

 GOVERNMENT OF DUBAI	Organization Unit	Public Health & Safety Department	الوحدة التنظيمية:	 بلدية دبي DUBAI MUNICIPALITY
	Form sheet title:	Technical Guidelines for industrial Compressed Gas Cylinders	اسم النموذج :	
	Doc Ref.	DM-PH&SD-P4-TG01	رقم النموذج :	

Industrial Compressed Gas Cylinders

Background: The widespread use of compressed gas cylinders during industrial operations is potentially hazardous due to the physical, chemical and biological risks from improper handling.

The Occupational Health and Safety regulations in Dubai, Local Order No. 61 of 1991 require that each employer provide for a safe working environment.

Guidelines:

1. General

- i. Compressed gas cylinders should be operated and handled only by personnel who have been instructed in proper procedures for their use and in the hazards involved.
 - ii. Personnel filling, handling, using compressed gas cylinders should be familiar with the properties of the contents, the hazards involved and precautionary and emergency measures to be taken for those hazards.
2. All cylinders shall conform to International standards of construction and be maintained in good condition.
 3. The date of manufacture and hydrostatic test date shall be clearly and legibly marked upon the cylinders.
 4. All cylinders shall be tested, inspected and filled in accordance with International standards.
 5. The supplier shall ensure that the cylinders or containers failed in visual/physical examination or hydrostatic test are physically damaged to prevent re-use of cylinders by any person.
 6. The supplier shall take every precaution to ensure that the cylinder valve is in good condition.
 7. No cylinders shall be supplied without protective guards or caps for the valve assemblies.

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8. *Marking:*

- i. Cylinders or containers shall be legibly and durably marked at the valve end preferably not on the cylinder part of the body with the following:
 - a. The chemical formula or symbol and the name of the gas it contains.
 - b. In the case of mixtures, the chemical formula or symbols and the names and proportions of the constituent gases.
 - c. In the case of common organic refrigerants, the chemical formula or symbol.
- ii. The marks shall be applied in such a manner that they do not weaken or damage the container or cylinder.

The dimension of the lettering or figures shall be commensurate with the size of the container/cylinder.

- iii. The marks may be made by stamping, embossing, engraving and shall be maintained in good condition.
 - iv. The size of the letters to be stenciled on the body of the container/cylinder shall be not less than 7cms. high.
 - v. The color of the lettering and symbols shall contrast against the container or cylinder color and be such as not to impair legibility.
9. All cylinders shall be color coded according to the contents of the cylinder and the hazards involved.
All color coding shall be maintained in a clear and legible condition.

All cylinders shall be labeled with UN Standard hazardous property warning diamonds in accordance with the Best Practicable Means BPM 1/92.

10. *Transport of Cylinders*

1. All cylinders when being transported shall have the protective guards or caps in place over the valve assemblies.
2. Cylinders shall be transported in the upright position and be placed in sectional boxes or containers in such a manner that they cannot knock against other cylinders or obstructions.

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3. Different gas cylinders shall not be mixed together in their containers when being transported.
4. Oxygen cylinders should under no circumstances be transported together with acetylene or any other forms of flammable substances.
5. Cylinders shall not be rolled from vehicles or allowed to free fall onto rubber tyres or similar packaging, but shall be lowered to the ground under controlled condition.
6. Oxygen/Acetylene welding sets shall have regulators removed and safely stored prior to transportation by road on welding trucks.
7. Cylinders should be protected from anything that will cut or damage the metal and reduce the strength of the cylinder.
8. Cylinders shall not be lifted using chains.
9. Cylinders shall be lifted in a properly designed cradle.
10. Cylinders shall be securely attached to the vehicle or trailer on which it is being transported to prevent the cylinders from falling off the vehicle.
11. Every person engaged in conveyance shall take all precautions to prevent explosion.
12. Drivers of every vehicle or trailer carrying any cylinder must be aware of the contents of cylinders and emergency procedures in case gas leakage/accident.
13. The supplier or owner of a transport vehicle should train the drivers in safe handling and emergency procedures.

