

Safety Advice.

22 – Handling chlorine gas cylinders.



1. Properties of chlorine

Chlorine is a gas liquefied under pressure with a pungent smell. It is heavier than air, soluble in water and nonflammable. It is toxic when inhaled and it irritates eyes and the respiratory tract. Chlorine reacts with the moisture in the air to form hydrochloric acid, which can then cause excessive corrosion.



Toxic substance warning

2. Instruction

Only instructed staff should handle gas cylinders containing chlorine.

Instruction should be repeated at least once a year and should be based on the operating instructions.

3. Storing chlorine cylinders

When chlorine cylinders are stored, the valve cap nut should be attached securely together with a suitable seal and the protecting cap screwed on. Filled and empty gas cylinders should be stored separately.

To prevent dangerous heating of the chlorine cylinders, they should be kept out of direct sunlight and should be stored at a distance of more than 0.6 m away from radiators.

Furthermore, the technical regulations on compressed gases (TRG 280) and the Linde Safety Advice 21 on "Storing gas cylinders" should be observed.

4. Handling chlorine cylinders

Chlorine cylinders should not be thrown and should be protected to prevent them from falling over. Chlorine cylinders should be connected in an upright position so that only gaseous chlorine can be delivered - unless the equipment is designed for the delivery of liquid chlorine.

5. Chlorine cylinder valves

Valves on chlorine cylinders should be operated by hand and without the use of force. The valves of filled or empty chlorine cylinders should always be closed securely with the correct cap nut (embossed with chlorine or Cl₂) and a suitable seal.

6. Precautions during delivery of chlorine

(The following precautions are listed as examples.)

Technical precautions:

- Ventilate chlorine rooms adequately.
- Use only suitable and tested chlorine gas equipment.
- Use only approved gas warning equipment and water spraying equipment (external operation).
- Ensure that there are short escape routes into the open. (Escape doors must open outwards.)
- Renew the connection seal every time the chlorine cylinders are exchanged.

Organizational precautions:

- Mark all equipment and rooms to indicate that chlorine is present.
- Display and observe the operating

instructions in accordance with the regulations on hazardous substances.

Also display an alarm plan.

- Ensure that filled and empty cylinders are definitely separate.
- Make available emergency protecting caps for the valve region of chlorine cylinders.
- Use ammonia for example to test chlorine equipment for leaks.

Personal precautions:

- When exchanging chlorine cylinders, use a suitable breathing mask with filter (e.g. full face mask with A/B-P3 combination filter). (Perform vacuum and pressure tests wearing a breathing mask.)
- Do not store opened breathing filter for longer than 6 months (e.g. write date of opening the mask on the filter). Sealed breathing filters can be stored until the storage date expires.
- Use suitable protective gloves and shoes.



Use respiratory protection

7. Procedure in the case of a chlorine leak

- Proceed according to alarm plan.
- Inform a second person.
- If the leaking chlorine gas cannot be controlled using the water spray equipment, call the fire brigade immediately

and inform them that chlorine gas is leaking.

- If the chlorine concentration is above the maximum workplace concentration level (0.5 ppm), use suitable compressed air breathing apparatus and a protective chemical suit. The protection equipment mentioned in 6 above is not sufficient.

8. First aid

- Persons who have inhaled chlorine gas require immediate medical attention.
- Taking care not to endanger themselves, rescuers should move injured persons to a site with fresh air. Should the injured persons not be breathing, artificial respiration is necessary. Otherwise, they should be made to inhale nebulized dexamethasone.
- If chlorine comes into contact with eyes or skin, it should be rinsed off immediately with plenty of water and a doctor should be consulted.
- Contaminated clothing should be removed immediately.



First aid

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