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Compressed Gas Cylinders: Identification, Handling and Use

Many industrial and laboratory operations require the use of compressed gases for a variety of operations. Compressed gases present a unique hazard and depending on the particular gas, there is a potential for simultaneous exposure to both mechanical and chemical hazards. Gases may be flammable, combustible, explosive, corrosive, poisonous, or a combination of these hazards.

Careful procedures are necessary for handling the various compressed gases, cylinders containing the compressed gases, regulators or valves used to control gas flow, and the piping used to confine gases during flow.

Identification

The contents of any compressed gas cylinder must be clearly identified. Such identification should be stenciled or stamped on the cylinder or a label. Commercially available three-part tag systems may also be used for identification and inventory.

No compressed gas cylinder should be accepted for use that does not legibly identify its contents by name. If the labeling on a cylinder becomes unclear or an attached tag is defaced to the point the contents cannot be identified, the cylinder should be marked "contents unknown" and returned directly to the manufacturer. Color coding should never be relied upon for the identification of contents because cylinder colors can vary by supplier. Additionally, labels on caps have little value because caps are interchangeable.

Compressed gas cylinder labels should be color coded to distinguish hazardous gases and signs should be conspicuously posted in areas where flammable compressed gases are stored, identifying the substances and appropriate precautions.

Handling and Use

When in use, compressed gas cylinders should be attached to a bench top, individually to the wall, placed in a holding cage, or have a non-tip base attached. Chains or sturdy straps may be used to secure them.

If a leaking cylinder is discovered, move it to a safe place, if it is safe to do so, and inform the Environmental Health & Safety Department. The cylinder vendor should also be informed as soon as possible. Under no circumstances should any attempt be made to repair a damaged cylinder or valve.

If you have an idea for SafePractices, please call PEI at (918) 494-9696 or email Chris Bouldin at cbouldin@pei.org

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Standardized cylinder-valve outlet connections and fittings have been devised by the Compressed Gas Association (CGA) to prevent mixing of incompatible gases. The outlet threads used vary in diameter and type; some are internal, some are external; some are right-hand, some are left-hand thread. In general, right-hand threads are used for non-fuel and aqueous gases, while left-hand threads are used for fuel and oil-pump gases.

To minimize undesirable connections, only CGA standard combinations of valves and fittings should be used in compressed gas installations; the assembly of miscellaneous parts should be avoided. The threads on cylinder valves, regulators and other fittings should be examined to ensure they correspond and are undamaged.

Cylinders should be placed with the valve accessible at all times. The main cylinder valve should be closed as soon as it is no longer necessary that it be open. This is necessary not only for safety when the cylinder is under pressure, but also to prevent the corrosion and contamination resulting from diffusion of air and moisture into the cylinder after it has been emptied.

Cylinders are equipped with either a hand wheel or stem valve. For cylinders equipped with a stem valve, the valve spindle key should remain on the stem while the cylinder is in service. Only wrenches or tools provided by the cylinder supplier should be used to open or close a valve. At no time should pliers be used to open a cylinder valve. Some valves may require washers; this should be checked before the regulator is fitted. Compressed gas cylinder valves should always be opened slowly.

When opening the valve on a cylinder containing an irritating or toxic gas, the user should position the cylinder with the valve pointing away from them and warn those working nearby.

Compressed Gas Cylinder Checklist

- Use safety glasses when handling and using compressed gases
- Read the label, color coding could vary between vendors
- Secure gas cylinders to prevent tipping
- Do not attempt to repair a cylinder or valve
- Do not store acetylene cylinders on their side
- Do not lubricate regulators or threads on oxygen cylinders with petroleum-based lubricants
- Open gas cylinder valves slowly
- Do not store hydrogen or acetylene in close proximity to open flames
- Ensure compatibility of regulator and valve fittings on all cylinders
- Close valves, bleed the system and remove regulator from empty cylinders.
- Replace valve cap and clearly mark as "empty" all empty cylinders

References

Information provided by Oklahoma State University, Department of Environmental Health and Safety Training. www.ehs.okstate.edu.



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