Static and Mobile Pressure Vessels (Unfired) Rules, 1981

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CHAPTER 1
PRELIMINARY

1. Short title and commencement :-

(1) These rules may be called the Static and Mobile Pressure Vessels (Unfired) Rules, 1981.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definition :-
In these rules, unless the context otherwise requires,-

(a) "Act" means the Indian Explosives Act, 1884 (4 of 1884);

(b) "approved" means a drawing, design, specification or code approved by the Chief Controller;

[1]"(bb) "bottling plant" means a premises where cylinders are filled with compressed gas;"

(c) "Chief Controller" means the Chief Controller of Explosives;

[2][(d) "Competent Person" means a person or an organisation recognised by the Chief Controller, for such gases and for such period as may be specified as competent for carrying out tests, examination, inspections and certification for installations and transport vehicles as stipulated in these rules, if such a person or organisation possesses the qualifications, experience and other requirements as set out in Appendix II to these rules and is

recognised as per procedure laid down in Rule 11A: Provided that the Chief Controller may relax the requirements of qualifications in respect of a competent person if such a person is exceptionally experienced and knowledgeable, but not the requirements in respect of the facilities at his command;]

[3]'(e) "compressed gas" means any permanent gas, liquefiable gas or gas dissolved in liquid or cryogenic liquid under pressure or gas mixture which in a closed pressure vessel exercises a pressure exceeding one atmosphere (gauge) at maximum working temperature and includes Hydrogen Fluoride. In case of vessel without insulation or refrigeration, the maximum working temperature shall be considered as 55° C.';

(f) "Controller of Explosives" includes the Deputy Chief Controller of Explosives, Deputy Controller of Explosives and Assistant Controller of Explosives;

(g) "corrosion" means all forms of wastage, and includes oxidation, scaling, mechanical abrasion and erosion;

[1]"(gg) "critical temperature" means tlic temperature above which gas can not be liquefied by the application of pressure alone;";

[5](gga) "cryogenic liquid" means liquid form of permanent gas having normal boiling point below minus 165° C;

[4](ggb) "cryogenic pressure vessel" means a pressure vessel intended for storage or transportation of cryogenic liquid and includes cold converters, vacuum insulated evaporators, vacuum insulated storage or transport tanks and thermosyphon tanks.'

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[1]"(ggg) "cylinder" or "gas cylinder" means any closed metal container intended for storage and transport of compressed gas having the same meaning as assigned to it in clause (xvi) of rule 2 of the Gas Cylinder Rules, 1981;"

(h) "design" includes drawings, calculations, specifications, models, codes and all other details necessary for the complete description of the pressure vessel and its construction;

(i) "design pressure" means the pressure used in the design calculations of a vessel for the purpose of determining the minimum thickness of the various component parts of the vessel;

[1]"(ii) "dispenser" means an equipment installed in liquefied petroleum gas dispensing station , meant for dispensing liquefied petroleum gas as automotive fuel to motor vehicles;"

(j) "district authority" means-

(i) in towns having a Commissioner of Police, the Commissioner or a Deputy Commissioner of Police; and

(ii) in any other place, the District Magistrate;

(k) "filling density" means the ratio of weight of liquefiable gas allowed in a pressure vessel to the weight of water that the vessel will hold at 15°C;

[9]"(kk) "fill point" means the point of the inlet pipe connection of a vessel where hose is connected for filling the compressed gas into the vessel;"

(l) "flammability range" means the difference between the minimum and maximum percentage by volume of the gas in mixture with air that forms a flammable mixture at atmospheric pressure and ambient tem- perature;

(m) "flammable compressed gas" means gas 13 per cent or less of which when mixed with air forms a flammable mixture or whose flammable range with air is greater than 12 per cent;

(n) "Form" means the Form appended to these rules;

(o) "gas free" in relation to a pressure vessel means the concentration of flammable or toxic gases or both if such pressure vessel is within the safe limits specified for persons to enter and carry out hot work in such vessels;

[10][(p) "Inspector" means a professional organisation recognised by the Chief Controller for certifying pressure vessels and their fittings after carrying out stagewise inspection during fabrication as stipulated in the rules so as to ensure that the pressure vessels are designed and constructed in accordance with IS: 2825 or any other Code approved by the Chief Controller, if the constituent members of the organisation possesses the qualifications and experience and other requirements as set out in Appendix II to these rules and the recognition is granted as per procedure laid in Rule 11A;]

(q) "installation" means any place which has been specially

prepared for the storage of compressed gas in pressure vessels;

(r) "liquefiable gas" means any gas that may be liquefied by pressure above 0°C, but will be completely vaporised when in equilibrium with normal atmospheric pressure (760 mm Hg) at 30°C;

[5]"(ra) "liquefied petroleum gas" includes hydrocarbon gases in liquefied state at normal ambient temperature by the application of pressure, and conforming to the Indian Standard Specification No.IS:4576;";

[5]"(rb) "liquefied petroleum gas dispensing station" means a premises used for storing and dispensing liquefied petroleum gas as automotive fuel to the motor vehicles;";

[5]"(re) "motor vehicle" means a vehicle having the meaning assigned to it in subsection (28) of S.2 of the Motor Vehicle Act, 1988 (59 of 1988);";

[5]"(rd) "petroleum service station" means a premises used for storage of petroleum for the purpose of fuelling motor vehicles, and licensed in Form-XII of the Petroleum Rules, 1976;"

(s)"permanent gas'' means a gas whose critical temperature is lower than 10°C;

[6][(t) "Pressure vessel" means any closed metal container of whatever shape, intended for the storage and transport of any compressed gas which is subjected to internal pressure and whose water capacity exceeds one thousand litres and includes interconnecting parts and components thereof up to the first point of connection to the connected piping and fittings, but does not include containers wherein steam or other vapour is or is intended to be generated or water or other liquid is or is intended to be heated by the application of fire or the products of combustion or by electrical means, heat exchangers, evaporators, air receivers, steam type digesters, steam type sterilizers, autoclaves, re- actors, calorifiers, pressure piping components such as separators or strainers and vessels containing a liquid under a blanket of compressed inert gas;]

(u) "safety relief device" means an automatic pressure relieving device actuated by the pressure upstream of the valve and characterised by

(v) "source of ignition" means naked lights, fires, exposed incandescent materials, electric welding arcs, lamps, other than those specially approved for use in flammable atmosphere, or a spark or flame produced by any means;

[16] "(vv) "tank truck loading or unloading gantry" or "hard stand" means the position of parking of tank truck or mobile pressure vessel for loading or unloading of compressed gas into or from it;".

(w) "transport" means the transport of a pressure vessel filled with any compressed gas from one place to another but does not include movement of the vessel from one place to another in the same permises;

(x) "vehicle" means a mechanically propelled carriage designed to trans- port by land compressed gas in a pressure vessel mounted thereon, and shall not include a vessel forming the barrel of a rail tank wagon;

(y) "vessel" means a pressure vessel;

(z) "water capacity" means capacity in litres of the pressure vessel when completely filled with water at 15°C.

1. Inserted by "the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999
2. Substituted by Noti. No. G.S.R. 264(E), dated 10-3-1993.
3. In Rule 2, Clause (e) shall be substituted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.
5. In Rule 2, Clause (gg-a) and (gg-b) shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.
9. Inserted by "the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999
10. Substituted by Noti. No. GSR 264(E), dated 10-3-1993.
16. Inserted by "the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

3. General exemptions :-

[1] -Nothing in these rules shall apply to vessels which form part of a processing plant. For the purpose of this rule vessels forming part of a processing plant shall mean vessels in which a unit process or unit operation is carried out and vessels which contain, as a process requirement, a compressed gas received from and consumed in the

same processing plant, provided that the water capacity of the vessel(s) shall be such that the gas stored therein at the maximum working pressure shall not exceed the requirement for feeding the consuming point(s) for a period not exceeding 16 hours at the designed flow rate.]

1. Substituted by Noti. No. GSR 264(E), dated 10-3-1993.

4. Restriction on filling, manufacture and import :-

[1] (1) No person shall fill any compressed gas in any vessel or transport any vessel filled with any compressed gas unless such vessel has been manufactured in accordance with a type or standard or code as specified under rule 12. (2) No person shall manufacture any vessel approved under sub-rule (1) without the prior approval of the Chief Controller. (3) Any person seeking approval of the Chief Controller under sub-rule (2) shall submit to him - (a) the particulars specified in Appendix -I to these rules; and (b) a scrutiny fee of rupees five hundred in the manner specified under rule 11. (4) No person shall import any vessel without the prior approval of the Chief Controller. (5) Any person seeking the approval of the Chief Controller under sub-rule(4) shall submit to him - (a) a test and inspection certificate of the vessel from the manufacturer or the inspecting agency of the country of origin; (b) the design details of the vessel , its fittings and particulars of specifications of the materials used in construction thereof; and (e) a scrutiny fee of rupees five hundred in the manner specified under rule 11."

