

Machinists and Tool and Die Makers

SOC: 51-4041 • Career Profile Report

■ Key Facts

\$57,700

Median Salary

5,900

Employment

-2.0%

Growth Rate

■ Requirements & Salary Range

Education: See Requirements (BLS)

■ Automation Risk Assessment

Medium Risk - 30.0% 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

6.1/10 - Good 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

Analytical skills, Manual dexterity, Mechanical skills, Physical stamina, Technical skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Machinists and Tool and Die Makers are precision manufacturing professionals who fabricate, modify, and repair **metal parts, tools, and molds used to produce industrial components**. Their work is foundational to manufacturing, enabling everything from automotive parts and aircraft components to medical devices and consumer products. Using advanced machinery and exact specifications, they turn raw materials into highly accurate finished pieces.

This career is well suited for individuals who enjoy precision work, problem-solving, and combining technical knowledge with hands-on craftsmanship.

What Do Machinists and Tool and Die Makers Do?

These professionals operate machine tools and create custom tools, dies, and parts that meet strict tolerances.

Common responsibilities include:

- Reading and interpreting blueprints and technical drawings
- Setting up and operating machine tools such as lathes, mills, and grinders
- Programming and running CNC (computer numerical control) machines
- Measuring finished parts to verify accuracy and tolerances
- Fabricating dies, molds, jigs, and fixtures
- Repairing or modifying existing tools and components
- Maintaining machines and following safety procedures

Machinists vs. Tool and Die Makers

While closely related, these roles differ slightly in focus:

- Machinists: Produce precision metal parts in production or custom job-shop settings.
- Tool and Die Makers: Build and repair specialized tools, molds, and dies used in manufacturing.

Both roles require high levels of accuracy, technical skill, and attention to detail.

Skills and Abilities Needed

Machinists and tool and die makers combine mechanical aptitude with mathematical precision.

Core Professional Skills

Personal Qualities That Matter

Education and Training Pathway

Most machinists and tool and die makers develop skills through structured technical training:

- High School Diploma or Equivalent: Typical minimum requirement
- Apprenticeship Programs: Paid multi-year training combining classroom and shop experience
- Technical or Trade School: Formal education in machining or manufacturing technology
- On-the-Job Training: Progressive skill development under experienced workers
- Continuing Education: Training on new machines, software, and materials

Where Do Machinists and Tool and Die Makers Work?

These professionals work across a wide range of manufacturing environments:

- Machine Shops and Tooling Facilities
- Manufacturing and Production Plants
- Automotive, Aerospace, and Defense Industries
- Medical Device and Precision Equipment Companies
- Metalworking and Fabrication Firms

- Custom Job Shops and Prototyping Labs

Work settings are typically indoors with precision equipment and strict quality standards.

How Much Do Machinists and Tool and Die Makers Earn?

Earnings vary by specialization, experience, and industry:

- Entry-Level Machinists: Typically earn hourly wages during training
- Experienced Machinists or Tool and Die Makers: Often earn higher pay with advanced skills
- CNC Specialists or Master Toolmakers: May earn more due to expertise and responsibility

Compensation often includes overtime and strong demand-based wages.

Is This Career Difficult?

This career is technically demanding and detail-intensive. Professionals must work within extremely tight tolerances where small errors can have large consequences. The challenge lies in maintaining accuracy, adapting to new technologies, and solving complex machining problems consistently.

Who Should Consider This Career?

This career may be a strong fit if you:

- Enjoy working with machines and precision tools
- Like math, measurements, and technical drawings
- Prefer hands-on problem-solving
- Value craftsmanship and accuracy
- Want a skilled trade with strong manufacturing demand

How to Prepare Early

- Take math, drafting, and shop or manufacturing courses
- Learn basic metalworking and measurement techniques
- Practice reading technical drawings and blueprints
- Develop patience and attention to detail
- Explore apprenticeship or machining technology programs

Machinists and tool and die makers form the backbone of modern manufacturing, transforming raw metal into precise components and tools that make mass production, innovation, and industrial reliability possible.