BRAZIL PLASTIC INDUSTRY

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Report prepared by the Massachusetts South America Office
E-mail: massbrazil@massbrazil.com.br
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Overview

The potential of the Brazilian market, currently the world's seventh largest consumer of plastic, confirms, indirectly, the image of Brazil as a global key market. With a population estimated at 184 million inhabitants, Brazil's per capita plastic consumption was approximately 25 kilos in 2006, or almost 2 kilos higher than in 2001. The Brazilian plastic supply chain is renowned for its high technology as well as for the qualification of its human resources. It is composed of Petrobras (national oil producer), 3 Naphtha-based Petrochemical Complexes, 1 Natural Gas-based Petrochemical Complex, 14 Thermoplastic Resin Producers and over 8,000 plastic converters nationwide. With more than 8 thousand plastic transformation companies, it is an important market for plastic production machine/equipment and related products including molds, sensors, controls, hot runners, industrial automation, plastics raw materials, etc.

The Industry

Since 2003, The Plastics transformation industry in Brazil has been investing about US $6 billion to increase production capacity and modernize equipment until 2008. A plan to increase exports of plastics products is expected to further stimulate investments in the sector. The plastics industry's sales in 2006 reached US$ 18.6 billion a 16% percent increase over 2005. Resin consumption was estimated at 4.53 million metric tons in 2006 compared to 4.21 million metric tons in the previous year. The plastics transformation industry in Brazil consists of 8.844 companies that employ approximately 267.000 people. With plastics consumption estimated at 4.5 million tons.

Plastic Industry in Brazil

Industry	*Installed capacity (Kt/y)*
Cracking (1st Generation)	**5.770**
Thermoplastic resins(2nd Generation)	**5.975**
Converting (3rd Generation)	**5.240**

Source: Export Plastic

Companies and Employees of the Plastic Industry 2001-2006

	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Companies	7.438	7.898	8.213	8.523	8.844	-
Employees	201.682	218.140	224.941	240.466	252.931	266.787

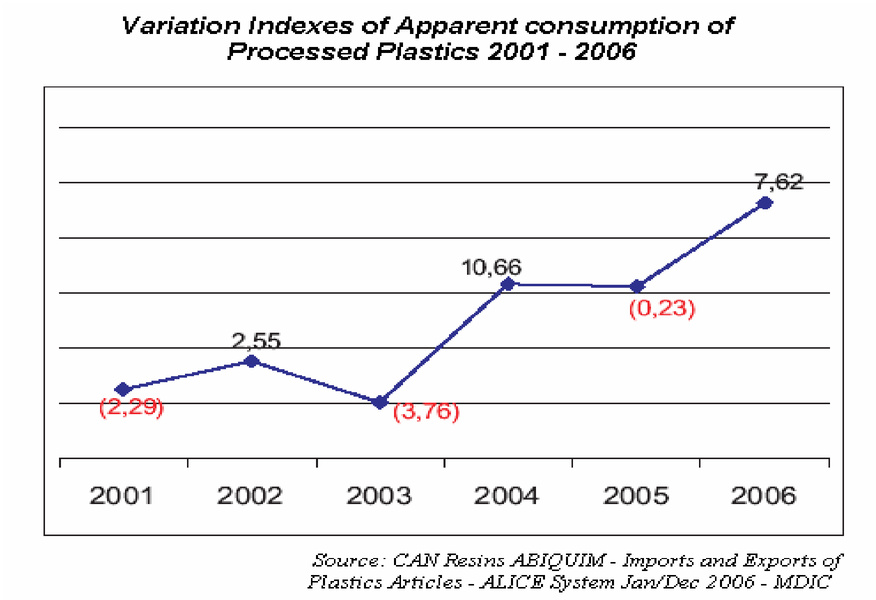
Source: MTE - RAIS 2005 - CAGED Jan 2006 to Dec 2006 - Movement of Admissions and Dismissal

Consumption of Processed Plastics Articles

2001 - 2006 (in tons)

	2001	2002	2003	2004	2005	2006
Domestic Consumption of Resins	3.822.324	3.915.547	3.816.921	4.220.479	4.213.418	4.535.820
Import of Articles	215.729	214.213	222.981	285.634	311.575	351.678
Export of Articles	146.333	138.914	199.089	255.729	284.236	323.428
Consumption of Plastics Article	3.891.720	3.990.845	3.840.812	4.250.384	4.240.757	4.564.070

Source: ABIPLAST



The petrochemical chain is made of first generation companies. The production units which produce basic petrochemicals – olefins (ethane, propane and butadiene) and aromatics (benzene, toluene and xylem) – and of second generation companies and production units, which produce intermediate products and thermoplastic resins. Third generation companies, better known as plastic production companies, are clients of the petrochemical industry, and they transform second generation and intermediate products into materials and products to be used in several segments, such as packaging, construction, electric, electronic and automotive.

