

ALUMINUM

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In 2004, 6 domestic companies operated 14 primary aluminum smelters in 12 States and produced more than 2.5 million metric tons (Mt) of metal. Smelters east of the Mississippi River accounted for about 75% of the production. The value of U.S. production was estimated to be about \$4.7 billion. Four additional companies had plants that were idled during the year. The 10 domestic producers had a total of 7 smelters that were either temporarily or permanently idled in 2004. At yearend, more than 1.6 million metric tons per year (Mt/yr) of domestic primary aluminum smelting capacity, including idled potlines at operating smelters, equivalent to about 38% of total capacity, was closed.

Aluminum recovered from purchased scrap increased to 3.03 Mt. Of this recovered metal, about 60% came from new (manufacturing) scrap, and 40% came from old (discarded aluminum products) scrap. Aluminum used beverage cans (UBCs) accounted for about 58% of the reported old scrap consumption in 2004. According to the Aluminum Association Inc. (2005a), the recycling rate for aluminum UBCs was 51.2%.

The transportation and the container and packaging industries remained the leading markets for aluminum products in Canada and the United States in 2004. The transportation industry accounted for 37% of metal shipments to the United States and Canadian markets; containers and packaging, 22%; building and construction, 16%; consumer durables, 7%; electrical, 7%; and other uses, 11%.

U.S. imports for consumption increased by 14% in 2004 compared with those of 2003. Canada remained the leading shipper of aluminum materials to the United States, followed by Russia. Total exports from the United States in 2004 increased by 18% compared with those of 2003.

The price of primary aluminum ingot on the domestic and the international markets fluctuated during the year. The 2004 annual average domestic price, however, increased significantly by almost 16 cents per pound compared with that of the previous year.

At the end of 2004, total world inventories of aluminum, as reported by the International Aluminium Institute (IAI) (2005), increased compared with those of 2003. Inventories of aluminum metal and alloys held by the London Metal Exchange Ltd. (LME), however, decreased.

Primary aluminum was produced in 41 countries in 2004. China, Russia, Canada, and the United States, in decreasing order of metal produced, accounted for more than one-half of total world production. World primary metal production increased by about 7% compared with that of 2003.

Production

Primary.—Domestic primary aluminum production, which totaled a reported 2,516,362 metric tons (t), decreased 7% compared with that of 2003. Production data were obtained from

the six operating domestic producers, all of whom responded to the U.S. Geological Survey (USGS) request for production data.

Commercial Development Co. (CDC) of St. Louis, MO, bought Kaiser Aluminum Corp.'s 200,000-metric-ton-per-year (t/yr) primary aluminum smelter in Mead (Spokane), WA, at auction for \$7.4 million. CDC began dismantling the smelter and selling the smelter equipment to prepare the site for possible sale to other industrial users (Read, 2004¹).

Longview Aluminum L.L.C. permanently closed its 204,000-t/yr primary aluminum smelter in Longview, WA. The court-appointed trustee for Longview abandoned the search for a buyer/operator of the smelter and sold the equipment at auction (Platts Metals Week, 2004c).

On January 30, Ormet Corp. filed voluntary petitions for Chapter 11 protection in the U.S. bankruptcy Court for the Southern District of Ohio. The Ormet subsidiaries involved in the filing were Formcast Development Inc., Ormet Aluminum Mills Products Corp., Ormet Primary Aluminum Corp., Ormet Railroad Corp., Specialty Blanks Holding Corp., and Specialty Blanks Inc. (Ormet Corp., 2004a). In May, Ormet announced the closure of a third potline at its Hannibal, OH, smelter. The closure of the Ohio River by the Army Corps of Engineers for emergency repairs to the McAlpine Lock and Dam was cited as the reason for the company's decision to curtail production (Ormet Corp., 2004b). Earlier, Ormet had closed one-half of the billet casting capacity at the smelter (Ormet Corp., 2004c). A fourth of six potlines was closed after unionized workers commenced a work stoppage at the facility in late November (Ormet Corp., 2004d).

In August, Alcoa Inc. announced the restart of 60,000 t/yr of capacity the company had closed in April 2003 at its two Massena, NY, smelters. The smelters returned to their combined full operating capacity of 255,000 t/yr by yearend (Alcoa Inc., 2004s).

Alcoa also announced the restart of two of the four potlines at its Wenatchee, WA, smelter that had been idled since July 2001. The restart was prompted by the signing of an interim labor agreement. Members of the United Steelworkers of America (USWA) and the Aluminum Trades Council of Wenatchee, WA, voted to accept a labor agreement whereby employees at Alcoa's Wenatchee smelter would be placed on the company's "Select Benefits" healthcare benefits program beginning in January 2005 until Alcoa's master contract agreement with the USWA covering 15 Alcoa facilities is renegotiated in 2006. The ramp up of the two lines at the 184,000-t/yr smelter, which was dependent on securing acceptable power contracts, was expected to be completed by mid-2005 (Alcoa Inc., 2004a, t).

On November 2, members of the USWA ratified a new 5-year labor contract that covered workers at Alcan Inc.'s Sebree, KY,

¹A reference that includes a section mark (§) is found in the Internet Reference Cited section.

smelter. The contract reportedly included a 10.8% hourly wage increase during the 5 years but workers would have to pay more for their health insurance (Platts Metals Week, 2004e).

Workers at Alcoa's Intalco aluminum smelter in Ferndale, WA, voted down a new labor contract only to have it implemented anyway when the workers would not agree to strike. A representative of the International Association of Machinists & Aerospace Workers Union reported that 74% of the employees rejected the proposed new contract. When a majority of the workers voted against a strike, however, the company's final 4-year offer was implemented. Only one of three potlines at the Ferndale smelter operated in 2004 (Brooks, 2004a).

Members of the Aluminum Workers' Trades Council AFL-CIO reportedly accepted a new 4-year labor agreement with Columbia Falls Aluminum Co., Columbia Falls, MT, to replace a 5-year contract that expired on October 19. One of five potlines at the smelter operated in 2004 (Platts Metals Week, 2004a).

Noranda Inc. selected AmerenUE (a subsidiary of Ameren Corp.) as the power supplier to its 250,000-t/yr New Madrid, MO, aluminum smelter. The letter of intent detailed a multiyear agreement that was expected to become effective in 2005 (Brooks, 2004b).

Alcan's shareholders and board of directors approved the spinoff of the company's rolled products businesses into an independent company named Novelis Inc. Based on shipment volumes, Novelis would be the world's leading aluminum rolled products company with 38 facilities operating in 12 countries. Competition authorities in both the United States and the European Union confirmed that the spinoff satisfied the antitrust divestment requirements associated with Alcan's acquisition of Pechiney in 2003 (Alcan Inc., 2004b).

Commonwealth Industries Inc. announced the sale of its Alflex subsidiary, a leading manufacturer of electrical products with operations in California and North Carolina, to Southwire Company for a cash purchase price of approximately \$60 million. The sale was part of Commonwealth's strategic plan to focus on its core competencies of materials recycling and aluminum sheet (Commonwealth Industries Inc., 2004a).

JW Aluminum purchased Alcoa's Alumax Foils with plants in Russellville, AR, and St. Louis. The facilities manufactured aluminum foil for sale to converters, who further processed the foil to be used in industrial tapes, insulation, foodservice and other flexible packaging, pharmaceutical packaging, and various other end uses (Alcoa Inc., 2004e).

