

ALUMINUM

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Domestic primary aluminum production increased slightly in 1997 to just over 3.6 million metric tons. Thirteen companies operated 22 primary aluminum reduction plants, and 1 plant remained closed. Montana, Oregon, and Washington accounted for 38% of the production; Kentucky, North Carolina, South Carolina, and Tennessee, 21%; and other States, 41%. The value was estimated to be \$6.1 billion.

Aluminum recovered from purchased scrap increased to almost 3.7 million tons. Of this recovered metal, 59% came from new (manufacturing) scrap and 41% from old (discarded aluminum products) scrap. Aluminum used beverage can (UBC) scrap accounted for more than one-half of the reported old scrap consumption in 1997. The recycling rate for aluminum UBC's increased to 66.5%.

Transportation and the container and packaging industries remained the largest domestic markets for aluminum products in 1997. The transportation industry accounted for an estimated 34% of domestic consumption; containers and packaging, 25%; building and construction, 15%; electrical and consumer durables, 8% each; and other uses 10%.

U.S. imports for consumption of aluminum materials increased in 1997, reversing a downward trend that began in 1995. Canada remained the largest shipper of aluminum materials to the United States. Shipments of crude metal and alloys from Russia, the second largest source of U.S. imports, appear to have stabilized in the area of 400,000 tons over the last 3 years. Total exports from the United States also increased in 1997.

The price of primary ingot on the domestic and the international markets fluctuated during the year. The annual average price of primary ingot was modestly higher than that in 1996. Prices in the aluminum scrap markets paralleled the general trend of primary ingot prices during the year.

World inventory levels at the end of 1997 were mixed, though overall there was about a 130,000-ton net decrease. Inventories held by the London Metal Exchange (LME) decreased by about 300,000 tons. World producer total metal stocks, however, increased slightly, as reported by the International Primary Aluminum Institute (IPAI). U.S. inventories also increased slightly during the year.

Primary aluminum was produced in 43 countries in 1997. The United States was the largest producer with 17% of the world total, followed by Russia with 14% and Canada with 11%. World metal production increased 3% compared with that of 1996.

Legislation and Government Programs

The 1997 Defense Authorization Act authorized the Defense Logistics Agency (DLA) to sell the entire inventory of aluminum metal, 57,046 tons (62,882 short tons), from the National Defense Stockpile (NDS). Sales began in April and continued through

October. By the end of the calendar year, 56,665 tons (62,462 short tons) of metal had been sold. The value of the metal sold was approximately \$92.7 million.

Production

Primary.—Domestic primary aluminum production, totaling 3,603,362 tons, increased by 1% compared with that in 1996. (*See tables 1 and 2.*) Production data were obtained from the 13 domestic producers, all of whom responded to the request from the U.S. Geological Survey (USGS) for data.

Reynolds Metals Co. announced the planned restart of limited production at its Troutdale, OR, primary aluminum smelter by February 1998 at an annual rate of 27,000 tons. The Troutdale smelter, which has an installed capacity of 121,000 tons per year, had been idle since December 1991 (Reynolds Metals Co., 1998).

Reynolds also announced that it had begun the process of restarting 47,000 tons per year of production at its 204,000-ton-per-year Longview, WA, primary aluminum smelter. The restart was expected to be completed in the second quarter of 1998 (Reynolds Metals Co., 1998).

Noranda Aluminum Inc. announced that it had awarded a \$3-million contract to ICF Kaiser International Inc. to provide engineering and design services for a \$54-million modernization project at its New Madrid, MO, primary aluminum smelter. The 10-month project, which involves the conversion to a new single-piece anode technology, was expected to increase existing annual capacity of 220,000 tons by about 33,000 tons (33 Metal Producing, 1997).

Noranda also announced the signing of a new 5-year labor agreement with its workers at the New Madrid smelter. The agreement reportedly includes an 8% wage increase over 5 years and improved pension and vacation benefits. The new contract went into effect September 1 and was set to expire August 31, 2002 (Platt's Metals Week, 1997c).

Ormet Primary Aluminum Corp. announced that it had signed a 10-year agreement, beginning in 2000, with CNG Energy Services that will provide most of Ormet's power supply for its Hannibal, OH, smelter and rolling mill through a joint-management committee and power trading desk. The trading desk will be responsible for acquiring power, arranging for transmission, developing price and risk management strategies to control Ormet's power costs, and assuring reliability of the power supply (Ormet Primary Aluminum Corp., 1997).

Alumax Inc. announced that it was investing \$18 million to increase aluminum extrusion billet production capacity by 30% to 227,000 tons per year. The production of aluminum extrusion billet involves casting primary aluminum into logs, followed by a process called homogenizing—heat-treating the logs to prevent the chemical segregation of alloying elements. Continuous

homogenizing furnace systems are being installed at the company's Eastalco smelter in Frederick, MD, and the Intalco smelter in Ferndale, WA. Both systems are expected to be fully operational by the end of 1998 (Alumax Inc., 1997b).

Alumax also announced plans to construct a fully integrated extrusion plant on the site of its old rolling mill in Morris, IL, that was closed in 1994. The \$35-million investment will include the installation of two extrusion presses—an existing 3,300-ton press to be relocated from the company's Franklin, NH, facility and a new 7,300-ton press. Initially, the plant, scheduled to begin production in early 1998, will manufacture extrusions for the automotive and truck-trailer markets, as well as various shapes for service centers (Alumax Inc., 1997a).

Kaiser Aluminum & Chemical Corp. reported the consolidation of its aluminum forging operations into two facilities with the closure of its Erie, PA, plant. Kaiser will shift the manufacture of its Erie forgings to its other plants in Greenwood, SC, and Oxnard, CA (Kaiser Aluminum & Chemical Corp., 1997b).

During the year, Reynolds announced the sale of several of its fabrication plants. In March, the company's U.S. residential construction products operations were sold to AmeriMark Building Products Inc. In May, the extrusion plant in El Campo, TX, was sold to William L. Bonnell, a subsidiary of Tredegar Industries Inc. In June, Kaiser bought the Bellwood, VA, extrusion plant; and in November, Eckart Aluminium L.P. purchased a powder and paste plant in Louisville, KY (Reynolds Metals Co., 1998).

In addition to the changes announced by the integrated aluminum companies, several independent fabricators reported significant plant expansions. In the die-casting industry, Mitsui Components (U.S.A.) Inc. opened a new plant in Casa Grande, AZ, that will produce small aluminum die-cast components for the automotive and consumer electronics markets (Furukawa, 1997). SPX Corp.'s Contech division began construction of a new \$8.4-million, die-casting facility in Pierceton, IN, which is expected to produce power steering components for the automotive industry (American Metal Market, 1997b). Ryobi Die Casting (USA) Inc. announced a major expansion at its Shelbyville, IN, plant that will add an estimated 25,000 to 27,000 tons (55 million to 60 million pounds) of annual production capability for light-alloy castings (Wrigley, 1997b).

JW Aluminum Co. reported that it had begun a 2-year, \$31-million expansion project at its Mount Holly, SC, rolling mill that is expected to increase its capacity by 60% to 109,000 tons (240 million pounds) per year. This plant produces high-quality aluminum foil, fin stock, litho sheet, and coiled sheet products (Platt's Metals Week, 1997a).