The Brazilian petrochemical industry, as other global petrochemical industries, is organized into groups, in order to take advantage of logistic synergies, infrastructure and operational integration, as well as to minimize costs. The units that make up the petrochemical groups are mostly first and second generation.

Basic Petrochemicals -1st Generation

The Brazilian plastic chain begins with Petrobras, a company operating in the areas of exploration, production, refining, trade and transportation of crude oil and gas in Brazil and overseas. Petrobras rate among the 10 largest oil companies in the world and is responsible for 8% of the national GDP gross. Rio Polímeros also represents the beginning of the chain, followed by four petrochemical companies.

Thermoplastic Resins – 2nd Generation

The apparent consumption of thermoplastic resins in Brazil grew 6%, in 2006. Production almost reached 5 million tons, an increase of 10% in relation to 2005. Imports totaled 744.3 thousand tons, a 4% growth. The highlight of the segment was the performance of resin exports that reached 1.194 thousand tons, an increment of 17%. The apparent consumption, result of the sum of production with imports, minus exports, was close to 4.5 million tons.

Apparent Consumption of Thermoplastic Resins
2001 - 2006 (in tons)

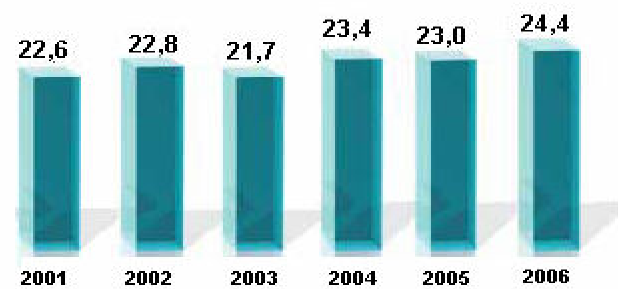
	2001	2002	2003	2004	2005	2006
Production	3.704.592	3.914.996	4.141.223	4.410.411	4.514.822	4.986.065
Imports	691.352	681.761	576.887	635.917	716.285	744.252
Exports	573.620	681.210	901.189	825.849	1.017.688	1.194.507
Consumption	3.822.324	3.915.547	3.816.921	4.220.479	4.213.418	4.535.820

Source: Production - ABIQUIM; Imports and Exports - ALICE System Jan/2006 - MDIC

The analysis carried out by the Coplast – Abiquim's Thermoplastic Resins Committee points to the political crisis that inhibited foreign investments, high interest rates, excessive taxation, valuation of the dollar, crude oil higher prices and the lack of investments in infra-structure as the main influencing factors for the segment last year. The exchange rate favored imports that evidenced a growth of 12.8% in volume, in relation to 2005. However, even with the appreciation of the real in relation to the dollar and the euro, Brazilian thermoplastic resins exports showed a growth greater than that of imports.

Per capita consumption of thermoplastic resins in Brazil did not increase in 2005, remaining at 23kg per inhabitant, however in 2006, it increased 6%. This calculation is based on the Country's total population, estimated at 187 million inhabitants in 2006, and the apparent consumption of thermoplastic resins. Considered as an indicator of the quality of life, the per capita consumption of thermoplastic resins still stands at a low ceiling in Brazil. Estimate for thermoplastic resins consumption in the USA stand at some 100 kg per inhabitant, in France some 60 kilos and in Argentina about 30 kilos per inhabitant.

Per Capita Consumption of Plastics in Brazil (Kg)



source: Abiquim

Coplast's survey comprises the following thermoplastic resins: low density polyethylene (PEBD); low linear density polyethylene (PEBDL); high density polyethylene (PEAD), polypropylene (PP); polyethylene (PS); polyvinyl chloride (PVC); ethylene copolymer and vinyl acetate (EVA) and polyethylene tereftalate (PET).