Indalex Aluminum Solutions Group, North America's leading independent supplier of aluminum extrusions, announced plans to expand capacity and capability at its Connersville, IN, plant. Indalex acquired the Connersville plant in June as part of an exchange of manufacturing assets with Ohio Valley Aluminum Co. (OVACO). OVACO assumed ownership of the former Indalex cast house in Niles, OH, that will supply aluminum billet to Indalex under a 5-year contract (Indalex Aluminum Solutions Group, 2004).

Alcoa and BHP Billiton announced the sale of their respective equity interests in Integris Metals to Ryerson Tull for \$410 million in cash and the assumption of \$250 million of Integris' debt. Integris was a metals service center company that was formed in November 2001 through the combination of the metals distribution businesses of Alcoa and BHP Billiton (Alcoa Inc., 2004c).

Alcoa announced that members of the USWA at two of its facilities—the Tifton Aluminium facility in Tifton, GA, and the Hawesville, KY, automotive casting center—ratified new 3-year labor agreements. Workers at both plants agreed to share costs for health care, joining the company's "Select Benefits" plan (Alcoa Inc., 2004i).

Secondary.—Metal recovered from new and old scrap increased to 3.03 Mt in 2004, according to data derived by the USGS from its "Aluminum Scrap" survey (table 3). Of the 63 companies and/or plants to which monthly or annual survey requests were sent, 32 responded; they represented 75% of the total scrap consumed, as listed in table 4.

According to figures released by the Aluminum Association Inc., the Can Manufacturers Institute, and the Institute of Scrap Recycling Industries, Inc., 51.5 billion aluminum UBCs were recycled in the United States in 2004, for a beverage can recycling rate of 51.2%. This reflected a 1.2% increase compared with the 2003 rate and the first increase since 1997 (Aluminum Association Inc., 2005a).

Hydro Aluminium AS (a subsidiary of Norsk Hydro ASA) invested \$8.3 million to upgrade the casthouse at its remelt facility in St. Augustine, FL. The upgrade included the installation of new casting technology, additional metal filtering equipment, and a new saw line. Upon completion, capacity at the plant would increase to 60,000 t/yr of billet (Hydro Aluminium AS, 2004a).

IMCO Recycling Inc. announced a 50% expansion of its Saginaw, MI, facility that supplied aluminum alloys to General Motors Corp. (GM). The additional alloy production would be used by GM's Saginaw Metal Casting Operations to manufacture the new all-aluminum V-8 engine for GM's full-size sport utility vehicles (IMCO Recycling Inc., 2004b).

Lancaster Aluminum LLC, a secondary smelter in Lebanon, PA, was renamed Beck Aluminum Alloys Inc., signaling full ownership by Beck Aluminum Corp., previously a part-owner of the 4-year-old facility. The facility has two electric induction furnaces and a reverberatory furnace with a combined capacity of more than 45,000 t/yr (100 million pounds per year) (Schaffer, 2004).

Industry Merger.—IMCO and Commonwealth merged to form a new company, Aleris International Inc. Aleris, which would be headquartered in Cleveland, OH, became one of the world's leading recyclers of aluminum and zinc and a leading U.S. manufacturer of aluminum sheet (Aleris International Inc., 2004). Commonwealth, a manufacturer of aluminum sheet, had direct-chill casting facilities in Kentucky and continuous casting minimills in California and Ohio. IMCO, one of the world's leading recyclers of aluminum and zinc, had 21 U.S. production plants and 5 international facilities located in Brazil, Germany, Mexico, and Wales, United Kingdom. Most of the aluminum metal recovered by IMCO was used by the construction, packaging, and transportation industries. The company's zinc plants purchased and recycled zinc scrap to produce zinc dust, zinc metal, and zinc oxide for a variety of industrial markets (Commonwealth Industries Inc., 2004b).

Consumption

The end-use shipment data reported by the Aluminum Association included aluminum product shipments in the United

States and Canada. In 2004, the combined United States and Canadian shipments of aluminum products to the transportation industry totaled 3.86 Mt. Shipments to the container and packaging industry, which was the second ranked end-use market, was 2.31 Mt. Total shipments, excluding exports, of aluminum products in 2004 increased by 7% compared with those of 2003 (table 6).

Automotive applications continued to dominate aluminum use in the U.S. transportation industry. There were several announcements during the year affecting the aluminum wheel industry. Hayes Lemmerz International Inc. closed its aluminum automotive wheel manufacturing plant in Howell, MI, and transferred the plant's production to other U.S. facilities. The closure was expected to reduce costs and to improve efficiencies and capacity utilization (American Metal Market, 2004a). GM reportedly planned to replace 2 million aluminum wheels on a number of its models with high-performance steel wheels (Burgert, 2004a). In contrast, Superior Industries International Inc. was awarded four new aluminum wheel supply contracts for DaimlerChrysler AG's 2005 Jeep Grand Cherokee and Jeep Liberty (American Metal Market, 2004b). Alcoa launched a new family of forged aluminum wheels for the 2005 Ford Motor Co. Super Duty truck line and eight new cast aluminum wheels for Nissan North America Inc. and DaimlerChrysler (Alcoa Inc., 2004j, k).

Toyota Motor Corp. announced plans to double the size of its Huntsville, AL, engine plant that would increase capacity by 150,000 units per year. The expansion would allow the plant to supply additional V-8 engines for pickup and sport utility vehicles being built in Toyota's Indiana and Texas assembly plants (American Metal Market, 2004c).

GM debuted an innovative aluminum forming process, quick plastic forming (QPF). The QPF process was developed for automotive applications and was adapted from a hot blow forming process used in the aerospace industry. The process was used to create the panels for the 2004 Chevy Malibu Maxx lift gate. By using QPF, GM was able to make the entire outer panel for the lift gate as one piece instead of two and cut the weight of the gate by nearly one-half (General Motors Corp., 2004).

A recent study indicated that railcar deliveries were expected to increase to 60,000 cars per year by 2009 from 42,000 cars shipped in 2004. One reason given for the growth was the increase in the use of low-sulfur coal by powerplants and the need to transport that coal from western mines to eastern plants. About 60% of the current fleet of rail cars has steel bodies that could be replaced with lighter weight aluminum bodies (Burgert, 2004c).

Kaiser shipped more than 1,800 t (4 million pounds) of aluminum plate to specialized producers of vehicle armor kits for military applications. Kaiser shipped most of the plate to Armor Holdings Aerospace & Defense Group that used the aluminum in combination with steel to provide ground-vehicle armor and mine blast kits for U.S. military vehicles such as the Humvee and heavy trucks (Kaiser Aluminum Corp., 2004a).

Pittsburgh Brewing Company, along with Alcoa and CCL Container, introduced a new aluminum bottle for its Iron City beer. The Iron City aluminum beer bottle was the first of its kind to be launched nationally. Alcoa and Pittsburgh Brewing continued their tradition of innovation in packaging that began in 1962 with the introduction of the first pull-top aluminum can (Alcoa Inc., 2004v). In December, Anheuser Busch Companies Inc. announced

that several of its beers would be available in 16-ounce aluminum bottles at select bars and clubs in test cities across the country. The new aluminum bottles would be manufactured by Exal USA (Anheuser Busch Companies Inc., 2004).

In the 2004 Olympic Games in Athens, Greece, aluminum was used for the Olympic Torch as well as the altar where the Olympic flame burned. The torch was made of a combination of aluminum and wood, and was created by Greek industrial designer Andreas Varostos to have the appearance of an olive leaf (JOM, 2004).

