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Author - Industry Canada - Metals and Minerals Processing

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# INDUSTRY SNAPSHOT THE COPPER SEMI-FABRICATING INDUSTRY IN CANADA

Industry Canada Metals and Minerals Processing Branch

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For further information, contact:

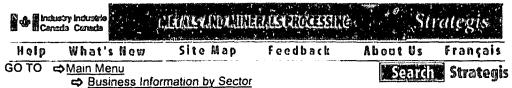
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# Industry Snapshot The Copper Semi-Fabricating Industry in Canada

#### Introduction

This document presents an economic profile of the copper and copper alloy rolling, casting and extruding industry over the 1988-1996 time period and includes 1997 data when available. The copper and copper alloy rolling, casting and extruding industry is often referred to as the copper semi-fabricating industry, and will be referred to as such throughout this document.

The analysis contained in this profile is based on statistics collected by Statistics Canada for the copper semi-fabricating industry. For the purpose of data collection, Statistics Canada uses a coding system, known as the Standard Industrial Classification (SIC) that categorizes companies, whose major activities are similar, into industrial groups. Statistics Canada classifies the Canadian Primary Metal Industries into the following SICs

291 2911 2912 2919	Primary Steel Industries Ferro-Alloys Industry Steel Foundries Other Primary Steel Industries
2921 2941 295 2951	Steel Pipe and Tube Industry Iron Foundries Non-Ferrous Metal Smelting and Refining Industries Primary Production of Aluminum Industry
2959 2961 <b>2971</b> 2999	Other Primary Smelting and Refining of Non-Ferrous Metal Industries Aluminum Rolling, Casting and Extruding Industry Copper and Copper Alloy Rolling, Casting and Extruding Industry Other Rolled, Cast and Extruded Non-Ferrous Metal Products Industries

This profile has three main sections:

- Industry Overview a summary of the industry's manufacturing processes and its economic outlook.
- Industry Structure information on structural measures such as industry size, trade, concentration and costs
- Industry Performance data on performance measures, including changes in industry size and efficiency indicators.

The information provided in this document should be useful to firms to observe trends and to measure performance against industry averages. This profile also contains useful reference information: a list of the major firms in the industry, a partial listing of industry products, a glossary and references to additional information on the industry.

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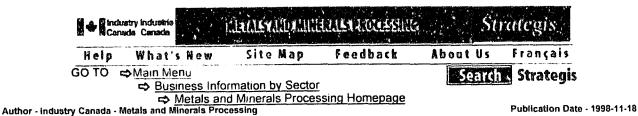
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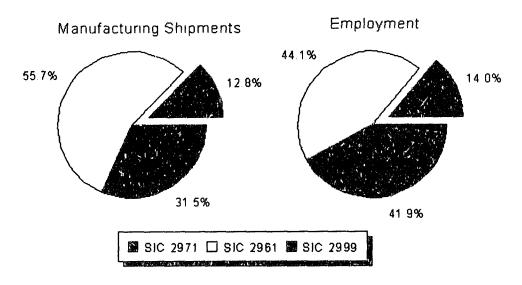


Industry Snapshot
The Copper Semi-Fabricating Industry in Canada

# 1. Industry Overview

The copper semi-fabricating industry is part of the non-ferrous semi-fabricating industry (Figure 1), which also includes SIC 2961 the aluminum rolling, casting and extruding industry and SIC 2999 the other rolled, cast and extruded non-ferrous metal products industry. The other rolled, cast and extruded non-ferrous metal products industry includes metals such as zinc, lead, magnesium, titanium etc. and their alloys and all non-ferrous diecasting.

Figure 1: Non-Ferrous Semi-Fabricating Industry, 1996



Source: Industry Canada estimates based on preliminary results from Statistics Canada

Within the non-ferrous semi-fabricating industry, the copper semi-fabricating industry ranks behind both the aluminum and other semi-fabricating industries in size of shipments and employment. However, because all rion-ferrous diecasting is included in SIC 2999 (including aluminum and copper diecasting), the above chart is underestimating the importance of aluminum and copper in the semi-fabricating industry.

SIC 2971 defines the copper semi-fabricating industry as follows:

Establishments primarily engaged in manufacturing copper and copper alloy castings and extrusions. Establishments primarily engaged in pressure die casting of copper alloys are classified in 2999 - Other Rolled, Cast and Extruded Non-Ferrous Metal Products Industries and those primarily engaged in extracting copper from copper ore are classified in 2959 - Other Primary Smelting and Refining of Non-Ferrous Metal Industries.

SIC 2971 includes:

- Bars, rods and shapes, copper and copper alloy
- · Bronze powder

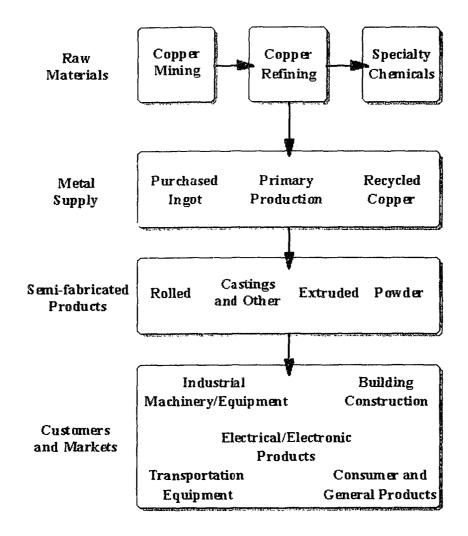
- · Castings and forgings (exc. pipe fittings), copper and copper alloy
- Copper alloy discs for cartridge cases
- Copper anodes for plating
- Copper powder
- Ingots, copper and copper alloy
- Pipe and tubing, copper and copper alloy
- Plate, sheet, strip and flat products, copper and copper alloy
- Wire and cable, not insulated, copper and copper alloy
- · Wire rods, copper and copper alloy

It should be noted that data reported by Statistics Canada for the copper semi-fabricating industry may be somewhat understated due to the fact that the activities of some companies that are involved in the semi-fabrication of copper may be reported under a different SIC. If at least 50% of an establishment's value added derives from activities associated with a particular SIC code, the establishment is classified in that industry.

