

Welders, Cutters, Solderers, and Brazers

SOC: 51-4121 • Career Profile Report

■ Key Facts

\$51,000

Median Salary

457,300

Employment

+2.0%

Growth Rate

■ Requirements & Salary Range

Education: High school diploma

■ Automation Risk Assessment

Medium Risk - 38.0% probability of being automated in the next 10-20 years.

This job has some routine elements but still requires human judgment and interaction.

■■ Work-Life Balance

5.5/10 - Fair work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.4/10	Investigative	5.0/10
Artistic	3.8/10	Social	4.6/10
Enterprising	4.0/10	Conventional	8.0/10

■ Top Skills Required

Detail oriented, Manual dexterity, Physical stamina, Physical strength, Spatial-orientation skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Welders, Cutters, Solderers, and Brazers are skilled trades professionals who join, shape, and repair metal components using **heat, pressure, and specialized equipment**. Their work is fundamental to construction, manufacturing, transportation, energy, and infrastructure projects, where strong, precise metal connections are essential for safety and durability. Rather than working behind a desk, these professionals perform hands-on fabrication that turns raw materials into functional structures and products.

This career is well suited for individuals who enjoy practical work, problem-solving, and creating tangible results. Welders and related metalworkers play a critical role in building everything from bridges and pipelines to vehicles and industrial machinery.

What Do Welders, Cutters, Solderers, and Brazers Do?

These professionals use various techniques to fuse or cut metal parts according to design specifications. They read blueprints, select appropriate tools, and ensure welds meet quality and safety standards.

Common responsibilities include:

- Reading and interpreting blueprints, drawings, and welding symbols
- Setting up and operating welding, cutting, or brazing equipment
- Joining metal components using techniques such as arc welding or gas welding
- Cutting metal using torches, plasma cutters, or lasers
- Inspecting finished welds for strength and accuracy
- Repairing or reinforcing existing metal structures
- Following safety procedures and wearing protective equipment

Types of Welding and Metalwork Roles

This occupation includes several specialized techniques and roles:

- Arc Welders: Use electric arcs to fuse metals in construction and manufacturing.
- MIG and TIG Welders: Perform precise welding for automotive, aerospace, and fabrication work.
- Cutters: Separate metal using torches, plasma, or laser cutting tools.
- Solderers and Brazers: Join metal components at lower temperatures, often for electronics or fine assembly.
- Pipe Welders: Specialize in welding pipes for plumbing, energy, or industrial systems.
- Robotic Welding Operators: Program and monitor automated welding systems.

Skills and Abilities Needed

Welders and related workers must combine technical precision with physical skill.

Core Technical Skills

Personal Qualities That Matter

Education and Training Pathway

Training pathways vary, but most welders develop skills through hands-on learning:

- High School Education: Focus on math, shop, and technical courses
- Vocational or Trade School: Welding certificate or diploma programs
- Apprenticeships: Paid, on-the-job training under experienced welders
- Industry Certifications: Credentials from organizations such as the American Welding Society (AWS)
- Ongoing Skill Development: Learning new techniques and technologies

Where Do Welders, Cutters, Solderers, and Brazers Work?

These professionals are employed across many industries:

- Manufacturing and Fabrication Shops

- Construction Sites and Infrastructure Projects
- Shipyards and Marine Facilities
- Oil, Gas, and Energy Operations
- Automotive and Aerospace Manufacturing
- Repair and Maintenance Services

Work environments may involve noise, heat, and confined spaces, making safety training essential.

Is This Career Difficult?

This career is physically demanding and requires sustained concentration. Welders must work in challenging conditions while maintaining precision and safety. The difficulty lies in mastering multiple techniques, adapting to different materials, and consistently producing high-quality work under time constraints.

Who Should Consider This Career?

This occupation may be a strong fit if you:

- Enjoy hands-on, practical work
- Like building or repairing physical structures
- Prefer trade skills over desk-based work
- Are comfortable working with tools and machinery
- Value clear standards and measurable results

How to Prepare Early

- Take math and shop or technical education courses
- Practice using hand and power tools safely
- Develop attention to detail and measurement skills
- Explore welding programs or apprenticeships
- Learn about safety procedures and protective equipment

Welders, cutters, solderers, and brazers form the foundation of modern manufacturing and infrastructure, creating the strong metal connections that hold the world together.