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Market study on the Mexican market
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MARKET STUDY ON
THE MEXICAN MARKET FOR PLASTICS PRODUCTION
MACHINERY, EQUIPMENT AND RESINS

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MACHINERY, EQUIPMENT AND RESINS

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1. BACKGROUND

The Mexican plastics production industry has shown a particularly high growth rate in the last decade, despite economic pressures, and this trend is expected to continue in the future. Between 1985 and 1991, the industry grew at an average annual rate of 6% and from representing 0.35% of Mexico's GDP the former year, it now represents 0.5%. It is estimated that in only five years, per capita consumption will grow to 19 kgs per person, as compared to 6 kgs. only ten years ago. This, coupled with a 2.3 % population growth will translate into an estimated annual increase in apparent consumption of plastic products of 8% per annum.

Therefore, both the Mexican markets for plastic resins and machinery offer important and growing sales opportunities for foreign manufacturers. The new open market policies adopted by the Mexican government will continue to benefit foreign companies. On the one hand, tariffs and other trade barriers have been reduced or eliminated, making importation easier and less costly and, on the other hand, export development policies and increased competition from abroad are forcing the domestic industry to be more efficient and productive. This will translate into increased imports of foreign technology, products and materials.

2. ECONOMIC ENVIRONMENT

With the objective of reducing the inflation rate, the Mexican authorities implemented a stabilization program in 1988, called the Economic Solidarity Pact, which features traditional austerity measures, entailing tight fiscal and monetary policies and unorthodox measures, such as price, wage and exchange rate controls. This program has been the cornerstone of Mexico's economic policy over the past four years, and has recently been extended to January 1993. It has resulted in a drastic reduction of the inflation rate, from an annual rate of 159% in 1987 to 19.7% in 1989. Inflation rebounded to 29.9% in 1990 but was brought down to 18.5% in 1991 and is expected to be of 10% to 12% in 1992. At the same time, interest rates have fallen substantially to the present 17%, and the peso-dollar devaluation rate has been set at Mex\$0.2 pesos a day or 2.4% per annum.

Along with the objective of consolidating the progress made in price stabilization, Mexico's macroeconomic policy in 1992 aims to reaffirm gradual and sustained economic recuperation, basically by establishing the necessary conditions to encourage national and foreign investment and by stimulating local demand, and to strengthen the improvement in living standards of the poorest segment of society through the Solidaridad program.

Domestic economic activity recovered for the third consecutive year in 1989, after the 1986 recession, with a gross domestic

product (GDP) growth rate of 3.1%. In 1990 it grew 3.9% and another 3.6% in 1991 to reach \$280.3 billion (1). With an 82.8 million population, per capita GDP was estimated at \$3,385 in 1991. Additionally, manufacturing output grew by 5.2% in 1990 and 3% in 1991 in real terms, private investment and consumption expanded 13.6% and 5.2% respectively and public investment was up 12.8%. During the 1992-1994 period, the GDP is expected to maintain an average annual growth rate of 4%-5%. Preliminary figures place GDP growth at 4% for 1992.

In an effort to revitalize and open the Mexican economy, the Mexican Government undertook a series of structural changes, including the accession to the General Agreement on Tariffs and Trade (GATT) on August 24, 1986 leading to an extensive trade liberalization process: import permits were eliminated on all but 325 of the total 11,950 tariff items based on the Harmonized System adopted in 1989. Official import prices are no longer applicable, nor the 5% export development tax, and import duties were lowered from a maximum of 100% in 1982 to 20% in January 1988. The weighted average tariff rate is now 10.4%. The automotive industry, with the exception of foreign assembled vehicles which are still subject to prior import license control, and the computer industry have also been liberalized, through the elimination of prior import permits, to allow free entry of products in these industries. The approval of the North American Free Trade Agreement will further strengthen trade between Canada, the United States and Mexico.

According to official data from the Mexican Secretariat of Commerce and Industrial Development (SECOFI), Mexico's trade balance dropped once again in 1991 to a \$10.4 billion deficit from -\$3 billion in 1990. Exports increased by 2.6% in 1991, from \$26.8 billion to \$27.6 billion, while imports grew 22.2%, from \$29.8 billion to \$38 billion in 1991, having already increased 27.2% in 1990 from \$23.4 billion in 1989.

Total Mexican imports from Canada increased 24% in 1989, then decreased 1.5% in 1990 and again by 26% in 1991. Total Canadian exports to Mexico amounted to Cdn\$594 million in 1990 and Cdn\$440.8 million in 1991, while total Canadian imports from Mexico were valued at Cdn\$1,730 million in 1990 and Cdn\$2,574 million in 1991. According to Mexican figures, in 1990, 1.6% of Mexico's imports came from Canada, while 0.8% of its exports were to Canada. This makes Canada Mexico's sixth largest exporter and fifth largest importer.

1. Note: All values in this report, unless otherwise stated (Mexican pesos, Mex\$, Canadian dollars, Cdn\$, etc) are quoted in United States dollar equivalents.

