



SECTION 10

WELDING, BURNING, AND CUTTING



1. WELDING, BURNING, and CUTTING: Welding, cutting and burning operations are limited to qualified personnel only. Most client locations require the issuance of hot work permits prior to starting welding, cutting and burning operations. Due to the extra ordinary hazard created by these operations, extreme care must be taken during the procedure and pre-job set up.

A. **OSHA Reference:** 29 CFR 1926. Subpart J (350 through 354)

B. **Fire Prevention:**

1. Objects to be welded, cut, burned or heated should be moved to a designated safe location when practical.
2. First aid equipment shall be available at all times.
3. If the objects cannot be moved, all fire hazards in the vicinity must be eliminated by removal, cleaning, or containment of sparks, flame and slag, prior to beginning work.
4. Welding, cutting, burning or heating operations must not be performed where the application of flammable paints, compounds or heavy dust accumulation will present a hazard.
5. The proper fire extinguishing equipment and fire watch must be in place prior to the onset of work.
6. Gas supplies to torches must be shut off at a point, (preferably the source) outside of confined spaces.
7. Torches and hoses must not be left in confined spaces and excavations over night.
8. Welding and cutting on used drums is prohibited unless the drums have been properly cleaned and purged of hazardous materials.
9. Hollow spaces, cavities and containers must be vented and purged with an inert gas before preheating, welding or cutting.
10. In areas where either a flammable atmosphere or combustible materials may be present fire watch will be designated and will remain at the operation, plus a ½ hour after completion The fire watch is required during the following:
 - 1) Locations where other than a minor fire might develop.
 - 2) Combustible materials closer than 35ft. (10.7M) to the point of operation.
 - 3) Combustibles that are 35ft. (10.7M) or more away but are easily ignited.
 - 4) Wall or floor openings within 35ft. (10.7M) radius expose combustible materials.
 - 5) Combustible materials are adjacent to the opposite side of metal partitions, ceilings or roofs..

Note: 1. All persons performing fire watch duties will be trained in the proper use of fire extinguishing equipment and general fire watch duties.



Note: 2. If the area has the potential for a flammable or explosive atmosphere LEL readings shall be continuously monitored with a pre-calibrated instrument for that purpose.

Note: 3 If fire hazards cannot be moved or guarded, welding and cutting operations shall NOT be performed.

11. Hot work permits will be required for all burning, cutting and welding operations by the supervisor or designated safety representative. A copy of the permit is attached to the end of this section.

C. Gas Welding, Cutting And Burning.

1. When transporting gas cylinders, they must be secured on a cradle, sling board or pallet. Choker sling or electric magnets must not be used.
2. The cylinders must be secured and transported in a vertical position with the valve protective caps in place.
3. Unless cylinders are firmly secured on a special carrier intended for the purpose, regulators must be removed and protective caps must be in place prior to movement.
4. An approved cylinder truck or chain must be used to steady the cylinders while in use or storage.
5. The cylinder valve may be opened only when work is being performed.
6. All gas cylinders must be kept away from the actual welding or cutting operation and protected from sparks, hot slag or flames.
7. Cylinders may not be placed where they may become a part of an electrical circuit.
8. Oxygen cylinders must be stored in an upright position, with regulators removed and safety caps installed.
9. Oxygen cylinders must be separated from fuel cylinders by a minimum of 20 feet.
10. All cylinders must be properly labeled with content and hazard warnings.
11. Cylinders must have fixed had wheels, keys, handles or a non-adjustable wrench on the valve stem.
12. Acetylene cylinders must never be opened more than 1 and 1/2 turns of the spindle
13. Before connecting a regulator to a cylinder valve, crack the valve open slightly and close to insure tight stop and no leakage. Do not stand in front of the valve when opening.
14. Fuel gas hose and oxygen hose must be easily distinguishable from each other. (Red hose for fuel gases, green hoses for oxygen and non-combustible gases black hose for inert gas and air).
15. All regulators, hoses, and valves must be kept free and clear of oil and other materials.



