Annexure - VIII :

GAS CYLINDER RULES - 1940

GOVERNMENT OF PAKISTAN

DEPARTMENT OF EXPLOSIVES

GAS CYLINDER RULES, 2004

DEPARTMENT OF LABOUR

Notification No. M. 1272, dated the 7th May, 1940.

Whereas by the notification of the Government of India in the Department of Labour, No. M. 1272(1) dated the 28th September, 1938 under section 17 of the Explosives Act, 1884 (IV of 1884), any gas when contained in any metal container in a compressed or liquefied state has been declared to be an explosive within the meaning of the said Act, the Central Government in exercise of the powers conferred by sections 5 and 7 of the said Act, is pleased to make the following rules to regulate the manufacture, possession, transport and importation of such gases, a draft of the said rules having been previously published as required by section 18 of the said Act, namely :—

RULES

1. *Short title.*—These rules may be called the Gas Cylinder Rules, 1940.

2. *General exemption.*—Nothing in these rules shall apply to any air receiver which forms part of an internal combustion engine or a compressing plant.

3. *Definition.*—In these rules unless there is any thing repugnant in the subject or context,

(*a*) "Chief Inspector" means the Chief Inspector of Explosives in Pakistan ;

(*b*) "Cylinder" means any metal container whatever its shape may be ;

(*c*) "District Magistrate" includes an Additional District Magistrate;

(*d*) "Person" includes any company or association or body of individuals whether incorporated or not.

4. *Construction and Tests of Cylinder, its valves and other fittings.*—No person shall fill any cylinder with any compressed or liquefied gas and no person shall import any cylinder so filled unless such cylinder and its valve or other fittings

(*a*) are constructed in accordance with the specifications laid down in Schedule I;

(*b*) have passed the tests specified in that Schedule; and

(*c*) conform to the provisions of rules 5 and 6.

5. *Screw threads for valves.*—(1) Valves of cylinders containing inflammable gas shall be provided with left handed screw threads for the pipe or other connections.

(2) All other cylinders shall be fitted with valves provided with right handed screw threads.

6. *Markings on cylinders.*—(1) Every cylinder shall be stamped permanently and legibly with

(*a*) the manufacturer's and owner's identification marks and rotation number;

(*b*) if it was manufactured after 1st September 1931—a mark indicating the specification to which the cylinder has been made, namely B.S.S. No. 399/1930, B.S.S. No. 400/1931 or B.S.S. No. 401/1931 as the case may be;

(*c*) the name or the chemical symbol of the gas for which the cylinder is to be used;

(*d*) the date of the last hydraulic test which may be indicated by the month and year or by the year with a symbol to denote the quarter of the year;

(*e*) the internal pressure required for the hydraulic test;

(*f*) if it is to be used for any liquefiable gas the tare and gross weights calculated from appropriate filling ratio.

(2) The marks specified in clause (c) of sub-rule (1) shall be stamped on the valve.

(3) All other marks, except the manufacturer's mark which may be on the base shall be stamped on the neck end of the cylinder.

7. *Hydraulic test.*—No cylinder shall be filled with gas unless such cylinder has been subjected by the person filling it to the hydraulic test specified in Schedule I within the preceding two years and has passed that test.

8. *Precautions to be observed in carrying out hydraulic test.*—(1) In carrying out hydraulic test referred to in rule 7, the following provisions shall be observed, namely—

(i) Every cylinder shall be thoroughly cleaned and examined externally and so far as practicable internally, for surface defects, corrosion and foreign matter.

(ii) Where internal rust or foreign matter is observed the cylinder shall, prior to the hydraulic test, be heated to a temperature not exceeding 300°C and again cleaned and examined.

(iii) As soon as the test is completed, the cylinder shall be thoroughly dried internally, and shall be clearly stamped on the neck end with marks and figures indicating the person by whom the test has been carried out and the date of test. A record shall be kept of all such tests.

(2) Any cylinder which fails to pass the hydraulic test or which for any other reason is found to be unsafe for use shall be destroyed or rendered useless.

9. *Examination prior to filling of cylinders.*—Every cylinder shall be carefully examined at the filling station to ensure that it complies in all respects with the requirements of these rules, and shall be completely emptied before it is passed for filling.

10. *Compressing and filling apparatus.*—The compressing and filling apparatus for any gas shall be wholly distinct from and unconnected with the compressing and filling apparatus for any other gas.

