



2006 Minerals Yearbook

ALUMINUM

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Domestic primary smelters produced 2.28 million metric tons (Mt) of aluminum metal valued at \$6.11 billion during 2006. At yearend, 6 companies were operating 14 domestic primary aluminum smelters in 11 States. Smelters east of the Mississippi River accounted for about 68% of the production. Five smelters remained temporarily idled at the end of the year. At yearend, about 36% [1.3 million metric tons per year (Mt/yr)] of domestic primary aluminum smelting capacity, including idled potlines at operating smelters, was not utilized.

Aluminum recovered from purchased scrap increased to 3.51 Mt. Of this recovered metal, 66% came from new (manufacturing) scrap, and 34% came from old (discarded aluminum products) scrap. Aluminum used beverage cans (UBCs) accounted for 54% of the reported old scrap consumed in 2006. According to the Aluminum Association Inc. (2007b), the United States recycling rate for aluminum UBCs was 51.6%.

The transportation and the container and packaging industries remained the leading markets for aluminum products in Canada and the United States in 2006. The transportation industry accounted for 38% of United States and Canadian metal shipments; containers and packaging, 22%; building and construction, 16%; consumer durables, 7%; electrical, 7%; machinery and equipment, 7%; and other uses, 3%.

The 2006 annual average U.S. market price of primary aluminum ingot increased 33% to \$1.214 per pound from 91.0 cents per pound in 2005. The monthly average price stayed above \$1.00 per pound throughout the year.

At the end of 2006, total world inventories of aluminum, as reported by the International Aluminium Institute (IAI) (2007), decreased by 8% compared with those of 2005. Combined inventories of aluminum metal and alloys held by the London Metal Exchange Ltd. (LME), however, increased by 10%.

Primary aluminum was produced in 42 countries in 2006. 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 5% compared with that of 2005, primarily owing to a 20% increase in production in China.

Production

Primary.—Domestic primary aluminum production, which totaled a reported 2.28 Mt, decreased by 8% compared with that of 2005. Domestic production data were obtained from the six operating producers, all of which responded to the U.S. Geological Survey (USGS) request for production data.

The Bonneville Power Administration (BPA) announced plans to increase employment in the Northwest by providing up to \$59 million per year in payments to purchase electricity starting in the fall of 2006 to three companies with smelters

idled or operating less than 30% of capacity. The companies involved were Alcoa Inc., Columbia Falls Aluminum Co., and Golden Northwest Aluminum Holding Co. (Bonneville Power Administration, 2006).

Kentucky's Governor signed legislation sought by the operators of powerplants and the two primary smelters in the State that would allow surplus electricity to be sold to out-of-State customers should there be a shutdown at a smelter. The revisions to the law opened the way for Alcan Inc. to negotiate a power contract with Big Rivers Electric Corp. for the Sebree, KY, smelter through at least 2023. Century Aluminum Co. and Kenergy Corp. negotiated a contract also to last until at least 2023 for the Hawesville, KY, smelter (Brooks, 2006a).

Following the financial assistance deal with the BPA, Alcoa announced plans to restart a second potline in 2007 at the 278,000-metric-ton-per-year (t/yr) Intalco smelter in Ferndale, WA. Only one of three potlines had been in operation since 2003 (Alcoa Inc., 2006a). In July, Alcoa obtained full ownership of the Intalco smelter and the Eastalco smelter in Fredrick, MD, from joint owners Mitsui & Co. Ltd. and YKK Corp. The 195,000-t/yr Eastalco smelter has been idled since December 2005 because of high electricity prices (Alcoa Inc., 2006f). The United Steelworkers (USW) ratified a 4-year contract in June with Alcoa, covering approximately 9,000 hourly employees at 15 locations nationwide (Alcoa Inc., 2006e).

In May, Century Aluminum Co. and the USW signed a 4-year agreement at the Hawesville, KY, smelter. The smelter has a capacity of 244,000 t/yr (Century Aluminum Co., 2006e). A 3-year agreement between Century and the USW was ratified by workers at the Ravenswood, WV, smelter in August (Century Aluminum Co., 2006f). One potline was shut down for about 2 months after a strike notice was issued by the union during the negotiations, which had started in May (Century Aluminum Co., 2006d).

In December, production resumed at the 265,000-t/yr smelter in Hannibal, OH, owned by Ormet Corp. (Ormet Corp., 2006c). Production had stopped in November 2004 as a result of labor disputes. While a new contract with the USW was ratified in July that ended the strike, a new electricity supply contract was not signed with American Electric Power Inc. until October (Ormet Corp., 2006a, b).

Secondary.—Metal recovered from new and old scrap increased to 3.51 Mt in 2006, according to data derived by the USGS from its "Aluminum Scrap" survey (table 3). Of the 83 companies and/or plants to which survey requests were sent, 51 responded, representing 88% of the total scrap consumed reported in table 4.

According to data released by the Aluminum Association, the Can Manufactures Institute, and the Institute of Scrap Recycling Industries Inc., 51.9 billion aluminum UBCs were recycled in

the United States during 2006. The UBC recycling rate was 51.6%, a slight decline from the rate in 2005 of 52% (Aluminum Association Inc., 2007b).

General Motors Corp. announced plans to improve energy efficiency and increase capacity at its foundry in Bedford, IN, which casts auto parts. The project began in July 2006, and completion was projected for late 2008 (General Motors Corp., 2006). G&S Metals Inc. opened a new secondary smelter in Manchester, GA, to supply alloys for automotive parts manufactures in the Southeast. Two furnaces started production during the year, and two more are expected to be in production in 2007 (Schaffer, 2006b).

