Troubleshooting

In the event of a problem with the cylinder, contact the supplier for expert support. Do NOT attempt to repair acetylene cylinders or valves! Do NOT heat acetylene cylinders!

Leaking cylinder and valve:

Do not operate lights or other electrical equipment as these could be a source of ignition.

Close the cylinder valve. If the leak has stopped, take cylinder out of service, identify the cylinder, inform the supplier and arrange for the cylinder to be collected.

If the cylinder is still leaking ventilate the room by opening doors and windows. Avoid ignition sources such as electrically operated fans.

If possible, and safe to do so, move the cylinder to a safe area outside and away from ignition and heat sources and public access.

Evacuate the area within the vicinity of the cylinder.

Contact the fire brigade and the cylinder supplier.

Acetone “spitting”

Reduce the acetylene flow to the maximum specified limit.

If “spitting” continues the cylinder should be removed from service, identified with the problem and returned to the supplier.

Flash back in cylinder-equipment system:

Immediately close both the blowpipe/nozzle valves. Close the cylinder valves on the acetylene and oxygen cylinders.

If there is no external flame present check by touch to see if the acetylene cylinder is heating indicating an internal decomposition. If the cylinder is observed to be hot either in spots or on larger areas of its surface then immediately follow the advice provided in the section “Cylinders in fires”.

Check the valve outlet for soot. A valve with soot in the outlet means the cylinder has to be taken out of service suitably identified and returned to the supplier.

If the cylinder is cool and there is no soot in the valve outlet, the cylinder can stay in use but the equipment must be checked to see if it was the cause of the flash-back before if it is re-used.

Cylinders in fires

If safe to do so, extinguish the flame as quickly as possible.

KEEP AWAY, do NOT approach or attempt to move the cylinder or open the valve.

Sound the alarm.

Evacuate the area.

Contact the fire and rescue services and the supplier.

Fire due to hose/piping leak

If safe to do so, close the cylinder valve to extinguish the flame as quickly as possible.

Cylinders following severe impact (e.g. road traffic incident)

Even if the cylinder is not leaking and does not show signs of internal heating (e.g. hot spots), as a precaution, the cylinder shall not be used until it has been inspected for damage by the cylinder supplier. If the cylinder is leaking:

- Raise the alarm
- Exclude all sources of ignition
- Stop traffic and unauthorized personnel from entering the affected area
- Evacuate the area
- Immediately inform the emergency services that an acetylene cylinder is involved.

Further information

For more extended information please use:

- Material Safety Data Sheet of acetylene
- EIGA document IGC Doc 123/04 “Code of Practice Acetylene”
- EIGA Safety Information 02/02 “Handling of Gas Cylinders at and after Fire/Heat exposure
- EIGA Safety Info 05/08 “Flashback and flame arrestors”

The safe transport, use and storage of Acetylene cylinders

Introduction

Cylinders should be transported, used and stored in accordance with local regulations and National requirements.

Acetylene gas is colourless and, has a characteristic smell. It is slightly lighter than air, highly flammable and can generate an explosive atmosphere at concentrations above 2.3% in air.

Very little energy is required to ignite an air/oxygen-acetylene mixture that could result in an explosion. Ignition can arise from sources including the following:

- Matches or cigarette lighters
- Sparks from static electricity
- Internal combustion engines
- Sparks from mechanical impact
- Mobile/cell phones, two-way radios, pagers
- Non-flameproof (non-explosion proof) electrical equipment
- Friction
- Any item containing batteries including battery operated vehicle locking devices apart from quartz watches.

Under certain conditions acetylene can decompose explosively into carbon and hydrogen. To prevent this happening acetylene is stabilized by storing in specially designed cylinders, filled with a porous material and containing a solvent (most commonly acetone) into which the acetylene is dissolved.

All gas cylinders, whatever their gas content, are potentially dangerous when exposed to fire. Acetylene cylinders will require additional cooling once the fire has been extinguished to fully cool the porous mass, solvent and acetylene.

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Safe transport of single Acetylene cylinders

Depending on the quantity of product, the transportation of acetylene cylinders may be subject to the Transport of Dangerous Goods Regulations ("ADR"), which the supplier can advise upon.

