

The Economic Impact Of The Polymer Industry in West Virginia

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REPORT

Prepared for:

The Polymer Alliance Zone



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Polymer Manufacturing in the West Virginia Economy

Polymer Industry Highlights

- There are more than 75 firms in West Virginia that manufacture polymer and plastics products
- The polymer industry supplies products to every major sector of the economy, including construction, mining, transportation, food products, medical, recreation and household
- The polymer industry is largely an exporting industry (more than 75 percent of the industry's customers are outside of West Virginia)¹
- The average polymer industry wage in West Virginia is \$54,000
- Wages within the state-wide polymer industry are nearly 1.5 times the State average
- The Polymer industry directly employs more than 8,000 people in West Virginia
- Including multiplier effects, the polymer industry is responsible for 22,630 jobs in the West Virginia, or three percent of total employment
- The industry is the source of more than \$178 million in taxes paid to the State
- With \$2.2 billion in local economic activity the polymer industry is responsible for 3.6 percent of Gross State Product.

Polymer Alliance Zone Highlights

- The Polymer Alliance Zone directly and indirectly employs more than 7,300 people in Jackson, Mason and Wood Counties, 13 percent of employment in the tri-county area
- The average Polymer Alliance Zone wage is \$73,000
- Wages within the PAZ companies are nearly twice the State average

Marshall University Study Methodology

The Center for Business and Economic Research (CBER) at Marshall University was asked to produce a report estimating the economic impact of the polymer industry in West Virginia. As part of this study, the CBER conducted a survey of polymer manufacturing firms in March and April of 2009. The firms were asked to report employment figures, to characterize their business activity and to estimate the source of various inputs to production.

A goal of the survey was to define the set of firms that comprise the direct impact of the industry. The large majority of goods producing firms fall into this category because they supply goods and services to customers outside of West Virginia. Firms that are customers of the direct firms are part of the indirect impact of the industry. Due to the interconnectedness of the polymer industry it is difficult to assume these relationships without survey information.

The polymer firms were grouped based on their North American Industrial Classification System (NAICS) code for evaluation of the total impact of the industry. The IMPLAN regional modeling

¹ Of the 74 firms that answered the survey only 10 reported that more than 25% of their customers were in-state.

software was used to estimate the total impact. The software estimates the spillover effects of additional business (indirect) and household (induced) spending that occurs from the polymer industry's demand for labor and for local goods and services. IMPLAN's assumptions regarding inputs to production were modified for one industry (plastics material resins manufacturing) based on the results of the survey. This resulted in a lower impact than the default analysis.

Categories of Production

The polymer industry is a goods producing industry. The industry produces both final products for businesses and households as well as intermediate products for other industries. In terms of classification, 24 different NAICS codes are represented. This illustrates the diversity of the West Virginia polymer industry. There are 73 firms modeled in the direct impact (13 firms in the PAZ). Additional polymer firms exist, such as those that provide compounding, packaging, distribution and warehousing services that are part of the indirect impact. The firms can be divided into four types of manufacturing²:

- Plastics material and resins
- Chemical additives such as antioxidants, polyols, fire retardants and organofunctional silicones.
- Final and intermediate plastic and polymer products produced from a variety of materials including urethane, polyurethane, fiberglass, phenolic foam, sponge rubber, polyethylene, polyvinyl chloride, vinyl, cultured marble, latex and polypropylene.
- Services, such as compounding, mold making and plastics recycling.

Employment and Wages

Average polymer salaries by manufacturing sub-industry are shown in Table 1 for all of West Virginia and in Table 2 for the PAZ counties.