Coplast worked on the analysis and development of new applications, such as crates to transport fruit and vegetables, and new markets for the plastics, it created a system to consolidate statistical data and followed up the data on thermoplastic resins cargo theft and accidents, among other activities.

Apparent Consumption of Thermoplastic Resins
2006- by Resins (in tons)

2006				
	Production	**Import**	**Export**	**Ap. Consumption**
PEBD	681.083	10.628	149.661	542.050
PEBL	635.152	174.593	295.320	514.424
PEAD	1.018.456	111.285	353.671	776.069
PP	1.234.977	104.997	223.157	1.116.817
PS	360.957	29.961	57.290	333.628
PVC	676.263	126.647	50.869	752.041
EVA	71.827	13.700	33.965	51.562
PET	307.351	172.452	30.574	449.229
TOTAL	**4.986.065**	**744.262**	**449.229**	**4.535.820**

Source: Production - ABIQUIM; Imports and Exports
ALICE System Jan/2006 – MDIC

The Players

Oil Producer	Naphta Crackers	Thermoplastic resins producer
Petrobrás	Brasken, Copesul, PQU	Basf, Brasken, Dow, Innova, Petroquímica, Petroquímica Triumfo, Pol. União, Polibrasil, Politeno, Rio Polimeros, Solvay

About Petrobras
Petrobrás, the largest Brazilian corporation, with activities in 24 countries, has an integrated approach to its operations in the exploration, production, refining, transport, distribution, and commercialization of oil and oil products, petrochemicals, natural gas, and energy. Petrobras, enjoying the international recognition it has achieved with the ultra-deepwater technology it developed, has been producing oil in offshore fields at even greater depths and at competitive prices. This has attracted the interest of oil companies from around the world, with which it has been signing partnership agreements for the exploration and production of its reserves in the vast Brazilian continental shelf.

About Brasken
Braskem has been the leader in the Latin American market of thermoplastic resins since its creation in August of 2002, when the groups Odebrecht and Mariani integrated their petrochemicals assets to Copene Petroquímica do Nordeste, former raw materials central of Camaçari pole in the state of Bahia, controlled by them since 2001. Both groups joined their petrochemical companies, creating Braskem, the first integrated petrochemical in the country. It means that Braskem concentrates, in one company, the operations of the first and the second generation in the plastic productive chain. The first generation is responsible by the business cycles connected to the basic raw materials production like, ethane, propane and chlorine, important elements for the second generation that works with the thermoplastic resins. Braskem's strategic plan calls for a substantial growth by 2010 to triple sales volume, currently at approximately US$ 3.2 billion

About Copesul
Copesul processes mainly naphtha besides condensate and LPG so as to generate basic products that feed downstream industries of petrochemical chain. Classified as a large-size cracker, Copesul produces about 40% of ethylene consumed in Brazil, nameplate capacity of 1.135 million tons/year. Besides ethylene, its main product, Copesul produces propylene, butadiene, benzene, toluene, xylenes, MTBE, butene-1, propane, and others, a total of 3 million tons per year of petrochemicals. More than 80% are consumed in South Petrochemical Complex. Remaining products are sold to other Brazilian states or exported.

About PQU
The Sao Paulo Petrochemical Complex is located in the city of Cubatão, with production units in Capuava, Santo André and Paulinia. PQU (Petroquímica União) is the raw material center for this petrochemical complex. Six groups, in a complex shareholders agreement, share the control of PQU. The multifaceted arrangement makes it difficult to attract new

investments and to integrate second-generation producers. Constant disputes among shareholders are another problem faced by PQU.

Export Plastic Program

In December 2003, it was created the Export Plastic Program, when the Brazilian integrated plastic chain Petrobras, the naphta crackers, the gas-based complex and thermoplastic resin producers, in partnership with the Ministry of Development Industry and Foreign Trade through APEX-Brazil (Trade and Investment Promotion Agency), took the decision to promote the export of converted plastic products under the coordination of INP (Brazilian Plastic Institute). The Program supports Brazilian plastic converters with the aim of expanding their markets through long-term sustainable strategies.