Three manufacturing processes dominate in the copper semi-fabricating industry (Figure 2)

- rolling. Slabs of pure copper are hot- or cold-rolled. Products include plate, sheet, strip and foil
- casting. Pure copper cathodes are cast into wire rods, billets, cakes or ingots either as pure copper or
  as copper alloys. The three most important methods are die casting, permanent mould casting and
  sand casting. (Although data for companies involved in die casting are included in SIC 2999 and not
  2971, a brief description of die casting is provided here.)
  - Die Casting Molten metal is forced into a steel die or mould under pressure to form the desired shape. This method is normally used for high volume production of accurate parts requiring a minimum of machining.
  - Permanent Mould Casting Molten metal flows into moulds and cores of steel or
    other metal, either by gravity or through the application of vacuum. These casting are
    stronger than either die or sand castings. When permanent cores would be
    impossible to remove from the finished product, semi-permanent mould casting,
    which uses expendable cores of sand or other material is used.
  - Sand Casting Virtually any pattern can be pressed into a fine sand mixture to form a mould into which the metal is poured. This method, although slower, is used to produce intricate designs or very large castings. It is also the preferred method of producing small quantities of a particular shape economically.
- extruding. Extruding consists of pushing pre-heated cylindrical copper billets through a steel die. The
  extrusion process can be likened to squeezing toothpaste from a tube with the extruded metal
  assuming the shape of the die through which it is pressed. Log-shaped metal billets are preheated and
  fed into an extrusion press where thousands of kilograms of pressure are applied to force the metal
  through the die onto a runoff table where the extrusion is straightened by stretching and then cut to
  length. Products include tubes, rods and bars of different shapes and sizes. Coiled rod about «" in
  diameter can be drawn down by wire mills to make pure copper wire of all gages.

Figure 2: The Copper and Copper Alloy Manufacturing Process



Source: Adapted from OECD (1996), p. 256.

**Summary and Outlook** 

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The Canadian copper semi-fabricating industry experienced significant changes between 1988 and 1996. From 1988 to 1990 there was a considerable drop in both shipments and employment. However, from 1990 to 1996 these two indicators have remained fairly stable with preliminary 1997 data showing a slight increase in shipments. The number of establishments in the industry has also dropped significantly, from 38 in 1988 to 28 in 1996. These factors indicate that the industry has undergone major restructuring during the 1988 to 1996 time period.

On a more positive note, the balance of trade has improved considerably since 1988. Measured in constant 1986 dollars, the balance of trade has improved from -\$102.6 in 1988 to -\$14.0 in 1996. This improvement is primarily due to a significant increase in exports to the U.S. in 1996 were approximately 2.5 times what they were in 1988, measured in constant dollars. The increased trade with the U.S. is a direct result of the implementation of the Canada-U.S. Free Trade Agreement (FTA) which came into place on January 1, 1989. Tariff barriers on about one-half of all non-ferrous metal semi-fabricated

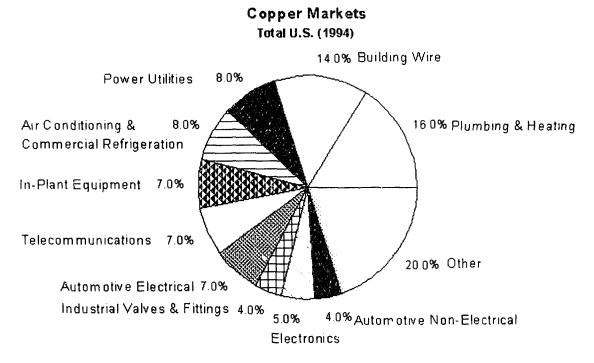
#### **Major Firms**

- Alcatel Canada Wire Inc. copper rod, wire and cable
- Emco Limited copper, brass, brouze, aluminum, solid and cored forgings, machined forgings, screw machine products, tubular products
- Gamma Foundries Limited bronze, brass, copper, aluminum and monel castings, barium and bronze bushings and bars
- Ratcliffs/Severn Ltd. brass and copper sheet and strip
- Wolverine Tube (Canada) Inc. seamless copper and copper alloy tubing, rod, sheet, wire, bar and strip products

products were reduced in five equal annual steps ending on January 1, 1993 and the remainder in ten steps ending January 1, 1998.

In 1994, the major markets for copper in the United States (data unavailable for Canada) are illustrated in Figure 3

Figure 3: Copper Market in the United States



Source: Copper Development Association Inc.

Several of the main markets for copper have suffered seriously in the recent past or are under threat of substitution by other metals, especially aluminum. In the automobile market, the switch to aluminum radiators has resulted in a serious drop in copper shipments. In the telecommunications market, copper has suffered

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from the introduction of fibre optics which have essentially taken over the long distance market. Copper still maintains the majority of the residential service market due to the use of fibre optics being uneconomic. However, fibre optics may pose a threat for the future, if the cost factor is overcome.

There are, however, signs that copper may be able to maintain its current markets or gain new ones. First, copper is gaining from the increasing use of wiring and electronics in the average car. Today, the average car built in North America contains about 50 pounds of copper and copper alloys, up from 36 pounds in 1980. Second, the implementation of regulations on ozone-depleting substances will require conversion to new refrigerant fluids and a rebuilding of the entire stock of air-conditioning and refrigeration equipment. This regulatory change will probably temporarily increase demand for copper tubing in refrigerators and air conditioners. Third, building wiring and plumbing have in recent years benefited from increasing intensity of use — new homes tend to have higher electrical loads and more bathrooms. In certain areas in telecommunications copper has been experiencing considerable growth over the last few years. Due to fibre optics being uneconomic for use in areas where short cable is required, copper has seen growth in the office environment with cable connecting telephones, computers and other electronic devices. And while plastics compete with copper in plumbing applications, their use is still held back by such factors as their susceptibility to permeation by gasoline and to mechanical damage. Fourth, there are potential new markets for copper, including superconductivity applications, electric vehicles, solar energy systems, and nuclear waste disposal canisters

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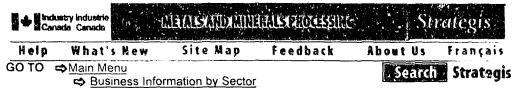
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# Industry Snapshot The Copper Semi-Fabricating Industry in Canada

## 2. Industry Structure

- In 1996, the value of industry shipments for SIC 2971 was \$526.3 million, measured in current dollars (Table 1). In the same year, the value of all exports was \$427.6 million, and the value of all imports was \$450.3 million (Table 2). Canada was a riet importer of the products of this industry in 1996, having a net trade balance with all countries of -\$22.7 million (Table 2).
- Manufacturing value added totalled \$151.9 million in 1996 (Table 1). In 1995, manufacturing value added per worker was \$86,920 (1996 employment figure currently unavailable).
- The Canadian copper semi-fabricating industry was comprised of twenty-eight establishments
  (Table 1). Since shipping costs can be a significant factor in the cost of delivered products, most
  establishments locate in Ontario and Quebec, to be close to major Canadian and American markets
  According to 1995 data, 53.6% of all establishments in SIC 2971 were located in Ontario, 28 6% in
  Quebec.