1. Substituted for rule 4 "Restriction on filling and manufacture (1) No person shall fill any compressed gas in any vessel or transport any vessel filled with any compressed gas unless such vessel has been manufactured in accordance with a type or standard or code duly approved by the Chief Controller. [(2) Any factory for the manufacture of vessels in accordance with a type or standard or code approved under sub-rule (1) shall be approved by the Chief Controller. Any person seeking such approval shall submit to the Chief Controller- (a) The particulars specified in Appendix I to these rules. (b) A scrutiny fee of rupees five hundred.] " by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

5. Restriction on delivery and despatch :-

(1) No person shall deliver or despatch any compressed gas filled in a vessel to any person other than the holder of a storage licence issued under these rules or to a port authority or a railway administration.

(2) No compressed gas delivered or despatched under sub-rule (1) shall exceed the quantity which the person to whom it is delivered or despatched is authorised to store under the licence held by him.

6. Repair to pressure vessels :-

(1) No person shall carry out any repairs, additions or alterations to any vessel unless the proposed repairs, additions or alterations and their method of execution have been approved by the Chief Control- ler. Any such repairs, additions or alterations approved by the Chief Controller shall be carried out in the manner and by practices acceptable under the design code referred to in Rule 12: Provided that nothing in this rule shall apply to the replacement of any of the fitments of the vessel which does not involve any heating.

(2) Before any repairs, additions or alterations are carried out to any vessel, the same shall be completely emptied and purged with an inert gas.

(3) Complete record of repairs, additions or alterations referred to in sub-rule (1) shall be maintained and made available to the Chief Controller and his permission shall be obtained before recommissioning the vessel.

7. Purging of pressure vessels used for flammable gases :-

(1) Before using any new vessel or before the refilling of any existing vessel which has been made gas-free, air contained therein shall be purged by an inert gas or by the gas for which the vessel is to be used.

(2) If the vessel is purged by means of a flammable gas, the flammable mixture so formed shall be vented from the vessel only after taking adequate precautions to prevent its ignition.

8. Prohibition of employment of children and intoxicated persons :-

No person under the age of eighteen years or who is in a state of intoxication shall be employed for the loading, unloading or transport of any vessel containing compressed gas, or in any permises licensed under these rules.

9. Prohibition of smoking, fires, lights, etc :-

No person shall smoke and no matches, fires, lights or articles or substance, capable of causing ignition of any flammable gas shall

b e allowed, at any time in proximity to a place where any compressed gas is stored, handled or transported in a vessel.

9A. Supervision and Operation within the Licensed premises :-

[1] - The operation of the licensed premises shall be under the supervision of persons having knowledge of the equipments being used in the premises and who is/are trained in handling the compressed gas, and other operators shall be conversant with the hazards associated with the compressed gas and fire fighting operations."

1. Inserted by "the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999"

10. Special precautions against accidents :-

(1) No person shall commit or attempt to commit any act which may tend to cause a fire or explosion in or about any place where any compressed gas is stored, handled or transported in a vessel.

(2) All empty vessels which had contained, any flammable or toxic gases, shall, except when they are opened for the purposes of filling or cleaning, or for rendering the gas free, be kept securely closed until they have been cleaned or freed of the gas, as the case may be.

(3) Every person storing compressed gas in a vessel and every person in charge of, or engaged in the storage, handling and transport of such gas in vessels, shall at all times-

(i) comply with the provisions of these rules and the conditions of any licence issued thereunder;

(ii) observe all precautions for the prevention of accident by fire or explosion; and

(iii) prevent any person from committing any act referred in sub-rule (1).

11. Procedure for payment of fees :-

[1] .-All fees payable under these rules be paid through crossed demand draft on any nationalised bank in favour of the Chief Controller of Explosives, Nagpur and in cases where the amount payable does not exceed Rs 100, the payment may be made by cash, money order, postal order or cheque drawn on a local bank.]

1. Substituted by Noti. No. GSR 264(E), dated 10-3-1993.

11A. 11A :-

1 -Procedure for grant and revocation of recognition to competent person and Inspector:-

(i) Anybody intending to be recognised as competent person or Inspector shall submit to the Chief Controller an application in the form pres- cribed in Appendix III. Every application shall be accompanied by a scrutiny fee of Rs 500 for application for competent person and Rs 1000 for application for Inspector. The Chief Controller shall register

(ii) The Chief Controller may after giving an opportunity to the Inspector or competent person of being heard revoke the recognition-

(a) if he has reason to believe that an Inspector or competent person has violated any condition stipulated in the letter of recognition or has carried out a test, examination and inspection or has acted, in a manner inconsistent with the intent or the purpose of these rules; or

(b) for any other reason to be recorded in writing.]

1. Inserted by Substituted by Noti. No. GSR264(E), dated 10-3-1993.

CHAPTER 2
CONSTRUCTION AND FITMENTS OF PRESSURE VESSELS

12. Design code :-

(1) Vessels shall be designed, constructed and tested in accordance with the Indian Standard 2825, as amended from time to time, or such other standard or code approved by the Chief Controller.

(2) A test and inspection certificate issued by the manufacturer of the vessel duly countersigned by an Inspector that the vessel meets with the requirements of the standard or code referred to in sub-rule (1) shall be furnished to the Chief Controller.

13. Design pressure :-

The design pressure of a vessel shall not be less than-

(a) the vapour pressure of the gas in the vessel at 55"C, if the vessel is meant for the storage of liquefiable gases: Provided that if the vessel is insulated, the vapour pressure of the gas in the vessel

shall correspond to the maximum temperature that is likely to be attained by the gas in the vessel;

(b) the developed pressure of the gas in the vessel at 55ZC, if the vessel is meant for the storage of a permanent gas.

[1] (c) the maximum allowable service pressure with additional allowances for vacuum and static head or surge due to acceleration or deceleration, as the case may be, in respect of the cryogenic liquid proposed to be stored or transported.

1. In Rule 13, Clause (c) shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.

14. Design of vessels for gases at low temperature :-

(1) Refrigerated vessels.-

(i) Vessels used for storage of refrigerated gases shall be designed in accordance with low temperature requirements under the Design Code referred to in sub-rule (1) of Rule 12.

(ii) The capacity of the refrigeration system shall be adequate to maintain the gas in the vessel at a temperature so that its vapour pressure does not exceed the design pressure of the vessel and shall also remain below the pressure-setting of the relief valve on the vessel.

(2) Insulated vessels.-

(i) The shell of the vessel and its manhole nozzle shall be insulated with a material approved by the Chief Controller. The entire insulation shall be covered with a metal jacket of a thickness not less than 3 mm. nominal and flashed around all openings so as to be weather-tight.

(ii) The insulation shall be of sufficient thickness so that the thermal conductance at 15ZC (expressed in calories or sq. cm. per hour per degree centigrade temperature differential) does not exceed the limit prescribed by the Chief Controller.

[1] (3) Cryogenic pressure vessels:

(i) The design service temperature of the cryogenic pressure vessels shall not be wanner than the normal boiling point of the cryogenic liquid;

(ii) The materials of construction of the inner vessel, its piping and fittings shall be suitable for the service temperature and compatible for the specific cryogenic liquid;

(iii) The outer vessel shall be made of steel not less than 3 mm nominal thickness or of aluminum not less than 4 mm nominal thickness and shall have required structural strength and capable tor supporting the inner vessel together with cryogenic liquid, insulation and other fittings. The outer vessel of vacuum insulated cryogenic tanks shall be designed for a minimum collapsible pressure of one atmosphere (gauge). The suitable protecting coating shall be provided on the outer vessel to avoid corrosion. The outer vessel shall also be provided with suitable lifting arrangement and supports for installation or mounting;

(iv) The inner supports between the inner vessel and the outer vessel shall be ot non-inflammable materials and capable of supporting the inner vessel together with the maximum allowable cryogenic liquid. The supports shall be able to withstand expansion or contraction within the operating temperature range. Cryogenic pressure vessels meant for transport purpose, shall be able to withstand combined loading of vertical down of two. vertical upward of one and a half, longitudinal of one and a half and lateral of one and a half times the weight of the vessel with attachment and the full load of cryogenic liquid. The factor of safety of the supports shall be as per the design code;

(v) The air in the annular space between the inner and outer vessel shall be evacuated and the space shall be filled with suitable insulating material compatible with the particular cryogenic liquid.

1. In Rule 14, sub-rule (3) shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.

15. Filling capacity and filling pressure :-

(1) The maximum quantity of liquefiable gas filled into any vessel shall be limited to the filling density of the gas and shall be such that the vessel shall not be liquid-full due to expansion of the contents with rise of the temperature to 55°C. If vessel is uninsulated, or to the highest temperature which the contents are likely to reach in service, if the vessel is refrigerated or insulated, this requirement shall be applicable irrespective of the ambient

temperature of the product at the time of filling.

(2) No vessel shall be filled with any permanent gas in excess of its design pressure.