11. *Working Pressure and filling Ratios.*—(1) The working or internal pressure in any cylinder charged with a permanent

gas shall not exceed 1,800 pounds to the square inch at a temperature of 60°F.

(2) Cylinders charged with liquefiable gases shall not be filled in excess of the filling ratios specified in Schedule II.

Explanation.—Filling ratio means the weight of gas permitted for each one pound of water capacity of the cylinder, the accuracy of the charge being determined by weighing.

12. *Identification Colours.*—(1) Every person filling any cylinder with compressed or liquefied gas shall, before it is stored or despatched see that it is painted with the appropriate identification colours specified in Schedule III.

(2) No person shall in any way interfere with or change the colour painted on a gas cylinder

Provided that nothing in this sub-rule shall be deemed to prohibit the repainting of a cylinder with the identification colour painted on it when it is required for the purpose specified in sub-rule (1) of rule 14.

13. *Marking and labelling of cylinders.*—(1) Every cylinder shall be legibly marked or labelled with the name of the gas and the name and address of the person by whom the cylinder was filled with gas.

(2) A warning in the following terms shall be attached to every cylinder containing gas:—

"*Warning*"

Gas Cylinder Rules, 1940.

1. Do not change the colour of this cylinder.
2. This cylinder may not be filled with any gas other than the one it now contains.
3. This cylinder should be kept cool. It should not be placed near a stove or other source of heat, nor be exposed to the sun.
4. No inflammable material should be stored in the immediate vicinity of this cylinder or in the same room in which it is kept.

5. No oil or similar lubricant should be used on the valves or other fittings of this cylinder.

(3) No person shall possess or transport any cylinder which does not comply with sub-rules (1) and (2).

14. *General precautions.*—(1) Cylinders together with their valves and other fittings and the identification colours prescribed under rule 12 shall always be maintained in good condition.

(2) No oil or similar lubricant shall be used on any valves or other fittings of any cylinder.

(3) Save as provided in clause (ii) of sub-rule (1) of rule 8 and Schedule I, no cylinder shall be subjected to any heat treatment or exposed to a high temperature or the Sun or stored with any inflammable or explosive material.

(4) Every cylinder containing compressed or liquefied gas shall have its valve securely closed so as to prevent leakage.

15. *Protection of valves during transport.*— (1) Every cylinder containing compressed or liquefied gas shall, if it is being transported, have its valve protected against damage in the manner provided in sub-rules (2) and (3) unless it is securely packed in a box or crate.

(2) Where the design of cylinder does not provide for the valve lying wholly below the level of the body of the cylinder, a stout metal cap or metal cover securely attached to the cylinder body shall be provided, the design being such that the cap or cover is nowhere in close proximity to any part of the valve or valve body.

(3) Every valve cap or cover on a cylinder which does not contain hydrocyanic acid shall be provided with a vent of such size as to prevent any gas pressure inside cap or cover.

(4) Nothing in sub-rules (1), (2) and (3) applies to cylinders containing oxygen for medical purposes or nitrous oxide and having a water capacity not exceeding ten pounds (10 lbs.).

(16) *Transport of cylinders.*—(1) Cylinders shall be so transported as not to project beyond the sides or ends of the vehicles in which they are transported.

(2) Adequate precautions shall be taken to prevent cylinders falling off the vehicle and being subjected to rough usage excessive shocks or local stress.

(3) (a) No lifting magnet shall be used in loading or unloading cylinders.

(b) When any such operation is carried on by means of a crane, a properly designed cradle with chain slings shall be used.

17. *Relaxation of rules.*—If the Chief Inspector is satisfied that in respect of any cylinder or class of cylinders, or any mode of conveyance any of the requirements of these rules may be safely suspended or modified, he may by written order authorise such suspension or modification for such period and under such conditions as he may think fit. Any such order may be revoked at any time.

18. *Notice of accident.*—Whenever there occurs in or about or in connection with any place where compressed or liquefied gas cylinders are handled, stored or transported any accident in any way connected with such cylinders attended with loss of human life or serious injury to person or property, or of a description usually attended with such loss or injury, the occupier of the place or the person incharge of the vehicle as the case may be, shall forthwith give notice thereof to the officer-in-charge of the nearest police station and the Chief Inspector.

19. *Powers of inspection, search, seizure, detention and removal.*—(1) Any of the officers specified in the first column of the following table may exercise the powers mentioned in Section 7 (1) of the Explosives Act, 1884, in the areas specified in the corresponding entry in the second column of that table.

