

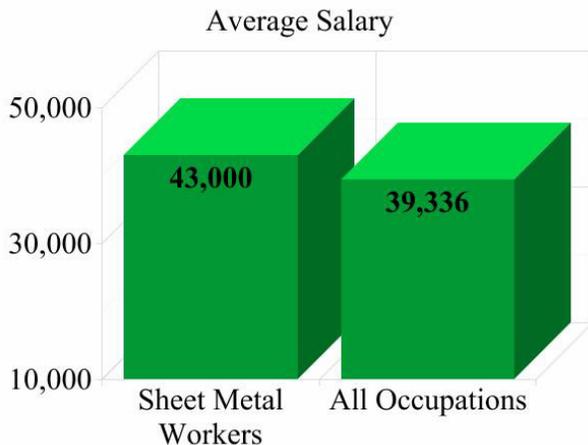
Sheet Metal Workers

Career Profiles provided by StudentScholarships.org

WHAT THEY DO

Sheet metal workers make, install, and maintain heating, ventilation, and air-conditioning duct systems; roofs; siding; rain gutters; downspouts; skylights; restaurant equipment; outdoor signs; railroad cars; tailgates; customized precision equipment; and many other products made from metal sheets. They also may work with fiberglass and plastic materials. Although some workers specialize in fabrication, installation, or maintenance, most do all three jobs. Sheet metal workers do both construction-related work and mass production of sheet metal products in manufacturing.

Sheet metal workers first study plans and specifications to determine the kind and quantity of materials they will need. They measure, cut, bend, shape, and fasten pieces of sheet metal to make ductwork, countertops, and other custom products. Sheet metal workers program and operate computerized metalworking equipment. They cut, drill, and form parts with computer-controlled saws, lasers, shears, and presses.



In shops without computerized equipment, and for products that cannot be made with such equipment, sheet metal workers make the required calculations and use tapes, rulers, and other measuring devices for layout work. They then cut or stamp the parts with machine tools.

Before assembling pieces, sheet metal workers use measuring instruments such as tape measures, calipers, and micrometers to check each part for accuracy. If necessary, they use hand, rotary, or squaring shears and hacksaws to finish pieces. After inspecting the pieces, workers fasten seams and joints together with welds, bolts, cement, rivets, solder, or other connecting devices. They then take the parts constructed in the shop and assemble the pieces further as they install them. These workers install ducts, pipes, and tubes by joining them end to end and hanging them with metal hangers secured to a ceiling or a wall. They also use shears, hammers, punches, and drills to make parts at the worksite or to alter parts made in the shop.

Some jobs are done completely at the jobsite. When installing a metal roof, for example, sheet metal workers usually measure and cut the roofing panels onsite. They secure the first panel in place and interlock and fasten the grooved edge of the next panel into the grooved edge of the first. Then they nail or weld the free edge of the panel to the structure.

EDUCATION REQUIRED

To become a skilled sheet metal construction worker usually takes between 4 and 5 years of both classroom and on-the-job training. Although there are a number of different ways to obtain this training, generally the more formalized the training received by an individual, the more thoroughly skilled the person becomes and the more likely he or she is to be in demand by employers. For some, this training begins in a high school, where classes in English, algebra, geometry, physics, mechanical drawing and blueprint reading, and general shop are recommended.

After high school, there are a number of different ways to train. One way is to get a job with a contractor who will provide training on the job. Entry-level workers generally start as helpers, assisting more experienced workers. Most begin by carrying metal and cleaning up debris in a metal shop, learning about materials, tools, and their uses as they go about their tasks. Later, they learn to operate machines that bend or cut metal. In time, helpers go to the jobsite to learn installation. Employers may send their employees to a trade or vocational school to take courses or to a community college to receive further formal training. Helpers may be promoted to the journeyman level if they show the requisite knowledge and skills. Most sheet metal workers in large-scale manufacturing receive on-the-job training, with additional classwork or in-house training as necessary. The training needed to become proficient in manufacturing takes less time than the training for proficiency in construction.

Apprenticeship programs combine paid on-the-job training with related classroom instruction. Usually, apprenticeship applicants must be at least 18 years old and meet local requirements. The length of the program, typically 4 to 5 years, varies with the apprentice's skill. Apprenticeship programs provide comprehensive instruction in both sheet metal fabrication and sheet metal installation. They may be administered by local joint committees composed of the Sheet Metal Workers' International Association and local chapters of the Sheet Metal and Air-Conditioning Contractors National Association.