Table 1: Industry Size, Copper and Copper Alloy Rolling, Casting and Extruding Industry, 1996

Indica	tor	Value*					
Number of Establishments 28							
Total R	levenue (\$)	532.3					
Manufa	acturing Shipments (\$)	526.3					
Manufa	acturing Shipments (constant 1986\$)	323.5					
Appare	ent Domestic Market** (\$)	549.0					
Manufa	151.9						
Total Employment*** 2,023							
**	Unless otherwise indicated, dollar amounts a of current dollars.  Apparent domestic market is defined as the manufacturing shipments plus the value of it the value of exports.	value of					
***	•						
Source:	Employment data are for 1995  For 1996, Industry Canada estimates, based on preliminary results from Statistics Canada, for 1995, Statistics  Canada/Industry Canada Business Integrated Database (BID).						

Table 2: Value of Trade, Copper and Copper Alloy Rolling, Casting and Extruding Industry, 1996\*

	Source/Destination						
	United States	Rest of World	All Countries				
Imports	360.2	90 1	450.3				
Exports	397 9	29 7	427.6				
Trade Balance**	37.7	-604	-22.7				

\* Millions of current dollars

\*\* Exports minus imports.

Source: Statistics Canada /Industry Canada BID

• The industry is highly concentrated, with the four largest enterprises accounting for 83.6% of the industry's manufacturing shipments in 1992 (Table 3). These four enterprises accounted for 15.8% of the industry's establishments, 71.7% of its wages and salaries, 83.3% of its fuel and electricity costs, and 87.2% of the costs of materials and supplies used in the industry (Table 3). In the same year, the eight largest enterprises accounted for 90.6% of the industry's manufacturing shipments, 26.3% of its establishments, 82.3% of its wages and salaries, 89.8% of its fuel and electricity costs, and 92.6% of the costs of materials and supplies used in the industry (Table 3).

Table 3: Industry Concentration, Copper and Copper Alloy Rolling, Casting and Extruding Industry, 1992

	Four Largest Enterprises	Eight Largest Enterprises		
Indicator	35 of Indu	istry Total		
Establishments	15.8	26.3		
Manufacturing Shipments	83.6	90.6		
Wages and Salaries	71.7	82.3		
Fuel and Electricity	83.3	89.8		
Materials and Supplies Used	87.2	92.6		

 In 1995, materials and supplies accounted for 81.22% of total industry operating costs, wages and salaries for 15.82%, and fuel and electricity for only 2.96% (Table 4). This cost distribution is quite similar to that for all manufacturing, which averaged the following in 1995: 75.4% for materials and supplies, 21.5% for wages and salaries, and 3.1% for fuel and electricity. Table 4: Operating Costs, Copper and Copper Alloy Rolling, Casting and Extruding Industry, 1995

Input	% of Total Operating Costs
Materials and Supplies	81 22
Wages and Salaries	15 82
Fuel and Electricity	2 96
All Operating Costs	100 00

 Wages are slightly higher than in the manufacturing sector as a whole. In 1995, \$39,951 in SIC 2971, \$37,860 in all manufacturing (source: Statistics Canada/CA).

wage was

- In 1995, the turnover ratio for SIC 2971 was 12.96. (The turnover ratio is the value of manufacturing shipments divided by the value of closing inventories of raw materials, goods in process and finished goods.) The corresponding figure for all manufacturing was 8.91 in 1995.
- In 1995, capital expenditure totalled \$23.2 million, measured in current dollars; this amount represents 4% of the value of manufacturing shipments. Total gross (undepreciated) capital stock was valued at approximately \$349.5 million in 1995, total net (depreciated) capital stock at approximately \$135.9 million.

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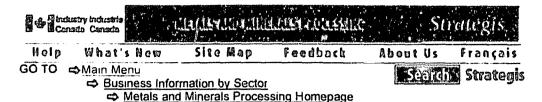
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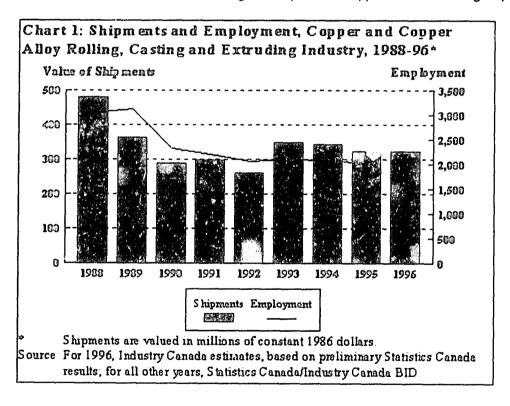
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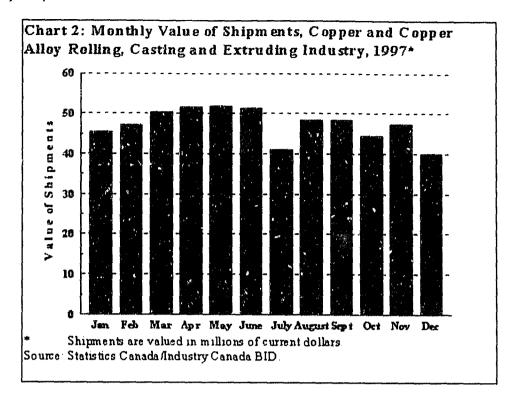
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## 3. Industry Performance