Brazil exported US$ 1.048 million in transformed plastic products in 2006, which represents an increase over 24%, as compared to 2005. Conceived by Coplast, the Export Plastic program strives to increase Brazilian exports for transformed plastic products with higher added value, by increasing the number of exporting companies and diversification of the items traded by Brazil in the international market. The program, established in 2003, is the result of a cooperation agreement signed between Abiquim, Abiplast –Brazilian Plastic Industry and the INP – National Plastic Institute with Apex Brazil – Export Promotion Agency. The Export Plastic Program brings together the experience, dynamism and synergy of the Plastic Production Chain. Added to the governmental effort developed by APEX Brazil - Trade and Investment Promotion Agency - these three factors aim at providing the Plastic Covering Industry (3rd Generation) with the necessary base it needs to sail towards the international market. The objectives are:

- Expand and consolidate the exports of the plastic transformation industry
- Develop the sector's exporting culture.
- Increase the number of jobs in the chain
- Increase the competitiveness of the production chain
- Increase exports by approximately US$ 300 million (in the first four years of the Program) totalizing US$ 2-Billion by 2008.
- Insert new companies in the exporting process

Exports of Brazilian Plastic Products

Best Sales Prospects

U.S. suppliers of equipment and services for the petrochemical industry should pay special attention to the developments in this sector in Brazil. There are several first- and second-generation projects being announced in the Brazilian media. Private sector companies, many with participation from state-owned Petrobras, will be responsible for operation of several of these projects. U.S. companies interested in becoming actively involved in the Brazilian petrochemical sector should seek a local partner, be it an agent, distributor or joint venture partner. USCS Brazil has specific services designed to assist U.S. companies in identifying ideal partners in Brazil.

Investment Forecast up to 2010

Company	*Products*	*US$ million*	*Conclusion*
PQU	Ethylene	180	2007
INNOVA	Estyrene/Ethylbenzene	150	2008
Polietilenos União	HDPE / LLDPE	150	2007
Politeno	HDPE / LLDPE / LDPE	109	2009
Suzano Petroquímica	PP	81	2007
Petrochemichal Refinery	Ethylene / PET / HDPE/ PP	6,600	2010
Bolivia gas – chemical complex	Ethylene / HDPE	1,400	2009
Poliéster PE complex	P-Xylene / TPA / PET	1,000	2009
Brasken/Petrobrás	PP (New plant)	250	2010

Comparing the projected demand with the current installed capacity of the Brazilian petrochemical industry, and not taking into account any future expansion projects surplus/deficit in capacity in tons/year, by resin, for the years 2008 and 2013 are shown in this chart:

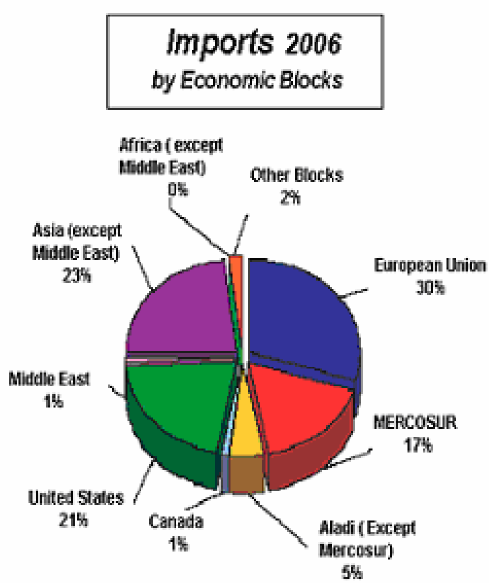
Year	PEAD	PEBD	PEBDL	PP	PET	PVC	PS
2008	145,941	37,527	114,440	469,806	394,066	257,111	219,120
2013	(789,946)	(332,445)	(633,727)	(2,348,115)	(1,283,605)	(970,585)	(11,672)

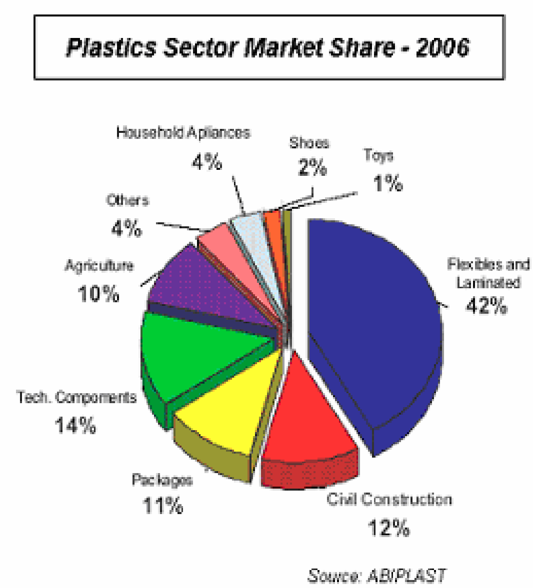
The Brazilian petrochemical industry will have to make a series of investments to meet the growing internal demand and to eventually expand into foreign markets. Investments of over US$12 billion would be necessary to expand the Brazilian petrochemical industry until 2013, to meet the growth in demand in local markets. A list of the necessary investments follows:

