

**Wisconsin Statewide  
Skilled Manufacturing Occupations, 2004-2014  
(See Notes Below)**

SOC Code	Occupational Title	Estimated Employment <sup>(1)</sup>				Estimated Average Annual Openings <sup>(1)</sup>			Typical Education and Training Path <sup>(4)</sup>	Estimated Salary and Wages (2005)		
		2004	2014	Change	% Change	New Jobs	Replacements <sup>(2)</sup>	Total <sup>(3)</sup>		Average Annual Salary <sup>(5)</sup>	Entry Level Hourly Wage <sup>(6)</sup>	Experienced Hourly Wage <sup>(7)</sup>
<b>00-0000</b>	<b>Total, All Occupations</b>	<b>3,032,810</b>	<b>3,380,410</b>	<b>347,600</b>	<b>11.5%</b>	<b>34,760</b>	<b>71,930</b>	<b>106,690</b>		<b>\$35,759</b>	<b>\$8.40</b>	<b>\$21.59</b>
	<b>Total, All Occupations Listed Below</b>	<b>286,830</b>	<b>293,400</b>	<b>6,570</b>	<b>2.3%</b>	<b>660</b>	<b>6,960</b>	<b>7,620</b>				
49-9041	Industrial Machinery Mechanics	6,990	7,170	180	2.6%	20	140	160	Long-term on-the-job training	\$42,137	\$15.37	\$22.70
49-9044	Millwrights	1,790	1,940	150	8.4%	20	40	60	Long-term on-the-job training	\$49,479	\$18.22	\$26.57
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	60	60	0	0.0%	0	0	0	Long-term on-the-job training	\$36,437	\$13.19	\$19.68
51-2041	Structural Metal Fabricators and Fitters	3,700	3,850	150	4.1%	20	90	110	Moderate-term on-the-job training	\$34,877	\$13.63	\$18.34
51-2091	Fiberglass Laminators and Fabricators	710	740	30	4.2%	0	20	20	Moderate-term on-the-job training	\$27,374	\$10.12	\$14.68
51-2092	Team Assemblers	46,540	50,430	3,890	8.4%	390	1,200	1,590	Moderate-term on-the-job training	\$26,555	\$8.84	\$14.73
51-2093	Timing Device Assemblers, Adjusters, and Calibrators	10	10	0	0.0%	0	0	0	Moderate-term on-the-job training	NA	NA	NA
51-2099	Assemblers and Fabricators, All Other	8,250	8,400	150	1.8%	20	210	230	Moderate-term on-the-job training	\$32,586	\$9.38	\$18.81
51-3011	Bakers	4,130	4,690	560	13.6%	60	100	160	Long-term on-the-job training	\$22,515	\$8.01	\$12.23
51-3021	Butchers and Meat Cutters	3,560	3,780	220	6.2%	20	80	100	Long-term on-the-job training	\$28,239	\$9.55	\$15.59
51-3023	Slaughterers and Meat Packers	5,040	5,860	820	16.3%	80	110	190	Moderate-term on-the-job training	\$22,093	\$9.29	\$11.29
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	7,250	7,350	100	1.4%	10	120	130	Moderate-term on-the-job training	\$34,853	\$11.82	\$19.22
51-4012	Numerical Tool and Process Control Programmers	690	700	10	1.4%	0	10	10	Long-term on-the-job training	\$43,338	\$16.46	\$23.02
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	2,460	2,190	-270	-11.0%	0	80	80	Moderate-term on-the-job training	\$29,125	\$10.01	\$16.00
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	1,940	2,130	190	9.8%	20	30	50	Moderate-term on-the-job training	NA	NA	NA
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	680	720	40	5.9%	0	20	20	Moderate-term on-the-job training	\$32,951	\$12.73	\$17.40
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	11,520	9,840	-1,680	-14.6%	0	270	270	Moderate-term on-the-job training	\$28,868	\$10.00	\$15.82
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	2,240	2,190	-50	-2.2%	0	70	70	Moderate-term on-the-job training	\$31,403	\$10.35	\$17.47
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	5,690	5,370	-320	-5.6%	0	110	110	Moderate-term on-the-job training	\$31,653	\$10.81	\$17.42
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	3,090	2,840	-250	-8.1%	0	60	60	Moderate-term on-the-job training	\$32,667	\$11.48	\$17.82
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	1,260	1,240	-20	-1.6%	0	20	20	Moderate-term on-the-job training	\$32,444	\$11.61	\$17.59
51-4041	Machinists	13,400	14,490	1,090	8.1%	110	310	420	Long-term on-the-job training	\$36,206	\$12.79	\$19.72
51-4051	Metal-Refining Furnace Operators and Tenders	640	620	-20	-3.1%	0	10	10	Moderate-term on-the-job training	\$33,515	\$12.11	\$18.12
51-4052	Pourers and Casters, Metal	870	850	-20	-2.3%	0	20	20	Moderate-term on-the-job training	\$30,257	\$11.09	\$16.27
51-4061	Model Makers, Metal and Plastic	340	330	-10	-2.9%	0	10	10	Moderate-term on-the-job training	\$43,788	\$15.47	\$23.84
51-4062	Patternmakers, Metal and Plastic	600	590	-10	-1.7%	0	20	20	Moderate-term on-the-job training	\$41,931	\$14.21	\$23.13
51-4071	Foundry Mold and Coremakers	1,370	1,330	-40	-2.9%	0	30	30	Moderate-term on-the-job training	\$31,080	\$10.59	\$17.12

