# THE CARBIDE OF CALCIUM RULES, 1937

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## NOTIFICATION

No. M—826 (1), Dated 18th March 1937

In exercise of the powers conferred by section 4 and sub-section (1) of section 29 of the Petroleum Act, 1934 (XXX of 1934), as applied to Carbide of Calcium by the notification of the Government of India in the Department of Industries and Labour, No. M. 826 (1), dated the 15th October 1936, read with section 22 of the General Clauses Act, 1897 (X of 1897), the Governor General in Council is pleased to make the following rules which have been previously published as required by sub-section (2) of section 29 of the first mentioned Act, namely :—

**Comments by the Chief Inspector of Explosives.**—Calcium carbide and calcium phosphide, both of which substances have an extensive use in commerce, give rise to dangers akin to those present when handling petroleum in that they give off an inflammable vapour on contact with moisture and the provisions of Sections 2-4, 12-14, 23-29 and 31 of the Petroleum Act, 1934, have been applied to them by Notifications No. M. 826 (1), dated the 15th October 1936, and No. M. 826 (1), dated the 23rd March 1937, respectively.

The uses of calcium phosphide are largely confined to the preparation of the danger and distress lights carried on ships but calcium carbide has a very wide industrial market chiefly for the production of acetylene gas for welding and cutting metals and for the illuminations commonly used in processions and at wedding and similar festivals.

The inflammable gas—acetylene—given off by carbide differs in one or two important respects from the inflammable vapour given off by petroleum. Acetylene is somewhat lighter than air and therefore tends to collect near the roof of any building in which it may be present instead of sinking to the floor as does petroleum vapour. Acetylene also differs from petroleum in forming an explosive mixture with air over much wider limits than the latter hydrocarbons. The explosive limits for petrol vapour and air are from about 1-1/2 per cent. to about 6 per cent. of the mixture compared with from about 2 per cent. to about 82 per cent. for acetylene. This means that petrol-air mixtures containing less than about 1-1/2 per cent. of petrol vapour are too weak to burn and mixtures containing over 6 per cent., while highly inflammable, are too rich to explode, but that with acetylene an explosion can occur with any mixture having a composition between 2 per cent. of the gas with 98 per cent. of air and 82 per cent. of the gas with 18 per cent. of air. Obviously the efficient ventilation of carbide premises is even more important than the the ventilation of petroleum premises.

## RULES.

### CHAPTER I.

### *Preliminary.*

1. *Short title and extent.*—(1) These rules may be called the Carbide of Calcium Rules, 1937.

(2) They shall apply to the whole of Pakistan.

2. *Supersession and savings.*—All notifications and rules issued by the local Governments and all appointments made by them under the Petroleum Act, 1899 (VIII of 1899), as applied to Carbide of Calcium by the notification of the Government of India in the Department of Commerce and Industry, No. 101—10, dated the 4th January 1907, are hereby superseded, but all licences or duplicates granted or renewed, all fees imposed or levied and all powers conferred by or under any notification or rule so superseded, shall, so far as they are consistent with these rules, be deemed to have been respectively granted, renewed, imposed, levied or conferred under these rules.

**Notes and References.**—It will be observed that there is no equivalent to Sub-Rule (2) of Rule 2 of the Petroleum Rules, 1937, in Rule 2 of the Carbide of Calcium Rules.

3. *Definitions.*—In these rules, unless there is anything repugnant in the subject or context,—

(*a*) "The Act" means the Petroleum Act, 1934;

(*b*) "Carbide" means Carbide of Calcium;

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

(*d*) "Conservator of the Port" includes any person acting under the authority of the officer or body of persons appointed to be conservator of the Port under Section 7 of the Port Act, 1908;

(*e*) "District Authority" means the District Magistrate;

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

(*g*) "Inspector" means an officer authorised by the Central Government under sub-section (1) of section 13 of the Act;

(*h*) "Prescribed receptacle" means a receptacle which—

(*i*) is made of metal but has no copper in its composition;

(*ii*) is hermetically closed at all times except when its conte nts are being placed within it or withdrawn from it; and

(*iii*) bears a stamped, embossed, painted or printed warning exhibiting in conspicuous characters the words "Carbide of Calcium—Dangerous if not kept dry" and the following caution :—

"*The contents of this package are liable, if brought into contact with moisture, to give off a highly inflammable gas*"; *and*

(*i*) "Sampling officer" means an officer authorised by the Central Government under sub-section (1) of section 14 of the Act.

**Notes and References.—Rule 3 (g).**—The following Officers have been authorised under Notification No. M. 826 (1), dated 22-3-1937 as amended in Pakistan.

| | *Officers* | *Areas* |
|---|---|---|
| 1. | The Chief Inspector, Inspectors and Assistant Inspectors of Explosives. | All the Provinces and the Capital of the Federation including Baluchistan. |
| 2. | All District Magistrates .. .. .. | Their respective districts. |
| 3. | All Magistrates subordinate to the District Magistrate. | Their respective Jurisdictions. |
| 4. | All Police Officers of rank not below that of Inspector. | The respective areas over which their anthority extends. |

**Comments by the Chief Inspector of Explosives.—Rule 3 (h).**—The use of copper is prohibited because of its tendency to form explosive compounds with acetylene.