[1] (3) The water capacity of the cryogenic pressure vessel shall be rated in terms of gross water capacity and the usable water capacity in litres at 15° C. The usable water capacity shall not exceed 95% of the gross water capacity. An overflow pipe shall be provided at the maximum usable capacity level as a safeguard against filling the vessel beyond the maximum usable capacity.

1. In Rule 15, sub-rule (3) shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.

16. Markings on pressure vessels :-

Every vessel shall have a metal plate permanently fixed to it showing the following particulars which shall be visible from the ground level, namely:-

(i) manufacturer's name and identification marks;

(ii) the standard or code to which the vessel is constructed;

(iii) official stamp of the Inspector;

(iv) design pressure in kg/cm 2;

(v) date of initial hydrostatic test and the subsequent test;

(vi) hydrostatic test pressure in kg/cm 2;

(vii) water capacity in litres;

(viii) gas capacity, if filled with liquefiable gas; and

(ix) name or chemical symbol of the gas for which the vessel is to be used.

17. Painting of vessels :-

Vessels shall be adequately painted externally to prevent corrosion and shall have a reflecting surface.

18. Fittings :-

(1) General.-

(i) Fittings.- Each vessel shall be provided with each of the

following fittings all of which should be suitable for use with the gas at pressures not less than the design pressure of the vessel to which they are fitted and for temperatures appropriate to the characteristics of the gas and operating conditions, namely,- - Pressure relief valve connected to the vapour space; - Drains; - Contents gauge or maximum level indicator; - Pressure gauge connected to the vapour space; - Means of measuring the temperature of the contents of the vessel.

[1]"(ii) Vessel connections,- Connections of vessels shall be designed and attached to the vessel in accordance with the Design Code specified under rule 12. All static vessels for storage of corrosive, flammable or toxic gas in liquefied state shall not have more than one pipe connection at the bottom for inlet or outlet, apart from the drainage. The drainage pipe, if provided, shall be extended beyond the shadow of the vessel and provided with two shut-off valves. No drainage pipe shall be provided direct from spherical vessel. The bottom inlet or outlet pipe for spherical vessel shall be integrally welded to the vessel and extended upto three metres beyond the shadow of the vessel, at the end of which, combination of manual and remote operated valve shall be provided;"

(2) Pressure relief.-

(i) every vessel shall be provided with two or more pressure relieving devices in accordance with the provisions of the Design Code referred to in Rule 12;

[2](i-a) for cryogenic pressure vessels, the outer vessel shall be provided with a vacuum valve and safety relief device (disc) to release internal pressure. The discharge area of such device shall be at least 0.34 sq mm/litre of water capacity of the inner vessel. The relief device shall function at a pressure not exceeding the internal design pressure of the outer vessel."

(ii) the relief valves shall be spring loaded and shall be set-to-discharge and reach full flow conditions as required by the Design Code referred to in Rule 12;

(iii) weight loaded relief valves shall not be permitted;

(iv) the relief valves shall be so designed that they cannot be inadvertently loaded beyond the set pressure;

(v) the design of the valves shall be such that the breakage of any

part will not obstruct free discharge of the liquid under pressure;

(vi) safety relief valves on any vessel shall be set to start-to-discharge at a pressure not in excess of 110 per cent of the design pressure of the vessel and shall have a total relieving capacity sufficient to prevent the maximum pressure in the vessel of more than 120 per cent of the design pressure;

[3](vi-a) In case of cryogenic pressure vessels, the safety relief devices shall be set to discharge in such a manner that at least one such device shall be set at a pressure not higher than the maximum allowable working pressure and the other device may be set at a pressure not higher than 110% of the maximum allowable working pressure.

(vii) each safety relief valve shall be plainly and permanently marked with the pressure in kg/cm 2 at which it is set to discharge, with the actual rate of discharge of the device in cubic metres per minute of the gas at 15ZC and at atmospheric pressure, and with the manufacturer's name. The rated discharge capacity of the device shall be determined at a pressure of 120 per cent of the design pressure of the vessel;

(viii) connections of safety relief devices shall be of sufficient size to provide the required rate of discharge through the safety relief valves;

(ix) safety relief valves shall be so arranged that the possibility of tampering is minimised and if the pressure setting or adjustment is external, the safety relief valve shall be provided with suitable means of sealing adjustment;

(x) each safety relief valve shall be provided with shut-off valve between it and the vessel. The arrangement of the shut-off valve installed between the safety relief valve and the vessel shall be so designed as to afford full required capacity flow through at least one of the safety relief valves;

(xi) safety relief valves shall have direct communication with the vapour space of the vessel;

(xii) for vessels other than those mounted on the vehicles of over 4500 litres water capacity, relief valves shall be fitted with extended vent pipes adequately supported and having outlets at least 2 metres above the top of the vessel and at least 3.5 metres

above the ground level and the vent pipes shall be fitted with loose-fitting rain caps;

[4][(xiii) relief valves shall be tested by a competent person for correct operation not less than once in a year and a record of such test shall be maintained. The test certificate shall be issued in the prescribed pro forma.] Relief valves shall be tested for correct operation not less than once in a year and a record of such test shall be maintained.

(3) Shut-off and emergency shut-off valves.-

(i) all liquid and vapour connections on vessels, except those for relief valves, plugged openings, and those where the connection is not greater than 1.4 mm diameter opening shall have shut-off valves located as close to the vessel as practicable;

(ii) all liquid and vapour connections on vessels, except those for relief valves, and drainage connections of small diameter, shall have an emergency shut-off valve, such as, an excess flow valve, an automat- ically operated valve or a remotely controlled valve. The emergency shut-off valve shall be in addition to the shut-off valve referred to in clause (i) unless the emergency shut-off valve is a remotely controlled [5] "Provided that the emergency shut-off valve is not required in cases where the connection to a vessel is not greater than three millimetre in diameter for liquid and eight millimetre in diameter for vapour, or for vessels meant for storage of non-corrosive, non-flammable or non-toxic gas"

(iii) where the emergency shut-off valve is of the excess flow type, its closing rate of flow shall be below the rate which is likely to result from a fracture of the line it is protecting, calculated under the most adverse weather conditions likely to be experienced. Excess-flow valves shall have a rated flow capacity sufficiently above normal flow requirements to prevent valve chatter.

(4) Liquid level gauging device.-

(i) a vessel used for liquefiable gas or dissolved gas shall be equipped with a liquid level gauging device to afford ready determination of the amount of liquid in the vessel at any time;

(ii) all liquid level indicators shall be suitable for operation at the design pressure of the vessel;

(iii) every vessel shall, in addition, be equipped with a fixed

maximum level indicating device depending upon the liquefiable gas or dissolved gas filled in the vessel;

(iv) gauging devices that require bleeding of the contents of the vessel such as a rotary tube, fixed tube and slip tube shall be designed in such a manner that the same cannot be completely withdrawn in normal gauging operations.

(5) Pressure gauge.-Every vessel shall be provided with at least one pressure gauge.

1. Substituted for "(ii) Vessel connections-connections of vessels shall be designed and attached to the vessel in accordance with the Design Code referred to in Rule 12" by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999
2. In Rule 18, sub-rule (2) item (i-a), shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.
3. In Rule 18, sub-rule (2) item (vi-a), shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.
4. Substituted by Noti. No. GSR 264(E), dated 10-3-1993.
5. Substituted for "Provided that no emergency shut-off valves are necessary where the connection to a vessel is restricted to not greater than 3 mm diameter for liquid and 8 mm diameter for vapour;" by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

19. Periodic testing of pressure vessels in service :-

(1) All vessels shall be hydraulically tested by a competent person at a pressure marked on the vessel at intervals of not more than five years after the date of first test, provided that in the case of vessels, containing corrosive or toxic gases, the periodic test shall be done at an interval of two years. [1][In case of vessels which are so designed, constructed or supported that they cannot be safely filled with water or liquids for hydraulic testing, or which are used in services where traces of water cannot be tolerated, the Chief Controller may permit pnuematic testing along with non-destructive tests instead of hydraulic testing, as per procedure laid down in vessel fabrication code; after satisfying himself about the adequacy of the safety precautions undertaken;]

[2](1-A) Cryogenic pressure vessel and vessel for liquid carbon dioxide shall be periodically tested with pneumatic pressure at 1.1

times of maximum allowable working pressure.

(2) The competent person carrying out the test as required under sub-rule (1) shall issue a certificate of test [1] [in prescribed pro forma].

1. Inserted by G.S.R. 264(E), dt. 10-3-1993 (w.e.f. 10-3-1993).
2. In Rule 19, sub-rule (1-A), shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.

20. Precautions to be observed in carrying out hydraulic test :-

In carrying out the hydraulic test referred to in Rule 19, the following precautions shall be observed, namely:-

(i) before the test is carried out, each pressure vessel shall be thoroughly cleaned and examined externally, and as far as practicable, internally also for surface defects, corrosion and foreign matter. During the process of cleaning and removal of sludge, if any, all due precautions

(ii) as soon as the test is completed, the vessel shall be thoroughly dried internally and shall be clearly stamped with the marks and figures indicating the person by whom the test has been carried out and the date of test and a record shall be kept of all such tests;

(iii) any vessel 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 unsuitable under intimation to the Chief Controller.