Stocks

Producer inventory data reported by the Aluminum Association included inventories held by the United States and Canadian producers. The combined United States and Canadian producers inventories of aluminum ingot, mill products, and scrap increased to 1.47 Mt at yearend 2004 from 1.40 Mt at yearend 2003 (Aluminum Association Inc., 2005b). The LME reported that primary aluminum metal ingot at its U.S. warehouses decreased dramatically to 11,900 t at yearend 2004 from more than 107,000 t at yearend 2003. At yearend, U.S. LME warehouses also held more than 104,000 t of North American Special Aluminium Alloy Contract (NASAAC) metal ingot, an increase from the 99,300 t held at the end of 2003. These U.S. warehouses no longer held any aluminum alloy ingot, having shipped out the 700 t of aluminum alloy held at the end of 2003 (London Metal Exchange Ltd., 2004).

Prices

The monthly average U.S. market price of primary aluminum metal, as reported by Platts Metals Week, fluctuated throughout most of the year. The monthly average price began the year at 76.6 cents per pound, the low for the year and, by April, had risen to 84.6 cents per pound. The monthly average price fluctuated during the next few months before starting a steady climb that began in September and ended the year at 91 cents per pound, the highest monthly average since February 1995. The average price in 2004 increased to 84.0 cents per pound, up significantly from 68.1 cents per pound in 2003.

The LME average monthly cash price for high-grade primary aluminum ingot and the average monthly spot settlement price for primary aluminum ingot on the COMEX division of the New York Commodity Exchange, Inc. followed the same general trend as the U.S. market price. The 2004 average annual LME cash price increased to 77.8 cents per pound from 64.9 cents per pound in 2003. The COMEX monthly average spot settlement price increased from 76.3 cents per pound in January to 89.6 cents per pound in December and averaged 83.1 cents per pound for the year.

Purchase prices for aluminum scrap, as quoted by American Metal Market, also fluctuated but closed at slightly higher levels than those at the beginning of the year. The 2004 yearend price ranges for selected types of aluminum scrap were as follows: mixed low-copper-content aluminum clips, 61 to 62 cents per pound; old sheet and cast aluminum, 56 to 58 cents per pound; and clean, dry aluminum turnings, 54 to 55 cents per pound.

Aluminum producers' buying price range for processed and delivered UBCs, as quoted by American Metal Market, also

closed higher at yearend. The price range began the year at 53.5 to 55.0 cents per pound and closed the year at 63 to 65 cents per pound. The annual average American Metal Market price for aluminum UBCs increased to 61.0 cents per pound in 2004 from 50.5 cents per pound in 2003.

The yearend indicator prices for selected secondary aluminum ingots, as published in American Metal Market, also increased compared with those at the beginning of the year. The closing prices for 2004 were as follows: alloy A380 (3% zinc content), 87.5 cents per pound; alloy B380 (1% zinc content), 90.2 cents per pound; alloy A360 (0.6% copper content), 94.0 cents per pound; alloy A413 (0.6% copper content), 93.9 cents per pound; and alloy 319, 92.6 cents per pound. Platts Metals Week published an annual average U.S. price of 82.3 cents per pound for A380 alloy (3% zinc content). The average annual LME cash price for a similar A380 alloy was 70.7 cents per pound and the annual average LME NASAAC cash price was 74.4 cents per pound.

Trade

Total exports of aluminum materials from the United States in 2004 were higher than those of 2003 (table 8). More than 80% of total U.S. exports in 2004 was shipped to Canada, China, and Mexico. Ninety percent of the shipments to China were in the form of aluminum scrap. Imports for consumption also increased compared with those of the previous year (table 10). Canada remained the major source country, contributing more than one-half of the total imports in 2004 (table 11), and Russia continued to be the second ranked supplier.

World Review

World production of primary aluminum metal increased by 7% in 2004 compared with that of 2003 (table 12). China, Russia, Canada, and the United States, in decreasing order of metal produced, accounted for more than one-half of total world production.

Unwrought aluminum inventories held by members of the IAI increased to 1.79 Mt at yearend 2004 from 1.63 Mt at yearend 2003. Unwrought aluminum is defined by the IAI as aluminum in its basic form made from primary metal or from scrap that is unworked in the metallurgical sense. IAI total aluminum inventories increased to 3.18 Mt at yearend 2004 from 2.97 Mt at yearend 2003. Total aluminum is unwrought aluminum plus unprocessed scrap, metal in process, and finished semifabricated (mill) products (International Aluminium Institute, 2005).

Yearend 2004 inventories of primary aluminum metal held by the LME decreased significantly to 693,000 t from 1.42 Mt at yearend 2003. Aluminum alloy inventories also decreased to 40,400 t at yearend 2004 from 62,600 t at yearend 2003; but NASAAC ingot inventories increased to 104,000 t at yearend 2004 from 99,300 t at yearend 2003 (London Metal Exchange Ltd., 2004).

Australia.—Hydro Aluminium began improvements to Potline 1 at its Kurri Kurri smelter in New South Wales. Upon completion of the upgrade, scheduled for late 2005, capacity at the smelter would increase by 6,800 t/yr to 160,000 t/yr, and emissions of dust, fluorides, and greenhouse gases were expected to be reduced by 50% to 95% (Hydro Aluminium AS, 2004e). Hydro also

announced an upgrade to the casthouse at the Kurri Kurri smelter. The upgrade would extend the smelter's product range beyond standard T-bars to include the production of primary foundry alloys and extrusion ingots (Hydro Aluminium AS, 2004c).

Brazil.—Alcoa signed a 20-year power supply agreement with Centrais Elétricas do Norte do Brasil SA (Eletronorte), a regional energy producer and seller, to purchase hydropowered electricity to supply its share of aluminum production capacity at the Alumar smelter in Sao Luis (Alcoa Inc., 2004f). Having secured the long-term power supply agreement, Alcoa began a 63,000-t/yr expansion project at Alumar. The Alumar smelter is a joint venture with BHP Billiton. Upon completion of the \$130 million expansion, scheduled for late 2005, capacity at the smelter will increase to 433,000 t/yr from 370,000 t/yr, and Alcoa's share of the output will increase from 54% to 60% (Alcoa Inc., 2004g).

Aluminio Brasileiro S.A. (Albras) [a joint venture of Companhia Vale do Rio Doce (CVRD) (51%) and Nippon Amazon Aluminum Co. Ltd. (NAAC) (49%)] also signed a 20-year agreement with Eletronorte to supply electricity to its 436,000-t/yr smelter in Barcarena (Companhia Vale do Rio Doce, 2004).

In 2003, Brazil recycled 89% of all aluminum cans sold in the country, according to the Brazilian aluminum association, Associação Brasileira do Alumínio (Abal), and the Brazilian canmakers association, Associação Brasileira dos Fabricantes de Latas de Alta Reciclabilidade. The 89% recycling rate corresponded to 112,000 t of aluminum or 8.2 billion cans. Abal attributed the growth in Brazil's recycling rate to greater participation in collection-related activities. There were more than 6,000 aluminum UBCs purchase points in Brazil, and Abal estimated that more 160,000 people earned a living by aluminum can recycling (Kinch, 2004).

Canada.—Indalex announced plans to build a third extrusion press at its Point Claire, Quebec, extrusion plant increasing capacity by 40% to about 9,000 t/yr (19.8 million pounds per year) (Foster, 2004).