Secondary.—Metal recovered from new and old scrap increased to 3.7 million tons in 1997, according to data derived by the USGS from its "Aluminum Scrap" survey. (See tables 3, 4, and 5.) Of the 93 companies and/or plants to which monthly or annual survey requests were sent, 66 responded, representing 86% of the total scrap consumed shown in table 4.

According to figures released by the Aluminum Association Inc., the Can Manufacturers Institute, and the Institute of Scrap Recycling Industries, 66.8 billion aluminum UBC's were recycled in the United States during 1997. The recycling rate, based on the number of cans shipped during the year, was 66.5%, a modest

increase from the 63.5% recycling rate reported in 1996. According to the organizations' joint press release, aluminum beverage cans produced domestically in 1997 had an average 54.7% postconsumer recycled content, the highest recycled content percentage of all packaging materials.

During the year, there were several major acquisitions of recycling plants by Philip Services Corp., Wabash Alloys, and Imco Recycling.

Reynolds reported the sale of its Bellwood, VA, secondary recycling plant to Philip Metals Recovery (USA) Inc., a subsidiary of Philip Services Corp. The plant processes scrap aluminum into a deoxidizing agent used by the steel industry (Reynolds Metals Co., 1998). Philip Services also purchased Roth Brothers Smelting Corp. Prior to the sale, Roth Brothers' secondary aluminum smelter in Syracuse, NY, had begun an expansion program to increase production capacity from 74,000 tons per year to 110,000 tons of ingot per year. The expansion was expected to continue under the new ownership (Platt's Metals Week, 1997d).

In September, Wabash Alloys announced that it had purchased the 2,700-ton-per-month Tipton, IN, secondary aluminum smelter from U.S. Reduction Co. (Platt's Metals Week, 1997e). In late November, Wabash purchased most of the remaining major assets of U.S. Reduction. In this court-ordered auction, Wabash took over ownership of the secondary aluminum smelters in Marietta, PA, Checotah, OK, and Russellville, AL, as well as the equipment from the smelters in East Chicago, IL, and Toledo, OH. The \$29-million purchase was expected to bring Wabash's rated capacity for the production of aluminum ingot to 545,000 tons (1.2 billion pounds) per year (Metal Bulletin, 1997e).

In January, Imco Recycling Inc. acquired Imsamet, a wholly owned subsidiary of EnviroSource Inc. The purchase included three aluminum recycling plants—Goodyear, AZ, Post Falls, ID, and Wendover, UT—and a 50% interest in a facility, near the Utah plant, that reclaims materials from salt cake, a byproduct of aluminum recycling (American Metal Market, 1997d). Earlier in the month, Imco purchased Rock Creek Aluminum Inc., a supplier of deoxidation products to the steel industry. Rock Creek's three plants in Cleveland, Elyria, and Rock Creek, OH, mechanically process about 68,000 tons (150 million pounds) per year of aluminum scrap and dross (Worden, 1997a). In September, Imco acquired Alchem Aluminum Inc., a privately owned producer of specification aluminum alloys for automobile manufacturers and their suppliers. The purchase included two secondary aluminum smelters in Coldwater, MI, with a combined annual capacity of approximately 135,000 tons (300 million pounds) of specification ingot and a new customer facility in Knoxville, TN. These acquisitions and other expansions were expected to increase Imco's processing capacity to about 1.2 million tons (2.6 billion pounds) per year (Platt's Metals Week, 1997b).

Superior Aluminum Alloys LLC, a subsidiary of OmniSource Corp., announced that construction had begun on a new secondary aluminum smelter in New Haven, IN. Upon completion in early 1998, the smelter was expected to have a production capacity of 54,000 to 68,000 tons (120 million to 150 million pounds) per year (Worden, 1997b).

Metal Exchange Corp.'s Continental Aluminum, a producer of

deoxidized aluminum for the steel industry, announced that it had begun construction of a secondary aluminum smelter in New Hudson, MI, for the production of specification aluminum ingot. Upon completion, the plant was expected to produce about 45,000 tons (100 million pounds) of ingot per year (Worden, 1997c).

Three Japanese companies, Toyota Tsusho America Inc. (50%), Daiki International Trading Corp. (45%), and Toyota Tsusho Corp. Ltd. (5%), announced the formation of a joint venture to construct a new secondary aluminum smelter in Troy, MI, capable of producing 30,000 tons (66 million pounds) per year of aluminum ingot for the automotive industry. According to the companies, production is targeted for Bodine Aluminum Inc., Toyota Motor's St. Louis-based aluminum parts-casting subsidiary, which also has a plant in Troy (Wrigley, 1997c).

Crown Cork & Seal Co. Inc. reported that it had exercised its option to purchase Golden Aluminum Co. from ACX Technologies, but retained option to return it to ACX within 2 years. Golden processes aluminum UBC scrap at its continuous caster sheet mills in Fort Lupton, CO, and San Antonio, TX (American Metal Market, 1997c).

Consumption

The transportation industry, accounting for approximately 3 million tons (29%) of total U.S. shipments of aluminum products, remained the largest domestic consumer of aluminum. The container and packaging industry consumed just over 2.2 million tons of aluminum in 1997. (See tables 6 and 7.)

With new casting applications leading the way, the North American automotive industry indicated that it planned to expand the use of aluminum in 1998 model cars and light-duty trucks. Depending on the number of vehicles produced, this could increase the net use of aluminum by more than 67,000 tons (149 million pounds) in 1998 compared with that of 1997. Chrysler, General Motors, and Toyota have all announced plans to use aluminum cylinder blocks and heads in many of their automotive engines. The new block- and head-casting uses for aluminum involve secondary aluminum alloys, including A319.1 and A380.1 with the 319 material accounting for most of the applications. An increase in the use of aluminum sheet alloys, including 6111 and 6022, has also been mentioned along with new applications for aluminum extrusions and forgings (Wrigley, 1997a).

Accuride Corp. and Kaiser have formed a joint venture, AKW L.P., to design, manufacture, and market aluminum wheels for the commercial transportation industry. AKW plans to introduce a new brand of forged aluminum wheels for medium and heavy trucks, trailers, RV's, buses, and other commercial equipment (Kaiser Aluminum & Chemical Corp., 1997a).

Stocks

Inventories of aluminum ingot, mill products, and scrap at reduction and other processing plants, as reported by the U.S. Department of Commerce, increased from a revised 1.86 million tons at yearend 1996 to 1.88 million tons at yearend 1997.

The LME reported that its U.S. warehouses held 325 tons of primary aluminum metal ingot at yearend 1997, a dramatic

decrease from the approximately 12,400 tons of metal held in these warehouses at yearend 1996. The LME also reported that aluminum alloy ingot at its U.S. warehouses at yearend 1997 totaled 7,260 tons, a significant decrease from the 20,100 tons of alloy held at yearend 1996.

The DLA began the sale of aluminum metal from the NDS in April 1997. By the end of the year, the DLA reported that almost the entire inventory of 57,000 tons (about 62,900 short tons) of aluminum metal had been sold, and the NDS inventory had decreased to 345 tons (380 short tons) of aluminum metal.

Prices

The monthly average U.S. market price of primary aluminum metal, as reported by Platt's Metals Week, fluctuated during the year. The monthly average price began the year at 76.1 cents per pound and reached a high of 80.1 cents per pound in August. By December, the monthly average had fallen to a low for the year of 74.7 cents per pound. The average price for the year was 77.1 cents per pound, a moderate increase compared with the 1996 average annual price of 71.3 cents per pound.