**Notes and References.—Rule 3 (i).**—The following officers have been authorised under Notification No. M. 826 (2), dated 22-3-1937 as amended in Pakistan.

| | Officers | Areas |
|---|---|---|
| 1. | The Chief Inspector, Inspectors and Assistant Inspectors of Explosives. | All the Provinces and the Capital of the Federation, including Baluchistan. |
| 2. | All District Magistrates .. .. .. | Their respective districts. |
| 3. | All Magistrates subordinate to the District Magistrate. | Their respective Jurisdictions. |
| 4. | All Police Officers of rank not below that of Inspector. | The respective areas over which their authority extends. |
| 5. | Preventive Officers, Custom House, Karachi | The Port of Karachi. |
| 6. | Preventive Officers, Custom House, Chittagong. | The Port of Chittagong. |
| 7. | Preventive Officers, Custom House, Chalna .. | The Port of Chalna. |

## CHAPTER II.

### *Importation of Carbide.*

4. *Ports of importation.*—Carbide shall not be imported except at the ports of—

Karachi.

Chittagong.

Chalna (Khulna).

5. *Duty of master or agent in port.*—(1) The master or the agent of the owner of every ship arriving at any port and carrying carbide shall, on entering the port and before landing any cargo, declare in writing to the Collector of Customs and also to the Conservator of the Port, the quantity and description of such carbide.

(2) The master shall moor the ship in such place as the Conservator of the Port may direct, and, while any carbide remains on board, shall not, except for the purpose of proceeding to sea, remove the ship without the written permission of the Conservator of the Port.

(3) The master shall ensure that the hold of every ship bringing carbide into port shall be efficiently ventilated from the time the vessel enters the port until all the carbide on board has been discharged or until the ship has left the port.

**Comments by the Chief Inspector of Explosives.**—When arranging for the ventilation of the hold of a ship carrying carbide particular attention should be paid to any pockets or overhead spaces in the hold not having an opening into the open air.

6. *Receptacles.*—(1) Carbide shall be brought into port only in prescribed receptacles.

(2) The receptacles shall be of such strength and construction or so protected as not be liable to become defective or insecure in transit otherwise than by gross negligence or extraordinary accident.

(3) No such receptacle shall be capable of containing more than 250 pounds of carbide.

**Comments by the Chief Inspector of Explosives.**—Prescribed receptacle is defined in Rule 3 (h) and for all practical purposes must be an iron or tinned iron vessel. It will be noted that the exclusion of metals containing copper in their composition automatically excludes brass.

7. *Defective receptacles.*—The Collector of Customs may require that any receptacle containing carbide which does not satisfy the requirements of rule 6 or which is defective shall be submerged in deep water under the direction of the Conservator of the Port, without compensation to the consignee.

**Comments by the Chief Inspector of Explosives.**—When disposing of a receptacle condemned under this rule it seems desirable to punch a number of holes in the container before submerging it, in order to ensure the safe destruction of the contents.

8. *Opening of receptacles in port.*—No receptacle containing carbide shall be opened within the limits of a port except in premises licensed for the storage of carbide.

9. *Precautions against contact with water.*—Every reasonable precaution shall be taken to prevent the contact of water or moisture with any carbide brought into port, and, where such contact may have occurred, to prevent ignition of the gas given off.

**Comments by the Chief Inspector of Explosives.**—With wetted carbide the danger most to be apprehended is an explosion caused by the ignition of any accumulations of the escaping gas. Wherever possible all damaged carbide and the receptacles containing it should be kept in the open air until proper arrangements can be made for its disposal and all fires, artificial lights or articles capable of igniting the gas should be kept well away. Too much care cannot be taken in respect of this latter precaution; acetylene is very much easier to ignite than petroleum or petroleum vapour.

10. *Facilities to be afforded to inspecting officers.*—The master or the agent of the owner of any ship in port with carbide on board shall, when so required by the Collector of Customs or by the Conservator of the Port or by an Inspector or sampling officer, show to such officer all carbide under his control or on board, and shall afford every reasonable facility to enable such officer to inspect such carbide so as to ascertain whether these rules are duly observed and to take samples, if such officer so desires.

**Notes and References.**—A list of inspecting and sampling officers is given in the note to Rule 3.

11. *Landing of carbide.*—(1) Carbide shall be landed only with the permission of the Collector of Customs and at such place or places as the Conservator of the Port may direct.

(2) Carbide shall be landed only between sunrise and sunset.

12. *Removal after landing.*—All carbide landed from any ship shall be removed without unnecessary delay to some licensed place of storage, and, if conveyed by water, shall be conveyed only in an open barge certified as suitable for the conveyance of carbide by the Conservator of the Port.

13. *Port Commissioners' Regulation.*—The landing and the removal after landing of carbide in a port shall be subject to all the regulations which may from time to time be prescribed generally or specially in that behalf by the Port Commissioners, provided such regulations are not inconsistent with these rules.

## CHAPTER III.

### *Transport of Carbide*

14. *Transport in quantity not exceeding 5 pounds.*—Carbide transported in any quantity not exceeding five pounds shall be packed in prescribed receptacles each containing not more than one pound.

**Notes and References.**—"Prescribed receptacles" are defined in Rule 3 (h).

15. *Transport in quantity exceeding 5 pounds.*—Carbide in quantity exceeding five pounds shall not be transported except under the following conditions :—

(*a*) the carbide shall be contained in prescribed receptacles no one of which shall be capable of containing more than 250 pounds of carbide; and

(*b*) the carbide shall not be deposited at any time during transit in any building other than a building fulfilling the requirements of Rules 22 and 24 and shall not be stored in any such building except in accordance with the requirements of Rule 25.