Triple M Metal announced plans to build a 90,700-t/yr (200-million-pound-per-year) aluminum remelt plant in Brampton, Ontario. The plant, which would operate under the name Matalco Inc., was designed to produce extrusion billet from aluminum scrap. The company expected the plant to be operational by the end of 2005 (Platts Metals Week, 2004d).

Alcan announced the permanent closure of four Soderberg potlines at its Jonquiere (Arvida) primary aluminum smelter in Saguenay, Quebec, resulting in the loss of 90,000 t/yr of production capacity. The remaining 163,000 t/yr of capacity using prebaked technology was not affected (Alcan Inc., 2004d).

Alcoa suspended the modernization project at its Baie Comeau smelter announced in 2003. The project included the replacement of Soderberg cells and the upgrade of the prebaked potlines that would have resulted in increased production capacity. Despite the cancellation, Alcoa announced its intention to keep the 438,000-t/yr smelter operating at least until 2010, as long as environmental compliance requirements, energy availability, and market conditions would allow (Alcoa Inc., 2004h).

Alcoa and the Syndicat des Metallurgistes unis d'Amerique approved a new 5-year labor agreement covering workers at the

403,000-t/yr Aluminerie de Becancour (ABI) smelter in Quebec. Alcoa announced plans to restart the smelter, which had been operating at one-third its capacity since July, as soon as possible, with full production expected by the end of April 2005. Alcoa (75%) was the operating partner of the joint venture with Alcan (25%) (Alcoa Inc., 2004u).

Dubai.—Dubai Aluminium Company Ltd. (Dubal) awarded three contracts to SNC-Lavalin Group Inc. for work on its Jebel Ali aluminum smelter. The contracts included a feasibility study for the rehabilitation of the smelters oldest three potlines and engineering and construction management of a seventh potline and a new casthouse. Upon completion, the smelter's capacity was expected to increase to 761,000 t/yr from 686,000 t/yr (SNC-Lavalin Group Inc., 2004).

Egypt.—In September, Aluminium Co. of Egypt (Egyptalum) resumed its upgrade to Potline 5. In February, the upgrade was delayed because of necessary repairs to the smelter's wiring and electrical equipment after 24 of the 96 planned pots had been installed. Upon completion of the upgrade, capacity at the smelter would increase to 250,000 t/yr from 195,000 t/yr (Platts Metals Week, 2004b).

France.—Alcan finalized the acquisition, agreed to by Pechiney in July 2003, of the remaining 65% of the Aluminium Dunkerque smelter. With the 35% share in the smelter owned by Pechiney, now an Alcan subsidiary, Alcan became the sole owner of this 250,000-t/yr smelter (Alcan Inc., 2004a).

Germany.—IMCO announced that its German subsidiary (VAW-IMCO Guss und Recycling GmbH) signed a long-term agreement to supply molten aluminum alloys to DaimlerChrysler. Some of this metal would come from a new recycling facility that IMCO planned to build in Deizisau, near DaimlerChrysler's foundry in Stuttgart. The plant was expected to begin operations in early 2006 (IMCO Recycling Inc., 2004a).

Ghana.—Kaiser completed the sale of its interests in Volta Aluminium Company Limited (Valco) to the Government of Ghana. The sale included Kaiser's 90% interest in Valco's 200,000-t/yr primary aluminum smelter (Kaiser Aluminum Corp., 2004b).

Greece.—At yearend, Alcan announced that it entered into a binding agreement to sell its controlling interest (60.2%) in Aluminium de Grece S.A. (ADG) to Mytilineos Holdings S.A. of Greece. Under the terms of the agreement, Mytilineos and certain affiliated companies would acquire a 53% equity position in ADG. The balance of Alcan's interest may be sold to Mytilineos at a later date. The sale of shares and completion of the transaction was subject to approval from the competition authorities as well as the Greek Ministry of Development. ADG is an integrated aluminum company consisting of bauxite mining operations, an 850,000-t/yr alumina refinery, and a 165,000-t/yr aluminum smelter (Alcan Inc., 2004e).

Iceland.—Century Aluminum Co. acquired Nordural Aluminium hf from Columbia Ventures Corp. Nordural owned and operated a 90,000-t/yr primary aluminum smelter in Grundartangi, Iceland (Century Aluminum Co., 2004b). Upon reaching agreements on long-term energy supplies, Century began work on expansion of the Nordural smelter that was expected to increase capacity to 212,000 t/yr by October 2006. The energy agreement included power supply contingencies for an additional 8,000 t/yr of capacity, which could bring capacity at the smelter

to 220,000 t/yr by yearend 2006. Upon completion of the expansion, the Nordural plant would have all of the infrastructure and support facilities necessary for a further expansion to 260,000 t/yr at a later date (Century Aluminum Co., 2004a).

Alcoa broke ground on its 322,000-t/yr Fjardaal aluminum smelter in east Iceland. The \$1.1 billion project was the company's first greenfield smelter in 20 years. The smelter was scheduled to begin production in the spring of 2007 (Alcoa Inc., 2004d).

India.—National Aluminium Co. Ltd. (Nalco) reportedly received Government approval of its \$895 million expansion plan. The plan included the company's bauxite, alumina, and aluminum operations. Bauxite production from Nalco's mines in the Koraput District would increase to 6.3 Mt/yr from 4.8 Mt/yr. Capacity at the alumina refinery in Damanjodi would increase to 2.1 Mt/yr from 1.58 Mt/yr, and the Angul smelter's capacity would increase to 460,000 t/yr from 345,000 t/yr. The expansion also would require an increase in Nalco's electricity generation capacity to 1,200 megawatts (MW) from the current level of 960 MW (Mining Journal, 2004).

Kazakhstan.—RUSAL and Eurasian Financial-Industrial Co. signed a memorandum creating Eurasian Aluminium Co., a joint company that planned to build a new 500,000-t/yr aluminum smelter and a 1.5-Mt/yr alumina refinery in Kazakhstan. Work on the refinery must begin within 18 months of the company being registered (CRU Alumina Monitor, 2004).

Mexico.—In August, Norsk Hydro began construction of a new aluminum precision tubing plant in Reynosa for automotive heat transfer applications. Production was expected to start in late 2005 (Hydro Aluminium AS, 2004b).

Nigeria.—Alcoa confirmed the sale of its 10% stake in the Aluminum Smelter Co. of Nigeria (Alscon) smelter in Ikot Abasi to the Government of Nigeria. Alcoa obtained its stake in the smelter as part of its acquisition of Reynolds Metals Co. in 2000 (Alcoa Inc., 2004o).

Norway.—Norsk Hydro completed the expansion of its Sunndal primary aluminum smelter increasing production capacity to 360,000 t/yr. The plant uses Hydro's HAL 275 technology (Norsk Hydro ASA, 2005, p. 24).

Alcoa announced plans to build a \$314 million anode plant in Mosjoen, Norway. The facility, which was to be built with Elkem ASA, would produce anode for Alcoa's Fjardaal smelter in Iceland and the Mosjoen smelter in Norway, a 50-50 joint venture of Alcoa and Elkem. Construction was expected to be completed by 2007 (Alcoa Inc., 2004p).

Oman.—Alcan signed a memorandum of understanding with Oman Oil Company and the Abu Dhabi Water and Electricity Authority for a 20% equity interest in the development of a proposed 330,000-t/yr primary aluminum smelter in Sohar. Alcan would license its Pechiney AP30 technology and take a leading role in the construction and operation of the smelter. Alcan also had the option to acquire up to 60% of a planned second 330,000-t/yr potline (Alcan Inc., 2004f).