2013

2nd Generation	Plants	Capacity (t)	Value (US$/t)	Total (US$)
PEBD	1	350,000	1,200	420,000,000
PEAD	3	500,000	800	1,200,000,000
PP	4	450,000	800	1,440,000,000
PTA	2	450,000	1,300	1,170,000,000
Soda Chloride to PVC	2	300,000	1,600	960,000,000
Total		**5,150,000**		**5,190,000,000**

1st Generation	Coefficient	Quantity (t)	Value (US$/t)	Total (US$)
Ethane (Naphtha)	**0.35**	**2,505,000**	**1,200**	**3,006,000,000**
PTA/PET	0.31	279,000		
PVC	0.52	312,000		
Polyethylene	1.05	1,850,000		
Styrene	0.32	64,000		
Propane	**0.25**	**1,789,286**		
Aromatics	**0.20**	**1,431,429**	**800**	**1,145,142,857**
Others	**0.20**	**1,431,429**	**300**	**429,428,571**
Styrene		**200,000**	**500**	
Total				
Total Investment	**1st and 2nd**	**Generation**	**2009-2013**	**9,930,571,429**
Total Investment	**2004-2013**			**12,090,571,429**





Growth Indicators of the Brazilian Plastics Processing Sector 2001 – 2006

Cons. Variation of Processed Plastics 2001-2006 (% ton)					
2001	**2002**	**2003**	**2004**	**2005**	**2006**
(2,29)	2,55	(3,76)	10,66	(0,23)	7,62

Revenue Variation of the Processed Sector US$ - %					
2001	**2002**	**2003**	**2004**	**2005**	**2006**
(33,08)	19,25	17,01	40,54	21,00	16,34

Imports of Processed Plastics - %						
	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Ton - %	(6,20)	(0,70)	4,09	28,10	9,08	12,87
US$ - %	(7,10)	(7,89)	5,23	29,33	16,00	18,36

Exports of the Processed Plastics - %						
	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Ton - %	8,51	(5,07)	43,32	28,45	11,15	13,79
US$ - %	10,13	(10,84)	29,54	33,09	21,77	24,66

Trade Balance Processed Plastics						
	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Ton - %	(69,40)	(75,30)	(23,89)	(29,91)	(27,34)	(28,25)
US$ - %	(368,93)	(353,08)	(274,23)	(335,22)	(350,16)	(361,48)

Per Capita Consumption of Plastics in Brazil (Kg)					
2001	**2002**	**2003**	**2004**	**2005**	**2006**
22,63	22,80	21,71	23,48	23,02	24,43

Plastics Processing Sector Share of GPD - %					
2001	**2002**	**2003**	**2004**	**2005**	**2006**
1,22	1,60	1,70	1,99	1,82	1,75

Source: Data ABIPLAST - Imports and Exports
ALICE System Jan/Dec 2006 - MDIC

Trade Shows

Tecnoplast Trade Show 2009
Late November 2009 at Centro de Exposições Fiergs in Porto Alegre-RS, Brazil
Website: www.feiratecnoplast.com.br

Embala Minas Trade Show 2008
April 8-10, 2008 at Expominas in Belo Horizonte- MG, Brazil
Website: www.embalaweb.com.br

Brasilplast Trade Show 2009
The event usually takes place every other year, in the first half of May in São Paulo, Brazil
Website: www.brasilplast.com.br

What We Can Do for Massachusetts Companies
Massachusetts companies interested in entering South American markets or attending/visiting local trade shows, please contact the Massachusetts South America Office in Brazil at massbrazil@massbrazil.com.br.
Phone: +55 11 3051-9080

Resources

- Export Plastic www.exportplastic.com.br
- ABIQUIM www.abiquim.org.br
- ABIPLAST www.abiplast.org.br
- ICIS www.icis.com
- USCS: Trade Reports - www.focusbrazil.org.br
- International Market Research: http://strategis.ic.gc.ca