CHAPTER 3
STORAGE

21. General :-

(1) All vessels meant for storage of compressed gas shall be installed entirely above ground, that is to say, no part of the vessel shall be buried below the ground level.

(2) Vessels and first stage regulating equipment shall be located in the open.

(3) Vessels shall not be installed one above the other.

(4) Vessels within a group shall be so located that their longitudinal axes are parallel to each other.

(5) No vessel shall be located within the bonded area of petroleum or other flammable liquid storages.

(6) Sufficient space shall be provided between two vessels to permit fire-fighting operations.

(7) Two or more vessels installed in batteries shall be so installed that the top surface of the vessels are on the same plane.

(8) Vessels installed with their dished ends facing each other shall have screen walls in between them.

[1][(9) Notwithstanding anything contained in sub-rules (1) to (8) above, vessels for storage of liquified petroleum gas can be placed underground or covered by earth in such manner and subject to such conditions as may be specified by a notification by the Central Government.]

[2] "(10) Aboveground vessel for storage of corrosive, flammable or toxic gas in liquefied state shall be provided with enclosure wall all around the ground. The minimum distance between vessel and enclosure wall shall be the diameter of the vessel or five metres, whichever is less. The ground shall be graded to form a slope away from pumps, compressors or other equipments. The height of the enclosure wall shall be thirty centimetres on the upper side and gradually increasing to maximum sixty centimetres on the lower side, at the end of which a shallow sump for collection of the spilled liquid, if any, shall be provided. The minimum separation distance between the vessel and the sump shall be, - (a)diameter of the vessel, in case of vessels with water capacity not exceeding forty thousand litres, (b)fifteen metres, if the water capacity of the vessels exceeds torty thousand litres."

1. Added by GSR 243(E), dt. 6-5-1997.
2. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

22. Location of pressure vessels :-

Each vessel shall be located with respect to the nearest building or group of buildings or line of adjoining property which may be built on and with respect to other vessels in accordance with the distances specified in the Table below:-

23. Foundations for pressure vessels :-

(1) General.-The materials, princi- ples,. methods and details of

design and construction of foundations and supports of vessels shall comply with approved specifications, standards or codes.

(2) Ground conditions.-A thorough knowledge of the ground condition shall be obtained by the person installing the vessel with particular reference to estab- lishing an allowable bearing pressure, total and differential settlements expected, risk of floatation and possible deterioration of original conditions.

(3) Materials.-

(i) The choice of materials for construction shall be determined by the ground conditions, loading and detailed design constructions.

(ii) The materials may be of-

(a) brickwork masonry;

(b) reinforced concrete; or

(c) steel plate, steel pipe or structural steel.

(4) Loading.-The greatest combined effect of static and imposed loadings shall be used for design as under:-

(a) Static loading : weight of vessel and its contents;

(b) test loading if tested by water;

(c) wind loading;

(d) operational loading such as vibration or thermal (natural and opera- tional).

(5) Settlement.-Any particular differential settlement shall be limited to prevent excessive stress in the connected pipework and vessel shell.

(6) Vessel supports.-

(i) the design of supports for vessels shall follow the standard or code to which the vessel is constructed;

(ii) the spacing of vessel support shall be decided after close consid- eration of vessel shell stressing and transmission of the loadings to the ground;

(iii) the design of supports for vessels shall provide flexibility to allow for movement of the vessel as a result of pressure and thermal expansion;

(iv) the vessel shall be securely anchored or weighed or provided with adequate pier height to avoid floatation due to flood waters;

(v) in case of structural steel supports such supports, excluding vessel saddles or supporting feet 45 cm or less in height, shall be encased in fire-resisting materials of adequate thickness.

24. Fencing :-

The area where vessels' pumping equipment, loading and un-loading facilities and direct fired vaporisers are provided, shall be enclosed by an industrial type fence at least 2 metres high along the perimeter of the safety zone.

(2) Every fence shall have at least two means of exit and the gates of such exists shall open outwards and shall not be self-locking.

25. Cleanliness :-

An area of three metres around the vessel shall be kept free from readily ignitable materials, such as weeds and long dry grass.

26. Earthing :-

(1) All vessels used for storage of flammable liquefiable gases shall be electrically connected with the earth in an efficient manner.

(2) Pipelines conveying flammable liquids shall be adequately prepared for electrical continuity and connected with the earth in an efficient manner.

27. No smoking :-

A permanent notice with letters at least 5 cms in height prohibiting smoking and naked lights shall be fixed to the fence surrounding the area where flammable or oxidising gases are stored and the notice shall be visible from outside.

28. Fire protection :-

All vessels used for the storage of flammable com- pressed gases shall be protected against fire hazards as under,-

1 "(i) provision shall be made for an adequate supply of water and fire protection in the storage area in accordance with the provision of the rules and the regulation applicable in that area. The application of water may be by hydrants, hoses and mobile equipments, fixed monitors or by fixed spray systems which may be automatic. Control of water flow should be possible from outside

any danger area. The fire water system shall be designed with medium velocity sprinklers for above ground storage vessels, filling sheds, loading or unloading area, and pump sheds having minimum spray density often litres per minute per square metre for the single largest risk area and with additional requirements for hydrant points. In plants referred to in Table 4-A of rule - 22, the quantity of water available shall be sufficient for four hours of fire fighting, and in plants referred to in Table 4-B of rule -22, the same shall be for two hours of fire fighting. For other installations not covered under Tables 4-A and 4-B, the fire water storage shall be as approved by the Chief Controller."

(ii) hydrants, where provided, shall be readily accessible at all times and so spaced as to provide for the protection of all vessels;

(iii) sufficient length of fire hose shall be provided and be readily available. The outlet of each hose line shall be equipped with a combination jet and fog nozzle. The hoses should be maintained well and periodically inspected;

(iv) mobile equipment, fixed monitors or fixed spray systems shall be designed to discharge water at a rate sufficient to maintain an adequate film of water over the surface of the vessel and supports under fire conditions;

(v) consideration shall be given to the provision of mobile or fixed water spray systems giving suitable and effective protection for vehicle loading and unloading areas;

(vi) at least two dry chemical powder type fire extinguishers of 9 kg. capacity each shall be installed at each point of access to the installa- tions.

"(vii) In Liquefied Petroleum Gas dispensing station for fuelling motor vehicles, having only underground or earth covered (mounded) liquefied petroleum gas storage vessels, two numbers seventy kilograms dry chemical type fire extinguishers shall be provided. In dispensing stations having above ground liquefied petroleum gas storage vessels, hydrants with minimum water pressure of seven kilograms per square centimetre shall be provided at convenient positions for alround coverages of storage vessels and handling area, and water sprinklers with spray density of ten liters pet minute per square metre shall be provided. The fire water pump shall be preferably diesel engine driven with capacity to deliver water at the rate and pressure specified above. The

minimum fire water storage at the premises shall be that needed for fighting fire atleast for one hour."

1. Substituted for "(i) provision shall be made for an adequate supply of water and fire protection in the storage area according to the local fire service regulations. The application of water may be by hydrants, hoses and mobile equipment, fixed monitors or by fixed spray systems which may be automatic. Control of water flow should be possible from outside any danger area;" by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

29. Loading and unloading facilities :-

(1) Pumps.-

(i) pumps may be centrifugal or positive displacement pumps;

(ii) design materials and construction of pumps shall be suitable for the type of gas to be handled and they shall be designed for the maximum outlet pressure to which they will be subjected to in operation:

(iii) positive displacement pumps shall have a bypass value or other suitable protection against overpressure.

(2) Compressors.-

(i) the design, material and construction of compressors shall be suitable for the type of gas which they are to handle and they shall be designed for the maximum outlet pressure to which they will be subjected to in operation;

(ii) compressors other than multi-stage compressors shall take suction from the vapour space of the vessels being filled.

(3) Transfer systems.-

(i) transfer systems shall be so designed that the risk of a gas of a higher vapour pressure being transferred to equipment designed for gas of a lower vapour pressure is minimised;

(ii) there shall be positive means of rapidly shutting off flow, located at a safe distance from the vessel which is being filled or emptied;

(iii) automatic alarm device to indicate the approach to maximum permis- sible height or automatic shut-off valves shall be used to prevent overfilling.

(4) Hoses.-

(i) the hoses for liquid transfer shall be designed to withstand not less than four times the maximum operating pressure they will carry in service;

(ii) the hoses shall be mechanically and electrically continuous.

[1]"(5) In the tank-truck loading or unloading gantry, number of bays for parking tank-trucks shall not exceed eight, and number of such gantries in a premises shall not exceed two.

[1](6) Rail tank wagon loading or unloading shall be restricted to a maximum of half a rake (six hundred tonnes). If full rake handling is required , it shall be placed in two separate gantries with fifty meters distance in between them.