**Comments by the Chief Inspector of Explosives.**—Clause (b) of this rule makes it clear that carbide may not be deposited in a shop or dwelling house and that a vehicles carrying it may not be kept in a garage or other building.

16. *Transport by railway.*—(1) Notwithstanding anything contained in clause (b) of Rule 15, carbide while in the custody of a railway administration for transport, shall not be stored in any railway goods shed, but shall be stacked in the open under waterproof sheets and shall be so placed as to prevent any receptacle containing it from becoming wet.

(2) Where the carbide is conveyed by rail it shall be subject to all the regulations which may from time to time be prescribed generally or specially in that behalf by the railway administration over whose line it is conveyed.

(3) All fires or artificial lights or articles capable of igniting acetylene shall be kept away from carbide stacked as provided in sub-rule (1).

**Comments by the Chief Inspector of Explosives.**—The usual miners safety lamp, the common type of electric torch, hand lanterns and ordinary electric appliances other than those complying with British Standard Specification No. 229 all fall within the definition of articles capable of igniting acetylene, and it should always be borne in mind that this gas is very easily ignited.

17. *Transport by passenger train.*—Where carbide is transported by passenger train—

(*i*) the quantity carried by any one train shall not exceed 500 pounds;

(*ii*) the vehicles containing carbide shall be well ventilated and as far as possible water-tight; and

(*iii*) no naked lamp or other artificial light capable of igniting inflammable gas shall be taken into a vehicle containing carbide.

**Notes and References.**—*See* Note to Rule 16.

18. *Transport by water.*—Where carbide is conveyed by water it shall be packed and stowed in accordance with the regulations issued from time to time by the Board of Trade for regulating the carriage of dangerous goods and explosives in ships.

**Comments by the Chief Inspector of Explosives.**—When copies of the regulation are not available the necessary information can usually be obtained by making application to the Port Authority.

19. *Restriction on delivering and despatch of carbide.*—(1) No person shall deliver any carbide to any one other than the holder of a storage licence or his authorised agent or a Port Authority or railway administration.

(2) No person shall despatch any carbide to any one other than the holder of a storage licence.

(3) This rule shall not apply to the delivery or despatch to any person of carbide in quantities which are permitted by these rules to be stored without licence.

**Comments by the Chief Inspector of Explosives.**—The position of a person importing carbide is not quite clear but it does not seem in any way unreasonable for the Collector of Customs to require the production of a storage licence under this rule before releasing a consignment. It will be seen that any person in possession of carbide is responsible that no quantity in excess of 28 lbs. is delivered or despatched to any one but the holder of a storage licence. *See* also Rule 21.

Attention may here be invited to Rule 43 (2). All licences expire on the 31st of December each year but, provided the application for renewal is properly made before the beginning of December, Rule 43 comes into force and, once the person despatching the supplies has satisfied himself that the law has been complied with, the issue of supplies need not be discontinued unless the licence holder has received a notice intimating that the his licence will not be renewed.

See also Rule 52 regarding the issue of authenticated copies of a licence.

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## CHAPTER IV.

### *Storage of Carbide.*

20. *Carbide to be " commercially pure ".*—No carbide shall be kept at any place, with or without a licence, unless it is " commercially pure ", that is, unless it contains no impurities which would render the gas evolved, either alone or in admixture with air, liable to ignite spontaneously.

**Comments by the Chief Inspector of Explosives.**—Carbides requires to be made from very carefully selected materials. The presence of impurities such as phosphorous or silicon in the raw material is liable to give rise to products forming a spontaneously inflammable gas; but modern methods of manufacture have materially reduced this risk and supplies from well established manufactures can usually be depended on.

21. *Licence for storage.*—(1) No person shall store any carbide except under a licence granted under these rules :

Provided that no licence shall be required for the storage of carbide—

(*i*) in any quantity not exceeding five pounds if it is kept in prescribed receptacles each containing not more than one pound.

(*ii*) in any quantity exceeding five and not exceeding twenty-eight pounds if it is kept in prescribed receptacles and the following conditions are observed :—

(*a*) the receptacles shall be stored in a dry and well ventilated place;

(*b*) due precautions shall be taken to prevent unauthorized persons from having access to the carbide ;

(*c*) notice shall be given of such storage to the District Authority; and

(*d*) where a fixed generator is used on the premises, detailed instructions as to the care and use of the generator shall be kept constantly posted up in a place where they can conveniently be referred to by the generator attendant.

(2) No licence shall be required for the temporary storage of carbide within port limits under such conditions as the Conservator of the Port may specify.

(3) No licence shall be required for the storage of any carbide in the possession of Armed Forces of Pakistan.

22. *Storage buildings.*—(1) Carbide shall be stored—

(*a*) if in quantities aggregating not more than 500 pounds—in a suitable uninhabited building at least 20 feet away from any other premises : provided that quantities not exceeding 250 pounds may be stored in a place connected with a shop at a distance not less than 10 feet from any other premises;

(*b*) if in quantities aggregating more than 500 pounds and not more than 3,000 pounds—in a suitable uninhabited building at least 40 feet away from any other premises;

(*c*) if in quantities aggregating more than 3,000 pounds—in an uninhabited building at least 60 feet away from any other premises and at least 30 feet away from any road.

