

Ensuring Gas Cylinder Safety

PRESSURE TESTING OF CYLINDERS FOR COMPRESSED, LIQUEFIED AND DISSOLVED GASES

In line with our quality policy, **CARBACID (CO₂) LTD** continues putting effort and commitment to continuous improvement, and compliance with statutory requirements in respect to safety in handling and use of compressed gas cylinders. We have as of 1st July 2009 started implementation of procedures that will ensure compliance to all the stipulated standards and laws. This in effect means only refilling of cylinders that have valid pressure test certification.

This applies also to fire extinguishers!

Why pressure test cylinders for compressed, liquefied and dissolved gases?

1. It is a statutory requirement!
2. To ascertain the cylinder (shell) has the ability to store the gas in its desired state under pressure.
3. Stored pressure can be dangerous if a compressed gas cylinder and any of its assembly parts was to rupture.
4. Pressure test guarantees safety by determining the elastic expansion of the cylinder, which ensures the integrity of pressure vessels.

What constitutes the pressure test?

1. Physical & Visual test
2. Hydro (hydrostatic) test
 - i. **Proof test method** to 900 psig for low pressure cylinders & fire extinguishers
 - ii. **Direct expansion method** to 10,000 psig for high pressure cylinders & Co₂ gas fire extinguishers

Our new state-of-the-art cylinder maintenance facility has the capacity to pressure test all types of compressed gas cylinders including low pressure cylinders such as the fire extinguishers, and **CARBACID (CO₂) LTD** is authorized to issue validation certified by licensed inspector.

How is re-validation recorded?

A test report is issued (certified by a DOSHS/Government Approved Inspector)
A register of all tested cylinders is to be kept as per statutory requirement.

Please note that the statutory requirement is for the "cylinder owner" to keep a register that shall be available for inspection.

Of special interest: Who is the cylinder owner in the case of fire extinguishers?

Fire extinguishers are owned by the end user, the obligation of compliance lies with them. We advice that this information be passed on to your fire safety team that even those type of cylinders are provided with proof of validation. The two commonly used gases in fire extinguishing are: **(1) liquefied Carbon dioxide and (2) compressed nitrogen gas**. The use of the gases in those states qualifies fire extinguisher cylinders as **compressed, liquefied and dissolved gases cylinders**

What is the cost of pressure testing cylinders?

In terms of safety? *Invaluable*

In other terms? *The visual and hydro-test service is on offer to all our Co₂ customers at discounted rates.*

What is the offer?

- 1) Hydro-testing at the listed rates.

a) fire extinguisher cylinders

No.	Description	Size	Qty	Cost of testing	
				Kshs.	ct
1.	Portable	All	1	500	00
2.	Trolley type	All	1	750	00

b) compressed, liquefied and dissolved gases cylinders

No.	Description	Size	Qty	Cost of testing	
				Kshs.	ct
3.	Up to 10kg	All	1	500	00
4.	Over 10kg	All	1	750	00



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- Note:
1. Our hydro-testing can be done on any compressed industrial, medical and high purity compressed gas cylinder.
 2. The collection/return, from your Nairobi premise, of batches of minimum ten cylinders for examination and testing at our cylinder maintenance facility along Factory Street, Industrial Area, Nairobi.

Where does the re-validation take place?

Our cylinder maintenance is situated along Factory Street, off Workshop Road, Industrial Area, Nairobi. You are most welcome to visit and get to see the process of re-validation.

What do the local statutes and regulations state?

THE FIRE RISK REDUCTION RULES, 2007

Detail of Legislation Publication	Kenya Gazette Supplement no.46 (legislative supplement no.28) : dated 4 th May 2007 Legal Notice No.59 : The Factories and Other Places of Work Act (Cap.514)
Title of Legislation	THE FACTORIES AND OTHERS PLACES OF WORK (FIRE RISK REDUCTION) RULES 2007

Maintenance, Inspection And Testing Of Cylinders

- 30..
- (1) Every employer shall ensure that all means of extinguishing fire are properly maintained.
 - (2) The occupier shall:-
 - (c) Ensure that all cylinders for fire fighting appliances are examined and tested at least once **every five years** and such tests shall include **hydraulic pressure test**.
 - (3) Every occupier shall ensure that any portable fire extinguisher is examined and tested whenever there is:-
 - (a) Evidence of corrosion or mechanical *damage*;
 - (b) *Repairs* on a cylinder by soldering, welding, brazing or use of patching compounds;
 - (c) *Change* of cylinder or shell threads
 - (d) *Corrosion* that has caused pitting or corrosion under removable name plate assemblies.