[1] (7) All valves on the vessel and pipelines in the premises shall be permanently marked in a manner clearly indicating the direction of opening and closing."

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

30. Transfer operations :-

(1) Before transfer of gas,-

(i) every vehicle shall be carefully examined at the installation 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;

(ii) a visual check shall be made of the surroundings for unusual or dangerous situations before any filling or discharging procedure is commenced;

(iii) warning notices, as necessary, shall be displayed;

(iv) the receiving vessel shall be checked to ensure that it has sufficient ullage to receive quantity of gas being transferred to it;

(v) the interconnecting system, that is pipework-fittings, valves or hoses, shall be checked to ensure that it is in safe working condition and that only valves and other fittings required in the transfer operations or any other operations proceeding simultaneously, are open.

(2) During transfer the receiving vessel shall be checked to ensure that it is not being filled above its safe filling capacity or beyond its design pressure.

(3) On completion of transfer before the vehicle is allowed to leave the licensed premises it shall be weighed over a weigh-bridge to ascertain the quantity of the compressed gas filled therein, if the vehicle is filled with a liquefiable gas.

(4) When filling the vessels on vehicles with compressed gas, the following procedure shall be complied with in addition to the other requirements, namely:-

(i) the place where the vehicle is parked shall be properly levelled;

(ii) the vehicle shall be prevented from accidental movement during the transfer operation. The parking brake of the vehicle shall be on and the engine shall remain stopped, except when it is necessary to drive the pump. Where necessary, wheel chock blocks shall be used;

(iii) any driving units or electrical equipment not required and not specifi- cally designed for the transfer operation shall be stopped or isolated;

(iv) the vessel mounted on a vehicle shall be electrically bonded to the fixed installation before any flammable liquefied gas transfer operation is carried out;

(v) before a vehicle is moved, the electrical and the liquid and vapour connections shall be disconnected, care being exercised to avoid spil- lage. Where wheel chock blocks have been used they shall be removed. The vehicle shall be checked to ensure that it is in safe working order and the surrounding areas checked to ensure that any liquefied flamm- able gas that may have leaked or has to be vented has safely dispersed.

(5) For keeping attention during operations-

(i) a competent person shall remain in attendance during all the operations connected with the transfer and ensure that all the requirements of these rules are complied with;

(ii) if it is necessary to discontinue a vehicle-loading operation temporarily, the loading hose, shall be disconnected from the vehicle for the period of such discontinuance.

(6) The person in charge of transfer operations shall ensure that transfer operations are stopped in the event of-

(i) any leakage;

(ii) a fire occurring in the vicinity;

(iii) a severe electrical storm occuring in the vicinity in the case of an operation which involves venting of flammable gas.

30A. Dispenser for liquefied petroleum gas dispensing station :-

[1] The dispenser and connected fittings used for dispensing liquefied petroleum gas in motor vehicles provided in the liquefied petroleum gas dispensing station shall be design, constructed, tested and maintained in accordance with the requirements laid down in Schedule II of these rules and be of a type approved in writing by the Chief Controller.

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

30B. Special Provisions for filling fuel tanks of motor vehicles and unloading of tank-truck in liquefied petroleum gas dispensing station :-

[1] (i) Liquefied Petroleum Gas shall not filled in fuel tank of motor vehicle while the engine of the vehicle is running. (ii) During the period of unloading of liquefied petroleum gas from tank-truck to the storage vessels, operation of dispensing liquefied petroleum gas to motor vehicles shall not be carried out."

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

31. Electrical apparatus and installations :-

(1) No electrical wire shall pass over any storage vessel.

(2) All electrical wires installed within the safety zone of any storage vessel for the storage of flammable compressed gases shall consist of insulated cables of approved type. The cables shall be mechanically continuous throughout and effec- tively earthed away from the vessels.

(3) For pump rooms used for pumping flammable compressed gases-

(i) all electrical meters, distribution boards, switches, fuses, plugs

and sockets shall be of flameproof construction complying with the require- ments of IS: 2148: 1968 and the frames shall be effectively earthed;

(ii) all electrical fixed lamps shall be enclosed in a well glass flameproof fitting conforming to IS: 2206 (Part I): 1962.

(4) All electrical portable hand lamps shall be of a type approved by the Chief Controller.

31A. Classification of hazardous area for flammable gases :-

[1] (1)A hazardous area for flammable gases shall be deemed to be- (a) a division '0' area if inflammable gases of vapours are expected to be continuously present in the area; (b) a division ' 1 ' area, if inflammable gases or vapours are likely to be present in the area under normal operating conditions; or (c) a division '2' area, if inflammable gases or vapours ae likely to be present in the area only under abnormal operating conditions or failure or rupture of an equipment. (2) If any question arises as to whether hazardous area is a division '0' area or a division '1" area or a division '2" area, the decision thereon of the Chief Controller shall be final.

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

31B. Extent of hazardous area. :-

[1] The extent of hazardous area for liquefied petroleum gas dispenser shall be as under:- (i) Entire space within the dispenser enclosure cabinet and forty six centimetres horizontally from the exterior of enclosure cabinet and upto an elevation of one hundred and twenty two centimetres above dispenser base and the entire pit or open space beneath the dispenser shall be division 'I'; (ii) Upto forty six centimetres vertically above the surrounding ground level and horizontally beyond forty six centimetres upto six metres on all sides of the dispenser enclosure cabinet shall be division "2'."

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

32. Lighting of storage and operating areas :-

Operations shall not be carried out during the night unless adequate artificial lightings of approved type are available and used.

33. Certificate of safety :-

A certificate of safety in the pro forma [1][prescribed by the Chief

Controller] and signed by a competent person shall be furnished to the licensing authority before any vessel is used for the storage of any compressed gas or whenever any addition or alteration to the installations or foundations for the vessel is carried out. [2] [* * * * *]

1. Substituted by GSR 264(E), dated 10-3-1993.
2. "Pro forma" omitted by Substituted by GSR 264(E), dated 10-3-1993.

CHAPTER 4
TRANSPORT

34. Application :-
The rules in this Chapter shall apply to the transport of compressed gas by vehicles.

35. Vehicles for transport of compressed gas :-

(1) Every vehicle for the transport of compressed gas shall be of a type approved, in writing, by the Chief Controller.

(2) Where approval is sought to a vehicle under sub-rule (1) or to any of its special safety fittings, 12 numbers of detailed drawing drawn to scale and a scrutiny fee of rupees fifty shall be forwarded to the Chief Controller.

(3) If the Chief Controller, after receipt of the drawing under sub-rule (2) and after making such further enquiries as he deems necessary, is satisfied that the vehicle or the special safety fittings, as the case may be, meets with the requirements laid down in these rules, he shall approve the drawing and return to the applicant one copy thereof duly endorsed.

36. Design :-

(1) Every vessel used for the transportation of compressed gas shall be constructed and tested in accordance with the requirements of Rule 12 and shall meet with the requirements of sub-rules (2), (3), (4) and (5) of this rule.

(2) The design stress shall include an allowance to enable the vessel to withstand shocks normally encountered by movements on road, such as, acceleration and deceleration for a minimum of 3 g. When the vessel is self- supporting, the vessel design shall provide for carrying the additional stresses normally carried by the chassis frame. Provision shall be made for distributing the localised stresses

arising from attachments to the vessels.

(3) Mounting of vessels on the chassis or underframe shall be done in such a manner as to keep the vibrations to the minimum.

(4) All attachments to the vessel shall be protected against accidental damage which may result from collision, overturning or other operational cause.

(5) All vessels shall be designed to withstand the most severe combined stresses to which they may be subjected to by the pressure of the gas, the pumping pressures and shock loading caused by transport conditions.

37. Protection of valves and accessories :-

(1) All valves and accessories shall be safeguarded against accidental damage or interference.

(2) Valves and accessories shall be mounted and protected in such a way that risk of accidental rupture of the branch to which the valve or accessory is connected is minimised.

(3) Valves or accessories situated at the rear of a vehicle shall be protected by the rear cross member of the frame of the vehicle against damage and shall comply with sub-rule (2).

38. Equipment :-

(1) Piping, fittings, pumps and meters.-

(i) all pipings, fittings, pumps and meters permanently mounted on the vehicle shall be designed to withstand the most severe combined stresses imposed by the following, namely:-

(a) the maximum designed pressure of the vessel;

(b) the superimposed pumping pressure of the shock loading caused by road movements;

(ii) the materials used for vessel equipment shall be sufficiently ductile to withstand rough usage and accidental damage. Brittle materials such as cast iron shall not be used.

(2) Protection of piping and equipment.-

(i) all piping and equipment shall be adequately protected to minimise accidental damage which may be caused by rough usage, collision or overturning;

(ii) any equipment or section of piping in which liquid may be trapped shall be protected against excessive pressure caused by thermal expan- sion of the contents.

(3) Marking of connections.-All connections on the vehicle which require manipulation by the operator of the vehicle should be clearly marked to prevent incorrect operation. The form of this marking should correspond with the operating procedure laid down for the vehicle.

