

Safety Advice.

21 – Storing gas cylinders.



1. Area of application

The storage of gas cylinders (compressed gas containers) is covered by the technical regulations on compressed gases (TRG 280).

Listed below are some of the most important requirements concerning the erection of small gas stores (maximum 50 cylinders) for inert, fire-stimulating and flammable gases (e.g. argon, oxygen, acetylene, propane).

2. Gas cylinder stores

A gas cylinder store is a defined place where full gas cylinders are continuously kept in stock and empty gas cylinders are stored until they are removed.

3. General requirements

- Store staff should regularly receive instruction in the handling of gas cylinders and on operating instructions in accordance with regulations on hazardous substances.
- Signs should be mounted forbidding access for unauthorized persons, e.g.
- There should be no risks from vehicles (e.g. collision protection).



- The gas cylinders must stand securely on flat ground and should be protected from falling over, e.g. storage in pallets, erection in groups.
- The valves should be closed securely

and the cylinder caps should be screwed on.

- A minimum distance of 0.5 m should be maintained between containers and sources of heat or radiators.
- A fire extinguisher and a telephone with information on emergency telephone numbers should be easily accessible.
- Stores should not be set up in critical areas such as stairways, corridors, emergency routes, garages or passages for persons or vehicles.
- Special regulations (TRG 280) should be observed in the case of underground storage rooms.
- Protective areas (see 6 below) must be maintained in the case of flammable gases.
- Gas cylinders with liquid gas (e.g. propane, butane) should be stored upright.
- Gas refilling and repair work on gas cylinders are forbidden in stores.

4. Stores in rooms

Stores in rooms are stores in closed rooms or in rooms that are open on one side (see 5 below for exceptions).

4.1. General requirements

- The walls of neighbouring buildings and the outside walls of the store must be built to be fire-resistant at least. The roofing must be sufficiently resistant to flying sparks and radiating heat.
- The flooring must be hardly flammable.
- In the store rooms there should be no pits, channels or drains to channels without liquid closures

and there should be no cellar accesses or other open passages to cellar rooms. Furthermore, there should be no cleaning or other openings of chimneys.

- There should be adequate ventilation in the store (ventilation area should be at

least 1% of the floor surface).

- No other flammable substances (e.g. flammable liquids, wood, paper) should be stored in the store rooms (except when separated by a protective wall with a height > 2 m).
- Store rooms in which more than 25 filled gas cylinders are stored should not be situated above or below rooms intended for continuous use by people.



Caution: gas cylinder

4.2. Requirements for flammable gases

- If the walls of a store room neighbour on a public path or road, these walls should have neither doors nor windows below a height of 2 m (except for self-closing and fire doors).
- A distance of a minimum of 2 m must be maintained between gas cylinders with oxidizing gases and gas cylinders with flammable gases.

5. Stores in the open

Stores in the open are also stores that have at least two sides open as well as stores that are open on one side only if the depth – measured from the open side – is not greater than the height of the open side. One side of the room is also defined as being open if it is made of wire grating or similar material.

The safety distance to neighbouring equipment which could be potentially dangerous

(e.g. stores with flammable substances) is at least 5 m. A protective wall with a height of 2 m and made of nonflammable building material can be a substitute for the safety distance.

6. Protective area

6.1. General requirements

- The protective area and the risk of explosion must be indicated by warning signs (see example of sign in 3 above).
- There should be no sources of ignition in the protective area.
- Electrical equipment must have zone 2 explosion protection.
- Only those vehicles necessary to serve the store are permitted.
- The protective area should not extend to neighbouring buildings or public paths or roads.

6.2. Requirements for stores in rooms

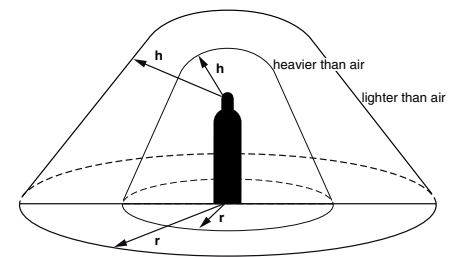
The entire room is a protective area in the case of rooms with a surface area of up to 20 m².

	Gases			
	lighter than air		heavier than air	
	Bottle	Cylinder	Bottle	Cylinder
Height h1 (m)	2	2	1	1
Radius r1 (m)	2	2	2	3



6.3. Requirements for stores in the open

- The protective area may be enclosed on max. two sides by min. 2 m high protective walls without openings and made of nonflammable building material. On one side this wall may also be the wall of a building, which must not have any openings in the protective area.
- In the store rooms there should be no pits, channels or drains without liquid closures and there should be no cellar accesses or other open passages to cellar rooms. Furthermore, there should be no cleaning or other openings of chimneys.



6.4. Dimensions of the protective areas

For flammable gases that are heavier than air (e.g. propane, butane).

For flammable gases that are lighter than air (e.g. acetylene, methane, hydrogen).

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