Qatar.—Dubal and Qatar's United Development Co. (UDC) abandoned a proposed plan to build a 516,000-t/yr primary aluminum smelter in the Ras Laffan industrial complex (CRU Aluminium Monitor, 2004).

Norsk Hydro and Qatar Petroleum signed an agreement to construct an aluminum smelting complex in the Mesaieed Industrial

Area, south of Doha. Planned smelter capacity of the first phase was 570,000 t/yr of primary aluminum based on Hydro's reduction cell technology. The project also included an anode plant, a casthouse, and a dedicated powerplant. The project, which would be owned 51% by Qatar Petroleum and 49% by Hydro, could be completed by 2009 (Hydro Aluminium AS, 2004d).

Romania.—Alcoa began construction of a new extrusion facility in Arad County, in northwestern Romania. Upon completion in 2005, the facility would have two presses to supply building and construction products for sale to commercial and residential customers throughout Europe (Alcoa Inc., 2004r).

Russia.—RUSAL announced the completion of the first upgrade of the casthouse at its Sayanogorsk aluminum smelter. Extrusion billet production capacity was increased to 80,000 t/yr from 30,000 t/yr, and the facility's product mix was broadened. A second stage upgrade to 160,000 t/yr was anticipated (RUSAL, 2004a). RUSAL also announced plans to add a new 35,000-t/yr aluminum alloy casting complex at its Krasnoyarsk smelter. The project was expected to be completed in 2006 (RUSAL, 2004b).

RUSAL announced that Bechtel Corporation had been hired to prepare a feasibility study for the construction of a 600,000-t/yr primary aluminum smelter in the Irkutsk region between Taishet and Talaya. The smelter would use RA-300 technology developed at RUSAL's Engineering and Technical Center. A 5-kilometer rail line would also be built to connect the site with the rail station at Taishet (RUSAL, 2004c).

Alcoa announced that it had received final approvals from the Russian Government to proceed with the purchase of RUSAL's controlling interests in the Samara and Belaya Kalitva fabrication plants. These plants have casting, extrusion, forging, and rolling capabilities (Alcoa Inc., 2004m).

South Africa.—Alcan announce that it would conduct a new feasibility study for the construction of a 660,000-t/yr aluminum smelter in Coega, Eastern Cape Province. The new study would evaluate the use of AP30 or AP35 smelting technologies. The study was scheduled to be completed in 2005 (Alcan Inc., 2004c).

Spain.—Alcoa announced plans to invest €64 million (\$80 million) in technology and environmental improvements at its smelters in Aviles, LaCoruna, and San Ciprian. The improvements reportedly would allow the plants to achieve environmental standards set by the European Union scheduled to take effect in 2007 (Alcoa Inc., 2004i).

Trinidad and Tobago.—Alcoa and the Government of the Trinidad and Tobago signed a memorandum of understanding to build an aluminum smelter at LaBrea with a capacity of at least 250,000 t/yr. The new smelter and related facilities, including a powerplant and an anode plant, was projected to cost in excess of \$1 billion. Natural gas from local fields would be converted to electricity for the smelter and the national grid. Alcoa would own 60% of the smelter and a Government enterprise would control the remainder (Alcoa Inc., 2004g). An environmental impact assessment was begun and pending its findings, an investment decision was expected in 2005 (Alcoa Inc., 2004b).

Turkey.—Hayes Lemmerz formed a joint venture to be known as Jantas Aluminum Wheels that would produce 1.5 million aluminum wheels annually. Partners in the venture to be located in Manisa, included Hayes (40%), Cromodora Wheels Spa of Ghedi,

Italy (35%), and Turkey's Inci Holding AS (35%) (Burgert, 2004b).

Venezuela.—Alcoa announced the sale of Aluminum Reynolds de Venezuela (Alreyven) to Topes Y Techos S.A. Alreyven, a small extrusion company that was acquired by Alcoa as part of the Reynolds acquisition in 2000, produced about 2,800 t/yr of extrusions (Alcoa Inc., 2004n).

Outlook

World aluminum supply appears to be adequate to meet future growth in demand. Announced brownfield and greenfield expansions will replace and supplement announced and anticipated smelter closures. Recent shortages in alumina should ease as planned refinery expansions come onstream to help reverse the recent rise in alumina costs for primary smelters. The effect of China on the world aluminum industry is still the unanswered question. An increase in the long-term demand for aluminum in China is expected, but whether that demand will be met by domestic or foreign supply has yet to be determined.

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TABLE 1
 SALIENT ALUMINUM STATISTICS¹

		2000	2001	2002	2003	2004
United States:						
Primary production						
Quantity	thousand metric tons	3,668	2,637	2,707	2,703	2,516
Value	millions	\$6,030	\$4,000	\$3,870	\$4,060	\$4,660
Price, average, U.S. market, spot	cents per pound	74.6	68.8	64.9	68.1	84.0
Inventories (December 31):						
Aluminum industry ²	thousand metric tons	1,550	1,300	1,320	1,400	1,470
LME stocks in U.S. warehouses ³	do.	(4)	28	45	207	116
Secondary recovery: ⁵	do.	3,450	2,970	2,930	2,820	3,030
New scrap	do.	2,080	1,760	1,750	1,750	1,870
Old scrap	do.	1,370	1,210	1,170	1,070	1,160
Exports, crude and semicrude	do.	1,760	1,590	1,590	1,540	1,820
Imports for consumption, crude and semicrude	do.	3,910	3,740	4,060	4,130	4,720
Supply, apparent ⁶	do.	9,610	7,990	8,070	7,880	8,460
Consumption, apparent ⁷	do.	7,530	6,230	6,320	6,130	6,590
World, production	do.	24,300	24,300	26,100 ^r	27,900 ^r	29,800 ^e

^eEstimated. ^rRevised.

¹Data are rounded to no more than three significant digits except "Primary production."

²Data from the Aluminum Association Inc.; includes ingot, semifabricated material, and scrap. Beginning in 2003, data series revised to include inventory levels for both United States and Canadian producers.

³Includes aluminum alloyed material.

⁴Less than ½ unit.

⁵Metallic recovery from purchased, tolled, or imported new and old scrap expanded for full industry coverage.

⁶Defined as domestic primary metal production plus secondary recovery plus imports minus exports plus adjustments for Government and industry stock changes.

⁷Apparent supply less recovery from purchased new scrap.

