeled.
4. Store gases so that old stock is used first.
5. Secure cylinders with chains or cables or special holders designed for that purpose such as cylinder carts or wall holders. Never secure cylinders to conduit carrying electrical current.
6. Make sure fire extinguishers near cylinder storage area are appropriate for the types of gases being stored.
7. Store oxygen cylinders at least 20 feet from flammables or combustibles or separate them by a 5-foot high, fire resistant barrier in accordance with NFPA requirements.
8. Keep oil and grease away from oxygen cylinders, valves, and hoses. If your hands, gloves or clothing are oily, do not handle oxygen cylinders. Oxygen and compressed air are not the same thing. Do not use them interchangeably.



9. Compressed gases may not be stored, permanently or temporarily in hallways or corridors of the University. And, section 3003.3.1 of the 2003 International Fire Code (the current fire code that applies to all State of Arizona facilities) requires that compressed gas cylinders be secured against unauthorized access.

CYLINDER HANDLING AND TRANSPORTATION

1. Always transport cylinders with the regulator removed and the safety cap installed. Use a cylinder cart, do not roll them by hand along the floor or transport them on forklifts. All cylinders should be treated as full and handled accordingly.
2. Always use the correct pressure regulator for the specific gas.
3. CGA fittings differ for inert gases (e.g., He, Ar, N₂), flammable gases (e.g., H₂) and oxidizers (e.g., O₂, N₂O). The modification or retrofitting of CGA fittings or relief valves is **NOT** allowed.
4. All compressed gas cylinders must be clearly marked with the correct chemical name. Shoulder labels must clearly identify the contents of a cylinder. **DO NOT** rely on cylinder color to identify the gas.
5. If more than 1,000 lbs. of cylinders are carried in a truck, the vehicle must be appropriately placarded and the driver needs a Commercial Driver's License and Hazmat Endorsement.
6. Never open valves until regulators are drained of gas and pressure-adjusting devices are released. When opening cylinders, point outlets away from people and sources of ignition, such as sparks or flames. Open valves slowly. On valves *without* hand wheels, use only supplier recommended wrenches. On valves *with* hand wheels, never use wrenches. Never hammer a hand wheel to open or close a valve.
7. Never put any gas cylinder in an enclosed environment such as a car trunk or a station wagon because if the valve has even a small leak, it could present an exposure, asphyxiation, fire and/or explosion risk.
8. Cylinders should be carried in the back of an open truck in a standing position and chained to a rack. If they must be transported laying down, they should be blocked in a manner to keep them from rolling around or banging against each other, and they must not be used until they have been in a standing position for several hours.
9. The transportation of cylinders and compressed or liquid gases is largely controlled by the U.S. Department of Transportation, and its affiliate which can be explored further at:
<http://www.fmcsa.dot.gov/safety-security/safety-security.htm>



10. The practice of “Transfilling” (where the contents of a compressed cylinder is transferred to another cylinder) requires specific training and is a potential hazard. It can only be completed with prior institutional approval at:
<https://risk.arizona.edu/training/gas-handling-safety>

11. There are minimum requirements for the use of toxic and/or corrosive gases at:
<https://risk.arizona.edu/toxiccorrosivereactive-compressed-gas-safety>

TRAINING

All employees using or handling compressed gases must be trained in the safe use of the material and pressurized systems. Permanent records/logs must be kept on all persons who have completed such training. Additional training is required if you will be involved in the transportation of larger quantities of compressed gases.