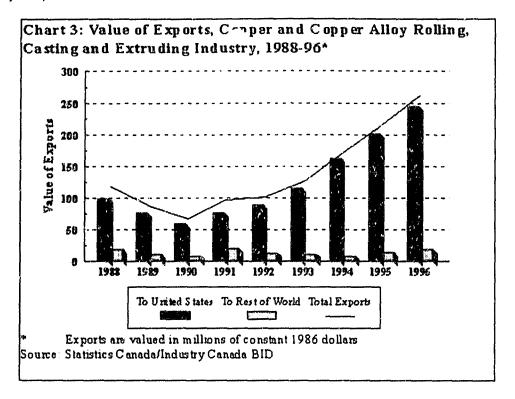
Shipments dropped significantly from 1988 to 1990 but from 1990 to 1996 shipments have been fairly stable (Chart 1). Preliminary data for 1997 (Chart 2) shows that shipments have increased slightly from 1996 \$526 million to \$567 million (7.8% increase). Measured in constant (1986) dollars, the value of industry shipments fell almost 33% between 1988 and 1996 (Chart 1). The overall decrease in shipments is likely due to several of copper's main markets having suffered from product substitutions. The switch to aluminum radiators in automobiles, and the introduction of fibre optics in telecommunications have both had negative impacts on copper semi-fabricating shipments.



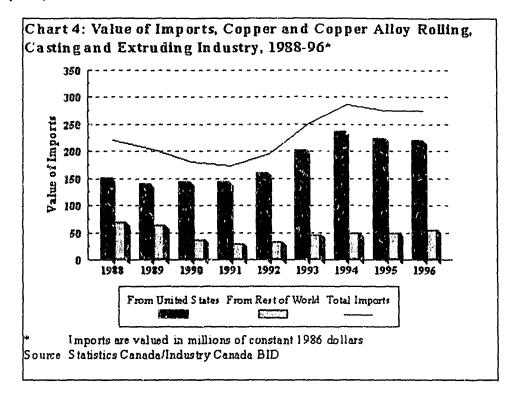
• The number of establishments in SIC 2971 fluctuated between 1988 and 1996, increasing from 38 in 1988 to 45 in 1989, returning to 38 in 1992, and dropping to 28 in 1996. The 1988-89 increase was accompanied by a steep drop in the value of industry shipments, the 1992-93 decrease by a considerable increase in the value of such shipments (Chart 2). Total employment dropped considerably after 1988: from over 3,000 in 1988 and 1989 to 2,023 in 1995. The drop in both establishments and number of employees is due to a considerable amount of restructuring within this industry over this time period.



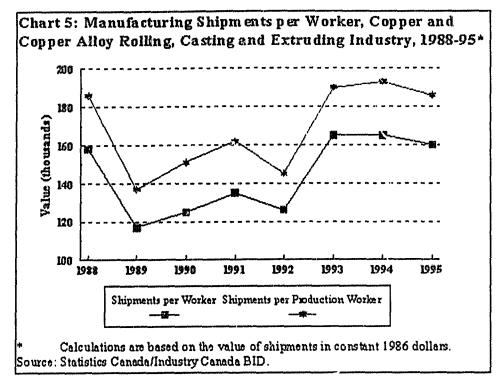
• The value of SIC 2971 exports to the United States in 1996 was more than double what it was in 1988 measured in constant dollars (Chart 3) and in 1996 represented 93.2% of all copper semi-fabricating exports. After falling by over 40% between 1988 and 1990, the value of shipments exported to the United States increased by at least 15% in every year between 1991 and 1996. Exports to the rest of the world fluctuated considerably during the 1988 to 1996 period, however in 1996 exports were back to the pre-recessionary levels (Chart 3). The increase in exports to the United States can be primarily attributed to free trade and to changes in the Canada/U.S. exchange rate. The most significant export growth was in copper wire which experienced an average annual growth rate of 58.8%, followed by copper pipes and tubes at 12.8% and thirdly copper foil at 16%. (Appendix B)

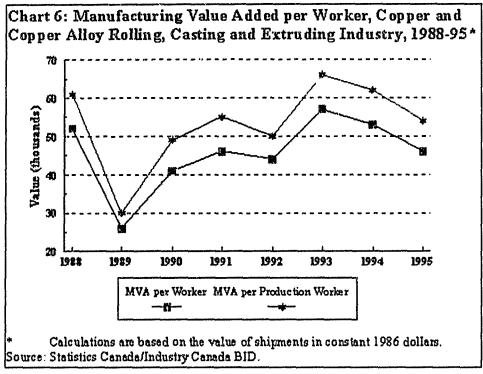


- The percentage of manufacturing shipments exported has increased dramatically since 1988. While
  exports represented only 24.6% of industry shipments in 1988, the corresponding figure in 1996 was
  81.2%.
- Measured in constant dollars, imports of copper semi-fabricated products from the United States remained fairly stable between 1988 and 1991 and exhibited an upward climb beginning in 1992 (Chart 4). In 1996, 80% of Canadian imports of copper semi-fabricating products were from the United States. The value of imports from the rest of the world declined between 1988 and 1992 to less than 50% of their 1988 value, primarily as a result of the recession, but increased in every other year, reaching about 80% of their 1988 value in 1996. Total imports have grown mainly as a result of increases in the imports of copper foil, copper plate, sheet, and strip and copper bar, rods and miscellaneous products (Appendix B).



- Canada was a net importer of the products of the copper semi-fabricating industry in every year between 1988 and 1996. However, the balance of trade is now considerably more favourable than it was in 1988, mainly because of the increase in exports to the United States. Measured in constant 1986 dollars, Canada's total balance of trade was -\$102.6 million in 1988, -\$14.0 million in 1996.
- The distribution of operating costs changed little between 1988 and 1995. During those years, material
  costs accounted for about 80% of operating costs, wages and salaries for about 15%.
- Measured in constant (1986) dollars, average wages in SIC 2971 have risen by approximately \$2,700 since 1988, from \$28,017 in 1988 to \$30,764 in 1995. During the same period, average wages in all manufacturing rose by only \$800, from \$26,861 to \$27,653. The gap between average real wages in SIC 2971 and all manufacturing thus increased from under \$1,200 to more than \$3,100.
- Standard efficiency indicators followed similar patterns between 1988 and 1995:
  - manufacturing shipments per worker. Measured in constant 1986 dollars, both
    manufacturing shipments per worker and manufacturing shipments per production worker were
    quite volatile in the 1988-1995 period (Chart 5). Both efficiency indicators dropped sharply in
    1989, and both took until 1993 to recover to their 1988 value. Altricugh increasing slightly in
    1994, shipments per worker dropped slightly in 1995.
  - manufacturing value added (MVA) per worker. Measured in constant dollars, both MVA per worker and MVA per production worker experienced considerable volatility between 1998 and 1994 (Chart 6). Both indicators decreased significantly in 1989, to about 50% of their 1988 value. By 1993, however, both had slightly surpassed their 1988 value. Both indicators dropped slightly in 1994 and again in 1995.





