

9. Plastics

The plastic products industry encompasses a wide range of products, including bags, films, pipes, bottles, coverings, foam products, and more. In the United States alone, the value of shipments for the plastic products industry totaled almost \$175 billion in 2006, up 6.3 percent from 2005, and the industry provided over 700,000 jobs. Typical firms range from large, high-volume manufacturers of standard products to small-volume contract manufacturers.

a) Representative Operation – Plastic Product Manufacturing

The representative operation modeled is an independent plastic products manufacturer. As illustrated in Exhibit 3.34, this operation is characterized by:

- Substantial land and building requirements, with moderate equipment requirements
- A workforce mix weighted toward skilled operators
- Relatively high energy requirements

The business is assumed to operate as a stand-alone profit center.

b) International Results

International results are illustrated in Exhibit 3.35. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.36.

c) Leading Cities

Exhibit 3.37 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.34 – PLASTICS	
Plastic Product Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	10 acres (4 hectares)
Size of factory built	100,000 ft ² (9,290 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$1,980
Office equipment – US \$'000	\$220
R&D equipment – US \$'000	–
Inventory – US \$'000	\$700
Equity financing - % of project costs	25%
Workforce	
Management	3
Sales and administration	11
Production/non-dedicated product development	
- Professional, technical	12
- Operators	46
- Unskilled laborers	15
Other	3
Total employees	90
Energy Requirements	
Electricity monthly consumption/peak demand	400,000 kWh and 1,350 kW
Gas monthly consumption	8,900 CCF (25,205 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$20,000
Materials and other direct costs - % of sales	33%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	–

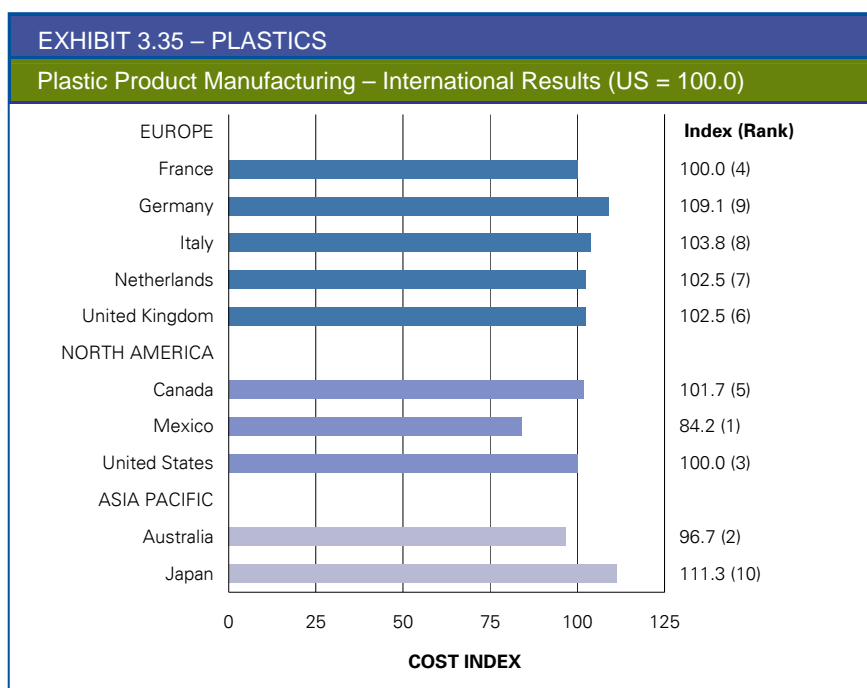


EXHIBIT 3.36 – PLASTICS										
Plastic Product Manufacturing – Costs, by Major Component, US \$'000										
	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200	19,200
Costs										
- Salaries & Wages	3,725	5,691	3,691	4,987	4,299	4,377	1,904	3,979	4,249	5,322
- Statutory Plans	1,581	934	1,213	650	521	434	227	449	551	483
- Other Benefits	747	1,111	948	1,438	1,334	933	433	1,110	885	1,765
- Total Labor & Benefits	6,054	7,736	5,852	7,074	6,154	5,744	2,565	5,538	5,685	7,570
- Transportation	1,242	1,270	1,839	861	866	2,022	2,600	2,119	935	1,700
- Utilities	608	951	1,192	837	802	509	697	409	743	833
- Interest & Depreciation	973	1,289	967	1,290	1,399	1,098	(245)	818	940	1,392
- Non-income Taxes	290	178	61	49	595	411	34	242	137	380
- Location-insensitive Costs	7,008	7,008	7,008	7,008	7,008	7,008	7,008	7,008	7,008	7,008
Profit Before Income Tax	3,024	767	2,280	2,080	2,376	2,408	6,542	3,073	3,752	318
- Income Taxes ¹	1,034	336	939	519	801	696	1,833	1,069	1,191	262
Effective Rate	34.2%	43.8%	41.2%	25.0%	33.7%	28.9%	28.0%	35.1%	31.7%	n/a
After-tax Profit	1,991	431	1,341	1,561	1,575	1,712	4,709	1,996	2,561	55
Total Annual Costs	17,209	18,768	17,858	17,638	17,626	17,489	14,492	17,204	16,639	19,145
Index (US=100.0)	100.0	109.1	103.8	102.5	102.5	101.7	84.2	100.0	96.7	111.3
Rank	4	9	8	7	6	5	1	3	2	10

¹ Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

EXHIBIT 3.37 – PLASTICS							
Plastics Product Manufacturing – Results for Leading Cities, by Country							
Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Mulhouse	99.5	38	Canada	Sherbrooke	94.1	12
	Toulouse	99.5	39		Quebec City	97.9	27
Germany	Halle	106.3	89	Waterloo Region	98.6	33	
	Erlangen	110.4	95	Montreal	98.7	34	
Italy	Vicenza	102.4	67	Mexico	Reynosa	81.2	1
	Livorno	103.2	77		Aguascalientes	84.5	2
Netherlands	Utrecht	102.5	68	United States	Greenville-Spartanburg	92.3	6
United Kingdom	Barnsley	100.4	48		Shreveport	92.7	7
	Plymouth	101.3	57		Montgomery	92.7	8
Australia	Melbourne	94.4	15		Lexington	92.8	9
	Adelaide	94.6	16		Little Rock	93.4	10
Japan	Fukuoka	108.8	93		Charleston	93.6	11
	Yokohama	111.9	97		Atlanta	94.3	13
				Nashville	94.4	14	
				Jackson	94.9	17	