
Glaziers

(O*NET 47-2121.00)

Significant Points

- Many glaziers learn the trade by helping experienced workers.
- Job opportunities are expected to be good.

Nature of the Work

Glass serves many uses in modern life. Insulated and specially treated glass keeps in warmed or cooled air and provides good condensation and sound control. Tempered and laminated glass makes doors and windows more secure. In large commercial buildings, glass panels give office buildings a distinctive look while reducing the need for artificial lighting. The creative use of large windows, glass doors, skylights, and sunroom additions makes homes bright, airy, and inviting.

Glaziers are responsible for selecting, cutting, installing, replacing, and removing all types of glass. They generally work on one of several types of projects. Residential glazing involves work such as replacing glass in home windows; installing glass mirrors, shower doors, and bathtub enclosures; and fitting glass for tabletops and display cases. On commercial interior projects, glaziers install items such as heavy, often etched, decorative room dividers or security windows. Glazing projects also may involve replacement of storefront windows for establishments such as supermarkets, auto dealerships, or banks. In the construction of large commercial buildings, glaziers build metal framework extrusions and install glass panels or curtain walls. (Workers who replace and repair glass in motor vehicles are not covered in this statement. See the statement on automotive body and related repairers elsewhere in the *Handbook*.)

Besides working with glass, glaziers also may work with plastics, granite, marble, and other similar materials used as glass substitutes and with films or laminates that improve the durability or safety of the glass. They may mount steel and aluminum sashes or frames and attach locks and hinges to glass doors.

For most jobs, the glass is precut and mounted in frames at a factory or a contractor's shop. It arrives at the jobsite ready for glaziers to position and secure it in place. They may use a crane or hoist with suction cups to lift large, heavy pieces of glass. They then gently guide the glass into position by hand.

Once glaziers have the glass in place, they secure it with mastic, putty, or other paste-like cement, or with bolts, rubber gaskets, glazing compound, metal clips, or metal or wood moldings. When they secure glass using a rubber gasket—a thick, molded rubber half-tube with a split running its length—they first secure the gasket around the perimeter within the opening, then set the glass into the split side of the gasket, causing it to clamp to the edges and hold the glass firmly in place.

When they use metal clips and wood moldings, glaziers first secure the molding to the opening, place the glass in the molding, and then force springlike metal clips between the glass and the molding. The clips exert pressure and keep the glass firmly in place.

When a glazing compound is used, glaziers first spread it neatly against and around the edges of the molding on the inside of the opening. Next, they install the glass. Pressing it against the compound on the inside molding, workers screw or nail outside molding that loosely holds the glass in place. To hold it firmly, they pack the space between the molding and the glass with glazing compound and then trim any excess material with a glazing knife.

For some jobs, the glazier must cut the glass manually at the jobsite. To prepare the glass for cutting, glaziers rest it either on edge on a rack, or “A-frame,” or flat against a cutting table. They then measure and mark the glass for the cut.

Glaziers cut glass with a special tool that has a small, very hard metal wheel. Using a straightedge as a guide, the glazier presses the cutter's wheel firmly on the glass, guiding and rolling it carefully to make a score just below the surface. To help the cutting tool move smoothly across the glass, workers brush a thin layer of oil along the line of the intended cut or dip the cutting tool in oil. Immediately after cutting, the glazier presses on the shorter end of the glass to break it cleanly along the cut.

In addition to handtools such as glasscutters, suction cups, and glazing knives, glaziers use power tools such as saws, drills, cutters, and grinders. An increasing number of glaziers use computers in the shop or at the jobsite to improve their layout work and reduce the amount of wasted glass.

Work environment. Glaziers often work outdoors, sometimes in inclement weather. Their work can, at times, result in injuries as they work with sharp tools and may need to remove broken glass. They must be prepared to lift heavy glass panels and work on scaffolding, sometimes at great heights. Glaziers do a considerable amount of bending, kneeling, lifting, and standing during the installation process.

Training, Other Qualifications, and Advancement

Most glaziers learn their trade by helping experienced workers, sometimes with supplemental classroom training. A few formal apprenticeship programs are available.

Education and training. Glaziers learn their trade through formal and informal training programs. Usually 3 years of classroom and on-the-job training are required to become a skilled glazier. There are a number of different avenues that one can take to obtain the necessary training. Most glaziers start by obtaining a job with a contractor who then provides on-



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Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-16	
				Number	Percent
Glaziers	47-2121	55,000	62,000	6,600	12

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

the-job training. Entry-level workers generally start as helpers, assisting more experienced workers. During this time, employers may send the employee to a trade or vocational school or community college to receive further classroom training.

Some employers offer formal apprenticeships. These programs combine paid on-the-job training with related classroom instruction. Apprenticeship applicants usually must be at least 18 years old and meet local requirements. The length of the program is usually 3 years, but varies with the apprentice's skill. Because the number of apprenticeship programs is limited, however, only a small proportion of glaziers learn their trade through these programs.

On the job, apprentices or helpers often start by carrying glass and cleaning up debris in glass shops. They often practice cutting on discarded glass. Later, they are given an opportunity to cut glass for a job and assist experienced workers on simple installation jobs. By working with experienced glaziers, they eventually acquire the skills of a fully qualified glazier. On the job, they learn to use the tools and equipment of the trade; handle, measure, cut, and install glass and metal framing; cut and fit moldings; and install and balance glass doors. In the classroom, they are taught about glass and installation techniques as well as basic mathematics, blueprint reading and sketching, general construction techniques, safety practices, and first aid.

