Alcan Facts

1992

ALCAN

1991 Highlights

- While Western World aluminum demand was stable in 1991, increased primary production by Western producers and increased exports from the former Soviet Union led to an oversupply of the metal.
- Market prices for primary aluminum fell through the year and by year-end, when adjusted for inflation, were the lowest ever experienced by the industry.
- Alcan, one of the largest aluminum producers in the world, produced a total of 1.7 million tonnes of primary aluminum, representing 12% of Western World production. However, in light of the world oversupply of aluminum, Alcan reduced production by 143,500 tonnes, on an annualized basis, towards year-end.
- Alcan shipped 2.2 million tonnes of aluminum, 61% of which was in the form of value-added fabricated products.

Contents

Terms

In this booklet, all amounts are expressed in United States dollars and all quantities are in metric tons, or 'tonnes'. A tonne is 1,000 kilograms, or 2,204.6 pounds. All facts and figures are as at December 31, 1991, unless otherwise indicated.

A "subsidiary" is a company controlled by Alcan. A "related company" is one in which Alcan has significant influence over management but owns 50% or less of the voting stock.

The word "Company" refers to Alcan Aluminium Limited or, as the context requires, to a subsidiary.

Trademarks

April 1992

Headquartered in Montreal, Alcan is the parent of a worldwide group of companies involved in all stages of the aluminum industry. Through subsidiaries and related companies around the world, Alcan's activities include bauxite mining, alumina refining, aluminum smelting, manufacturing, sales and recycling.

In the 90 years since it was established, Alcan has developed a unique combination of competitive strengths, with low-cost, owned hydroelectricity in Canada, proprietary process technology and international diversification. Today, Alcan is one of the world's largest aluminum companies.

A corporate mission statement, originally published in 1986 and revised with minor changes in 1990, sets forth Alcan's goals as a multinational organization:

"Alcan will be the most innovative aluminum company in the world. Through its people, Alcan will be a global, customer-oriented and environmentally responsible enterprise committed to excellence and lowest cost in its chosen aluminum and related businesses. In the 1990s, Alcan's return-on-equity target is to outperform the Standard & Poor's Industrials."

The Alcan Group is a multicultural and multilingual enterprise reflecting the differing corporate and social characteristics of the many countries in which it operates. Within a universal framework of policies and objectives, individual subsidiaries and divisions conduct their operations with a large measure of autonomy. The document, *Alcan, Its Purpose, Objectives and Policies*, was first published in 1978 in 11 languages to strengthen employee awareness worldwide of the general principles and policies which had guided the conduct of Alcan's business over the years. This document was updated and reprinted in 1991 and is available from the Company upon request.

Over 50,000 people are directly employed by the Company, with thousands more employed in its related companies. Alcan is a publicly-owned company with some 33,500 holders of its 223 million common shares and 2,500 holders of its preference shares distributed internationally - the majority in North America.

A company as fully integrated as Alcan has many operations that interact with the environment — from the mining of bauxite and the production of aluminum through to the collection and recycling of used aluminum products.

For Alcan, environmental responsibility is a primary consideration in all of its activities. The Company's commitment, first articulated in 1978 in the publication, *Alcan, Its Purpose, Objectives and Policies*, is spelled out afresh in its Environmental Policy Statement, published in 1990:

"It is the policy of Alcan Aluminium Limited to achieve compatibility between the environment and the processes and products of its operations. Alcan and its subsidiaries will take those practical steps necessary to prevent or abate adverse impacts on the environment which may result from their operations and products. They will respect the local legal standards and quickly implement such changes as are appropriate to achieve compliance. They will minimize waste and seek to achieve the most efficient use of energy and other raw materials."

The effective implementation of this policy is achieved in two ways. The first is an annual assessment of each operating company's environmental performance.

This assessment evaluates the operation under eight headings. The first four cover the identification of problems and risks inherent to processes and products, the degree of compliance to local legislation, the financial implications of proposed action plans and the requirements for research and development. The last four areas covered in the annual assessment involve addressing the status of personnel expertise and awareness in environmental matters, communications and training, emergency preparedness and community relations.

The second way in which implementation of the policy is monitored is by environmental compliance reviews. This formal review is carried out at regular intervals in each plant by a team of professionals to verify compliance with legal requirements and the Alcan policy. The review team also assesses the effectiveness of management systems in environmental control. The team then submits a report, with appropriate recommendations, to local plant and national managements and to Alcan's Environment Department in Montreal.

The annual assessments, which started in 1990, and the compliance reviews, which are being extended to the whole of Alcan in 1992, heighten the level of environmental awareness and employee involvement, and help refine action plans and research and development (R & D) activities. As for financial commitments, expenditures on environment-related projects for 1991 totalled $110 million and, for 1992, are targetted at $120 million. These include close to $10 million that is spent annually for R & D expenditures related to the environment.

Among the major environmental activities undertaken by Alcan over the past years are the Quebec smelter rebuild program, the rehabilitation of land used for bauxite mining in Jamaica and Brazil and the expanding recycling activities in North America and Europe. Other examples of recent Alcan activities are:

- A new 40-acre wetlands system at a rolling mill in Kentucky, U.S.A., which reduces water usage and minimizes wastewater disposal.
- A dross recycling plant in Quebec, which uses a plasma technology to recover aluminum and other reusable materials.
- Raw material and process modifications at Arvida Works in Quebec and Kitimat Works in British Columbia, which have reduced smelter PAH (polycyclic aromatic hydrocarbons) emissions to 15% and 25%, respectively, of what they were in 1981.
- Improved waste management (reduction, recycling or reuse) of paper, wood, foil laminates, lubricants, scrubber or process sludges and by-products at Alcan companies throughout the Group.

While environmental improvements have been achieved, Alcan faces many challenges — not the least of which is to remain cost-competitive while meeting continually rising environmental standards. Innovative engineering solutions coupled with the commitment and involvement of Alcan employees at all levels are the key to success in this important field.

Recycling plant capacities – as at December 31, 1991
(thousands of tonnes)

Locations		% of ownership by Alcan	Annual capacity
Subsidiaries			
Foundry alloys from misc. scrap			
Canada	Guelph (Ontario)	100	60
Italy	Borgofranco (regione Grange, d'Ivrea)	100	60
United States	Shelbyville (Tennessee)	100	36
	Total foundry alloys		156
Sheet ingot from UBCs			
United States	Berea (Kentucky)	100	117
	Greensboro (Georgia)	100	94
	Oswego (New York)	100	25
United Kingdom	Warrington (England)	100	50
Sheet ingot from misc. scrap			
United Kingdom	Warrington (England)	100	47
	Total sheet ingot		333
Total subsidiaries			489
Related companies			
Foundry alloys from misc. scrap			
Japan	Koda (Aichi-ken)	45	44
	Mie (Mie-ken)	45	42
	Kambara (Shizuoka-ken)	45	30
United Kingdom	Bradford (West Yorkshire)	50	25
Thailand	Bangpoo (Samudprakarn)	36.3	12
Total related companies			153

Aluminum is one of the most recyclable materials in the marketplace. The metal can be repeatedly recycled into the same or other products with effectively no deterioration in quality or in the metal's intrinsic value. In addition to the environmental advantages of aluminum recycling, there are economical benefits. Recycling aluminum requires only five per cent of the energy required to produce the primary metal. And aluminum's high scrap value, about two-thirds that of its primary value, is a great incentive for collection.

