

Great Western Painting

Cal/OSHA Electric Welding

Electric Welding **Cal/OSHA T8 CCR 4851**

When performing arc welding and cutting, the following safety procedures will be employed to ensure safety of our employees:

1. Where the work permits, the welder will be enclosed in an individual booth painted with a finish of low reflectivity, such as zinc oxide and lamp black, or shall be enclosed with noncombustible screens having a similar low reflectivity finish. Booths and screens shall permit circulation of air at floor level. Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.
2. Welding machines shall be left on the outside of a confined space and heavy portable equipment shall be blocked to prevent accidental movement.
3. When operations are suspended for any substantial period of time, such as during lunch or overnight, welding machines shall be shut off at some point outside the confined space. Where practicable, the electrodes and electrode holders shall be removed from the confined space. All electrodes shall be removed from the holders and the holders carefully located to prevent accidental contact. Upon completion or discontinuance of welding operations, the welder shall provide some means of warning other workers of the location of hot metal.
4. **Manual Electrode Holders**
 - a. The employer shall ensure that only manual electrode holders intended for arc welding and cutting and capable of handling the maximum current required for such welding or cutting shall be used.
 - b. Current-carrying parts passing through those portions of the holder gripped by the user and through the outer surfaces of the jaws of the holder shall be insulated against the maximum voltage to ground.

5. **Welding Cables and Connectors:**

- a. Arc welding and cutting cables shall be insulated, flexible and capable of handling the maximum current required by the operations, taking into account the duty cycles.
- b. Only cable free from repair or splice for 10 feet (3 m) from the electrode holder shall be used unless insulated connectors or splices with insulating quality equal to that of the cable are provided.
- c. When a cable other than the lead, mentioned above, wears and exposes bare conductors, the portion exposed shall not be used until it is protected by insulation equivalent in performance capacity to the original.
- d. Insulated connectors of equivalent capacity shall be used for connecting or splicing cable. Cable lugs, where used as connectors, shall provide electrical contact. Exposed metal parts shall be insulated.

6. **Ground Returns and Machine Grounding:**

- a.. Ground return cables shall have current-carrying capacity equal to or exceeding the total maximum output capacities of the welding or cutting units served.
- b. Structures or pipelines, other than those containing gases or flammable liquids or conduits containing electrical circuits, may be used in the ground return circuit if their current-carrying capacity equals or exceeds the total maximum output capacities of the welding or cutting units served.
- c. Structures or pipelines forming a temporary ground return circuit shall have electrical contact at all joints. Arcs, sparks or heat at any point in the circuit shall cause rejection as a ground circuit.
- d. Structures or pipelines acting continuously as ground return circuits shall have joints bonded and maintained to ensure that no electrolysis or fire hazard exists.
- e. Arc welding and cutting machine frames shall be grounded, either through a third wire in the cable containing the circuit conductor or through a separate wire at the source of the current. Grounding circuits shall have resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

- f. Ground connections shall be mechanically and electrically adequate to carry the current.
- 7. When electrode holders are left unattended, electrodes shall be removed and holders placed to prevent employee injury.
- 8. Hot electrode holders shall not be dipped in water.
- 9. The competent person on site will ensure that when arc welders or cutters leave or stop work or when machines are moved, the power supply switch shall be kept in the off position.
- 10. Arc welding or cutting equipment having a functional defect shall not be used.
- 11. The control apparatus of arc welding machines shall be enclosed except for operating wheels, levers, and handles.
- 12. Input power terminals, top change devices and live metal parts connected to input circuits shall be enclosed and accessible only by means of insulated tools.
- 13. When arc welding is performed in wet or high humidity conditions, employees shall use additional protection, such as rubber pads or boots, against electric shock.