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# Industry Snapshot The Aluminum Semi-Fabricating Industry in Canada

# Major Firms in the Industry

The following list names the establishments that produce products in SIC 2971 as of 1996, according to Statistics Canada. The establishments listed are those that have five or more employees.

A.H. Tallman Bronze Company Ltd.

A.W. Reid Sheet Metal Ltd.

Alcatel Canada Wire Inc. (Rod Mill Division)

Bow Metallics Inc.

Copper Canada Corporation

Dilwol Wire & Cable Inc.

Emco Limited (Waltec Components)

Fonderie Benoit Marcoux Ltd.

Fonderie St. Romuald Ind.

Gamma Foundries Limited

Hastings Brass Foundry Ltd.

K.P. Bronze Limited

Les Creations Le Bronzier Inc.

Les Entreprises J B R G Inc. (Alu Bronze)

Lofthouse Brass Manufacturing Ltd.

London Mechanical Services Ltd.

M L C Copper Products

Matthews Canada Ltd.

Mercier Foundries Ltd.

Montreal Bronze Foundries Ltd.

Niagara Bronze Ltd.

Ornamental Bronze Ltd.

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Osborne Propellers Ltd.

Quantum Industries Manufacturing Ltd.

Production Machine Services Ltd.

Rahnmet 1992

Ratciffs/Severn Ltd.

Richards Bronze Products Ltd.

Riverside Brass & Aluminum Foundry Limited

S B & A Foundry Ltd. (Standard Brass & Aluminum)

Stone Marine Canada Ltee

T C Lawrence & Sons Ltd.

Tri Cast Bronze Ltd.

Trimay Wear Plate Ltd. (Edmonton Plant Business)

Vancouver Island Brass Foundry Ltd.

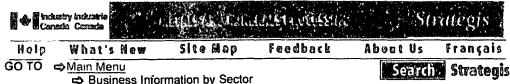
Wolverine Tube (Canada) Inc.

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# **Industry Associations**

Canadian Copper & Brass Development Association (CCBDA)

CCBDA is a non-trading, non-profit organization funded by the Canadian copper industry to promote, develop and stimulate uses for copper, copper alloys and copper compounds. Association membership includes primary copper producers, brass mills, wire and cable manufacturers, forgings producers, plumbing fittings manufacturers, foundries and ingot manufacturers. The Association maintains close ties with government representatives, codes and standards writing organizations and regulatory agencies.

Mr. Arnold A. Knapp, Executive Director

49 The Donway West, Suite 415

North York, Ontario

M3C 3M9

Tel: (416) 391-5599 Fax: (416) 391-3823

Email: coppercanada@onramp.ca

International Copper Study Group (ICSG)

Established in 1992, the International Copper Study Group (ICSG) has as its main functions conducting consultations and exchanges of information on the international copper economy, improving statistics on copper, studying issues of concern to the Group and considering special problems that exist or may arise in the international copper economy. Membership in ICSG is open to any country involved in copper production, consumption or international trade, and the current membership represents more than 80% of the international copper trade. Canada is a member of ICSG.

Mr. Thomas Baak, Chief Statistician

Mr. Patrick Hurens, Senior Research Analyst (Environmental, Economic and Regulatory Issues)

International Copper Study Group

Rua Almirante Barroso, No. 38, 6th Floor

1000 Lisbon Portugal

Tel: 351-1-352-40 39 Fax: 351-1-352-40 35 Email: icsg@mail.telepac.pt

Copper Development Association Inc. (CDA)

The Copper Development Association Inc. (CDA) serves as the advanced market development and engineering services arm of the copper and brass industry in the USA. Membership in CDA is open to copper producers worldwide and to brass mill, wire mill and foundry fabricators of copper and copper alloys with production facilities in the USA.

Copper Development Association Inc.

260 Madison Avenue

New York, NY

10016

Tel: (212) 251-7200 Fax: (212) 251-7234

Email: The-Copper-Page@cda.copper.org

WWW: http://www.copper.org/ (The Copper Page)

#### The Canadian Foundry Association (CFA)

The Canadian Foundry Association One Nicholas Street, Suite 1500 Ottawa, Ontario K1N 7B7

Tel: (613) 789-4894 Fax: (613) 789-5957

Email: metassn@istar.ca

WWW: http://home.istar.ca/~metassn/

The International Copper Association (ICA)

The International Copper Association is the market development group of the world's copper mining and fabricating industry. Membership includes 35 copper mining and fabricating companies located in 16 countries. More than 75% of the world's production of copper is represented. The ICA sponsors activities to promote the use of copper in more than 21 countries around the world. Most of the ICA's work is carried out by the 22 national copper development centers located in North America, Europe, Asia and Latin America.

International Copper Association 260 Madison Avenue

New York, NY

10016 Catherine Bolton

**Director of Communications** 

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WWW: http://www.copper.org/references/ica-env.htm

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### **Industry Snapshot** The Copper Semi-Fabricating Industry in Canada

## **Major Industry Products**

The following list itemizes and describes 31 Harmonized System (HS) export codes assigned to SIC 2971 for 1996. The HS code is an international system of Commodity Classification which is employed to keep track of imports and exports passing through customs.