39. Vehicle design considerations :-

(1) General.-The vessel shall be se- curely attached to the chassis of the vehicle in such a manner as to take care of the forward movement of the vessel due to sudden deceleration of the vehicle.

(2) Design safety requirements-Mechanical:

(i) the engine of the vehicle shall be of an internal combustion type;

(ii) where the fuel system is gravity-fed, a quick action cut-off-valve shall be fitted to the fuel feed pipe in an easily accessible and clearly marked position;

(iii) the engine and exhaust system together with all electrical generators, motors, batteries, switch-gears and fuses shall be efficiently screened from the vessel or the body of the vehicle by a fire-resisting shield or by enclosure within an approved fire-resisting compartment;

(iv) when the equipment referred to in clauses (i), (ii) and (iii) are mounted forward of the back of the driving cab, the cab can be considered to act as an acceptable shield, provided the back, the roof and the floor of the cab, are of fire-resisting construction for the full width of the cab, without any openings in the back or roof, and that the back extends downwards to the top of the chassis:

(v) when the cab construction does not conform to the requirements mentioned above, a separate fire-resisting shield should be installed extending upwards without any openings from the top of the chassis to the top of the vessel;

(vi) in any case, where windows are provided in the shield, they should be fitted in fire-resisting framing with wired glass or other heat-resisting material and shall not be capable of being opened;

(vii) when the equipment referred to in clauses (i), (ii) and (iii) are mounted to the rear of the back of the cab, it shall be contained wholly within an approved fire-resisting compartment;

(viii) in any case where the fuel used to propel a vehicle gives off a flammable vapour at a temperature less than 65ZC, the fuel tank shall not be behind the shield unless the following requirements are complied with, namely:-

(a) the fuel tank is protected from blows by stout steel guards or by the frames of the vehicle;

(b) the fill pipe of the fuel tank of the vehicle is provided with a cover having locking arrangement;

(c) the fuel feed apparatus placed in front of the fire-resisting shield is used to lift the contents of the fuel tank.

(ix) where a transfer pump is driven by the engine of the vehicle, provision shall be made to stop the engine from outside the cab.

(3) Design safety requirements-Electrical: The following requirements shall be complied with in connection with the electrical and antistatic properties of the vehicle, namely:-

(i) The electrical system shall have-

(a) the battery in an easily accessible position;

(b) readily accessible cut-off switch of not less than 300 Amps rating;

(c) wiring so fixed and protected as to minimise accidental damage or undue wear.

(ii) The vessel shall be electrically continuous with the chassis.

(iii) The vehicle shall be provided with a bonding point or bonding cable.

(iv) Tyres shall be of the "antistatic" type.

(4) Design safety requirements-General:

(i) There shall be a clear space of at least 15 cm. between the back of the cab and the front of the vessel.

(ii) The rear of the vessel shall be protected by a robust steel bumper and this bumper shall be-

(a) attached so that collision stresses will be transmitted to the framework of the vehicle or, in the case of an articulated vehicle to the framework carrying the wheels of the vessel;

(b) situated at least 7.5 cm. to the rear of the rearmost part of the vessel;

(c) extended on each side of the vehicle to at least the maximum width of the vessel.

(iii) The maximum weight of the liquefied gas for which the vehicle is designed should not exceed the difference in weight between the unladen weight of the vehicle and the maximum gross weight permitted for that class of vehicle under the appropriate transport regulations.

40. Marking of vehicle :-

All vehicles shall be conspicuously marked on the vessel to show the product which is being carried.

41. Fire protection :-

(1) Two serviceable fire extinguishers of suitable size and type shall be provided on each vehicle, one on each side and should be accessible from outside the cab.

(2) A person, while in, or attending, any vehicle conveying flammable gas, shall not smoke or use matches or lighters.

(3) No fire, artificial light or article capable of causing fire or explosion shall be taken or carried on any vehicle carrying flammable gas.

42. Operations :-

(1) Drivers shall be carefully selected and given appropriate training in driving and safe handling of the equipment and the compressed gas carried in the vehicle.

(2) When loading or discharging of a vehicle takes place within the operator's own premises, a competent person shall be present throughout the operations.

(3) When discharge is in progress, at a customer's premises, the driver shall remain with his vehicle in such a position as so to be able to stop the discharge immediately in an emergency.

(4) Every vehicle shall be constantly attended to by at least one

person who is familiar with the rules in this Chapter: Provided that nothing in this sub-rule shall apply to vehicles which are left in places previously approved for the purpose by the Chief Controller.

(5) In the event of an overnight stop away from home base, prior arrangements shall be made for the safe parking of the vehicle overnight. In an emergency, a driver may seek the cooperation of the local police in finding suitable parking facilities for his vehicle.

43. Certificate of safety :-

A certificate of safety [1] [in prescribed pro forma] signed by a competent person shall be furnished to the licensing authority before any vehicle is used for the transportation of any compressed gas to the effect that the vehicle meets with the provisions of the rules in this Chapter.

1. Inserted by GSR 264(E), dated 10-3-1993.

44. Inspection and maintenance of vehicles :-

(1) [1][The licensee for any vehicle shall] ensure that it is at all times roadworthy, and that it is in a fit condition to fill, transport and discharge its load safely.

[1] [(2) An examination of the vehicle to check that the vehicle is maintained as per sub-rule (1) shall be carried out every six months by a competent person and a certificate in the prescribed pro forma shall be issued by him.]

1. Substituted by GSR 264(E), dated 10-3-1993.

CHAPTER 5
LICENCES

45. Licence for storage of compressed gas :-

No person shall store any compressed gas in any vessel except under and in accordance with the conditions of a licence granted under these rules.

46. Prior approval of specification and plans of vessels and premises proposed to be licensed :-

(1) Every person desiring to obtain a licence to store any compressed gas in any vessel shall submit to the Chief Controller-

(i) specifications and plans drawn to scale in triplicate clearly indicating-

(a) the manner in which the provisions prescribed in these rules shall be complied with;

(b) the premises proposed to be licensed, the area of which shall be distinctly coloured or otherwise marked;

(c) the surrounding area lying within 100 metres of the edge of all facilities which are proposed to be licensed;

(d) the position, capacity, materials of construction and ground and elevation views of all vessels, all valves and fittings, filling and discharge pumps and fire-fighting facilities where provided and all other facilities forming part of the premises proposed to be licensed; and

(ii) a scrutiny fee of rupees one hundred paid in the manner specified in Rule 11.

(2) If the Chief Controller, after scrutiny of the specifications and plans and after making such inquiries as he deems fit, is satisfied that compressed gas can be stored in the premises proposed to be licensed, he shall return to the applicant one copy each of all the specifications and plans signed by him conveying his sanction which may be subject to such conditions as he may specify.

46A. No Objection Certificate :-

[1](1) An applicant for a new licence other than a licence in Form-IV, shall apply to the District Authority with two copies of site plan showing the location of the premises proposed to be license under these rules for a certificate to the effect that there is no objection to the applicant's receiving a licence for storage of compressed gas in pressure vessel at the site proposed, and the District Authority shall, if he sees no objection, grant such certificate to the applicant who shall forward it to the Chief Controller with his application.

(2) Every certificate issued by the District Authority under sub-rule (1) above shall be accompanied by a copy of the plan of the proposed site duly endorsed by him under his official seal.

(3) The Chief Controller, may refer an application not accompanied by a certificate granted under sub-rule (1) to the District Authority for his observation.

(4) If the District Authority, either on a reference being made to him or otherwise, intimates to the Chief Controller that any licence

which has been applied for should not, in his opinion, be granted, such licence shall not be issued without the sanction of the Central Government.

(5) Notwithstanding anything contained in sub-rules (1) to (4) above, all licenses granted or renewed under the said rules prior to the date on which the above provisions come in force, shall be deemed to have been granted or renewed under these rules."

[2] (6) The provisions of this rule shall not apply to non-flammable, non-toxic compressed gases.

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999
2. In Rule 19, sub-rule (1-A), shall be inserted by Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 2002., published in the Gazette of India, Part II, Section 3(i), dated 17th May, 2002, pp. 6-9.

47. Licence for transport of compressed gas :-

(1) No compressed gas filled in a vessel shall be transported by a vehicle except under and in accordance with the conditions for a licence granted under these rules.

(2) Nothing in this rule shall apply to the transport of compressed gas filled in a vessel by a railway administration.

48. Grant of licence :-

A licence prescribed under these rules shall be granted by the Chief Controller on payment of the fees specified in the Schedule 1 attached to these rules.