Arkansas Aluminum Alloys Inc. temporarily closed production of secondary aluminum after an explosion in October killed two employees. A week after the accident, the plant was operating at about one-half capacity. Secondary ingot production equipment damaged by the explosion remained idle and was not expected to be replaced until January 2007 (Schaffer, 2006a). A fire at the Jupiter Aluminum Corp. rolling mill in Hammond, IN, injured one employee, forcing the plant to shutdown in November. Construction of a new mill with upgraded equipment was expected to be completed in mid-2007. The plant produced aluminum sheet for the construction industry (Jupiter Aluminum Corp., 2007).

Consumption

Apparent consumption of aluminum in the United States declined by 11% in 2006 compared with that in 2005. Shipments of aluminum for building and construction declined by 2%, and for transportation, by less than 1% in 2006 compared with the amounts shipped in 2005. Although the price of aluminum rose during recent years, prices for copper and steel increased at a higher rate, leading to greater substitution by aluminum in products such as cable, beverage cans in Europe, and automobile parts. Although the economy of the United States experienced slowdowns in consumption by the construction and transportation sectors, Chinese consumption offset these declines (Lerner, 2006a).

Transportation.—Per unit aluminum use in automobiles continued to increase, with the average passenger vehicle produced in North America containing 145 kilograms of aluminum. In 2006, aluminum surpassed iron as the second most used material in automobiles by weight. For the first time ever, more than one-half of all engine blocks manufactured in North America were made from aluminum, a trend projected to continue (Aluminum Now, 2006).

In the aerospace sector, several new supply contracts were announced. Kaiser Aluminum Corp. signed a multiyear deal with the Boeing Co. to supply heat-treat plate (Kaiser Aluminum Corp., 2006a). Kaiser also extended a contract to supply aluminum sheet and plate products to be used for manufacturing small aircraft to A.M. Castle & Co. (Franklin Park, IL), a subcontractor of Raytheon Co. (Kaiser Aluminum Corp., 2006c). The first furnace of a three-furnace-expansion at Kaiser's Trentwood, WA, rolling mill was completed in 2006 to supply increasing orders of heat-treat plate for aircraft manufacturers. The next furnace was expected to be operating by mid-2007, and the third, by 2008 (Kaiser Aluminum Corp., 2006b).

Alcan signed multiyear agreements to supply aluminum products from the Ravenswood, WV, rolling mill for Boeing's 787 Dreamliner and regional and business jets manufactured by Bombardier Inc. (Alcan Inc., 2007, p. 67).

ThyssenKrupp Materials NA Inc.'s subsidiary TMX Aerospace announced multiyear deals to supply Bombardier and Boeing with cut-to-size aluminum sheet for manufacturing aircraft (ThyssenKrupp Materials NA Inc., 2006a, b).

FreightCar America Inc. announced that it was stepping up production of rail cars which carry coal. High demand for coal from the Powder River Basin of Wyoming created a shortage of coal cars made of aluminum (Reuters, 2006).

Containers and Packaging.—Crown Holdings Inc. converted a 12-ounce (oz) can line at its Batesville, MS, plant to produce 16-oz cans. Specialty cans accounted for 10% of beverage cans shipped during 2006 in the United States, an increase of 13% from that of 2005 (Crown Holdings Inc., 2006).

Building and Construction.—Alcoa and E. I. du Pont de Nemours and Co. have jointly developed architectural panels from a combination of aluminum sheet, polyethylene, and Kevlar®. The panels are designed to protect buildings from debris blown at speeds of up to 130 miles per hour (Alcoa Inc., 2006b).

Technology.—Novelis Inc. introduced a newly patented technology that enables multiple alloys to be produced in a single sheet. The process combines a core alloy with other alloys outside the core to produce a product with properties of multiple alloys. This process enables a strong core alloy to be combined with an outer alloy with greater corrosion resistance, or other desired qualities (Novelis Inc., 2006a).

Stocks

Total U.S. stocks of aluminum rose only slightly. According to data reported by the Aluminum Association, the combined United States and Canadian producers' inventories of aluminum ingot, mill products, and scrap decreased to 1.42 Mt at yearend 2006 from 1.43 Mt in 2005 (Aluminum Association Inc., 2007a). The LME, however, reported that primary aluminum metal ingot stocks at its U.S. warehouses increased to 92,700 metric tons (t) at yearend 2006 from 80,100 t at yearend 2005. At yearend 2006, U.S. LME warehouses also held about 146,000 t of North American special aluminum alloy contract (NASAAC) metal ingot, an increase from the 129,000 t held at yearend 2005 (London Metal Exchange Ltd., 2006).

Prices

Global demand, especially in emerging markets such as China, drove prices for all forms of aluminum in 2006. The monthly average U.S. market price of primary aluminum metal, as reported by Platts Metals Week, was volatile during the year. After finishing 2005 at \$1.061 per pound, the monthly average price continued to rise, reaching \$1.355 per pound in May, then decreased to \$1.193 per pound in June. The monthly average price declined slightly over the next several months, then turned higher, reaching \$1.241 per pound in October and finishing the year at \$1.296 per pound. The annual average price in 2006

increased to \$1.214 per pound, up significantly from 91.06 cents per pound in 2005.

The LME average monthly cash price for high-grade primary aluminum ingot followed the same general trend as the U.S. market price. The 2006 average annual LME cash price increased to \$1.163 per pound from 86.1 cents per pound in 2005. The average monthly Commodity Exchange (COMEX division of the New York Mercantile Exchange, Inc.) spot settlement price for primary aluminum ingot also followed the same general trend as the U.S. market and LME prices. The notable difference was that the COMEX monthly average price in October spiked to \$1.291 per pound from \$1.180 per pound in September before retreating briefly to \$1.217 per pound in November. The COMEX monthly average spot settlement price increased from \$1.097 per pound in January to \$1.255 per pound in December and averaged \$1.189 per pound for the year.