"(2) Not more than 1,000 tons of carbide shall be stored in any one building so, however, that not more than 250 tons thereof is stored in any one room or other part of the building".

**Comments by the Chief Inspector of Explosives.**—Carbide, of itself, is quite harmless and the risks associated with its storage have their origin, not in the actual quantity stored, but in the quantity liable to be exposed to moisture. The volume of explosive mixture capable of being formed by an escape of acetylene into the building constitutes the real danger and on consideration of this aspect of the question, it will be at once apparent that the possible range of damage likely to be caused by an explosion rapidly increases with increase in the size of the storage building.

Under no circumstances may a carbide store be in, or communicate directly with, any shop, house, or other building. Under the proviso to sub-rule (1) (a) a store for quantities not exceeding 250 lbs., which store should incidentally be as small as possible, may be erected in the open air adjoining a shop but even under these conditions it must have no openings into the adjoining building and must observe a safety distance of 10 feet from any other premises.

All buildings for the storage of carbide must be ventilated directly into the open air and under no circumstances can this requirement be relaxed.

23. *Power to reduce distances.*—The distances laid down in sub-rule (1) of Rule 22 may be reduced by the Chief Inspector or an Inspector of Explosives where screen walls are provided or other special precautions are taken or where there are special circumstances that in the opinion of the Chief Inspector or in Inspectors of Explosives warrant the reduction.

24. *Construction of storage buildings.*—Every building for the storage of carbide shall be—

(*a*) constructed of non-inflammable material, with non-inflammable roofs and with tiled, paved, cemented, iron or steel floors raised at least a foot above the ground level; and

(*b*) well ventilated and water-tight to the satisfaction of the licensing authority.

**Comments by the Chief Inspector of Explosives.**—The major portion of the risk attendant when handling carbide disappears if the carbide is kept dry and if the building in which it is stored is well ventilated. Acetylene being lighter than air it is important to provide opening for its escape as near the apex of the roof as possible and not only in the surrounding walls. Mere openings are not, of themselves, sufficient for reliable ventilation and steps should be taken to ensure a good draught right through the premises. This can best be arranged by fitting ventilators near the floor as well as in the roof and by making sure that they are of ample size for the capacity of the building. Under all ordinary conditions it will be necessary also to cover the ventilators with fine galvanised iron or other non-corroding metal wire gauze of mesh not less than 28 to the linear inch. This gauze tends to reduce the effective area for the passage of air and should be allowed for when designing the openings. All ventilators require to be frequently inspected and kept clean and must, of course, be so constructed or protected as to exclude rain without interfering with their normal duties of freely admitting a current of air.

25. *Arrangements in storage buildings.*—Carbide shall be stored only on racks or trestles standing at least one foot above the level of the floor of the building, and no articles of an inflammable or combustible nature shall be kept in the same building.

**Comments by the Chief Inspector of Explosives.**—While it will be observed that the rule does not prohibit the storage of uninflammable articles in a carbide store it is well to remember that any goods so stored greatly increase the responsibility of the licensee particularly in respect of any acts, or absence of precautions, likely to lead to fire or explosion and the possible presence of fires or lights.

26. *Disposal of carbide if wet.*—If any carbide becomes wet it shall be destroyed by being submerged in deep water. If deep water is not available, the wet carbide shall be spread out in the open in an isolated position, and all precautions shall be taken to prevent any fire or artificial light or article capable of igniting acetylene being brought near until the material has given off all its gas.

**Note.**—The fact of carbide having become wet will be indicated by the outward appearance of the drum, and probably by a disagreeable odour, showing a leakage of gas.

**Comments by the Chief Inspector of Explosives.**—When destroying a leaky, but otherwise unbroken, package by dropping it into deep water it is advisable to punch several holes in the receptacle before submerging it.

27. *Precautions by vendor.*—(1) Every vendor of carbide delivering any quantity exceeding half a pound to any person shall deliver it to him in a prescribed receptacle.

(2) No vendor shall open more than one receptacle at a time for the purpose of delivering carbide.

**Notes and References.**—" Prescribed receptacle " is defined in Rule 3 (h).

28. *Children.*—No person under the age of 15 years shall be employed in or allowed to enter any premises licensed under those rules.

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## CHAPTER V.

### *Manufacture of Acetylene Gas.*

29. *Application of Chapter.*—(1) The rules in this Chapter shall be observed by every person holding a licence for the storage of carbide granted under these rules who uses such carbide for the manufacture of acetylene gas.

(2) In this Chapter, apparatus means any appliance for the manufacture of acetylene gas, including all generators and gas-holders and the devices for preventing

the passage of oxygen into the acetylene supply pipes, the pipe lines and the other fittings.

**Comments by the Chief Inspector of Explosives.**—The rules in this chapter refer to the manufacture of acetylene in the common form of low pressure generator, and it should be noted that acetylene when liquid or when under a pressure exceeding 250 inches of water column, that is not quite 9 lbs. per square inch, is an explosive the manufacture, possession and importation of which is, with certain exceptions, prohibited by Government of India, Department of Labour, Notification No. M. 1268 (1), dated the 9th January 1939.

30. *Construction of apparatus.*—(1) The apparatus shall be so constructed that lime sludge cannot gain access to any pipes intended for the passage of gas or the circulation of water.

