



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 665: MIG and TIG Welding (Part A)

Introduction: Only qualified workers should operate MIG and TIG welders. Following are safety guidelines for ensuring safe operations:

■ **Always** read and follow the safety information in the operator's manual or contact the manufacturing company when in doubt.

■ **Arc rays and eye protection:** Arc rays produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.

■ **Any** exposed skin can be burned quickly by these rays. Welding helmets should be fitted with a proper filter shade to protect the operator's face and eyes when welding or watching.

■ **Approved** safety glasses with side shields should be worn. Screens or barriers to protect others from flash and glare should be installed where appropriate and maintained in proper working order.



■ **Clothing:** Gloves and clothing should be flame-resistant. Clothing made from a dark-colored, tightly woven material is best suited for welding. Gauntlet type leather gloves should be worn to protect hands and wrists. Leather aprons or jackets provide body protection.

■ **Shirt collars** and shirt cuffs should be buttoned, and open front pockets are not advisable as they may catch sparks. Pants cuffs are not recommended.

■ **Wear** high-top leather shoes or boots. In hot conditions, take frequent rest periods, and dry off equipment and clothing. Frequently change or alternate gloves and protective clothing to avoid perspiration from accumulating on them. If clothing is soaked with perspiration, it must be changed.

■ **Environment:** The area surrounding the welder will be subjected to light, heat, smoke, sparks, and fumes. Permanent booths or portable partitions can be used to contain light rays in one area. The heat and sparks given off are capable of setting flammable materials on fire.

■ **Welding** should not be done in areas containing flammable gases, vapors, liquids, or dust because explosions are a possibility.

■ **Metals** with plating, coatings, or paint that come near the region of the arc may give off smoke and fumes during welding. These fumes may pose a health hazard to the lungs; therefore an exhaust hood or booth should be used to remove fumes from the area.

■ **When welding in confined spaces**, such as inside tanks or large containers, toxic fumes may gather. Remember, in an enclosed room, breathable oxygen can be replaced by shielding gases used for welding or purging. Care must be taken to ensure enough clean air for breathing. Certain situations require welders to wear air masks or self-contained breathing equipment.

■ **Power Source and Primary Power Line-Grounding the Equipment:** Welders must always be concerned about the possibility of electrical shock.

■ **Wet** working conditions must be avoided because water is an excellent conductor and electricity will always follow the path of least resistance. Even a person's perspiration can lower the body's resistance to electrical shock.



■ **Stand** on a dry rubber mat, or when welding outdoors, stand on a dry board.

■ **Poor** connections and bare spots on cables further increase the possibility of electrical shock. A daily inspection of these items is recommended.

■ **Equipment operators** should routinely inspect for effective ground connections. A proper ground connection is always necessary because it provides a safety connection from a welding machine frame to the earth. Connections used for grounding an engine-driven welding machine include a cable connected from a ground stud on the welding machine to a metal stake placed in the ground.

■ **The workpiece** being welded and the frame or chassis of all electrically powered machines must be connected to a good electrical ground. This can be accomplished by connecting it to a properly grounded building frame or other appropriate ground.

■ **The work lead** is not the grounding lead. The work lead connects the work terminal on the power source to the workpiece. A separate lead is required to ground the workpiece or power source. Chains, wire ropes, cranes hoists, and elevators must never be used as grounding connectors.

■ **Examples** of conducting objects include buildings, power tools, work benches, welding power source cases, and workpieces.

■ **Never** touch the electrode and any metal object unless the welding power source is off.

■ **When** installing a welding system, connect the frames of each unit such as the welding power source, control, work table, and water circulator to the building ground. Conductors must be adequate to carry ground currents safely. Equipment made electrically hot by stray current may deliver a powerful shock. **Never** ground to an electrical conduit or to a pipe carrying any gas or flammable liquid such as oil or fuel.

■ **For a three-phase connection**, check phase requirements of equipment before installing. If only three-phase power is available, connect single-phase equipment to only two wires of the three-phase line. Do not connect the equipment ground lead to the third (live) wire, or the equipment will become electrically hot. Before welding, check the ground for continuity. Make sure conductors are touching bare metal of equipment frames at connections.

■ **When** a line cord with a ground lead is provided with the equipment for connection to a switchbox, connect the ground lead to the grounded switchbox. If a three-prong plug is added for connection to a grounded mating receptacle, the ground lead must be connected to the ground prong only. If the line cord comes with a three-prong plug, connect to a grounded mating receptacle. **Never** remove the ground prong from a plug.

■ **Conclusion:** Retrain all workers periodically. Follow these safety guidelines to ensure safe MIG and TIG welding operations.

Work Site Review

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

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.)

Foreman/Supervisor's Signature: _____

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