Except for a brief dip in February, the purchase prices for aluminum scrap, as quoted by American Metal Market, followed the upward trend in primary prices during the first half of the year. From the end of June to the end of the year, prices traded in a narrow range, with a general upturn. The 2006 yearend price ranges for selected types of aluminum scrap were as follows: mixed low-copper-content aluminum clips, 80 to 81 cents per pound; old sheet and cast aluminum, 75 to 76 cents per pound; and clean, dry aluminum turnings, 75 to 76 cents per pound.

Aluminum producers' buying price range for processed and delivered UBCs, as quoted by American Metal Market, also closed higher at yearend, following similar trends observed in the price of other scrap categories. The price range began the year at 76 to 78 cents per pound and closed the year at 84 to 86 cents per pound, averaging 85.1 cents per pound in 2006 compared to 65.4 cents per pound in 2005.

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 2006 were as follows: alloy A380 (3% zinc content), \$1.100 per pound; alloy B380 (1% zinc content), \$1.182 per pound; alloy A360 (0.6% copper content), \$1.192 per pound; alloy A413 (0.6% copper content), \$1.191 per pound; and alloy 319, \$1.150 per pound. Platts Metals Week published an annual average U.S. price of \$109.9 per pound for A380 alloy (3% zinc content). The average annual LME cash price for a similar A380 alloy was \$1.039 per pound and the annual average LME NASAAC cash price was \$1.014 per pound.

During the year, most can sheet producers announced that they would no longer offer a price ceiling in response to the continued rise in energy and aluminum prices. While efforts to remove price ceiling clauses from contracts were made in 2005, the sheet producers were more successful in 2006. Companies that announced the change in pricing policy included Alcoa, Wise Metals Group LLC, and Novelis (Brooks, 2006b).

Foreign Trade

In 2006, net exports of scrap rose by 58% compared with the amount in 2005. In 2006, net imports of crude metal declined by 7%, while the net amount of semifabricated aluminum products imported declined by 6% compared with those of 2005.

Total exports of crude and semifabricated aluminum materials from the United States in 2006 were 4% higher than those of 2005. About 79% of total U.S. exports in 2006 were shipped to China, Canada, and Mexico. More than 95% of the shipments to China were aluminum scrap (table 8).

Imports for consumption of crude aluminum decreased by 6% while imports of semifabricated aluminum materials increased by 2% compared with those of 2005. Canada remained the major source country accounting for 55% of the total imports in 2006, and Russia continued to be the second ranked supplier, accounting for 14% of total imports of aluminum (table 11).

World Industry Structure

Production.—China, Russia, Canada, and the United States, in decreasing order of metal produced, accounted for 55% of total world production. Primary aluminum production increased by 6% in 2006 compared with that of 2005 as a result of increased smelter capacity, which rose by 19% during 2006 (table 12). However, owing to greater demand, particularly in China, global inventories of crude aluminum decreased by 5% from the 2005 yearend level.

Stocks.—Unwrought aluminum inventories held by producers of the IAI decreased by 10% to 1.62 Mt at yearend 2006 from 1.80 Mt at yearend 2005. 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. Total IAI aluminum inventories decreased by 8% to 2.94 Mt at yearend 2006 from 3.19 Mt at yearend 2005. Total aluminum includes unwrought aluminum plus unprocessed scrap, metal in process, and finished semifabricated (mill) products (International Aluminium Institute, 2007).

Yearend 2006 inventories of primary aluminum metal held by the LME increased to 698,000 t from 644,000 t at yearend 2005. Aluminum alloy inventories increased to 99,300 t at yearend 2006 from 52,900 t at yearend 2005, and NASAAC ingot inventories increased to 136,000 t at yearend 2006 from 129,000 t at yearend 2005 (London Metal Exchange Ltd., 2006).

Industry Mergers.—In October, a deal was announced to combine RUSAL (Moscow), SUAL Group (Moscow), and the alumina assets of Glencore International AG (Baar, Switzerland) into a single company. The combined company will be known as United Company RUSAL and will be headquartered in Moscow. It will have the world's largest capacity for alumina and aluminum production, with operations in 17 countries on 5 continents. Total alumina capacity was expected to be 11 Mt/yr, and primary aluminum capacity was expected to be 4 Mt/yr (RUSAL, 2006e). The merger was completed in March 2007 (RUSAL, 2007).

Falconbridge Ltd.'s (Toronto, Ontario, Canada) subsidiary Noranda Aluminum Inc. (Franklin, TN), which owns a primary smelter in New Madrid, MO, became part of Xstrata plc (Zug, Switzerland) when Falconbridge was acquired by Xstrata in August (Xstrata plc, 2006).

World Review

Argentina.—Work continued on the expansion project at the Aluar Aluminio Argentino S.A.I.C. (Aluar) primary aluminum

smelter in Puerto Madryn that would increase capacity at the 275,000-t/yr smelter by 141,000 t/yr. The project included construction of a new 105,000-t/yr potline, increasing total capacity at the three existing potlines by 36,000 t/yr, expansion of the anode facility, construction of a new billet casting station, and electrical generation equipment. Completion of the project was scheduled for mid-2007 (Aluar Aluminio Argentino S.A.I.C., 2006).

Azerbaijan.—The Government of Azerbaijan seized control of Azeral from Fondel Metal Participants BV. Assets taken by the Government included the Zaglik alunite mine, the Ganja alumina refinery, and the Sumgait smelter. The Government and Fondel had a 25-year agreement for the company to invest \$1 billion to modernize the country's aluminum industry. The investment plan projected increasing the smelter capacity to 100,000 t/yr from 30,000 t/yr. The Government claimed that Fondel had not made required investments and terms of the contract were unfavorable to the country (Interfax, 2006b). After seizing control of the smelter, the Government announced plans to expand capacity to 60,000 t/yr by 2008 (Interfax, 2006a).

Bosnia and Herzegovina.—Aluminij Mostar Inc. announced plans to expand smelter capacity by 10,000 t/yr (CRU Aluminum Monitor, 2006d).