Table 1: Direct Polymer-Related Employment by Sub-Industry (All WV)

Manufacturing Industry	Employment	# of Firms	Average Salary in 2008
Chemical Additives	783	5	\$ 68,178
Compounding	52	3	\$ 43,657
Other Plastic Products	2952	29	\$ 30,175
Other Polymer Products	940	8	\$ 48,770
Other Polymer Services	133	3	\$ 49,959
Plastic Bags & Films	188	3	\$ 37,026
Plastics Material & Resins	2611	10	\$ 81,051
Rubber Products	295	6	\$ 45,651
Urethane & Other Foam	43	6	\$ 36,212
TOTAL	7997	73	\$54,084

² Additional firms for which no employment figure was available would increase the total impact slightly.

Wages at polymer industry firms averaged 144 percent of all wages state-wide. The average annual wage was \$54,000 compared to \$37,500 state-wide (3rd quarter 2008). Industries in the tri-county PAZ have an even higher salary (\$73,000) that is nearly twice the average wage in West Virginia. These figures are for direct impact firms.

Table 2: Direct Polymer-Related Employment by Sub-Industry (PAZ Counties)

Manufacturing Industry	Employment	# of Firms	Average Salary in 2008
Chemical Additives	10	1	\$ 68,178
Compounding	17	2	\$ 43,657
Other Plastic Products	356	4	\$ 30,175
Other Polymer Product	9	1	\$ 48,770
Other Polymer Services	13	2	\$ 49,959
Plastics Material & Resins	2073	3	\$ 81,051
PAZ Total	2478	13	\$ 73,153

The Plastics Material & Resins industry pays exceptionally high wages and few exceed it in average salaries. The only industries that do are finance-related, including securities brokerage firms and investment banks, organic chemical manufacturing and druggists' goods wholesalers.³

Table 3 provides comparison of average polymer industry salaries with other select industries. Polymer industry salaries exceed most industries and are also above average for the manufacturing sector. Exceptions include coal mining, utilities and chemical manufacturing.

Table 3: Average Salary Comparisons for West Virginia

Comparison Industry in 2008	Average Salary
All Mining	\$ 72,062
All Construction	\$ 50,610
All Manufacturing	\$ 50,413
Chemical Manufacturing	\$ 71,410
Fabricated Metal Product Manufacturing	\$ 47,953
All Utilities	\$ 66,293
Retail	\$ 22,642
Finance and Insurance	\$ 41,093
Government	\$ 41,083

Total Economic Impact

The estimated total impact of the industry on economic activity is shown in Table 4. In addition to spending by the polymer firms, the total impact includes indirect business spending and household spending. Indirect business spending results as polymer businesses require goods

³ Workforce West Virginia, 2009.

and services from other businesses. Induced spending is household spending by employees of businesses in the both the direct and indirect categories. A large portion of the value of the polymer industry's output is leaked out of the West Virginia economy. This is due to the small size of the state and the sourcing of significant inputs to production, the location of businesses close to state borders and to the assumption that profits are spent outside of the State.

The 22,630 jobs that exist because of the polymer industry are 3.2 percent of the State's total employment. In terms of direct employment the number of jobs is similar to those employed by department stores (7,964 jobs), wholesalers of non-durable goods (8,037 jobs), and amusements–gambling-and-recreation (8,092 jobs).

Table 4: Economic Impacts of the Polymer Industry in West Virginia

Annual Impact in 2008	
	Local Employment
Direct Impact	8,000 jobs in polymers & related industries
Additional Impact	14,630 jobs in other industries (incl govt)
TOTAL EMPLOYMENT	22,630 jobs
	Personal Income
Direct Impact	\$597 million
Additional Impact	\$591 million
TOTAL INCOME	\$1.19 billion
	Output (estimated sales value)
Direct Output Impact	\$5.13 billion (est \$1.65 billion local)
Additional Impact	\$ 1.14 billion local
TOTAL Spending in WV	\$2.2 billion local

West Virginia had a gross state product of around \$61 billion in 2008⁴, a measure of all economic activity within the state. With \$2.2 billion in local economic activity the polymer industry is responsible for 3.6 percent of the State's gross product. Local direct plus additional output is not equal to total local spending due to leakages from household spending.