Acetylene cylinders should be transported in the supplier's vehicle. If using private transport, it is strongly recommended that an open or well ventilated vehicle is used. Do NOT transport acetylene cylinders in an unventilated vehicle or unventilated compartment within the vehicle, because small leaks can create explosive atmospheres.

Always close cylinder valves during transport - Acetylene cylinders are never completely empty because acetylene is dissolved in the solvent and residual acetylene remains, even if there is no more flow/pressure when the valve is open.

Ensure that any valve protection is in place and that regulators and other equipment are disconnected from the cylinder before transport.

Always ensure that gas cylinders are fixed and secured for transport, preferably in the vertical position and separated from the driver's compartment.

Always respect no smoking requirements.

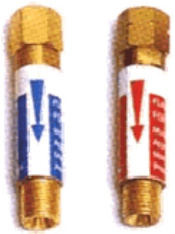
When the destination is reached, remove any cylinder(s) from the vehicle. Do not store cylinder(s) inside any vehicle.

Safe Use of Acetylene

Before using cylinders ensure that you have read the safety data sheet and have been properly trained in the equipment being used.

When moving cylinders from the cylinder storage area to the place of work, ensure that the valve is closed and fitted with a protection cap (if supplied). Use a cylinder trolley.

Before commencing work, **ensure the work area is adequately ventilated, clean and that appropriate risk assessments have been conducted**.



Any equipment (torch, hoses, regulator, flashback arrestors, etc.) used should be designed and constructed to recognized standards for use with acetylene. Equipment shall be kept in good working condition and free from oil or grease. **It is essential to install flashback arrestors and check (non-return) valves.**

Use the correct flow rate for the acetylene application. Flashback occurs when acetylene flow rate is lower than torch need. Too high a flow causes solvent carry over, flame disturbance and reduces the effectiveness of flashback prevention devices.

All users should be fully trained and competent on the use of cylinders and acetylene and wear appropriate personal protective equipment.

Ensure availability of appropriate fire extinguishers. It is strongly recommended that dry powder type fire extinguishers are available close to or in the work area.

Acetylene cylinders are designed to be used in the vertical position. This helps to avoid solvent spitting experienced with some types of porous material.

Cylinders should be secured by means of retaining straps or chain when in use.

Do NOT "crack" open the cylinder valve to blow out dust from the valve outlet as there is a risk of ignition. If necessary, clean the outlet valve with a lint free cloth before connecting the regulator.

When connected, ensure that the regulator pressure is released and face away from the outlet before slowly opening the cylinder valve.

Ensure that the equipment is leak tested and purged of air before use. Alternatively, equipment can be provided with self sealing valves/connectors. Incorrectly designed fittings increase the risk of air ingress and could lead to an explosion inside the piping and equipment arising from the heat of compression (adiabatic compression).

Only use fittings that have been specifically designed for use with acetylene.

Before use, check for gas leaks at each connection with a suitable leak detection product.

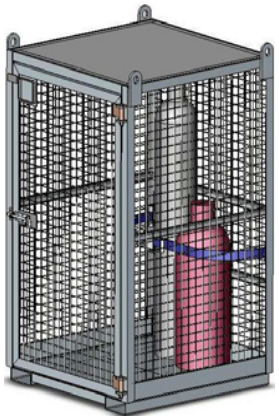
Follow the manufacturer's installation and operating instructions, in particular:

- Select the correct gas nozzle for the flow rate
- Set the proper gas pressures for the nozzle size being used
- Before lighting the torch, purge each gas hose separately for a few seconds
- Never bring a lighted torch near a gas cylinder.

After use always:

- Close the torch and cylinder valves, in the order recommended by the supplier
- Release the regulator pressure
- Depressurize each hose by opening each torch valve individually
- Return the cylinders to the cylinder store when not in use.

Safe Storage of Acetylene Cylinders



When not in use, store gas cylinders in a safe **well ventilated** area that is secure and lockable. **Never store acetylene cylinders in occupied buildings, unventilated rooms, underground rooms (cellars) or in areas accessible to the public.**

Store cylinders away from heat and ignition sources, flammable or corrosive materials

Cylinders should only be stored in areas where water cannot accumulate as this may cause corrosion to the cylinder base

Ensure that cylinders are secured upright.

Ensure the storage area is designated "NO SMOKING" and that there are no other ignition sources in the area, such as those detailed in the introduction to this leaflet.

Rotate stock on a first in, first out basis as good practice.