TABLE 2
PRIMARY ANNUAL ALUMINUM PRODUCTION CAPACITY IN THE UNITED STATES, BY COMPANY¹

Company	Yearend capacity (thousand metric tons)		2004 ownership
	2003	2004	
Alcan Aluminum Corp., Seabee, KY	196	196	Alcan Inc., 100%.
Alcoa Inc.:			
Alcoa, TN	210	215	Alcoa Inc., 100%.
Badin, NC	120	120	Do.
Evansville, IN (Warrick)	309	309	Do.
Ferndale, WA (Intalco)	278	278	Alcoa Inc., 61%; Mitsui & Co. Ltd., 39%.
Frederick, MD (Eastalco)	195	195	Do.
Massena, NY (St. Lawrence)	125	125	Alcoa Inc., 100%.
Massena, NY	130	130	Do.
Mount Holly, SC	224	224	Alcoa Inc., 50.3%; Century Aluminum Co., 49.7%.
Rockdale, TX	264	267	Alcoa Inc., 100%.
Wenatchee, WA	227	184	Do.
Total	2,080	2,050	
Century Aluminum Co.:			
Hawesville, KY	244	244	Century Aluminum Co., 100%.
Ravenswood, WV	170	170	Do.
Total	414	414	
Columbia Falls Aluminum Co., Columbia Falls, MT	168	168	Glencore International AG, 100%.
Goldendale Aluminum Co., Goldendale, WA	160	160	Private interest, 60%; employees, 40%.
Kaiser Aluminum & Chemical Corp., Mead (Spokane), WA	200	--	MAXXAM Inc., 100%.
Longview Aluminum, L.L.C., Longview, WA	204	--	Michigan Avenue Partners, 100%.
Noranda Aluminum Inc., New Madrid, MO	250	250	Noranda Mines Ltd., 100%.
Northwest Aluminum Corp., The, Dalles, OR	82	82	Private interest, 100%.
Ormet Primary Aluminum Corp., Hannibal, OH	265	265	Ormet Corp., 100%.
Vanalco Inc., Vancouver, WA	116	116	Glencore International AG, 100%.
Grand total	4,140	3,700	

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

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

(Metric tons)

Class	Calculated recovery		
	Consumption	Aluminum	Metallic
2003:			
Secondary smelters	1,520,000	1,030,000	1,110,000
Integrated aluminum companies	852,000	691,000	736,000
Independent mill fabricators	746,000	651,000	696,000
Foundries	93,600	78,100	83,400
Other consumers	8,170 [†]	8,100 [†]	8,100 [†]
Total	3,220,000 [†]	2,460,000 [†]	2,630,000
Estimated full industry coverage	3,460,000	2,640,000	2,820,000
2004:			
Secondary smelters	1,630,000	1,130,000	1,210,000
Integrated aluminum companies	754,000	628,000	668,000
Independent mill fabricators	904,000	790,000	844,000
Foundries	91,600	76,200	81,400
Other consumers	8,210	7,340	7,360
Total	3,390,000	2,630,000	2,810,000
Estimated full industry coverage	3,650,000	2,830,000	3,030,000

[†]Revised.

¹Excludes recovery from other than aluminum-base scrap.

²Data are rounded to no more than 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 2004^{1,2}

(Metric tons)

Class of consumer and type of scrap	Stocks, January 1	Net receipts ³	Consumption	Stocks, December 31
Secondary smelters:				
New scrap:				
Solids	12,200	278,000	269,000	20,800
Borings and turnings	4,300	207,000	206,000	4,700
Dross and skimmings	4,640	451,000	451,000	4,470
Other ⁴	751	227,000	226,000	1,650
Total	21,900	1,160,000	1,150,000	31,600
Old scrap:				
Castings, sheet, clippings	7,630	276,000	275,000	8,360
Aluminum-copper radiators	1,400	15,900	15,800	1,510
Aluminum cans ⁵	1,070	68,600	68,700	1,020
Other ⁶	3,230	109,000	110,000	2,160
Total	13,300	469,000	470,000	13,000
Sweated pig	190	10,400	10,200	448
Total secondary smelters	35,400	1,640,000	1,630,000	45,100
Integrated aluminum companies, foundries, independent mill fabricators, other consumers:				
New scrap:				
Solids	8,470 ^r	695,000	692,000	11,600
Borings and turnings	465	16,600	16,600	465
Dross and skimmings	220 ^r	7,770	7,760	232
Other ⁴	5,950 ^r	262,000	263,000	4,790
Total	15,100 ^r	981,000	979,000	17,100
Old scrap:				
Castings, sheet, clippings	3,240	108,000	107,000	4,130
Aluminum-copper radiators	188 ^r	5,830	5,550	465
Aluminum cans ⁵	13,100	656,000	665,000	4,450
Other ⁶	22	--	--	22
Total	16,500 ^r	770,000	778,000	9,060
Sweated pig	1	576	562	15
Total integrated aluminum companies, etc.	31,700 ^r	1,750,000	1,760,000	26,200
All scrap consumed:				
New scrap:				
Solids	20,600 ^r	973,000	961,000	32,400
Borings and turnings	4,770	223,000	223,000	5,160
Dross and skimmings	4,860 ^r	458,000	458,000	4,700
Other ⁴	6,700 ^r	489,000	489,000	6,440
Total	37,000 ^r	2,140,000	2,130,000	48,700
Old scrap:				
Castings, sheet, clippings	10,900	384,000	383,000	12,500
Aluminum-copper radiators	1,590 ^r	21,800	21,400	1,970
Aluminum cans	14,200	725,000	734,000	5,470
Other ⁶	3,250	109,000	110,000	2,180
Total	29,900	1,240,000	1,250,000	22,100
Sweated pig	191	11,000	10,700	462
Total of all scrap consumed	67,000 ^r	3,390,000	3,390,000	71,300

^rRevised. -- Zero.

¹Includes imported scrap. According to reporting companies, 8.66% of total receipts of aluminum-base scrap, or 297,000 metric tons, was received on toll arrangements.

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Includes inventory adjustment.

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

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

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

TABLE 5
 PRODUCTION AND SHIPMENTS OF SECONDARY ALUMINUM ALLOYS BY INDEPENDENT SMELTERS
 IN THE UNITED STATES¹

(Metric tons)

	2003		2004	
	Production	Net shipments ²	Production	Net shipments ²
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	21,100	21,200	18,400	18,700
380 and variations	317,000	318,000	270,000	270,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	49,200	48,700	49,200	49,700
No. 319 and variations	97,000	96,800	123,000	124,000
F-132 alloy and variations	25,800	26,600	26,000	26,400
Al-Mg alloys	2,360	2,310	1,490	1,300
Al-Zn alloys	1,760	1,620	2,020	2,110
Al-Si alloys (0.6% to 2.0% Cu)	37	56	551	551
Al-Cu alloys (1.5% Si, maximum)	4,570	4,620	3,910	3,910
Al-Si-Cu-Ni alloys	63	65	--	1
Other	390	437	236	272
Wrought alloys, extrusion billets	236,000	235,000	290,000	288,000
Miscellaneous:				
Steel deoxidation	W	W	W	W
Pure (97.0% Al)	W	W	W	W
Aluminum-base hardeners	3,380	3,330	--	--
Other ³	72,300 ^r	73,400 ^r	78,300	77,200
Total	831,000 ^r	832,000 ^r	863,000	862,000
Less consumption of materials other than scrap:				
Primary aluminum	121,000	XX	122,000	XX
Primary silicon	39,600	XX	36,500	XX
Other	8,030	XX	6,800	XX
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot ⁴	663,000 ^r	XX	697,000	XX

^rRevised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous, other."

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes inventory adjustment.

³Includes other diecast alloys.

⁴No allowance made for meltloss of primary aluminum and alloying ingredients.

TABLE 6
DISTRIBUTION OF END-USE SHIPMENTS OF ALUMINUM PRODUCTS
IN THE UNITED STATES AND CANADA, BY INDUSTRY¹

Industry	2003 ^r		2004 ^p	
	Quantity (thousand metric tons)	Percentage of grand total	Quantity (thousand metric tons)	Percentage of grand total
Containers and packaging	2,240	21.0	2,310	20.3
Building and construction	1,560	14.6	1,680	14.8
Transportation	3,540	33.2	3,860	33.9
Electrical	653	6.1	723	6.4
Consumer durables	689	6.5	730	6.4
Machinery and equipment	659	6.2	730	6.4
Other markets	415	3.9	416	3.7
Total to domestic users	9,760	91.5	10,400	91.8
Exports ^c	905	8.5	929	8.2
Grand total	10,700	100.0	11,400	100.0

^cEstimated. ^pPreliminary. ^rRevised.