Table 5 shows the total employment impact of the polymer industry on other industries. This demonstrates the demand for goods and services by the polymer manufacturing establishments and their employees. The nearly 8,000 direct employees (7,997) in manufacturing and wholesale trade, combined with firm spending add an additional 14,633 jobs to the economy for a total of 22,630 jobs. The indirect category is jobs created by firm spending while the induced category is jobs created by household spending.

⁴ Bureau of Economic Analysis (preliminary figure for 2008).

Table 5: Total Employment Impacts of the Polymer Industry in West Virginia

INDUSTRY	Direct	Indirect	Induced	Total
Ag, Forestry, Fish & Hunting	0	43	151	194
Mining	0	585	40	625
Utilities	0	136	57	193
Construction	0	138	54	193
Manufacturing	7,867	707	134	8,709
Wholesale Trade	120	821	186	1,127
Transportation & Warehousing	0	901	137	1,038
Retail trade	0	202	1,528	1,730
Information	0	110	82	193
Finance & insurance	0	197	224	421
Real Estate & Rental	0	182	251	432
Professional- Scientific & Tech Svcs	0	863	203	1,066
Management of Companies	0	302	26	328
Administrative & Waste Services	10	386	189	585
Educational Services	0	55	204	259
Health & Social Services	0	0	1,586	1,586
Arts- Entertainment & Recreation	0	44	125	168
Accommodation & Food Services	0	409	930	1,340
Other Services	0	275	665	939
Government (includes education)	0	44	1,461	1,506
TOTAL	7,997	6,401	8,232	22,630

The estimated total impact in the three PAZ counties is shown in Table 6.

Table 6: Economic Impacts of the Polymer Industry in PAZ Counties

Annual Impact in 2008	
	Local Employment
Direct Impact	2,478 jobs in polymers & related industries
Additional Impact	4,822 jobs in other industries (+ public ed)
TOTAL EMPLOYMENT	7,300 jobs
	Personal Income
Direct Impact	\$210 million
Additional Impact	\$160 million
TOTAL INCOME	\$370 million
	Output (estimated sales value)
Direct Output Impact	\$1.69 billion (est \$516 million local)
Additional Impact	\$206 million local
TOTAL Local Spending	\$511 million local

The PAZ county impact excludes the effect of employment due state government tax spending collected from the polymer industry’s economic activity. This is because the state expenditures are not geographically directly related to the source of the tax. State expenditures are included in the state-level impact figures. Employment in public education and associated spending is included in the PAZ county impact because the demand for public education is highly correlated with population, as represented by jobs.

Tax Impact

The polymer industry contributes to state and local taxes via direct property and other business taxes as well as by taxes paid by its employees and business partners. The amount of tax paid to the State of West Virginia and its counties is estimated at \$178 million. This figure is a function of the 22,630 individuals employed as a result of the industry and is based on total taxes received by the State divided by total employment. This method averages individual consumer contributions to taxes as well as businesses of all types and assets. Data with enough detail to account for actual polymer firm taxes is not available.

Table 7: Tax Impacts of the Polymer Industry

	<u>FY2008</u>	<u>\$ Per Employee</u>	<u>PAZ Firms</u>
Employment, 3rd Q 2008	714,615		22,640
State Tax Category			
General Revenue	\$ 3,304,659,776	\$ 4,624	\$ 104,696,231
State Road Fund	\$ 404,222,669	\$ 566	\$ 12,806,338
Special Revenue	\$ 586,667,746	\$ 821	\$ 18,586,453
Total (minus severance)	\$ 4,295,550,191	\$ 6,011	\$ 136,089,022
Property Taxes Levied	\$ 1,333,508,122	\$ 1,866	\$ 42,247,397
Total	\$ 5,629,058,313	\$ 7,877	\$ 178,336,419

* Severance taxes are excluded.