Almost one-third of the aluminum consumed in the Western World is produced from recycled metal. While most consumers today associate aluminum recycling with used beverage cans, UBCs actually represent less than one-quarter of the worldwide recycling business. Apart from can recycling, the industry also includes facilities that remelt scrap from a wide range of used aluminum products such as automobile parts, cookware, household siding, aircraft fuselages and much more. Typically, these 'secondary smelters' produce foundry alloys for use in shape castings.

For its part, Alcan has a growing participation in the recycling industry. By the end of 1991, the Company's annual recycling capacity was about 489,000 tonnes with a further 153,000 tonnes in its related companies.

Alcan operates three fully owned facilities for the production of foundry alloys primarily from recycled aluminum, one each in Canada, Italy and the United States. A U.K. facility is operated by a related company. Another related company operates three foundry alloy plants in Japan and one in Thailand. Most of these plants serve domestic automotive markets.

In the case of UBCs, Alcan has a well-established and growing North American recycling network that processed approximately 10 billion cans in 1991. The Company remelts UBCs at three locations in the United States, producing new can sheet ingot from cans either purchased from U.S. collection companies or its own customers, or gathered through its Canadian collection centres. The Canadian system encompasses three companies based in British Columbia, Ontario and Quebec to collect UBCs from across the country.

In October 1991, Alcan opened the European Community's first dedicated UBC recycling plant at Warrington, England, with a capacity to process about 2.5 billion cans per year. The Company is continuing to develop a domestic collection network to feed the facility. Throughout Europe, the Company plays leading roles in joint industry programs to promote aluminum collection and recycling.

Alcan also operates an environmentally improved operation in Quebec for the recovery of aluminum from the dross that forms on the surface of molten metal. And in Italy, the Company operates a plant for the recovery of aluminum and salt from saline slag, a byproduct of aluminum recycling. As a matter of course, Alcan operates facilities in many plants to recycle aluminum scrap generated internally by fabricating activities.

Alumina capacities – as at December 31, 1991
(thousands of tonnes)

Locations		% of ownership by Alcan	Annual capacity	Alcan share of capacity
Subsidiaries				
Smelter-grade alumina				
Canada	Vaudreuil (Jonquière, Quebec)	100	1,150	1,150
Jamaica	Kirkvine (Manchester)	93	1,000	930
	Ewarton (St. Catherine)	93		
Ireland	Aughinish (Limerick)	65	1,000	650
Brazil	Ouro Preto (Minas Gerais)	100	150	150
	Total smelter-grade alumina		3,300	2,880
Mainly chemical aluminas				
United Kingdom	Burntisland (Fifeshire, Scotland)	100	120	120
Total subsidiaries			3,420	3,000
Related companies				
Smelter-grade alumina				
Australia	Gladstone (Queensland)	21.4	3,325	712
India	Belgaum (Karanataka)	39.6	252	100
	Muri (Bihar)	39.6		
Guinea	Kimbo (Fria)	10.2	630	120
Brazil	Alumar (São Luis)	10*	1,000	100
	Total smelter-grade alumina		5,207	1,032
Mainly chemical aluminas				
Japan	Shimizu (Shizuoka-ken)	45	450	203
Total related companies			5,657	1,235

**As of March 31, 1992*

Aluminum is produced through the electrolytic reduction of alumina (aluminum oxide) that has been extracted from bauxite (the ore) by a chemical process. Between four and five tonnes of bauxite are required to produce approximately two tonnes of alumina, which yields one tonne of metal.

Bauxite:
Alcan obtains its bauxite from mining subsidiaries, consortium companies and third-party suppliers.

Via its 12%* interest in Mineração Rio do Norte, a bauxite mining consortium in Brazil, Alcan supplies the bulk of the requirements for its Jonquière, Quebec, refinery. Alcan has an indirect 13.8% interest in Compagnie des Bauxites de Guinée. From this, the Company supplies its share of bauxite for the 65%-owned Aughinish Alumina Limited joint venture in Ireland and also ships bauxite to its plant in Quebec and to third parties. Australian bauxite from third parties is used to supply Alcan's 21.4% interest in Queensland Alumina Limited and a related-company refinery in Japan.

The Jamaican and Brazilian operations, the related company in India and Alcan's interest in Guinea all produce alumina from their own bauxite. Alcan participates in a joint venture in Ghana, which ships bauxite to the Burntisland plant in the United Kingdom. A Malaysian subsidiary, which shipped bauxite to a related company in Japan and to third parties, was sold in early February 1992.

Alumina:
The alumina produced in Brazil, Canada and India is largely consumed by Alcan's smelters in those countries. The Australian alumina is primarily used at the Kurri Kurri smelter in Australia. It is also shipped to the Kitimat smelter in Canada. Jamaican alumina is supplied to Alcan smelters in eastern Canada and the United States.

Alumina from the Aughinish, Ireland, refinery is shipped to Alcan's Lynemouth and Lochaber smelters in the United Kingdom and to third parties in Europe. Alumina from Guinea is also shipped to third parties in Europe.

Alumina is also the starting material for a wide variety of inorganic chemical products. The Vaudreuil refinery in Canada, although mainly a supplier of smelter-grade alumina, does produce a significant quantity of chemical-grade aluminas. For its part, the Japanese alumina is mainly used in the chemicals business, but some does go to the Kitimat, British Columbia, smelter in Canada and to a related company's Kambara smelter in Japan. All of the output of the Burntisland refinery in the United Kingdom is devoted to chemical products.

Bringing these and other materials together is an Alcan-owned global transportation network that includes freight trains, bulk cargo vessels and port facilities.

Alcan Group
Bauxite Mining and Alumina Refining Operations

Smelter capacities – as at December 31, 1991
(thousands of tonnes)

Locations		% of ownership by Alcan	Annual capacity
Subsidiaries			
Canada	Arvida (Jonquière, Quebec)	100	232
	Grande-Baie (La Baie, Quebec)	100	180*
	Laterrière (Chicoutimi, Quebec)	100	204*
	Shawinigan (Quebec)	100	84
	Isle-Maligne (Alma, Quebec)	100	73
	Beauharnois (Melocheville, Quebec)	100	48*
	Kitimat (British Columbia)	100	272*
	Total in Canada		1,093
United States	Sebree (Kentucky)	100	180*
United Kingdom	Lynemouth (Northumberland, England)	100	130
	Lochaber (Inverness-shire, Scotland)	100	38
	Kinlochleven (Argyll, Scotland)	100	11
Brazil	Ouro Preto (Minas Gerais)	100	51**
	Aratu (Bahia)	100	58
Australia	Kurri Kurri (New South Wales)	73.3	150
	Total outside Canada		618
Total subsidiaries			1,711
Related companies			
Japan	Kambara (Shizuoka-ken)	45.0	34
India	Belgaum (Karnataka)	39.6	73
	Hirakud (Orissa)	39.6	24
	Alupuram (Kerala)	39.6	20
Total related companies			151

**The annual rated capacity has been restated, as at April 1, 1992, to better reflect the actual production levels achieved over a period of time.*

***Reflects reduction in late 1991.*

Aluminum is produced from alumina by an electrolytic process which uses large quantities of electrical energy to separate aluminum from oxygen in the alumina. For this process, a smelter requires anywhere between 13,000 and 17,500 (D.C.) kilowatt-hours of electricity to produce one tonne of aluminum.