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		2004	2014	Change	% Change	New Jobs	Replacements <sup>(2)</sup>	Total <sup>(3)</sup>		Average Annual Salary <sup>(5)</sup>	Entry Level Hourly Wage <sup>(6)</sup>	Experienced Hourly Wage <sup>(7)</sup>
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	8,420	8,250	-170	-2.0%	0	210	210	Moderate-term on-the-job training	\$28,838	\$10.23	\$15.68
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	3,990	4,160	170	4.3%	20	110	130	Moderate-term on-the-job training	\$33,487	\$11.90	\$18.20
51-4111	Tool and Die Makers	4,470	4,420	-50	-1.1%	0	100	100	Long-term on-the-job training	\$44,111	\$16.56	\$23.53
51-4121	Welders, Cutters, Solderers, and Brazers	12,000	12,560	560	4.7%	60	340	400	Postsecondary vocational training	\$33,618	\$12.69	\$17.90
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	2,390	2,380	-10	-0.4%	0	70	70	Moderate-term on-the-job training	\$32,175	\$11.09	\$17.66
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	940	970	30	3.2%	0	30	30	Moderate-term on-the-job training	\$29,873	\$10.78	\$16.15
51-4192	Lay-Out Workers, Metal and Plastic	310	290	-20	-6.5%	0	10	10	Moderate-term on-the-job training	\$37,154	\$14.01	\$19.79
51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	1,200	1,200	0	0.0%	0	30	30	Moderate-term on-the-job training	\$26,974	\$9.43	\$14.74
51-4194	Tool Grinders, Filers, and Sharpeners	840	790	-50	-6.0%	0	30	30	Moderate-term on-the-job training	\$34,964	\$12.66	\$18.88
51-4199	Metal Workers and Plastic Workers, All Other	2,400	2,120	-280	-11.7%	0	60	60	Moderate-term on-the-job training	\$47,269	\$13.56	\$27.31
51-5011	Bindery Workers	5,520	6,150	630	11.4%	60	150	210	Moderate-term on-the-job training	\$27,286	\$8.86	\$15.25
51-5012	Bookbinders	430	440	10	2.3%	0	10	10	Moderate-term on-the-job training	\$28,412	\$9.14	\$15.92
51-5021	Job Printers	2,050	2,250	200	9.8%	20	50	70	Long-term on-the-job training	\$34,741	\$11.51	\$19.30
51-5022	Prepress Technicians and Workers	2,840	2,650	-190	-6.7%	0	70	70	Postsecondary vocational training	\$35,447	\$11.84	\$19.64
51-5023	Printing Machine Operators	8,130	8,560	430	5.3%	40	190	230	Moderate-term on-the-job training	\$35,902	\$11.99	\$19.90
51-6011	Laundry and Dry-Cleaning Workers	4,150	4,510	360	8.7%	40	110	150	Moderate-term on-the-job training	\$19,728	\$7.26	\$10.60
51-6031	Sewing Machine Operators	4,420	4,260	-160	-3.6%	0	60	60	Moderate-term on-the-job training	\$22,761	\$8.31	\$12.26
51-6041	Shoe and Leather Workers and Repairers	260	220	-40	-15.4%	0	10	10	Long-term on-the-job training	\$22,415	\$8.20	\$12.07
51-6042	Shoe Machine Operators and Tenders	280	200	-80	-28.6%	0	0	0	Moderate-term on-the-job training	\$20,329	\$7.20	\$11.06
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	240	140	-100	-41.7%	0	10	10	Moderate-term on-the-job training	\$27,269	\$9.24	\$15.05
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	610	620	10	1.6%	0	10	10	Moderate-term on-the-job training	\$22,315	\$9.16	\$11.51
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	490	240	-250	-51.0%	0	10	10	Long-term on-the-job training	\$29,240	\$9.97	\$16.10
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	190	120	-70	-36.8%	0	0	0	Moderate-term on-the-job training	\$28,885	\$9.78	\$15.94
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	520	480	-40	-7.7%	0	10	10	Moderate-term on-the-job training	\$32,281	\$11.53	\$17.51
51-6092	Fabric and Apparel Patternmakers	*	*	*	*	0	0	0	Long-term on-the-job training	\$33,635	\$10.57	\$18.97
51-6093	Upholsterers	560	460	-100	-17.9%	0	10	10	Long-term on-the-job training	\$30,269	\$10.37	\$16.64
51-7011	Cabinetmakers and Bench Carpenters	3,990	3,950	-40	-1.0%	0	100	100	Long-term on-the-job training	\$29,788	\$9.87	\$16.55
51-7021	Furniture Finishers	510	440	-70	-13.7%	0	10	10	Long-term on-the-job training	\$27,316	\$9.84	\$14.78
51-7031	Model Makers, Wood	*	*	*	*	0	0	0	Long-term on-the-job training	\$32,932	\$11.53	\$17.98
51-7032	Patternmakers, Wood	60	60	0	0.0%	0	0	0	Long-term on-the-job training	\$32,188	\$12.04	\$17.19
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	2,410	2,140	-270	-11.2%	0	70	70	Moderate-term on-the-job training	\$25,163	\$8.97	\$13.66
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	3,820	3,420	-400	-10.5%	0	100	100	Moderate-term on-the-job training	\$26,906	\$9.50	\$14.65
51-7099	Woodworkers, All Other	*	*	*	*	0	30	30	Moderate-term on-the-job training	\$21,952	\$7.54	\$12.06
51-8011	Nuclear Power Reactor Operators	*	*	*	*	0	0	0	Long-term on-the-job training	NA	NA	NA
51-8012	Power Distributors and Dispatchers	180	170	-10	-5.6%	0	10	10	Long-term on-the-job training	\$62,806	\$22.80	\$33.89