3. MARKET ASSESSMENT

3.1 PLASTICS PRODUCTION MACHINERY AND EQUIPMENT

3.1.1 Total Market Demand

In 1986, total apparent consumption of plastics production machinery and equipment reached its highest level since 1982, amounting to \$124.6 million. This represented a 33% increase over 1985 and 60% over 1984 levels. Although the market contracted in 1987, in 1988 it reached its previous level and started growing at a very fast pace in 1989 and 1990, with growth rates of 37.1% and 19.6% respectively, reaching \$205.1 million in 1990 (see Table 1). Economic and political conditions determined this trend in the market. The plastics industry had shown an important demand backlog for new machinery, since purchases were drastically reduced beginning in 1982. Important fiscal incentives and preferential credits have been granted for the purchase of machinery. Decreasing inflation and devaluation rates coupled with Mexico's trade liberalization policies have made imports easier and cheaper. Also, improved economic conditions have favorably affected the demand for plastic products and thereby for plastics production machinery. All of these factors have resulted in a demand upswing since 1986.

TABLE 1
THE MEXICAN MARKET FOR PLASTICS PRODUCTION
MACHINERY AND EQUIPMENT
(million U.S.\$)

	1988	1989	1990	1991e	1994p
Production	47.4	51.7	56.4	59.6	69.0
+ Imports	88.8	131.3	162.0	183.1	243.7
- Exports	11.1	11.5	13.3	14.4	17.6
TOTAL	125.1	171.5	205.1	228.3	295.1

Note: e=estimated p=projected

Source: Import-export data based on statistics published by Secretaría de Comercio y Fomento Industrial (SECOFI)

During 1991, total demand in this market grew another 11% and should then continue its upward trend with an estimated annual increase of 9% in the following three years, since the plastics industry is one of the most dynamic economic sectors in Mexico. On the one hand, there will continue to be a growth in the overall demand for plastic products, both in terms of volume and of the number and variety of applications; coupled with the increased integration and competitiveness of the domestic plastics producing industry as will be seen in Section 4 of this report. Major plastics producing companies are expected to continue replacing old machinery, which is estimated to have a

life-span of nine to ten years. The machinery and equipment presently used in Mexico is still, in many instances, technologically outdated and in some cases even obsolete, accounting for its reduced productivity. In the new export-oriented industry, new products need to be introduced, new materials used, quality improved and, in general, efficiency increased, in order to supply domestic demand and international markets with a competitive edge. This is no time to stay behind and the plastics industry is no exception. Imported state of the art technology will continue to be crucial to the growth and development of the Mexican plastics industry.

3.1.2 Imports

The plastics industry has traditionally relied predominantly on imported machinery and equipment, which accounts for an average 70% to 80% of the market. Due to the extraordinary increase of imports in the past few years, the import market share has steadily increased since 1988 to the present 80%. In the years to come, since imports are expected to grow at a faster rate than local production, the imported share of the market is expected to continue increasing and to reach 82.6% by 1994.

Total Mexican imports of plastics production machinery were valued at \$88.8 million in 1988, including machinery and equipment for the transformation of plastics and rubber, parts thereof and moulds. In 1989, imports grew 48% and another 23.3% in 1990. In 1991, an additional 13% increase is anticipated and imports are expected to grow 10% annually between 1991 and 1994 to reach \$243.7 million by the latter year.

TABLE 2
MEXICAN IMPORTS OF PLASTICS AND RUBBER
PRODUCTION MACHINERY AND EQUIPMENT

	1988	1989	1990
Injection moulding machines	13,330	30,083	37,137
Extruders	14,859	18,796	17,816
Blow moulding machines	12,521	16,212	24,621
Vacuum moulding machines	653	3,509	6,155
Tyre & tube moulding & retreading	1,036	468	907
Cutting & punching machines	1,272	2,617	4,904
Granulators, mills & crushers	751	1,557	2,085
Mixers	1,071	2,491	1,976
Machines with 2 or more functions	690	1,856	2,605
Painting, pigmenting & joining	359	918	242
Other machines for plastics	19,185	14,550	18,601
Parts for machinery & equipment	8,326	11,708	13,646
Moulds for plastics & rubber	14,754	23,887	31,309
TOTAL IMPORTS	88,807	128,652	162,004

Source: Import statistics by SECOFI

As can be seen in the above table, there has been a gradual shift in the importation of plastics production machinery. Injection moulding machines, which in 1988 represented 15% of total imports, increased their participation to 23% by 1990. Extruders, on the other hand, fell relatively to other types from 16.8% to 11% during that same period. Blow moulding and vacuum moulding machines also increased their participation and now represent 15.1% and 3.8% respectively as opposed to 14% and 0.8% in 1988. Imports of moulds have also increased in importance, while all other areas have, in general terms, grown steadily and maintained their participation.

