

Welding Safety Checklist for Home & Shop

BEFORE EVERY WELDING SESSION - MANDATORY SAFETY VERIFICATION

Welding hazards include electric shock, arc radiation, toxic fumes, fire, explosion, and burns. This checklist ensures comprehensive safety coverage for home and shop welding operations. Use this before EVERY welding session.

1. Personal Protective Equipment (PPE) Verification

Equipment	Requirement	Check Points
Welding Helmet	Auto-darkening or passive Shade 10-14 for arc welding	■ Lens clean and crack-free ■ Correct shade for process ■ Headband adjusted properly ■ Auto-dark batteries charged
Eye Protection	Safety glasses under helmet Shade 5 for grinding	■ ANSI Z87.1 rated ■ Side shields present ■ No scratches obscuring vision
Welding Gloves	Leather, MIG/TIG specific No holes or tears	■ Dry and clean inside ■ No burns or holes ■ Proper type for process
Protective Clothing	Leather jacket or sleeves Flame-resistant materials	■ No synthetic materials ■ Covers all exposed skin ■ No frayed edges ■ Pockets empty (fire hazard)
Footwear	Leather boots or shoes Closed-toe, high-top preferred	■ No canvas or mesh ■ Laces tucked inside ■ Pants cover boot tops
Respiratory Protection	Respirator for confined spaces Ventilation for open areas	■ P100 filters for fumes ■ Fit-tested properly ■ Clean and functional
Hearing Protection	Earplugs or muffs Especially for prolonged work	■ NRR rating 25+ dB ■ Clean and undamaged

2. Welding Equipment Safety Checks

Equipment	Safety Verification Checklist
Welding Machine	■ Power cord intact, no damaged insulation ■ Proper grounding (3-prong plug) ■ No exposed internal components ■ Cooling fan operational (if equipped) ■ Machine case not damaged or bent ■ Located on dry, non-conductive surface ■ Adequate clearance for ventilation (12" minimum)
Electrode Holder (Stick welding)	■ Jaws grip electrode securely ■ No exposed metal near grip ■ Handle insulation intact ■ Cable connection tight ■ No damage to holder body
MIG/TIG Torch	■ Cable not kinked or damaged ■ Gas hoses secure with no leaks ■ Contact tip/tungsten tight ■ Trigger functional ■ No cracked or broken insulation
Ground Clamp	■ Spring pressure strong ■ Jaws clean and make good contact ■ Cable connection secure ■ No damaged insulation on cable
Gas Cylinders	■ Secured upright with chain or strap ■ Protective cap on when not in use ■ No oil, grease, or flammables nearby ■ Regulator attached properly ■ Cylinder in good condition ■ Pressure gauge functional
Cables and Leads	■ Insulation intact along entire length ■ No splices or repairs ■ Connectors tight and secure ■ Not lying in water or wet areas ■ Routed away from heat and sharp edges

3. Work Area Safety Preparation

- Floor dry and non-conductive (rubber mat if concrete)
- Adequate lighting (minimum 50 foot-candles)
- Clear 35-foot radius of all flammable materials:
 - Wood, paper, cardboard
 - Solvents, paints, thinners
 - Compressed gas (other than welding gases)
 - Cloth, rags, sawdust
- Fire extinguisher present and charged:

- ABC dry chemical (minimum 10 lb)
- Within 50 feet of welding area
- Inspection tag current
- Adequate ventilation established:
 - Natural draft or mechanical ventilation
 - Fume extraction if confined space
 - No welding in unventilated areas
- Welding screens or curtains if others present (protects from arc flash)
- All containers marked and verified empty before welding:
 - NEVER weld on tanks that held flammables
 - Purge and test before welding
- Metal-top welding table or fire-resistant surface
- Clear path to exits—no trip hazards
- Warning signs posted if public area:
 - 'WELDING IN PROGRESS - EYE PROTECTION REQUIRED'

4. Electrical Safety Verification

- Machine plugged into properly rated circuit:
 - 120V machines: 20A minimum circuit
 - 240V machines: Check nameplate for requirement
- Ground Fault Circuit Interrupter (GFCI) if wet conditions
- Extension cords (if used):
 - Heavy-duty, rated for welder amperage
 - Maximum 25 feet length
 - 3-wire grounded type
- No damage to power plug or receptacle
- Welder case properly grounded
- Stand on dry insulation if wet conditions cannot be avoided
- Gloves dry before handling electrical components
- Never touch electrically 'hot' parts
- Do not weld in rain or standing water
- Disconnect power before making internal adjustments