49. Application for licence :-

[1] A person intending to obtain a licence under these rules shall submit to the Chief Controller, - (i) an application, - (a) in Form- I, if the application is in respect of a licence to store compressed gas in pressure vessels; (b) in Form -II, if the application is in respect of a licence to transport compressed gas in a pressure vessel by a vehicle; (e) in Form-IA, if the application is in respect of a licence to store and dispense liquefied petroleum gas as automotive fuel;"; (ii) a certificate of safety under rule 33 or rule 43 as the case may be; (iii) a test and inspection certificate as required under sub-rule (2) of rule 12; (iv) four copies of the drawings approved by the Chief Controller under rules 35 and 46; (v) licence fee as specified in the schedule-I , (vi) No Objection Certificate from the District

Authority in respect of storage of compressed gas in pressure vessels alongwith the site-plan duly endorsed; (vii) copy of The Registration Certificate of the vehicle issued under Motor Vehicles Act, 1988 (59 of 1988) in respect of mobile pressure vessels for transport of compressed gas."

1. Substituted for rule 49 "A person wishing to obtain or renew a licence under these rules shall submit to the Chief Controller- (1) an application- (a) in Form I, if the application is in respect of a licence in Form III; and (b) in Form II, if the application is in respect of a licence in Form IV; (2) a certificate of safety under Rule 33 or Rule 43, as the case may be; (3) four copies of the drawings approved by the Chief Controller under Rules 35 and 46." by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

50. Period for which licences may be granted or renewed :-

[1]"(1) A licence, in Form-111 or Form -V for the storage of compressed gas in pressure vessel, or in Form -IV for the transport of the compressed gas in a pressure vessel by a vehicle, shall be granted or renewed subject to a maximum of three years and shall remain in force until the thirty first day of March of the year upto which the same is granted or renewed.".

(2) Notwithstanding anything contained in sub-rule (1), the Chief Controller may, if he is satisfied that a licence is required for a specific work which is not likely to last up to the 31st day of March of the year up to which the licence is granted or renewed, grant or renew a licence for such period as is necessary.

(3) [* * *] [2]

1. Substituted for "(1) A licence in Form III for the storage of a compressed gas [in a pressure vessel, or in Form IV for the transport of the compressed gas in a pressure vessel by a vehicle] granted or renewed under these rules shall remain in force until the 31st day of March of the year up to which the licence is granted or renewed subject to a maximum of three years." by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999
2. Omitted by GSR 243(E), dt. 6-5-1997.

51. Particulars of licence :-

(1) Every licence granted under these rules shall be subject to the conditions specified therein and shall contain all the particulars which are contained in the form specified under these rules.

(2) One copy of the plan or plans for the licensed premises, signed in token of approval by the Chief Controller, shall be attached to the licence which shall form part of such licence and an identical copy shall be filed for record in the Office of the Chief Controller.

[1]"(3) Every licensed premises under these rules shall have prominently marked thereon the number of the licence held for it.

[1] (4) The emergency telephone numbers of local fire service, police and the principal marketing company or supplier of the compressed gas, and emergency instructions shall be conspicuously displayed in the licensed premises."

1. Inserted by "the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

52. Power of licensing authority to alter conditions :-
Notwithstanding any- thing contained in Rule 51, the Chief Controller may omit, alter or add to any of the conditions specified in the Form of a licence.

53. Prior approval necessary for alteration in the licensed premises :-

(1) No alteration shall be carried out in the licensed premises until the plan showing such alteration has been approved in writing by the Chief Controller.

(2) A person wishing to carry out any alteration in the licensed premises shall submit to the Chief Controller-

(i) three copies of a properly drawn plan of the licensed premises showing in distinct colour or colours the proposed alteration and the reasons therefor;

(ii) a scrutiny fee of rupees fifty paid in the manner specified in Rule 11.

(3) If the Chief Controller, after scrutiny of the plan showing the proposed alteration and after making such enquiries as he deems fit, is satisfied that the proposed alteration may be carried out, he shall return to the licensee one copy of the plan signed by him and conveying his sanction subject to such condition or conditions as he may specify.

(4) The holder of a licence shall apply to the Chief Controller for the amendment of the licence as soon as the sanctioned alteration has

been carried out.

54. Amendment of licence :-

(1) Any licence granted under these rules may be amended by the Chief Controller.

(2) The fee for amendment of a licence shall be rupees ten plus the amount, if any, by which the fee that would have been payable if the licence had originally been issued in the amended Form exceeds the fee originally paid for the licence.

(3) A licensee who desires to have his licence amended shall submit to the Chief Controller-

[1] "(i) an application duly filled in and signed in Form -I, or in Form - I-A or in Form-II, as the case may be."

(ii) the licence sought to be amended together with the approved plans attached to it;

(iii) where any alteration in the licensed premises has been carried out, three copies of the properly drawn plan showing the alteration sanc- tioned under Rule 53 by the Chief Controller;

(iv) fee for the amendment of the licence as specified in sub-rule (2);

(v) a certificate of safety, if required under Rule 33.

1. Substituted by "(i) an application duly filled in and signed in Form I if the licence has been granted to store any compressed gas and in Form II if the licence has been granted for the transport of compressed gas;" by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

55. Renewal of licence :-

(1) A licence granted under these rules may be renewed by the Chief Controller.

(2) Every licence granted under these rules, [* * *] [1]may be renewable for three financial years where there has been no contravention of the Act or the rules framed thereunder or of any conditions of the licence so renewed.

(3) Where a licence which has been renewed for more than one year is surrendered before its expiry, the renewal fee paid for the unexpired portion of the licence shall be refunded to the licensee,

provided that no refund of renewal fee shall be made for any financial year during which the Chief Controller receives the renewed licence for surrender.

[2] "(4) Every application for renewal of the licence shall be made in Form-1, or Form-I-A or Form -II, as case may be, and shall be accompanied by the licence and prescribed fee"

(5) Every application for the renewal of a licence shall be made so as to reach the licensing authority at least thirty days before the date on which it expires, and if the application is so made, the licence shall be deemed to be in force until such date as the Chief Controller renews the licence or until an intimation that the renewal of the licence is refused has been communicated to the applicant.

(6) Where the renewal of a licence is refused, the fee paid for the renewal shall be refunded to the licensee after deducting therefrom the proportionate fee for the period beginning from the date from which the licence was to be renewed up to the date on which renewal thereof is refused.

(7) The same fee shall be charged for the renewal of a licence for each financial year as for the grant thereof: Provided that-

(i) if the application with accompaniments required under sub-rule (4), is not received within the time specified in sub-rule (5), the licence shall be renewed only on payment of a fee amounting to twice the fee ordinarily payable;

(ii) if such an application with accompaniments is received by the Chief Controller after the date of expiry but not later than thirty days from that, the licence may, without prejudice to any other action that may

(8) No licence shall be renewed if the application for renewal be received by the Chief Controller after thirty days of the date of its expiry.

1. The words "other than a licence in Form IV" omitted by GSR 243(E), dt. 6-5-1997.
2. Substituted for "(4) Every application shall be accompanied by the licence which is to be renewed together with approved plans attached to the licence, and renewal fee paid in the manner specified in Rule 11." by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

56. Refusal of licence :-

(1) The Chief Controller refusing to grant, amend, renew or transfer a licence, shall record his reasons for such refusal in writing.

(2) A copy of the order containing the reasons for such refusal shall be given to the applicant on payment of a fee of rupees five paid in the manner specified in Rule 11.

57. Suspension and cancellation of licence :-

(1) Every licence granted under these rules shall be liable to be suspended or cancelled, by an order of the Chief Controller for any contravention of the provisions of the Act or these rules or of any condition contained in such licence, or by an order of the Central Government if at any time the continuance of the licence in the hands of the licensee is deemed objectionable: Provided that-

(i) before suspending or cancelling a licence under this rule, the holder of the licence shall be given an opportunity of being heard;

(ii) the maximum period of suspension shall not exceed three months; and

(iii) the suspension of a licence shall not debar the holder of the licence from applying for its renewal in accordance with the provisions of Rule 55.

(2) Notwithstanding anything in sub-rule (1), an opportunity of being heard may not be given to the holder of a licence before his licence is suspended or cancelled in case-

(i) where the licence is suspended by the Chief Controller as an interim measure for the violation of the provisions of the Act or these rules, or of any condition contained in such licence or in his opinion such violation is likely to cause imminent danger to the public: Provided that where a licence is so suspended, the Chief Controller shall give the holder of the licence an opportunity of being heard before the order of suspension is confirmed; or

(ii) where the licence is suspended or cancelled by the Central Government, if that Government considers that in the public interest or in the interest of the security of the State such opportunity should not be given.

(3) The Chief Controller or the Central Government suspending or cancelling a licence under sub-rule (1), shall record his or its reasons for so doing in writing.

58. Procedure on expiration, suspension or cancellation of licence :-

A person licensed to store compressed gas shall, on the expiration, suspension or cancellation of his licence, forthwith give notice to the Chief Controller of the nature and quantity of compressed gas in his possession and shall comply with any directions which the Chief Controller may give in regard to its disposal.

59. Appeals :-

(1) An appeal shall lie with the Central Government against any order passed by the Chief Controller refusing to grant, amend or renew a licence or cancelling or suspending a licence.

(2) Every appeal shall be in writing and shall be accompanied by a copy of the order appealed against and shall be presented within sixty days of the order passed.

