



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

Regulation of Safety Requirement and Means of Protection in Storage Warehouses

Translated by: Fasial Refaee

2024 – 1446



Chapter 1

1st: Definitions: The terms in this list mean:

1. Storage warehouses:

as per the provisions of this regulation, storage warehouses are buildings or parts of buildings designated for storing carbon or solid materials, whether they are raw materials, manufactured or semi-manufactured materials. While the areas designated for storing hazardous materials such as chemicals, various medicines, petroleum liquids, LPG, firecrackers, radioactive materials, refrigerated warehouses, etc. have different considerations and require special protective needs regulated by the relevant regulations for each type of material. Therefore, it is imperative to consult the General Directorate of Civil Defense regarding these and similar materials to determine the relevant regulations and instructions that must be implemented.

2. The Law:

Civil Defense Law issued by the Royal Decree No. M/10 and dated 10/5/1406 H and all other relevant regulations.

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 tools.



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.

6. 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

The license shall not be issued for any of the storage activities subject to this regulation, whether the place intended to use for the aforementioned purpose is independent or attached to other facility unless a technical study prepared by one of the technical offices is submitted. This office shall be concerned with firefighting, industrial safety and security works, and is approved by the General Directorate of Civil Defense. The study clarifies the extent of adherence to the requirements and specifications contained in this regulation. It also gives the existing warehouses, at the time of issuance this regulation, a time limit not exceeding 6 months, to be extended, in order to implement the requirements and instructions stated in this regulation. The competent authorities in the municipalities must take into account that granting or renewing the license is in accordance with this regulation, and they must take into account that the issuance of the electrical permit is conditional on the approval of the civil defense to ensure that the safety and firefighting means are ready and installed.

3rd:

The office that prepared the aforementioned study has to answer to the Civil Defense and other relevant authorities in regard to accuracy of the study and monitoring its implementation. The office will undertake to submit a final certificate confirming the warehouse compliance to the instructions and specifications contained in this regulation. The office shall be considered responsible in solidarity with the license applicant for any default or neglect in this regard.

4th:

The licensee should be responsible for safety in the warehouse (and has the right to appoint a safety officer). He shall be accountable for implementing the Regulation of duties and responsibilities of the safety officer issued by His Highness the Minister of Interior and Chairman of the Civil Defense Council. He shall be directly accountable for conducting the monthly inspection and the periodic testing every (3 months) of the concerned establishment and its mechanical and electrical installations, safety means, firefighting equipment, and promptly repairing any malfunction.

5th:

The licensee (safety responsible) undertakes in the event of any accident involving a high degree of risk to try and isolate or stop the source of danger immediately and to evacuate workers from the dangerous areas in the building and to contact Civil Defense center immediately to consider the procedure that must be taken.

6th:

The licensee (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 relevant Civil Defense Center. 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

7th.

All workers in the warehouses must be trained on the fire & rescue, and ambulance in schools and national training institutes approved by the General Directorate of Civil Defense provided that the training requesting party bears the costs of such.

8th:

One or more workers trained in safety and firefighting work should be assigned to monitor the warehouse on non-working hours and holidays. To be well trained to take the necessary steps in emergency situations until the arrival of the civil defense teams.

9th.

The licensee (safety officer) shall coordinate directly with the competent civil defense center to develop an intervention and firefighting plan to be implemented in emergency situations. He shall also train the workers to take the necessary measures until the arrival of the Civil Defense teams.

10th.

The safety and prevention requirements contained in this regulation represent the minimum that must be considered in the warehouses subject to this regulation. Therefore, they must be strictly implemented without violating any condition. Moreover, the Director General of Civil Defense, by a decision according to his assessment of the risks of the presented situation, may add some new conditions and requirements to this regulation.

11th.

The Civil Defense Committee, within its local jurisdiction boundaries, may exempt the warehouses located on roads far from urban areas from one or more conditions set forth in this regulation and in conditioned that this exemption will not constitute any violation of the safety of warehouses and employees.



Chapter 2

Safety, Prevention and Firefighting Conditions

The first part of this chapter presents safety, prevention and firefighting conditions in the warehouse subject of this regulation. While the second part discusses safety rules and requirements must be adhered to during the storage processes.

