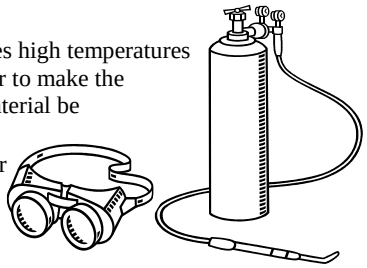
Tailgate/Toolbox Safety Training

Safety Services Company-Safety Meeting Division, PO Box 6408 Yuma, AZ 85366-6408 Toll Free (866) 204-4786

Company Name: _____Job Site Location: _____

Date: _____Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 260: Gas Welding and Cutting

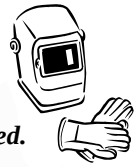


Introduction: Using a torch to cut or join metal material is commonly known as ***"Hot Work".*** Torch welding uses high temperatures to heat or melt the metal material to be bonded and uses a similar, compatible material to melt into the joint as filler to make the weld (joint). This process requires that proper heat be applied to the base material and that suitable filler or rod material be applied to the joint in order for the connection to bond properly after cooling.

The term "Brazing" is generally applied to gas welding on non-ferrous (iron) metals. HVAC high-pressure copper refrigerant line-sets are generally brazed with copper alloy rod, although sometimes they are sweated (soldered).

"Sweating" is a term applied to a type of soldering used by plumbers to join copper fresh-water supply-lines that will sustain substantial fluctuating hydraulic pressures. Slip socket fittings are cleaned with emery cloth or stiff wire brushes, acid flux is applied to both pipe and fitting, the joint is connected, and heat is then applied. After correct temperature is achieved, the solder (un-leaded only for fresh-water supply-lines) is introduced to the joint, melts on contact, and is drawn into the joint (sweated). If the joint isn't hot enough, the solder won't draw; if the joint is too hot, the flux burns off, and the silver runs and drips off, won't draw, and the sweated joint will leak.

Regular "Soldering" uses melted metal as a form of glue to join together low stress assemblies (such as sheet metal pans).



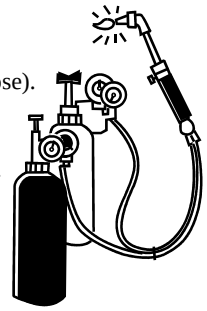
"Gas Torch Cutting" requires the metal (usually ferrous alloys) to be heated to liquid with the cut being accomplished by blowing the liquefied metal out with a blast of oxygen from a second-stage port, activated by fully depressing the cutting torch's handle. This process blows molten metal spray in all directions. Safe torch cutting skills are only acquired through much practice.

Most of the injuries and illnesses associated with "Gas Welding and Cutting" are due to the extreme temperatures involved.

- ☒ ***The danger of explosion or fire*** is ever-present due to the fuel gas and oxidizer being used; or by other flammable or combustible materials present in the work-zone.
- ☒ ***The hazard from smoke, vapors, and fumes*** result from burning flux, the combustion by-products (carbon monoxide) from the fuel gas torch being used, and from paint or other anti-rust coatings burning off the metal being welded or cut.
- ☒ ***Additional hazards*** relate to the fabrication and preparation processes such as grinding and mechanical cutting on the material being used.

Follow these guidelines for safe "Gas Welding and Cutting" operations:

- ☑ ***Untrained or inexperienced persons*** should never be allowed to do ***"Hot Work"*** without supervision.
- ☑ ***All possible Engineering Controls*** should be implemented prior to beginning the job to ensure adequate ventilation and exhaust.
- ☑ ***Personal Protective Equipment*** appropriate to the type of operations being conducted must be worn, such as: Eye and Face protection must have the correct filter lenses, proper gloves, welding apron (if needed), steel-toed boots (if working with heavy metal), and hearing protection when grinding and machine cutting .
- ☑ ***Proper Fire Prevention control measures*** must be in place prior to starting ***"Hot Work"*** such as fire extinguishers, water buckets, and fire watchers. Many times during rough-in processes, plumbers and HVAC mechanics apply direct flame to wooden frame members and it is important to remember to douse these areas with water to avoid smoldering embers which could later flare-up and set the job on fire.
- ☑ ***Compressed Gas Cylinders (CGCs) must be kept far enough away*** from hot operations so that sparks, flames, or slag will not reach them; if impractical, fire resistant heat shields must be utilized.
- ☑ ***Make certain*** that cylinders containing oxygen, acetylene, or other fuel gases are not taken into confined spaces.
- ☑ ***Color-coded hoses*** must be used: ***RED*** to identify fuel gas, ***GREEN*** to identify oxygen, and ***BLACK*** for inert gas (or air hose).
- ☑ ***Pressure-reducing regulators and manifolds*** must only be used for the gas and pressures for which they were designed.
- ☑ ***CGC regulators, hoses, and torches*** must be carefully inspected and removed from service if integrity is suspect.
- ☑ ***Only approved apparatus*** (torches, regulators, pressure-reducing valves, acetylene generators, and manifolds) shall be used.



Conclusion: Many construction trades and general industry require ***"Gas Welding and Cutting"*** processes. Thoughtful care must be given to all equipment and PPE being used in all areas of the ***"Hot"*** processes. These operations must be conducted in a safe manner in order to avoid potential serious injury or possibly setting the job-site or shop on fire.

Work Site Review

Specific Work-Site Hazards and Safety Suggestions: _____

_____

Employee Signatures: *(My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)*

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Foreman/Supervisor's Signature: _____

These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.