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Market study on the Mexican market
for machine tools and metalworking
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MARKET STUDY ON THE MEXICAN MARKET FOR
MACHINE TOOLS AND METALWORKING EQUIPMENT

INDEX

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	PAGE
1. BACKGROUND	2
2. ECONOMIC ENVIRONMENT	3
3. MARKET ASSESSMENT	4
3.1 IMPORTS	5
3.2 DOMESTIC PRODUCTION	7
4. END USERS	8
4.1 GOVERNMENT AGENCIES	8
4.2 AUTOMOTIVE INDUSTRY	9
4.3 STEEL INDUSTRY	11
4.4 OTHER	11
5. MARKET ACCESS	12
UPDATE AS OF DECEMBER 1991	14
MARKET ASSESSMENT	14
END USERS	17
MARKET ACCESS	19
APPENDICES	21
APPENDIX I: Industrial Chambers and Associations	
APPENDIX II: Useful Government Agencies	
APPENDIX III: Agents and Distributors	

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1. BACKGROUND

Mexico has a high propensity to import capital goods, to the point that their importation tends to accelerate at 10 times the rate of increases in GDP. The origin of this behavior can be found in the import substitution policies adopted during the 1950's. These consisted in closing the borders to all imports of industrial raw materials and consumer goods in order to encourage their domestic production. On the other hand, the importation of machinery, equipment, their parts and components was permitted. This has resulted in a very high dependency on imported machinery and equipment, in particular of machine tools.

During 1982, the total market for machine tools and metalworking equipment in Mexico grew by almost 71% reflecting the accelerated rate of industrial development of the Mexican economy. Imports of machine tools reached their all time high of close to \$700 million. The following year, however, the market contracted significantly and imports decreased by 60% dropping to \$284 million. This decline was due to the general reduction in economic activity and to the virtual impossibility of obtaining dollars for private sector imports. Starting in 1984, as the economy began growing again and foreign exchange was made more readily available, imports resumed a halting but upward trend. Purchases of foreign made equipment increased 35% between 1983 and 1988.

Mexico is the 13th largest consumer of machine tools in the world but only the 33rd world producer. Imports have therefore played a very important role in this market, supplying an average 90% of total apparent consumption, estimated at \$450 million in 1989. This market is expected to grow eight percent per annum during the next five years as a result of government priorities in the petroleum, automotive and steel sectors and because modern machine tools and equipment will be needed, if Mexican manufacturers are to compete successfully with foreign goods both in the domestic and international markets. This market, as many others, will be mucho more open to foreign competition under the Mexican government's increasingly liberalized economic and trade policy.

Mexico's accession to GATT in 1986 and the ensuing liberalization policies have brought about important changes in import policy, benefitting foreign exporters and opening new doors and opportunities for suppliers of machine tools, metalworking equipment and accessories. Tariffs have been lowered to a maximum 20%, the official price system has been totally eliminated and import permits are now required on only 325 of the total 11,950 items on the recently adopted Harmonized System of Tariff Nomenclature, none of which are applicable to this industry.

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 resulted in a drastic reduction of the inflation rate, from an annual rate of 159.2% in 1987 to 51.7% in 1988 and 19.7% in 1989. Inflation rebounded to 29.9% in 1990 but the Mexican government aims to achieve a 14% inflation rate in 1991, which seems a reasonable estimate based on an annual inflation rate of 13.3% as of October 1991. Along with the objective of consolidating the progress made in price stabilization, Mexico's macroeconomic policy in the short run 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.

After the 1986 recession, Mexico's gross domestic product (GDP) increased a moderate 1.7% in 1987 and an additional 1.3% in 1988. Domestic economic activity recovered for the third consecutive year in 1989 with a growth rate of 3.1% and further 3.9% in 1990 to reach \$234 billion (1). With an 81.1 million population, per capita GDP was estimated at \$2,874 in 1990. Additionally, manufacturing output grew by 5.2% in 1990 in real terms, private investment and consumption expanded 13.6% and 5.2% respectively and public investment was up 12.8%. During the 1991-1994 period GDP is expected to maintain an average annual growth rate of 2.5%-3%. Preliminary figures for 1991 place GDP growth at 4.5%-5% for this year.

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 198 of the total 11,812 tariff items based on the Harmonized System adopted in 1988. 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% since January 1988. The weighted average tariff rate is now 10.4%. The automotive and computer industries 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.

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

According to official data from the Mexican Secretariat of Commerce and Industrial Development (SECOFI), Mexico's trade balance in 1990 dropped once again to a \$3 billion deficit from -\$645 million in 1989. Exports increased by 17.5% in 1990, from \$22.8 billion to \$26.8 billion, while imports grew 27.3%, from \$23.4 billion to \$29.8 billion in 1990, having already increased 23.8% in 1989 and 54.9% in 1988. As of September 1991, total exports for the year amounted to \$20.7 billion and imports to \$27.2 billion.

Total Mexican imports from Canada increased 24% in 1989 and decreased 1.5% in 1990. Total Canadian exports to Mexico amounted to Cdn\$594 million, while total Canadian imports from Mexico were valued at Cdn\$1,730 million in 1990. According to Mexican figures, in 1989, 1.9% of Mexico's imports came from Canada, while 1.2% of its exports were to Canada. This makes Canada Mexico's fifth largest exporter and sixth largest importer.

3. MARKET ASSESSMENT

The total Mexican market for machine tools and metalworking equipment amounted to \$421 million in 1988, up 50% over the \$280 million of 1987. Preliminary data for 1989 place the market size at \$451 million, reflecting a further 7% growth. As a result of Mexico's open investment and trade policy, total demand is expected to increase at an 11% annual rate and reach \$759.6 million in 1994. In conjunction with Mexico's general economic growth, a variety of new projects are underway in the steel and automotive sectors, which have boosted demand for this type of equipment and will continue to do so in the future.