The LME cash price for high-grade primary aluminum ingot followed the same general trend as the U.S. market price. The 1997 average annual LME cash price was 72.5 cents per pound.

Purchase prices for aluminum scrap, as quoted by American Metal Market (AMM), followed the general trend of primary ingot prices. However, scrap prices closed the year at slightly higher levels than those at the beginning of the year. The yearend price ranges for selected types of aluminum scrap were as follows: mixed low-copper-content aluminum clips, 56 to 57 cents per pound; old sheet and cast, 49 to 50 cents per pound; and clean, dry aluminum turnings, 50 to 51 cents per pound.

Aluminum producers' buying price range for processed and delivered UBC's, as quoted by AMM, fluctuated during the year. The price range began the year at 53 to 54 cents per pound, reached a high of 59 to 61 cents per pound in April and in August, and closed the year at 55 to 56 cents per pound. Resource Recycling published a monthly transaction price for aluminum UBC's in its Container Recycling Report. The average annual UBC transaction price for 1997 was 60.3 cents per pound, a moderate increase from the 1996 annual average of 54.7 cents per pound.

The yearend indicator prices, as published in AMM, for selected secondary aluminum ingots also increased compared with those of 1996 and were as follows: alloy 380 (1% zinc content), 81.31 cents per pound; alloy 360 (0.6% copper content), 86.53 cents per pound; alloy 413 (0.6% copper content), 86.35 cents per pound; and alloy 319, 84.71 cents per pound. Platt's Metals Week published an annual average U.S. price of 75.5 cents per pound for A-380 alloy (3% zinc content). The average annual LME cash price for a similar 380 alloy was 66 cents per pound.

Foreign Trade

Total exports of aluminum from the United States increased in 1997 compared with those of 1996. Although exports of crude metal and alloys decreased, semifabricated materials and scrap exports increased compared with those of 1996. Canada, Mexico,

and Japan, in decreasing order of shipments, accounted for almost two-thirds of total U.S. exports. (See tables 8 and 9.)

Imports for consumption increased in 1997, reversing a downward trend that began in 1995. Canada remained the major source country, supplying about two-thirds of total imports. Russia remained the second largest supplier of aluminum materials. Imports of crude metal and alloys from Russia have stabilized in the 400,000-ton-per-year range over the last 3 years, following the rapid growth in shipments that occurred between 1991 and 1994. (See tables 10 and 11.)

World Review

World production of primary aluminum metal increased 3% in 1997 compared with that of 1996. (See table 12.) Strong demand for primary aluminum, tight supply, and rising premiums characterized the U.S. and European markets. By contrast, the financial turmoil in Asia began to take its toll on that area's aluminum market during the latter part of the year. As the financial and economic crises in Asia spread, the LME prices also came under pressure and began a downward slide in September that continued through the end of the year; this occurred despite a decrease in world inventories and strong growth in demand in the United States and Western Europe.

Unwrought primary aluminum inventories held by members of the IPAI decreased from 1.69 million tons at yearend 1996 to 1.64 million tons at yearend 1997. IPAI total metal inventories, including secondary aluminum, increased from 3.14 million tons at yearend 1996 to 3.16 million tons at yearend 1997.

Inventories of primary aluminum metal held by the LME decreased steadily during the first half of the year, increased briefly during the late summer and early autumn, before continuing its downward trend. By the end of the year, inventories had decreased to 622,000 tons from 951,000 tons at the end of 1996.

Australia.—Comalco Ltd. reported the commissioning of a third potline at its Boyne Island primary aluminum smelter. The \$740 million project included the construction of a new potline of 264 cells, a carbon-baking furnace, additional metal casting facilities and auxiliary equipment. The expansion was completed 6 months ahead of schedule and increased annual capacity at the smelter from 260,000 tons per year to 490,000 tons per year, making the smelter one of the largest in the world (van Os, 1997).

Tomago Aluminium Co. Pty. Ltd. reported that work was continuing on the upgrade of existing potlines at its 380,000-ton-per-year smelter in New South Wales. Upon completion of the work in mid-1998, the annual capacity of the primary aluminum smelter would increase to 440,000 tons. Tomago also announced that the joint-venture partners were looking at the feasibility of adding a fourth potline at Tomago that could increase capacity at the smelter to 660,000 tons per year by 2003 (Metal Bulletin, 1997d).

Brazil.—Alcan Aluminium Ltd. announced that it would invest approximately \$350 million over the next 3 years to expand and modernize aluminum rolling operations in Brazil to serve the rapidly growing South American market for aluminum beverage cans. In a two-phase expansion program, Alcan's Brazilian subsidiary, Alcan Alumínio do Brasil S.A. (Alcanbrasil), will

more than double production capacity at its Pindamonhangaba (Pinda) aluminum sheet rolling facility from 100,000 tons per year to 250,000 tons per year. The existing Pinda plant is already the largest aluminum rolling operation in Latin America and the only one capable of producing beverage can sheet. The first phase of the expansion will involve the installation of a tandem finishing mill for the existing hot mill and should be operational within 2 years. The second phase will include the addition of a second cold-rolling mill and associated equipment and is targeted for startup in 2000 (Alcan Aluminium Ltd., 1997b). As part of the expansion project, Alcanbrasil also constructed a 30,000-ton-per-year UBC recycling facility that was commissioned in February 1998 (Alcan Aluminium Ltd., 1998).

Canada.—Alcan announced its decision to proceed with the development of a new 375,000-ton-per-year primary aluminum smelter at Alma, Quebec. Preliminary planning for this \$1.6-billion project was completed during 1997. Environmental clearance for the project was obtained from the Government of Quebec, and a long-term contract was reached for the supply of electricity from Hydro-Québec. Work at the site began in March 1998 and the first aluminum production was expected in the fall of 2000 (Alcan Aluminium Ltd., 1998).

Alcan also announced the restart of 22,000 tons per year of capacity at its primary aluminum smelter in Kitimat, British Columbia, which would return the smelter to its full operating capacity of 272,000 tons per year. The restart, which began in November, was one element of a legal agreement with the Government of British Columbia to settle the outstanding issues related to the Kemano Completion (hydroelectric) Project (Alcan Aluminium Ltd., 1998).

Wabash Alloys moved into a new secondary aluminum smelter complex in Mississauga, Ontario, which replaces its Toronto facility. The new smelter has an initial monthly capacity of 5,400 tons (12 million pounds) of specification aluminum alloys. The company reported that, if demand increased, the smelter capacity would be expanded to 9,100 tons (20 million pounds) per month (Worden, 1997d).

China.—Alcan and China National Non-Ferrous Metals Industry Corp. announced the signing of a Memorandum of Understanding to complete a detailed feasibility study on a proposed primary aluminum smelter and power complex at Hejin City, Shanxi Province. The project has received the consent of all relevant government departments and has been approved by the State Planning Commission. The feasibility study on the 240,000-ton-per-year smelter and dedicated power complex was expected to take approximately 12 to 18 months to complete (Alcan Aluminium Ltd., 1997a).

