



Kingdom of Saudi Arabia
Ministry of Interior
General Directorate of Civil Defense

Regulation of Safety Conditions in LPG Selling and Storing businesses, their Means of Transportation and LPG tanks

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Chapter 1

1st. Definitions:

The terminologies included in this Regulation have the following meanings:

1. Liquefied petroleum gases:

Light hydrocarbons produces from the refining of crude oil and the processing of natural gas. The most common types used as fuels are butane, propane, butelin and propylene, which are liquefied under high pressure and stored in cylinders or tanks designed for this purpose. They directly transformed into a gaseous state state once they leak out of their containers.

2. Law:

Civil Defence Law issued by Royal Decree No. 10 and dated 10/5/1406 H and all other relevant laws.

3. Regulation of inspections, forfeiture, investigation, and penalties:

The regulation issued by HRH, the Minister of the Interior, and the president of the Civil Defense Council to determine the procedures of inspection, forfeiture, and investigation of violations and misuses related to Civil Defense works and the penalties imposed on them.

4. Civil Defense Representative:

The authorized person or persons by the General Directorate of Civil Defense, or one of its centers to carry out inspection, forfeiture, and investigation of violations as per the rules and procedures specified in the relevant Regulation, to ensure the safety of the building, and safety of firefighting equipment and tool, and to impose the penalty stipulated.

5. The Relevant authority: the Ministry of Interior, the General Directorate of Civil Defense and other public authorities involved in the process of licensing the establishment and its business.

6. Safety Officer:

The person appointed or assigned to be responsible for all safety and security matters. The licensee is responsible for safety in all cases.

7. Approved Standards:

- a) Saudi Standards: issued by the Saudi Standards, Metrology, and Quality Organization, SASO.
- b) International specifications: In the absence of Saudi standards, the United States of American or European Standards shall be considered. If the equipment or material is manufactured in other countries (other than US or EU countries), in that case the specifications must be confirmed by the manufactured countries' relevant authorities. A document must be submitted to prove the availability of all safety rules in equipment or material used in all cases.

2nd.

According to article (20) of the Civil Defense Law, the licensee shall not be permitted to establish any facility engaged in the sale or storage of liquefied petroleum gases, renewing, renovating or expanding the existent one until he submits a technical study prepared by one of the technical offices specialized in safety and alarm and fire control works and approved by the General Directorate of Civil Defense. This study explains the extent of compliance with the rules mentioned in this regulation. The current related stores are allowed for a period of one year from the time of issuing this Regulation, and it can be extended by decision of the region's governor and according to the discretion of the Civil Defense. This is to implement the requirements and instructions stipulated in this Regulation.

3rd:

The office that prepared the study mentioned above have to answer to the Civil Defense and other relevant authorities about the accuracy of the study and monitoring its implementation. The office will undertake to provide a final certificate confirming the compliance with the terms and conditions included in this study. The office shall be considered responsible in solidarity with the licensee for any default or neglect in this regard. Civil Defense representative after reviewing the application and visiting the site or shop required license for, should prepare a report of safety and firefighting requirements as per this Regulation. Factors such as shop size, type of business required license for, the potential risks of tools and machines, and the other considerations that may affect the safety requirements and means of fire suppression should be considered. The relevant authority in the municipalities should consider that granting or renewing a license is conditioned with Civil Defense above mentioned report.

4th:

The person in charge of the safety in the gas shop is responsible for conducting monthly inspections and periodic tests (every three months) for the facility and its equipment, and for safety methods and equipment and firefighting, and must repair any defects or malfunctions immediately. He shall not be relived from responsibility, even if he is not the licensee or the tenant, unless it is proven that he has performed all the inspections and tests and that this malfunction is outside his jurisdiction and he has informed the relevant authorities of the situation.

5th:

It is the responsibility of the safety officer at gas cylinders shops to inspect the cylinders and ensure their safety before storage and sale. In case of any defect or leakage, damaged cylinders should be removed and returned back to the company. It is imperative to make sure that there is no gas leakage before starting any activities. In addition, safety officer shall

monitor the transportation and storage process as per the instructions and conditions stipulated in this Regulation.

6th:

When installing liquefied gas tanks, the gas company must adhere to all scientific and practical safety requirements. These tanks should be checked regularly to ensure they are safe to use. In case the liquefied gas's tank and its pipelines are not suitable for use, owner and Civil Defense must be notified immediately to make sure not to use them until being replaced or fixed. Safety worker should check daily the liquid gas's tank and its pipelines to ensure that they are usable and there are no leaks or problems.