TABLE 1
THE MEXICAN MARKET FOR MACHINE TOOLS
AND METALWORKING EQUIPMENT
(million US dollars)

	1987	1988	1989 ^a	1994 ^b	89-94 ANNUAL GROWTH
Production	48.3	59.5	63.6	89.2	7.0%
+ Imports	245.8	384.8	411.7	708.1	11.5%
- Exports	14.2	22.9	24.5	37.7	9.0%
TOTAL	279.9	421.4	450.8	759.6	11.0%

Source: Import and export statistics - Secretaría de Comercio y Fomento Industrial.

3.1 IMPORTS

The weakness of the domestic industry has meant that imports have played a paramount role in the Mexican market for machine tools and metalworking equipment. Total imports were \$245.8 million in 1987 and grew 56.5% in 1988 as a result of general economic growth, trade liberalization policies and several new projects undertaken in the various end user sectors. Total 1988 imports of \$384.8 million can be divided into \$226 million of machine tools, \$81 million of metalworking equipment and \$77 million of ovens and furnaces. Preliminary figures indicate a further 7% growth in 1989 placing total imports at \$411.7 million. Imports of machine tools are expected to grow at an average annual rate of 11.5% in the next five years within the same framework set by the administration of President Salinas. Even though this figure may seem high, it is not unrealistic if it is remembered that in 1981 imports of machine tools reached a peak of approximately \$680 million, a figure slightly below estimated imports for 1994 of \$708 million.

Metal cutting machine tools represent approximately 40% of total imports. These are followed closely by metal forming equipment with approximately 32%. This is expected to be the fastest growing segment of the market, as it has been in the last few years, even though metal cutting machine tools are the most important segment in dollar terms. The remainder is composed of lathes, metal drawing machines, grinding and finishing machines, boring, milling, drilling machines and machining centers.

Imports of parts and attachments for machine tools represented 12% of total imports in 1988, up from 22% in 1987, and increased to 18% in 1989. At a time when credit is scarce and a large portion of the Mexican industry is working below capacity, parts will continue to represent a flourishing market. Nevertheless, purchases of new machinery have already been resumed on a major scale, given the demand backlog existing since the market contraction began in 1981. In light of Mexico's accession to GATT, the Mexican industry will have to be more productive and more competitive, both internationally and at home. This means increased demand for new, improved technologies, of capital goods in particular.

As is the case with the majority of Mexican imports of capital goods, most machine tools originate in the U.S., which has accounted for an average 50% of total imports. In 1988, this market share was 51%, representing total sales of \$197 million. Other countries' share in 1988 were as follows: the United Kingdom (14.8%), West Germany (10.9%), Hong Kong (6.3%), Japan (4.4%), Italy (2.4%) and Canada (1.0%).

The source of supply of Mexican machine tool imports varies mostly in terms of their relative degree of sophistication. With regard to simpler types of equipment, Latin American, Asian and

Eastern European countries have made major inroads in the Mexican market. Countries such as Spain, Italy, Hong Kong, China and Brazil have achieved increasing levels of penetration in the medium technology bracket. Finally, countries such as the U.S., Japan, West Germany and the U.K. dominate the high technology, high quality market segment. Japan and West Germany have been making strong efforts to capture a larger proportion of this segment through extended credit terms and/or low prices. Tight domestic financing is forcing Mexican buyers to give greater weight to financing than quality when purchasing equipment, and this has favored countries willing to finance large sales.

TABLE 2
CANADIAN IMPORTS AND EXPORTS
OF MACHINE TOOLS AND METALWORKING EQUIPMENT
 (000 Canadian dollars)

	EXPORTS 1988	IMPORTS 1988	EXPORTS 1989	IMPORTS 1989
Saw blades	30	10	237	134
Pliers	35	32	0	25
Wrenches	7	0	0	0
Tools & dies	363	1,467	606	1,126
Machine tools	3,224	0	944	33
Parts & accessories	1,476	50	668	193
Furnaces and ovens	110	0	132	60
TOTAL	5,245	1,559	2,587	1,571

Source: Statistics Canada - International Trade Division

Canadian exports to Mexico increased 83% in 1988 to Cdn\$5.2 million, but decreased again 51% in 1989 prompted by a drop in exports of machine tools and their accessories. Canadian products are well accepted in Mexico, but Canadian exporters should be more aggressive in marketing their products in Mexico, by offering financing alternatives, participating in trade shows, establishing a representative or distributor or investing in Mexico.

Foreign products with best sales prospects in Mexico include: numerically controlled machine tools, machining centers, lathes, milling machines, grinding machines, centering, honing, punching, shearing, bending & forming machines, jig and vertical boring machines, horizontal drilling machines, gear cutting and finishing machines, polishing and molding machines, copying machines, shaping machines, sawing machines, cutoff machines, arc welding machines, wire drawing machines, presses, cutting pliers, saws, wedges, knives, blades, special dies & tools, parts and attachments.

3.2 DOMESTIC PRODUCTION

Domestic production of machine tools has at most represented 12% of total apparent consumption in the last several years. In 1987 it was valued at \$59.5 million and is estimated to have increased to \$63.6 million in 1989, of which \$24.5 were exported. It is restricted to the more basic, less sophisticated and traditional specifications of equipment. Among machine tools manufactured in Mexico are drills, blades, tips, spare parts, cutting and welding equipment, tool holders, shears, rolling trains, smooth-roll mills, grooved-roll mills, handsaw jigs, electric furnaces, horizontal mechanically controlled small lathes, station and transfer machines, pneumatic and hydraulic presses, horizontal and vertical mechanical presses, mechanical and hydraulic guillotines, circular sawing machines, mechanical shears and curtain presses. Many of these products are exported to the United States, Central and South America.

The Mexican Government has stated its desire to develop the domestic industry's capacity to produce machine tools, metalworking machinery and the intermediate goods necessary for their production, in particular in the areas of metal rolling and wire production (drawing process). Scarce government resources and financing, increased competition from abroad and poor economic conditions have so far limited the success of this development plan. However, the Mexican parastatal policy of buying national whenever possible has helped local producers make some progress in recent years.