Shanghai Sigma Metals, China's largest secondary aluminum producer, announced plans to increase capacity at its secondary smelter in Shanghai from 7,000 tons per month to 11,000 tons per month of aluminum alloy ingot by the end of 1998. The company is a joint venture between Taiwan's Sigma Brothers Inc. and the local Shanghai government. Most of the alloy produced at this plant is destined for the automotive industry in Japan (Reed, 1997).

Dubai.—Dubai Aluminium Co. (Dubal) completed a \$503-million expansion of its primary aluminum smelter 8 weeks ahead of schedule. The expansion project included a new 240-cell

potline, two new gas turbines, improvements to the carbon plant, and the construction of a new casthouse. The potline cell technology was developed jointly by Dubal and Comalco. The addition of this fifth potline increased capacity at the smelter from 245,000 tons per year to 375,000 tons per year (Metal Bulletin Monthly, 1997).

Egypt.—At the end of October, the Aluminium Co. of Egypt (Egyptalum) completed the installation of its new 50,000-ton-per-year potline at the Nag Hammadi primary aluminum smelter. This sixth potline, with 92 prebaked cells, increased capacity at the smelter to 230,000 tons per year. Egyptalum announced plans to gradually convert the smelter's original five Soderberg potlines to prebake technology over the next 5 years. Upon completion, the conversion was expected to add 60,000 to 70,000 tons of annual capacity to the smelter (Karpel, 1997).

France.—In mid-September, Pechiney announced plans to restart all of the company's 125,000 tons of idled primary aluminum production capacity by the end of 1998. By the end of 1997, capacity restarts of approximately 25,000 tons per year had taken place at the Bécancour smelter in Canada and the Saint-Jean-de Maurienne smelter in France. The remaining idled capacity is split between another potline at Saint-Jean-de-Maurienne, two more smelters in France, one in the Netherlands, and one in Greece (Mining Journal, 1997b).

Hungary.—Aluminum Company of America (Alcoa) opened a new plant in Székesfehérvár, 80 kilometers southwest of Budapest, for the production of forged aluminum truck wheels. The plant was designed to serve Alcoa's European truck wheel customers and those in Brazil and Australia who require European-style wheels (Aluminum Company of America, 1998).

Iceland.—Icelandic Aluminium Co. Ltd., a subsidiary of Alusuisse-Lonza Holding AG, officially opened a third potline at its Straumsvík primary aluminum smelter. The new 160-cell potline increased the smelter's annual capacity from 100,000 tons to 162,000 tons (Hotter, 1997).

Iran.—In June, the first 30,000 tons per year of capacity was commissioned at Almahdi Aluminium Corp.'s greenfield smelter in Bandar Abbas. Capacity at the smelter was expected to be increased gradually until the 110,000-ton-per-year potline was fully commissioned. A second 110,000-ton-per year potline has been planned (Metal Bulletin, 1997c).

Japan.—Japan's aluminum can recycling rate hit a record high of 70.2% in the year ended March 31, up from 65.7% in the previous 12-month period. The Japan Aluminum Can Recycling Association estimated that 190,000 tons of aluminum cans wererecycled versus total sales of 271,000 tons of aluminum cans (American Metal Market, 1997e).

Mexico.—Wabash Alloys has begun construction of a new secondary aluminum smelter at Monclova in northern Mexico with a planned capacity of 2,700 tons (6 million pounds) per month of aluminum alloys, to be expanded to between 4,500 and 5,400 tons (10 to 12 million pounds) per month, if demand increases. The smelter is scheduled to begin production in the first half of 1998. Wabash also announced that it has negotiated a 10-year contract with Teksid Aluminio de Mexico to provide molten 319 alloy to Teksid's foundry located near the new smelter (Platt's Metals Week, 1997f).

Nigeria.—The Aluminium Smelting Co. of Nigeria (Alscon)

announced that production has begun at its 193,000-ton-per-year Ikot Abasi primary aluminum smelter. Startup of one line began in late 1997, and it was operating at 16% of its 96,500-ton-per-year capacity at yearend. Alscon is joint venture between the Nigerian government (70%), Ferrostaal AG of Germany (20%), and Reynolds Metals (10%) (Reynolds Metals Co., 1998).

Norway.—Norsk Hydro AS announced that it planned to restart all previously idled primary aluminum smelting capacity (70,000 tons per year) by the end of 1997. In addition, brownfield expansions at the Karmøy smelter (35,000 tons per year) and Årdal smelter (12,000 tons per year) were expected to be operational by the end of the year. Capacity at these two smelters would increase to 267,000 tons per year at Karmøy and 204,000 tons per year at Årdal (Nurse, 1997).

Romania.—The 265,000-ton-per-year primary aluminum smelter, Alro Slatina, has completed the first phase of its modernization program. With the technological support of Pechiney, the upgrade of one potline reduced environmental emissions and raised dust extraction efficiency from 68% to 98%. A second potline is scheduled to be upgraded, and there are plans to modernize the entire plant, decreasing power consumption and gas emissions, by 2005 (Standish, 1997).

Russia.—AluminProduct ImpEx Ltd., a joint-venture company formed by Reynolds and Sayansk Aluminium Zavod, has signed an agreement to supply primary aluminum ingot to Samara Metallurgical Company (Sameco) for conversion into beverage can stock. The agreement calls for AluminProduct to supply primary aluminum to Sameco's rolling plant in Samara where it will be manufactured initially into aluminum can end, tab, and body stock for customers in Asia and the Middle East. AluminProduct also plans to ship can stock to customers in the Commonwealth of Independent States as the aluminum beverage can industry develops there (Reynolds Metals Co., 1997).

South Africa.—Gencor of South Africa announced that it will restructure its assets into two separate companies by transferring its base metal and coal assets to a new company to be called Billiton Plc. and retaining its precious metals assets in Gencor Ltd. The new Billiton will be listed on the London Stock exchange and will have an international portfolio held in six main divisions: aluminum, steel and ferroalloys, coal, titanium, base metals, and nickel (Mining Journal, 1997a).

Alusaf Ltd., a subsidiary of Billiton, is conducting a feasibility study for the environmental upgrade of potrooms B and C at its 170,000-ton-per-year Bayside smelter. Potroom A has already been modernized to meet environmental standards. The company is also reported to be upgrading the casthouse at Bayside to produce value-added products such as rolling slab, extrusion billet, electrical conductor rods, and rim alloy (Metal Bulletin, 1997a).

Spain.—After approval by the European Commission and the Spanish government, Alcoa completed the purchase of Inespal S.A., the state-owned aluminum producer. The purchase includes substantially all of Inespal's businesses (Aluminum Company of America, 1998). The businesses include the 1.1-million-ton-per-year alumina refinery at San Ciprian; three primary aluminum smelters, at San Ciprian, La Coruna, and Aviles, with a combined capacity of 365,000 tons per year; three rolling mills, at Amorebieta, Alicante, and Sabinanigo, with a combined capacity

of 220,000 tons per year; two extrusion plants, at Noblejas and La Coruna, with a combined annual capacity of 29,000 tons, and an administrative center in Madrid (Aluminum Company of America, 1997).

Thailand.—Mitsubishi Aluminum Co. and Muang-Thong Aluminium Industry Co. have formed a joint venture to construct and manage a plant near Bangkok that will produce extruded aluminum heat exchanger components for the automotive industry. Initially, the new company, Muang-Max (Thailand) Co., will have a capacity of 180 tons per month when commercial production begins in mid-1998 (Metal Bulletin, 1997b).