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51-8013	Power Plant Operators	1,000	1,000	0	0.0%	0	30	30	Long-term on-the-job training	\$49,385	\$15.95	\$27.64
51-8021	Stationary Engineers and Boiler Operators	740	750	10	1.4%	0	10	10	Long-term on-the-job training	\$41,425	\$15.92	\$21.92
51-8031	Water and Liquid Waste Treatment Plant and System Operators	2,210	2,340	130	5.9%	10	80	90	Long-term on-the-job training	\$33,847	\$9.22	\$19.80
51-8091	Chemical Plant and System Operators	810	840	30	3.7%	0	30	30	Long-term on-the-job training	\$40,186	\$14.03	\$21.97
51-8092	Gas Plant Operators	80	90	10	12.5%	0	0	0	Long-term on-the-job training	\$56,331	\$22.49	\$29.38
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	*	*	*	*	0	0	0	Long-term on-the-job training	\$43,981	\$17.98	\$22.73
51-8099	Plant and System Operators, All Other	200	200	0	0.0%	0	10	10	Long-term on-the-job training	NA	NA	NA
51-9011	Chemical Equipment Operators and Tenders	900	900	0	0.0%	0	30	30	Moderate-term on-the-job training	\$35,319	\$12.00	\$19.47
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	1,730	1,800	70	4.0%	10	60	70	Moderate-term on-the-job training	\$35,536	\$12.18	\$19.54
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	1,390	1,380	-10	-0.7%	0	40	40	Moderate-term on-the-job training	\$30,492	\$9.42	\$17.28
51-9022	Grinding and Polishing Workers, Hand	1,560	1,410	-150	-9.6%	0	40	40	Moderate-term on-the-job training	\$27,671	\$9.90	\$15.01
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	3,870	3,990	120	3.1%	10	100	110	Moderate-term on-the-job training	\$31,952	\$11.05	\$17.52
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	4,380	4,380	0	0.0%	0	90	90	Moderate-term on-the-job training	\$31,979	\$10.99	\$17.57
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	2,200	2,270	70	3.2%	10	60	70	Moderate-term on-the-job training	\$30,912	\$9.68	\$17.45
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	730	750	20	2.7%	0	20	20	Moderate-term on-the-job training	\$31,747	\$10.89	\$17.45
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	21,230	23,400	2,170	10.2%	220	480	700	Moderate-term on-the-job training	\$29,007	\$8.88	\$16.48
51-9071	Jewelers and Precious Stone and Metal Workers	480	530	50	10.4%	10	10	20	Postsecondary vocational training	\$38,888	\$13.26	\$21.41
51-9081	Dental Laboratory Technicians	1,030	1,080	50	4.9%	10	20	30	Long-term on-the-job training	\$34,225	\$10.89	\$19.24
51-9082	Medical Appliance Technicians	130	160	30	23.1%	0	0	0	Long-term on-the-job training	\$34,440	\$11.04	\$19.32
51-9083	Ophthalmic Laboratory Technicians	670	710	40	6.0%	0	20	20	Moderate-term on-the-job training	\$27,391	\$9.29	\$15.11
51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	4,820	4,790	-30	-0.6%	0	130	130	Moderate-term on-the-job training	\$31,670	\$11.01	\$17.33
51-9122	Painters, Transportation Equipment	1,300	1,440	140	10.8%	10	30	40	Long-term on-the-job training	\$39,583	\$13.78	\$21.66
51-9131	Photographic Process Workers	600	480	-120	-20.0%	0	20	20	Moderate-term on-the-job training	NA	NA	NA
51-9141	Semiconductor Processors	60	60	0	0.0%	0	0	0	Associate degree	\$32,938	\$10.07	\$18.72
51-9191	Cementing and Gluing Machine Operators and Tenders	360	360	0	0.0%	0	10	10	Moderate-term on-the-job training	\$30,233	\$10.60	\$16.50
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	420	430	10	2.4%	0	10	10	Moderate-term on-the-job training	\$30,815	\$10.55	\$16.95
51-9193	Cooling and Freezing Equipment Operators and Tenders	130	130	0	0.0%	0	0	0	Moderate-term on-the-job training	\$29,838	\$9.82	\$16.61
51-9194	Etchers and Engravers	350	350	0	0.0%	0	10	10	Long-term on-the-job training	NA	NA	NA
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	1,040	1,020	-20	-1.9%	0	30	30	Moderate-term on-the-job training	\$30,786	\$10.20	\$17.10
51-9196	Paper Goods Machine Setters, Operators, and Tenders	8,300	8,050	-250	-3.0%	0	180	180	Moderate-term on-the-job training	\$34,522	\$11.89	\$18.95
51-9197	Tire Builders	90	100	10	11.1%	0	0	0	Moderate-term on-the-job training	\$24,082	\$9.60	\$12.57
51-9199	Production Workers, All Other	9,130	8,590	-540	-5.9%	0	220	220	Moderate-term on-the-job training	\$29,418	\$8.57	\$16.93