Local producers face a variety of obstacles when competing with imported products, including high prices and lower quality of raw materials in comparison to international standards, high interest costs, and scarcity of trained personnel and technicians. But the most cited causes of slack demand for domestically manufactured machine tools is the perception that quality is low, that deliveries are likely to be delayed and that their technological level is inadequate. Due to the above reasons, Mexican machine tools are almost only used in technical schools, small scale industries and job shops, not in heavy industry. The Mexican capital goods industry operated at 30%-40% capacity in 1984. In 1985 and 1986 it rose again to 50%-55% and is estimated at 55%-60% in 1989. This was partly due to an improvement in the quality of Mexican made equipment due to licensing agreements and joint ventures with firms from the U.S., West Germany, Brazil, The U.K., Spain, Italy and Japan. The ability of Mexican companies to continue improving their quality and technological state-of-the-art will determine their growth and market participation in the future. During the next few years, however, domestic production is expected to grow at a 5% annual rate, still below that of imports.

Approximately 16 major companies in Mexico manufacture machine tools. Of the three government owned companies, which previously supplied approximately 40% of the market, Fábrica Nacional de Máquinas-Herramienta (FANAMHER) was closed and Oerlikon Italiana de México was put up for sale. Major private companies are Cormetal, Dizher Industrial, Dreis & Krump de México, Empresas Tosa, Fábrica de Máquinas y Accesorios (FAMA), Fundación y Talleres Anáhuac, Gimbel, Hidromex, Industrial de Partes, Industrias Jego, Lukas, Máquinas Monterrey, Potencia Hidráulica, Strojimport de México and W.A. Whitney.

4. END USERS

The most important end-user sectors of machine tools in Mexico are the automotive industry, the steel industry, electric and non-electric machinery and equipment, as well as the following industry groups: metal furniture & fixtures, construction, metal products, cutlery and tableware, fasteners, textiles, chemicals and petrochemicals, plastics, packaging, electrical appliances and electronic products.

4.1 GOVERNMENT AGENCIES

The Mexican Government is the principal force of the economy. It is presently involved in approximately 450 state-owned firms and government agencies, down from 1,155 in 1982 as a result of a major effort of the past administration to reduce government involvement in the economy. In 1989 the total budget assigned to physical investment is \$6.5 billion, of which \$3.9 billion were assigned to Pemex and other parastatal companies. Government agencies account for approximately 40% of total machine tool imports. Among government institutions with the greatest market potential for imported machine tools are:

- Petroleos Mexicanos (PEMEX), the national petroleum and gas monopoly, was assigned a \$1.6 billion investment budget for 1989, mostly for exploration drilling, production, oil and gas pipes, storage, projects under construction (development of marine platforms in the Campeche marine area and in the Southeast), increased exports of refined products and increased efficiency in its nine refineries and 20 petrochemical complexes;
- Comisión Federal de Electricidad (Federal Electricity Commission-CFE), the sole generator and distributor of electricity in Mexico, is undergoing a significant structural change with the aim of increasing its efficiency and profitability. The 1989 investment budget will be used to increase installed capacity by 318 MW (for a total 25,305 MW)

and to continue construction in existing coal fired, nuclear and oil fired generating plants;

- Caminos y Puentes Federales de Ingreso (Federal Income Generating Roads and Bridges), the parastatal company responsible for the construction and maintenance of toll highways and bridges, has been authorized to increase its tariffs, which will enable it to modernize and expand the existing infrastructure of 939 kms;
- CONCARRIL, the sole manufacturer of rail cars in Mexico, satisfying 90% of total demand, has undergone a major restructuring, mostly by adding new production lines, such as passenger cars, light trains, subway trains and locomotive reconstruction, to the previous subway and freight cars. The use of installed capacity increased from 23% in 1986 to an estimated 70% in 1988 and has translated into exports and the coverage of local demand;
- Diesel Nacional (DINA), the government owned manufacturer of trucks and buses, and SIDERMEX, the largest steel producing enterprise in Mexico will be discussed below.

4.2 AUTOMOTIVE INDUSTRY

The most important end user of machine tools in the private industry is the automotive sector. The largest automotive manufacturers in Mexico are:

Chrysler	Ford
General Motors	Nissan
Dina	Volkswagen

These firms operate a total of 16 plants in Mexico, of which ten are American, two German, three Japanese and one Mexican. These 100% foreign owned plants manufacture automobiles, trucks and motors, providing 90% of Mexico's total automotive production. The other plants are majority Mexican owned and produce truck trailers, tractors for agriculture and buses. All passenger car manufacturers are 100% foreign owned and, since they were established prior to 1973, they were exempted from the majority Mexican ownership regulation imposed later by the Foreign Investment Law.

According to the Mexican Association for the Automotive Industry, total production reached 641,275 units in 1989, reflecting a 25% increase over the 512,626 units produced in 1988. Of total production, 68% corresponded to automobiles, 31% to trucks and the balance to trailer-tractors and buses. Market participation by company, was as follows: Nissan 21.5%, Chrysler 20.9%, Ford 19.6%, Volkswagen 19.3% and General Motors 16.3. Total internal demand for cars and trucks has also increased significantly

(30%), from 341,919 units in 1988 to 445,863 in 1989, as have exports.

A new decree was published in December 1989 for the automotive industry allowing locally established car and truck manufacturers to import new cars from their foreign facilities, provided they show an overall trade surplus and imported units do not exceed 15% of locally produced units during 1991-1992 and 20% in 1993. The minimum local contents requirement (60% on cars and 70% on trucks) has been eliminated, as well as previous restrictions regarding the number of lines and models produced.

Virtually all of the major auto companies have expanded their manufacturing facilities in recent years:

- Nissan has built two new plants, one for body stamping and the other for motor assembly, in Aguascalientes, with the capacity to produce 8,000 units per month. These plants are expected to be operational in 1992.
- Ford built a motor plant in Chihuahua and completed its auto assembly plant in Hermosillo in 1987.
- Chrysler's Mexico City plant is the sole worldwide producer of its Ramcharger, a light luxury truck line.
- General Motors enlarged its two plants located in Coahuila. In 1990, Packard Electric, a division of G.M., under the name of Alambrados Automotrices S.A., will invest \$50 million in two new plants to produce condensers.
- Volkswagen is in the process of increasing the export capacity through its plant in Puebla. It will invest \$300 million in 1990 to expand its production capacity and \$90 million in autopart manufacturing.
- Renault has suspended its production of finished cars in Mexico since 1987, but still manufactures six cylinder motors for export at its Durango plant. Renault will invest \$453 million during the next three years to increase its capacity.
- The Japanese firm Honda opened two motor assembly plants in Jalisco and Sonora to supply the U.S. market.