Brazil.—Expansion of the Alumar smelter in Sao Luis was completed in March with the commissioning of 52 additional smelting pots. In November 2005, 48 new smelting pots were put into production at the smelter. The 100 pots increased total capacity by 63,000 t/yr for a total of 433,000 t/yr at the smelter jointly owned by Alcoa (60%) and BHP Billiton Ltd. (40%) (Alcoa Inc., 2006d).

Companhia Brasileira de Aluminio (CBA) continued expansion at its Aluminio (Sorocoba) smelter in Sao Paulo to increase production to 470,000 t/yr by 2007 (Votorantim Group Inc., 2006).

In 2005, Brazil recycled a record 96.2% of all aluminum beverage cans sold during the year. Brazil collected and recycled more than 9.4 billion aluminum cans, the equivalent of almost 128,000 t of aluminum, making Brazil the world leader in aluminum can recycling rates for the fifth consecutive year among countries that do not have mandatory recycling laws (Associacao Brasileira do Aluminio, 2006).

Canada.—Alcan announced plans to modernize and expand the smelter at Kitimat, British Columbia. The investment of \$1.8 billion would increase capacity to 400,000 t/yr from 245,000 t/yr. The modernization will replace Soderberg pots with the latest AP 35 pot technology, which uses electricity more efficiently and produces fewer emissions. The first phase of modernization should come online in 2009 with completion of the project expected by the end of 2011 (Alcan Inc., 2006a).

China.—Despite a rapid increase in production capacity during recent years, continued expansion of China's economy has resulted in greater aluminum consumption, and China continued as a net importer of aluminum. Scrap imports as a source of raw material continued to grow in 2006. In order to assure supply, China adjusted tax policies to discourage exports of aluminum ingot and semifabricated products while encouraging scrap use, the latter also to decrease electricity consumption (Lerner, 2006b). Effective at the beginning 2006,

the 1.5% tax on scrap imports was removed (Teo, 2006). Despite these tax policies, continued high prices for primary aluminum, lower alumina prices, and capacity growth fueled strong exports during the latter half of the year (Platts Metals Week, 2006c).

In response to high alumina prices at the beginning of the year, at least 17 smelting companies agreed to cut production of primary aluminum by 10% for a total of 335,000 t (Platts Metals Week, 2006b). State-controlled Aluminum Corporation of China Ltd. (Chalco), the country's leading smelter and the world's second ranked refiner of alumina, however, did not cut its production. By April, alumina prices for some smelters had declined owing to long-term contracts and increased domestic alumina production, and production at the smelters returned to normal levels (Mok, 2006).

Chalco acquired interests in several smelters in an effort to consolidate primary aluminum smelting capacity within China. In March, Chalco closed a deal to obtain a 51% interest in the 220,000-t/yr Shanxi Huasheng smelter, and it acquired the 140,000-t/yr Fushun smelter. Chalco obtained a 29% share of the 272,000-t/yr Jiaozuo Wanfang smelter in May, a 61.3% interest in the 110,000-t/yr Zunyi smelter in June, a 55% interest in the 100,000-t/yr Shangdong Huaya smelter in July, and 51% interest in the 127,000-t/yr Gansu Hualu smelter in August (Aluminum Corporation of China Ltd., 2007, p. 15-16).

In addition to the acquisitions, Chalco continued to expand its primary aluminum capacity by greenfield construction as well as increasing the capacity of a previously owned smelter and at two of the newly acquired smelters. The new Shanxi Huaze smelter was commissioned in January with a capacity of 280,000 t/yr. Capacity expansions were announced for the Lanzhou, Fushun, and Jiaozuo Wanfang smelters, but the size of these projects and work schedules were not certain (Aluminum Corporation of China Ltd., 2007, p. 33-34).

Qingtongxia Aluminum Co. Ltd. started production from upgraded facilities at its smelter in February. The expansion project increased the smelter's capacity to 430,000 t/yr (Platts Metals Week, 2006d). Shanxi Guanlu Aluminum Co. Ltd. started production on new lines in March at its smelter, which increased capacity to 330,000 t/yr from 110,000 t/yr (Platts Metals Week, 2006e). The Datun smelter completed an expansion that raised capacity to 110,000 t/yr from 55,000 t/yr, but the startup was delayed by completion of a new powerplant built to supply electricity to the smelter. Chinalco Guizhou Zunyi Aluminium Co. Ltd. completed installation of 123 new pots to replace the Soderberg potline at its 131,000-t/yr smelter (CRU Aluminum Monitor, 2006b).

Yunnan Dongyuan Quijing Co. Ltd. had started an expansion project in August 2005 to increase the capacity of its smelter to 300,000 t/yr from 50,000 t/yr (CRU Aluminum Monitor, 2006g). Yinhai Aluminum Corp. announced plans to construct a 100,000-t/yr expansion to its smelter in Guangxi Province. The project would raise capacity to 200,000 t/yr when completed (Metal Bulletin, 2006c). Luneng Jinbei started construction on a 125,000-t/yr smelter in Sichuan Province. Completion was expected in May 2007 (Metal Bulletin, 2006b). Henan Shenhua Group Ltd. and Qin'ao Aluminum Power Group Ltd. started construction on a smelter and powerplant project which would have an initial capacity of 200,000 t/yr and would be expanded

to 300,000 t/yr. The initial phase of construction was projected to begin in early 2007 (CRU Aluminum Monitor, 2006c).