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**Notes:**

**Occupations were selected using these criteria: (1) The occupation has to be concentrated in the manufacturing sector and/or be a production occupation. The occupations may also be in industries other than manufacturing; and (2) the occupation has to typically require some post-secondary training.**

(1) **Employment** is a count of jobs rather than people, and includes all part- and full-time nonfarm jobs. Employment also includes jobs among self-employed and unpaid family workers. Employment is rounded to the nearest ten, with employment less than five rounded to zero. Totals may not add due to rounding.

(2) **Replacements** are an estimate of the number of job openings expected because people have permanently left a given occupation. Permanent exits occur if someone dies, retires, or otherwise leaves the labor force. Permanent exits also include openings resulting from someone permanently changing occupations. For example, a person leaves their job as a cashier and becomes a truck driver. Openings resulting from people changing employers, but staying in the same occupation are not included.

(3) **Total openings** are the sum of new jobs and replacements. Total openings are an indication of how many new people are needed to enter a given occupation.

(4) **Typical Education and Training Path** gives a general indication of the education or training typically needed in a given occupation. There may be other pathways into the occupation, as well as additional educational, training, or licensing requirements.

**Associate Degree:** This degree requires two years of full-time academic work beyond high school.

**Moderate-Term On-the-Job Training:** Training for these occupations usually occurs at the workplace and lasts from one to twelve months.

**Long-Term On-the-Job Training:** These occupations require more than one year of on-the-job training, or combined work experience and classroom instruction.

**Postsecondary Vocational Training:** These formal training programs last from a few weeks to more than a year, and are offered at vocational or technical schools.

(5) **Average Annual Salary:** An occupation's average hourly wage is calculated by summing the wages of all employees in a given occupation and then dividing by the total number of employees in that occupation. In most cases, the annual average salary is equal to the average hourly wage multiplied by 2,080.

(6) **Entry Level Hourly Wage** is the average of the lower third of wages that are paid in a given occupation.

(7) **Experienced Hourly Wage** is the average of the upper two-thirds of wages that are paid in a given occupation.

\* Data is suppressed to preserve the confidentiality of employers.

Projections information is derived using the November 2004 OES Survey, 2004 QCEW and 2004 CES (3/2005 Benchmark) data. Unpublished data from the US Bureau of Labor Statistics and US Census Bureau was also used. Wage information derived from the May 2005 OES Survey.

To the extent possible, the projections take into account anticipated changes in Wisconsin's economy from 2004 to 2014. It is important to note unanticipated events may affect the accuracy of these projections.

**Source:** Office of Economic Advisors, Wisconsin Department of Workforce Development, February 21, 2007

**Contact:** Karin Wells, Economist  
(608) 264-7841  
Karin.Wells@dwd.state.wi.us