Tips on safe handling, storage and transport of oxygen and acetylene
Oxy-acetylene process

- Uses two gases — oxygen and acetylene — mixed together to produce a flame.
- Widely used for welding and brazing of pipes and tubes including plumbing work from new installations to other various job repair tasks.
- Oxy-acetylene is also used for heating and cutting of steel.
Class of gas and hazards

Class - Flammable Gas 2.1 - Red diamond (2)
Flammable gases products such as acetylene and LPG.

Flammable gas specific hazards.

- Fire / explosion: all flammable gases will burn or may explode when exposed to open flames.
- Asphyxiation can occur in high concentration.
- All gases in cylinders are under pressure and the compressed energy can easily propel a gas cylinder into the air or along the ground.
- Acetylene is lighter than air and can accumulate up high near a ceiling in a confined space.
Class of gas and hazards

Oxidizing Gas (non flammable non toxic, subclass oxidizing) 2.2 / 5.1

Yellow diamond (2)

Oxidizing gases products such as oxygen

Oxidizing gas specific hazards.

• Keep cylinder and equipment free of oil and grease.

• Oxygen gas in cylinders is contained under high pressure and the compressed energy can easily propel a gas cylinder into the air or along the ground.

• Oxygen enrichment: material doused with oxygen will burn more vigorously. A particular hazard is oxygen-saturated clothing.

• Oxygen reaction with material: oxygen reacts with other material like oil and oil products (fire / explosion).

• Oil products include, grease, tarmac, fat, butter, etc.
Labelling of cylinders

If a cylinder does not have a product label, do not use it.

Proper shipping name

Flammable gas class diamond - identification

UN identification used by emergency services to assess risks with the gas.

EAN bar code identifies the product

Caution section lists key safety do’s & don’ts for product users.
Storage of gases

Store cylinders containing fuel gases such as acetylene at least 3 metres away from cylinders containing oxygen.
Storage of gases

• Storage area should be well ventilated. Never store gas cylinders in a confined space.
• Do not expose gas cylinders to artificial sources of heat, e.g. cutting torch, heaters, grinding sparks.
• Acetylene cylinders should be stored and moved in an upright position only.
• Keep clear of combustible materials – not less than three (3) metres.
• The storage floor should be flat, solid and constructed from non combustible material.
• Flammable gases should not be stored under lights or power lines.
• Cylinders must be restrained at all times, whilst in storage, in use for example in a cylinder trolley and when being transported.
Transporting gas cylinders

- Always carry and restrain cylinders in an open utility, trailer / truck, i.e. “well ventilated”.
- Secured vertically to prevent vertical and sideways movement.
- Flammable cylinders including acetylene must always be transported in an upright position with the valves closed.
- The maximum recommended number of cylinders that can be transported in a utility in total is three D size oxygen and three D size acetylene cylinders.
Transporting flammable gas: safety label on acetylene cylinders

Please also refer to the respective state requirements
Manual handling of gas cylinders

- Weight of a full D size cylinder for
  - acetylene: 13.6 kg
  - oxygen: 17.3 kg

- The cylinders should be lifted using the handle.

- Do not lift the cylinder from the hand wheel that opens the cylinder valve. This could result in the cylinder accidently opening and releasing gas at high pressure.

- Do not open the cylinder valve without a safety device, eg: regulator fitted.

- Make sure the cylinder valve is closed before moving cylinders.

- Use a cylinder trolley with the cylinders restrained to safely move cylinders around.
Equipment safety

- Never use oil, grease or thread tape on gas cylinders or connecting equipment.
- Always connect the correct equipment.
- Don't work with faulty equipment.
- Do not open a cylinder valve without a safety device, eg: regulator fitted.
- Regulator control knob must be in a relaxed position when connecting and disconnecting from cylinder.
- Use flashback arrestors for acetylene and oxygen gases.
- Gas hose: acetylene hose is not to be used for LPG and LPG hose is not to be used for acetylene.
- Acetylene cylinders in use are to be in the upright position only.
- Test for leaks.
- Always use appropriate Personal Protective Equipment (PPE).
Emergency response - key points

• If an ignition has not occurred:
  – Try to stop the leak by closing the cylinder valve.
  – If the leak is not able to be stopped and it is safe to do so, move the cylinder to a safe well ventilated open outdoor location away from all other cylinders.
  – Ensure there are no potential ignition sources nearby.
  – Call Coregas on number: 1 800 807 203 during business hours, Mon to Fri between the hours of 8.30am to 5.00pm or after hours on: 1 300 657 070.
  – Ensure that you and other people keep at least 20 metres away.

• If an ignition has occurred:
  – Evacuate immediate area, raise fire alarm and evacuate the rest of the building.
  – Immediately alert the fire brigade on 000 and give the details of the gas leak, cylinder type and size.
Frequently asked questions

Q. As oxygen and acetylene gases are both dangerous goods products, what safety information is available that I should read?
A. Product Safety Data Sheets (SDS), ANZIGA leaflet *Transporting Gas Cylinders*, the safety information written on each cylinder label.

Q. I have never used these products, what other safety information is available?
A. Australian Standards AS 4332, AS 4839, AS 2030 and AS 4267 provide more detailed information and are available for purchase.

Q. Where can I get training on how to use oxygen and acetylene gas equipment?
A. TAFE colleges that have Metal Fab sections offer training courses for these products.

Q. Where do I get the oxygen and acetylene SDS information from?
A. Coregas and/or Bunnings websites, Bunnings trade counter and/or contact Coregas direct.
Summary

- Oxygen and acetylene are hazardous products that should be handled with care.
- Key hazards for acetylene: flammability / fire, explosion, asphyxiation.
- Key hazards for oxygen: high pressure, oil and grease contact, oxygen enrichment.
- For detailed information refer to the respective Australian Standards:
  - AS 4332 - The storage and handling of gases in cylinders
  - AS 4839 - The safe use of portable and mobile oxy-fuel gas systems for welding, cutting, heating and allied processes
  - AS 2030 - Gas cylinders - general requirements
  - AS 4267 - Pressure regulators for use with industrial compressed gas cylinders
- Also refer to product label, product Safety Data Sheets (SDS) and ANZIGA publications.