Licensure. Only the State of Connecticut currently requires glaziers to have a license. In addition to passing a test, workers need education, experience, and an apprenticeship to be licensed. There is a voluntary license in Florida. Other States may require licenses in the future.

Other qualifications. Skills needed to become a glazier include manual dexterity, eye-hand coordination, physical fitness, and a good sense of balance. The ability to solve arithmetic problems quickly and accurately also is required. In addition, a good work history or military service is viewed favorably by employers.

Certification and advancement. Glaziers who learn the trade through a formal registered apprenticeship program become certified journeyworkers. Some associations offer other certifications. The National Glass Association, for example, offers a series of written examinations that certify an individual's competency to perform glazier work at three progressively difficult levels of proficiency: Level I Glazier; Level II Commercial Interior or Residential Glazier, or Storefront or Curtainwall Glazier; and Level III Master Glazier.

Advancement for glaziers generally consists of increases in pay; some advance to glazier supervisors, general construction supervisors, independent contractors, or cost estimators. For those who would like to advance, it is increasingly important to be able to communicate in both English and Spanish in order to relay instructions and safety precautions to workers with limited understanding of English because Spanish-speaking

workers make up a large part of the construction workforce in many areas. Supervisors and contractors need good communication skills to deal with clients and subcontractors and should be able to identify and estimate the quantity of materials needed to complete a job and accurately estimate how long a job will take to complete and at what cost.

Employment

Glaziers held 55,000 jobs in 2006. About 68 percent of glaziers worked for glazing contractors engaged in new construction, alteration, and repair. About 16 percent of glaziers worked in retail glass shops that install or replace glass, and for wholesale distributors of products containing glass.

Job Outlook

Average employment growth is projected. Good job opportunities are expected, especially for those with a range of skills.

Employment change. Employment is expected to grow 12 percent from 2006 to 2016, about as fast as the average for all occupations. Employment of glaziers is expected to increase as a result of growth in residential and nonresidential construction. Demand for glaziers also will be spurred by the continuing need to modernize and repair existing structures, which often involves installing new windows. Also, more homeowners now prefer rooms with more sunlight and are adding sunrooms and skylights to houses. Demand for specialized safety glass and glass coated with protective laminates is also growing in response to a higher need for security and the need to withstand hurricanes, particularly in many commercial and government buildings. Homes and buildings that have been built recently are less likely to need replacement windows than older structures.

Counteracting these factors, however, is the ability of other workers such as carpenters to install windows, which reduces employment growth for glaziers.

Job prospects. Job opportunities for glaziers are expected to be good. Since employers prefer workers who can do a variety of tasks, glaziers with a range of skills will have the best opportunities.

Like other construction trades workers, glaziers employed in the construction industry should expect to experience periods of unemployment because of the limited duration of construction projects and the cyclical nature of the construction industry. During downturns in the economy, job openings for glaziers are reduced as the level of construction declines. However, construction activity varies from area to area, so job openings fluctuate with local economic conditions. Employment opportunities should be greatest in metropolitan areas, where most glazing contractors and glass shops are located.

Earnings

In May 2006, median hourly earnings of wage and salary glaziers were \$16.64. The middle 50 percent earned between \$12.85 and \$22.18. The lowest 10 percent earned less than \$10.19, and the highest 10 percent earned more than \$30.52. Median hourly wage-and-salary earnings in the foundation, structure, and building exterior contractors industry were \$17.03. Median hourly earnings for glaziers employed by building materials and supply dealers, where most glass shops are found, were \$15.51.

Glaziers covered by union contracts generally earn more than their nonunion counterparts. Apprentice wage rates usually start at 40 to 50 percent of the rate paid to experienced glaziers and increase as they gain experience. Because glaziers can lose work time due to weather conditions and fluctuations in construction activity, their overall earnings may be lower than their hourly wages suggest.

Some glaziers employed in construction are members of the International Union of Painters and Allied Trades.

Related Occupations

Glaziers use their knowledge of construction materials and techniques to install glass. Other construction workers whose jobs also involve skilled, custom work are brickmasons, blockmasons, and stonemasons; carpenters; carpet, floor, and tile installers and finishers; cement masons, concrete finishers, segmental pavers, and terrazzo workers; sheet metal workers; and painters and paperhangers. In addition, automotive body and related repairers install broken or damaged glass on the vehicles they repair.

Sources of Additional Information

For more information about glazier apprenticeships or work opportunities, contact local glazing or general contractors, a local of the International Union of Painters and Allied Trades, a local joint union-management apprenticeship agency, or the nearest office of the State employment service or State apprenticeship agency. You can also find information on the registered apprenticeships together with links to State apprenticeship programs on the U.S. Department of Labor's Web site: http://www.doleta.gov/atels_bat Apprenticeship information is also available from the U.S. Department of Labor's toll free helpline: (877) 872-5627.

For general information about the work of glaziers, contact:

➤ International Union of Painters and Allied Trades, 1750 New York Ave. NW., Washington, DC 20006.

Internet: <http://www.iupat.org>

For information concerning training for glaziers, contact:

➤ Associated Builders and Contractors, Workforce Development Department, 4250 North Fairfax Dr., 9th Floor, Arlington, VA 22203. Internet: www.trytools.org

➤ National Glass Association, Education and Training Department, 8200 Greensboro Dr., Suite 302, McLean, VA 22102. Internet: <http://www.glass.org>

For general information on apprenticeships and how to get them, see the *Occupational Outlook Quarterly* article "Apprenticeships: Career training, credentials—and a paycheck in your pocket," online at <http://www.bls.gov/opub/ooq/2002/summer/art01.pdf> and in print at many libraries and career centers.