

CHAPTER 7

ELECTRICAL COMPONENTS

CHAPTER 7 - ELECTRICAL COMPONENTS

INTRODUCTION

Under NAFTA, the three member countries agreed to an immediate or a five-year elimination of tariffs for most electrical components. In addition, NAFTA provides for the elimination of tariffs on certain electrical components (e.g. computer power supplies, semiconductor devices, integrated circuits) imported from any country, immediately or over a five year period beginning in 1999. Many US electronics companies have set up production and assembly facilities in Mexico to take advantage of low wage rates there. These companies import electrical components from the United States and export finished products back across the border. The elimination of tariffs between the three countries, combined with simplified regulations affecting trade among Canada, Mexico, and the United States as envisioned under NAFTA, should stimulate further growth of three-way trade in the region.

The Canadian electronic components industry is a dynamic export-oriented sector; production stands at about \$1.2 billion, of which approximately 80 % is exported. Canada currently imports about \$5.5 billion worth of electrical components, 85% of which comes from the United States. The domestic market for electrical components is expected to grow as much as 4 % annually over the next few years. Canada is considered to be a primary global location for the assembly of electrical components. Increasingly, components are imported and further processed or assembled in some manner and then re-exported.

Canada - US intercompany trade is very significant in this sector. A number of large multinational companies, with facilities in both Canada and the United States, import electrical components into Canada for further processing into higher value-added electrical components or finished articles. Smaller Canadian companies operate in the open market, exporting custom-designed components to clients in the telecommunications, computer and automotive industries.

Mexican manufacturers of electrical components focus primarily on low-end semiconductor products and printed circuit boards. Expansion by Mexican manufacturers to other electrical components has been limited by a shortage of skilled workers and by a high turnover in the work force.

The Mexican markets for telecommunications, computers and consumer electronic products are growing rapidly. Since 1990, the government has helped facilitate the importation of electrical components used in the assembly and production of finished products. Mexico relies heavily on imported inputs in the high technology area.

Investment in Mexico to install new telecommunications and computer systems should increase Mexican demand for printed circuits, cathode ray tubes, transformers, connectors, power supplies, and capacitors. The electronics sector maquiladora industry, which imports materials in-bond, assembling them locally and then exporting them, is also an important consumer of electrical components.

In the United States, increased demand for computers, communications equipment, and electronic automotive devices will support significant growth in the electrical components market. Demand for electrical components comes primarily from the computer, telecommunications, instrumentation, medical equipment, and transportation industries.

CANADA

Tariffs (%)

<u>Items:</u>	<u>MFN</u>	<u>GPT</u>	<u>US/Mexico</u>
Power supply (transformers, converters, inductors)	0-16.3	0-10	0-8
Capacitors	8.2-9.2	6.5	0-3.9
Resistors	0-8.2	6.5	0
Printed circuit boards	8.2	6.5	0-3.9
Connectors	0-16.3	0-11.5	0-6.9
Semiconductors	0	0	0

Standards

Standards for the electronics sector in Canada are regulated by the Canadian Standards Association (CSA). Since there are numerous standards, and some are product specific, the manufacturer should contact the CSA for the standards for his particular product. The manufacturer is also recommended to contact the Standards Council of Canada. Both organizations are listed under Section III of this guide.

Labelling

Pre-packaged products sold in Canada must comply with Canadian packaging and labelling requirements as prescribed by Industry Canada, under the Consumer Packaging and Labelling Act and Regulations for pre-packaged non-food consumer products.

There are three mandatory statements which must appear on the label:

- product identity
 - the product's name;
- product net quantity
 - expressed in metric units in volume, weight or numerical count, according to the type of product;

- dealer's name and principal place of business
 - identity and principal place of business of the person for whom the pre-packaged product was manufactured or produced for resale
 - when imported, substitutes to the requirement include (a) name and address of a Canadian dealer preceded by the words "imported by"; (b) the statement of origin located immediately adjacent to the name and address of a Canadian dealer; or (c) the name and address of the dealer outside Canada.