(2) The use of glass in water gauges, sight boxes, etc., shall be avoided, but where glass is absolutely necessary as part of the apparatus it shall be effectively protected against fracture.

(3) The apparatus shall be so constructed that it is not possible, even by incorrect manipulation of cocks, to seal the generating chamber hermetically.

(4) The air-space in a generator shall be as small as is consistent with the proper working of the apparatus.

(5) No metal containing more than 80 per cent. of copper shall be present in any portion of the apparatus excluding the nozzles of the blow pipes.

(6) The various parts of the apparatus shall be of adequate strength to withstand any pressures that may be generated therein.

(7) The size of the pipes carrying the gas shall be proportioned to the maximum rate of generation, so that undue back pressure from throttling may not occur.

**Comments by the Chief Inspector of Explosives.**—Acetylene under quite low pressures, for example at about 30 lbs. per square inch, has the somewhat unusual property of being able to explode with considerable violence even in the pure state and without the presence of any air or oxygen. For this reason it is necessary to take very great care in the design of a generator to provide against the possibility of any rise in pressure, whether due to the stoppage of a pipe, the closing of a tap, or any other mismanagement or faulty manipulation of the machine. The action of water on carbide produces considerable quantities of lime sludge and the large number of fatal accidents which have occured with home-made generators is sufficient evidence of the case with which it can block up both the gas and water pipes and cause a rapid rise in pressure leading finally to a serious explosion.

31. *Efficiency of apparatus.*—The apparatus shall have an efficiency of at least 90 per cent.

**Comments by the Chief Inspector of Explosives.**—Among other necesssary precautions this rule lays down that the arrangements by which the carbide is fed to the water, or *Vice versa* depending on the type of apparatus in question, is so designed and maintained as to effectively prevent any over production, of gas and consequent discharge into the air. In other words, to comply with Rule 31 an acetylene generator must only manufacture gas as fast as it can be used or stored and must automatically and positively stop generating immediately the gas delivery is closed, or the gas holder is filled.

32. *Temperature of apparatus.*—The temperature of any part of the apparatus, when working, shall not exceed 180° F.

**Note.**—The temperature may be ascertained by placing short lengths of wire, drawn from fusible metal of a suitable melting point in those parts of the apparatus in which heat is liable to be generated.

**Comments by the Chief Inspector of Explosives.**—Any appreciable rise in temperature rapidly increases the risk of explosion. Considerable heat is set free by the action of water on carbide and, unless the generator is properly designed to quickly dissipate the heat thus formed, dangerous rises in temperature can easily take place. Naturally, a badly designed " addition of water to carbide " machine is more liable to give rise to difficulties on this account than the " carbide to water " variety.

33. *Pressure.*—(1) The apparatus used shall not be made to work at a pressure exceeding 60 inches water column :

Provided that, if it be shown to the satisfaction of the licensing authority that a higher pressure is necessary in any generating apparatus and that such higher pressure may be used without danger, the licensing authority may allow the use of higher pressure up to a maximum of 250 inches water column on the condition that the apparatus is fitted with suitable safety devices. A generator operating at a higher pressure than 60 inches water column shall have clearly marked on it the water column at which it works.

(2) In the use of the apparatus, regard shall be had to the danger of stoppage of passage of the gas and a consequent increase of pressure.

**Comments by the Chief Inspector of Explosives.**—60 inches of water column is equal to a pressure of just over 2 pounds per square inch and 250 inches to not quite nine pounds.

Sub-rule (2) clearly lays down that even if the gas supply be cut off or any of the pipes become blocked the pressure in the generator must not exceed 60, or 250 inches water column, as the case may be. An apparatus delivering gas at 2 or 9 pounds per square inch and in which the pressure rises above these figures when the gas is turned off is quite illegal and renders the possessor liable to a heavy fine.

34. *Precautions against escape of gas.*—(1) Adequate precautions shall be taken to prevent any escape of gas from the apparatus.

(2) Gas-holders shall be fitted with blow off pipes carried up to a suitable point in the open air.

**Comments by the Chief Inspector of Explosives.**—This rule is, perhaps, at first sight, somewhat ambiguous but its effect is to necessitate the provision of proper escape or blow-off pipes leading into the open air. The not uncommon type of home-made generator in which an excess production of gas escapes from the apparatus by bubbling through the gas holder water-seal into the generator room is not permissible.

35. *Decomposition of carbide.*—(1) The carbide shall be completely decomposed in the apparatus, so that the lime sludge discharge therefrom shall not be capable of generating more gas.

(2) The apparatus shall give no tarry or other heavy condensation products from the decomposition of the carbide.

**Comments by the Chief Inspector of Explosives.**—The production to tarry or other heavy products during the generation of gas is, generally speaking, a sure sign of too high a temperature in the carbide—water reaction chamber.

36. *Residue.*—(1) An open tank shall be provided in the open air for the reception of all residue from the carbide : and such residue shall remain for at least ten hours in not less than four times its bulk of water in such tank.

(2) Precautions shall be adopted for preventing any lime sludge from being discharged into the drains.

**Comments by the Chief Inspector of Explosives.**—These precautions are necessary to prevent the production of acetylene in dangerous situations in the event of any undecomposed carbide escaping with the sludge discharged from the generator.

37. *Attendants.*—(1) No person shall have charge of an apparatus until he has been properly instructed in its management.

