Risk Assessment Guidance

Title Use of Oxygen & Acetylene

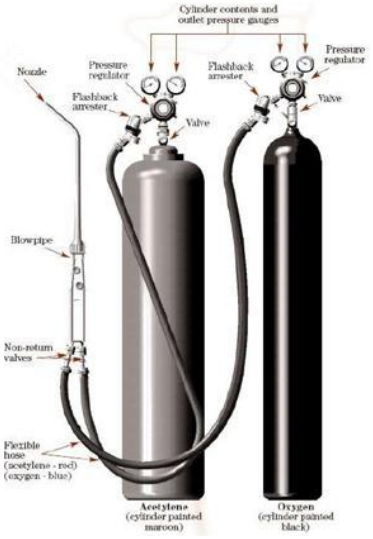
This risk assessment Guidance covers the use of oxygen and acetylene associated with the company's activities particularly during the construction and strike of sets.

Oxyacetylene Welding is a process for joining two pieces of metal in which the required high temperature is obtained by the combustion of acetylene gas and oxygen. The gasses are thoroughly mixed in the nozzle or tip of the welding torch to ensure perfect combustion.

The weld may be formed directly between two adjoining surfaces, but usually metal from a welding rod is fused in between the surfaces of the joint. Oxyacetylene Cutting is a process where the nozzle temperatures are increased to burn through the material.

Acetylene (C2H2) is extremely flammable and can form an explosive mixture with air, flammability range 2.4-88 vol% in air. Lighter than air.

Oxygen (O2) Oxidant which also supports combustion and is heavier than air. Increased levels of oxygen in low ventilated areas or confined spaces are extremely hazardous.



Job Sequence	Hazard Identification	Controls
Pre-operational safety checks & Maintenance	Competence & Training.	Only competent and trained staff are permitted to use oxy – acetylene for welding or cutting. They must be familiar with the equipment and this risk assessment and be able to carry out the pre-use checks.
	Leaking valves or damaged hoses.	Always inspect the equipment before use, ensure that the valves are fitted and secured correctly and completely close off the gas supply when closed. Also inspect all hoses for any signs of damage before use.
	Storage and use of compressed cylinders. Buildup of an explosive atmosphere with potential for a confined vapour cloud explosion from accidental release of acetylene gas.	Please refer to the company's risk assessment covering gas cylinders. Both compressed cylinders associated with this process should be secured at all times. When not in use they should be stored in an external cage. This equipment should not be left unsupervised during non-working hours in workshops.The equipment should be stored in the external cylinder cages provided. On all occasions and at all times in use cylinders to be housed in chained trolleys.
	Cleaning & maintenance of equipment.	Oils/greases prohibited for lubrication of oxygen equipment. Only replacement parts specifically designed for oxygen use permitted
Explosive environments	and/or enhanced fire/explosion from release of oxygen to atmosphere through:	Cylinders on all occasions to be transported in suitable cylinder trolleys by staff trained in manual handling techniques.

	Leaks in hose, joints, hose connections and fittings. Faulty flashback arrestor. Faulty non-return valves. Flashback from blowpipe. Damage to the cylinder. Damage to regulator.	Cylinders located away from all sources of heat and flammable materials minimum distance three meters. Regulators, gauges, hoses, connections, hose assemblies, blowpipes, safety devices, etc compliant with all relevant British Standards (all inspections to be recorded). Regulators and flame arrestors serviced or replaced every 5 years, and inspected annually by a competent person and inspection recorded Maintenance and examinations of equipment by competent person (all details to be recorded). Dedicated LEV system for indoor welding equipment, subjected to annual inspection/testing in accordance with statutory requirements (all testing/inspections to be recorded). Acetylene equipment must not contain copper or come into contact with silver or mercury which could form explosive acetylides (any acetylene-derived compound containing a metal atom, often very explosive). With LEV in operation hoses are purged of any flammable mixtures of gases before blowpipe is lit; Equipment must not be used above manufacturer's recommended pressures.
Housekeeping	Damage to equipment. Fire / Flammable Materials. Ignition sources. Electrical equipment.	Hoses to be kept clear of sharp edges and abrasive surfaces, metal splatter to hoses to be avoided, the correct gas pressures and nozzle size for the job to be used. Remove all possible combustible material from the welding area, protection for any combustible materials that cannot be moved from close contact with flame, heat, sparks or hot slag. Oil/grease must not come into contact with oxygen valves or cylinder fittings. No flammable substances stored within the welding area. Dedicated flammable storage cupboard A hot work permit Has to be issued by the designated person from the company. No Smoking is permitted in any internal buildings or adjacent to these activities. The welding area should be surrounded by curtain screens. No welding operations within the immediate vicinity of any abrasive wheel grinding or other process creating sparks. Earthing to LEV ducting to prevent static build up. All portable electric hand tools are PAT certificated.

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Transportation & Disposal	Safe transportation.	When transporting compressed cylinders, they should be isolated from valves and secured with chains. There should be good ventilation and appropriate markings on the vehicles to inform the emergency services about what cylinders are on the vehicle. Cylinders must only be disposed of or filled by competent suppliers.
Safe storage of compressed cylinders	Build-up of explosive environments. Ignition sources.	Natural ventilation, bottles shielded from direct sunlight. Gas bottles securely chained whilst in store. No other activities to be undertaken in the cylinder store. Cylinder store located away from all sources of heat and flammable materials, minimum distance three meters. No electrical equipment permitted within the store other than intrinsically safe light fittings, no naked flames, surfaces or sources of mechanical energy.
Personal Protective Equipment	Eyes & face protection. Respiratory protective equipment. Overalls, gloves and footwear.	A suitable welding shield should be used which protects the skin and eyes from UV and light created. Suitable RPE should be used when using this equipment in internal areas or where there is poor ventilation. Dust masks are not suitable as welding fumes consist of very small particles of condensed vapour. These particles penetrate dust respirator filters more easily than larger dust particles and reduce the effectiveness of filters. Overalls should be worn which are fire retardant and cover the arms and neck, hand protection should also be used. Safety boots should also be worn.
First Aid		Information for the appointed medical personnel support is displayed in workshops. Make sure you are aware of the first aid provisions in place. All accidents & near misses must be reported to your Supervisor

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All persons working with this equipment or within close vicinity must sign and show that they have read and understood the risk assessment guidance and that they will follow the above control measures set out whilst working.

Additional Guidance	COSHH Assessment	Method Statement	Other (Specify)
Gas cylinders	**Material Dependent**	**N/A**	**Only trained persons are allowed to operate this equipment. Hot works permit**
Name			
Signed			Date