Mexico has predominantly used extrusion and injection processes to manufacture plastic products. There are approximately 20,000 machines of these types installed, which can easily cover the demand in this area. Other processes are now becoming more important as well as the use of engineering resins over commodity resins. These innovative areas represent excellent opportunities for Canadian suppliers. Machinery with best sales prospects include blow moulding, lamination, rotational moulding, foaming, compression, thermoforming, coating, calendaring, sealing, metalizing, electroplating, decorating and finishing machines. At present small and medium sized automatic machines are in greater demand than large machines, due to the average size of plastic manufacturing firms and to the high cost of the latter machines. Another area with an excellent growth potential is moulds. At a time when buying a new machine is extremely costly, using existing machinery more efficiently is becoming very important. Moulds are a very effective means to achieve this, as well as screws to adapt the machine to other resins. It is in these areas that a higher growth is expected.

The United States is presently the number one exporter of plastics production machinery to Mexico, but has seen its market share falling from 58% in 1985 to 50% in 1988 and further to 40% in 1990 as a result of increased competition from third country suppliers. West Germany has substantially increased its market share, to approximately 20%, as a result of a very aggressive marketing strategy. This includes establishing representatives in Mexico, making literature available in Spanish, visiting local chambers and associations and keeping them informed on new machines and their applications, demonstrating their products directly at the firms, training personnel in new processes and resins and, in general, having a stronger presence in the sales and service markets. Italy is the third most important competitor, enjoying a stable market share of 10% to 12%. European machines are perceived to be of very good quality, high productivity and versatility, at prices similar to those of U.S. and Canadian machines. The U.S. is particularly known for big machines with high productivity and quality, while European machines tend to be smaller in size. Other countries, such as Spain, France, Canada, Belgium and Brazil also sell to the Mexican market but are not as well established as the U.S.,

Germany and Italy. Japanese manufacturers are also penetrating the market with small and low priced machines and in particular with moulds, sector in which they cover 17% of imports.

The following table lists trade between Mexico and Canada in plastics production machinery and moulds.

TABLE 3
CANADA-MEXICO TRADE OF
PLASTICS PRODUCTION MACHINERY
(Cdn\$000)

CANADIAN EXPORTS TO MEXICO

CATEGORY	1988	1989	1990	1991
Injection/moulding mach.	0	4,500	220	3,659
Extruders	0	0	0	57
Tube & tyre making mach.	0	92	0	0
Plastic moulding & forming	33	164	0	0
Other for plastic & rubber	314	107	4	472
Parts for machinery	152	1,916	200	563
Injection/compression moulds	948	1,979	2,670	1,082
Other moulds	41	0	103	76
TOTAL	1,488	8,758	3,197	5,909

CANADIAN IMPORTS FROM MEXICO

CATEGORY	1988	1989	1990	1991
Injection/moulding machines	54	0	0	0
Other mach. for plastics	0	56	0	0
Parts for machinery	1	9	10	49
Moulds	0	61	3	11
TOTAL	55	129	13	60

Source: Statistics Canada - International Trade Division

As can be seen in the above table, Canadian imports from Mexico are very minor. Canadian exports to Mexico of plastics and rubber industry machinery, although not very significant, have increased from 1990 to 1991, although the 1991 amount of Cdn\$5.9 million is still lower than the Cdn\$8.8 million of 1989. The most important categories of exports to Mexico are injection-moulding machines and injection-compression moulds, as well as parts for machinery and equipment. Canadian companies have a good potential for exporting to Mexico, but they would benefit from more aggressive marketing strategies, including visits to local distributors and end users, participation in trade shows for the plastics industry and an active relationship with the local Plastics Association

and Industrial Plastics Institute, which recently inaugurated its International Plastics Center to support all companies related to this industry, including producers, transformation companies and end users, as well as suppliers to the industry, exporters and importers. This center also features an all-year-round exhibition of firms related to this industry.

Some of the most important foreign companies represented in Mexico include:

UNITED STATES

American Plastics Equipment
Beloid
Cincinnati/Sano
Conair
Filmaster
Goodyear
H.P.M.
Hyfel
IMCO
John Brown
Jomar Industries
Micromolder Machinery
New Britanic
Reed-Prentice
Sterling
Vandoor

JAPAN

Glaco
Nissei ASB
Sandreto
Toshiba

WEST GERMANY

Arbur
Barmag
Battenfeld
Bekum
Berns
Boy
Demag
Fischer
Mannesman
Reifenhausen

ITALY

Amut
Fluidmec
Hercole Comercio
Negribossi
Pantera

3.1.3 Domestic Production

Local production of plastics processing machinery and equipment is considered basic and with relatively little diversification, using mostly imported technology. All of the more sophisticated and state of the art equipment is imported, as well as the special applications machinery and accessories.