(2) A label or printed card giving fully detailed instructions in the vernacular as to the use of the apparatus and a certificate by the licensee to the effect that the attendant who shall be mentioned by name has been properly instructed as required by sub-rule (1) shall be exhibited on or in close proximity to the apparatus.

## CHAPTER VI.

*Licences.*

38. *Application for licence.*—A person wishing to obtain or to renew a licence to store carbide under these rules shall submit an application in Form A to the authority empowered under rule 39 to grant such licence.

39. *Grant of licence.*—(1) Licences for storage may be granted by the licensing authorities set forth in Schedule I appended to these rules in the forms, for the purposes and on payment of the fees specified therein.

(2) Every licence granted or renewed under these rules shall remain in force until the 31st day of December of the year for which the licence is granted or renewed.

**Comments by the Chief Inspector of Explosives.**— All licences for the storage of carbide to be used by the licensee for the generation of acetylene and all licences for the storage of carbide in excess of 250 lbs. will be granted by the Chief Inspector of Explosives in Pakistan, Karachi.

It will be observed that sub-rule (2) is subject to the provisions of rule 43 (2) in respect of the renewal of a licence.

40. *Particulars of licence.*—Every licence granted under these rules shall be held subject to the conditions endorsed on it and shall contain all the particulars which are contained in the form prescribed for it by these rules.

41. *Power of licensing authority to alter conditions.*—(1) Notwithstanding anything contained in rule 40, the licensing authority may omit, alter or add to any of the conditions specified in the prescribed form of licence.

(2) This power shall not be exercised by any licensing authority other than the Chief Inspector of Explosives.

42. *Amendment of licence.*—(1) Any licence granted under these rules may be amended by the authority granting such a licence provided that the amendments are not in conflict with any of these rules.

(2) A licensee who desires to have his licence amended shall submit it to the licensing authority with an application stating the nature of the amendment and the reasons for it.

(3) The fee for the amendment of a licence shall be two rupees *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 paid for the original licence.

43. *Renewal of licence.*—(1) A licence may be renewed by the authority empowered to grant such a licence provided that a licence which has been granted by the Chief Inspector may be renewed by an Inspector of Explosives duly authorized by the Chief Inspector in this behalf.

(2) Every application for the renewal of a licence shall be made so as to reach the licencing authority not less than 30 days before the date on which the original licence expires, and, if the application is so made, the premises shall be held to be duly licensed until such date as the licensing authority issues the renewed licence

or until an intimation that the renewal of the licence is refused has been communicated to the applicant.

" (2a) Every application under sub-rule (2) shall be accompanied by the licence which is to be renewed together with the approved plan attached thereto and the original treasury receipt showing the deposit of the correct amount of renewal fee under the correct head of account ".

(3) The same fee shall be charged for the renewal of a license as for the grant thereof, provided that if the application for renewal is not received within the time specified in sub-rule (2), the licence shall be renewed only on payment of double the fee ordinarily payable for the licence.

**Comments by the Chief Inspector of Explosives.**—Unless sub-rule (2) is complied with and the application for renewal accompanied with the prescribed fee and license is received by the licensing authority by the beginning of December a licensee cannot receive any supplies of carbide after the 31st day of December of the year for which the licence is current. No exception to this rule is possible. Many thousands of licences are sent for renewal at this time of the year and sub-rule (2) is particularly introduced to avoid any inconvenience owing to delays which may arise in issuing the renewed licence. Persons who fail, for one reason or another, to avail themselves of this provision in the rules cannot expect to receive special consideration at the expense of other persons who have been careful to avail themselves of its privileges.

44. *Refusal of licence.*—(1) A licencing authority refusing to grant, amend or renew a licence, shall record his reasons for such refusal in writing.

(2) A copy of the order containing the reason for such refusal shall be given to the applicant on payment of a fee of two rupees.

45. *Cancellation of licence.*—(1) Every licence granted under these rules shall be liable to be cancelled by the authority, granting such a licence for any contravention of the Act, or of any rule made thereunder, or of any condition contained in such licence.

(2) The authority cancelling a licence shall record his reasons for so doing in writing.

(3) A copy of the order containing the reason for the cancellation of a licence shall be given to the holder of the licence on payment of a fee of two rupees.

46. *Appeals.*—(1) An appeal shall lie against any order refusing to grant, amend or renew a licence or cancelling a licence—

(*i*) to the Central Government when the order is passed by the Chief Inspector;

(*ii*) to the immediate official superior to the District Authority if the order passed by the District Authority;

(*iii*) to the Chief Inspector if the order is passed by an Inspector of Explosives.

(2) Every appeal shall be in writing and shall be accompanied by a copy of the order appealed against and shall be presented within 60 days of the order passed if preferred to the Central Government, and within 30 days in all other cases.

47. *Transfer of licence for storage.*—(1) The holder of a licence for the storage of carbide may, at any time before the expiry of the licence, apply for permission to transfer his licence to another person.

(2) Such application shall be made to the licensing authority who shall, if he approves of the transfer, enter upon the licence, under his signature, an endorsement to the effect that the licence has been transferred to the person named.

(3) A fee of two rupees shall be charged on each such application.

(4) The person to whom the licence is so transferred shall enjoy the same powers, and be subject to the same obligations under licence as the original holder

48. *Procedure on death or disability of licensee.*—(1) If a licensee dies or becomes insolvent or mentally incapable or 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 by the licence 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.