HS Code	Description
7405.00.00	Master alloys of copper
7406.10.00	Powders, copper, of non-lamellar structure
7406.20.00	Powders, copper, of lameliar structure and flakes
7407.10.00	Bars, rods and profiles of refined copper
7407.21.00	Bars, rods and profiles of copper-zinc base alloys
7407.22.00	Bars, rods and profiles of copper-nickel or copper-nickel-zinc base alloys
7407.29.00	Bars, rods an⊲ profiles, copper alloy not elsewhere specified
7408.11.00	Wire of refined copper of which the maximum cross sectional dimension exceeds 6mm
7408.19.00	Wire of refined copper of which the maximum cross sectional dimension is 6mm or less
7408.21.00	Wire, copper-zinc base alloy
7408.22.00	Wire, copper-nickel base alloy or copper-nickel-zinc base alloy
7408.29.00	Wire, copper alloy, not elsewhere specified
7409.11.00	Plate, sheet & strip of refined copper, in coil, exceeding 0.15mm thick
7409.19.00	Plate, sheet & strip of refined copper, not in coil, exceeding 0.15mm thick
7409.21.00	Plate, sheet & strip of copper-zinc base alloys, in coil, exceeding 0.15mm thick
7409.29.00	Plate, sheet & strip of copper-zinc base alloys, not in coil, exceeding 0.15mm thick
7409.31.00	Plate, sheet & strip of copper-tin base alloys, in coil, exceeding 0.15mm thick
7409.39.00	Plate, sheet & strip of copper-tin base alloys, not in coil, exceeding 0.15mm thick
7409.40.00	Plate, sheet & strip of copper-nickel or cop-nickel-zinc base alloy, exceeding 0.15mm thick
7409.90.00	Plate, sheet & strip of copper alloy, not elsewhere specified
7410.11.00	Foil of refined copper, not backed
7410.12.00	Foil, copper alloy, not backed
7410.21.00	Foil of refined copper, backed
7410.22.00	Foil, copper alloy, backed
7411.10.00	Pipes and tubes, refined copper
7411.21.00	Pipes and tubes, copper-zinc base alloy
7411.22.00	Pipes and tubes, copper-nickel base alloy or copper-nickel-zinc base alloy
7411.29.00	Pipes and tubes, copper alloy, not elsewhere specified
7413.00.00	Stranded wire, cable, plaited bands and the like of copper not elec insulated
7419.91.00	Articles of copper, not further worked than cast, moulded, stamped or forged
8485.10.00	Ships' or boats' propellers and blades therefor

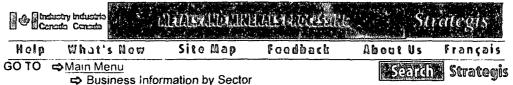
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# Industry Snapshot The Aluminum Semi-Fabricating Industry in Canada

### Glossary

The following definitions of technical terms are adapted from Statistics Canada's Census of Manufactures.

#### Capital Expenditure and Capital Stock

Capital expenditure refers to expenditure on the two components of capital:

- construction
- · machinery and equipment

Gross capital stock is the sum over time of annual capital expenditures minus the value of annual discards of worn-out fixed assets.

Net capital stock refers to gross capital stock minus accumulated depreciation. Straight-line depreciation is one of many methods of calculating depreciation. This method assumes that an asset's value decreases linearly over its life; assets are therefore depreciated by equal amounts each year over their life until their net value is zero.

#### Company

A company is a legal entity. For Census purposes, four types of organization are distinguished: individual ownerships, partnerships, incorporated companies and co-operatives.

Although the company is recognized in Census tabulations when distributing establishments according to their type of legal organization, basis Census tabulations classify each establishment of a company to its own industry, not to the industry most characteristic of the company as a whole. For example, if Company ABC operates establishments manufacturing small electrical appliances and others manufacturing synthetic plastic resins, the output of the two kinds of establishments is included in totals for their respective industries.

#### Enterprise

An enterprise is a company or family of companies controlled or managed by the same interests as a result of common ownership. In Statistics Canada's Census of Manufactures, enterprises are simply tabulating units; the Census gathers no information from enterprises or about enterprises as such.

#### **Establishment**

An establishment is the smallest separate operating entity capable of reporting the following statistics:

- · materials and supplies used
- · goods purchased for resale
- fuel and power consumed
- · number of employees and their wages and salaries
- · person-hours worked and paid

- · inventories
- · shipments or sales

In practice, a manufacturing establishment is usually equivalent to a factory, plant or mill.

#### Harmonized System (HS)

The HS code is an international system of Commodity Classification which is employed to keep track of imports and exports passing through customs.

#### Industry

An industry is a group of operating units, such as companies or establishments, that are engaged in the same or a similar kind of economic activity.

#### Standard Industrial Classification (SIC)

The Standard Industrial Classification (SIC) is a coding system that defines industries in terms of specific groupings of activities. Every industry is assigned a code, and there are two-, three-, and four-digit codes. Two-digit codes represent the broadest industry definition and the broadest range of activities, four-digit codes the most detailed industry definition and the most detailed range of activities. For example, SIC 29 represents the Primary Metal Industries (which include both primary and semi-fabricated metals), SIC 2961 the Aluminum Rolling, Casting and Extruding Industry. If at least 50% of an establishment's value added derives from activities associated with a particular SIC code, the establishment is classified in that industry.

#### Value Added

Value added refers to the value a producing unit adds to the goods and services it purchased from suppliers. Value added is thus a measure of net output — the value of gross output minus the value of purchased inputs used to create the product.

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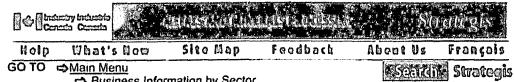
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# Industry Snapshot The Copper Semi-Fabricating Industry in Canada

## For More Information . . .

This document has presented only some of the data available on Canada's copper semi-fabricating industry. More information may be obtained from the following sources

Organisation for Economic Co-operation and Development (OECD). 1996. Globalisation of Industry: Overview and Sector Reports. Paris, France: OECD.