	Officers	Area
1.	The Chief Inspector, Inspectors and Assistant Inspectors of Explosives.	All parts of Pakistan.
2	All District Magistrates.	Their respective districts.

3.	All Magistrates subordinate to the District Magistrates.	Their respective jurisdictions.
4.	All Police officers of rank not below that of Sub-Inspector.	The respective areas over which their authority extends.

Provided that the powers of removal and destruction under clause (d) of sub-section (1) of Section 7 of the said Act shall not be exercised by any Magistrate or Police officer except under and in accordance with the instructions of the Chief Inspector, or an Inspector or Assistant Inspector of Explosives.

(2) Every facility shall be afforded to the officers specified in sub-rule (1) to ascertain that these rules are being duly observed.

20. *Penalties.*—(1) Whoever commits any offence mentioned in the first column of the following table shall be punishable with fine which may extend to the amount indicated in that behalf in the second column of that table :—

(1) Contravening any of the provisions of rules 4, 7, 8, 10 and 11.	Five hundred rupees.
(2) Failing to give notice of an accident under rule 18 or to afford facilities for inspection to an officer authorised under rule 19.	Two hundred rupees.
(3) Contravening any of the provisions of rules 9, 12, 13, 14, 15 and 16.	do

(2) In proceedings for a breach of rule 4 in respect of the material and manufacture of cylinders it shall be a good defence to produce a certificate from the makers stating that the cylinders were manufactured in accordance with the requirements of Schedule I

SCHEDULE I

(See Rule 4)

Specifications for the construction of gas cylinders and their valves and other fittings and tests for such cylinders.

1. Cylinders for gases which at the usual working temperature and pressure remain in a gaseous state in the cylinder shall conform in every respect with the tests and requirements laid down in British Standard Specification No. 399/1930 or No. 400/1931. Each cylinder when ready to be put into service shall be subjected to a hydraulic stretch test, preferably by the "water-jacket"* method, and the proof pressure applied in this test shall be 3,000 lbs. per square inch. No pressure greater than the working pressure shall have been applied to any cylinder before the test. The permanent stretch shown by the test shall not exceed 10 per cent of the total stretch under the test pressure.

2. Cylinders for gases which are generally reduced to the liquid condition by the pressures used in charging them into the cylinders shall conform in every respect with the tests and requirement laid down in British Standard Specification No. 401/1931. Each cylinder when ready to be put into service shall be subjected to a hydraulic stretch test preferably by the "water jacket"* method and the proof pressure applied in this test shall be the value of P calculated from the formula $P = 2\ ft.f(D-t)$ where D is the outside diameter of the cylinder in inches, t is the thickness of the wall in inches and f has the value of 33,600 pounds per square inch. The test pressure for cylinders for carbon dioxide, nitrous oxide and ethylene is 3,360 lbs per square inch in all cases No pressure greater than the working pressure for which the cylinder is designed shall have been applied to the cylinder before the test. The permanent stretch shown by the test shall not exceed 10 per cent of the temporary stretch under the proof pressure. Test pressures in pounds

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*The "water-jacket" method is that in which the cylinder is enclosed in a vessel filled with water and which is fitted with a gauge glass projecting from its upper cover. The changes in volume of the cylinder on applying and after removal of the internal hydraulic pressure are measured by the changes in level of the water in the gauge glass.

per square inch to the nearest 10 pounds per square inch calculated from the formula are:

Diameter	Internal working pressure (gauge); lb./sq. in.				
In.	100	200	300	400	500
3 ...	1,970	2,080	2,200	2,320	2,440
4 ...	1,710	1,830	1,940	2,060	2,190
5 ...	1,550	1,650	1,770	1,890	2,010
6 ...	1,420	1,520	1,640	1,760	1,890
7 ...	1,320	1,430	1,540	1,670	1,800
8 ...	1,240	1,350	1,460	1,590	1,720
9 ...	1,170	1,280	1,400	1,530	1,660
10 ...	1,110	1,230	1,340	1,470	1,610
11 ...	1,070	1,180	1,300	1,430	1,570
12 ...	1,030	1,140	1,260	1,390	1,530