7th:

The safety officer shall assign a register called (safety and firefighting record) according to the application form prepared by Civil Defense. All pages are stamped with the seal of the Civil Defense. All the monthly inspections and periodic tests of fire, monitoring, alarm methods, the dates, results, repair works and other data are recorded in this register. Part of this record is dedicated to the building inspection and maintenance works and the building's electrical installations. The record must be kept within the gas shops management so that the register is at the disposal of Civil Defense representative at all times to view and write notes, fines in it.

8th:

The safety officer at gas shops may inform the relevant Civil Defense center to choose a suitable date to attend the tests. Civil Defense representative will sign the safety record as a proof of attending.

9th:

All workers must be trained on fire & rescue, and ambulance in schools and national training institutes approved by the General Directorate of Civil Defense, or coordinate with Civil Defense in case these schools or institutes are not available in order to conduct these courses. The training requesting party bears the costs of such, or its share of the course costs based on the cost of one trainee.

10th:

The safety officer shall monitor the extent of compliance with the safety requirements stipulated in this Regulation and coordinate with the competent Civil Defense center regarding the development of an evacuation, intervention and extinguishing plan, and determine the procedures that workers must follow in emergency situations until the arrival of the Civil Defense.

11th:

The safety officer at the facility must undertake to place instruction signs according to the design adopted by the Civil Defense, to prohibit smoking, ban any source of fire ignition, and point to exits and escape routes and publish safety instructions.

Chapter 2

Fire Safety and Prevention Conditions

Part 1:

LPG selling and storing businesses, their means of transportation

1st: Location and building:

The following conditions must be met in the place designated for selling and storing LPG cylinders:

1. Municipalities are responsible for issuing licenses for LPG cylinders shops in according to city's planning and citizen's needs after fulfilling the safety and fire protection requirements of the Civil Defense stipulated this regulation.
2. Municipalities shall undertake to set all construction conditions, electrical and mechanical installations as per the approved standards.
3. Due to the nature of the risks, these stores must be at least 10 meters away from any flammable materials, and 25 meters from public places such as mosques, hotels, cafes and restaurants, as well as places that use flame sources such as ovens, boilers and the like. The municipality must obtain the opinion of the civil defense before proceeding with the license application.

4. The window of the gas shop should be on a wide street and road to allow passage and access of gas cylinders carrying-trucks, and the large vehicles of firefighting and other public services.
5. The shop should not contain flammable materials, stoves, heaters, or heat sources. Smoking is strictly prohibited and warning signs and instructions must be placed in visible places throughout the shop.
6. The floor of the shop should be coated with a soft, not hard, material that does not cause sparks, such as clean fine sand.
7. The floor of the shop should not contain any holes, openings or sewers.
8. The building to which the gas store is attached must be independent and not part of a building.

2nd: Ventilation:

1. Natural ventilation:

- Natural ventilation must be provided through windows, openings and doors so that it is sufficient to continuously replenish the shop's air.
- The area of the vents is not less than 12% of the total area of the walls and ceiling.
- Windows and air vents are fitted with a metal guard to protect them and a narrow wire mesh prevents any sparks from entering
- The air vents are distributed throughout the shop to achieve adequate ventilation.

2. Mechanical ventilation:

In addition to the natural ventilation which is a mandatory, the mechanical ventilation can be used to be designed and installed in accordance with Saudi Arabian specifications.

3rd: Lighting and electrical installation:

All electrical and mechanical equipment and services must be designed and installed with the supervision of the relevant authorities and according to Saudi standards issued by SASO, the following must be considered:

1. All installations must be of suitable types and diameters, well isolated and protected against wear & tear, high current.
2. Ground connections must be provided for electrical appliances and installations that require these connections as per Saudi Standards.
3. Service openings should be closed with protective barriers.
4. Appropriate and secure power breakers must be provided against the dangers of electric arch and shortage.
5. Heating appliances with strength of 1,000 kilos are installed inside dyke made of non-flammable material.
6. Lighting should be sufficient throughout the shop; lamps installed must be of non-explosive types, placed inside glass. The use of suspended lamps is prevented.
7. A backup light source must be provided in the gas cylinders shops to supply light continuously to all escape paths and exits, to be of automatic type when the main power is outage.
8. All electrical wiring and installations must be performed by a specialized technical body. Monitoring and maintenance should be carried out on a regular basis by a professional technician to ensure its safety and avoid any potential defects.

4th: Means of egress:

1. A number of 2 exits access should be provided in the retail store to easy use in emergency situations. Exits increase according to the size of the shop and the number of workers, and after consulting the Civil Defense.
2. Exits access should lead to an escape route that provides a means of travel to a safe location outside the retail store.
3. Exit access width not less than 130 cm.

5th: Storage, Distribution and Handling of Gas Cylinders:

A. Storage of cylinders:

- Gas cylinders must be stored inside the retail store and not outside.