THE OCCUPATIONAL SAFETY AND HEALTH ACT, 2007

Detail of Legislation Publication	SPECIAL ISSUE : Kenya Gazette Supplement no.111 (Acts No.15) : dated 26 th October 2007 KENYA GAZETTE SUPPLEMENT ACTS, 2007
Title of Legislation	The Occupational Safety and Health Act, 2007

PART VII – MACHINERY SAFETY

Safe use of plant, machinery and equipment

55. All plant, machinery and equipment whether fixed or mobile for use either at the workplace or as a workplace, shall only be used for work which they are designed for and be operated by a competent person

Competent person – in relation to any duty or function, means a person who has adequate training, relevant qualifications and experience to enable him to perform that duty or function.

Cylinders for compressed, liquefied and dissolved gases

70. (1) Every cylinder for compressed, liquefied and dissolved gases, and its fittings, shall be :-
- (a) So designed as to be suitable for the particular circumstances of their use; and
 - (b) Of sufficient strength to sustain the internal pressures to which they will normally be subjected.
- (2) Every cylinder for compressed, liquefied and dissolved gases shall conform to a standard specification prescribed under the Standards Act or where a standard is not prescribed, a standard specification approved by the Director and the Kenya Bureau of Standards for the purposes of this Act and shall be of good construction, sound material, adequate strength and free from patent defect.
- (3) Every cylinder, when constructed or sold, shall be covered by the **manufacturer's test certificate** showing compliance with the safety and health standards specifications prescribed under section 4, and the **certificate shall be obtainable**, during the whole life of the cylinder, **from the owner of the cylinder**.
- (4) Every cylinder owner shall keep a cylinder maintenance register in which shall be noted, under the corresponding dates, all tests, internal and external examination, cleanings and repairs undertaken on the cylinder, and the register shall be available for inspection by an occupational safety and health officer at all times.



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- (5) It shall be the duty of a cylinder owner to ensure that all cylinder belonging to him are examined and tested and the results of such examinations and tests are entered in the cylinder maintenance register by a person approved by the Director by certificate in writing :-
 - (a) Before being placed in service for the first time; or
 - (b) Before being placed in service after repairs other than changing the neck ring which carried the cap, re-tapping the neck or changing the foot-ring and;
 - (c) At intervals not exceeding two years in the case of cylinders for corrosive gases and five years in the case of cylinders for other gases.
- (6) The test that a cylinder other than an acetylene cylinder shall undergo to comply with the provisions of subsection (5) shall comprise :-
 - (a) A hydraulic pressure test which shall exceed the maximum permissible working pressure; and
 - (b) An internal and external examination in the accordance with the requirements of the standard specification referred to in subsection (2) of this section.
- (7) The following particulars shall be clearly and boldly marked on every cylinder :-
 - (a) Owner's name
 - (b) Registered number as shown in maintenance register;
 - (c) Clear indication of the gas to be charged;
 - (d) Date o type of test undertaken;
 - (e) Country and year of manufacture;
 - (f) Permissible maximum charging pressure; and
 - (g) Standard specification used.
- (8) Every cylinder for compressed, liquefied and dissolved gases shall be clearly marked for the purpose of identification of their contents in a colour conforming to a standard specification of cylinder colour markings.
- (9) Markings required under the provisions of subsection (7) shall not be :-
 - (a) Cut into the metal of the cylinder unless special reinforcement has been provided for that purpose; or
 - (b) Placed on the cap
- (10) In addition to the requirements of subsection (7) every cylinder for :-
 - (a) Liquefied gases shall be clearly and boldly marked with the permissible maximum weight of the charge of gas for which the cylinder is designed;
 - (b) The compressed gases shall be clearly and boldly marked with the permissible maximum weight of the charge of gas for which the cylinder sin designed; and
 - (c) The compressed gases shall be clearly and boldly marked with the cubic capacity.
- (11) Before being charged for the purposes of subsection (10), every cylinder shall :-
 - (a) Be carefully examined at the charging station to ensure that it complies with the provisions of this section; and
 - (b) Except in the case of acetylene, be completely emptied.
- (12) Every cylinder for liquefied gases with a critical temperature exceeding the usual ambient temperature shall not be completed filled in order to prevent the generation of dangerous pressure when at temperatures exceeding this critical temperature, and, cylinders for liquefied gases shall be weighted during charging.

PART VIII: SAFETY – GENERAL PROVISIONS

Storage

74. (1) All goods, articles and substances stored in a workplace shall be stored or stacked :-
 - (a) In such manner as will ensure their stability and prevent any fall or collapse of the stack;

PART IX: CHEMICAL SAFETY

Materials safety data sheets

84. (1) Every manufacturer, importer, supplier or distributor of chemicals shall make available to employers, material safety data sheets for chemical s and other hazardous substances, containing detailed essential information regarding their identity, supplier, classification of hazards, safety precautions and emergency procedures.