Diameter	Internal working pressure (gauge) ; lb./sq. in.								
In.	600	700	800	900	1,000	1,100	1,200	1,300	1,400
3 ...	2,470	2,510	2,550	2,580	2,620	2,670	2,700	2,740	2,780
4 ...	2,250	2,310	2,370	2,440	2,500	2,550	2,620	2,680	2,750
5 ...	2,090	2,170	2,250	2,330	2,410	2,500	2,570	2,650	2,730
6 ...	1,980	2,080	2,170	2,260	2,350	2,440	2,530	2,620	2,720
7 ...	1,900	2,000	2,100	2,200	2,300	2,400	2,500	2,610	2,710
8 ...	1,830	1,940	2,050	2,150	2,260	2,370	2,480	2,590	2,700
9 ...	1,770	1,890	2,000	2,120	2,230	2,350	2,460	2,580	2,690
10 ...	1,730	1,850	1,960	2,080	2,200	2,330	2,440	2,570	2,690
11 ...	1,690	1,810	1,940	2,060	2,180	2,310	2,430	2,560	2,690
12 ...	1,660	1,780	1,910	2,040	2,170	2,290	2,420	2,550	2,680

3. Cylinders manufactured prior to 1st September 1931 may be made of wrought iron or lap welded or seamless steel containing not more than 0·25 per cent of carbon and not less than 99 per cent of total iron, the ultimate stress of the steel being not less than 26 tons per square inch and not more than 33 tons per square inch and the ultimate elongation not less than 1·2 inches on a test piece of 8—inch gauge length cut from a finished cylinder.

4. Valve fittings for cylinders shall comply in all respects with the specification for valve fittings for gas cylinders set out in the British Standard Specification No. 341 of 1931 and from the 11th May 1942 the valve fittings for cylinders for Carbon Dioxide shall be provided in the body of the fitting with a safety release consisting of a softened copper disc so arranged as to burst at a pressure between 2,600 and 2,850 pounds per square inch.

SHEDULE II.

[*See* Rule 11(2)]

Filling ratios and Working (gauge) Pressure of Liquefiable Gases.

Gas	Tropical climates (maximum temperature 65°C)	
	Filling Ratio	Working (gauge) pressure ; lb./sq. in.
Sulphur dioxide	1·19	160
Ammonia	0·51	412
Chlorine	1·19	284
Methyl chloride	0·79	211
Ethyl chloride	0.79	60
Freon (dichlordifluormethane)	1·08	233
Hydrocyanic acid ...	0·57	32
Phosgene	1·19	95
Carbon dioxide	0·667	1,800
Nitrous oxide	0·667	1,800
Ethylene	0·270	1,800

Note.—The water capacity of each individual cylinder shall be carefully ascertained and by using the appropriate filling ratio the true gas capacity determined. The true capacity (in pounds) added to the tare weight of the cylinder will give the gross weight referred to in the rule 6 (1) (*f*).

TABLE I—*contd.*

Gas		Ground Colour of Cylinder		Colour of Bands	
Name	Symbol	Nominal	British Standard Colour No.	Nominal	British Standard Colour No.
Hydrogen		Red	37	None	...
Methane	CH_4	Red	37	None	...
Methyl Bromide		Blue	3	Black	...
Methyl Chloride, inflammable.		Green	25	Red	37
—Do.—non-inflammable		Green	25	None	...
Neon		Medium Brown	11	Black	...
Nitrogen		Grey	30	Black@	...
Oxygen		Black	...	None	...
Phosgene		Black	...	Blue and Yellow%	3 & 56
Sulphur Dioxide		Green	25	Yellow	56

* *See* Appendix.

% The red and blue band shall be placed adjacent to the valve fitting and the yellow band between that and the ground colour of the cylinder. (*See* Fig. 1).

@The black neck band shall occupy only half the portion of the cylinder between the junction of the hemispherical and cylindrical portion and the neck.

TABLE II.

British Standard Identification Colours for Gas Cylinders, for Medical Purposes. (See *Fig.* 7).