Plastics production machinery and equipment manufactured locally includes injection, extrusion, blow moulding machinery, peripheral equipment, accessories and molds. In 1990, total domestic production amounted to \$56.4 million, up from \$51.7 million in 1989 (see Table 1). As a result of the 1987 reduction in import duties, imported machinery is competing very strongly with domestically produced equipment. It is estimated that, by 1994, close to 83% of the total market will be of imported origin, while local production will be mostly for replacement purposes and for moulds.

There are only nine major manufacturers of plastics machinery in Mexico. The most important, until recently, were Fabricación de Máquinas, S.A. (FAMA) and Leesona, both manufacturers of

injection molding machines. Leeson, a company operating under license of Negri Bossi Italy, recently closed its plant in Mexico because of its low productivity. Its locally produced equipment was perceived to be expensive and technologically outdated. This, in addition to increased competition from abroad due to Mexico's trade liberalization shifted the demand to other brands and towards imported machinery. This will represent increased opportunities for foreign suppliers in this area. Other Mexican companies include Mecánica de Oriente (injection), Vulcano (manual injectors and blow molders), Maquinaria Plástica Mexicana (extrusion), Beutel Spacher (extrusion), ITI, S.A. (extrusion), PRIPSA (peripheral equipment), Frigothem McQuay (chillers) and Friomold (moulds), in addition to FAMA, which also produces and exports moulds. Additionally, there are 110 manufacturers of moulds. These are mostly small, artesanal operations which do not produce sophisticated moulds.

3.2 PLASTIC RESINS

3.2.1 Total Market Demand

TABLE 4
APPARENT CONSUMPTION OF PLASTIC RESINS AND MATERIALS
(U.S.\$ millions)

	1989	1990	1991	1994e
Production	961.4	1,077.2	1,120.5	1,353.5
+ Imports	417.8	423.9	467.5	605.4
- Exports	186.5	236.8	260.5	346.7
TOTAL	1,192.7	1,264.3	1,327.5	1,612.2

Source: Based on import-export data published by SECOFI; data by Instituto Mexicano del Plástico Industrial (IMPI)

Mexico's consumption of plastic resins fell during the 1982-1984 recession period by 12%, but it increased at an average annual rate of 6% between 1985 and 1991, reaching over 1.4 million tons, or \$1.3 billion dollars, in 1991. During 1990, total apparent consumption grew by 6% and preliminary figures place 1991 growth at 5%.

Per capita consumption of plastic resins is of 15 kgs (33 pounds) at present, as compared to 12 kgs (26.4 lbs) in 1986, up from six kgs (13.2 lbs) only ten years before. Even though this figure is still considerably lower than the 89 kgs (196 lbs) consumed in the U.S. or even 127 kgs (279 lbs) in Germany, as Mexico continues to grow and develop, an increase in per capita consumption of plastics, in conjunction with the increase in population, will translate into a higher demand for plastic resins and materials. It is estimated that in only five years,

per capita consumption will grow to 19 kgs per person, while population growth is estimated at 2.3% per annum. These two effects will translate into an annual increase in apparent consumption of plastic resins of 8% per annum. This growth rate is further supported by the trend toward substituting plastics for traditional materials, such as metals, wood and glass. This will represent increasing sales for both local and foreign suppliers of these materials.

Additionally, several companies presently operating in Mexico, most of which are multinational firms, are investing significant amounts in new plants in Mexico, in order to supply the local market and take advantage of export opportunities that will open as a result of the North American Free Trade Agreement presently under negotiation.

Total installed capacity, production, import, export and apparent consumption, in tons, by type of resins, in 1989 was as follows:

TABLE 5
1989 APPARENT CONSUMPTION OF SELECTED PLASTIC RESINS
(000 tons)

PRODUCT	INST. CAPACITY	PROD.	IMPORT	EXPORT	APP. CONSUMP
Low den. polyethylene	339.0	340.0	37.5	0	377.5
High den. polyethylene	200.0	97.1	105.9	0	203.0
Polyvinyl chloride	308.0	263.0	10.9	138.2	135.7
Polypropylene	0	0	105.2	0	105.2
Polystyrene	182.0	113.3	6.3	33.4	86.2
Urea resins	109.3	75.6	0.2	0.1	75.7
Polyurethanes	66.5	35.3	1.1	0	36.4
Unsaturated polyester	37.5	21.5	0.6	0.7	21.4
Phenolic resins	35.0	14.6	1.0	0.3	15.3
ABS	45.0	13.5	2.4	4.0	11.9
Melamine resins	13.4	9.0	0.6	0	9.6
Epoxy resins	13.7	5.3	4.2	0.1	9.4
Polyethylene terephthalate	19.4	18.7	0.1	9.4	9.4
Polymethyl methacrylate	11.4	10.0	1.4	3.3	8.1
Cop AC Vinyl chloride	11.0	5.8	0.3	1.4	4.7
Polyamide	7.3	2.6	1.0	0.4	3.2
Alkyd resins	5.0	1.4	0.4	0.5	1.3
Polycarbonate	0	0	1.0	0	1.0
Polytetrafluoride ethylene	0	0	0.2	0	0.2
Coverings & adhesives	146.5	97.7	5.7	6.2	97.2
Other	150.0	17.6	36.0	24.0	29.6
TOTAL	1700.0	1142.0	322.0	222.0	1242.0

Source: IMPI

In terms of volume, the materials most commonly used are low density polyethylene (30%), high density polyethylene (16%), PVC (11%), polypropylene (8%) and polystyrene (7%). The highest growth rates during 1990 and 1991 have been in polyethylene terephthalate (40% during the two years), polypropylene (35%), polycarbonates (15%), low density polyethylene (12%), urea resins (12%), ABS (10%), polyamid (10%) and alkyd resins (10%).