Bosai Minerals Group Ltd. announced plans to purchase the Aba smelter in Sichuan Province and expand capacity to 80,000 t/yr from 19,000 t/yr. Gansu Lanzhou Co. Ltd. was expanding its smelter capacity to 310,000 t/yr from 60,000 t/yr. The project will also include a 900-megawatt (MW) electric plant. Completion of the first phase of the expansion was expected in early 2007, and the entire project was projected to be completed in early 2008. The Sichuan E'Meishan Co. smelter was adding an additional potline with a capacity of 150,000 t/yr, bringing the smelter's total capacity to 325,000 t/yr. The first part of the expansion was expected to be operational by early 2007. The Henan Wanji Aluminum Co. completed a 150,000-t/yr expansion at its Wanji smelter, increasing capacity to 330,000 t/yr from 180,000 t/yr (CRU Aluminum Monitor, 2006d, p. 12).

Ethiopia.—An extrusion plant opened with a capacity of 1,500 t/yr and is the first business in the aluminum industry located in Ethiopia. The extrusion plant is owned by Ethio-Iran Aluminium Factory Ltd., a joint venture of the Ethiopian Government and unnamed Iranian interests (Metal Bulletin, 2006d).

Germany.—The Hamburg Aluminium Werk GmbH was sold by its owners (Norsk Hydro, Alcoa, and Austria Metall AG) to Trimet Aluminium AG. Trimet plans to restart the 130,000-t/yr smelter, which was closed in 2005 owing to high electric prices (Norsk Hydro ASA, 2006b).

Norsk Hydro's 70,000-t/yr Stade smelter was closed at the end of the year owing to high electric prices and the lack of economies of scale at the smallest primary smelter in Germany (Norsk Hydro ASA, 2006a).

Ghana.—Volta Aluminium Co. (Valco) restarted production at the 200,000-t/yr Tema smelter. Two of five potlines were started early in the year after being shuttered since April 2003. Part of one potline was shut later in the year owing to power shortages (Mining Journal, 2006a).

Hungary.—Magyar Aluminium Group closed its 35,000-t/yr Inota smelter owing to high electricity prices. The smelter had been Hungary's only primary aluminum producer (American Metal Market, 2006).

Iceland.—Alcoa continued work on the Fjardaal smelter in 2006. Ground has been broken for the greenfield smelter in 2005 and completion was scheduled for 2007. The smelter will have a capacity of 346,000 t/yr when completed (Alcoa Inc., 2007, p. 31). Alcoa began feasibility studies in the first quarter of 2006 on a second smelter at Bakki in the northern part of Iceland with a proposed capacity of 250,000 t/yr (Alcoa Inc., 2006c).

Century completed expansion work and energized all new pots at its Nordural smelter in September. The expansion increased capacity to 220,000 t/yr from 90,000 t/yr (Century Aluminum Co., 2006a). Having secured a power deal during the first quarter of 2006, further capacity expansion to 260,000 t/yr was planned for completion in 2007 (Century Aluminum Co., 2006b). Century was also moving forward with plans for a 250,000-t/yr smelter at Helguvik, and in June, signed a memorandum of understanding (MOU) with power producers Hitaveita Sudurnesja Ltd. and Orkuveita Reyjavikur Ltd. to supply electricity (Century Aluminum Co., 2006c).

India.—Vedanta Resources plc completed expansion of its Korba smelter in late 2005, bringing its total capacity to 350,000 t/yr. Delays in the full startup of production were owing to storms in May, which interrupted power supplies, but all pots were operational by the end of the 2006. Work started on a new \$2.1 billion smelter and powerplant being constructed by Vedanta in Jharsuguda, Orissa, with a capacity of 500,000 t/yr. The first phase of construction was expected to be completed in mid-2009, while the second phase was projected to be completed in late 2010 (Vedanta Resources plc, 2006, p. 6-7).

Hindalco Industries Ltd. commissioned the first phase of an expansion project at the Hirakud smelter ahead of schedule. The expansion added 150 new pots and increased capacity to 100,000 t/yr from 65,000 t/yr. The second phase to the expansion project was progressing and will increase the smelter's capacity to 143,000 t/yr. Hindalco also progressed on plans for the Aditya alumina refining and smelting complex. The bauxite mine to supply the refinery has been permitted. The project was slated to have 1.5 Mt/yr of alumina capacity and 325,000 t/yr of aluminum capacity (Hindalco Industries Ltd., 2006).

National Aluminum Company of India Ltd. (Nalco) continued progress on expanding its integrated aluminum capacity. The capacity of the Panchpatmali bauxite mine was to increase to 6.3 Mt/yr from 4.8 Mt/yr; the capacity of the Damanjodi alumina refinery was being expanded to 2.1 Mt/yr from 1.6 Mt/yr; and the Angul smelter was to increase aluminum capacity to 460,000 t/yr from 345,000 t/yr. The expansion project was projected for completion in 2008 (National Aluminum Company of India Ltd., 2006).

Iran.—Vahid Shirvan Aluminium Co. announced plans to construct a smelter with a capacity of 250,000 t/yr. The project was to be constructed by China Nonferrous Metal Industry's Foreign Engineering and Construction Co. Ltd. (Mining Journal, 2006b).

Kazakhstan.—A 250,000-t/yr smelter in Pavlodar was being built by Corica AG. The Government of Kazakhstan will own 68.24% of the smelter, and Corica will own the remainder. Completion of the first 60,000 t/yr of capacity was expected in December 2007, the next 65,000 t/yr capacity by September 2008, and completion of the entire project by 2012 (Interfax, 2006c).

Mozambique.—BHP Billiton announced that plans to expand capacity at the Mozal smelter have been put on hold until it can secure a contract for additional electricity from Eskom Holdings Ltd., the South African state-owned utility. The company intended to add a new potline, which will add 250,000 t/yr of capacity. The smelter is a joint venture between BHP Billiton, Mitsubishi Co., the Industrial Development Corporation of South Africa, and the Government of Mozambique (Metal Bulletin, 2006a).