16. Parallel sections of oxygen and fuel hose that have been taped together must be taped with not more than 4 inches of tape each 12 inches.
17. Hoses in with noticeable or suspected defect must not be used.
18. All hoses, cables and other equipment must be kept clear of walkways and roadways.
19. Torches must be inspected each day for leaking shut off valves, hose couplings and tip connections.
20. Torches may be lit by friction lighters only.
21. All gauges, valves and pressure regulators must be in proper working order.
22. Cutting, welding and burning may not be performed on surfaces with protective coatings applied without proper breathing zone ventilation or appropriate respiratory protection.
23. Proper protective equipment must be worn when performing welding, cutting or burning.
24. Hoses must not be wrapped around an individual's body.
25. Workers in charge of oxygen or fuel-gas supply equipment (including distribution piping systems and generators) must be instructed and judged competent for such work.

D. Arc Welding And Cutting.

1. Employees assigned to operate arc welding equipment must be properly instructed and qualified to operate such equipment.
2. MSDS for welding rods must be available in the Maul Electric, Inc. HAZCOM program.
2. Positive ventilation must be provided when welding and cutting are performed in a confined space, or respiratory protection must be provided.
3. All ground connections shall be inspected to insure that they are mechanically sound and properly rated for the required current.
4. A ground return cable must have a safe current carrying capacity equal to or exceeding the specified maximum output of the arc-welding unit.
5. The frames of all arc welding machines must be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire that is grounded at the source of the current.
6. Gasoline or propane fueled portable welding machines and auxiliary generators must have a positive ground before placing them in service.
7. Arc welding and cutting operations with must be screened with non-combustible or flameproof screens wherever possible.
8. Use only manual electrode holders specifically designed for arc welding and cutting.



9. All current carrying parts must be fully insulated against the maximum voltage encountered to ground.
10. All arc welding cables must be capable of handling the maximum current requirements of the work being accomplished.
11. Cables must be equipped with standard insulated connectors of a capacity at least equivalent to that of the cable.
12. Proper eye and face protection must be used when performing arc welding or cutting.

Note: 1. All employees assigned arc welding and cutting duties must be familiar with 29 CFR 1910.254, 29 CFR 252 (a)(b) and (c), and with fire prevention and protection, health protection and ventilation, and protection of personnel.

Note: 2. Operators of equipment should report any equipment defect or safety hazards and discontinue use of equipment until its safety has been assured. Repairs shall be made only by qualified personnel.

Note: 3: Some Cities, Municipalities and Clients require that burners, welders and fire watch personnel be licensed. Therefore, prior to the start of the job Maul Electric, Inc will ascertain if licensing is required and provide only licensed welders, burners and fire watchers on those job sites that require licensing. Even in cases where personnel are not required to be licensed, persons, supervisors and fire watch's shall be trained on the aforementioned policies and procedures prior to the commencement of cutting, burning and welding operations.



HOT WORK PERMIT

Date: _____ Time: _____

Location: _____

Issued To: _____

Site Safety Officer (if applicable): _____

Supervisor: _____

Do not cut or use open-flame or spark producing equipment until the following precautions have been taken.

Protective Equipment to be used: _____

Fire Watch Assigned: _____

(Initial Each Of The Following)

_____ The location where the work is to be done has been personally examined.

_____ Any available fire protection systems are in service.

_____ There are no flammable dusts, vapors, liquids or unpurged tanks (empty) in the area.

_____ Explosive meter reading <10%. 1st Reading: _____ 2nd Reading: _____
Additional readings: _____

_____ All combustibles have been moved away from the operation, or otherwise protected with fire curtains or equivalent.

_____ Ample portable fire extinguishing equipment has been provided.

_____ Arrangements have been made to patrol the area for at least 30 minutes after the work has been completed.

_____ The phone number for the local Fire Department is: _____

This form must be filled out daily whenever HOT WORK is being conducted and Posted at the jobsite.