PART XI: HEALTH, SAFETY AND WELFARE – SPECIAL PROVISION

Protective clothing and appliances

100. (1) Every employer shall be provide and maintain for the use of employees in any workplace where employees are employed in any process involving exposure to wet or to any injurious or offensive substance, adequate, effective and suitable protective clothing and appliances, including, where necessary, suitable gloves, footwear, goggles and head coverings.

How to get further information & assistance.

Our Sales & Marketing team is available to provide further assistance in this regard. We sincerely believe that with your cooperation it is possible to ensure that only safe cylinders that are in compliance with all statutory requirements end up in the possession of the end users.

Sales & Marketing

CARBACID (CO₂) LIMITED

(Please see terms & conditions)



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TERMS & CONDITIONS

CYLINDER RE-VALIDATION TESTING FOR ALL TYPES OF COMPRESSED GAS CYLINDERS

1. **ALL CYLINDERS MUST BE TRANSPORTED AND DELIVERED WITH THE SAFETY CAPS.**
2. All cylinders must be empty prior to delivery to **CARBACID** cylinder testing department.
3. All parts of cylinders shall be removed.
4. All decals, stickers, labels, covers, etc, that might be hiding manufacturers' and last validation information must be removed prior to delivery.
5. **DO NOT REMOVE OR ATTEMPT TO REMOVE THE MANUFACTURERS LABEL.**
6. If cylinders are received with, decals, stickers and also hiding manufacturers' and last validation information, **CARBACID** will attempt to remove the decals, stickers etc. from the cylinder for an additional charge of kshs.100.
7. **CARBACID** reserves the right to decline testing a cylinder due to non-removal of labels, decals, etc. The customer is responsible for the return.
8. **CARBACID** is not responsible for customer cylinder covers or any other accessory that are not removed prior to delivery for testing of the cylinder.
9. **CARBACID** is not liable for damage that occurs during the removal process to the cylinder valve or the pressure regulator or any other part of the cylinder.
10. **CARBACID** will inspect the "cylinder threads" of valves or pressure regulators for damage.
NOTE: The "cylinder threads" are the threads on the valve or pressure regulator that screws into the cylinder.
11. **CARBACID** reserves the right to refuse installation of a valve or pressure regulator due to unsafe or damaged threads.
12. The **CUSTOMER** is responsible for all delivery of cylinders to **CARBACID**, and for protecting the valve, pressure regulator, cylinder shell and any other cylinder accessory that might be delivered with the cylinder from damage during transportation.
13. **CARBACID** is not responsible for damage claims related to transportation to and from our facility
14. All damage claims must be filed with the carrier. The **CUSTOMER** is responsible for filling the damage claims.
15. **Carbacid** accepts customer(s) valve/regulator and cylinder in "as is" condition when received at **CARBACID** facility.
16. **CARBACID** will re-install the head valve and pressure regulator using a red thread locker.
NOTE: The thread locker is not a permanent sealant and is used primarily to help reduce the removal of the regulator from the bottle without the use of tools. This is for your safety and we recommend the use of a thread locker.
17. **CARBACID** will not install a defective head valve and pressure regulator which is unsafe; however we will contact you with information.
18. The **CUSTOMER** may elect NOT to have **CARBACID** install the valve or pressure regulator.
19. The **CUSTOMER** is responsible for ensuring that the only a qualified technician installs any valve or pressure regulator or any other part onto the cylinder.
20. **CARBACID** is not responsible for any installed head valve or pressure regulator or any other part, whose installation is not performed by **CARBACID**.
21. **CARBACID** is not responsible for the safe use of fire extinguisher once they leave the PSI location.
22. **CARBACID** will test all cylinders in general as per KS 11602 – 2:2000 PART 2; and in particular as per CGA - 6 – 2007: STANDARDS FOR VISUAL INSPECTION OF STEEL COMPRESSED GAS CYLINDER and; CGA - 1 – 2006: METHODS FOR HYDROSTATIC TESTING OF COMPRESSED GAS CYLINDERS;
23. Any condemned cylinder, together with all parts and accessories received with it, will be returned to the customer. Parts and accessories will not be installed on condemned cylinders.
24. **REFUNDS ARE NOT ISSUED ON CONDEMNED CYLINDERS.**
25. Cylinders delivered to **CARBACID** due to non delivery by the carrier will be held by **CARBACID** until the Customer pays for the charges.
26. **CARBACID IS NOT RESPONSIBLE FOR CYLINDERS NOT CLAIMED AND PAID FOR WITHIN 30 DAYS.**