Nigeria.—RUSAL acquired a 77.5% stake in the Aluminum Smelter Company of Nigeria (ALSCON) for \$250 million. The remainder of ALSCON stock is held by the Government of Nigeria (15%) and Ferrostaal AG (7.5%). RUSAL will be responsible for dredging the river to better facilitate transportation near the smelter in Akwa Ibom. The partners also planned to invest \$150 million during the next 3 years

to modernize the smelter, which had been closed since 2000 owing to high production costs, inadequate gas for the electric generator, and problems with transportation from the smelter to the port. No date for reopening the 193,000-t/yr smelter was announced (RUSAL, 2006b).

Norway.—Norsk Hydro closed its 22,000-t/yr Soderberg potline at its Hoyanger smelter in February (CRU Aluminum Monitor, 2006a). Norsk Hydro received approval from the Norwegian Pollution Control Board to continue operation of the 48,000-t/yr Soderberg potline at its smelter in Ardal. The potline had been scheduled for permanent closure by the end of 2006 but was expected to operate until the middle of 2007. The smelter will have 172,000 t/yr of capacity remaining (Norsk Hydro ASA, 2006e). Norsk Hydro also applied for a delay of the closure of the 107,000-t/yr Soderberg potlines at the smelter in Karmoy, which were scheduled for closure in November 2007. The company wanted to be allowed to operate the potlines until the end of 2009. The smelter will have 160,000 t/yr of capacity remaining (Norsk Hydro ASA, 2006c).

Oman.—Construction of the \$1.7 billion primary aluminum smelter in Sohar began in May. The project is a partnership between Oman Oil Company SAOC (40%), the Abu Dhabi Water and Electricity Authority (40%), and Alcan (20%). The 350,000-t/yr smelter was expected to begin production in the third quarter of 2008. The smelter's initial capacity would be from a single AP35 potline but with provisions for a second potline. In addition to casting and carbon facilities, a gas-fired powerplant would also be constructed to give the smelter a long-term dedicated power supply sufficient to meet its electricity requirements (Oman Oil Company SAOC, 2006).

Qatar.—Norsk Hydro and Qatar Petroleum Co. Ltd. signed an agreement on the construction of a smelter with an initial capacity of 585,000 t/yr, which could be expanded to 1.2 Mt/yr. The facility will include a smelter, casthouse, carbon plant, and a gas powerplant with a capacity of 1,350 MW. Construction is scheduled to begin in mid-2007 with completion in late 2009. Full production is expected to be achieved by mid-2010. Each company has an equal share in the project (Norsk Hydro ASA, 2006d).

Russia.—RUSAL introduced the use of a 400-kiloampere smelting pot at its Sayanogorsk primary smelter. The pot design was expected to operate at a daily capacity of 3 t and be 94% efficient in electrical use. The new design will be used in all smelters that the company plans to construct in the future (RUSAL, 2006d).

RUSAL started production at its new smelter in Khakass. Initial capacity of the smelter is 71,000 t/yr, but total capacity of 300,000 t/yr was expected when the construction of all potlines is completed. Completion was expected in November 2007 (RUSAL, 2006c).

RUSAL announced plans to expand production at its smelter at Bratsk by an additional 150,000 t/yr from the current capacity of 955,000 t/yr and to start construction of a smelter near Taishet. The greenfield smelter would have a capacity of 600,000 t/yr but negotiations for additional power from EvriSibEnerg may enable further expansion to 750,000 t/yr. Completion of the smelter is anticipated by 2010 (MacMillan, 2006).

RUSAL and Russian power producer OAO Hydro OGK announced plans to construct a hydroelectric powerplant on the Angara River and a primary aluminum smelter at Boguchanskaya. The powerplant would produce 3,000 MW of electricity, and the aluminum smelter would have a capacity of 600,000 t/yr. Initial production from the smelter was expected in 2009 (RUSAL, 2006a).

Saudi Arabia.—Saudi Arabian Mining Co. was developing the Az Zabirah aluminum project. The project was to consist of a 3.3-Mt/yr bauxite mine at Az Zabirah to feed an alumina refinery with a capacity of 1.4 Mt/yr at Ras Az Zawr and a primary aluminum smelter, also at Ras Az Zawr, capable of producing 620,000 t/yr. The project would also include an oil-fueled power generation plant and desalinization facility. Initial production was anticipated in 2008 (Saudi Arabian Mining Co., 2006).

Slovenia.—The Talum smelter announced it would close 35,000 t/yr of capacity from pots that do not comply with European Union environmental regulations. The smelter will replace the pots by expanding another potline with pots that are in compliance with the regulatory standards (CRU Aluminum Monitor, 2006f).

South Africa.—BHP Billiton said that its plans to expand capacity at its Hillside smelter have been put on hold until it can secure a contract for additional electricity from Eskom. The company intended to add a fourth potline if the power contract can be obtained (Metal Bulletin, 2006a).

Spain.—Modernization of Alcoa's Aviles and La Coruna smelters continued in 2006. Completion of the Aviles project was scheduled for the second quarter of 2007, and the La Coruna project was scheduled for completion a year later (Alcoa Inc., 2007, p. 31).

Switzerland.—Alcan closed the primary smelter and anode plant at Steg in April. The high cost of electricity was cited as the reason for the closure of the 44,000-t/yr smelter (Alcan Inc., 2006b).

Novelis announced plans to construct a new casthouse at its rolling mill in Sierre to produce 70,000 t/yr of multialloy automotive sheet and other high performance products. Completion was expected in early 2008 (Novelis Inc., 2006b).

Trinidad and Tobago.—Alutrin Ltd. signed a technical agreement with the China National Machinery & Equipment Import Corp. to build a 125,000-t/yr smelter. Construction was planned to start as soon as environmental permits were received. Alutrin is a joint venture between the Government-owned National Energy Corp. and Venezuelan Sural Corp. (CRU Aluminum Monitor, 2006e).