The following table shows the growth in total apparent consumption of plastics between 1981 and 1991.

TABLE 6
GROWTH IN APPARENT CONSUMPTION BY TYPE OF RESIN
 (% annual growth)

PLASTIC	81-85	85-89	87-89	90-91
Low density polyethylene	3.7	2.5	13.5	6.0
High density polyethylene	4.1	13.5	18.5	3.0
Polyvinyl chloride	2.0	(2.2)	3.3	3.0
Polypropylene	(2.8)	4.4	2.2	17.5
Polystyrene	(3.1)	2.3	0.6	(3.5)
Urea formaldehyde	10.8	7.8	5.6	6.0
Polyurethane	(15.0)	7.9	18.4	0
Unsaturated polyester	(1.1)	3.5	3.5	2
Phenol formaldehyde	2.4	(0.8)	6.1	(10)
Expoxy resins	(3.5)	22.5	52.0	0
Melamine formaldehyde	(12.3)	25.2	41.8	(5.0)
Polymethyl methacrylate	1.5	6.1	4.0	3.0
ABS	4.8	(1.6)	8.9	5.0
Polyethylene teraphthalate	-	-	34.9	20.0
Polyamide	12.5	13.8	20.6	5.0
Polyoxymethylene	(6.2)	11.0	5.8	6.5
Polycarbonate	(10.6)	1.7	21.2	2.5

Source: IMPI

3.2.2 Imports

Imports have played an important role in this growing market, in particular those of polypropylene, which is not yet produced in Mexico, and polyethylene, as well as engineering resins and specialty products. During the 1981-1987 period, imports lost ground before locally produced resins and materials. Imports decreased from 312,180 tons to 228,000 tons, decreasing their relative participation in total apparent consumption from 32% to 20% in terms of volume. However, in response to Mexico's liberalization policies, imports have grown starting in 1988 and have done so since. In 1989, they grew 26%, representing 26% of supply and in 1991, they are estimated to represent 27%.

Total imports amounted to \$423.9 million in 1990, representing 33.5% of total consumption in terms of value and 24.8% in terms

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of volume. Imports are expected to continue increasing in the future as a result of Mexico's trade liberalization policies and the expected growth in the plastics processing industry and per capita consumption of plastics. By 1994, imports are estimated to reach approximately \$631 million, reflecting a 9% average annual growth rate.

While in 1991 54% of import corresponded to low density polyethylene (LDPE), 32% to polypropylene and 6% to high density polyethylene (HDPE), by 1989 HDPE represented 33% of imports, polypropylene 33% and LDPE 12%. This trend was mostly a result of the decrease in imports of low density polyethylene (from 170 million tons in 1981 to only 2.3 million in 1987 and 37.5 million tons in 1989), since it is now produced in Mexico by Petroleos Mexicanos (PEMEX), the national oil monopoly. The importation of other resins and materials has doubled since 1982, in particular that of specialty and engineering resins, polypropylene and high density polyethylene. In 1989, PEMEX opened a new HDPE production plant which has greatly reduced the flow of imports of this resin in 1990 and 1991. However, in the long run, HDPE imports will continue to grow since installed capacity is not enough to cover growing local demand for this product.

The types of resins available in Mexico are still limited, both because they are not produced in Mexico and because firms exporting to Mexico do not offer the variety of products they have available. Plastic processors have expressed much interest in exploring new materials and finding new applications in the plastics industry. Engineering resins, usually produced in low volume and at higher cost than commodity resins, are particularly sought in Mexico. These are all of imported origin because their production process is technologically more advanced and production volume is too low to justify domestic production. Engineering resins used in Mexico include ABS, PBT, polycarbonate, polyacetal resins, nylon, fluoropolymers, polyamide, polyesters, polyurethans, epoxy resins, unsaturated polyester, alloys and blends. This is an area particularly suited for companies interested in selling or expanding their operations in Mexico, as well as other products such as acrylic, epoxic, melamine, alkyd and urea resins.

Additives for plastics have also become increasingly important in the plastics industry. Here again, Mexico relies entirely on imports to satisfy local demand. Since foreign suppliers of these products have not marketed their products sufficiently in Mexico, this area represents an excellent export potential for U.S. manufacturers.