All mandatory label information must be shown in English and French, except the manufacturer's name and address which can appear in either language. Other supplemental, non-mandatory label information does not have to be bilingual, but manufacturers are encouraged to include this in a bilingual format, if possible. However, the province of Quebec has additional requirements concerning the use of the French language on all products marketed within its jurisdiction. Information on French requirements may be obtained from the Office de la Langue Francaise, found in Section III of this guide.

All non-mandatory label information on a pre-packaged product must not be false or misleading to the consumer; it must conform with any label claims made which may relate to type, quality, performance, function, origin, or method of manufacture, for example. Please refer to the Merchandise Standards Division, Industry Canada, or the CSA, both listed under Section III of this guide, for more information.

Packaging

For **pre-packaged** products, according to the Consumer Packaging and Labelling Act and Regulations, all packages must be manufactured, constructed, or displayed in such a manner that a consumer may not reasonably be misled with respect to the quality or quantity of the product it contains.

Labels on pre-packaged products must show:

- the identity and principal place of business of the person by or for whom the pre-packaged product was manufactured or produced for resale;
- the identity of the pre-packaged product in terms of its common or generic name or in terms of its function;
- such information respecting the nature, quality, age, size, material content, composition, geographic origin, performance, use or method of manufacture or production of the pre-packaged product as may be prescribed.

Questions on the Act may be directed to the Consumer Products Branch, Industry Canada, found under Section III of this guide.

Marketing and Distribution

The domestic industry is made up of approximately 250 companies, with the majority being small in size and Canadian-owned. However, production is also performed by large multinationals.

The fastest-growing segment of the industry in Canada is the production of specialised products, which relies on strong capabilities in design. The domestic telecommunications and defence sectors have traditionally been the main driving forces behind microelectronics development. The industry is also driven by computer, consumer electronics and industrial applications. Demand for imports of electrical components is closely linked to demand for end-use products such as telecommunications, computers, and office equipment.

The latest available data suggests that the import market for electrical components into Canada is US \$4.5 billion.

The trend is toward technology networks, partnerships between companies and research organisations linked through partnership agreements, joint ventures and consortia. More specifically, technological interdependence, links to “systems” suppliers and the growth of the application-specific integrated circuits (integrated circuits that are tailor-made to customer specifications and range from full custom to semi-custom devices) market are the main trends in this industry.

Documentation

Goods imported into Canada have mandatory documentation requirements. These are:

- Form B3, Canada Customs Coding (two copies required for an automated Customs office, three if not). It is important to fill in this form properly, especially since it is here where the importer shows the tariff treatment for his goods;
- cargo control document - manifest, waybill or other approved document that must be obtained from carrier or forwarder (two copies);
- commercial invoice, indicating the buyer and seller of the goods, price paid or payable, adequate description, including quantity, of goods contained in the shipment, together with a Canada Custom invoice containing the remaining

required data (two copies), or a fully completed Canada Customs invoice, or an invoice containing all data listed by Customs.

Revenue Canada requires that certain goods imported into Canada be clearly labelled as to their country of origin, in English or French; this must be clearly located on the product. If the consumer will ultimately buy the good in a container, then it is acceptable that the container only be marked. Canadian importers are responsible for ensuring that the goods they are importing comply with the marking requirements at the time they import the goods. Please verify with a Canada Customs office concerning your product's marking requirements.