¹Data are rounded to no more than 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, 3}

(Thousand metric tons)

	2002 ^r	2003 ^r	2004 ^p
Wrought products:			
Sheet, plate, foil	4,450	4,400	4,780
Pipe, tube, extruded shapes	1,550	1,520	1,660
Rod, bar, wire, cable	559	532	585
Forgings (including impacts)	94	104	116
Powder, flake, paste	57	56	61
Total	6,710	6,610	7,200
Castings:			
Sand	279	287	222
Permanent and semipermanent mold	693	724	766
Die	1,280	1,210	1,290
Other	206	190	162
Total	2,450	2,410	2,440
Grand total	9,160	9,030	9,630

^pPreliminary. ^rRevised.

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

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Wrought products data series includes net shipments in both the United States and Canada.

Source: The Aluminum Association Inc.

TABLE 8
U.S. EXPORTS OF ALUMINUM, BY COUNTRY¹

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)
2003:								
Azerbaijan	--	--	4	\$29	--	--	4	\$29
Brazil	88	\$272	16,400	54,100	(3)	\$3	16,500	54,400
Canada	120,000	197,000	476,000	1,170,000	141,000	165,000	737,000	1,530,000
China	183	680	24,700	68,100	244,000	234,000	269,000	303,000
France	107	302	4,600	33,900	5	102	4,720	34,300
Germany	949	7,620	5,080	43,800	372	985	6,400	52,400
Hong Kong	110	552	4,960	16,800	22,500	29,800	27,600	47,200
Italy	9	67	2,290	13,900	3	7	2,310	14,000
Japan	3,790	10,500	6,950	64,200	27,100	33,400	37,800	108,000
Kazakhstan	--	--	237	553	--	--	237	553
Korea, Republic of	317	1,300	16,100	61,700	45,000	54,000	61,400	117,000
Mexico	85,800	122,000	116,000	388,000	51,700	66,000	254,000	576,000
Netherlands	291	1,190	672	4,690	55	597	1,020	6,480
Philippines	2	3	572	2,740	--	--	573	2,740
Russia	64	146	114	656	--	--	178	802
Saudi Arabia	2	8	11,500	25,300	--	--	11,500	25,300
Singapore	163	1,100	1,440	13,900	85	152	1,690	15,100
South Africa	4	16	169	1,430	--	--	174	1,450
Taiwan	190	505	10,300	28,400	27,800	31,200	38,300	60,200
Thailand	41	149	5,730	19,200	1,900	1,690	7,670	21,000
Ukraine	(3)	10	31	103	--	--	31	113
United Kingdom	479	2,490	9,920	75,400	464	721	10,900	78,700
Venezuela	7	30	2,340	6,280	42	51	2,390	6,360
Other	1,460	5,200	29,500	147,000	14,700	14,700	45,600	167,000
Total	214,000	351,000	746,000	2,240,000	577,000	633,000	1,540,000	3,220,000
2004:								
Azerbaijan	--	--	3	20	--	--	3	20
Brazil	1,120	2,470	11,600	50,800	78	126	12,800	53,300
Canada	132,000	250,000	523,000	1,470,000	142,000	186,000	797,000	1,910,000
China	454	1,220	36,200	100,000	314,000	321,000	350,000	423,000
France	124	586	6,220	47,900	176	322	6,520	48,800
Germany	439	1,460	4,640	34,900	245	407	5,320	36,800
Hong Kong	95	516	9,180	32,200	10,800	16,000	20,000	48,700
Italy	228	502	2,060	14,000	42	47	2,330	14,600
Japan	5,170	14,900	7,400	71,900	23,300	32,900	35,900	120,000
Kazakhstan	--	--	55	331	--	--	55	331
Korea, Republic of	809	3,290	16,500	77,500	54,300	70,800	71,600	152,000
Mexico	150,000	267,000	162,000	490,000	38,100	56,000	350,000	812,000
Netherlands	365	1,370	744	4,830	222	588	1,330	6,790
Philippines	--	--	142	1,150	--	--	142	1,150
Russia	5	21	27	381	--	--	32	402
Saudi Arabia	29	215	17,400	42,200	(3)	3	17,400	42,500
Singapore	215	1,290	1,680	16,200	362	234	2,260	17,700
South Africa	1	12	223	2,010	--	--	224	2,030
Taiwan	641	1,600	5,900	25,300	39,200	49,200	45,700	76,100
Tajikistan	--	--	84	661	--	--	84	661
Thailand	172	678	5,090	20,600	4,920	5,720	10,200	27,000
Ukraine	--	--	(3)	14	--	--	(3)	14
United Kingdom	833	3,450	11,700	86,500	165	294	12,700	90,200
Venezuela	20	78	1,650	6,560	3	30	1,670	6,670
Other	5,530	14,600	34,600	196,000	32,200	31,200	72,300	244,000
Total	298,000	565,000	857,000	2,790,000	660,000	773,000	1,820,000	4,130,000

See footnotes at end of table.

TABLE 8—Continued
U.S. EXPORTS OF ALUMINUM, BY COUNTRY¹

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes castings, forgings, and unclassified semifabricated forms.

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 9
U.S. EXPORTS OF ALUMINUM, BY CLASS¹

Class	2003		2004	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	214,000	\$351,000	298,000	\$565,000
Scrap	577,000	633,000	660,000	773,000
Plates, sheets, bars, strip, etc.	690,000	1,900,000	795,000	2,380,000
Castings and forgings	20,000	142,000	21,900	175,000
Semifabricated forms, n.e.c.	36,800	198,000	40,100	237,000
Total	1,540,000	3,220,000	1,820,000	4,130,000
Manufactures:				
Foil and leaf	72,900	235,000	85,000	287,000
Powders and flakes	12,000	50,400	12,300	53,500
Wire and cable	30,400	80,000	32,200	96,500
Total	115,000	365,000	129,000	437,000
Grand total	1,650,000	3,590,000	1,950,000	4,570,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 10
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY CLASS¹

Class	2003		2004	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	2,870,000	\$4,270,000	3,250,000	\$5,880,000
Plates, sheets, strip, etc., n.e.c. ²	653,000	1,510,000	724,000	1,950,000
Pipes, tubes, etc.	26,900	134,000	34,900	171,000
Rods and bars	142,000	435,000	179,000	581,000
Scrap	440,000	496,000	535,000	655,000
Total	4,130,000	6,840,000	4,720,000	9,240,000
Manufactures:				
Foil and leaf ³	110,000	354,000	107,000	378,000
Powders and flakes	5,570	18,500	5,360	18,700
Wire	156,000	269,000	175,000	359,000
Total	271,000	642,000	288,000	756,000
Grand total	4,400,000	7,480,000	5,010,000	10,000,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes circles, disks, plates, and sheets.

³Excludes etched capacitor foil.

Source: U.S. Census Bureau.