60. Procedure on death or disability of licensee :-

(1) If a licensee dies or becomes insolvent or is mentally incapable or is otherwise disabled, the person carrying on the business of such licensee shall not be liable to any penalty or confiscation under the Act or these rules for exercising the powers granted to the licensee during such time as may reasonably be required to allow him to make an application for a new licence in his own name for the unexpired portion of the original licence in respect of the year in which the licensee dies or becomes insolvent or mentally incapable or is otherwise disabled: Provided that nothing in this sub-rule shall be deemed to authorise the exercise of any power under this sub-rule by any person after the expiry of the period of the licence.

(2) A fee of rupees five shall be charged for a new licence for the unexpired portion of the original licence granted to any person applying for it under this rule.

61. Loss of licence :-

When a licence granted under these rules is lost or accidentally destroyed, a duplicate may be granted on the submission of a copy of the plan or plans identical with those attached to the licence and on payment of a fee of rupees ten paid in the manner specified in Rule 11.

62. Production of licence on demand :-

(1) Every person holding or acting under a licence granted under these rules shall produce it, or an authenticated copy of it, at the place to which the licence applies, when called upon to do so by any of the officers specified in Rule 69.

(2) Copies of any licence may, for the purpose of this rule, be authenticated by the authority which granted the licence-

(a) on payment of a fee of rupees five in the manner specified in Rule 11 for each authenticated copy; and

(b) on the submission of a copy or copies of the plans identical with the approved plan or plans attached to the licence.

62A. Compliance of instructions of licensing authority :-

[1] If the licensing authority calls upon the holder of the licence by a notice in writing to execute any repairs in the licensed premises which are, in the opinion of such authority, necessary for the safety of the premises, the holder of the licence shall execute the repairs within such periods as may be specified in the notice."

1. Inserted by the Static and Mobile Pressure Vessels (Unfired) (Amendment) Rules, 1999

63. Procedure on reports of infringement :-

The district authority shall inform the Chief Controller of the action taken by him on any reports of infringement of the Act or of these rules which the Chief Controller may make to him.

64. Executive control over authorities :-

Every authority, other than the Central Government, acting under this Chapter shall perform its duties subject to the control of the Central Government: Provided that nothing in this rule shall be deemed to affect the powers of executive control of the Chief Controller over the officers subordinate to him.

CHAPTER 6
EXEMPTION

65. Powers to exempt :-

The Central Government may, on the recommenda- tion of the Chief Controller, in exceptional cases, by order and for reasons to be recorded in writing, exempt storage and transportation of any compressed gas in any vessel from all or any of the provisions of these rules, on such conditions, if any, as may be specified in the order.

66. Notice of accident :-

The notice of an accident required to be given under sub-section (1) of Section 8 of the Act shall be given forthwith-

(i) to the Chief Controller by express telegram (Telegraphic Address-Ex- plosives, Nagpur) followed within twenty-four hours by a letter giving particulars of the occurrence; and

(ii) to the officer-in-charge of the nearest police station by the quickest route. Pending the visit of the Chief Controller, or his representative, or until instruction is received from the Chief Controller that he does not wish any further investigation or inquiry to be made, all wreckage and debris shall be left untouched except in so far as its removal may be necessary for the rescue of persons injured, and recovery of the bodies of any persons killed by the accident or in the case of Railways, for the restoration of through communication.

67. Inquiry into accidents :-

(1) Whenever a District Magistrate, a Commis- sioner of Police or a Magistrate subordinate to a District Magistrate holds an inquiry under sub-section (1) of Section 9 of the Act, he shall adjourn such an inquiry unless the Chief Controller or an officer nominated by him is present to watch the proceedings or the Magistrate has received written information from the Chief Controller that he does not wish to send a representative.

(2) The Magistrate shall, at least fourteen days before holding the adjourned inquiry, send to the Chief Controller notice in writing of the time and place of holding the adjourned inquiry.

(3) Where an accident has been attended with loss of human life, the Magistrate, before the adjournment, may take evidence to identify any body and may order the internment thereof.

(4) The Chief Controller or his representative shall be at liberty at any such inquiry to examine any witness, subject to the order of the Magistrate, on points of law.

(5) Where evidence is given at an inquiry at which the Chief Controller or an officer nominated by him is not present, of any neglect as having caused or contributed to the explosion or

accident or of any defect in or about or in connection with any installation or any vehicle appearing to the Magistrate or Jury to require a remedy, the Magistrate shall send to the Chief Controller notice in writing of the neglect or defect.

68. Inquiry into more serious accidents :-

(1) Whenever an inquiry is held under Section 9-Aof the Act, the persons holding such inquiry shall hold the same in open court in such manner and under such conditions as they may think most effectual for ascertaining the causes and circumstances of the accident, and enabling them to make the report under this rule: Provided that where the Central Government so directs the inquiry may be held in camera.

(2) Persons attending as witnesses before the Court under sub-rule (1) shall be allowed such expenses as are paid to witnesses attending before a civil court subordinate to the High Court having jurisdiction in the place where the inquiry is held and in case of any dispute as to the amount to be allowed, the question shall be referred to the local Magistrate who, on a request being made to the Court, shall ascertain and certify the proper amount of such expenses.

(3) All expenses incurred in or about in inquiry or investigation under this rule shall be deemed to be part of the expenses of the Department of Explosives in carrying the Act into execution.

CHAPTER 8
POWERS

69. Powers of inspection, search, seizure, detention and removal :-

.-(1) Any of the officers specified in the first column of the Table below may exercise the powers mentioned in sub-section (1) of Section 7 of the Act in the areas specified in the corresponding entry in the second column of that Table :-

	Officers	Areas
	(1)	(2)
1.	The Chief Controller, Deputy Chief Controllers,	The whole of India.
	Controllers, and Deputy Controllers of Explosives and	
	Assistant Controllers of Explosives.	
2.	All District Magistrates.	Their respective districts.

3.	All Magistrates subordinate to the District Magistrate.	Their respective jurisdictions.
4.	The Commissioners of Police.	Their respective jurisdictions.
5.	Deputy Commissioners of Police subordinate to the	The respective areas over which their
	Commissioners of Police.	authority extends.
6.	All police officers not below the rank of a Sub	-do-
	inspector.	

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

SCHEDULE 1
SCHEDULE

SCHEDULE 2
Schedule

(See rule 30A) Design, construction, testing and maintenance of dispenser for liquefied petroleum gas dispensing station and its pipe connections. - (a) The type of the dispenser used for dispensing liquefied petroleum gas shall conform to a specification and be of a type approved by the Chief Controller. (b) The dispenser shall be provided with an excess flow valve, a remote operated shut-off valve and a pipe shear provision in that order in the liquid inlet pipe. (c) The dispenser shall be installed on a firm foundation and protected against physical damage. (d) A breakaway device with excess flow valves or quick action cut-off valves on both sides of the breakaway device conforming to Underwriters Laboratory, USA, specification number 567 or equivalent shall be provided on the delivery line form the dispenser before the connection of the hose so as to prevent spillage of liquefied petroleum gas from both sides of the breakaway point in the event of its breakage. (e) The dispensing nozzle at the end of the hose shall be of self sealing type of twenty two millimetres nominal size and suitable for matching with filler connection of cylinders fitted to vehicles as fuel tanks, as specified in Australian specification AS-1425 or other established standard approved by the Chief Controller. (f) The hose for delivery of liquefied petroleum gas by the dispenser to motor vehicles shall be suitable for commercial propane. The design pressure of the hose shall be minimum thirty two kilograms per square centimetres with a safety factor of five and shall be tested at one and half times of the design pressure at an interval not exceeding one year. The hose shall be electrically and mechanically continuous. (g) The length of the hose connected to the dispenser shall not exceed five metres and fifty centimetres. (h) Clearly identified switches and circuit breakers shall be provided at easily accessible location not less than six metres away from the dispenser to cut-off power supply in the event of fire, accident or other emergency. The switches or circuit breakers shall be visible from point of dispensing liquefied petroleum gas to motor vehicles. (i) Every dispensing unit from which liquefied petroleum gas introduced into

the cylinders fitted to the motor vehicles, shall be equipped with seif sealing type fuelling nozzle form which the liquid released on disconnection shall not exceed fifteen millilitres. (j) All metallic liquefied petroleum gas pipings shall be rated for Propane and designed to American Standard ASME-B-31.3 with minimum design pressure of thirty two kilograms per square centimetres with a factor of safety of four. The materials of pipe shall be low carbon or alloy-steel conforming to American Standard ASTM-SA-333 grade 6, or SA-106 grade B Schedule 80, or API-5L or equivalent. The pipeline shall be tested at one and half times of the design pressure, if hydro-tested , or ten percent in excess of the design pressure if pneumatically tested. Joints of pipeline above forty millimetres diameter shall be welded or flanged. Threaded or screwed connection shall not be provided except for special fittings like excess flow valve, pump connections upto fifty millimetres diameter".