United Kingdom.—The recycling rate for aluminum UBC's in 1996 increased to 31%, according to the Aluminium Can Recycling Association, London. Approximately 1.5 billion UBC's, or about 24,000 tons, were collected for recycling (American Metal Market, 1997a).

Outlook

Despite the economic crisis in Asia, which began in 1997, the demand for aluminum in the United States and Western Europe continues to show strength. U.S. demand remains strong and demand in Western Europe has been described as stable. World production is expected to increase as previously idled capacity continues to come back on-stream and smelter expansions are being planned or initiated. Based on the growth indicators for the aluminum industry, prior to the downturns in the Asian economies, an increase in world production capacity appeared to be required in the next couple of years. Now, however, the timetable for these increases may have to be adjusted outward until the demand for aluminum in the Asian markets recovers.

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TABLE 1
SALIENT ALUMINUM STATISTICS 1/

(Thousand metric tons, unless otherwise specified)

	1993	1994	1995	1996	1997
United States:					
Primary production	3,695	3,299	3,375	3,577	3,603
Value (million dollars)	\$4,340	\$5,180	\$6,390	\$5,630	\$6,120
Price (average cents per pound)					
U.S. market (spot)	53.3	71.2	85.9	71.3	77.1
Inventories (December 31)					
Aluminum industry 2/	1,980	2,070	2,000	1,860 r/	1,880
LME stocks in U.S. warehouses	168	16	14	12	(3/)
National Defense Stockpile	57	57	57	57	(3/)
Secondary recovery 4/	2,940	3,090	3,190	3,310 r/	3,690
New scrap	1,310	1,580	1,680	1,730 r/	2,160
Old scrap	1,630	1,500	1,510	1,580 r/	1,530
Exports (crude and semicrude)	1,210	1,370	1,610	1,500	1,570
Imports for consumption (crude and semicrude)	2,540	3,380	2,980 r/	2,810	3,080
Aluminum industry shipments 5/	7,300	8,160	8,260	8,330 r/	8,880
Supply, apparent 6/	7,920	8,460	8,010	8,330 r/	8,850
Consumption, apparent 7/	6,600	6,880	6,320	6,600 r/	6,690
World: Production	19,800	19,200	19,700 r/	20,800 r/	21,400 e/

e/ Estimated. r/ Revised.

1/ Data are rounded to three significant digits, except "Primary production" and "prices."

2/ Includes ingot, semifabricated material, and scrap. Data from Current Industrial Reports, Series M33-D, U.S. Department of Commerce, Bureau of the Census.

3/ Less than 1/2 unit.

4/ Metallic recovery from purchased, tolled, or imported new and old scrap expanded for full industry coverage.

5/ Shipped to domestic industry.

6/ Defined as domestic primary metal production + secondary recovery + imports - exports + adjustments for Government and industry stock changes.

7/ Apparent supply less recovery from purchased new scrap.

TABLE 2
PRIMARY ANNUAL ALUMINUM PRODUCTION CAPACITY IN THE UNITED STATES, BY COMPANY 1/

Company	Yearend capacity (thousand metric tons)		1997 ownership (percent)
	1996	1997	
Alcan Aluminum Corp.:			
Sebree, KY	186	186	Alcan Aluminum Ltd., 100%.
Alumax Inc.:			
Ferndale, WA (Intalco)	272	272	Alumax Inc., 61%; Mitsui & Co., 23%; TosTem Corp., 9%; YKK Corp., 7%.
Frederick, MD (Eastalco)	174	174	Do.
Mount Holly, SC	205	205	Alumax, 50.3%; Century Aluminum Co., 26.7%; Glencore Primary Aluminum Co., 23%.
Total	651	651	
Aluminum Co. of America: 2/			
Alcoa, TN	210	210	Aluminum Co. of America, 100%.
Badin, NC	115	115	Do.
Evansville, IN (Warrick)	300	300	Do.
Massena, NY	125	125	Do.
Rockdale, TX	315	315	Do.
Wenatchee, WA	220	220	Do.
Total	1,290	1,290	
Century Aluminum Co.:			
Ravenswood, WV	168	168	Century Aluminum Co., 100%.
Columbia Falls Aluminum Co.:			
Columbia Falls, MT	168	168	Montana Aluminum Investors Corp., 100%.
Goldendale Aluminum Co.:			
Goldendale, WA	160 r/	160	Private interest, 60%; employees, 40%.
Kaiser Aluminum & Chemical Corp.:			
Mead, WA (Spokane)	200	200	MAXXAM Inc., 100%.
Tacoma, WA	73	73	Do.
Total	273	273	
NSA:			
Hawesville, KY	186	186	Southwire Co., 100%.
Noranda Aluminum Inc.:			
New Madrid, MO	215	215	Noranda Mines Ltd., 100%.
Northwest Aluminum Corp.:			
The Dalles, OR	82	82	Private interests, 100%.
Ormet Corp.:			
Hannibal, OH	256	256	Ormet Corp., 100%.
Reynolds Metals Co.:			
Longview, WA	204	204	Reynolds Metals Co., 100%.
Massena, NY	123	123	Do.
Troutdale, OR	121	121	Do.
Total	448	448	
Vanalco Inc.:			
Vancouver, WA	116	116	Vanalco Inc., 100%.
Grand total	4,190 r/	4,190	

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Individual plant capacities are U.S. Geological Survey estimates based on company reported total.

TABLE 3
U.S. CONSUMPTION OF AND RECOVERY FROM PURCHASED NEW
AND OLD ALUMINUM SCRAP, 1/ BY CLASS 2/

(Metric tons)

Class	Consumption	Calculated recovery	
		Aluminum	Metallic
1996:			
Secondary smelters	1,460,000 r/	1,050,000 r/	1,120,000 r/
Integrated aluminum companies	1,410,000	1,170,000	1,250,000
Independent mill fabricators	709,000	613,000	654,000 r/
Foundries	95,300	78,500	84,400
Other consumers	9,910	8,730	8,770 r/
Total	3,680,000 r/	2,920,000 r/	3,120,000 r/
Estimated full industry coverage	3,910,000 r/	3,090,000 r/	3,310,000 r/
1997:			
Secondary smelters	1,750,000	1,240,000	1,330,000
Integrated aluminum companies	1,470,000	1,230,000	1,310,000
Independent mill fabricators	812,000	707,000	756,000
Foundries	73,900	60,700	65,400
Other consumers	10,300	9,440	9,470
Total	4,120,000	3,240,000	3,470,000
Estimated full industry coverage	4,380,000	3,450,000	3,690,000

r/ Revised.

1/ Excludes recovery from other than aluminum-base scrap.