- Gas cylinders should be stored in an upright position with the valve on top and in rows separated by corridors that allow easy reach.
- Full and empty cylinders should be stored separately in clearly marked areas. – It is forbidden to refill gas cylinders and recharge lighting devices in gas stores. These operations are performed in the designated area by the approved entity.
- The public is not permitted to enter the storage areas.
- Cylinders should be stored on flat ground.
- It is forbidden to store any other materials with cylinders.
- It is forbidden to roll cylinders and they should be handled carefully.
- Workers must be qualified and trained in safety work, dealing with gas cylinders and facing the resulting risks.

B. Handling and Distribution:

- Cylinder valves must be secured with the protective caps permanently installed on them.
- Loading and unloading should be performed carefully.
- Distribution workers must deliver full cylinders and return the empty ones.
- It is imperative to make sure, before installing and testing cylinders, that there is no source of ignition.
- Smoking is strictly prohibited during loading, unloading and distribution.
- It is forbidden to use a flame in a cylinder leak test; instead a soap liquid intended for this purpose should be used.

6th: Firefighting Equipment:

1. The shop must be equipped with a number of multi-purpose dry chemical powder fire extinguishers according to the size of the store and the quantity of stored cylinders. A fire extinguisher (12 kg) should be allocated for every 20 cylinders.



2. The shop must be equipped with fire hose reels. There must be one hose reel per 100 square meters of space or less, and the distance between this and the farthest point in the shop should not exceed 15 meters. The hose should be 20–30 meters long, 1–1.50 inches in diameter, and connected to a water spray ejector to cool the cylinders if needed. These hose reels are fed from general fire water lines or from a water tank with a pressure machine permanently connected to the hose reels.
3. Firefighting equipment should be distributed in suitable places to be easily use when needed. In addition, regular maintenance must be carried out to ensure their readiness.

7th: Additional Equipment:

- a) The shop should be equipped with a first aid box that contains the appropriate medical materials.
- b) Protective gas masks should be provided for use when needed by trained and good health workers.

8th: General Requirements:

1. The shop must be provided with means of communication (phone service) and signs with Civil Defense and other emergency services numbers.
2. The licensee/ shop owner should issue invoices to the customers to return cylinders in case of any defects.
3. The National Gas Company shall undertake to deliver LPG cylinders to authorized retail shops only.
4. The National Gas Company is responsible for the type of LPG inside the cylinders and its compliance to Saudi standard specifications.
5. The cylinders are painted in a uniform color. The approved color in Saudi Arabia is silver.



Chapter 2

LPG Transportation

LPG cylinders are transported from the refilling plants to the retail stores by trucks equipped for this purpose and owned by the National Gas Company. The following conditions must be met in the aforementioned means of transport:

1. The vehicle superstructure must be durable, tightly mounted on the chassis and specially designed to hold the cylinders in position.
2. The vehicle bed is equipped with the metal sides and suitable webbing straps to secure cylinders safely during movement .
3. If trailers are used, ensure the safety of towing and fastening equipment and brake connections.
4. Vehicle batteries should be of a good type.
5. Vehicle brakes should be firm and solid.
6. Vehicle should be provided with grounding tool.
7. The exhaust must be equipped with spark arrestors.
8. Front and back of the vehicle should be equipped with adequate warning lights.
9. The vehicle must be equipped with an electrical circuit breaker next to the driver that separates the electrical cycle from the vehicle in the event of an increased load on the roads.
10. The vehicle is equipped with warning signs and phrases indicating its dangers.
11. The vehicle is equipped with two dry chemical powder fire extinguishers (12 kg) mounted firmly on racks.
12. Gas cylinders are stacked upright with valves on top in the designated places.
13. Vehicles carrying gas cylinders are prohibited to park on public streets, except for the period designated for loading and unloading.
14. Smoking is strictly prohibited during loading, unloading and transporting. Public streets except for the period allocated for loading and downloading.



15. The vehicle must be technically inspected before each use to ensure the integrity of all its equipment.

Chapter 3

Instructions and Conditions for Installing Residential Gas Tanks

1. It is completely prohibited to place the gas tank outside the walls of the building in any respect.
2. LPG tank must be mounted on a gas tank concrete pad with outriggers.
3. If the tank is installed above the ground, it should be located in high area to prevent the accumulation of gases.
4. In case LPG tank is installed underground, it should be located in a waterproof room made of cement. The tank should be coated with anti-rust material. The tank is covered with soft sand and then an armed concrete slab must be placed on it so that only the filling and discharge group, safety valve and liquid level gauge should appear only from the tank, to be secured inside a locked box.
5. The minimum distance between the tank and the nearest buildings should be 3 meters for tanks with capacity (1001 to 2000 liters), 7.50 meters for tanks of capacity (2001–7500 liters), and 15 meters for tanks of capacity (7501 liters and above).
6. The minimum distance between these tanks and flammable liquid tanks power station (transformers) should be 6 meters.
7. A grounding device must be installed to provide protection against the static electrical charges on the body of tanks with a capacity of more than 2000 liters.
8. All gas tanks in residential buildings with a capacity of 1001 liters or more must be equipped with a pressure relief valve, the capacity of which depends on the size of the tank. The valve base should be connected directly to the gas tank or the upper valve nozzle should directly be attached to the gas tank, while the upper valve nozzle is provided with a cover to protect it from dust and other unwanted things and does not affect the discharge capacity of the valve.