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

49. *Loss of licence.*—Where a licence granted under these rules is lost or accidentally destroyed, a duplicate may be granted on payment of a fee of five rupees.

50. *Payment of fees.*—(1) Every application under this Chapter shall be accompanied,—

(*i*) if in respect of a licence granted or to be granted by the District authority by the appropriate fee in cash or by cheque, and

(*ii*) if in respect of any other licence, by a Treasury receipt showing that the appropriate fee has been paid into the local Treasury under the head of account "XXXVI—Miscellaneous Departments, (Central) Miscellaneous, Explosives".

(2) If an application for the grant, renewal or amendment of a licence is rejected, the fee paid shall be refunded by the District Authority or, if it has been paid into a Treasury, by that Treasury on the production of a signed order from the licensing authority directing such refund.

51. *Power to exempt from payment of fees.*—The Central Government may, by general or special order, grant exemption from, or reduction of, any fee payable under these rules.

52. *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 Inspector.

(2) Copies of any licence may, for the purposes of this rule, be authenticated free of charge by the authority which granted the licence.

53. *Executive control over authorities.*—Every authority other than the Central Government acting under this chapter shall perform his 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 Inspector over the Officers subordinate to him.

54. The District Authority shall inform the Chief Inspector of Explosives of the action taken by him on any report of infringement of these rules which the Chief Inspector may make to him.

## SCHEDULE I.

*Licences* (vide *Rule* 39).

| Article No. | Form of Licence (See Schedule II). | Purpose for which granted | Authority empowered to grant licence | | Fee |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | | 5 |
| | B | To store carbide in quantity not exceeding 250 pounds at any one time, provided the carbide is not to be used by the licensee for the generation of acetylene. | The District Authority. | (*a*) When the quantity to be stored does not exceed 1,000 pounds. | Rs. 8. |
| | | | | (*b*) When the quantity to be stored exceeds 1,000 pounds but does not exceed 5,000 pounds. | Rs. 8 for the first 1,000 pounds *plus* Re. 1 for every additional 1,000 pounds or part thereof. |
| 2 | C | To store carbide in all other cases. | The Chief Inspector. or an Inspector of Explosives duly authorized by the Chief Inspector in this behalf. | (*c*) When the quantity to be stored exceeds 5,000 pounds but does not exceed 75,000 pounds. | Rs. 12 for the first 5,000 pounds *plus* Rs. 2 for every additional 1,000 pounds or part thereof. |
| | | | | (*d*) When the quantity to be stored exceeds 75,000 pounds. | Rs. 180. |

## SCHEDULE II.

### FORMS

### FORM A.

(*See Rule* 38).

*Application for the grant/renewal of a licence to store Carbide of Calcium.*

| | |
|---|---|
| 1. *Applicant's Name<br>,, Profession<br>,, Address | **The replies to be written in this column.** |
| 2. Situation of building in which carbide is to be stored.<br>Province<br>District<br>Town or village<br>Locality | |

3. Quantity of carbide proposed to be stored.

4. Form in which licence is required.

5. Quantity of carbide already stored, if any, on the premises.

6. Is the carbide for use or for sale unopened in the receptacles in which it is received, and, if not, what wil be done with it?

In what receptacles will the carbide be kept, what is the capacity of the same, how are they closed against moisture? and of what material are they made,

7. In what part of the building will the carbide be kept? How are the premises constructed? Are the premises used for other purposes, and, if so, for what purposes?

Is the carbide to be used for the manufacture of acetylene gas? How is the generator constructed, and what is its capacity? Give sketch.

Give particulars as to the building in which the generator will be placed, and state whether it is detached from other buildings, and whether it is used for other purposes. How is it proposed to dispose of the residue? Will the generator be in the sole charge of a person competent to manage it?

Remarks.

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Signature of the applicant.

Postal address of the applicant.

Date of application.

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*In cases where the application is made on behalf of a company, the name and address of the company and the name of the manager or agents should be given.

**Comments by the Chief Inspector of Explosives.**—Much correspondence will usually be saved if this application for a licence is accompanied by a site plan showing the position and construction of the store and of the generation house and the distances that can be observed from other buildings, roads, etc.

## FORM B.

(Article 1 of Schedule I).

*Licence to store Carbide of Calcium, not to be used by the licensee for generating acetylene gas, in quantity not exceeding* 250 *pounds at any one time.*

No. Fee Rs.

Licence is hereby granted to

valid only for the storage of pounds of Carbide of Calcium in the building described below, subject to the provisions of the Petroleum Act, 1934, and the Carbide of Calcium Rules, 1937, and to the further conditions on the back of this licence.

This licence shall remain in force till the 31st day of December 19 .

*The* 19 . *District Authority.*

*Description of the building referred to above.*

| Date of renewal | Date of expiry | Signature of licensing authority |
|---|---|---|
| | | |

This licence is liable to be cancelled if the licensed premises when inspected are not found conforming to the description and conditions attached hereto and contravention of any of the rules and the conditions under which this licence is granted is also punishable with fine which may extend to five hundered rupees for a first offence and which may extend to two thousand rupees for any subsequent offence.

*Conditions of licence.*

1. If the licensing authority calls upon the holder of the licence, by notice in writing, to execute any repairs to the building licensed which may, in the opinion of such authority, be necessary for the safety thereof, the holder of the licence shall execute the repairs within such period, not being less than one week from the date of receipt of the notice, as may be fixed by the notice.