The parastate company Diesel Nacional (DINA) was restructured in 1989. It consisted of Dina Camiones, Dina Autobuses and Mexicana de Autobuses in passenger buses; Motores Perkins, Dina Motores, Dina Cummins and Moto Diesel Mexicana in the production of motors; Plásticos Automotrices Dina, Maquiladora Automotriz Nacional and Servicios Alimentarios in the autoparts industry; and it also held shares in Dina Rockwell and Dina Komatsu. The Grupo G company from Jalisco bought DINA for \$100 billion pesos (\$40 million), including Dina Camiones, Dina Autobuses, Dina Motores and Dina Plásticos.

The demand for machine tools and metalworking equipment has grown with the automotive industry's increase in production, both for the domestic market and for export. General Motors and Ford have the most innovative equipment at their plants. G.M. has 30 numerically controlled transfer machines at its Coahuila plant and Ford is automatizing its plants, where robots will be used in

the grinding and polishing processes, while materials handling and storing will be done in a numerically controlled facilities. Every automobile manufacturer purchases eight to ten hydraulic presses annually, as car models are changed. Robots are used by Ford, Chrysler, Volkswagen and General Motors.

4.3 STEEL INDUSTRY

The government owned SIDERMEX is the most important steel and alloy producing group in Mexico, with total output of 5.1 billion tons in 1988. It comprises two major companies: Altos Hornos de México and Siderúrgica Lázaro Cárdenas "Las Truchas" (SICARTSA), in addition to the NKS complex, a joint venture between Nacional Financiera, SIDERMEX and Kobe Steel (Japan) which began full scale production in 1986 at their steel mill and castings plant in Lázaro Cárdenas. By 1990, it is expected to operate at full capacity.

The Mexican steel industry is undergoing a period of reorganization, mostly through the privatization of several steel companies and the optimization of existing production. In 1987 the Mexican government assumed SIDERMEX's \$700 million foreign and internal debt in order to keep it afloat, and increased its budget to \$25 million in 1988. Simultaneously it began reorganizing the industry by privatizing 55 steel companies between 1982 and 1988: selling 35, closing 15, merging four and resectorizing four. A major action consisted in closing the troubled Fundidora Monterrey, a major company associated to SIDERMEX. This restructuring was partially encouraged by Japanese capitals in the amount of \$260 million flowing into the second phase of the SICARTSA steel project on the coast of Michoacán. New and ongoing projects in addition to the modernization of existing facilities should increase demand for machine tools and metalworking equipment.

Additionally, in March 1990, the Mexican government put the SIDERMEX complex for sale. It is expected that the sale of AHMSA and SICARTSA will be included within the debt to equity swap program, which was created to foster private investment in infrastructure projects and those involving the sale of public sector assets. Offers to buy are expected from Mexican, British, West German and particularly Japanese investors.

4.4 OTHER

The construction industry is another important user of machine tools. After several years of negative growth, in 1989 it showed at 1.4% increase and is expected to grow 2.5% in 1990. In 1989, the Mexican government launched the Private Investment in Toll Highways Program for 1989-1994 enabling private Mexican and foreign investors to participate in the construction of 3,200 kms. of toll highways with a total projected investment of \$1.6

billion. Participation will be made through international bidding and swap programs.

Approximately 4,100 companies manufacture non-electric machinery and equipment, while another 600 produce electric machinery. The metal working machinery and capital goods sector plays a strategic role in Mexico's industrialization process and growth. It is therefore a sector that will continue to be promoted by the government in the future.

5. MARKET ACCESS

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 machine tools and metalworking equipment has improved significantly as a result of this commercial liberalization. Therefore, imports of equipment for this industry 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. Some manufacturers who use imported inputs for their products under a Mexican Government approved manufacturing plan may have the duty and/or VAT waived or rebated. Raw materials, intermediates and machinery for use in manufacturing or assembling products for export are generally eligible to be imported either duty free or under bond.

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.

International tenders financed by the World Bank or the International Development Bank are open to all member countries of these institutions. More recently, the World Bank, where its credits are involved, has required that bid documents should also include an affidavit confirming that the Canadian company is a bona fide Canadian company with an official residence in Canada

and that Canada is recognized as a contributing member to the World Bank.

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:
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UPDATE AS OF DECEMBER 1991

3. MARKET ASSESSMENT

In order to more accurately describe the Mexican market for machine tools, it has been decided to redefine the categories to be included in this update. The market assessment made below includes:

1. Machine tools for working with materials by removal of material, by laser or other light of photom beam, ultrasonic, electro-discharge, electro-chemical, electron beam, ionic beam or plasma arc processes;
2. Machining centers, unit construction machines, single station and multi-station transfer machines for working metals;
3. Lathes for removing metal;
4. Machine tools for drilling, boring, milling, threading or tapping by removing metal other than lathes;
5. Machine tools for deburring, sharpening, grinding, honing, lapping, polishing or otherwise finishing metal, sintered metal carbides or cermets by means of grinding stones, abrasives or polishing products;
6. Machine tools for planing, shaping, slotting, broaching, gear cutting, gear grinding or gear finishing, sawing, cutting off and other machine tools working by removing metal, sintered metal carbides or cermets;
7. Machine tools for working metals by forging, hammering, or die-stamping; by bending folding, straightening, flattening, shearing, punching or notching; presses for working metals or metal carbides;
8. Other machine tools for working metal, sintered metal carbides or cermets without removing material;
9. Parts and accessories for the above;
10. Interchangeable tools for machine tools.

Excluded (and previously included) are equipment for metallurgy or metal foundries, metal rolling mills, furnaces and ovens used in the steen industry, and hand tools used for metalworking.