Alcan owns hydroelectric power generating facilities in Canada with a total installed capacity of 3,583 megawatts, of which 2,740 megawatts are classified as firm power capacity. These generating facilities supply all the power needs of Alcan's Canadian smelters. During the summer of 1991, the expansion project for the hydroelectric facility at Kemano in British Columbia was suspended in light of the uncertainties introduced by a federal court judgment (which is being appealed), quashing the 1987 Kemano Settlement Agreement with the Canadian and B.C. governments.

Electric power for smelters outside Canada is generated both from hydro facilities and thermal stations (principally coal-fired). About one-third of the total power supply for the non-Canadian smelters comes from Company-owned installations.

Alcan is one of the largest primary aluminum producers in the world with two-thirds of its primary smelting capacity being powered by low-cost, owned hydroelectricity. The company owns and operates 14 primary aluminum smelters with a total rated capacity of 1,711,000 tonnes per year, including 1,093,000 tonnes in Canada. Production at Alcan's new Laterrière smelter in the Saguenay Lac-Saint-Jean region of Quebec reached its full capacity with the start-up of the final 50,000-tonne phase during the second quarter of 1991. As with earlier phases, the new tonnage replaces older and less environmentally sound equivalent capacity at Arvida Works. Alcan's related companies operate four other smelters outside Canada with a total rated capacity of 151,000 tonnes per year.

During 1991, Alcan's Canadian smelters produced 1,086,000 tonnes of primary aluminum (or 99.4% of rated capacity), and subsidiaries in other countries produced 609,000 tonnes.

Most of the primary aluminum produced in Canada is exported to Alcan's fabricating operations and to third-party customers in the United States, Europe and Asia. Part of the production of the Kurri Kurri smelter in Australia also serves Far Eastern customers. Alcan's other smelters generally serve domestic ingot markets or fabricating plants.

Alcan's primary production sales to third parties throughout the world totalled 666,000 tonnes in 1991. Over 62% of ingot shipments were in the form of value-added products, such as sheet ingot, extrusion billet and foundry alloys.

Alcan Group
Aluminum Production Operations

- Primary Aluminum Smelting
- Super Purity Aluminum Refining
- Recycling/Secondary Smelting

(For details, see page 3)

While Alcan has a leading position in international markets for ingot products, the Company's principal sales are of fabricated aluminum products. In 1991, shipments of fabricated products decreased to 1,333,000 tonnes, representing 61% of total aluminum shipments. Fabricated products produced from customer-owned scrap added a further 145,000 tonnes.

Alcan's fabricated products business is composed of a number of large, capital-intensive rolling operations as well as dozens of smaller downstream businesses or enterprises. In 1991, the downstream enterprise companies accounted for approximately 38% of Alcan's total worldwide sales of $7.3 billion. Through its many downstream businesses, the Company manufactures and sells a wide variety of end products and services, using aluminum and related materials to meet the needs of both existing and emerging markets. Through subsidiaries and related companies, Alcan carries out its fabricating operations in over 150 plants in 18 countries.

Fabricating capacities – consolidated subsidiaries only
(thousands of tonnes)

Fabricated aluminum products	Annual capacity
Rolled products	1,340
Extrusions	250
Wire and cable	180
Castings and other	100
Total	1,870

About half of the aluminum produced by the Alcan Group is converted into rolled products such as sheet, plate, and foil. A major portion of Alcan sheet is can stock for beverage containers. Other important end uses for sheet include building and construction, automotive and transportation products, the printing industry and the industrial distribution market. Plate products are used primarily for aerospace, defense and transportation applications. The Company also rolls foil for household and commercial packaging applications and for industrial products. Alcan is a major supplier of rolled products in North America, and the largest producer of rolled products in Europe.

Another important use of aluminum worldwide is in extruded shapes. The Company produces and sells extruded products for the building and construction, transportation and engineering markets in 15 countries, including Australia, Brazil, Canada, India, the United Kingdom and the United States. Examples of end-use products using extrusions are windows and doors, ladders, automotive bumpers, truck bodies and aircraft components. Moreover, the Company is a major supplier of extrusion ingot to independent extruders.

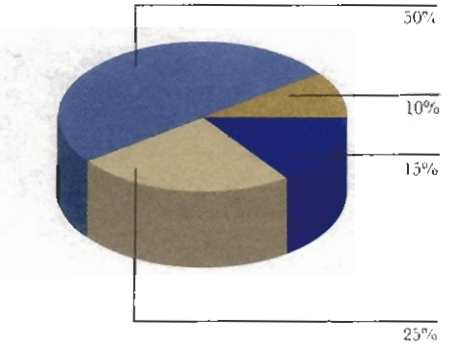
Aluminum is also cast and rolled into rod which is then drawn into wire and stranded into cable for the transmission and distribution of electricity. Wire is also used for non-electrical applications such as welding wire, rivets and zippers. Alcan's main wire and cable businesses are in Brazil, Canada, the United Kingdom and the United States.

In addition, Alcan casts molten metal into machine, automotive and aircraft components and is a supplier of aluminum pistons and other engine components to the automotive industry in Germany and North America. The Company also sells alloys to independent foundries in Australia, Canada, Italy, the United Kingdom and the United States.

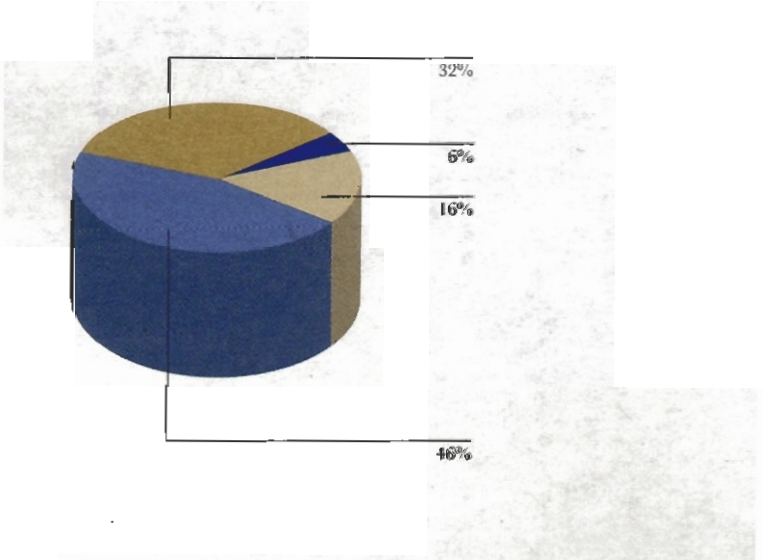

Alcan Group
Fabricating Operations
Sheet and/or Foil Rolling
Extrusion
Other Fabricating
Canada
United Kingdom
China
Germany
Switzerland
United States
France
Japan
Italy
Thailand
Brazil
Malaysia
Chile
New Zealand
India
Australia
Argentina
Uruguay

Alcan International Limited
Research by Process Technology

Total for 1984 - $44 million*



Total for 1991 - $80 million*



** These amounts are included in the total R & D expenses for the Alcan Group, which for 1984 and 1991 were $66 million and $131 million, respectively.*

Alcan's principal group resource for technology is Alcan International Limited, which is headquartered in Montreal and consists of two divisions: technology, and research and development (R & D).

