

Gas cylinders for storing high-pressure oxygen, gas, petroleum liquefied gas, etc. Gas cylinders are generally filled with permanent, liquefied or mixed gases for safe storage and transportation of gases. Gas cylinder filling units, gas cylinder inspection units, gas cylinder use list (including factories, laboratories, hospitals, schools, CDC, electronic rooms, clean rooms, industrial institutions, etc.), cylinder management of gas cylinder distribution units and gas cylinder distribution units urgently need to be improved. Safety management of transportation and storage gas cylinders should be strengthened.



Principle of Safe Storage

1. Storage should be placed in special warehouses, which should abide by the national regulations on the storage of dangerous goods, gas cylinder warehouses should comply with the relevant provisions of the Code for Fire Protection in Architectural Design, and must be equipped with technical personnel with professional knowledge, and their warehouses and places should be managed by special personnel, equipped with reliable personal safety protective equipment.
2. No ditches, underground channels, open fires and other heat sources shall be allowed in the warehouse. The warehouse shall be ventilated, dry and avoid direct sunlight. Storage warehouses and storage rooms shall have good ventilation and cooling facilities, no underground ditches, underground channels and bottom ventilation holes, and no pipelines shall be allowed to pass through. Direct sunlight shall be avoided and open sources of radiation shall be avoided. The cylinder body should be kept dry. Exposure should be prevented in summer.
3. Gas cylinders filled with gases prone to polymerization or decomposition must control the maximum temperature in the warehouse according to the nature of

gases, specify the storage period, and avoid open sources of radiation.

4. Empty and real bottles should be placed separately and marked clearly. Contacts between toxic gas cylinders and gases in the bottles can cause combustion, explosion and poison production. They should be stored in separate rooms and set up anti-poison appliances or fire extinguishers nearby. It must be stored in isolation from explosives, oxidizers, inflammables, spontaneous combustion and corrosive materials.

5. Cylinders should be placed neatly, upright, properly fixed, and measures should be taken to prevent dumping. Innovation of new all-plastic cylinder fixing plate and rack perfectly solves the problem of cylinder storage and fixing, improves safety and avoids the disorder of cylinder placement. It meets the requirements of OSHA 29CFR.1910 and greatly improves cylinder safety. The full plastic structure of innovative cylinder fixing plate and cylinder fixing frame will not be as bulky as steel products, rust and debris, especially suitable for clean rooms, clean rooms, operating rooms, electronic rooms and other occasions with high requirements for cleanliness.



Principles of Safe Transportation

1. Transportation must be safe and reliable. Compared with common metal cylinder trolleys, full plastic cylinder trolleys do not produce friction sparks, corrosion, noise and maintenance during transportation. In addition, the full plastic cylinder pusher has stronger pushing function, better balance and better operability than the metal cylinder pusher. Light, effortless and durable. It is suitable for any road surface and can carry cylinders up to 31 cm in diameter.

2. Bottle caps (excluding those with protective covers) and shock rings (excluding those with packaged cylinders) must be worn properly. Light handling and light unloading are

strictly prohibited. Throwing, sliding, rolling and touching are strictly prohibited.

3. When hoisting, it is strictly forbidden to use electromagnetic crane and metal chain rope.
4. Contacts of gases in cylinders that can cause combustion, explosion and poisonous substances shall not be transported in different carriages; inflammable, flammable, corrosive or chemically reacting with gases in cylinders shall not be transported with cylinders.
5. Gas cylinders should be properly fixed when transporting by vehicles. When standing, the height of the carriage should be more than 2/3 of the bottle height. When lying down, the valve end of the bottle should be oriented to one side. The stacking height should not exceed five storeys and not exceed the height of the carriage.
6. Transportation in summer should be provided with sunshade facilities to avoid exposure to sunlight, and daytime transportation should be avoided in busy urban areas.
7. Fireworks are strictly prohibited when transporting flammable gas cylinders. Fire extinguishing equipment shall be provided on the means of transport.
8. Vehicles and vessels transporting cylinders shall not stop near busy urban areas, densely staffed schools, theatres, large shops, etc. Drivers and escorts shall not leave at the same time when vehicles and vessels stop.
9. Gas cylinders containing liquefied petroleum gas are strictly prohibited from being transported over 50 kilometers away.
10. Transportation of inflatable gas cylinders shall strictly comply with the provisions of the Dangerous Goods Transport Regulations.
11. Transportation enterprises should formulate emergency measures to deal with accidents, and drivers and escorts should handle them correctly.

Usage principle

(1) High-pressure cylinders must be classified and kept separately. They should be fixed when they are placed upright. The cylinders should be kept away from heat sources to avoid exposure to sunlight and strong vibration. Normally, there should be no more than two cylinders in the laboratory.

A. On the shoulder of the cylinder, the following marks are printed with a steel stamp to mark the manufacturing date of the cylinder type, the working pressure and pressure test date of the cylinder type, the next inspection date, the gas volume and the weight of the cylinder.

B. In order to avoid confusion in the use of various cylinders, cylinders are often painted with different colors and the names of gases in the cylinders are indicated.

(2) Pressure reducers selected on high-pressure cylinders should be classified and specially used, and the screw should be tightened to prevent leakage during installation; when opening and closing pressure reducers and on-off valves, the action must be slow; when using, the on-off valve should be rotated first, then the decompressor should be opened; when using up, the on-off valve should be closed first, after exhausting the exhaust gas, the decompressor should be closed. Never just turn off the decompressor, not the on-off valve.

(3) When using a high-pressure cylinder, the operator should stand in a vertical position at the interface with the cylinder. Striking and impact are strictly prohibited during operation, and air leakage is often checked. Pressure gauge reading should be paid attention to.

(4) Oxygen cylinders or hydrogen cylinders should be equipped with special tools, and no contact with oil should be allowed. Operators should not wear clothing gloves contaminated with various oils or susceptible to static electricity, so as not to cause combustion or explosion.

(5) The distance between flammable gas and gas cylinder and open fire should be more than 10 meters (isolation measures can be taken when it is really difficult to reach).

(6) Residual pressure of 0.05 MPa or more shall be retained in the used cylinder as required. Flammable gases should remain 0.2 MPa to 0.3 MPa (about 2 kg/cm² to 3 kg/cm² gauge pressure) and H₂ should be retained 2 MPa in order to avoid danger and exhaustion when refilling.

(7) All kinds of cylinders must be inspected regularly. Cylinders filled with general gases are inspected once every three years; if serious corrosion or damage is found in use, the inspection shall be carried out in advance.

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