Sheet metal workers can choose one of many specialties. Workers can specialize in commercial and residential HVAC installation and maintenance, industrial welding and fabrication, exterior or architectural sheet metal installation, sign fabrication, service and refrigeration, and testing and balancing of building systems.

On the job, apprentices receive first safety training and then training in tasks that allow them to begin work immediately. They use materials such as fiberglass, plastics, and other nonmetallic materials.

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OTHER USEFUL SKILLS

Sheet metal workers need to be in good physical condition and have mechanical and mathematical aptitude and good reading skills. Good eye-hand coordination, accurate perception of spaces and forms, and manual dexterity also are important. Courses in algebra, trigonometry, geometry, mechanical drawing, and shop provide a helpful background for learning the trade, as does related work experience obtained in the U.S. Armed Services.

HOW TO ADVANCE

It is important for experienced sheet metal workers to keep abreast of new technological developments, such as the use of computerized layout and laser-cutting machines. In addition, new software, called B.I.M., which stands for "building information modeling," allows contractors, architects, and engineers to coordinate their efforts and increase efficiency at worksites.

Certifications in one of the specialties also can be beneficial to workers. Certifications related to sheet metal specialties are offered by a wide variety of associations, several of which are listed in the sources of additional information at the end of this statement.

Sheet metal workers in construction may advance to supervisory jobs. Some of these workers take additional training in welding and do more specialized work. Workers who perform building and system testing are able to move into construction and building inspection.

WORK ENVIRONMENT

Sheet metal workers usually work a 40-hour week. Those who fabricate sheet metal products work in small shops and manufacturing plants that are usually well lighted and well ventilated. However, they stand for long periods and lift heavy materials and finished pieces. Those performing installation at construction sites or inside buildings do considerable bending, lifting, standing, climbing, and squatting, sometimes in close quarters or awkward positions. Working outdoors exposes sheet metal workers to various kinds of weather.

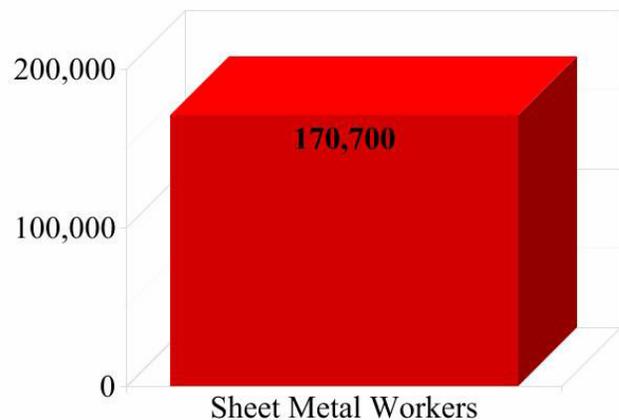
Sheet metal workers must follow safety practices, because this occupation has a relatively high rate of nonfatal injuries. Some sheet metal workers work around high-speed machines, which can be dangerous. Others are subject to cuts from sharp metal, burns from soldering or welding, and falls from ladders or scaffolds. They often are required to wear safety glasses and must not wear jewelry or loose-fitting clothing that could easily be caught in a machine. To avoid repetitive-type injuries, they may work at a variety of different production stations.

JOB GROWTH

Employment of sheet metal workers is expected to increase by 6 percent between 2008 and 2018, slower than the average for all occupations. This change reflects anticipated growth in the number of industrial, commercial, and residential structures to be built over the decade. In addition, it reflects the need to install energy-efficient air-conditioning, heating, and ventilation systems in older buildings and to perform other types of renovation and maintenance work on these systems. Also, the popularity of decorative sheet metal products and increased architectural restoration are expected to add to the demand for sheet metal workers.

Sheet metal workers in manufacturing, however, are expected to experience a moderate decline in employment as the industry becomes more automated and some of the work is done in other countries.

Number in Workforce



Job opportunities are expected to be good for sheet metal workers in the construction industry, reflecting both employment growth and openings arising each year as experienced sheet metal workers leave the occupation. Opportunities should be particularly good for individuals who have apprenticeship training or who are certified welders. Applicants for jobs in manufacturing will experience competition.

Sheet metal workers in construction may experience periods of unemployment, particularly when construction projects end and economic conditions dampen construction activity. However, because maintenance of existing equipment makes up a large part of the work done by sheet metal workers, they are less affected by construction downturns than are some other construction occupations. Installation of new air-conditioning and heating systems in existing buildings is expected to continue as individuals and businesses adopt more energy-efficient equipment to cut utility bills.