Trade Associations

Canadian Manufacturers Association
Toronto, Ontario Tel. (416) 798-8000
Fax (416) 798-8050

Canadian Semiconductor Design Association
Kanata, Ontario Tel. (613) 592-1470
Fax (613) 592-8163

Consumer Electronics Marketers of Canada
Rexdale, Ontario Tel. (416) 674-7410
Fax (416) 674-7412

Solid State Optoelectronics Consortium
Kanata, Ontario Tel. (613) 993-1506
Fax (613) 957-8734

Strategic Microelectronics Consortium
Kanata, Ontario Tel. (613) 592-8155
Fax (613) 592-2093

Trade Fairs

Canadian High Technology Show
April, September
Various Canadian locations

Canadian Consumer Electronics Expo
September
Vancouver/Toronto rotation

ElectroTech West
June (biennial)
Various Canadian locations

MEXICO

Tariffs (%)

<u>Items:</u>	<u>General</u>	<u>US/Canada</u>
Power supply (transformers, converters, inductors)	5/10/15/20	A/B/C
Capacitors	10/15	A/B/C
Resistors	10/15	A/B/C
Printed circuit boards	10/15	B
Connectors	10/15/20	A/C
Semiconductors	5/10/15	A

A - duties fully eliminated on January 1, 1994

B - duties removed in five equal stages of 20% annually to full elimination by 1998

C - duties removed in ten equal stages of 10% annually to full elimination by 2003

Standards

There are voluntary standards applicable to this sector, as found in SECOFI's Catalogue of Official Mexican Standards, Volume II, Classification I. A sampling of the range of standards applicable to this sector include test methods, environmental and durability testing, marking codes for products, specifications, and other standards. There are also obligatory standards listed, including testing of some products, graphical symbols for diagrams for conductors and connectors, and other specific standards according to the type of product. The exporter is strongly urged to contact the Direccion General de Normas at SECOFI, the relevant Mexican sector association, or a knowledgeable Mexican importer, about the most current standards applicable to, and required for, his product.

Labelling

According to Mexico's Ley de Proteccion al Consumidor (consumer protection law), all information contained on a consumer product or its labels, containers and packages must be in Spanish. These labelling requirements will be enforced at the border, meaning that compliance is effectively the responsibility of the exporter. Full original Spanish labelling is to be affixed at the point of origin.

Labels must contain specific information such as:

- name of the product or good (including a product description, if not described in the name of the product or good);
- name or trade name and address of the importer and exporter (this information may be displayed on a separate label and may be added after importation);
- country of origin of the product;
- net contents in accordance with Official Mexican Standard NOM 030-SCFI-1993;
- warnings or precautions in the case of dangerous products.

Products are already subject to a NOM which requires that instructions and warranties be provided at the point of sale, so they are not subject to the general requirement that product labels contain instructions for use and care.

The labels must be legible. The label will normally be affixed to each individual package offered for sale to consumers.

Packaging

There are no official packaging requirements for imported products to Mexico. Please check with your Mexican broker or importer for developments in this area.

Marketing and Distribution

Mexico's domestic components industry is small; the sector has as its primary focus the production of low-end semiconductor-related components. Expansion to other components areas is limited by the lack of a skilled workforce.

As the economy expands, the Mexican demand for electronics will grow. This demand for end-use electronics is now almost entirely satisfied by foreign producers. The most important end user sectors are the local computer, telecommunications, consumer electronics, and office machine industries. The most promising subsectors include printed circuit boards, integrated circuits/ memories, and semiconductors. Also, sourcing for the important electronics sector maquiladora industry is almost totally done abroad.

For Mexicans, price is most important, followed by quality, service and delivery, when considering the purchase of electrical components.

Documentation

Goods imported into Mexico must be accompanied by standard documentation, as follows:

- commercial invoice (in Spanish, if prepared in English, the Spanish translation may follow original text on invoice or translation may accompany invoice), including the original and several copies;
- packing list (if more than one package shipped) with at least four copies;
- bills of lading, including one original for importer and one for customs broker.

The invoice must be complete and accurate. It must include:

- place and date of issue;
- complete name and addresses of the buyer or importer in Mexico, and the exporter;
- description of merchandise, including marks, numbers, types, and quantities;
- price and value of shipment;
- freight and insurance charges;
- signature (manual), name, and title of exporter; and
- shipper's invoice number and customer's order number.