United Arab Emirates.—Dubai Aluminium Co. Ltd. announced that it had completed upgrades to capacity and efficiency at its smelter in Dubai. The primary aluminum smelter capacity increased by 100,000 t/yr to 861,000 t/yr (Dubai Aluminium Co. Ltd., 2006b). Additional expansion work was announced to increase the smelter's capacity by an additional 60,000 t/yr, bringing capacity to 920,000 t/yr. Further plans to increase capacity to a total of 1.5 Mt/yr were being considered (Dubai Aluminium Co. Ltd., 2006a).

United Kingdom.—Secondary ingot producer Bernhard Metals Ltd. was liquidated after its 18,200-t/yr smelter closed at

the start of the year. Difficulty securing scrap supplies, volatile prices, and pricing pressure from customers in the automobile industry reportedly made operating secondary smelters unprofitable (Mason, 2006).

Venezuela.—A Venezuelan policy aimed at reducing exports of raw materials resulted in domestic sales of primary aluminum at prices 1% to 10% below the LME price. This policy was put in place in 2005 and continued through 2006 (Kinch, 2006).

Upgrades to Corporacion Venezolana de Guayana's Alcasa smelter at Puerto Ordaz expanded capacity to 210,000 t/yr from 186,000 t/yr. Plans to expand capacity by another 80,000 t/yr were being considered, and plans to add a fifth potline capable of producing 150,000 t/yr were also being evaluated (Platts Metals Week, 2006a).

Outlook

World demand for aluminum was expected to increase at a slightly slower pace than the past few years. Demand from China was expected to remain strong. Expansions of primary smelters in locations with low-cost, low-polluting sources of electricity were expected to offset idled older smelters in regions with constrained power supplies and high labor costs, and capacity was expected to keep pace with global demand. Consolidation of primary producers was expected to continue as a result of globalization of the commodities markets. A relatively weak dollar, low labor costs, and cheap shipping rates in containers being returned to China were expected to result in continued scrap exports from the United States and Western Europe.

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TABLE 1
SALIENT ALUMINUM STATISTICS¹

	2002	2003	2004	2005	2006	
United States:						
Primary production:						
Quantity	thousand metric tons	2,707	2,703	2,516	2,481	2,284
Value	millions	\$3,870	\$4,060	\$4,660	\$4,980	\$6,110
Price, average, U.S. market, spot	cents per pound	64.9	68.1	84.0	91.0	121.4
Inventories (December 31):						
Aluminum industry ²	thousand metric tons	1,320	1,400	1,470	1,430	1,410
LME stocks in U.S. warehouses ³	do.	45	207	116	209	229
Secondary recovery: ⁴						
New scrap	do.	1,750	1,750	1,870	1,950 ^r	2,310
Old scrap	do.	1,170	1,070	1,160	1,080 ^r	1,200
Total	do.	2,930	2,820	3,030	3,030 ^r	3,510
Exports, crude and semicrude	do.	1,590	1,540	1,820	2,370	2,820
Imports for consumption, crude and semicrude	do.	4,060	4,130	4,720	5,330	5,180
Supply, apparent ⁵	do.	8,070	7,880	8,460	8,480 ^r	8,160
Consumption, apparent ⁶	do.	6,320	6,130	6,590	6,530 ^r	5,840
World, production	do.	26,100	28,000	29,900	31,900	33,700

^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.

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

⁵Defined as domestic primary metal production plus secondary recovery plus imports minus exports plus adjustments for Government and industry stock changes.

⁶Apparent supply less recovery from purchased new scrap.

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

Company and location	Yearend capacity (thousand metric tons)		Ownership in 2006
	2005	2006	
Alcan Aluminum Corp., Sebree, KY	196	196	Alcan Inc., 100%.
Alcoa Inc.:			
Alcoa, TN	215	215	Alcoa Inc., 100%.
Badin, NC	120	120	Do.
Evansville, IN (Warrick)	309	309	Do.
Ferndale, WA (Intalco)	278	278	Do.
Frederick, MD (Eastalco)	195	195	Do.
Massena, NY (St. Lawrence)	125	125	Do.
Massena, NY	130	130	Do.
Mount Holly, SC	224	224	Alcoa Inc., 50.3%; Century Aluminum Co., 49.7%.
Rockdale, TX	267	267	Alcoa Inc., 100%.
Wenatchee, WA	184	184	Do.
Total	2,050	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%.
Noranda Aluminum Inc., New Madrid, MO	250	250	Xstrata plc., 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	3,700	3,700	

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
2005:			
Secondary smelters	1,590,000 ^r	1,150,000 ^r	1,230,000 ^r
Integrated aluminum companies	812,000 ^r	680,000 ^r	723,000 ^r
Independent mill fabricators	842,000	739,000	788,000 ^r
Foundries	82,000	67,700	72,300
Other consumers	8,600 ^r	7,760 ^r	7,790 ^r
Total	3,330,000 ^r	2,640,000 ^r	2,820,000 ^r
Estimated full industry coverage	3,580,000 ^r	2,840,000 ^r	3,030,000 ^r
2006:			
Secondary smelters	2,060,000	1,400,000	1,490,000
Integrated aluminum companies	901,000	759,000	807,000
Independent mill fabricators	946,000	830,000	886,000
Foundries	78,700	64,600	69,100
Other consumers	8,700	7,700	7,730
Total	3,990,000	3,060,000	3,260,000
Estimated full industry coverage	4,300,000	3,290,000	3,510,000

^rRevised.