11. *Storage of Cylinders*

1. Cylinder storage areas shall be prominently posted with their names of the gases stored within and appropriate hazard symbols.
2. Where gases of different types are stored at the same location, cylinders shall be grouped by type of gas and the groups arranged to take into account the gases contained. The flammable gases shall not be stored near oxidizing gases.
3. Charged and empty cylinders shall be stored separately.

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4. Cylinder locations shall be of fire resistant construction, well ventilated and designed such that the cylinders are shaded from the direct rays of the sun.
5. Cylinders shall not be stored near sources of heat such as boilers, furnaces, radiators or other hot process equipment.
6. The store shall be located as far as possible but not less than 20 meters from flammable substances such as oil, gasoline or waste. Inside buildings, there should be a separation of at least 6 meters (20 feet) between oxygen and fuel-gas (combustible gas) cylinders unless there is a fire-resistive partition between them.
7. Cylinders shall be stored in an upright position within the store and secured in such a manner as they cannot fall or be knocked over.
8. Protective caps or guards shall be retained in place on all full and empty cylinders within the store.
9. "Smoking" shall not be allowed within or in the vicinity of cylinder stores and warning notices to this effect should be prominently displayed.

12. Use of cylinders

1. Compressed gas cylinders shall be handled and used only by experienced and properly instructed persons.
2. The user shall examine the label and markings on the cylinder prior to connection to make certain it contains the gas he intends to use. Any cylinder which is not positively identifiable by markings should be returned to the supplier.
3. The protective caps for valve assembly shall be kept in until the cylinder is required for use.
4. The user shall ensure that the cylinders are properly supported and secured.
5. Suitable pressure regulating devices shall be used. Before an attempt is made to remove a regulator from a cylinder, the regulator should be depressurized by closing the cylinder valve and releasing all pressure from the regulator.

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6. Threads on regulator connections or their auxiliary equipment shall be the same as those on the cylinder valve outlet. Connections that do not fit shall not be forced together.
7. The cylinder valve shall be opened slowly with the valve pointed away from the operator or any other person. Only approved tools shall be used to open or close cylinder valves. On valves equipped with hand wheels, wrenches/hammers or other tools shall not be used to operate the valve.
8. Oil, grease or other combustible material should never be used to lubricate or clean valves, regulators, gauges or fittings on cylinders holding oxygen or other oxidizers.
9. If a valve sticks, never hit it with a hard object to loosen it. Return the cylinder to the supplier.
10. Connections to piping, regulators and equipment shall always be kept tight to prevent leakage. Hoses where used shall be maintained in good condition.
11. If a valve leaks, it should be closed, stored in a location where leakage will not constitute a hazard, marked as "Leaking" and returned to the supplier.
12. Under no circumstances shall compressed oxygen be used for testing or purging instead of compressed air or nitrogen.
13. Under no circumstances shall an acetylene cylinder be transported, stored or used in the horizontal position.
14. Extreme caution shall be taken to avoid knocking or jarring acetylene cylinders which can lead to internal self heating and risk of explosion.
15. In case of leaking, cylinders particularly toxic gases such as chlorine, the user should contact Civil Defense and follow established evacuation procedures.

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13. Further References:

UAE Standards 118/1990 Requirements for filling, transporting, handling and storage of liquefied	BS - 349	Identification of the contents of industrial gas cylinders
Petroleum gas Cylinders 62/1988, 63/1988, 64/1988 65/1988 Industrial Safety and Health Regulations-	BS - 1319	Identification of Medical gas cylinders.
Hazardous Materials - gases	BS - 4800 BS - 3810 BS - 5430 BS - 5355	Color Classification “ “ Testing and Inspection Filling of Cylinders.

**FURTHER INFORMATION IS AVAILABLE FROM
PUBLIC HEALTH AND SAFETY DEPARTMENT
Tel: 2064244 FAX: 2270160**