1st:

Fire safety, Fire prevention and firefighting conditions in warehouses

1. Location and building:

- a) The location of warehouse buildings must be at a safe distance from the boundaries of neighboring buildings in accordance with the requirements of municipalities and related entities. There must be sufficient distance separating them from unsafe shops as per Civil Defense requirements and after inspecting the site. Moreover, consideration should be given to establishing major warehouses outside the residential, industrial and commercial areas, and within the areas that may be determined by the authority concerned with urban planning and beautification. However, Municipalities, as the licensing authority, before granting a license, must ensure that all requirements are met and that the approvals of the relevant bodies are obtained.
- b) Entrances and roads leading to the warehouse must be paved with sufficient width to allow the passage of Civil Defense large vehicles.
- c) All storage warehouses must be constructed from non-flammable materials and resist high thermal loads.
- d) The warehouses floors need to be sloped/inclined to allow drainage of fire water into the regular drain.



2. The structural integrity and fire spread prevention:

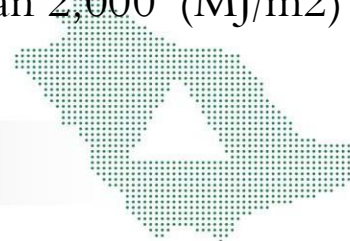
- a) The structural components of the building and external walls must be non-flammable and fire-resistant according to technical and engineering specifications issued by the competent authorities such as the municipality and SASO.
- b) The external cladding of the building walls shall not be less than Class (A) of non-flammable materials.

3. Types of Warehouse:

- a) Warehouses are divided into three types:
- a) Major or independent warehouses: built in an isolated independent building specifically designed for storage.
- b) Warehouses that are part of a group of buildings attached to the factory:
- c) If creating an independent warehouse is impossible, advice should be sought from Civil Defense to ensure that all safety rules are met. After obtaining the approval, the warehouses must be separated from the rest of the buildings by fire-resistant walls for a period of not less than two hours.
- d) Intermediate warehouses:
- e) They are subsidiary warehouses and are called service warehouses, which are established inside the production building and are supplied with raw materials from the main warehouses to ensure the continuation of the manufacturing process for a limited period of time.

4. Classification of warehouses in terms of their potential exposure to fire risks:

- a) Storage warehouses with a fire load of no more than 2000 (MJ/m²) of floor area and considered as medium-risk.
- b) Storage warehouses with a fire load of more than 2,000 (MJ/m²) of floor area and considered as extremely-risk.



- c) Storage warehouses with high shelves exceeding eight meters high, which poses some difficulties in extinguishing the fire accident. Therefore, intensification of preventive precautions and firefighting equipment and tools must be considered in the last two types.
- **Fire load:** The contents of the storage building of flammable materials and movable items. The international measuring unit of fire load is MJ/m²) of floor area.

5. Warehouse compartmentalization:

The storage buildings with large sizes and spaces are sub-divided into various fire compartments aimed at limiting the spread of fire. These compartments can be separated by fire-resistant walls and fire-resistant floors in case of multi-story building. Doors and windows of these compartments must be fire-resistant and self-closing in the event of a fire. It is preferable that each compartment have one type of stock in order to prevent the overlapping of various types of risks. Packaging and unloading areas must be separated from the rest of the warehouse by fire-resistant walls to prevent them from any source of fire.

6. Lighting and Electrical extensions:

- All electrical installations must be of the safe types, anti-thermal radiation and explosion proof insulation, comply with technical specifications issued by SASO.
- Flam light bulbs or hanging bulbs must not be used in warehouses. All lights must be glass enclosed.
- Electrical installations and extensions should be within insulating tubes. The installations should contain a general breaker used after the end of work shift in addition to the sub-breakers for different sections.
- All installations works must be carried out by a specialized technical body.
- Periodic maintenance as well as regular inspection on all electrical installations, extensions and appliances must be carried out by a professional technician.