Some of the most important suppliers of plastic resins to Mexico, both local and foreign, are: Amoco, BASF, Bayer, BF Goodrich, Borden, Borg-Warner Chemicals, Celanese, Chevron Chemical, Ciba Geigy, Cyanamid, Dayton Chemicals, Dow, Du Pont de Nemours, EGC Corp., Fuller, Hercules, Himont, K.J. Quinn, Mobil Polymers, Monsanto Chemical Co., Pemex, Phillips Petroleum, Plastiglas,

Plexchem International, Polimer, Polúmeros de Mexico, Polycid, Reichhold Chemicals, Resistol, Rohm & Haas, Shell and Simon.

The U.S. is by far the most important supplier of plastic resins to Mexico, enjoying a 90% import market share, followed by Germany, which presently hold an import market share of 4.6%. Japan has 1.2% of imports, Brazil and France 1% each. Although the U.S. holds a very dominant position in the Mexican market, other country suppliers, including Germany, Japan, Brazil, France and Italy are trying to increase their share of the import market. Germany, in particular, has actively promoted its products and some users have begun to favor German products.

The following table shows Canadian trade of plastic resins with Mexico between 1988 and 1991.

TABLE 7
CANADIAN TRADE OF PLASTIC RESINS WITH MEXICO
(Cdn\$000)

CANADIAN EXPORTS TO MEXICO

CATEGORY	1988	1989	1990	1991
L.D. Polyethylene	1,068	511	197	564
H.D. Polyethylene	453	274	364	209
Polypropylene	0	369	92	23
Polyisobutylene	0	9	5	17
Polyurethanes	0	10	0	0
PVC	0	0	0	4
Acrylic polymers	2	0	0	0
Polyethers	8	0	0	0
Silicones	0	125	75	48
Phenolic resins	16	0	0	0
Natural polymers	3	0	0	0
Plastic waste & scrap	0	5	8	0
TOTAL	1,550	1,303	741	865

CANADIAN IMPORTS FROM MEXICO

CATEGORY	1988	1989	1990	1991
Polypropylene	0	54	0	0
Polystyrene	451	1,612	96	31
ABS	88	84	165	212
Unsaturated polyester	0	0	0	40
PVC not mixed	1,206	2,257	1,400	0
PVC not plasticised	135	0	0	0
PVC plasticised	21	0	0	0
Polymethyl methacrylate	55	0	0	0
Polyamides	0	0	28	94
Silicones	0	0	637	0
TOTAL	1,956	4,007	2,326	377

Source: Statistics Canada - International Trade Division

Canadian exports to Mexico have not been very significant in the past four years and have shown a general decreasing tendency, falling from Cdn\$1.6 million in 1988 to the present Cdn\$865,000. Canada has mostly exported low and high density polyethylene, polypropylene and silicones to Mexico. Canadian imports from Mexico, on the other hand, have also been minimal and falling from Cdn\$4 million in 1989 to Cdn\$377,000 in 1991. Canada has mostly imported PVC, ABS and polystyrene from Mexico.

Canadian manufacturers could benefit from a more aggressive marketing strategy, including participating in trade shows, exhibiting materials and examples of the types of products manufactured with them, preparing brochures and promotional materials in Spanish, contacting companies directly with sales agents, if possible in Spanish, using local associations and chambers as multipliers, preparing technical seminars to inform on latest technologies and innovations, setting up a representative office in Mexico or even establishing a joint venture.

3.2.3 Domestic production

Mexico's production of plastics materials and resins started only some 43 years ago and has been very dynamic since, growing at rates beyond general GDP growth. Most of the demand for plastic resins is satisfied through domestic production. Mexico is practically self sufficient in polyvinyl chloride, low density polyethylene, polystyrene, urea resins, polyurethanes, unsaturated polyester, melamines, polyethylene terephthalate and polymethyl methacrylate, but imports all its consumption of polypropylene, much of its consumption of high density polyethylene and most, if not all, special application and engineering resins (see Table 5).

Total installed capacity of plastic resins in Mexico has increased significantly in the past. Between 1970 and 1980 it grew at an average annual rate of 15%, reaching 525,000 tons the latter year. Between 1980 and 1984, capacity increased 50%, while in the following four years it doubled, reaching 1.6 million tons in 1987 and 1.7 million tons in 1989. Presently installed capacity is estimated at 1.9 million tons.

Domestic production has increased similarly. Between 1975 and 1980, it increased 14.3% annually, while between 1981 and 1985, the years of Mexico's economic downturn, production increased 6.2% a year, an average still above that of the economy as a whole. Between 1985 and 1989, local production of plastic resins increased 8.5% annually, and another 6% annually between 1990 and 1991. Domestic production now represents close to 90% of total apparent consumption, as compared to 67% in 1981. Until 1987, PVC was the predominant resin produced in Mexico, representing 27% of total production. In the following three years, low density polypropylene increased its participation significantly,

and in 1989 it represented 30% of production, followed by PVC (23%), polystyrene (10%) and high density polyethylene (9%) which is now produced by PEMEX.