2/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 4
U.S. STOCKS, RECEIPTS, AND CONSUMPTION OF PURCHASED NEW AND OLD ALUMINUM
SCRAP AND SWEATED PIG IN 1997 1/ 2/

(Metric tons)

Class of consumer and type of scrap	Stocks, Jan. 1	Net receipts 3/	Consump- tion	Stocks, Dec. 31
Secondary smelters:				
New scrap:				
Solids	7,440 r/	272,000	273,000	6,020
Borings and turnings	5,450 r/	278,000	271,000	11,700
Dross and skimmings	3,320 r/	417,000	417,000	3,030
Other 4/	7,950 r/	223,000	228,000	3,660
Total	<u>24,200 r/</u>	<u>1,190,000</u>	<u>1,190,000</u>	<u>24,400</u>
Old scrap:				
Castings, sheet, clippings	22,500 r/	355,000	353,000	25,000
Aluminum-copper radiators	767 r/	16,100	15,600	1,290
Aluminum cans 5/	2,500 r/	87,600	88,100	1,990
Other 6/	1,350 r/	93,400	93,000	1,750
Total	<u>27,100 r/</u>	<u>552,000</u>	<u>549,000</u>	<u>30,000</u>
Sweated pig	1,240 r/	11,900	10,700	2,400
Total secondary smelters	<u>52,500 r/</u>	<u>1,750,000</u>	<u>1,750,000</u>	<u>56,800</u>
Integrated aluminum companies, foundries, independent mill fabricators, other consumers:				
New scrap:				
Solids	27,000 r/	934,000	945,000	16,400
Borings and turnings	376 r/	28,100	28,200	259
Dross and skimmings	233 r/	11,000	10,900	347
Other 4/	11,900	254,000	256,000	9,590
Total	<u>39,500 r/</u>	<u>1,230,000</u>	<u>1,240,000</u>	<u>26,600</u>
Old scrap:				
Castings, sheet, clippings	7,210 r/	239,000	235,000	11,300
Aluminum-copper radiators	528 r/	9,750	9,760	515
Aluminum cans	26,000 r/	862,000	861,000	26,700
Other 6/	480 r/	16,700	17,100	139
Total	<u>34,200 r/</u>	<u>1,130,000</u>	<u>1,120,000</u>	<u>38,700</u>
Sweated pig	325 r/	4,220	4,430	117
Total intergrated aluminum companies, etc.	<u>74,100</u>	<u>2,360,000</u>	<u>2,370,000</u>	<u>65,500</u>
All scrap consumed:				
New scrap:				
Solids	34,500 r/	1,210,000	1,220,000	22,500
Borings and turnings	5,830 r/	306,000	300,000	11,900
Dross and skimmings	3,550 r/	428,000	428,000	3,380
Other 4/	19,800 r/	477,000	484,000	13,300
Total	<u>63,700 r/</u>	<u>2,420,000</u>	<u>2,430,000</u>	<u>51,000</u>
Old scrap:				
Castings, sheet, clippings	29,700 r/	594,000	587,000	36,300
Aluminum-copper radiators	1,300 r/	25,900	25,400	1,810
Aluminum cans	28,500 r/	949,000	949,000	28,700
Other 6/	1,830 r/	110,000	110,000	1,890
Total	<u>61,400 r/</u>	<u>1,680,000</u>	<u>1,670,000</u>	<u>68,700</u>
Sweated pig	1,560 r/	16,100	15,200	2,520
Total of all scrap consumed	<u>127,000 r/</u>	<u>4,110,000</u>	<u>4,120,000</u>	<u>122,000</u>

r/ Revised.

1/ Includes imported scrap. According to reporting companies, 17.38% of total receipts of aluminum-base scrap, or 715,173 metric tons, was received on toll arrangements.

2/ Data are rounded to three significant digits; may not add to totals shown.

3/ Includes inventory adjustment.

4/ Includes data on foil, can stock clippings, and other miscellaneous.

5/ Used beverage cans toll treated for primary producers are included in secondary smelter tabulation.

6/ Includes municipal wastes (includes litter) and fragmented scrap (auto shredder).

TABLE 5
 PRODUCTION AND SHIPMENTS OF SECONDARY ALUMINUM ALLOYS BY
 INDEPENDENT SMELTERS IN THE UNITED STATES 1/

(Metric tons)

	1996		1997	
	Production	Net shipments 2/	Production	Net shipments 2/
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	75,900 r/	74,900 r/	66,100	66,700
380 and variations	486,000 r/	488,000 r/	504,000	501,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	24,600 r/	24,500 r/	36,300	35,100
No. 12 and variations	W	W	W	W
No. 319 and variations	139,000 r/	140,000 r/	157,000	157,000
F-132 alloy and variations	43,100 r/	42,900 r/	38,800	38,600
Al-Mg alloys	685	685	639	639
Al-Zn alloys	3,430	3,430	15,900	16,100
Al-Si alloys (0.6% to 2.0% Cu)	9,980	10,600	2,020	2,130
Al-Cu alloys (1.5% Si, maximum)	936	937	925	926
Al-Si-Cu-Ni alloys	1,130	1,110	1,440	1,440
Other	4,180	4,270	12,000	12,200
Wrought alloys, extrusion billets	153,000	152,000	209,000	209,000
Miscellaneous:				
Steel deoxidation	(3/)	(3/)	(3/)	(3/)
Pure (97.0% Al)	--	--	(3/)	(3/)
Aluminum-base hardeners	93	93	6,430	4,770
Other 4/	82,900 r/	86,200 r/	91,400	91,000
Total	1,020,000 r/	1,030,000 r/	1,140,000	1,140,000
Less consumption of materials other than scrap:				
Primary aluminum	46,200 r/	--	53,000	--
Primary silicon	81,000 r/	--	47,200	--
Other	4,960 r/	--	8,410	--
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot 5/	893,000 r/	XX	1,030,000	XX

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Sand and permanent mold: Other." XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes inventory adjustment.

3/ Withheld to avoid disclosing company proprietary data; included with "Miscellaneous: Other."

4/ Includes other die-cast alloys.

5/ No allowance made for melt-loss of primary aluminum and alloying ingredients.

TABLE 6
DISTRIBUTION OF END-USE SHIPMENTS OF ALUMINUM PRODUCTS IN THE UNITED STATES,
BY INDUSTRY 1/

Industry	1996		1997	
	Quantity (thousand metric tons)	Percent of grand total	Quantity (thousand metric tons)	Percent of grand total
Containers and packaging	2,180	22.6	2,220	21.7
Building and construction	1,330 r/	13.8	1,320	12.9
Transportation	2,640 r/	27.5	2,990	29.2
Electrical	671 r/	7.0	708	6.9
Consumer durables	655 r/	6.8	694	6.8
Machinery and equipment	569 r/	5.9	626	6.1
Other markets	291 r/	3.0	318	3.1
Total to domestic users	8,330 r/	86.6	8,880	86.8
Exports e/	1,290	13.4	1,360	13.2
Grand total	9,610 r/	100.0	10,200	100.0

e/ Estimated. r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: The Aluminum Association Inc.

TABLE 7
U.S. NET SHIPMENTS OF ALUMINUM WROUGHT AND CAST PRODUCTS,
BY PRODUCERS 1/ 2/

(Thousand metric tons)

	1996	1997 p/
Wrought products:		
Sheet, plate, foil	4,430 r/	4,640
Rod, bar, pipe, tube, shapes	1,540 r/	1,710
Rod, wire, cable	350 r/	366
Forgings (including impacts)	99 r/	96
Powder, flake, paste	53 r/	63
Total	6,480 r/	6,870
Castings:		
Sand	180	NA
Permanent and semipermanent mold	473	NA
Die	612	NA
Other	121	NA
Total	1,390	NA
Grand total	7,860	NA

p/ Preliminary. r/ Revised. NA Not available.