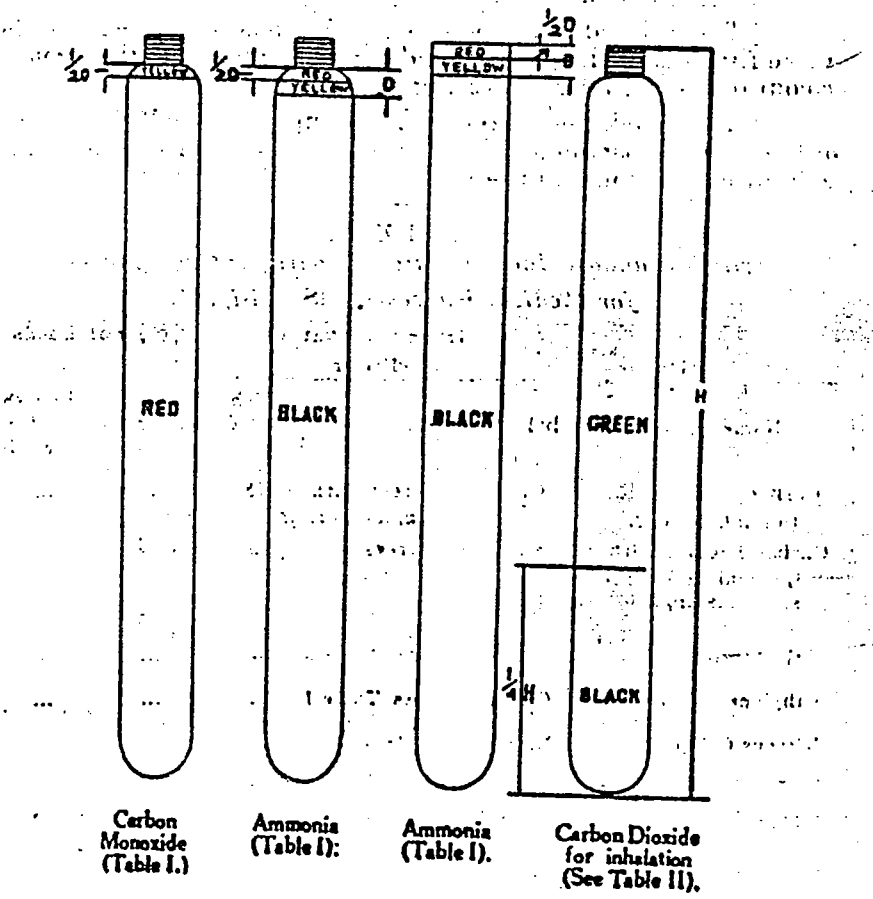
Gas		Ground Colour of Cylinder		Colour of Bands	
Name	Symbol	Nominal	British Standard Colour No.	Nominal	British Standard Colour No.
Carbon Dioxide (for inhalation).	CO_2	Green with black bottom.	25	...	...
Carbon Dioxide with internal tube (for snow making).	CO_2	Green	25	...	...
Ethyl Chloride	C_2H_5Cl	As Table I	...	...	...
Ethylene	C_2H_4	As Table I	...	...	...
Nitrous Oxide		Black	...	...	...
Oxygen		Black	...	White	...
Oxygen and CO_2 mixture.		Black	...	Green with white neck.	28

APPENDIX.

Extract of Colours from British Standard Schedule of Colours for Ready Mixed Paints (No. 381).

British Standard Colour No.	Colour.
3	Peacock Blue.
11	Medium Brown.
25	Light Brunswick Green.
30	French Grey.
32	Dark Battleship Grey.
37	Signal Red.
41	Maroon.
56	Golden Yellow.

FIG. 1.



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PART II

Statutory Notifications (S. R. O.)

GOVERNMENT OF PAKISTAN

MINISTRY OF INDUSTRIES

NOTIFICATIONS

Islamabad, the 24th February, 1980

S. R. O. 224 (I)/80.—In exercise of the powers conferred by section 5 and 7 of the Explosives Act, 1884 (IV of 1884), the Federal Government is pleased to direct that the following further amendment shall be made in the Gas Cylinder Rules, 1940, the same having been previously published as required by sub-section (1) of section 18 of the said Act, namely :—

In the aforesaid Rules, in rule 7, for the word "two" the word "five" shall be substituted.

[No. 4(38)/79-Admn. IV.]

S. QAMAR AHMAD,
Section Officer.

(Office of the Controller General Prices and Supplies)

Islamabad, the 25th February, 1980

S. R. O. 225 (I)/80.—In exercise of the powers conferred by section 3 of the Price Control and Prevention of Profiteering and Hoarding Act, 1977 (Act XXIX of 1977), I, S. Shaukat Kazmi, Joint Controller General Prices and Supplies, hereby order :

(*i*) to stop all sales and supplies of Chemical Fertilizers forthwith ;

(*ii*) that all stocks of Chemical Fertilizers with factories, depots, dealers, stockists, agents, cooperative societies and sale points shall be declared as on closing day of 24th February, 1980 ;

Price : Rs. 62

[1806/Ex-Gaz.]