***Oxyacetylene Torches***

Brief Summary:

* If you have not been trained in [oxyacetylene welding](http://www.welding-robots.com/applications.php?app=oxyacetylene+welding) or brazing, you must first be educated and evaluated on the safe and proper use of the Oxyacetylene welding system.
* There is specific information you must know in order to safely use this equipment.

Safety Considerations:

* Welding is a practical and satisfying art but oxyacetylene welding is a potentially dangerous activity.
* Severe and fatal burns and violent building destroying explosions can result from inattention and carelessness. Familiarize yourself with safety procedures and weld safely!
* Before using an oxyacetylene set, ensure that flammable materials such as grease, oil, paint, sawdust etc are cleared from the area and work pieces.
* It is important to wear clean, oil and grease free clothing because oil and grease can spontaneously ignite and burn violently in the presence of pure oxygen.
* The fluxes, filler rods and base metals heated during welding and brazing all release toxic fumes and acetylene gas is highly explosive so ensure adequate ventilation before welding.
* Acetylene is often described as having a” sweet garlic like smell”. If you can smell it in the air and don't know where it is coming from, evacuate the area immediately. Call the fire department from a phone \*outside\* of the area as a phone can set off vapors.
* In confined spaces, respirator masks designed for welding can be used. Never weld on containers that have previously contained toxic or flammable substances. Do not weld inside enclosed spaces or in tanks where the only ventilation comes from above - you might suffocate.
* Leather gloves with long cuffs and heavy work boots are required. Falling droplets of metal will instantly burn through running shoes and continue burning through the operator’s foot. Long pants and shirt sleeves must be worn. Do not role up pant legs as the cuffs could catch sparks. Leather aprons and flame proof jackets can be used to protect the operator. Eye protection is also required. IR5 lenses must be used when cutting or welding.
* Make sure you do not have a cigarette lighter in your pockets as they may explode causing serious injury.
* Gas welding does not generate the same UV as [arc welding](http://www.welding-robots.com/applications.php?app=arc+welding) but sparks and infra-red radiation are still very dangerous.
* Before using an oxyacetylene setup, ensure that a fire extinguisher in good working order is present.
* Water does not work on grease fires; a bucket of water can be handy for putting out small wood fires and quenching parts.
* A wet cloth can also be used to extinguish a flame on a hose or fitting. Sand can also be used to put out fires.
* Ensure that the tanks are secured vertically on a cart or chained to a wall. If the cylinders were to fall over and the valve broken off the top, the highly pressurized gases inside will convert the cylinders into rockets capable of smashing through walls.
* On your oxyacetylene torch system there will be three types of valves, the cylinder valve, the regulator valve, and the torch valve.
* There will be one of them for each gas. The gas in the tanks or cylinders is at high pressure. Oxygen cylinders are generally filled to 2200 psi. and acetylene to 200 psi.
* The regulator converts the high pressure gas to a low pressure stream suitable for welding.
* Never attempt to directly use high-pressure gas.
* Do not use pressurized oxygen for blowing dirt out or cleaning clothing. The oxygen can saturate the material making it eight times more flammable!
* The system must have devices known as” flashback arrestors” in place where the oxygen and acetylene hoses connect to the torch body to prevent a potential explosion.

***Lighting a Setup torch***

Follow these steps each time the torches are used:

1. Read the safety considerations
2. Ensure that the hoses are untangled and kept well clear of the flame.
3. Make sure that the regulator valves are turned all the way out and the torch valves are closed.
4. Open the acetylene cylinder valve no more than 1 ½ turns. Open the oxygen cylinder valve fully. The valves should be opened slowly to minimize the impact of unleashing highly compressed gases on the regulators. The operator should not stand directly in front of the regulator guages as malfunctioning guages can blow outwards. Turn both regulator valves inwards until you reach the desired pressure.
5. It is recommended that you purge the gas lines before use to ensure that no oxygen is in the acetylene line and vice versa. Ensure that you have adequate ventilation.
6. If the setup has not been used in a while you may wish to check for leaks. With the torch valves closed and the regulators open, shut off the cylinder valves and observe the line pressure for several minutes. If the pressure falls, there is a leak in the system. An approved leak detector solution can be used to test connections for leaks. Never use a setup with a leak!
7. Open the acetylene torch valve a very small amount and light with a striker. DO NOT USE ANYTHING BUT THIS DEVICE.
8. Once the flame is lit, open the acetylene valve just until the flame stops smoking. You should get a flame about 8 inches long with a toothy splintering end.
9. Now open the oxygen valve until the flame loses its feather around its inner core, but no farther than this amount. This is called a "neutral" flame. The mixture of oxygen and fuel gas combines to produce exhaust gases that do not chemically alter the metal to be welded or brazed.

**NOTE : DON”T SET THE ACETYLENE REGULATOR VALVE HIGHER THAN 15psi!** If you do, the acetylene can explosively decompose into carbon and hydrogen gas all by itself.

* To shut down the torch, close the oxygen torch valve first, then the acetylene. A 'pop' may occur if you reverse the order.
* The pop throws carbon soot back into the torch, which may partially plug the gas passages.
* Next, close both the cylinder valves.
* Turn on the torch valves again, one at a time, to bleed any remaining pressure, then close them again.
* Turn the regulator valves until there is no pressure on the adjusting spring and the screw turns freely.

Make sure you clean up after you are finished using the torches and return PPE to its proper location.