The technology division, composed of approximately 90 people, is concerned with maintaining, improving and developing the technologies used by Alcan's operations worldwide. The division is organized around the three major process technologies of Alcan's operations, namely raw materials, reduction (smelting) and fabricating, and is supported by a small corporate engineering group. It focuses on assisting operating units to achieve increased productivity, higher quality and reduced costs. It is also responsible for the intellectual property management that safeguards the Company's process and product technologies and trademarks.

The R & D division of Alcan International Limited plays an important role in innovation, through basic and applied research. The organization is composed of about 600 employees located largely in three laboratories: two in Canada (at Kingston, Ontario, and Jonquière, Quebec) and one in the U.K. (Banbury, Oxfordshire). The division also works closely with the laboratories of Nippon Light Metal Company, Ltd., and Toyo Aluminium K.K., Alcan's related companies in Japan. While the historic focus of Alcan's R & D efforts has been on process improvement, a significant and increasing research effort (17% in 1991) is related to recycling and environmental issues. Also in recent years a major focus has been on exploratory work to develop both new products for the mainline business and the new technologies required to pursue related new opportunities.

A wholly owned materials research laboratory, ManLabs, Inc., in Cambridge, Massachusetts, permits the specialized testing of new materials. Alcan International Limited also has overall functional responsibility for the development of new technology businesses.

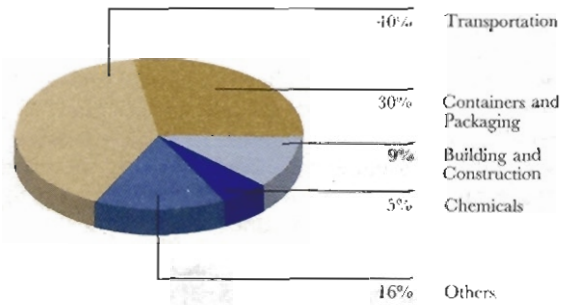
Alcan's national companies operate Applied Engineering Centres located close to key markets. Automotive centres in the United Kingdom, United States and Japan are the most recently established. These centres are focused on major products and provide technical and product development support to customers, drawing greatly on the resources and core scientific disciplines in the research centres.

Alcan International's market-related development effort was 68%, or approximately $55 million, of its total expenses for 1991. This effort was aimed at identifying and building opportunities related to its mainstream business and technologies. New product ideas and improvement of existing products build on Alcan's existing strengths which, in turn, point to certain target sectors for exploration and development. Many of those ideas originate, or are developed, in Alcan's own research centres in North America and Europe. Others may be brought in from the outside through acquisition or joint

venture, but a key criterion in all cases is the relatedness of the opportunity to Alcan's existing business or technology.

In the various target sectors, a number of projects are under way, each with a different scale and time horizon. A few examples of those that have reached, or are close to, commercialization may illustrate the scope and achievement of the new product strategy:

Market-related product development



- The demand for lighter, more fuel efficient cars drives the trend toward greater usage of aluminum in the automobile. Alcan's adhesive bonding and spot-welding technology allows for the production of body structures and other components, about half the weight of steel, on conventional production lines. It has been tested on many prototype models and adopted for the production of the Jaguar XJ220 supercar. This is just one of many technologies for the use of aluminum that could open up major new opportunities in the automotive market.

- In the materials field, Alcan's metal matrix composite, *Duralcan*™, aimed at engineering and automotive applications, is produced at a 12,000-tonne capacity plant in Quebec. Automotive applications such as brake rotors and drive shafts are being actively pursued in cooperation with a number of major companies. Another new metal/ceramic material, using a revolutionary, near final shape technology, is being produced for wear-resistant, industrial equipment components at Alanx Products L.P., an Alcan subsidiary in Delaware, in the United States.

- Alcan's subsidiary, Alupower, Inc., is the leading company in the field of aluminum-based electric power sources. These high-capacity energy systems offer much reduced volume and weight, compared to conventional batteries. Market applications include standby batteries for the telecommunications industry, propulsion power for underwater vehicles, and range extenders for road vehicles.

- In rail transportation, Alcan has established Tarco, a joint venture with Thrall Car Manufacturing Company, to design, build and market aluminum rail cars. They offer unequalled fuel efficiency in the transportation of bulk commodities such as coal and grain and are economically recyclable. To date, with over 3,500 orders for aluminum coal cars, Tarco has proven to be a commercial success.

- In the recovery of waste energy from power station cooling water, a new industrial heat exchanger system based on aluminum is being tested in pilot applications. Successful commercialization of this system would open up a significant new market opportunity.

The history of Alcan may be summarized as the growth, over a period of almost 90 years, of an integrated aluminum enterprise, based initially on hydroelectric power in Canada and extending to other countries on other continents. In the process, Alcan has become one of the largest aluminum companies in the world and one of the largest multinational companies based in Canada.

Alcan had its beginnings in Shawinigan, Quebec. In that town where hydroelectric power facilities had been developed, the first primary aluminum in Canada was produced on October 22, 1901. The operation was then a subsidiary of Aluminum Company of America (Alcoa), the pioneer producer on the North American continent.

The Canadian operation was incorporated in 1902 as Northern Aluminum Company but in 1925, its name was changed to Aluminum Company of Canada, Limited. It was also in 1925 that the rights were acquired to develop the Chute-à-Caron and Shipshaw power sites on the Saguenay River, some 241 kilometres northeast of Shawinigan. To utilize the massive and largely unused hydroelectric potential of the Saguenay–Lac-Saint-Jean region, the Company built and started its second aluminum smelter in 1926 at a new town called Arvida, today part of the city of Jonquière.

Only two years later, in 1928, Alcoa decided that it should divest itself of its principal subsidiaries outside the United States, including Aluminum Company of Canada, Limited, and transfer them to an independent Canadian company that could focus its activities on the development of the aluminum industry in Canada and internationally. The separation was achieved by transferring such subsidiaries to that new Canadian company and issuing the shares of the new company to the Alcoa shareholders on a *prorata* basis. The directors and management were independent of Alcoa from 1928 onwards; a final adjudication of legal proceedings in 1950 ensured that any common identity of major shareholders in the two companies was also removed.

Despite the adversities of the Great Depression of the 1930s, the newly independent company pursued its mission of developing aluminum fabricating activities in Canada, the U.K. and Europe that could provide outlets for the ingot from its Canadian smelters. Although the Company worked hard and successfully to develop new uses and markets for its metal in Canada, close to 85% of its smelter production had to find export markets. An international chain of sales offices was established. Also in the pre-war period, the Company was involved in pioneer efforts to build the industry in India, Australia, China and Japan.

The outbreak of the Second World War in 1939 brought unprecedented demand for aluminum in the manufacture of aircraft for the military efforts of the allied nations, particularly Canada, the U.K. and, later, the U.S.

To meet the demand, Alcan rapidly completed several additional hydroelectric sites in the Saguenay–Lac-Saint-Jean region of Quebec and was able to increase its smelter production more than five-fold to over 500,000 tonnes on an annual basis. Fabricating plants to produce sheet and other components for aircraft were also rapidly built in Canada and the U.K.