The invoice should be sent ahead to the importer/broker/agent, in order to obtain special permits (if necessary) if shipped by sea or land, or it should accompany goods if shipped by air.

The packing list includes:

- number of packages, and detailed list of goods in each package;
- net, gross, and legal weight of each package and total shipment, in metric units, along with volume or measurements of each package and total shipment.

The bill of lading has information such as:

- types of packages in shipment and their weights and measurements;
- names and addresses of the shipper and importer, or customs broker;
- ports of origin and destination;
- description of goods;
- list of charges, including freight;
- number of bills of lading in full set; and
- carrier's official acknowledgement of receipt on board of goods for shipment.

Trade Associations

Asociacion Mexicana de Fabricantes de Conductores Electricos
(Electric conduction equipment manufacturers association)
Mexico City Tel. (5) 533-4441, 207-2254
Fax (5) 286-7723

Asociacion Mexicana de Ingenieros en Comunicacion Electrica y Electronica
(Electric and electronic communications engineers association)
Mexico City Tel. (5) 512-5300, 510-3142
Fax (5) 510-3142

Camara Nacional de la Industria Electronica y de Comunicaciones Electricas
(Electronics and communications industry chamber)
Mexico City Tel. (5) 574-7411, 574-7700
Fax (5) 584-5083

Camara Nacional de las Manufacturas Electricas
(Electric manufacturers national chamber)
Mexico City Tel. (5) 202-1440
Fax (5) 202-2020

Trade Fairs

Comdex/Comexpo
March
Mexico City

Electronica
June (biennial)
Mexico City

Expo Ferrelectrica
June
Mexico City

UNITED STATES

Tariffs (%)

<u>Items:</u>	<u>General</u>	<u>GSP</u>	<u>CBI</u>	<u>Canada/Mexico</u>
Power supply (transformers, converters, inductors)	2.4-6.6	0	0	0-2.6
Capacitors	3.9-10	0-10	0	0-9
Resistors	0-6	0-6	0	0
Printed circuit boards	5.3	0	0	0
Connectors	5.3	0	0	0-4.2
Semiconductors	0-2	0	0	0

Standards

Standards for the electronics sector in the United States are enacted by Underwriters Laboratories (UL). Since there are numerous standards, and some are product specific, the manufacturer should contact UL for the standards for his particular product. The manufacturer is also recommended to contact the National Institute for Standards and Technology, under Section III of this guide, for any other standards that may be applicable to his product.

Labelling

The Federal Trade Commission has general requirements for **consumer** product labels, or packages of products, which consist of:

- the identity of the product;
- the name and place of business of the manufacturer, packer or distributor;
- country of origin (US Customs requirement).

Please consult with UL about the current status of labelling for the product being exported to the US.

Packaging

An important function of packaging is to pack the product in a way to enable US Customs to examine, weigh, measure, and release the goods promptly. Therefore, show

the exact quantity of each item of goods in each box or other package, put marks and numbers on each package, and show those marks on your invoice opposite the itemisation of goods contained in the corresponding package.

Marketing and Distribution

Shipments of electrical components are forecast to grow at an annual rate of 6 - 8 % through the late 1990's. Demand for electrical components comes primarily from the computer, telecommunications, instrumentation, medical equipment, and transportation industries.

US electrical components producers are located primarily in California, Indiana, Massachusetts and Texas.

Customers are demanding higher performance, more functionality, and continued miniaturisation of physical characteristics at ultra-competitive prices. In the US, original equipment manufacturers, those companies which purchase components and integrate them into electronic systems, tend to emphasise supplier flexibility, rather than lasting alliances.

Component suppliers will face continuing demand for higher performance products. The increased complexity of the packaging and the interconnection of high-performance systems place a premium on compatibility among components. Systems designers will select components that offer the best engineering solutions. Component suppliers will have to carefully track technology and product developments in their customer markets and anticipate needed changes in their own product development to ensure compatibility. The establishment of close working relationships between component suppliers and users is critical.

