

# Dental Laboratory Technicians

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## Significant Points

- Employment should increase slowly, as the public's improving dental health requires fewer dentures but more bridges and crowns.
- Dental laboratory technicians need artistic aptitude for detailed and precise work, a high degree of manual dexterity, and good vision.

## Nature of the Work

Dental laboratory technicians fill prescriptions from dentists for crowns, bridges, dentures, and other dental prosthetics. First, dentists send a specification of the item to be manufactured, along with an impression (mold) of the patient's mouth or teeth. Then, dental laboratory technicians, also called dental technicians, create a model of the patient's mouth by pouring plaster into the impression and allowing it to set. Next, they place the model on an apparatus that mimics the bite and movement of the patient's jaw. The model serves as the basis of the prosthetic device. Technicians examine the model, noting the size and shape of the adjacent teeth, as well as gaps within the gumline. Based upon these observations and the dentist's specifications, technicians build and shape a wax tooth or teeth model, using small hand instruments called wax spatulas and wax carvers. They use this wax model to cast the metal framework for the prosthetic device.

After the wax tooth has been formed, dental technicians pour the cast and form the metal and, using small hand-held tools, prepare the surface to allow the metal and porcelain to bond. They then apply porcelain in layers, to arrive at the precise shape and color of a tooth. Technicians place the tooth in a porcelain furnace to bake the porcelain onto the metal framework, and then adjust the shape and color, with subsequent grinding and addition of porcelain to achieve a sealed finish. The final product is a nearly exact replica of the lost tooth or teeth.

In some laboratories, technicians perform all stages of the work, whereas, in other labs, each technician does only a few. Dental laboratory technicians can specialize in 1 of 5 areas: Orthodontic appliances, crowns and bridges, complete dentures, partial dentures, or ceramics. Job titles can reflect specialization in these areas. For example, technicians who make porcelain and acrylic restorations are called *dental ceramists*.

## Working Conditions

Dental laboratory technicians generally work in clean, well-lit, and well-ventilated areas. Technicians usually have their own workbenches, which can be equipped with Bunsen burners, grinding and polishing equipment, and hand instruments, such as wax spatulas and wax carvers. Some technicians have computer-aided milling equipment to assist them with creating artificial teeth.

The work is extremely delicate and time consuming. Salaried technicians usually work 40 hours a week, but self-employed technicians frequently work longer hours.

## Employment

Dental laboratory technicians held about 47,000 jobs in 2002. Around 7 out of 10 jobs were in medical equipment and supply manufacturing laboratories, which usually are small, privately owned businesses with fewer than five employees. However, some laboratories are large; a few employ more than 50 technicians.

Some dental laboratory technicians work in offices of dentists. Others work for hospitals providing dental services, including U.S. Department of Veterans Affairs hospitals. Some technicians work in dental laboratories in their homes, in addition to their regular job.

## Training, Other Qualifications, and Advancement

Most dental laboratory technicians learn their craft on the job. They begin with simple tasks, such as pouring plaster into an impression, and progress to more complex procedures, such as making porcelain crowns and bridges. Becoming a fully trained technician requires an average of 3 to 4 years, depending upon the individual's aptitude and ambition, but it may take a few years more to become an accomplished technician.

Training in dental laboratory technology also is available through community and junior colleges, vocational-technical institutes, and the U.S. Armed Forces. Formal training programs vary greatly both in length and in the level of skill they impart.

In 2002, 25 programs in dental laboratory technology were approved (accredited) by the Commission on Dental Accreditation in conjunction with the American Dental Association (ADA). These programs provide classroom instruction in dental materials science, oral anatomy, fabrication procedures, ethics, and related subjects. In addition, each student is given supervised practical experience in a school or an associated dental laboratory. Accredited programs normally take 2 years to complete and lead to an associate degree. A few programs take about 4 years to complete and offer a bachelor's degree in dental technology.

Graduates of 2-year training programs need additional hands-on experience to become fully qualified. Each dental laboratory owner operates in a different way, and classroom instruction does not necessarily expose students to techniques and procedures favored by individual laboratory owners. Students who have taken enough courses to learn the basics of the craft usually are considered good candidates for training, regardless of whether they have completed a formal program. Many employers will train someone without any classroom experience.

The National Board for Certification, an independent board established by the National Association of Dental Laboratories, offers certification in dental laboratory technology. Certification, which is voluntary, can be obtained in five specialty areas: Crowns and bridges, ceramics, partial dentures, complete dentures, and orthodontic appliances.



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In large dental laboratories, technicians may become supervisors or managers. Experienced technicians may teach or may take jobs with dental suppliers in such areas as product development, marketing, and sales. Still, for most technicians, opening one's own laboratory is the way toward advancement and higher earnings.

A high degree of manual dexterity, good vision, and the ability to recognize very fine color shadings and variations in shape are necessary. An artistic aptitude for detailed and precise work also is important. High school students interested in becoming dental laboratory technicians should take courses in art, metal and wood shop, drafting, and sciences. Courses in management and business may help those wishing to operate their own laboratories.

### **Job Outlook**

Job opportunities for dental laboratory technicians should be favorable, despite expected slower-than-average growth in the occupation through the year 2012. Employers have difficulty filling trainee positions, probably because entry-level salaries are relatively low and because the public is not familiar with the occupation.

The overall dental health of the population has improved because of fluoridation of drinking water, which has reduced the incidence of dental cavities, and greater emphasis on preventive dental care since the early 1960s. As a result, full dentures will be less common, as most people will need only a bridge or crown. However, during the last few years, demand has arisen from an aging public that is growing increasingly interested in cosmetic prostheses. For example, many dental laboratories are filling orders for composite fillings that are the same shade of white as natural teeth to replace older, less attractive fillings.

### **Earnings**

Median hourly earnings of dental laboratory technicians were \$13.70 in 2002. The middle 50 percent earned between \$10.51 and \$18.40 an hour. The lowest 10 percent earned less than \$8.16, and the highest 10 percent earned more than \$23.65 an hour. Median hourly earnings of dental laboratory technicians in 2002 were \$13.78 in medical equipment and supplies manufacturing and \$12.98 in offices of dentists.

Technicians in large laboratories tend to specialize in a few procedures, and, therefore, tend to be paid a lower wage than those employed in small laboratories who perform a variety of tasks.

### **Related Occupations**

Dental laboratory technicians manufacture artificial teeth, crowns and bridges, and orthodontic appliances, following specifications and instructions provided by dentists. Other workers who make and repair medical devices include dispensing opticians, ophthalmic laboratory technicians, orthotists and prosthetists, and precision instrument and equipment repairers.

### **Sources of Additional Information**

For a list of accredited programs in dental laboratory technology, contact:

► Commission on Dental Accreditation, American Dental Association, 211 E. Chicago Ave., Chicago, IL 60611. Internet: <http://www.ada.org>

For information on requirements for certification, contact:

► National Board for Certification in Dental Technology, 1530 Metropolitan Blvd., Tallahassee, FL 32308. Internet:

<http://www.nadl.org/html/certification.html>

For information on career opportunities in commercial laboratories, contact:

► National Association of Dental Laboratories, 1530 Metropolitan Blvd., Tallahassee, FL 32308. Internet: <http://www.nadl.org>

General information on grants and scholarships is available from dental technology schools.