



THE FACTS

Welding

Welding is a fabrication process that joins materials, usually metals or thermoplastics, by heating the surfaces to the point of melting using a blowtorch, electric arc, or other means, and uniting them primarily by using high temperature to melt the parts together and allow them to cool, causing fusion.

Hazards:

- Welding smoke is a mixture of very fine particles (fumes) and gases. Many of the substances in welding smoke (e.g., chromium, nickel, arsenic, asbestos, manganese, silica, beryllium, cadmium, nitrogen oxides, phosgene, acrolein, fluorine compounds, carbon monoxide, cobalt, copper, lead, ozone, selenium, and zinc) can be extremely toxic.
- The intense heat of welding and sparks can cause burns and/or eye injury from hot slag, metal chips, sparks, and hot electrodes.
- Excessive exposure to heat can lead to heat stress or heat stroke.
- The intense light associated with arc welding can cause damage to the retina of the eye while infrared radiation may damage the cornea and result in the formation of cataracts.
- Invisible UV light from the arc can cause arc eye or welders flash even after a brief exposure; symptoms include a feeling of sand or grit in the eye, blurred vision, intense pain, tearing, burning, and headache.
- Exposure to UV light can also cause skin burns like sunburn and increase the welder's risk of skin cancer.



Safety:

- Provide and review safety data sheets for all chemicals used.
- Keep work area clean. Combustible materials should be removed from the work area prior to welding activities.
- Inspect welding equipment to ensure it is in good working condition.
- Maintain electrical connections, cables, electrodes holders and inspect for damage to cables and insulation and for loosened screws.
- Keep a fire extinguisher in the work area.
- Maintain safety data sheets for all compressed gases, welding, and brazing rods.
- Wear appropriate PPE and clothing during welding activities, such as a face shields or helmets and goggles, leather gloves, long-sleeved wool or flame-retardant cotton shirts and pants, and closed-toe shoes.
- Use wet methods or HEPA vacuums to clean the work area instead of dry sweeping.
- Weld in well-ventilated areas or provide local exhaust ventilation.

Occupational and Environmental Safety (OES) is a team of dedicated professionals who provide safety and compliance services to support Clemson University's core mission of research, teaching and public service. We accomplish this through collaboration and partnerships with the Clemson community and are committed to continuous improvement and exceptional customer service.

For more information on OES website: <https://www.clemson.edu/finops/oes/index.html>