1/ Net shipments derived by subtracting the sum of producers' domestic receipts of each mill shape from the domestic industry's gross shipments of that shape.

2/ Data are rounded to three significant digits; may not add to totals shown.

Source: U.S. Department of Commerce.

TABLE 8
U.S. EXPORTS OF ALUMINUM, BY COUNTRY 1/

Country or territory	Metals and alloys, crude		Plates, sheets, bars, etc. 2/		Scrap		Total	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
1996:								
Armenia	--	--	23	\$99	--	--	23	\$99
Brazil	101	\$380	22,500	77,100	129	\$156	22,800	77,700
Canada	131,000	191,000	352,000	955,000	61,500	63,400	544,000	1,210,000
France	418	1,810	4,070	23,300	24	55	4,510	25,100
Georgia	--	--	7	47	--	--	7	47
Germany	343	1,170	21,900	30,600	190	216	22,400	31,900
Hong Kong	3,170	6,100	13,200	40,500	41,600	52,800	57,900	99,400
Italy	35	325	3,280	16,400	80	79	3,390	16,800
Japan	188,000	307,000	30,400	168,000	54,900	67,600	273,000	543,000
Korea, Republic of	20,500	36,200	22,000	93,200	37,800	42,400	80,200	172,000
Latvia	--	--	33	14	--	--	33	14
Mexico	48,000	80,400	105,000	333,000	17,100	21,300	170,000	435,000
Netherlands	410	432	1,710	8,740	375	458	2,500	9,630
Philippines	1,280	2,130	1,220	6,510	179	123	2,680	8,770
Russia	15	274	1	12	--	--	16	286
Saudi Arabia	32	40	18,900	53,900	--	--	18,900	53,900
Singapore	205	873	3,170	12,300	14	18	3,390	13,200
South Africa	13	105	1,500	5,520	--	--	1,520	5,620
Taiwan	8,650	14,800	12,800	45,700	48,200	42,100	69,600	103,000
Thailand	6,300	11,000	4,680	15,100	868	1,310	11,800	27,500
Turkmenistan	--	--	--	--	--	--	--	--
Ukraine	--	--	1	19	--	--	1	19
United Kingdom	706	4,550	18,300	86,700	12,700	17,400	31,700	109,000
Venezuela	46	173	11,600	33,600	418	424	12,100	34,200
Other	8,120	22,600	111,000	382,000	44,300	45,200	164,000	450,000
Total	417,000	682,000	760,000	2,390,000	320,000	355,000	1,500,000	3,420,000
1997:								
Armenia	--	--	--	--	--	--	--	--
Brazil	90	340	75,600	225,000	13	79	75,700	226,000
Canada	155,000	240,000	394,000	1,080,000	86,700	99,800	636,000	1,420,000
France	287	1,440	5,740	34,100	9	91	6,030	35,600
Georgia	--	--	3	20	--	--	3	20
Germany	530	1,750	8,930	34,000	395	400	9,860	36,200
Hong Kong	4,080	7,460	20,800	55,700	31,700	43,300	56,500	106,000
Italy	57	252	3,090	12,000	20	48	3,170	12,300
Japan	95,300	160,000	37,600	162,000	35,400	47,400	168,000	370,000
Korea, Republic of	14,300	27,300	28,600	108,000	33,800	42,600	76,700	178,000
Latvia	--	--	--	--	--	--	--	--
Mexico	63,000	113,000	102,000	293,000	33,400	45,600	198,000	451,000
Netherlands	85	190	1,530	8,350	67	76	1,680	8,610
Philippines	226	415	3,140	11,900	641	403	4,010	12,800
Russia	18	34	41	164	5	22	63	220
Saudi Arabia	42	32	18,100	43,500	--	--	18,200	43,600
Singapore	190	529	3,220	34,100	107	270	3,510	34,900
South Africa	179	2,720	267	1,580	--	--	446	4,300
Taiwan	9,070	16,300	14,500	46,800	61,800	64,600	85,400	128,000
Thailand	2,050	3,870	8,480	21,100	1,060	1,650	11,600	26,700
Turkmenistan	(3/)	3	--	--	--	--	(3/)	3
Ukraine	--	--	8	34	--	--	8	34
United Kingdom	1,460	13,100	14,600	75,600	4,760	9,090	20,800	97,800
Venezuela	96	581	9,740	27,300	383	523	10,200	28,400
Other	5,820	15,600	132,000	471,000	47,300	49,800	185,000	537,000
Total	352,000	606,000	882,000	2,750,000	338,000	406,000	1,570,000	3,760,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes castings, forgings, and unclassified semifabricated forms.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 9
U.S. EXPORTS OF ALUMINUM, BY CLASS 1/

Class	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	417,000	\$682,000	352,000	\$606,000
Scrap	320,000	355,000	338,000	406,000
Plates, sheets, bars, strip, etc.	703,000	2,130,000	837,000	2,460,000
Castings and forgings	12,200	105,000	10,900	131,000
Semifabricated forms, n.e.c.	44,800	147,000	33,700	155,000
Total	1,500,000	3,420,000	1,570,000	3,760,000
Manufactures:				
Foil and leaf	99,700	274,000	100,000	298,000
Powders and flakes	6,340	30,800	8,770	35,800
Wire and cable	28,500	104,000	26,500	94,100
Total	134,000	410,000	136,000	428,000
Grand total	1,630,000	3,830,000	1,710,000	4,190,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 10
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY CLASS 1/

Class	1996		1997	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	1,910,000	\$3,040,000	2,060,000	\$3,500,000
Plates, sheets, strip, etc., n.e.c. 2/	428,000	1,050,000	461,000	1,180,000
Pipes, tubes, etc.	11,300	54,300	14,200	72,800
Rods and bars	59,300	179,000	85,800	266,000
Scrap	402,000	460,000	454,000	574,000
Total	2,810,000	4,790,000	3,080,000	5,590,000
Manufactures:				
Foil and leaf 3/	57,100	207,000	64,300	231,000
Flakes and powders	1,840	5,920	2,360	6,820
Wire	76,900	148,000	81,800	165,000
Total	136,000	361,000	148,000	403,000
Grand total	2,940,000	5,150,000	3,230,000	6,000,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes plates, sheets, circles, and disks.

3/ Excludes etched capacitor foil.

Source: Bureau of the Census.

