



Mechanical Hazards

NATURE OF THE HAZARD

Like other technologies that work with metals, welding and cutting seldom work in isolation. Other equipment and tools are normally used and kept nearby. The use of, or the closeness to, mechanical equipment can present hazards to the welder. Knowledge of the proper use of power tools, such as grinders, chippers, drills, and various hand tools, is important to welder safety. Know and understand the safe limits and proper use of cranes, positioners, and other material handling equipment. Use appropriate guards and personal protective equipment. Some safety recommendations follow.

PERSONAL SAFETY

- Wear proper eye, face, hand, foot, and body protection.
- Use face shields, safety glasses, and goggles as appropriate.
- Wear dry, hole-free insulating gloves when welding or cutting.
- Do not wear loose items such as earrings, rings, necklaces, bracelets, loose clothing, neckties, and scarves.
- Do not wear clothing that is flammable or melts.
- Protect long hair and beards.

- Watch out for sharp objects, pinch points, and moving objects.

GRINDING WHEEL SAFETY

- Make sure proper guards are in place.
- Follow all manufacturer safety instructions.
- Do not exceed recommended grinding wheel speed limitations (RPMs) a.
- Do not grind on the side of a wheel unless designed for such service.
- When starting a bench grinder wheel, stand to the side until it reaches speed.

TOOL SAFETY

- Use the correct tool for the job as specified by the manufacturer. For example, it is often tempting to use a screwdriver for a chisel or a pair of pliers for a wrench. Avoid such practices. The right tool will do the job faster and safer.
- Inspect tools before use.
- Never use a tool that is in poor or faulty condition.
- Keep all tools in good condition.
- Keep a firm grip on tools to prevent them from slipping away.

- Do not overload or force a tool beyond its capabilities.
- Foresee results of unexpected occurrences such as tools getting away, binding, or coming loose from their handles.
- Check any tool that has become jammed, or otherwise overstressed, for damage before reuse.
- Anticipate the reactive force from tools.
- Anticipate what might happen to a component that is to be loosened or unbolted from its working position.
- When using tools that involve weights and spring tension, be certain that all pressures are applied and released in a safe manner.
- Follow lockout/tagout/tryout procedures for equipment and tools as required (see AWS Safety and Health Fact Sheet No. 18).
- Do not bypass safety interlocks or remove guards on equipment. Bypassing or removing defeats the safety device and creates a hazard.
- Follow proper safety and housekeeping procedures. Store tools in a safe place. Each tool should have a designated place in a toolbox or pouch. Many accidents are caused by tools falling off ladders, shelves, or scaffolds. .
- For additional information on the safe operation and guarding of mechanical equipment, refer to the manufacturers' safe operating procedures.

INFORMATION SOURCES

ABMA B165.1, *Power Tools – Power-Driven Brushing Tools – Safety Requirements for Design, Care, and Use*, American Brush Manufacturers Association, <www.abma.org>.

ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, American National Standards Institute, <www.aws.org>.

ANSI Z87.1, *Practice for Occupational and Educational Eye and Face Protection*, American National Standards Institute <www.ansi.org>.

ANSI Z244.1, *Control of Hazardous Energy - Lockout/Tagout and Alternative Methods*, American National Standards Institute, <www.ansi.org>.

AWS, *Safety and Health Fact Sheets*, American Welding Society, <www.aws.org>.

CSA B173.5: 1979, *Safety Requirements for the Use, Care, and Protection of Abrasive Wheels*, Canadian Standards Association, <www.csagroup.org>.

MSHA Title 30, Parts 1-199, *Mineral Resources*, Mine Safety and Health Administration, *Code of Federal Regulations*, <www.msha.gov>.

OSHA, Title 29, Parts 1910.1 to 1910.1450, Occupational Safety and Health Administration, *Code of Federal Regulations*, <www.osha.gov>.

UAMA B7.1, *Safety Requirements for the Use, Care, and Protection of Abrasive Wheels*, United Abrasives Manufacturers Association, <www.uama.org>.