The total Mexican market for machine tools and metalworking equipment, as redifined above, amounted to \$160.8 million in 1987 and grew an unprecedented 76% in 1988 to \$283.8 million in response to the import liberalization policies which reduced import tariffs on machine tools. The market then decreased 2.1% in 1989 and another 8.5% to \$254.2 million in 1990. This is considered a short term trend to stabilize the market after its surge in 1988. As a result of Mexico's open investment and trade policy, as well as in response to planned investments in the end user sectors, total demand is expected to increase at a 6% annual rate and reach \$323.9 million in 1994.

TABLE 1U
THE MEXICAN MARKET FOR MACHINE TOOLS
AND METALWORKING EQUIPMENT
(million US dollars)

	1987	1988	1989	1990	1994 ^P
Production	31.1	38.7	40.5	43.2	44.5
+ Imports	137.6	258.3	248.1	222.6	291.8
- Exports	7.9	13.2	10.8	11.6	12.4
TOTAL	160.8	283.8	277.8	254.2	323.9

Source: Import and export statistics - Secretaría de Comercio y Fomento Industrial.

3.1 IMPORTS

The weakness of the domestic industry has meant that imports have played a paramount role in the Mexican market for machine tools and metalworking equipment. Total imports were \$137.6 million in 1987 and grew 87% in 1988 as a result of general economic growth, trade liberalization policies and several new projects undertaken in the various end user sectors. Total imports decreased 4% in 1989 and another 10% in 1990 for the reasons described above. Imports of machine tools are expected to grow at an average annual rate of 7% in the next four years, at a slightly faster pace than total apparent consumption to reach \$291.8 million in 1994, or 90% of total demand.

TABLE 2U
MEXICAN IMPORTS OF MACHINE TOOLS
(000 us\$)

CATEGORY	1987	1988	1989	1990
1. MT by removal	3,325	5,775	3,583	4,962
2. Mach. centers	20,352	23,351	7,106	11,552
3. Lathes	12,313	33,181	22,829	27,364
4. MT. drill...	9,185	15,275	18,784	19,480
5. MT. debur...	18,009	73,682	74,803	26,475
6. MT. plane ...	3,448	6,053	5,199	7,076
7. MT. forge...	17,635	31,068	34,573	39,584
8. MT other	5,049	10,438	8,241	10,157
9. MT parts	25,630	27,384	31,658	32,071
10. Tools	22,653	32,084	41,265	43,855
TOTAL	137,599	258,291	248,041	222,576

Source: Import data published by SECOFI

TABLE 3U
CANADIAN IMPORTS AND EXPORTS
OF MACHINE TOOLS AND METALWORKING EQUIPMENT
(000 Canadian dollars)

CATEGORY	IMPORTS FROM CANADA			EXPORTS TO CANADA		
	1988	1989	1990	1988	1989	1990
1. MT by removal	0	0	0	0	0	0
2. Mach. centers	0	0	0	0	0	0
3. Lathes	0	33	0	0	0	4
4. MT. drill...	0	0	0	9	0	8
5. MT. debur...	0	0	0	0	104	0
6. MT. plane ...	0	0	0	0	77	47
7. MT. forge...	0	0	0	3173	380	26
8. MT other	0	0	0	33	383	95
9. MT parts	50	178	319	1444	661	516
10. Tools	883	614	871	280	534	87
TOTAL	933	825	1190	4939	2139	783

Source: Statistics Canada - International Trade Division

Canadian exports to Mexico increased 44% in 1990 to Cdn\$1.2 million. Canadian products are well accepted in Mexico, but Canadian exporters should be more aggressive in marketing their products in Mexico, by offering financing alternatives, participating in trade shows, establishing a representative or distributor or investing in Mexico.

3.2 DOMESTIC PRODUCTION

Domestic production of machine tools has at most represented 12% of total apparent consumption in the last several years. In 1989 it was valued at \$40.5 million and is estimated to have increased to \$43.6 million in 1990, of which \$11.6 were exported. It is restricted to the more basic, less sophisticated and traditional specifications of equipment. Among machine tools manufactured in Mexico are drills, blades, tips, spare parts, cutting and welding equipment, tool holders, shears, rolling trains, smooth-roll mills, grooved-roll mills, handsaw jigs, electric furnaces, horizontal mechanically controlled small lathes, station and transfer machines, pneumatic and hydraulic presses, horizontal and vertical mechanical presses, mechanical and hydraulic guillotines, circular sawing machines, mechanical shears and curtain presses. Many of these products are exported to the United States, Central and South America.

4. END USERS

The most important end-user sectors of machine tools in Mexico are the automotive industry, the steel industry, electric and non-electric machinery and equipment, as well as the following industry groups: metal furniture & fixtures, construction, metal products, cutlery and tableware, fasteners, textiles, chemicals and petrochemicals, plastics, packaging, electrical appliances and electronic products.

4.1 GOVERNMENT AGENCIES

Among government institutions with the greatest market potential for imported machine tools are:

- Petroleos Mexicanos (PEMEX), the national petroleum and gas monopoly, had a \$2 billion investment budget in 1990 mostly for exploration drilling, production, oil and gas pipes, storage, petrochemical production, increased exports of refined products and increased efficiency in its nine refineries and 20 petrochemical complexes, which in 1990 produced 17.6 million tons as compared to 16.1 million tons in 1989;
- Comisión Federal de Electricidad (Federal Electricity Commission-CFE), the sole generator and distributor of electricity in Mexico, is undergoing a significant structural change with the aim of increasing its efficiency and profitability. It presently has an installed capacity of 30,513 Megawatts and generates 113,666 gigawatts/hour of energy. In 1992 it will continue construction in existing water, coal fired, nuclear and oil fired generating plants;
- Caminos y Puentes Federales de Ingreso (Federal Income Generating Roads and Bridges) is the parastatal company responsible for the construction and maintenance of toll highways and bridges. In addition to an increase in tariffs on the use of existing highways, the government has authorized private investments in the construction of new ones, opening new opportunities and increasing funds invested in this sector;
- CONCARRIL, the government owned manufacturer of rail cars in Mexico has recently been closed down;

4.2 AUTOMOTIVE INDUSTRY

The most important end user of machine tools in the private industry is the automotive sector. The largest automotive manufacturers in Mexico continue to be:

Chrysler
General Motors
Dina

Ford
Nissan
Volkswagen

These firms operate a total of 16 plants in Mexico, of which ten are American, two German, three Japanese and one Mexican. These 100% foreign owned plants manufacture automobiles, trucks and motors, providing 90% of Mexico's total automotive production. The other plants are majority Mexican owned and produce truck trailers, tractors for agriculture and buses. All passenger car manufacturers are 100% foreign owned and, since they were established prior to 1973, they were exempted from the majority Mexican ownership regulation imposed later by the Foreign Investment Law.