TABLE 11
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY COUNTRY 1/

Country	Metals and alloys, crude		Plates, sheets, bars, etc. 2/		Scrap		Total	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
1996:								
Argentina	1,450	\$2,270	1,030	\$2,660	3,060	\$3,490	5,540	\$8,420
Australia	1,080	1,840	1,660	4,470	1,310	1,300	4,050	7,610
Bahrain	--	--	8,930	20,200	--	--	8,930	20,200
Belgium	931	1,620	5,560	15,200	80	102	6,570	17,000
Brazil	11,700	18,400	436	1,110	415	515	12,500	20,100
Canada	1,340,000	2,210,000	296,000	674,000	223,000	265,000	1,850,000	3,150,000
Estonia	--	--	--	--	--	--	--	--
France	1,040	7,130	8,480	35,100	3,950	3,740	13,500	46,000
Germany	1,100	5,080	26,700	112,000	7,840	10,900	35,700	128,000
Italy	25	1,520	9,550	30,700	62	46	9,630	32,200
Japan	353	1,130	10,300	41,700	280	466	11,000	43,300
Kazakstan	18	226	--	--	--	--	18	226
Mexico	953	1,470	13,300	35,300	73,700	80,600	88,000	117,000
Netherlands	410	766	4,640	15,200	743	962	5,790	16,900
Norway	511	1,660	3,650	7,570	--	--	4,160	9,230
Russia	402,000	559,000	11,200	21,800	9,750	11,800	423,000	593,000
Slovenia	--	--	3,510	10,900	--	--	3,510	10,900
South Africa	2,310	3,870	3,240	7,400	204	230	5,750	11,500
Spain	120	173	19,100	42,100	6	22	19,200	42,300
Tajikistan	20,000	27,400	--	--	--	--	20,000	27,400
Ukraine	4,300	5,030	8	36	--	--	4,300	5,070
United Arab Emirates	--	--	--	--	1,920	2,160	1,920	2,160
United Kingdom	2,130	2,470	18,000	66,900	13,100	15,100	33,200	84,500
Venezuela	116,000	181,000	29,700	56,600	23,600	23,700	169,000	261,000
Other	6,330	8,600	23,000	85,700	38,300	39,900	67,600	134,000
Total	1,910,000	3,040,000	498,000	1,290,000	402,000	460,000	2,810,000	4,790,000
1997:								
Argentina	13,000	22,000	1,270	2,800	3,680	4,370	18,000	29,200
Australia	1,250	2,030	1,060	2,860	1,340	1,510	3,650	6,400
Bahrain	--	--	11,800	26,600	--	--	11,800	26,600
Belgium	321	690	4,600	13,100	140	184	5,060	14,000
Brazil	23,900	39,900	776	2,610	319	356	25,000	42,900
Canada	1,410,000	2,470,000	330,000	803,000	252,000	320,000	2,000,000	3,590,000
Estonia	4	65	--	--	--	--	4	65
France	386	4,690	10,700	48,700	6,110	6,470	17,200	59,900
Germany	1,020	4,730	38,200	146,000	2,150	4,760	41,400	156,000
Italy	18	63	3,520	12,100	16	5	3,550	12,100
Japan	134	581	19,600	77,900	947	1,640	20,700	80,200
Kazakstan	--	--	--	--	--	--	--	--
Mexico	1,740	3,740	13,200	34,800	84,900	107,000	99,900	145,000
Netherlands	2,370	14,500	4,960	16,800	1,480	2,140	8,810	33,400
Norway	765	2,640	1,660	2,930	--	--	2,420	5,570
Russia	423,000	653,000	7,640	13,000	4,670	11,600	435,000	678,000
Slovenia	--	--	3,520	11,700	--	--	3,520	11,700
South Africa	11,400	18,600	5,550	11,500	809	980	17,800	31,100
Spain	151	307	14,300	32,700	994	1,280	15,400	34,300
Tajikistan	4,030	5,540	--	--	--	--	4,030	5,540
Ukraine	4,190	6,120	19	60	614	750	4,830	6,930
United Arab Emirates	--	--	--	--	2,460	2,910	2,460	2,910
United Kingdom	18,700	30,800	19,000	74,300	10,400	14,400	48,000	119,000
Venezuela	114,000	190,000	29,700	59,000	17,100	19,700	161,000	269,000
Other	28,900	32,200	40,300	123,000	63,900	73,800	133,000	229,000
Total	2,060,000	3,500,000	561,000	1,520,000	454,000	574,000	3,080,000	5,590,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes circles, disks, rods, pipes, tubes, etc.

Source: Bureau of the Census.

TABLE 12
ALUMINUM, PRIMARY: WORLD PRODUCTION, BY COUNTRY 1/ 2/

(Thousand metric tons)

Country	1993	1994	1995	1996	1997 e/
Argentina	173 r/	175 r/	186 r/	186 r/	185
Australia	1,381	1,317	1,297	1,372	1,495 3/
Azerbaijan e/	20	15	10	10	10
Bahrain	448	447	451	461 r/	480
Bosnia and Herzegovina e/ 4/	15	10	10	10	15
Brazil	1,172	1,185	1,188	1,195 r/	1,200
Cameroon e/	87	89 3/	79 r/	82 r/	82
Canada	2,308	2,255	2,172	2,283 r/	2,327 3/
China e/	1,220	1,450	1,680 r/	1,770 r/	2,000
Croatia 4/	26	26	31	38 r/	35
Egypt	178	188	180 r/	177 r/	177
France	426	438 r/	372 r/	380 r/	390
Germany	552	505	575	576 r/	575
Ghana	175	141	135	137	152 3/
Greece	148	144	144 r/	141 r/	145
Hungary	28	31	25 e/	-- r/	--
Iceland 5/	94	99	100	104	104
India 6/	466	472	537 r/	531 r/	494 3/
Indonesia 6/	206	222	220 e/	225 e/	200
Iran e/	109 3/	116	118	118	118
Italy	156	176	198 r/	184 r/	185
Japan 7/	18	17	18	17	17
Mexico 6/	--	--	10	61 r/	65
Netherlands	232	219	216	227 r/	230
New Zealand	277	269 r/	273	285 r/	305
Norway	887	857 r/	847	863 r/	919 3/
Poland 8/	47	50	56	52 e/	55
Romania 9/	116	120 r/	141 r/	141 r/	140
Russia	2,820	2,670	2,724 r/	2,874 r/	2,906 3/
Serbia and Montenegro 4/	26	7	17	37 r/	65
Slovakia e/ 6/	39 r/	33 r/	31 r/	35 r/	35
Slovenia 4/	83 r/	77 r/	58 r/	60 r/ e/	60
South Africa	175	172	195 r/	617 r/ e/	660
Spain	364 r/	338	361 r/	362	362
Suriname	30	27 r/	28 r/	32	32
Sweden	82	84	95	98	98
Switzerland	36	24	21	27	27
Tajikistan	250 e/	235	232 r/	198	189
Turkey	59	60	62	62 r/	60
Ukraine e/	100	100	98 3/	90 r/	101 3/
United Arab Emirates: Dubai	242	247	240 e/	251 r/	250
United Kingdom	239	231	238	240	240
United States	3,695	3,299	3,375	3,577	3,603 3/
Venezuela	568	585	630	635 r/	640
Total	19,800	19,200	19,700 r/	20,800 r/	21,400

e/ Estimated. r/ Revised.

1/ World totals and estimated data are rounded to three significant digits; may not add to totals shown.

2/ Primary aluminum is defined as "The weight of liquid aluminum as tapped from pots, excluding the weight of any alloying materials as well as that of any metal produced from either returned scrap or remelted materials." International reporting practices vary from country to country, some nations conforming to the foregoing definition and others using different definitions. For those countries for which a different definition is given specifically in the source publication, that definition is provided in this table by footnote. Table includes data available through May 11, 1998.

3/ Reported figure.

4/ Primary ingot plus secondary ingot.

5/ Ingot and rolling billet production.

6/ Primary ingot.

7/ Excludes high-purity aluminum containing 99.995% or more as follows, in metric tons: 1993--20,300; 1994--23,800; 1995--28,400; 1996--29,400 (revised); and 1997--29,000 (estimated).

8/ Primary unalloyed ingot plus secondary unalloyed ingot.

9/ Primary unalloyed metal plus primary alloyed metal, thus including weight of alloying material.