Following the war, growth in civilian demand, aided by aggressive product development by the aluminum industry, required further expansion of Alcan's power and smelter capacity. As a result, hydroelectric projects were started in Quebec and construction began for the Kitimat-Kemano project in British Columbia. Power capacity was doubled in the 1950s and, by the end of the 1960s, Alcan's Canadian smelting capacity had also doubled to almost one million tonnes. In this period, the Company's fabricating capacity was also greatly increased and had spread to many countries. Particularly noteworthy was the Company's entry as a major fabricator in the U.S. markets after 1960.

In the 1970s, new smelting operations were opened in Australia, the U.K., Brazil and India. In addition, new bauxite mining activities were undertaken in Guinea and Brazil, while the Company participated in new alumina production capacity notably in Jamaica, Australia and Ireland.

In the 1980s, the Company was able to take advantage of a major restructuring in the international aluminum industry. Through the 1982 merger with British Aluminium Company plc and the 1985 acquisition of most of the aluminum assets of Atlantic Richfield Company in the U.S., the Company has substantially increased its presence in markets for fabricated products.

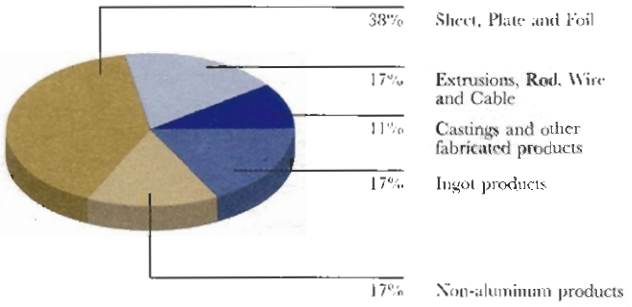
Pursuant to a reorganization in 1987, Aluminum Company of Canada, Limited, which had been the principal subsidiary, became the parent company of the Alcan Group of companies and changed its name to Alcan Aluminium Limited.

More detailed information on Alcan's corporate history is contained in the three volumes of Global Mission The Story of Alcan, *available from Alcan's headquarters in Montreal.*

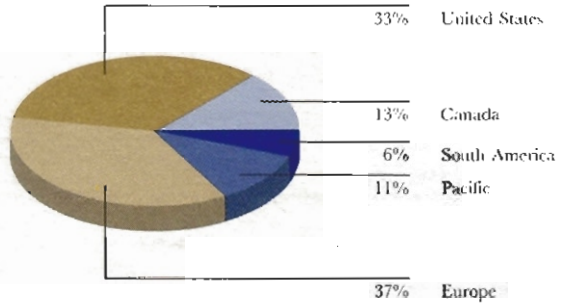
Analysis of Sales*

Total Sales for 1991 — $7.3 billion

Sales by product

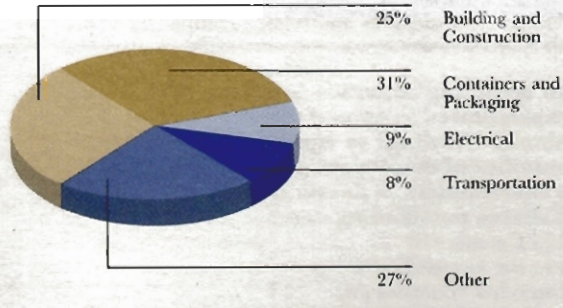


Sales by region



Sales of Fabricated Aluminum and Non-aluminum Products for 1991 — $6.1 billion

Sales by end-use market



** Alcan Group consolidated sales*

Over 83% of Alcan's consolidated sales are accounted for by aluminum products. Other products include bauxite, alumina, specialty chemicals and plastics, as well as magnesium, nickel and stainless steel alloys that are sold principally through Alcan's distribution network. Sales of all products totalled $7.3 billion in 1991, consisting of fabricated aluminum and non-aluminum products of $6.1 billion and ingot sales of $1.2 billion.

Alcan is the largest domestic producer of fabricated aluminum products in a number of countries including Canada and the United Kingdom. The Company also has important market positions in Australia, Brazil, the United States and the European Community, as well as in Japan through its related companies.

In addition, Alcan sells ingot products to aluminum fabricators and customers all over the world who, in turn, serve a variety of end-use markets, including:

- **Building & Construction:** In North America, Alcan is a leading supplier of sheet and extrusions for products used in new construction and renovation of residential, commercial and industrial buildings. Alcan also holds leading shares of the building sheet and extrusion markets in Australia, Brazil, Italy and the United Kingdom.
- **Containers & Packaging:** While the United States continues to be Alcan's single largest geographic market for these products, the fastest-growing markets are Europe and Asia. In these areas, aluminum is making inroads into beverage can markets, largely due to the metal's recyclability, while foil consumption is also on the rise. Through subsidiaries in Europe and North America and a related company in Japan, Alcan is a world leader in aluminum foil production.
- **Electrical:** The Company produces a full line of bare and insulated conductor products, ranging from proprietary building wire to specialized, patented cable for power transmission lines. Alcan is an important supplier to electrical utilities and contractors in Brazil, Canada and the United States.
- **Transportation:** In both Europe and North America, Alcan is a producer of castings, principally of engine and transmission components, for the automotive industry. In addition, the Company supplies specialized sheet products and proprietary brazing technology for automobile radiators and heat exchangers. The Company also supplies high-strength plate and extrusions to the aerospace, marine, rail and truck markets. Alcan is also focusing on new sheet applications for automotive bodies and structures.