#### World Wide Web:

<u>Canadian Business Map</u> — for information on Canada's information resources (federal, provincial, municipal and international)

<u>Canadian Industry Statistics</u> — for detailed data on Canadian and U.S. manufacturing industries (links to pages on SIC 2961)

Export Source — for trade information resources from across government

Industry associations — for information on the activities of Canadian industry associations:

Canadian Die Casters Association

Canadian Foundry Association (CFA)

Industry Canada — for Industry Canada's home page

 Metals and Minerals Processing Branch home page — for a wealth of reference materials on the metals and minerals industries

 <u>Natural Resources Canada</u> — for information on minerals and mining in Canada (links to data from NRCan's Minerals and Mining Statistics Division (MMSD))

Trade Data Online — for data on imports and exports by Harmonized System (HS) or SIC code

For further information, contact

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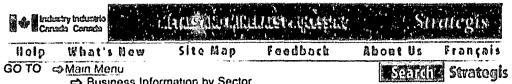
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## Appendix A — Canadian Industry Statistics

SIC-E 2971 - Industry Structure

**Table 1: Structural Indicators** 

SIC 2971 Copper and Copper Alloy Rolling, Casting and Extruding Industry

Selected Indicators/Years	1988	.589	1990	1991	1992	1993	1994	1995	1996
Number of Establishments	38	45	40	43	38	36	31	29	28
Total Revenue (\$)	705.17	592 01	453 06	422 81	372 1	480.15	547 37	616 13	532 32
Manufacturing Shipments (\$)	702 6	587 91	446 38	413 89	369 52	477 12	542.81	609.18	526.32
Shipments	479.59	364.93	289 11	297 98	259 49	347.76	344 42	323.86	323.49
Manufacturing Shipments as a % of All Manufacturing Shipments	0.24	0.19	0 15	0 15	0 13	0.15	0.15	0.15	0.13
Apparent Domestic Market (Shipments + Imports - Exports) (\$)	852.84	776.72	621 48	521 59	500 97	645.51	724.34	722.64	549.02
Value Added (\$)	í :	131.29				[		175.84	i
Total Employment	3040	3119	2316	2211	2066	2111	2092	2023	n/a
Total Salaries and Wages (\$)	92.5	99.71	78.16	76 57	72.82	76.75	80 77	80.82	n/a
Total No. of Workers		85.7	82.56	83.22	86.88	86.5	85.33	85 86	n/a
of Workers	15.13	14.3	17.44	16.78	13.12	13.5	14.67	14.14	n/a
Industrial Product Price Index	146.5	161.1	154.4	138 9	142.4	137 2	157.6	188.1	162.7

Note(1): (\$) figures are in millions of current dollars. Note(2): Figures for 1996 are Industry Canada estimates.

Source: Statistics Canada/Industry Canada Business Integrated Database.

Table 2: Operational Costs, 1995

SIC 2971 Copper and Copper Alloy Rolling, Casting and Extruding Industry

Operational Costs |\$Value|% of Total

Fuel and Electricity	15.13	2.96
Materials and Supplies	414.99	81.22
Wages and Salaries		
<b>Total Operational Costs</b>	510.94	100

Note(1): (\$) figures are in millions of current dollars. Source: Statistics Canada/Industry Canada Business Integrated Database.

Table 3: Value of Trade, Canada with the U.S. and the Rest of the World

SIC 2971 Copper and Copper Alloy Rolling, Casting and Extruding Industry

Selected Indicators/Years	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Imports from U.S. (\$)	221.5	226 3			229.5					
Exports to U.S. (\$)	1	122.7								398.8
Trade Balance with U.S. (\$)	-76.6	-103.6	-130.9	-93.6	-103.4					
Imports from Rest of World (\$)	101.5	1027	57.6	42.1				94.5		
Exports to Rest of World (\$)	27.8	17.5	13.5	28.0				26.3		
Trade Balance with Rest of World (\$)	-737	-85.2		-14.1						-71.3
Trade Balance with All Countries (\$)		-188.8	-175.1		-131.4					
Exports as a % of Domestic Shipments	24.6	23.8	23.4		39.2					
Imports as a % of Domestic Market	37.9	42.4	45.0	46.3	55.2	52.9	62.2	71.5	82.0	n/a

Note(1): (\$) figures are in millions of current dollars

Source: Statistics Canada/Industry Canada Business Integrated Database.

Table 4: Performance Indicators

SIC 2971 Copper and Copper Alloy Roiling, Casting and Extruding Industry

						11993		
						226		
Manufacturing Shipments per Production Worker (\$000's)								
Manufacturing Value Added per Production Worker (\$000's)	89.4	49.1	76.4	76.5	71.8	90.6	97.1	101.2
Total Wages/Total Operational Costs (%)						19.8		
Energy Costs/Total Operational Costs (%)						3.7		
Material Costs/Total Operational Costs (%)	81.3	78.3	75.7	74.5	72.6	76.5	78.9	81.22

Note(1): (\$) figures are in millions of current dollars. Source: Statistics Canada/Industry Canada Business Integrated Database.

**Table 5: Investment and Capital Stock** 

SIC 2971: Copper and Copper Alloy Rolling, Casting and Extruding Industries

Current \$ millions									
	1988	1989	1990	1991				1995	
Capital Investment	10.0	4.7	3.0		8.0	15.6	15.0	23.2	17.6
Total Gross(undepreciated) Capital Stock	396.1	392.0	379.4	361.3	339.6	339.2	342.0	349.5	350.0
Total Net (depreciated) Capital Stock	j .	152.2	140.7	129.2	119.4	122.1	125.8	135.9	140.1
Constant \$ millions (1986=	100)								
	1988	1989	1990	1991	1992	1993	1994	1995	1996
Capital Investment	10.1	4.6			8.0	15.0	13.7	20.3	
Total Gross (undepreciated) Capital Stock	379.2	362.3	343.6	326.2	312.5	305.8	298.1	297.4	292.0
Total Net (depreciated) Capital Stock	154.0	141.5	128.2	117.3	110.6	111.2	110.9	117.1	118.5

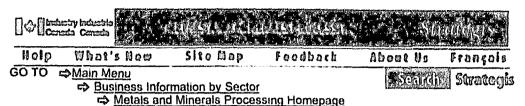
Source: Statistics Canada/industry Canada Business Integrated Database.