9. The provision of an umbrella, white color, with suitable height protects the tank from sunlight. Water spray to keep the umbrella cool during summer days especially after filling the tank.
10. Gas pipelines are preferable to be underground to be protected against the risk of collisions, vehicle passage, and static electricity. However, pipes should be isolated to be protected against corrosion.
11. Gas pipelines shall be painted in an orange color that distinguishes them from the water pipes as well as the valve. The direction of gas flow in pipelines is indicated by arrows, and each floor or section that uses gas must have its own valve. In the processing of each floor, plant or section of the sections that use gas in a special gas lock.
12. Gas pipelines must be made of galvanized carbon steel or copper and not of plastic. Teflon tape is used to seal pipe threads. However, the use of fibers is not allowed as this will lead to gas leakage.
13. Gas pipelines must be inspected using air pressure up to 3 kg/cm² and Pressure gauge should be noticed. Water and soap should be used as a method to detect any leaks for a period not less than half an hour.
14. Tanks containing gas should be in white. The phrase (compressed liquid petroleum gas, flammable) should be written in Arabic and English.
15. When gas leaks from the tank pipelines or openings, the main valve must be closed, the company should be notified immediately. People must be warned, and all precautions must be taken to remove the sources of flames until the company's representative attends.
16. When a gas leak is suspected in the kitchen, it is necessary to quickly close the main valve of the tank immediately, open windows and doors and not ignite any flame or touch any of the electrical switches and keys.
17. Tanks of 1001 liters and above must be equipped with a liquid level scale. The change in pressure and temperature must be considered when designing the scale.
18. It is imperative to avoid grease or oils on tank valves, or that any foreign objects usually get stuck in the vents and cause the valves to loosen, which usually leads to gas leaks.

19. Tanks should be kept away from sites of acids and other substances.
20. A certificate from the tank manufacturer proves that hydrostatic test is performed at a pressure of one-and-one-half times the maximum working pressure. This test should be performed again in case of any weld repairs have been made. All repair work should be mentioned in the certificate. However, repairs should only be performed by technical firms qualified in this business.
21. The approval of the National Gas and Manufacturing Company shall be obtained regarding the technical safety of the tank and its pipelines. The company must not supply LPG tanks that do not meet the requirements.
22. Tanks shall be equipped with a pressure gauge with a reading of more than 50% of the normal operating pressure. The face of the gauge should be white and readable from a distance and be highlighted in red to show the maximum allowable pressure.
23. In the event of a gas leak, it must be stopped from accumulating in low areas as it is dangerous and must be ventilated.
24. Gas tanks in educational facilities such as universities, schools, public and industrial facilities, etc., should be out of students' reach and away from places designated for sport activities and break times. the tank should be placed in a room specially designed and with ventilation from the top and sides, covered with fine wire mesh, with holes at the bottom covered with wire mesh that allows ventilation and prevents the entry of unwanted things. The room has a constantly closed door that is only opened by responsible persons.
25. The use of liquid solutions and oil to clean the tank should be prohibited and people should be warned.
26. It is preferable to keep tanks away from prefabricated buildings by additional distances.
27. It is recommended to use manual fire extinguishers appropriate to the size, uses, and pipelines of the gas tank. A dry chemical powder (12 kg) fire extinguisher or a 24 kg wheeled fire extinguisher is used, making sure to carry out regular maintenance of fire extinguishers and check fire materials constantly.

Chapter 4

Precautions should be taken in case of gas leak

1. Heat sources must be kept away from the leakage area.
2. Gas sources must be shut down immediately when possible.
3. The Civil Defense Centre should be immediately notified.
4. The power supply must be shut down.
5. Persons in the place must be evacuated.
6. Upon the arrival of Civil Defense forces and public services, they must be provided with the necessary assistance and information to control the leak quickly.

Regulation Amendments

The addition of two paragraphs to the first section of the second chapter of the Regulation as follows:

1. Gas shops are not allowed to be established on main and important roads used by official motorcade within cities. The Ministry of Municipal and Rural Affairs and Civil Defense should not authorize the establishment of such shops and amend them in their regulations and requirements.
2. Gas shops are not allowed to be set up near government facilities and the distance should be not less than 25 meters.