		1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981
CONSOLIDATED INCOME STATEMENT ITEMS												
(in millions of US$)	**Revenues**											
	Sales and operating revenues	**7,748**	8,757	8,839	8,529	6,797	5,956	5,718	5,467	5,208	4,644	4,978
	Other income	**82**	162	208	97	81	100	113	109	97	65	75
	Total revenues	**7,830**	8,919	9,047	8,626	6,878	6,056	5,831	5,576	5,305	4,709	5,053
	Costs and expenses											
	Cost of sales and operating expenses	**6,455**	6,996	6,682	6,072	5,117	4,635	4,692	4,228	4,185	3,818	3,801
	Depreciation	**429**	393	333	316	296	276	258	250	238	221	202
	Selling, administrative and general expenses	**635**	659	600	525	447	406	385	393	392	362	365
	Research and development expenses	**131**	150	136	132	95	77	77	66	60	55	48
	Interest	**246**	197	130	137	177	202	232	244	255	234	186
	Special charges and rationalization expenses	**—**						416				
	Other expenses	**163**	65	62	91	113	52	53	38	32	30	22
	Income taxes	**(104)**	126	350	497	230	160	87	151	73	9	142
	Minority interests	**—**	(1)	(16)	(22)	(5)	(2)	3	5	9	3	5
	Equity income	**89**	211	97	97	35	5	15	46	10	46	4
	***Net income (Loss) from continuing operations**	**(36)**	543	835	931	433	251	183	247	89	45	278
	Extraordinary gain	**—**					26	36	37	15		
	***Net income (Loss)**	**(36)**	543	835	931	433	277	147	284	104	45	278
	Preference dividends	**20**	22	21	30	36	33	33	31	31	13	14
	***Net income (Loss) attributable to common shareholders**	**(56)**	521	814	901	397	244	(180)	253	73	58	264
CONSOLIDATED BALANCE SHEET ITEMS												
(in millions of US$)	**Working capital**	**1,110**	1,222	1,376	2,115	2,039	1,660	1,452	1,488	1,152	1,361	1,486
	Property, plant and equipment – net	**6,525**	6,167	5,260	4,280	3,965	3,949	3,875	3,600	3,550	3,701	3,267
	Total assets	**10,816**	10,649	9,508	8,615	7,660	7,118	6,861	6,690	6,600	6,632	6,339
	Long-term debt	**2,185**	1,796	1,079	1,199	1,336	1,366	1,600	1,350	1,499	1,749	1,589
	Deferred income taxes	**1,126**	1,092	1,044	1,006	754	554	409	562	537	535	561
	Preference shares	**212**	212	212	211	405	421	398	405	337	340	139
	Common shareholders' equity	**4,730**	4,942	4,610	4,109	3,565	3,116	2,746	2,916	2,799	2,511	2,631
PER COMMON SHARE *(in US$)*												
	***Net income (Loss) from continuing operations**	**(0.25)**	2.33	3.58	3.85	1.68	0.97	(0.97)	0.98	0.29	0.31	1.41
	***Net income (Loss)**	**(0.25)**	2.33	3.58	3.85	1.68	1.09	(0.81)	1.15	0.36	0.31	1.41
	Dividends paid	**0.86**	1.12	1.12	0.59	0.39	0.35	0.49	0.53	0.40	0.60	0.80
	Common shareholders' equity	**21.17**	22.19	20.30	18.06	15.05	13.18	12.23	13.07	12.83	13.10	14.15
	Market price – NYSE close	**20.00**	19.50	22.88	21.75	17.92	12.55	12.89	12.78	17.67	12.39	10.22
OPERATING DATA *(in thousands of tonnes)*												
	Consolidated aluminum shipments											
	Ingot and ingot products	**866**	857	743	832	787	731	878	577	728	758	510
	Fabricated products	**1,333**	1,488	1,518	1,446	1,410	1,388	1,340	1,213	1,174	949	1,037
	Total aluminum shipments	**2,199**	2,345	2,261	2,278	2,197	2,119	2,218	1,790	1,902	1,707	1,547
	Consolidated primary aluminum production	**1,695**	1,651	1,643	1,619	1,587	1,641	1,644	1,560	1,383	1,297	1,395
	Consolidated aluminum purchases	**591**	646	718	716	593	489	465	496	520	417	425
	Consolidated aluminum inventories *(end of year)*	**463**	447	539	480	496	579	625	708	534	620	666
	Primary aluminum capacity											
	Consolidated subsidiaries	**1,676**	1,685	1,685	1,680	1,680	1,841	1,841	1,646	1,619	1,593	1,483
	Total consolidated subsidiaries and related companies	**1,827**	1,836	1,836	1,831	1,861	1,905	1,905	2,097	2,070	2,035	1,987
OTHER STATISTICS												
	Cash from operating activities *(in millions of US$)*	**659**	760	970	1,370	879	725	586	489	324	255	240
	Capital expenditures *(in millions of US$)*	**880**	1,367	1,466	676	415	342	597	427	382	643	974
	Ratio of total borrowings to equity *(%)*	**37:63**	33:67	26:74	26:74	27:73	31:69	37:63	34:66	36:64	43:57	41:59
	Average number of employees *(in thousands)*	**54**	57	57	56	63	67	70	70	71	67	67
	Common shareholders *(in thousands at end of year)*	**34**	38	40	41	46	49	59	67	59	51	47
	Common shares outstanding *(in millions at end of year)*	**223**	223	227	228	237	237	225	224	218	192	188
	Registered in Canada *(%)*	**68**	54	44	54	44	43	46	56	48	51	48
	Registered in the United States *(%)*	**31**	44	54	43	53	52	49	39	48	42	45
	Registered in other countries *(%)*	**1**	2	2	3	3	5	5	5	4	7	7
	Return on average common shareholders' equity *(%)*	**(1)**	11	19	24	12	8	6	9	3	2	10

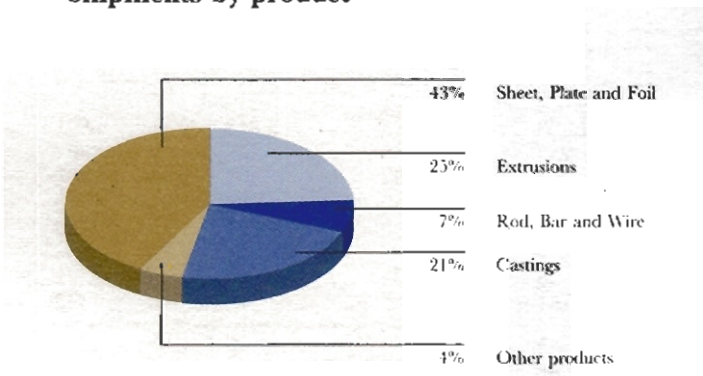
**All net income figures include the after-tax impact of unusual charges, such as special charges and rationalization expenses of $252 million ($1.13 per common share) in 1985, and the gains and losses from the disposal of various assets and investments.*

All per share amounts reflect the three for two share splits on May 5, 1987, and May 9, 1989.

Shipments of Fabricated Aluminum Products for 1991

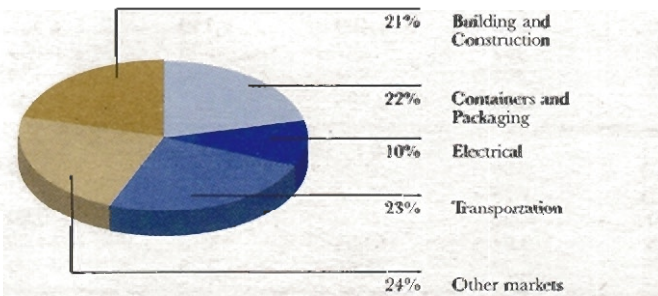
Western World shipments of aluminum products reached an estimated 19.6 million tonnes in 1991. This figure covers both primary and secondary/recycled aluminum shipped in the form of fabricated products, including castings.

Shipments by product



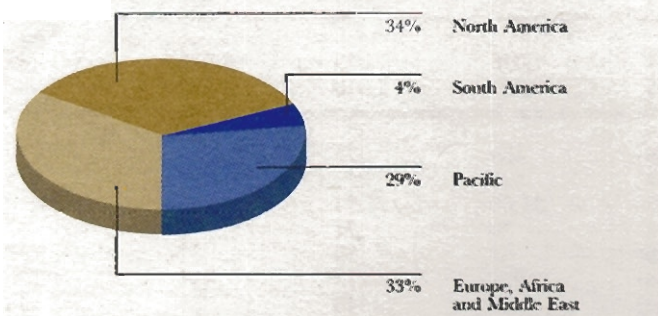
- Flat-rolled products are the largest group of aluminum products consumed in the Western World at 43% of total shipments. The single most important product in this category is can sheet which accounts for over 33% of total sheet, plate and foil shipments. Extrusions account for 25% of total shipments and are used extensively in the fabrication of products such as doors and window frames. The majority of castings, which represent 21% of shipments, are used in the engines and transmissions of automobiles and light trucks. Rod, bar and wire make up 7% of shipments and are used primarily in electrical transmission and distribution lines.