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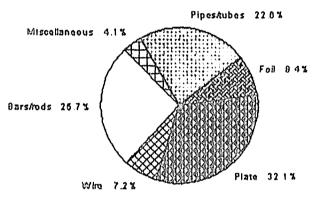
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### **Industry Snapshot** The Copper Semi-Fabricating Industry in Canada

# Appendix B — Additional Trade Observations

Figure 1: Copper Semis Exports Breakdown

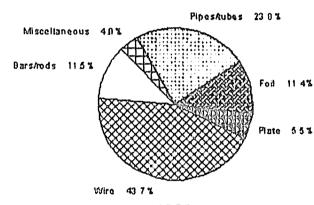


1988

articles of copper and propeller/blades

Source: Statistics Canada, TIERS Database

Figure 2: Copper Semis Exports Breakdown

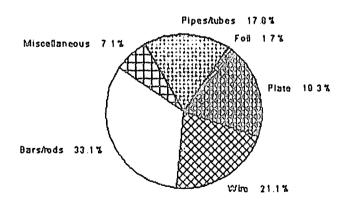


1996

Source Statistics Canada, TIERS Database

\*Miscellaneous includes: master ziloys, powders/linkes, stranded wir \* Miscellaneous includes: master alloys, powders/flakes, stranded wire. articles of copper and propeller/blades

Figure 3: Copper Semis Imports Breakdown

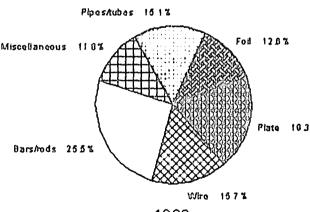


Source: Statistics Canada, TIERS Database

Miscellaneous includes: master alloys, powders/flakes, stranded wire, articles of copper and propellar/blades

1988

Figure 4: Copper Semis Imports Breakdown

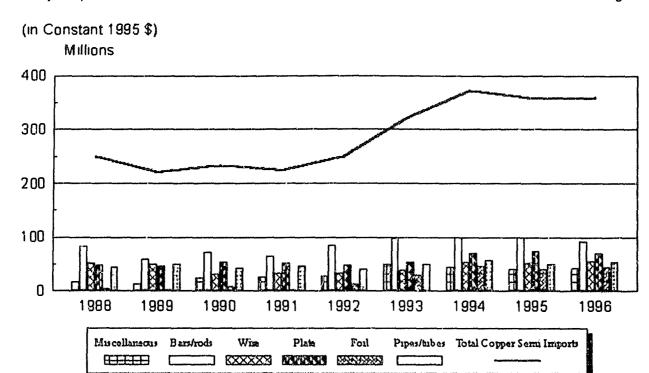


1996

Source Statistics Canada, TIERS Database

\* Miscellaneous includes master zlloys, powdersMakes, stranded i articles of copper and propeller/blades

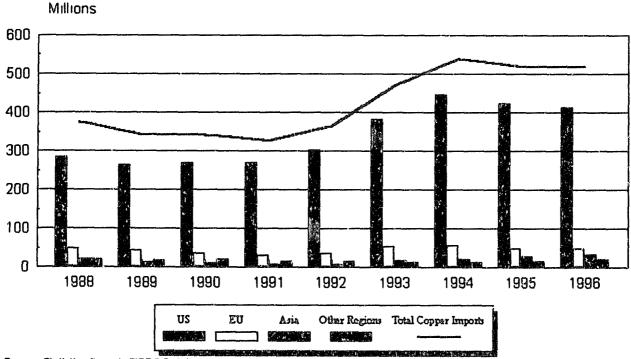
Figure 5: Copper Semi-Fabricating Imports by HS Code



Source Statistics Canada, TIERS Database

Miscellaneous includes: master alloys, powders/flakes, stranded wire, articles of copper and propeller/blades

Figure 6: Copper Semi-Fabricating Imports by Geographical Region (in Constant 1995 \$)

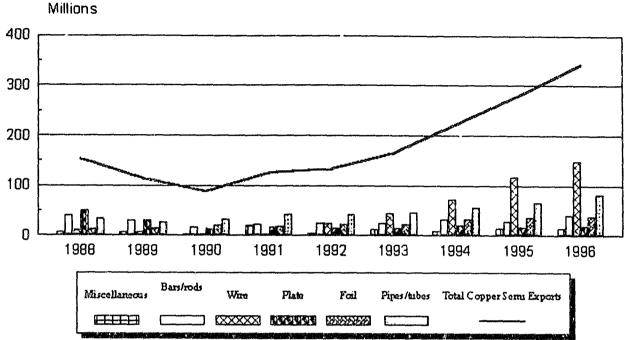


Source: Statistics Canada-TIERS Database

\* Other regions include: CIS & E. Europe, L. America and others

Figure 7: Copper Semi-Fabricating Exportss by HS Code

(in Constant 1995 \$)

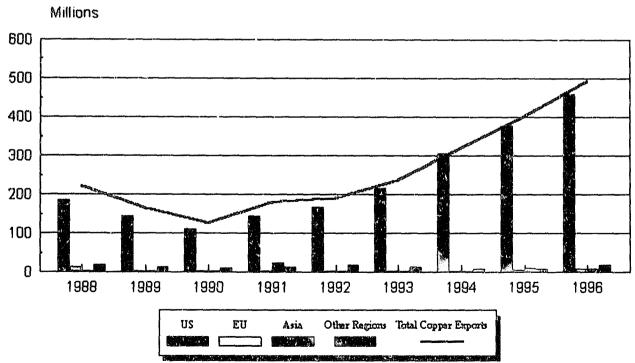


Source: Statistics Canada, TIERS Database

\* Miscellaneous includes: master alloys, powders/flakes, strended wire, articles of copper and propeller/blades

Figure 8: Copper Semi-Fabricating Exports by Geographical Region

(in Constant 1995 \$)



Source: Statistics Canada-TIERS Database

\* Other regions include: CIS & E. Europe, L. America and others

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# Appendix C -- Yearly Annual Average Copper Prices, 1980-1997

YEAR	LME (current US1/2/lb)
1980	99.0
1981	79.0
1982	67.1
1983	72.1
1984	62.5
1985	64.3
1986	62.3
1987	80.9
1988	117.9
1989	128.9
1990	121.0
1991	106.2
1992	103.7
993	86.8
1994	104.7
1995	132.9
1996	104.1
1997	103.3

Source: International Copper Study

Group

Note: Settlement price for highest

grade of copper sold.

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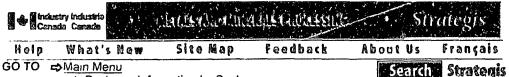
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YEAR	LME (current US1/2/lb)
1980	99.0
1981	79.0
1982	67.1
1983	72.1
1984	62.5
1985	64.3
1986	62.3
1987	80.9
1988	117.9
1989	128.9
1990	121.0
1991	106.2
1992	103.7
1993	86.8
1994	104.7
1995	132.9
1996	104.1
1997	103.3

Source: International Copper Study Group Note: Settlement price for highest

grade of copper sold.

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