



Welding Garage Safety Guide: From Setup to PPE to Proper Welds

From welding area setup to PPE and more, follow this guide to learn how to stay safe while welding in your garage or home shop.



Welding shop safety

Anyone who has spent time welding in a garage or shop knows that you shouldn't take shortcuts on two things: the quality of your work and your personal safety. It's easy to get lazy during a quick tack weld or go without proper protection because it's hot, but the last thing you want is a stray spark or mass of molten metal to ruin your day. Let's take a look at ways to stay safe while welding in your garage or home shop.

Before you begin, always read and follow the Owner's Manual, the safety labels on the product and all applicable safety standards.



Welding area setup

It's important that your welding area is set up properly before you begin welding.

- Ensure your welding equipment is on a flat surface away from any flammable materials including paper, cloth rags, oil and gasoline. Since water conducts electricity, avoid working in damp or wet conditions.
- Verify equipment installation and grounding. Be sure the work clamp has a good metal-on-metal connection that is best when unimpeded by paint or other foreign material.
- Always chain gas cylinders securely to a stationary, upright support or cart. When moving or storing a cylinder, fasten the threaded protector cap to the top of the cylinder. In addition, only use gas hoses designed for welding.
- Keep your work area free from clutter and make sure necessary tools are easy to find. Some common tools are a chipping hammer, wire brush and grinding discs. Always have a pair of pliers on hand to pick up hot metal; never use your hands even when wearing gloves.
- Minimize the number of cables and hoses underfoot as they create a trip hazard. Examine hoses regularly for leaks, wear and loose connections. A quick spray with a soap and water mixture will create bubbles indicating a leak or loose connection. Immediately replace any faulty gas hoses and avoid the quick duct-tape fix.

Garage welding ventilation

One key component of welding shop safety is ventilation. Always ensure your welding shop is well ventilated to protect you from the fumes, dust and particles created when welding. It's also important to wear personal protective equipment, which we will discuss further in the next section. Depending on the type and amount of welding you're doing, leaving a door or window open, running a box fan and wearing a disposable mask could be sufficient. Regardless of your method, always be sure that fumes are being pulled away from your breathing area, never across or through it. However, if you do a lot of welding you may want to consider investing in a small, portable fume extractor to help remove fume at the source of the weld. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which you are exposed.

Proper personal protective equipment

A common safety fault when welding in the shop is not wearing the right PPE. Arc welding produces sparks and spatter — and emits intense rays that pose several hazards to unprotected skin and eyes.

Shorts, short sleeves and open collars leave you vulnerable to burns. Instead, wear flame-resistant clothing that covers your skin, button your cuffs and pockets, and avoid pant cuffs to prevent them from catching sparks.

When it comes to footwear, high-top leather shoes or boots offer the best protection. Tennis shoes and other cloth shoes are inadequate because they can catch a spark and smolder unnoticed. Plus, they can melt and stick to your skin.

Always wear proper gloves when welding or handling materials to protect your hands from burns. Mechanic-style gloves are not recommended for welding, as they are not flame resistant. There are many application-specific gloves available that provide the right protection, comfort and dexterity for welding.

According to the National Institute of Safety and Health (NIOSH), about 2,000 U.S. workers sustain an eye injury every day that requires medical treatment. The majority of these injuries result from small particles striking the eye and thermal burns that can happen while welding if not properly protected.

Even brief exposure to the arc's radiation can cause a burning sensation or eye irritation commonly referred to as arc flash. Repeated exposure to arc rays can lead to permanent injury, so always wear proper face and eye protection including safety glasses underneath your welding helmet, even for a quick tack weld.

Auto-darkening helmets offer the best solution if you weld with different processes or parameters, and there are many types available. Some are more basic for the value-minded welder, and others have the latest technologies and features such as higher switching speeds, more arc sensors, grind modes or built-in grind shields, improved lens technology and more. Auto-darkening helmets must comply with the safety and protection requirements of the American National Standards Institute (ANSI).

Safe, quality welds

Performing high-quality, structurally sound welds is as important as personal safety in the shop. Failing to fully grind out a crack or using insufficient current can result in a weld that appears sound but could fail under demanding conditions.

Safe equipment operation and quality welds begin with reading the equipment Owner's Manual. Because every machine is different, the manual will help you weld safely, select the proper wire or electrode for your metal type and thickness, and provide guidelines for setting the correct current parameters to ensure adequate penetration. If you don't have your Owner's Manual, most manufacturers offer them online.

Once you have the wire/electrode and settings right, be sure to grind away the paint, rust and other surface material from the area to be welded. Stick and flux-cored welding are more forgiving of these contaminants than MIG welding, but the metal should always be cleaned as much as possible.

One of the most overlooked steps in making a strong weld is fully grinding out cracks and holes. Oftentimes, the operator will simply weld over the crack, ignoring that the crack goes all the way through the metal. This type of bandage approach creates an unsafe situation in which a small amount of weld material is being required to bear the same amount of weight and force

that initially caused the crack in a much thicker piece of metal. To avoid this potential hazardous situation, grind out the crack from the front and back to ensure it doesn't reform and continue spreading.

Another step in creating sound welds is making multiple passes. Operators often go too slow, mistakenly thinking the extra metal being deposited will result in stronger welds. Instead, weld at a recommended pace and make multiple passes as necessary.

Taking these steps can help keep your home welding shop safe and your projects more enjoyable.

Welding Shop Safety Checklist

Download and post this safety checklist near your welding area.

- Around the shop
 - ☐ Clean, dry workspace away from any flammable liquids or solvents
 - ☐ Metal-on-metal work clamp connection
 - ☐ Secured gas cylinder
 - ☐ Hoses free of leaks, moved off the ground
- Welding tools
 - ☐ Pliers
 - ☐ Needle nose / snips
 - ☐ Chipping hammer
 - ☐ Wire brush
 - ☐ Grinder discs
 - ☐ Cut-off wheels
- Ventilation
 - ☐ Open window or door
 - ☐ Exhaust fan, if needed
 - ☐ Small fume extractor
- PPE
 - ☐ Safety glasses
 - ☐ Welding helmet: auto-darkening or flip-shade with current ANSI certification
 - ☐ Flame-resistant clothing with cuffs & pockets buttoned
 - ☐ Gloves (leather for welding)
 - ☐ Leather shoes (high-tops, steel toes are a bonus)
 - ☐ Respiratory mask
- Safe welds
 - ☐ Correct wire or electrode for material thickness
 - ☐ Proper machine settings for the application
 - ☐ Joint prep: grind off any surface material and paint
 - ☐ Repairing cracks: fully grind out cracks and holes on both sides of the metal
 - ☐ Make multiple passes at the recommended travel speed; slower is not better

Welding Safety Checklist

Download and post this safety checklist near your welding area.

Related Products



Digital Performance™ Series Welding Helmets

Lightweight helmet with superior headgear for increased efficiency.

Features

ClearLight™ Lens



Cloth Jackets

Designed for Everyday Use



Multi-Task Gloves

Designed for light-duty MIG, TIG, Plasma and Oxy-Fuel applications



FILTAIR® 130 Portable Fume Extractor

Portable fume extraction system designed specifically for welding. This system is ideal for contract...

Published: June 24, 2020

© Miller Electric Mfg. LLC