Shipments by end-use market



- The transportation market is the largest end-use market for aluminum products accounting for 23% of all shipments. While declining slightly from last year, this market has seen good growth in recent years largely due to the greater use of aluminum in automotive applications. Shipments to the container and packaging market continue to make good gains, primarily due to the strength of the North American aluminum beverage can market and increased penetration into European and Japanese markets. Over the last ten years, building and construction has seen the loss of market share in traditional applications for aluminum such as windows and residential siding.

Shipments by region

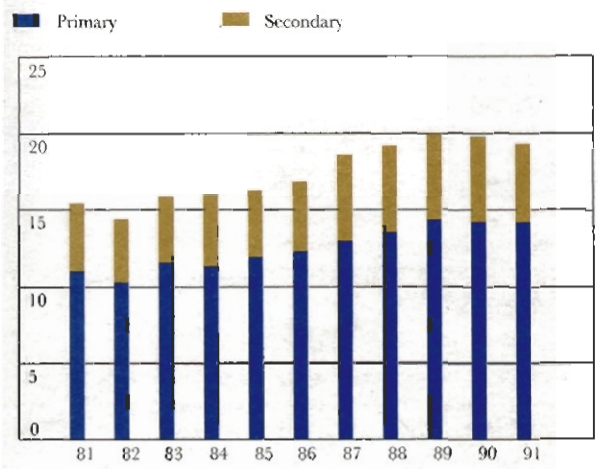


- North America, traditionally the largest consumer of aluminum, is now almost equalled by Europe, led by Germany. Another of the large consumer regions, and the fastest growing, is the Pacific, which accounted for 29% of total shipments in 1991, a significant increase over the previous year.

* *Total aluminum industry data, excluding China, the former Soviet Union and East Bloc countries.*

Primary and Secondary Aluminum Shipments

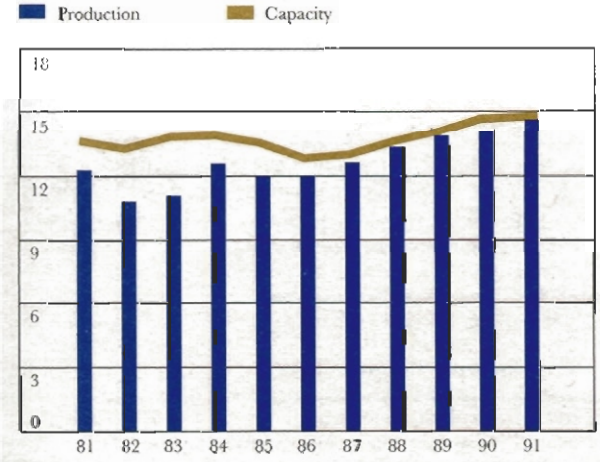
(millions of tonnes)



From 1981 to 1991, total aluminum shipments in Western World countries grew at a rate of 2.5% per year, rising from 15.3 million tonnes to 19.6 million tonnes. The rapid expansion of markets for aluminum products such as beverage cans and automotive castings increased the consumption of secondary, or recycled, metal to an annual growth rate of 2.9%, while the consumption of primary metal saw a growth rate of 2.3%. Recycled metal represented 28% of total aluminum consumption in 1991.

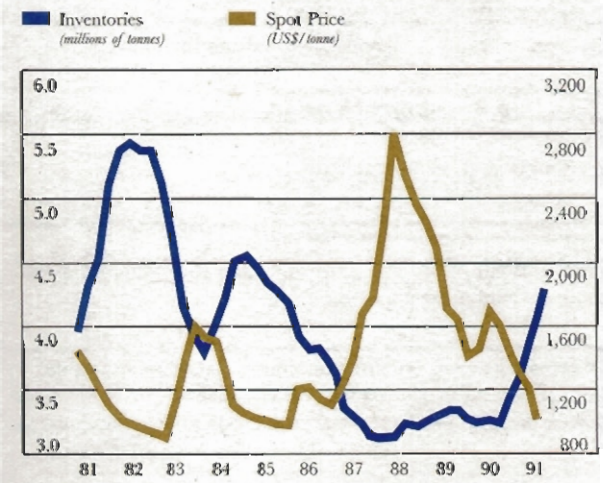
Primary Aluminum Production and Capacity

(millions of tonnes)



In 1991, Western World production of primary aluminum reached a new record level of 14.8 million tonnes, with operating rates remaining close to 100% for most of the year. The increase in production is also attributable to a capacity increase of 300,000 tonnes per year in 1991 at existing smelters in Brazil and Canada, bringing total Western World capacity to 15 million tonnes per year. With flat demand, this level of output caused a growing oversupply situation, which was exacerbated by a large increase in exports from the former Soviet Union. In response to rising inventories, Western producers announced production cuts of about 900,000 tonnes per annum in the second half of 1991. Despite this situation, planned industry expansions are likely to add a further 7% to world capacity by the end of 1993.

Primary Aluminum Inventories and Spot Ingot Prices



Inventories of aluminum held by producers and in commodity exchange warehouses rose significantly during 1991. The surplus was due to flat demand, higher Western World production and an increase in exports from the former Soviet Union. Spot prices declined steadily to levels which are the lowest, in real terms, the industry has ever experienced.

Alcan Companies Worldwide*

(Fully owned except where the parent company's percentage of equity ownership is shown)

NORTH AMERICA		
Canada	**Alcan Aluminium Limited** 1188 Sherbrooke Street West, Montreal, Quebec, Canada H3A 3G2	Parent company and world headquarters
	Alcan Enterprises (Canada) (address as above)	Extrusions, foil packaging products, rod, wire and cable, automotive castings, metal matrix composites, and fabricated products such as truck bodies, heat exchangers and building products
	Alcan Ingot (Canada) Toronto-Dominion Centre, Toronto, Ontario, Canada M5K 1K1	Foundry alloys from primary and recycled aluminum
	Alcan International Limited 1188 Sherbrooke Street West, Montreal, Quebec, Canada H3A 3G2	Responsible for worldwide technology, research laboratories, intellectual property and technology sales
	Alcan Rolled Products Company (Canada) 2 Sheppard Avenue East, Suite 500, Willowdale, Ontario, Canada M2N 5Y7	Sheet, plate and foil products for: body, end and tab stock for beverage and food cans; semi-rigid containers; household foil and commercial packaging; the building and construction markets; heat exchangers; automotive and transportation applications; the distributor market; and a broad variety of other consumer and industrial products. Effective March 19, 1992, also responsible for the collection system of used aluminum beverage cans for recycling.
	Alcan Smelters and Chemicals Ltd. 1188 Sherbrooke Street West, Montreal, Quebec, Canada H3A 3G2	Primary aluminum, ingot products, alumina and alumina-based industrial chemicals
United States	**Alcan Aluminum Corporation** 100 Erieview Plaza, P.O. Box 6977, Cleveland, OH 44001, U.S.A.	
	Alcan Enterprises (U.S.A.) (address as above)	Extrusions, wire and cable, pipe, building products, plain and converted foil products, metal matrix composites, as well as sales, marketing and distribution of high-performance metals, powders and paste, trucking and transportation
	Alcan Ingot (address as above)	Primary ingot
	Alcan Recycling (address as above)	Foundry alloys from recycled aluminum
	Alcan Rolled Products Company (U.S.A.) (address as above)	Sheet, plate and foil products for: body, end and tab stock for beverage and food cans; semi-rigid containers; household foil and commercial packaging; the building and construction markets; heat exchangers; automotive and transportation applications; the distributor market; and a broad variety of other consumer and industrial products. Effective March 19, 1992, also responsible for the recycling of used aluminum beverage cans.
Bermuda	**Alcan (Bermuda) Limited** P.O. Box HM 1386, Hamilton, HMFX, Bermuda	Shipping, bauxite trading, alloying materials and insurance
CARIBBEAN		
Jamaica	**Alcan Jamaica Company** P.O. Box 222, Mandeville, Jamaica, W.I.	Bauxite, alumina and related facilities
SOUTH AMERICA		
Argentina	**CAMEA S.A.** (99.6%) Casilla de Correo 1900, Buenos Aires, Argentina	Sheet, plain and converted foil, extrusions and rod, foundry alloys, rigid containers and impact extrusions
Brazil	**Alcan Alumínio do Brasil S.A.** Caixa Postal 22041, CEP 01310, São Paulo, Brazil	Bauxite mining, alumina, primary aluminum, rod, wire and cable, plate, sheet, plain and converted foil, foil containers, extrusions, paste and powders, building products, heat exchangers and cooking utensils

