



## Entry Welder (A.W.S.)

Welding is the most common way of permanently joining metal parts. In this process, heat is applied to metal pieces, melting and fusing them to form a permanent bond.

Because of its strength, welding is used in shipbuilding, automobile manufacturing and repair, aerospace applications, and thousands of other manufacturing activities. Welding is also used to join beams in the construction of buildings, bridges, and other structures and to join pipes in pipelines, power plants, and refineries.

The work that welders do and the equipment they use vary, depending on the industry. The most common and simplest type of welding today, arc welding, uses electrical currents to create heat and bond metals together; however, there are more than 100 different processes that a welder can use.

Welders may work outdoors, often in inclement weather, or indoors, sometimes in a confined area designed to contain sparks and glare. When working outdoors, they may work on a scaffold or platform high off the ground. In addition, they may have to lift heavy objects and work in awkward positions while bending, stooping, or standing to work overhead.

Most welders work full-time and overtime hours are common. Many manufacturing firms have two or three shifts each day, ranging from 8 to 12 hours, which allow the firm to continue production around the clock if needed. Therefore, welders may work evenings and weekends.

### Indiana Wage Information

	Entry	Median
Hourly Wage	\$14.01	\$16.88

### Job Outlook in Indiana

Long term	-8.18 % (decrease)
Short Term	1.57 % (increase)

\*Data collected from [hoosierdata.in.gov](http://hoosierdata.in.gov)

## Job Duties

- Study blueprints, sketches, or specifications
- Calculate dimensions to be welded
- Lay out, position, align, and secure parts and assemblies prior to assembly using straightedges, combination squares, calipers, and rulers
- Inspect structures or materials to be welded
- Ignite torches or start power supplies
- Weld components in flat, vertical, or overhead positions
- Monitor the welding process to avoid overheating
- Smooth and polish all surfaces
- Operate safety equipment and use safe work habits
- Maintain equipment and machinery

## Important Qualities

**Detail oriented** - must do precise work, often with straight edges and minimal flaws

**Dexterity** - must have a steady hand and good hand-eye coordination

**Physical strength** - must be in good physical condition

**Stamina** – must be able to endure long periods of standing or repetitious movements

**Troubleshooting skills** - must have the ability to detect cracked pieces of metal and be able to repair them

**Visual acuity** – must be able to see details and characteristics of joints and detect changes in molten metal flows

## Skills and Knowledge

### Technical

- Operate manual or semiautomatic welding equipment
- Read blueprints and mechanical drawings
- Shop mathematics
- Understand electricity
- Understand computers and robotics
- Knowledge of physics, chemistry, and metallurgy also helpful

### English Language Arts

- Interpret written welding procedures
- Communicate orally with coworkers

### Math

- Apply principles of basic math (fractions to decimals)
- Knowledge of metric measurements

## Certification and Advancement

Some employers are willing to hire inexperienced entry-level workers and train them on the job, but many prefer to hire workers who have been through formal training programs. Often, welding positions require general certification in welding or certification in specific skills, such as inspection, robotic welding or lead-free soldering techniques.

Welders can advance to more skilled welding jobs with additional training and experience. For example, they may become welding technicians, supervisors, inspectors or instructors. Some experienced welders open their own repair shops. Those who obtain postsecondary degrees or have many years of experience may become welding engineers.

The American Welding Society's (AWS) certification courses are offered at many welding schools. AWS Certified Welders (CW) hold welder certification cards listing those welding processes, metals & thicknesses, positions and supplemental codes for which they have demonstrated mastery.

Groove Test Position	Welding Positions Qualified For	
Groove Position	Groove Positions	Fillet Positions
FLAT 1G	F	F, H
HORIZONTAL 2G	F, H	F, H
VERTICAL 3G	F, H, V	F, H, V
OVERHEAD 4G	F, H, OH	F, H, OH
3G AND 4G	ALL	ALL

NOTE: Also Qualifies for pipe over 24" diameter.  
if backing is used qualification is with backing

### Other Certifications:

- AWS offers advanced welding certification for welding fabricators, supervisors, sales representatives, educators, radiographic interpreters, robotic arc welders, welding engineers, and inspectors.
- The Institute for Printed Circuits offers certification and training in soldering. In industries such as aerospace and defense, which need highly-skilled workers, many employers require these certifications.
- The International Code Council (ICC) issues a Structural Welding Special Inspector certification.
- The National Inspection, Testing, and Certification Corporation (NITC) issues Brazing Process certification.

## How can YOU get involved?

The world of work relies on the foundational skills students acquire in your classrooms and/or programs!

- Know your students'/clients' interests and career goals
- Affirm the value of the skills/hobbies students demonstrate both in and outside of the classroom
- Infuse your classroom culture and/or meetings with career-minded activities
- Provide time to make connections between the material learned in adult education or workshops and students' daily lives/career aspirations
- Know the basic job descriptions and training requirements of in-demand occupations in your area
- Know which WorkINdiana programs are available in your region
- Know the processes for referring students to postsecondary or on-the-job training
- Post resources where students can find more information about further education/training and careers

Sources and Further Information:

[www.bls.gov/ooh/](http://www.bls.gov/ooh/)

[www.iseek.org/index.jsp](http://www.iseek.org/index.jsp)

[www.mynextmove.org](http://www.mynextmove.org)

[www.indianacareerexplorer.com](http://www.indianacareerexplorer.com)

[www.aws.org/certification](http://www.aws.org/certification)

[www.indianaskills.com](http://www.indianaskills.com)

[www.careeronestop.org](http://www.careeronestop.org)

\*Last Updated July 2016