Exports represent an increasing proportion of domestic production, now estimated at 21%, up from 11% in 1983. Principal exports are PVC (62% of total exports) and polystyrene (15%), as well as ABS and polyethylene terephthalate, which have compensated an insufficient domestic demand for these products.

4. END USER PROFILE

The Mexican plastics industry comprised 2,950 plastic processing companies in 1989 (the last year for which data are available), which together have 116,000 employees. Additionally, there are an estimated 125 manufacturers of raw materials, 110 mould and die manufacturers, 50 distributors of machinery and equipment for the plastics industry, 10 producers of machinery and equipment, 30 recycling companies and 15 primary petrochemical producers.

The Mexican plastics processing industry is very diversified, and large, high technology and productivity firms coexist with very small, family owned businesses: 62% of all firms are microindustries with less than 20 employees, 28% are small with 21-100 employees, 7% are medium with 101-200 employees, and only 3% are large but employ 40% of total labor in the industry. These companies are mostly concentrated in Mexico City and the surrounding area of the State of Mexico (56%), followed by the central region, particularly in Jalisco, Puebla, Querétaro, San Luis Potosí and Guanajuato (22%); the North, in particular Nuevo León and Baja California (20%); and finally the South and Southeast (2%). Additionally, there are some 350-450 maquiladora firms located along the Mexico-U.S. border.

The great majority of companies use injection and extrusion processes, as well as blowing. Injection is gradually being substituted by extrusion and blowing and other more sophisticated processes, such as laminating, rotational moulding, foaming, compression, thermoforming, coating, metalizing, electrochroming, decorating and finishing.

The number of plastics processing companies by type of plastic resin used were as follows in 1988: (no recent data are available)

TABLE 8
PLASTIC PROCESSORS BY TYPE OF RESIN USED

PRODUCT	PROCESSING COMPANIES	RELATIVE PARTICIPATION
Low density polyethylene	2,000	45.9%
High density polyethylene	800	18.4%
Polyvinyl chloride	500	11.5%
Polystyrene	350	8.0%
Unsaturated polyester	170	3.9%
Polypropylene	150	3.4%
Polyurethane resins	80	1.8%
Urea resins	50	1.1%
Nylon	50	1.1%
Acrylic resins	50	1.1%
Polyacetal	40	0.9%
Phenolic resins	30	0.7%
Polycarbon	25	0.6%
Engineering plastics	15	0.3%
Melamine resins	15	0.3%
Epoxic resins	15	0.3%
Teflon	10	0.2%
Thermoplastic polyester	5	0.1%

Source: IMPI

Here again, the most dynamic sectors in the years to come will be new plastic resins, those for specialty products and applications and engineering resins rather than the traditional commodity resins, as well as additives to improve resins.

The consumption of plastics by end user sectors is as follows:

TABLE 9
END USER SECTORS

Packaging	46.5%
Adhesives, coverings & paints	9.5%
Construction	8.5%
Household products	8.0%
Furniture	7.0%
Consumer electronics	3.0%
Toys & recreational products	3.0%
Automobile	2.5%
Electric-electronics	2.5%
Other	9.5%

The packaging industry is the most important consumer of plastics, but the paints, coverings and adhesives, the construction and automobile industries also represent an important and growing market, as well as the household products

industry. A wide variety of other sectors also use plastics materials and will increase their demand in the future, such as electronics, medicine, marine and avionics.

5. MARKET ACCESS

Sales in Mexico are usually made through local agents and distributors, normally operating on a commission basis, or through the Mexican affiliates of foreign companies. Decisions should be taken on whether to use an agent, joint venturing or licensing with a Mexican company. Mexico's market is highly competitive and companies which maintain an active presence in the market and establish a good track record by virtue of product performance, competitive price and service will do well.

High value sales, most common in this market segment, usually are made through letters of credit. Small value sales are either made cash or with a 50% advance payment when the order is placed and 50% on delivery. It is important to find out the sales and financing practices of individual entities, in particular in the case of government agencies, since some of them are known to delay payment to suppliers for over 90 days.

Formerly, in order to bid on tenders and sell to a government agency or decentralized company, foreign manufacturers required having a local resident agent and to have the foreign supplier registered and accepted by the Secretariat of Planning and Budgeting (Secretaría de Programación y Presupuesto - SPP). As of July 1991, the above requirement for prior registration with SPP has been eliminated.

The new procedures now in force require the foreign supplier to have a local agent or representative and it has to be registered through his local representative as an accepted supplier with each government ministry and/or decentralized agency according to the international tender requirements under review.

As a result of Mexico's accession to GATT, the Mexican government has gradually opened the economy to international markets. Tariffs have been lowered from a maximum 100% in 1983, to 20% since December, 1988. The official price system has been totally eliminated and import permits are required on only 198 of the total 11,812 items in the Mexican Harmonized Tariff System.