5. Fume and Gas Hazard Controls

- Local exhaust ventilation active (if available)
- General area ventilation verified:
 - Minimum 2000 cubic feet per welder
 - Air movement visible (smoke test)
- Position to keep fumes away from breathing zone
- Respirator required for:
 - Stainless steel (hexavalent chromium)
 - Galvanized metal (zinc oxide fumes)
 - Confined spaces
 - Paints or coatings present
- Never weld on:
 - Cadmium-plated materials (toxic)
 - Lead-containing materials
 - Unknown coatings without testing
- Gas cylinder safety:
 - Never use damaged or leaking cylinders
 - Open valve slowly
 - Do not exceed regulator pressure rating
 - Ensure proper gas for application

6. Fire Prevention and Hot Work Procedures

- Hot work permit obtained (if required by facility)
- Fire watch assigned for high-risk areas (required for 30 min after welding)
- Welding blankets protecting adjacent combustibles
- Floor swept—no sawdust, wood chips, or debris
- Catch containers for sparks if overhead welding
- Check hidden spaces behind walls/floors for flammables
- Sprinkler systems active (not disabled)
- Nearby personnel notified of hot work
- Plan for quenching hot metal after welding
- Post-work inspection scheduled (check for smoldering 4 hours after)

7. Special Conditions and Hazards

Condition	Additional Safety Requirements
Confined Spaces	■ Continuous ventilation at 2000+ CFM ■ Attendant outside space ■ Airline respirator (not filters) ■ Rescue equipment ready ■ Permit-required confined space procedures ■ Gas monitoring equipment ■ Never weld in unventilated confined space
Overhead Welding	■ Leather cape or shoulder covers ■ Gauntlet-style gloves ■ Pant legs over boot tops ■ Button collar and pockets ■ Catch pans for sparks ■ Hard hat if others overhead
High-Amperage Work (>200A)	■ Insulated electrode holder ■ Dry gloves mandatory ■ Insulated surface to stand on ■ Extra caution with connections ■ Do not work alone
Outdoor Welding	■ Dry location or covered area ■ Wind screens for gas-shielded processes ■ Generator properly grounded ■ No welding in rain
Galvanized or Coated Materials	■ Remove coating if possible ■ P100 respirator mandatory ■ Extra ventilation required ■ Awareness of metal fume fever symptoms

8. Emergency Procedures and Contacts

Know and Post Emergency Information:

- Emergency phone numbers posted prominently:
 - 911 or local emergency
 - Poison Control: 1-800-222-1222
 - Facility emergency contact
- First aid kit stocked and accessible
- Eye wash station functional (if chemicals present)
- Burn treatment supplies available
- All personnel know evacuation routes
- Emergency shutdown procedure posted

Injury Response Procedures:

- Arc Flash to Eyes: Seek immediate medical attention, apply cold compress, do not rub eyes

- Burns: Cool with water for 10+ minutes, cover with sterile dressing, seek medical attention for serious burns
- Electric Shock: Do not touch victim if still in contact with electricity, shut off power, call 911, begin CPR if trained
- Inhalation Injury: Move to fresh air immediately, seek medical attention if symptoms persist
- Fire: Use PASS method (Pull, Aim, Squeeze, Sweep), evacuate if fire not controlled in 30 seconds

9. Post-Welding Safety Procedures

- Turn off welding machine
- Close gas cylinder valves
- Disconnect power if machine will not be used for extended period
- Mark hot metal with 'HOT' sign or chalk
- Do not touch welds until cooled—appear cold but can burn severely
- Properly store electrodes/wire (especially low-hydrogen rods)
- Coil cables loosely—avoid kinks
- Inspect area for fire/smoldering materials:
 - Check 4 hours after completion in high-risk areas
 - Look for smoke, discoloration, or heat
- Clean and store all tools
- Ventilate area until all fumes dissipated
- Document any incidents or near-misses for future prevention

QUICK DAILY SAFETY CHECKLIST (Laminate This!)

Use this abbreviated checklist for daily verification:

- PPE: Helmet, gloves, jacket, safety glasses, boots
- Equipment: Cables intact, connections tight, ground secure
- Area: Flammables removed 35-foot radius
- Fire: Extinguisher charged and within 50 feet
- Ventilation: Adequate air movement verified
- Electrical: Proper circuit, dry conditions, GFCI if needed
- Gas: Cylinders secured upright, regulators attached properly
- Emergency: Phone numbers posted, first aid kit stocked
- Special: Additional precautions for confined space, overhead, or coated materials

CRITICAL SAFETY REMINDER

Welding safety is not optional. Every item on this checklist exists because someone was injured when it was neglected. Take the time to verify each point—your safety and the safety of those around you depends on it. When in doubt, STOP and get help. No weld is worth an injury.