2. Subject to the provisions of rules 19 (3) and 21, the licensee shall not deliver any quantity of Carbide of Calcium exceeding twenty-eight pounds to any one who has not a licence to store Carbide of Calcium or any quantity of Carbide of Calcium exceeding half a pound, except in accordance with the rules as to the manner in which the Carbide is to be packed.

3. Only one receptacle containing Carbide of Calcium shall be opened at a time and only for the time necessary for the removal of the Carbide required or for the refilling of other receptacles. During such removal or refilling every reasonable precaution shall be adopted for preventing moisture being brought into contact with the Carbide of Calcium, as well as for guarding against the risk of ignition of any gas which may be liberated.

4. Every storage receptacle of a greater storage capacity than two pounds shall be secured with a lock or be kept in a locked receptacle, so as to prevent unauthorised person having access to the contents.

5. Due precautions shall at all times be taken for the prevention of accidents by fire or explosion and no smoking, fire or artificial light or article capable of igniting acetylene shall be permitted at any time within or near the building in which the Carbide is stored.

6. Free access to the licensed premises shall be given at all reasonable times to any Inspector or sampling officer and every facility shall be afforded to an Inspector to ascertain that the rules and the conditions of this licence are duly observed and to a sampling officer to inspect and take samples for testing of any carbide.

7. Any accident, fire or explosion occuring within the licensed premises, which is attended with loss of human life or serious injury to person or property shall be reported to the nearest Magistrate or to the officer-in-charge of the nearest Police Station immediately and by telegraph or telephone where such means of communication are available.

8. No acetylene gas shall be generated in the licensed building.

FORM C.

(Articles 2 of Schedule I.)

*Licence to store Carbide of Calcium.*

No. Fee Rs.

Licence is hereby granted to valid only for the storage of pounds of Carbide of Calcium at any one time in the building described below subject to the provisions of the Petroleum Act. 1934, and the Carbide of Calcium Rules, 1937, and to the further conditions on the back of this licence.

This licence shall remain in force till the 31st day of December 19 .

*Licensing Authority.*

*The* 19 .

*Description of the building referred to above.*

| Date of renewal | Date of expiry | Signature of licensing authority |
|---|---|---|
| | | |

This licence is liable to be cancelled if the licensed premises when inspected are not found conforming to the description and conditions attached hereto and contravention of any of the rules and the conditions under which this licence is granted is also punishable with fine which may extend to five hundred rupees for a first offence and which may extend to two thousand rupees for any subsequent offence.

*Conditions of licence.*

1. If the licensing authority calls upon the holder of the licence, by notice in writing, to execute any repairs to the building licensed which may, in the opinion of such authority, be necessary for the safety thereof, the holder of the licence shall execute the repairs within such period, not being less than one week from the date of receipt of the notice, as may be fixed by the notice.

2. Subject to the provisions of rules 19 (3) and 21, licensee shall not deliver any qunatity of Carbide of Calcium exceeding twenty-eight pounds to any one who has not a licence to store Carbide of Calcium or any quantity of Carbide of Calcium exceeding half a pound, except in accordance with the rules as to the manner in which the Carbide is to be packed.

3. Only one receptacle containing Carbide of Calcium shall be opened at a time and only for the time necessary for the removal of the Carbide required or for the refilling of other receptacles. During such removal or refilling every reasonable precaution shall be adopted for preventing moisture being brought into contact with the Carbide of Calcium, as well as for guarding against the risk of ignition of any gas which may be liberated.

4. Every storage receptacle of a greater storage capacity than two pounds shall be secured with a lock or be kept in a locked receptacle, so as to prevent unauthorised persons having access to the contents.

5. Due precautions shall at all times be taken for the prevention of accidents by fire or explosion and no smoking, fire or artificial light or article capable of igniting acetylene shall be permitted at any time within or near the building in which the Carbide is stored.

6. If Carbide of Calcium is used for the manufacture of acetylene gas, the following precautions for ensuring safety shall be adopted :—

(*a*) every apparatus for generating and storing acetylene gas other than a portable apparatus holding a charge of less than two pounds of Carbide shall be situated in an outbuilding, or in a suitable place in the open air;

(*b*) such apparatus shall be as far away as may be practicable from dwellings and, if in a building, such building shall be well ventilated and not used for any other purpose;

(*c*) no fire, flame or artificial light or article capable of igniting acetylene gas shall be taken into or near the building or place where the apparatus is situated;

(*d*) where an acetylene generator is used for oxy-acetylene welding or cutting, an efficient device shall be provided for preventing the passage of oxygen into the acetylene gas supply pipe; a separate device shall be provided for each blowpipe. Each such device must be kept in proper working order and shall be placed in a position, or be so protected that in the event of an explosion in the device, there would be no risk of injury to any person in the vicinity; and

(*e*) the rules relating to the manufacture of acetylene gas shall be observed.

7. Free access to the licensed premises shall be given at all reasonable times to any Inspector or sampling officer and every facility shall be afforded to an Inspector to ascertain that the rules and the conditions of this licence are duly observed and to a sampling officer to inspect and take samples for testing of any carbide.

8. Any accident, fire or explosion occuring within the licensed premises, which is attended with loss of human life or serious injury to person or property shall be reported to the nearest Magistrate or to the officer-in-charge of the nearest Police Station immediately and by telegraph or telephone where such means of communication are available.