The import climate for plastic resins and materials has improved significantly as a result of this commercial liberalization. Maximum duty rates have been reduced to 20% and prior import permits are not required on items in this study. Plastic resins are classified under numbers 3901 to 3909 and pay a 10% to 15% rate on average. Plastic machinery is classified under tariff number 8477 and moulds under 8480 and also pay 10% to 15% in most cases. Therefore, imports of plastic resins and machinery are subject to an ad valorem duty of maximum 20% assessed on the invoice value. In addition, a customs processing fee of 0.8% is

assessed on the invoice value. A 10% value added tax (recently reduced from 15%) is then assessed on the cumulative value of both taxes in addition to the invoice value.

There are no official metric requirements applicable to imports into Mexico. However, since the metric system of units is, by law, the official standard of weights and measures in Mexico, importers will usually require metric labeling for packaged goods, although the English system is also used. Dual labeling is acceptable. Imported products should be labeled in Spanish containing the following information: name of the product, trade name and address of the manufacturer, net contents, serial number of equipment, date of manufacture, electrical specifications, precautionary information on dangerous products, instructions for use, handling and/or product conservation and mandatory standards. Mexico adheres to the International System of Units (SI). Electric power is 60 cycles with normal voltage being 110, 220 and 400. Three phase and single phase 230 volt current is also available.

Prepared by:
Caroline Vêrut for the
Canadian Embassy
Mexico City
April 1992

**APPENDIX I:
INDUSTRIAL CHAMBERS AND ASSOCIATIONS**

To call all telephone and fax numbers listed below (unless preceded by a different area code) from Canada, dial 011-525 first.

**ASOCIACION NACIONAL DE INDUSTRIAS
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(NATIONAL PLASTICS INDUSTRY ASSOCIATION)**

Dr. Vértiz 546
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03020 México D.F.
Phone: 566-74-66 538-13-02
Fax: 566-50-17
Contact: Lic. Ma. del Socorro Sedano O.
Directora

**ASOCIACION MEXICANA DE INDUSTRIAS DE
TUBERIAS PLASTICAS, A.C. (AMITUP)
(MEXICAN PLASTIC TUBES ASSOCIATION)**

Alabama 35
Col. Nápoles
03810 México D.F.
Phone: 669-05-10
Fax: 687-37-02
Contact: Ing. Amira Marín Hernández
Directora

**ASOCIACION NACIONAL DE DISTRIBUIDORES DE LLANTAS
Y PLANTAS RENOVADORAS, A.C. (ANDELLAC)
(NATIONAL TYRE DISTRIBUTORS AND RENOVATING PLANTS ASSOCIATION)**

Cuauhtémoc 204 y 206
Col. Sn. Pedro Iztacalco
08220 México D.F.
Phone: 696-74-64 696-17-83
Fax: 579-11-24
Contact: Sr. José Manuel Cortés M.
Presidente

**INSTITUTO MEXICANO DEL PLASTICO INDUSTRIAL, S.C.
(MEXICAN INDUSTRIAL PLASTICS INSTITUTE)**

Gral Juan Cano 25
Col. San Miguel Chapultepec
11850 México D.F.
Phone: 515-63-56 515-61-52
Fax: 578-15-71
Contact: Ing. Rafael Blanco Vargas
President

APPENDIX II:
USEFUL GOVERNMENT AGENCIES AND MINISTRIES

PETROLEOS MEXICANOS

Av. Marina Nacional 329

Torre Ejecutiva

Col. Huasteca

11311 México D.F.

Phone: 250-34-57 250-10-55

Contact: Francisco Rojas Gutiérrez
Director General

Phone: 545-33-95 250-54-85

Raúl Robles Segura
Subdirector de Petroquímica

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11520 México D.F.
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Fax: 512-15-11
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Presidente

APPENDIX III:
POTENTIAL AGENTS AND DISTRIBUTORS

MACHINERY AND EQUIPMENT

ALBANY EQUIPOS Y SISTEMAS, S.A. DE C.V.

Calle 6 No. 2559
Zona Industrial
44940 Guadalajara, Jal.
Phone: (36) 12-22-15 12-43-55
Fax: (36) 12-43-03
Contact: Enrique Martínez G.
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DISTRIBUIDORA DE MAQUINARIA Y EQUIPOS, S.A. DE C.V.

Loma Bonita 7
Col. Lomas Altas
11950 México D.F.
Phone: 570-40-39 570-40-91
Fax: 570-73-54
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PARTES PARA MOLDES DME, S.A. DE C.V.

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Col. Parque Industrial Cartagena
54900 Tultitlán, Mex.
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Gerente General

PLASTICOS LEON, S.A.

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66250 Garza García, N.L.
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Refinería 1516
Fracc. Alamo Industrial
44100 Guadalajara, Jal.
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Contact: Rafael Acevedo
Presidente

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PLASTIC RESINS

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