7. Ventilation and air conditioning system:

- a) Natural and mechanical ventilation is provided to ensure the air is replenished throughout the warehouse and that fumes and gases are not accumulated.
- b) All ventilation and air conditioning systems must be designed, installed, and maintained as per SASO specifications to not cause any spread of smoke and hot gases from one part to another.
- c) Emergency ladders and halls should not be used as returning methods for ventilation systems. In case the roof is used for the aforementioned purpose, then its length must not exceed the vertical fire barriers limit unless it is equipped with smoke detectors and connected to a fire alarm system to give an early warning of smoke leakage and to close the air withdrawal/ section system.
- d) Air conditioning units installed in the outer walls of the storage building are equipped with an external steel panel frame to prevent falling out in the event of a fire.

8. Means of Egress:

- a) All necessary escape routes and emergency exits must be provided to ensure that the warehouse is evacuated from people and lift trucks at the appropriate time in the event of a fire. In general, there must be at least two escape routes in storage buildings.
- b) Escape routes must lead to final exits through which people can travel outside the building where adequate ventilation is provided.
- c) Emergency exits must be provided for use in the emergency evacuation. The travel distance from any point in the building to escape routes must not exceed 15 meters to ensure that the evacuation of the warehouse will be within a period of not more than three minutes. It should be considered that exits are in multiple directions and open in the direction of escape routes and be easy to use.



- d) Large warehouses designed to allow the access of cars and tankers for loading and unloading, in addition to the previous requirements, the doors allocated to this should be sufficiently and appropriate to facilitate the exit of these tankers in cases of emergency and the access of fire equipment if necessary, with the provision of an additional emergency exit to accommodate the passage of these vehicles.
- e) The site's layouts should be presented to Civil Defence to verify the adequacy and appropriateness of roads, entrances and exits as required by the location area, the nature of work and the number of workers and visitors.
- f) Illumination of escape routes and exits by placing clear light signs to enable the swift and safe evacuation of the building. Power is provided from two sources; one is the main lighting power source, and the other is a backup liquid battery source to ensure the continuity of illumination for these signs in emergency situations and during power outages.

9. Firefighting equipment:

- a) Fire hydrants: the sites must be equipped with a fire water network according to Saudi specifications and equipped with outlets of the type and diameters used in Civil Defense centers. The number and locations of fire hydrants must be determined in coordination with the Civil Defense and according to the location and area of the warehouse. A two-outlet fire hydrant should be installed near each access and exit and equipped with 20 m hoses and a multi-purpose nozzle.
- b) Fire hose reels: a cylindrical metal spindle used to store a hose length of 20–30 meters, 1–1.50 dm, with an inlet connected to a pressurized water supply and an outlet with a nozzle made of metal. The workers and safety personnel in the site can easily use it. However, a fire hose reel should be allocated for each 300 square meters of the space.

- c) Fire water sources: water must be provided for firefighting work by the installation of one or more water tanks equipped with appropriate pressure machines to supply the fire water network with the necessary water volumes and the appropriate pressures to feed fire hydrants, hose rollers and automatic fire system.
- d) Manual fire extinguishers: The warehouse is equipped with the necessary number of manual fire extinguishers (dry chemical powder, carbon dioxide, water) according to the types of materials stored after field inspection by the safety officer in coordination with the competent Civil Defense Center. A 12 kg extinguisher should be allocated per 150 square meters of area to be use by workers to attack any fire at its initial phase.

10. Automatic alarm and firefighting systems:

- a) The main warehouses must be equipped with an automated warning system (heat or smoke detectors) as well as an automatic fire suppression system using automatic water sprinklers. This cannot be implemented on warehouses where non-flammable materials such as iron–cement are stored.
- b) Other types of warehouses should be equipped with an automatic alarm system and preferably equipped with automatic fire suppression system using water sprinklers. This is subject to the discretion of the Civil Defense after submitting the plans and according to the requirements of the warehouse area, the site, and the potential risks.
- c) The appropriate automated warning and suppression systems are selected after studying the site by a specialized entity or company. In addition, the design and installation should be in accordance with the technical specifications approved by SASO Standards.
- d) Automated alarm and fire suppressions systems must be connected to a control room operating 24 hours a day. Qualified and trained personnel should be assigned to in it.