According to the Mexican Association for the Automotive Industry, total production for the local market reached 445,813 units in 1989, reflecting a 30.4% increase over the 341,919 units produced in 1988. In 1990, production increased another 23.4% to 550,306 units. Of total production, 64% corresponded to automobiles, 35% to trucks and the balance to trailer-tractors and buses. Market participation by company, was as follows: Nissan 20.7%, Chrysler 16.9%, Ford 16.4%, Volkswagen 26.6% and General Motors 17.2%. Total production for export also increased significantly (42.5%), from 195,468 units in 1989 to 278,559 in 1990, placing total production at 820,558 units in 1990.

4.3 STEEL INDUSTRY

Mexico's steel production industry includes all five stages of production typically found in the operations of major, fully integrated, steel producers in other countries:

- concentration of iron ore and production of coke from coal;
- production of primary iron or fusion;
- production of pig iron and sponge iron;
- production of steel for lamination, casting or smelting;
- production of the final product in semi-finishing or finishing mills.

Firms in the industry are divided into three groups, according to the degree of transformation employed:

- Integrated producers carry out all five production processes;
- Semi-integrated firms begin with scrap or pig iron, fabricate raw steel and produce finished (rolled) products;
- Mill rollers produce finished products from steel ingots.

The Mexican steel industry is composed of four large, fully integrated manufacturers, 23 semi-integrated firms and 44 mill rollers with a total installed capacity of 11.6 million metric tons of steel, of which 58% are government owned. Capacity utilization in 1990 was 78% as compared to 67% in 1989. Mexico is the second largest steel producer in Latin America after Brazil and the world's 21st. Total employment in the industry is of 62,000 persons, 43,000 blue collar workers and 19,000 employees.

The sector's GDP accounts for 1.2% of total GDP and 5% of manufacturing GDP.

Total raw steel production reached an all time high of 8.7 million tons in 1990, reflecting an 11.1% increase over 1989 levels and a 26% increase over its all time low during the decade of 6.9 million tons in 1983. Steel production increased due to a general economic recovery and growing exports at favorable world prices. Ten month figures for 1991 place total steel production at 6.67 million tons, reflecting an 8.4% decrease as compared to the same period in 1990.

The four fully integrated steel plants accounted for 83.6% of total national production and 65% of employment in the industry. Of the four large companies, two are included in the government owned SIDERMEX (Mexican Steel) complex: Altos Hornos de México (AHMSA) and Siderúrgica Lázaro Cárdenas - Las Truchas (SICARTSA). Hojalata y Lámina (HYLSA) and Tubos de Acero de México (TAMSA) are the two fully integrated, privately owned producers and account for 27% of total production and 33% of production of the fully integrated firms.

No major investments are to be undertaken in the near future since no expansions or new projects are to be undertaken until the sale of government the steel giant is closed. After that time, major projects are expected to be undertaken in order to modernize and renew existing production processes and lines.

5. MARKET ACCESS

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 electricity generation and distribution equipment has improved significantly as a result of this commercial liberalization. Therefore, imports of equipment for this industry 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. Some manufacturers who use imported inputs for their products under a Mexican Government approved manufacturing plan may have the duty and/or VAT waived or rebated. Raw materials, intermediates and machinery for use in manufacturing or assembling products for export are generally eligible to be imported either duty free or under bond.

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.

International tenders financed by the World Bank or the International Development Bank are open to all member countries of these institutions. More recently, the World Bank, where its credits are involved, has required that bid documents should also include an affidavit confirming that the Canadian company is a bona fide Canadian company with an official residence in Canada and that Canada is recognized as a contributing member to the World Bank.

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 Vérot for the
Canadian Embassy
Mexico City
December 1991

To call all telephone and fax numbers listed below from Canada, unless they are preceded by a different area code, dial 011-525 first, otherwise dial 011-52-(area) number.
NOTE: The information on companies not located in Mexico City was not confirmed.

**APPENDIX I:
INDUSTRIAL CHAMBERS AND ASSOCIATIONS**

CAMARA NACIONAL DE LA INDUSTRIA METALICA DE GUADALAJARA

National Chamber of the Mexican
Metalic Industry of Guadalajara
16 de septiembre 730-1708
Col. Centro
44100 Guadalajara, Jal.
Phone: (36) 12-21-27

**CAMARA REGIONAL DE LA INDUSTRIA DE TRANSFORMACION
DEL ESTADO DE JALISCO**

Regional Chamber of the Transformation Industry in
the State of Jalisco
Av. Washington 1920
44100 Guadalajara, Jal.
Phone: (36) 11-73-09

CAMARA NACIONAL DE LA INDUSTRIA DE TRANSFORMACION

National Chamber of the Transformation Industry
Av. San Antonio 256
Col. Ampliación Nápoles
03849 México D.F.
Phone: 563-34-00

CAMARA DE LA INDUSTRIA DE TRANSFORMACION DE NUEVO LEON

Regional Chamber of the Transformation Industry in the
State of Nuevo Leon
Ocampo Pte. 250 - Piso 4
Col. Centro
64000 Monterrey, N.L.
Phone: (83) 43-64-53

ASOCIACION DE INDUSTRIALES DEL ESTADO DE MORELOS, A.C.

Association of Industrialists of the State of Morelos
Río Balsas 102
Col. Vista Hermos
62290 Cuernavaca, Mor.
Phone: (731) 204-33

ASOCIACION DE INDUSTRIALES DEL ESTADO DE MEXICO, A.C.