Documentation

Within five working days of the date of arrival of a shipment at a US port of entry, entry documents must be filed, which consist of:

- a commercial invoice, or pro forma invoice when the commercial invoice cannot be produced;
- packing lists, if appropriate;

- evidence of right to make entry (bill of lading, air waybill, shipping receipt, carrier's certificate); and
- Entry Manifest, Customs Form 7533; or Application and Special Permit for Immediate Delivery, Customs Form 3461; or other form of merchandise release required by the district director.

A requirement of US Customs is that a good entering the United States, or its container (if the good reaches the final purchaser in a container) must be marked with its country of origin. An exception to this rule is an article which is to be processed in the US by the importer and not intended for sale in its imported form, or an article incapable of being marked. The manufacturer should check with US Customs to verify which situation applies to his product.

Trade Associations

American Electronics Association (AEA)
Washington, DC Tel. (202) 682-9110

Association for High Tech Distributors
Philadelphia Tel. (215) 564-3484
Fax (215) 564-2175

Electronic Industries Association
Washington, DC Tel. (202) 457-4900

Electronic Representatives Association
Chicago Tel. (312) 649-1333

Institute for Interconnecting & Packaging Electronic Circuits
Lincolnwood, Illinois Tel (708) 677-2850
Fax (708) 677-9570

IEEE (Institute of Electrical & Electronics Engineers) Components, Hybrids & Manufacturing Technology Society
New York Tel. (212) 705-7900
Fax (212) 705-4929

National Electronic Distributors Association
Chicago Tel. (312) 558-9114

National Electronics Service Dealers Association
Fort Worth, Texas Tel. (817) 921-9061
Fax (817) 921-3741

Semiconductor Equipment & Materials International
Mountain View, California Tel. (817) 921-9061
Fax (817) 921-3741

Semiconductor Industry Association
San Jose, California Tel. (408) 246-2711.

Trade Fairs

Assembly Technology Expo
May - Charlotte, North Carolina
September - Illinois

Electro International
May
Various US locations

Electronic Distribution Show & Conference
April/May
Las Vegas

FABCON/International Printed Circuit Fabrication Conference
May
California

Ideas in Science & Electronics
May
Albuquerque, New Mexico

IEEE Applied Power Electronics Exposition
March
Various US locations

International Electrical Exposition & Congress
June
Various US locations

SEMICON East/Southwest/West
(semiconductor show)
Various US locations

WESCON Electronics Exhibition and Conference
October/November
San Francisco/Anaheim, California

SOURCES OF INFORMATION ON THIS SECTOR

“Encyclopaedia of Associations: National Organisations of the US, Vols. I & II”, Gale Research Inc. (Washington), 1994.

“Industry Profile: Microelectronics”, Industry Canada, 1991.

“Market Research Reports: Mexico - Electronic Equipment Market Trends”, United States Department of Commerce, International Trade Administration, 1994.

“Market Study on the Mexican Market for Electrical components”, Department of Foreign Affairs and International Trade, 1991.

“MEXICO Business, The Portable Encyclopaedia for Doing Business with Mexico”, World Trade Press (San Rafael, California), 1994.

“NAFTA and the Electrical components Sector”, Industry Canada, 1994.

“1995 Tradeshow Week Data Book”, Tradeshow Week: New Jersey, 1994.

“North American Free Trade Agreement Opportunities for US Industries: NAFTA Industry Sector Reports”, US Department of Commerce, International Trade Administration, 1993.

“Opportunity In Mexico: A Small Business Guide, Chapter 3: Market Prospects”, United States Small Business Administration, Office of International Trade, 1993.

“US Industrial Outlook, Chapter 15: Electrical components, Equipment and Superconductors”, United States Department of Commerce, International Trade Administration, 1993.