- e) The warehouse must be provided with a means of communication (telephone service) to quickly report the emergency. In addition to providing a sign / plate indicating the numbers of the Civil defense, Police and other services required by the nature of work on the site.

2nd.

Safety rules and preventive requirements must be followed in storage processes:

1. Storage must be carried out in accordance with safety rules in one of the two following methods:
 - a) Storage on high shelves: – The goods are stored above ballets and then placed on the shelves by a crane. The shelves should be fire-resistant materials, and its width should be twice the width of the ballets and the distance between two sides opposite not less than 180 cm.
 - b) Storage in the form of stacks: – In this case the following shall be considered:
 - Stacks should be of a suitable size according to the type of the stored materials and the size of warehouse.
 - Material stacking blocks must be separated by appropriate corridors in order to protect the rest pf stacks from fire and to enable workers and fire equipment to contain and fight the fire through theses corridors.
 - The width of corridor in warehouses whose doors do not allow vehicles to access for the purpose of loading and unloading should not be less than 120 cm.
 - The doors and corridors of large warehouses where unloading and loading are carried out by vehicles must be sufficiently wide to accommodate lorries, fire and public services vehicles to respond to emergencies.
 - The locations of the stacks are marked with clear markings on the floors and must be followed.



- It is preferable to locate the anchors with clear markings on the floors in order to take into account the commitment to them.
 - Consideration should be given to storing materials by type. Independent stores should be allocated to similar types of materials.
 - The height of the stacks should not reach ceiling level and a safe distance of not be less than 100 cm should be made between the top of the stacks and the ceiling. Stacks should be located away from windows, doors and corridors.
 - Stacks are placed on racks that raise them 15 cm above the ground level to avoid moisture, which considers one of self-ignition causes and to prevent fire water from touching the goods in the event of a fire.
2. Smoking is strictly prohibited as well as igniting fires and using heating devices and thermal equipment. Warning signs should be placed in regard.
 3. In the case of storing hazardous materials such as various chemicals, petroleum liquids and liquefied gases, each type must be allocated to an independent warehouse that meets its safety requirements. In this case, the opinion of the General Directorate of Civil Defense must be taken into consideration to determine the relevant regulations and preventive requirements to be implemented.
 4. Causes of self-ignition should be avoided by ensuring the stacks are well ventilated and avoiding the effects of moisture, bacteria formation or overheating.
 5. The use of mechanical equipment designated for lifting and moving must be very limited and be of the types that do not release sparks by installing a spark arrestor in the exhaust.
 6. Always take into account that roads, corridors, hose reels and fire extinguishers areas are free of any obstacles.
 7. Waste should be collected in special containers and disposed of in designated places away from storage or manufacturing areas.



8. The necessary protection and guarding should be provided to warehouses from outside to prevent the spreading of any fire or external flame and to control any actions in breach to regulations.
9. At the end of the daily work in the warehouse and before it is closed, make sure that there are no sources of ignition, turn off the equipment and machinery, and close the main circuit breaker.
10. Necessary awareness program should be carried out regularly to promote the concept of safety and prevention in the warehouses.

3rd: General Requirements:

1. A qualified safety officer must be appointed in the main storage warehouses to carry out the safety tasks and responsibilities in the site according to the Regulation of industrial safety and security officer in ministries, government stakeholders, bodies with..... he is assigned to prepare emergency and intervention plan in various accidents and recruit safety teams and tasks and duties
2. Safety work in the attached and intermediate warehouses is assigned to the responsible safety worker on site.
3. Warehouse workers must be trained in safety work in accordance with article (7) of this regulation. Periodic exercises should be conducted to verify their knowledge of safety instructions, fire prevention and control and the proper use of available equipment such as hose reels and manual fire extinguishers.
4. The warehouse should be equipped with first aid equipment appropriate to the type of potential hazards in it (disinfectants, bandages, medicines for wounds and burns and others).
5. Instructions and warning signs should be provided to clarify safety instructions, emergency procedures, or a ban on smoking or arson. They should be placed in visible place and prepared according to the design approved by the Civil Defense.
6. The business owner must provide the clothes and equipment required by the nature of the work and the risks in order to protect the employees and he must require them to wear and use these protective tools during the working hours.