TABLE 11
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY COUNTRY¹

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)
2003:								
Argentina	70,300	\$110,000	1,000	\$2,450	495	\$592	71,800	\$113,000
Australia	78,100	70,300	116	671	9	10	78,200	71,000
Azerbaijan	--	--	1	3	--	--	1	3
Bahrain	3,010	4,630	15,500	31,200	--	--	18,500	35,800
Belgium	7	42	10,300	25,800	(3)	2	10,300	25,800
Brazil	72,100	108,000	16,500	38,500	3,880	6,290	92,500	153,000
Canada	1,730,000	2,640,000	439,000	1,010,000	306,000	352,000	2,480,000	4,000,000
China	559	1,040	25,200	71,500	328	536	26,100	73,100
France	714	5,810	6,020	25,000	497	492	7,230	31,300
Germany	10,400	22,100	67,300	231,000	721	701	78,500	254,000
Italy	(3)	2	2,260	9,660	--	--	2,260	9,670
Japan	294	656	8,240	39,800	1,070	1,550	9,600	42,000
Korea, Republic of	12	55	6,380	17,000	--	--	6,390	17,100
Mexico	3,680	7,160	17,200	62,400	71,200	75,000	92,100	145,000
Netherlands	670	1,830	2,600	11,200	289	401	3,560	13,400
Norway	502	1,110	160	598	--	--	662	1,710
Panama	--	--	836	2,350	2,300	2,520	3,130	4,870
Russia	627,000	910,000	45,200	90,800	5,160	6,880	677,000	1,010,000
Slovenia	--	--	4,740	12,300	--	--	4,740	12,300
South Africa	9,380	13,500	36,700	81,900	--	--	46,100	95,400
Spain	128	410	764	2,900	21	28	913	3,340
United Arab Emirates	51,400	81,200	3	30	719	808	52,100	82,100
United Kingdom	4,040	6,240	3,050	21,900	3,820	3,310	10,900	31,500
Venezuela	182,000	253,000	23,800	41,900	7,970	8,940	214,000	304,000
Other	20,600	32,600	90,000	244,000	36,000	35,800	147,000	312,000
Total	2,870,000	4,270,000	823,000	2,080,000	440,000	496,000	4,130,000	6,840,000
2004:								
Argentina	75,400	115,000	583	2,220	204	259	76,200	118,000
Australia	65,100	123,000	87	1,340	35	39	65,200	124,000
Bahrain	2,670	4,910	13,100	29,600	--	--	15,800	34,500
Belgium	688	1,220	11,600	32,100	--	--	12,300	33,300
Brazil	226,000	399,000	31,700	77,000	4,770	8,950	262,000	485,000
Canada	1,660,000	3,070,000	489,000	1,340,000	353,000	422,000	2,500,000	4,830,000
China	13,900	25,000	52,800	159,000	230	352	67,000	184,000
France	2,610	10,500	7,770	32,300	271	388	10,600	43,100
Germany	4,380	13,400	81,500	291,000	933	932	86,800	306,000
Italy	450	776	2,030	11,700	--	--	2,480	12,500
Japan	1,750	4,220	12,100	57,600	569	1,990	14,500	63,900
Korea, Republic of	68	308	3,380	13,400	29	37	3,480	13,800
Mexico	1,260	2,510	21,400	73,000	84,700	103,000	107,000	179,000
Netherlands	1,110	2,990	2,840	15,900	229	657	4,180	19,600
Norway	4,110	9,000	121	510	5	9	4,240	9,520
Panama	--	--	404	1,350	3,220	4,090	3,620	5,440
Russia	904,000	1,590,000	37,600	90,500	9,860	15,100	952,000	1,690,000
Slovenia	--	--	4,930	15,400	--	--	4,930	15,400
South Africa	40,000	69,300	36,100	87,500	--	--	76,100	157,000
Spain	114	362	1,730	6,820	--	--	1,850	7,180
Ukraine	--	--	--	--	57	155	57	155
United Arab Emirates	54,300	102,000	79	254	487	652	54,800	103,000
United Kingdom	6,340	12,800	2,870	19,400	4,360	5,590	13,600	37,800
Venezuela	138,000	239,000	19,900	37,800	20,300	27,900	178,000	304,000
Other	46,200	86,800	104,000	315,000	52,300	62,600	203,000	465,000
Total	3,250,000	5,880,000	938,000	2,710,000	535,000	655,000	4,720,000	9,240,000

See footnotes at end of table.

TABLE 11—Continued
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY COUNTRY¹

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

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

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 12
ALUMINUM, PRIMARY: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2000	2001	2002	2003	2004
Argentina	262	245	269	272	270 ^e
Australia	1,769	1,797	1,836	1,857	1,900 ^e
Azerbaijan	--	--	--	19	30 ^e
Bahrain	509	523	519	532 ^r	530 ^e
Bosnia and Herzegovina ^{e,3}	95	96	103 ^r	111 ^r	115
Brazil	1,277	1,140	1,318	1,381	1,457
Cameroon	86	81 ^r	67 ^r	77 ^r	77 ^e
Canada	2,373	2,583	2,709	2,792	2,592
China ^e	2,800	3,250	4,300	5,450	6,670
Croatia ³	15	16	--	--	-- ^e
Egypt	189 ^r	191 ^r	195 ^r	195 ^r	215
France	441	462	463	443 ^r	450 ^e
Germany	644	652	653	661 ^r	675
Ghana	137	144	117	13	-- ^e
Greece	168	166	165	165	165 ^e
Hungary ^e	34 ⁴	34	35	35	35
Iceland ⁵	224	243	264	266 ^r	271
India ⁶	644	624	671	799 ^r	862
Indonesia ^{e,6}	160	180	160	200 ^r	230
Iran	140 ^e	160	169	170	170 ^e
Italy	189	187	190	191 ^r	190 ^e
Japan ⁷	7	7	6	7	6
Mexico ⁶	61	52	39	--	-- ^e
Mozambique	54	266	273	408	547
Netherlands	302	294	284	278 ^r	326
New Zealand	328	322	335 ^e	340 ^e	350
Norway	1,026	1,068	1,096	1,192 ^r	1,322
Poland ⁸	47	45	49 ^r	45 ^r	51 ^e
Romania ⁹	179	182	187	190	190 ^e
Russia	3,245	3,300	3,347	3,478	3,593
Serbia and Montenegro ³	88	100	112	112 ^r	115 ^e
Slovakia ⁶	137 ^r	134 ^r	147 ^r	165 ^r	160 ^e
Slovenia ³	84	77	88	110 ^r	110 ^e
South Africa	673	662	707	738	863
Spain	366	376	380	389 ^r	398
Sweden	101	102	101	101	101
Switzerland	36	36	40	44 ^r	45
Tajikistan	269	289	308	319	358
Turkey ^e	61	62 ⁴	63	63	60

See footnotes at end of table.

TABLE 12—Continued
ALUMINUM, PRIMARY: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2000	2001	2002	2003	2004
Ukraine ⁹	104	106	112	114	113
United Arab Emirates, Dubai ⁶	470	500	536	560 ^{r,4}	683 ⁴
United Kingdom	305	341	344	343 ^r	360
United States	3,668	2,637	2,707	2,703	2,516
Venezuela	571	571	605	601	624
Total	24,300	24,300	26,100 ^r	27,900 ^r	29,800

^cEstimated. ^rRevised. -- Zero.

¹World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Primary 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 5, 2005.

³Primary ingot plus secondary ingot.

⁴Reported figure.

⁵Ingot and rolling billet production.

⁶Primary ingot.

⁷Excludes high purity aluminum containing 99.995% or more as follows, in metric tons: 2000—40,956; 2001—26,586; 2002—40,443; 2003—44,000 (revised); and 2004—45,000 (estimated).

⁸Primary unalloyed ingot plus secondary unalloyed ingot.

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