Industrialists Association of the State of Mexico

Av. Parque de Chapultepec 105

Col. del Parque

53390 Naucalpan, Mex.

Phone: 576-21-11

Fax: 576-52-06

Contact: Ing. Alfonso Zorriva
Director General

ASOCIACION INDUSTRIAL VALLEJO, A.C.

Association of the Norte Industrial Area of Vallejo

Norte 35 No. 865

Col. Industrial Vallejo

02300 México D.F.

Phone: 567-85-55

Fax: 587-86-88

Contact: Lic. Fernando Morales A.
Director General

CAMARA NACIONAL DE LA INDUSTRIA DEL HIERRO Y DEL ACERO

Iron and Steel Chamber

Amores 338

Col. del Valle

03199 México D.F.

Phone: 543-44-43

Fax: 687-05-17

Contact: Sr. Romeo Gómez F.
Director General

**ASOCIACION NACIONAL DE IMPORTADORES Y EXPORTADORES
DE LA REPUBLICA MEXICANA, A.C.**

Mexican Importers and Exporters Association

Monterrey 130

Col. Roma

06700 México D.F.

Phone: 564-86-18 584-95-22

Fax: 584-53-17

Contact: Ernesto Warnholz
Director General

ASOCIACION DE INDUSTRIALES DEL ESTADO DE OAXACA, A.C.

Industrialists Association of the State of Oaxaca

Av. Independencia 803-206

Col. Centro

58000 Oaxaca, Oax.

Phone: (951) 645-71

CAMARA NACIONAL DE MANUFACTURAS ELECTRICAS

Electrical Manufacturers National Chamber

Thiers 84

Col. Anzures

11590 México D.F.

Phone: 250-50-82

**APPENDIX II:
USEFUL GOVERNMENT MINISTRIES AND
DECENTRALIZED AGENCIES**

PETROLEOS MEXICANOS (PEMEX) (SEMIP)

Av. Marina Nacional 329

Col. Huasteca

11311 México D.F.

Phone: 250-26-11 254-20-44

Fax: 254-45-29

C.P. Francisco Rojas Gutiérrez

Director General

Torre Ejecutiva - Piso 44

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

Lic. Víctor M. Montañéz Morfín

Secretario Particular

Torre Ejecutiva - Piso 44

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

Lic. Adrián Lajous Vargas

Subdirector de Planeación y

Coordinación

Torre Ejecutiva - Piso 36

Phone: 203-47-43 254-33-34

Ing. Alfonso Nava Jaimes

Gerente de Ingeniería de Telecomunicaciones

Phone: 531-61-90

COMISION FEDERAL DE ELECTRICIDAD (SEMIP)

Río Ródano 14

Col. Cuauhtémoc

06598 México D.F.

Phone: 553-71-33 536-64-00

Fax: 553-6424

Ing. Guillermo Guerrero Villalobos

Director General

Piso 7

Phone: 553-65-00

Ing. Andrés Moreno Fernández

Subdirector de Construcción

Piso 5

Phone: 286-69-43

Lic. José Luis García
Gerente de Abastecimientos
(Responsable de Adquisiciones)
Piso 7
Phone: 286-95-36 286-9556

COMPañIA DE LUZ Y FUERZA DEL CENTRO, S.A. (CFE) (SEMIP)
Melchor Ocampo 171
Col. Tlaxpana
11379 México D.F.
Phone: 518-00-80 hasta el 99
Fax: 591-10-11

Ing. Guillermo Guerrero Villalobos
Director General
Río Ródano 14 Piso 7
Col. Cuauhtémoc
06598 México D.F.
Phone: 553-64-00 553-65-00

Ing. Jorge Gutiérrez Vera
Subdirector General - Piso 8
Melchor Ocampo 171
Col. Tlaxpana
11379 México D.F.
Phone: 546-77-70 592-42-73

Ing. Celestino Cázares Lazcano
Gerente Administrativo
(Responsable de Adquisiciones)
Melchor Ocampo 171 - Piso 8
Col. Tlaxpana
11379 México D.F.
Phone: 546-79-58

FERROCARRILES NACIONALES DE MEXICO (FERRONALES)

RAILROADS

Av. Jesús García 140
Col. Buenavista
06358 México D.F.
Phone: 547-52-40
Fax: 547-09-59

Ing. José Humberto Mosconi Castillo
Director General
Phone: 547-79-20
Piso 13 Ala A

Lic. Gustavo Cortés Fuentes
Subdirector General de Recursos Materiales
Phone: 547-62-73

FERTILIZANTES MEXICANOS, S.A. (FERTIMEX)

FERTILIZERS

Av. La Morena 804 Piso 11

Col. Narvarte

03020 México D.F.

Phone: 536-90-20

Fax: 687-50-68

Ing. Manuel Cadena Morales

Director General

Phone: 687-39-95

C.P. Alfonso Mireles Ortíz

Subdirector de Adquisiciones

Phone: 536-39-28

**APPENDIX III:
POTENTIAL DISTRIBUTORS AND REPRESENTATIVES**

ANDEX, S.A. DE C.V.
Av. Río Consulado 517
Col. Atlampa
06450 México D.F.
Phone: 541-31-50
Fax: 541-41-93
Contact: Heriberto Bohnen
Presidente

CHICAGO PNEUMATIC TOOL DE MEXICO, S.A.
Bvld. Puerto Aéreo 169
Col. Federal
15700 México D.F.
Phone: 571-34-11
Fax: 785-20-99
Contact: Ing. Luis Palacios Haase
Director General

DIAMANT BOART DE MEXICO, S.A. DE C.V.
Calle 2 A No. 1
Fracc. Industrial Vallejo
54170 Tlalnepantla, Mex.
Phone: 392-62-44
Fax: 392-41-07
Contact: Ing. Jean Paul Hebrant
Director General

DREIS & KRUMP DE MEXICO, S.A. DE C.V.
Carr. a Monterrey-Salttillo Km. 68
66350 Sta. Catarina, N.L.
Phone: (83) 36--26-97
Fax: (83) 36-39-07
Contact: Ing. Javier Guajardo T.
Director General

ESPECIALIDADES DE REYNOSA, S.A. DE C.V.
Brecha E-99
Parque Industrial
87600 Reynosa, Tamps.
Phone: (892) 261-99
Fax: (892) 260-59
Contact: Jim Henderson
Gerente de Planta

FERRETERIA Y SIMILARES DE COATZACOALCOS, S.A. DE C.V.

