COMPRESSED GAS CYLINDERS

Rules for use

1 Introduction

This Safety Instruction is published by the TIS Commission under the procedure set out in CERN’s safety policy document SAPOCO/42. It comes into force on the date of publication.

The safety rules for the procurement and use of flammable gases and for the design and operation of systems containing flammable gases are set out in Safety Code G (CERN Flammable Gas Safety Manual). The present IS only concerns the rules for the use of compressed (flammable or not) gas cylinders and should be considered as a complement to Safety Code G.

Compressed gas cylinders are used at CERN for a large number of technical and experimental purposes. Their transport, handling, use and storage entail certain hazards. The purpose of this Safety Instruction is to point out these hazards and to recall the preventive steps to be taken.

2 General

Before using compressed gases, make sure that you are familiar with their characteristics. Check that the equipment to be used (pressure reducer, valve, union, pipework, etc.) is suitable and in good condition and that all the necessary precautions against fire, explosion, poisoning and suffocation have been taken.

All cylinders are pressure-tested before use. The pressure tests must be repeated every 10 years by a body approved by a Member State. On this occasion the general condition of the cylinders (e.g. deterioration, corrosion, etc.) is also checked. Each cylinder is marked with its operating pressure, test pressure, volume, type of gas, date of the latest test, serial number, the stamp of the inspection body and the empty weight.

All installations using compressed gases must undergo a safety inspection by TIS before being pressurised.

In case of doubt, please apply to the TIS-GS Group.
3 Safety instructions for transport

The cylinders must be properly secured and fitted with their protective covers.

Any vehicle used to transport more than 500 kg of flammable gases or more than 1000 kg of other gases (including the weight of the cylinders) must bear two marker plates showing:

- that hazardous materials are being transported
- the type of hazardous material.

(More detailed information on transport and marking is obtainable from the Flammable Gas and Chemicals Section of the TIS-GS Group).

Closed vehicles must be ventilated to prevent gases from accumulating. Vehicles must carry at least two extinguishers, one for the engine and the other for the flammable gases transported (information is available from the Fire Prevention Section of the TIS/GS Group).

Vehicles with a carrying capacity of over 3.5 t which transport flammable gases must be fitted with a two-pole circuit-breaker located as close to the battery as possible with an easily accessible direct control fitted on the outside of the vehicle and a remote control in the cab. The battery terminals of these vehicles must be protected.

4 Handling

- Order not more than the quantity actually needed.
- Remember that compressed gas cylinders weigh between 70 and 80 kg while cylinders containing liquefied gases weigh between 110 and 120 kg.
- Learn and use the proper movements and stances for handling the cylinders.
- Wear safety boots and gloves.
- Do not roll cylinders by hand over more than a few metres and then only on flat, non-slip flooring, but preferably use cylinder barrows.
- Secure the cylinders to the barrow while they are being moved, even if only over short distances.
- Never drop a cylinder.
5 Use and storage

- Every user must ensure that cylinders are used only for their intended purpose (e.g. do not use cylinders as rollers).

- The cylinders must be fitted with a pressure reducer and suitable connecting piping.

- The cylinders must never be exposed to a temperature above 50°C or to a naked flame.

- The cylinders must always be properly secured during use or storage. The protective cap must not be removed unless the cylinder is firmly secured.

- Any contact with an electric circuit must be prevented and it is forbidden to strike an electric arc against a cylinder during welding.

- The cylinders must be used and/or stored only in a vertical position.

- Compressed gas stores must be properly ventilated. It is always preferable to store cylinders in the open with protection against bad weather and direct sunlight.

- It must be impossible for heavy gas from a leak to seep into other premises or confined spaces.

- Empty and full cylinders must be clearly separated during storage to prevent any suction effect if an empty cylinder is connected to a pressurised circuit.

- Empty cylinders must be marked and returned to the Stores Service as soon as possible.

6 Abandoned cylinders

The Territorial Safety Officers (TSO) and, indeed, anyone at CERN must ensure that no gas cylinders are left around anywhere. The cylinders must always be marked with the user's name (person, service, etc.). If the user cannot be identified, the TSO must ensure that the cylinders are returned to the Stores Service, where appropriate, after consulting the Stores Service on any precautions to be taken.