**This list names the principal subsidiaries or related companies in each country in which Alcan has a significant presence. A complete list is contained in the Company's 10-K Report, available from Alcan's headquarters in Montreal.*

SOUTH AMERICA (continued)		
	Mineração Rio do Norte S.A. (12%) Caixa Postal 16230, Rio de Janeiro, CEP 22210 RJ, Brazil	Bauxite mining
	Petrocoque S.A. – Industria & Comércio (25%) Caixa Postal 14, CEP 11500, Cubatao, São Paulo State, Brazil	Calcined coke
Chile	**Tubopack S.A.** (45%) Av. Mexico, 719, Santiago, Chile	Fabrication of laminated tubes
Uruguay	**Alcan Aluminio del Uruguay S.A.** (89.92%) Casilla de Correo 789, Montevideo, Uruguay	Sheet, plain and converted foil, extrusions and tubing, wire and cable, and other fabricated products
AFRICA		
Ghana	**Ghana Bauxite Company Limited** (45%) Private Mail Bag, Ministry Post Office, Accra, Ghana	Bauxite mining
Guinea	**Compagnie des Bauxites de Guinée** (13.8%) c/o Halco (Mining) Inc., 900 Two Allegheny Center, Pittsburgh, Pennsylvania 15212, U.S.A.	Bauxite mining
	Friguia (10.2%) c/o Frialco, P.O. Box 265, George Town, Grand Cayman, Cayman Islands	Bauxite mining and alumina refining
EUROPE		
France	**Alcan France (formerly Technal)** 171, route d'Espagne, B.P. 1229, F 31037, Toulouse Cedex, France	Residential and commercial building systems
Germany	**Alcan Deutschland GmbH** Koelner Strasse 8, P.O. Box 5149, D-6236 Eschborn, Germany	Bare and coated sheet products, plain and converted foil, rigid foil containers, automotive castings and impact extrusions
Ireland	**Aughinish Alumina Limited** (65%) Aughinish Island, Askeaton, Co. Limerick, Ireland	Alumina refining
Italy	**Alcan Alluminio S.p.A.** Via Bruno Buozzi 12, 20090 Pieve Emanuele MI, Italy	Bare and coated sheet, extrusions, utensil circles, heat exchangers and foundry alloys from recycled aluminum packaging materials
Norway	**Vigeland Metal Refinery A/S** (50%) P.O Box 6, 4701 Vennesla, Near Kristiansand, South Norway	Super purity aluminum remelt ingots
Switzerland	**Alcan Aluminium S.A.** 13, quai de l'Île, 1204 Geneva, Switzerland	Metal supply management and metal sales
	Alcan Rorschach AG CH-9400 Rorschach, Switzerland	Converted foil and thin strip for packaging materials and technical applications
United Kingdom	**British Alcan Aluminium plc** Chalfont Park, Gerrards Cross, Bucks, England SL9 OQB	Sheet and remelt ingot, extrusion billet, foundry alloys and hardeners from primary and recycled aluminum, plate, tube and extrusions, bare and coated sheet and circles, plain and converted foil, semi-rigid foil containers, aluminum-lithium alloys, superplastic and other high performance materials, high-strength gas cylinders, rod welding and general engineering wire, conductors and bare cables, building and architectural as well as other fabricated products, magnesium foundry alloys, and alumina- and zirconium-based chemicals

PACIFIC		
Australia	**Alcan Australia Limited** (73.3%) G.P.O. Box 4130, Sydney, N.S.W., Australia 2001	Primary ingot, sheet, foil, foil containers, extrusions, architectural and building products, and transportation equipment
	Queensland Alumina Limited (21.4%) G.P.O. Box 374, Brisbane, Queensland, Australia 4001	Alumina refining
China	**Nonferret International Aluminium Company Limited** (32.9%) MaJia Long, No 2 Industrial Development, Nanton District, Shenzhen, China	Production and sale of aluminum billets, mill-finished and anodized extrusions, windows and doors
Hong Kong	**Alcan Asia Limited** 9/F, Dina House, Ruttonjee Centre, 11 Duddell Street, Hong Kong	Trading in China, Hong Kong, Japan and Southeast Asia
	Alcan Nikkei China Limited (51%) (address as above)	Holding company for investments by Alcan and Nippon Light Metal Company, Ltd. in ventures in China and Taiwan
	Alcan Nikkei Korea Limited (51%) (address as above)	Trading in Korea
India	**Indian Aluminium Company, Limited** (39.6%) Box 361, Calcutta 700 001, India	Bauxite, alumina, primary ingot, rod, sheet, extrusions, foil, powder and paste; carbon paste and electronic products
Japan	**Alcan Pacific Limited** 2622 Kasumigaseki Building, 3-2-5-Kasumigaseki Chiyoda-ku, Tokyo, Japan 100	Management office for investments in Southeast Asia and in the Far East
	Nippon Light Metal Company, Ltd. (45%) P.O. Box 5, Takanawa Post Office, Tokyo, Japan	Alumina, ingot from primary and recycled aluminum, sheet and extrusions, castings, and building and other fabricated products
	Toyo Aluminium K.K. (48.9%) Sumiseishimojima Building, 7F, 3-8, Kitakyuhojimachi, 3-Chome Chuo-ku, Osaka, Japan 541	Plain and converted foil, foil containers, powder and paste, and high purity aluminum nitrate
Malaysia	**Aluminium Company of Malaysia Berhad** (63.9%) P.O. Box 1096, 46870 Petaling Jaya, Selangor Darul Ehsan, Malaysia	Sheet, extrusions, foil and fabricated products
New Zealand	**Alcan New Zealand Limited** P.O. Box 98-444, South Auckland Mail Centre, Wiri, Auckland, New Zealand	Sheet and extrusions
Thailand	**Alcan Siam Limited** (70%) G.P.O. Box 11-870, Bangkok 10110, Thailand	Sheet and foil products

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