Hidalgo 500
Col. Centro
96400 Coatzacoalcos, Ver.
Phone: (921) 244-80
Fax: (921) 301-73
Contact: Victor Uscanga Espinoza
Director General

FERROSTAL MEXICANA, S.A.

Calz. de la Naranja 174
Col. Alce Blanco
53370 Naucalpan, Mex.
Phone: 576-51-55
Fax: 358-40-20
Contact: Alphons Strotgen
Director General

GIMBEL MEXICANA, S.A. DE C.V.

Av. Sonora 189
Col. Hipódromo Condesa
06100 México D.F.
Phone: 584-38-00
Fax: 574-53-88
Contact: Carlos Gimbel Rotschild
Gerente General

HERRAMENTAL MONTERREY, S.A.

Av. Madero 2701 Poniente
64240 Monterrey, N.L.
Phone: (83) 48-73-11
Fax: (83) 48-84-49
Contact: Angel M. Lozano
Director General

HERRAMEX, S.A.

Vía Gustavo Baz 91
Col. Bosques de Echegaray
53310 Naucalpan, Mex.
Phone: 360-15-79
Fax: 560-36-39
Contact: Ing. Tomás Hesselman
Presidente

HERRAMIENTAS CLEVELAND, S.A. DE C.V.

Prol. Av. Juárez 1602
Col. Sta. Julia
42080 Pachuca, Hgo.
Phone: (771) 313-00
Fax: (771) 373-70
Contact: Eberhard Hesse
Glueck: Gerente General

HERRAMIENTAS GREENFIELD, S.A. DE C.V.

Dr. Gustavo Baz 3321
Fracc. Industrial Tlaxcolpan
54030 Tlalnepantla, Mex.
Phone: 565-79-16
Fax: 565-05-54
Contact: John Koehn Weiss
Gerente General

HERRAMIENTAS STANLEY, S.A. DE C.V.

Autopista México-Puebla Km.124
Col. Corredor Industrial
72030 Puebla, Pue.
Phone: (22) 49-59-46
Fax: (22) 49-48-80
Contact: William D. Moore
Director General

LANDIS, S.A. DE C.V.

Aviación Comercial 34
Col. Federal
15700 México D.F.
Phone: 762-39-31
Fax: 762-39-35
Contact: Alfonso Servín H.
Director General

LEON WEILL, S.A.

Av. Coyoacán 1153
Col. del Valle
03210 México D.F.
Phone: 559-43-11
Fax: 575-41-16
Contact: León Weill
Director Ejecutivo

MANUFACTURAS Y AGENCIAS UNIDAS, S.A.

Amores 1018
Col. del Valle
03100 México D.F.
Phone: 576-26-11
Fax: 358-50-27
Contact: Lic. Roberto Troop
Director General

MAPREMEX, S.A. DE C.V.

Av. Convento de Tepotzotlán 11
Col. Jardines de Sta. Mónica
54050 Tlalnepantla, Mex.
Phone: 398-67-88
Fax: 398-67-88
Contact: Peter F. Frank
Director General

MERIT PRODUCTS DE MEXICO, S.A. DE C.V.

Avenida 19 Norte 130 - Local 10

Col. La Mesa

22610 Tijuana, B.C.N.

Phone: (66) 86-89-95

Fax: (66) 86-88-11

Contact: Rafael Sanabria Nilo
Administrador

MESSER GRIESHEIM DE MEXICO, S.A. DE C.V.

Belisario Domínguez 8

Col. del Carmen

04100 México D.F.

Phone: 658-21-99

Fax: 554-82-18

Contact: Ing. Thomas Getmann
Director General

MINER Y MENDEZ DE MEXICO, S.A. DE C.V.

Insurgentes Sur 2462

Col. Ermita Atizapán

01070 México D.F.

Phone: 548-94-70

Fax: 550-69-15

Contact: Lic. Felipe Ziri6n
Presidente

OXVAL DE MEXICO, S.A.

Ingenieros Militares 38-A

Col. Lomas de Sotelo

53390 Naucalpan, Mex.

Phone: 557-23-77

Fax: 557-90-36

Contact: Guillermo Mart6nnez de Alva
Gerente General

TUERCAS Y CANDADOS, S.A.

Av. Dr. J.E. Gonz6lez 280-A Sur

64640 Monterrey, N.L.

Phone: (83) 46-44-00 46-44-04

Fax: (83) 51-96-47

Contact: Ing. Roberto Rodr6guez T.
Director de Operaciones

TULON DE MEXICO, S.A. DE C.V.

Calle 30 No. 2715

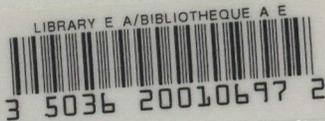
Zona Industrial

44940 Guadalajara, Jal.

Phone: (36) 12-33-10 10-58-29

Fax: (36) 10-20-97

Contact: Donald Dunbar Olin
Director de Operaciones



VALENITE GTE DE MEXICO, S.A. DE C.V.

Avenida Peñuelas 7
Fracc. Industrial Sn. Pedrito
76040 Querétaro, Qro.
Phone: (42) 455-08 455-09
Fax: (42) 455-03
Contact: Arnaldo Herrera
Director General

VMC DE MATAMOROS, S.A.

Tercera y Michoacán 312
Fracc. Moderno
87380 Matamoros, Tamps.
Phone: (891) 307-55
Fax: (891) 650-10
Contact: C.P. Javier Villarreal E.
Director General

WELDING PROCESS DE MEXICO, S.A. DE C.V.

Pensylvania 84-C
Col. Nápoles de C.V.
03810 México D.F.
Phone: 687-03-35 687-90-39
Fax: 687-90-89
Contact: Ing. Lucio Oliva
Director General

DOCS
CA1 EA953 91M22 ENG
Verut, Caroline
Market study on the Mexican market
for machine tools and metalworking
equipment
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