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# WELDING AND CUTTING

## FUEL GAS AND REGULATORS AND SHIELDING, OH MY!

### ROLES & RESPONSIBILITIES

#### Project Supervision

- Audit the jobsite for welding and cutting hazards and compliance.
- Provide adequate personal protective equipment (PPE) for welding and/or cutting operations.

#### Employee-owners

- Utilize provided PPE for welding and/or cutting operations.
- Notify project supervision of any welding and/or cutting hazards and provide feedback for corrective measures.

### PROCEDURES

#### General Requirements

- Gas welding and cutting.
- Transporting, moving, and storing compressed gas cylinders.
- Valve protection caps must be in place and secured.
- Cylinders must be moved by gently tilting and rolling them on their bottom edges.
- When cylinders are hoisted by cranes, or other mechanical means, magnets, or choker slings must not be used.
- When cylinders are moved by powered vehicles they must be secured in a vertical position to the vehicles by a metal bracket designed for this purpose.
- A suitable steadying device must be in place to keep cylinders in a vertical position when in use.
- Damaged or defective cylinders must be taken out of service immediately.
- Oxygen cylinders in storage must be separated from fuel gas cylinders by a minimum distance of 20'. A secondary option is to separate the cylinders using a non-combustible barrier at least 5' high that has a fire rating of 30 minutes.

#### Placing Cylinders

- Cylinders must be kept far enough away from the actual welding or cutting operation so that slag, sparks, or flame will not reach them.
- Cylinders containing oxygen, acetylene, or other fuel gas must not be taken into confined spaces.

#### Use of Fuel Gas

- Employee-owners must be instructed in the safe use of fuel gas.
- Before a regulator is connected to a cylinder valve, the valve must be opened slightly and closed immediately. This "cracking" of the valve must be done each time before a regulator is connected.
- Flashback arrestors must be installed at the torch head and at the regulators and used according to the manufacturer's recommendations.
- Flashback arrestors must be routinely inspected, per the manufacturer's recommendations.
- All hoses must be routinely inspected, per the manufacturer's recommendations. Specific issues include cracking and dry rot.

#### Regulators and Gauges

- Oxygen and fuel gas pressure regulators must be in proper working order, per the manufacturer's recommendations, while in use.
- The regulators & gauges must be removed from the cylinders at the end of each shift or transport caps must be placed on bottles.

### ARC WELDING AND CUTTING

#### Manual Electrode Holders

- Only manual electrode holders designed for arc welding and cutting, and are capable of handling the maximum current, can be used.
- Any and all current carrying parts of the holder must be fully insulated.
- When welding is not taking place, the rod cannot be left in the stinger.

#### Welding Cables and Connectors

- All arc welding and cutting cables must be completely insulated, flexible, and capable of handling the maximum current necessary to complete the work.
- The cables must be free from splices or repaired at a minimum distance of 10' from the cable end to the electrode holder.
- Cables in need of repair, beyond the distance noted above, can be repaired using friction or rubber tape, per the manufacturer's recommendations.

#### Machine Grounding

- The ground return cable must have a current carrying capacity equal to or greater than the maximum specified output of the arc welding or cutting unit.
- When a single ground is used to service several machines, the current carrying capacity must be equal to or greater than the total maximum specified output of all the machines which it services.

#### Shielding

- All arc welding and cutting operations must be shielded by non-combustible or flameproof screens, which protect individuals working in the area from the direct rays of the arc.

#### Fire Prevention

- When practical, the object to be welded, cut, or heated should be moved to a designated safe location, away from flammable liquids and other combustibles.
- If the object cannot be moved, positive means must be taken to confine the heat, sparks, and slag.
- A 10 lb., ABC dry chemical extinguisher or equivalent must be immediately available in the work area and must be maintained in a state of readiness for instant use.
- Drums, containers, or hollow structures, which have contained toxic or flammable substances, must be filled with water and thoroughly cleaned, ventilated, and tested before welding or cutting on them.
- Hot work permits must be completed per the jobsite requirements.

### TRAINING

#### General Requirements

- Employee-owners will be trained on welding and/or cutting safety as applicable to the task.
- General welding and/or cutting safety awareness will be provided as part of the Safety Management Program.