



TECHNICAL INFORMATION SHEET 16

REVISION 1: 2014

THE STORAGE OF GAS CYLINDERS CONTAINING CORROSIVE GAS AT USERS' PREMISES

Background

Corrosive gases are used by a wide variety of industries and processes to improve the performance of materials, aid chemical reactions, etc. Cylinders containing corrosive gas are safe when handled and stored appropriately. This Technical Information Sheet is designed to provide guidance on the safe storage of cylinders containing corrosive gas at users' premises.

Due to the particular hazard of a corrosive gas the user should always discuss and agree with the gas supplier safe and appropriate ways to store, manage and handle these cylinders. This may include a requirement for the gas supplier to carry out a safety audit on the users' premises.

BCGA Guidance Note 2, *Guidance for the storage of gas cylinders in the workplace*, and BCGA Code of Practice 18, *The safe storage, handling and use of special gases*, provide comprehensive guidance on general storage requirements and the safe use of special gases, including those with a corrosive hazard. The product Safety Data Sheet will provide product specific information.

It should be noted that many gases with a corrosive hazard also have other hazards, such as toxicity.

Additional management controls for gas cylinders containing corrosive gases

All gas cylinders should be stored in an external storage area. The key principles are:

1

The storage area shall be kept secure and access restricted to authorised personnel. The store should be kept locked and the keys held by authorised personnel. Arrangements shall be made for unlocking the store, as necessary, in the event of an emergency.

2

The storage area will be located and constructed in such a way as to provide a high level of natural ventilation. Gas cylinders should be kept in the shade and out of direct sunlight. A roof can help, providing protection from the weather and the onset of external corrosion. The store shall be constructed in such a way as to prevent any build up of gases in an enclosed volume, including the roof space, with both high-level and low-level ventilation. Low-level ventilation is particularly important since many gases are heavier than air. Some gases may require to be kept in a controlled temperature environment. The use of gas detection equipment is to be assessed. Where installed, alarms should be tested regularly and set to activate at a limit that will still allow safe evacuation.

3

The installation of a water spray system, that will operate either automatically or manually, shall be assessed in the fire risk assessment. In case of significant fire such a spray will ensure that cylinders are cooled in order to minimise the risk of cylinder rupture and with some corrosive gases water spray may also help to minimise the spread of any escaping gas.

The Site Fire Safety Management Plan is to identify how the emergency services are informed of the presence of these gases in the event of an incident occurring. The use of a site plan showing the location of all gas stores, with a copy displayed at the site entrance, is recommended. The emergency services may require special clothing and equipment.

4

The floor shall be flat and constructed of concrete or other non-combustible, non-porous material. It should be laid to a fall, and/or provided with suitable drainage, to prevent the accumulation of water. The slope of the floor shall be such that any product spill is directed to a low risk area. Any drainage system shall take account of the hazard from the corrosive gas, this may require the use of a bund and the availability of appropriate neutralising chemicals.

NOTE: The fall of the floor shall not make the cylinders unstable.

5

The storage area shall be clearly labelled with the type or classification of cylinders it contains, the action to be taken in an emergency, contact numbers and the location of access keys.

6

Cylinders shall be grouped within the store according to a formal plan. Gas cylinders containing corrosive gases are to be segregated from other gas cylinders. Nominally empty cylinders shall be segregated from full cylinders within the store. Nominally empty, partly full or full cylinders, shall be clearly marked as such. When no longer required cylinders should be returned to the gas supplier as soon as practicable.

7

Cylinders should be stored in the vertical position and be properly secured to prevent falling over. Stored cylinders shall be periodically checked for general condition and leakage. Written procedures are to be in place to manage and make safe any leaks. Any damage or faults discovered on a cylinder are to be reported to the gas supplier as soon as possible. Cylinder valve guards or protective caps are to be fitted. Blanking nuts should always be fitted to the valve outlets, irrespective of whether the cylinders are full or nominally empty.

8

Each cylinder will be allocated a 'return by' date. The cylinders are to be returned back to the gas supplier according to this date.

9

An inventory shall be kept listing all corrosive gas cylinders held on site, whether full, in use or nominally empty. The cylinder inventory shall be regularly reviewed to ensure that stock holdings are not excessive and that there is a regular turnover of all cylinders containing corrosive gases. This inventory should be updated each time deliveries/ collections to/from site are made by the gas supplier. A periodic physical audit (at least annually) should be made on the inventory and any deficiencies recorded, investigated and a report made to management.

10

Due to the particular hazard of corrosive gases the gas supplier will work with the customer to agree safe and appropriate practice for the management of cylinders containing corrosive gases. The gas supplier may carry out a safety audit on the users' premises before first delivery and on a routine basis thereafter.

11

The use of personal protective equipment (PPE) by all persons requiring access to the store shall be assessed. All necessary PPE shall be provided. This may include positive pressure breathing apparatus, protective clothing, face, eye and hand protection. It may also be necessary to provide ancillary equipment, such as a water shower and eye wash bottle(s). Individual Safety Data Sheets are to be consulted.

12

All personnel involved in the storage and handling of cylinders shall be adequately trained for their role and have access to the Safety Data Sheet appropriate to the products being used.

Due to the hazard from corrosive gases, such training should include the actions to take in the event of a leak and appropriate first aid.

NOTE: Ammonia (NH₃) and nitric oxide (NO) are excluded from the additional requirements of TIS 16 as being of low corrosion potential with regard to cylinder materials.

References:

- 1) BCGA CP 18, *The safe storage, handling and use of special gases.*
- 2) BCGA GN 02, *Guidance for the storage of gas cylinders in the workplace.*

For more information:

British Compressed Gases Association (BCGA)

www.bcgaco.uk