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 2006^{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:				
Extrusions	21,500 ^r	428,000	430,000	19,600
Can stock clippings	163	50,100	49,800	473
Other wrought sheet and clippings	1,690 ^r	174,000	174,000	1,360
Casting	1,870 ^r	81,300	80,700	2,430
Borings and turnings	3,610 ^r	210,000	208,000	5,480
Dross and skimmings	4,260 ^r	598,000	598,000	3,620
Other	--	8,590	8,590	--
Total	33,000 ^r	1,550,000	1,550,000	33,000
Old scrap:				
Castings	3,210 ^r	125,000	125,000	3,010
Extrusion	2,090 ^r	69,900	70,500	1,540
Aluminum cans ⁴	139	42,900	40,600	2,450
Other wrought products	460 ^r	57,600	55,500	2,600
Auto shredder scrap	2,890 ^r	186,000	186,000	2,670
Other	--	20,400	20,400	--
Total	8,800 ^r	502,000	498,000	12,300
Sweated pig	198	9,470	9,580	82
Grand total secondary smelters	42,000 ^r	2,060,000	2,060,000	45,300

See footnotes at end of table.

TABLE 4—Continued
 U.S. STOCKS, RECEIPTS, AND CONSUMPTION OF PURCHASED NEW AND OLD ALUMINUM SCRAP
 AND SWEATED PIG IN 2006^{1,2}

(Metric tons)

Class of consumer and type of scrap	Stocks, January 1	Net receipts ³	Consumption	Stocks, December 31
Integrated aluminum companies, foundries, independent mill fabricators, other consumers:				
New scrap:				
Extrusion	13,700 ^r	749,000	751,000	11,800
Can stock clippings	1,980 ^r	205,000	206,000	967
Other wrought sheet and clippings	3,050 ^r	131,000	131,000	2,880
Casting	240	26,100	26,100	240
Borings and turnings	361	16,700	16,700	361
Dross and skimmings	168	7,900	7,850	215
Total	19,500 ^r	1,130,000	1,140,000	16,400
Old scrap:				
Castings	889	30,100	29,900	1,090
Extrusion	55	1,360	1,410	8
Aluminum cans ⁴	408 ^r	664,000	660,000	3,810
Other wrought products	2,890 ^r	86,500	87,100	2,260
Auto shredder scrap	52	647	623	76
Other	--	16,200	16,200	--
Total	4,290 ^r	799,000	796,000	7,250
Sweated pig	1	86	87	--
Grand total integrated aluminum companies, etc.	23,800 ^r	1,930,000	1,930,000	23,700
All scrap consumed:				
New scrap:				
Extrusion	35,200 ^r	1,180,000	1,180,000	31,400
Can stock clippings	2,140 ^r	255,000	256,000	1,440
Other wrought sheet and clippings	4,740 ^r	304,000	305,000	4,240
Casting	2,110 ^r	107,000	107,000	2,670
Borings and turnings	3,970 ^r	227,000	225,000	5,840
Dross and skimmings	4,430 ^r	606,000	606,000	3,830
Other	--	8,590	8,590	--
Total	52,600 ^r	2,680,000	2,690,000	49,400
Old scrap:				
Castings	4,100 ^r	155,000	155,000	4,100
Extrusion	2,150 ^r	71,300	71,900	1,550
Aluminum cans	546 ^r	707,000	701,000	6,250
Other wrought products	3,350 ^r	144,000	143,000	4,860
Auto shredder scrap	2,940 ^r	186,000	187,000	2,740
Other	--	36,600	36,600	--
Total	13,100 ^r	1,300,000	1,290,000	19,500
Sweated pig	198	9,550	9,670	82
Grand total of all scrap consumed	65,900 ^r	3,990,000	3,990,000	69,000

^rRevised. -- Zero.

¹Includes imported scrap. According to reporting companies, 12.5% of total receipts of aluminum-base scrap, or 416,462 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.

⁴Used beverage cans toll treated for primary producers are included in secondary smelter tabulation.

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

(Metric tons)

	2005		2006	
	Production	Net shipments ²	Production	Net shipments ²
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	19,200 ^r	19,300 ^r	25,000	24,600
380 and variations	216,000 ^r	215,000 ^r	219,000	221,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	19,400	19,400	33,000	33,200
No. 12 and variations	1,670 ^r	1,650	1,600	1,630
No. 319 and variations	73,600 ^r	74,300 ^r	82,500	82,200
F-132 alloy and variations	22,600 ^r	22,500	17,500	17,800
Al-Mg alloys	19,400 ^r	19,700	4,580	4,580
Al-Zn alloys	2,370 ^r	2,210	2,710	2,690
Al-Si alloys (0.6% to 2.0% Cu)	291 ^r	289	2,560	2,650
Al-Cu alloys (1.5% Si, maximum)	5,180 ^r	4,940	5,180	5,180
Al-Si-Cu-Ni alloys	483 ^r	480	483	483
Other	6,850 ^r	6,820	442	442
Wrought alloys, extrusion billets	301,000^r	303,000^r	667,000	665,000
Miscellaneous:				
Steel deoxidation	18,100 ^r	18,100	40,800	41,100
Pure (97.0% Al)	W	W	W	W
Aluminum-base hardeners	W	W	W	W
Other ³	48,100 ^r	49,400 ^r	59,200	57,800
Total	754,000^r	757,000^r	1,160,000	1,160,000
Less consumption of materials other than scrap:				
Primary aluminum	116,000 ^r	XX	219,000	XX
Primary silicon	28,700 ^r	XX	32,600	XX
Other	6,980 ^r	XX	11,700	XX
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot ⁴	602,000 ^r	XX	898,000	XX

^rRevised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous, other." XX Not applicable.

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 melt loss 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	2005		2006 ^p	
	Quantity (thousand metric tons)	Percentage of grand total	Quantity (thousand metric tons)	Percentage of grand total
Containers and packaging	2,320	20.0 ^r	2,319	19.8
Building and construction	1,671 ^r	14.5 ^r	1,644	13.9
Transportation	3,939	34.0 ^r	3,931	33.4
Electrical	746 ^r	6.4 ^r	772	6.5
Consumer durables	708	6.1 ^r	746	6.3
Machinery and equipment	741 ^r	6.4 ^r	760	6.4
Other markets	336 ^r	2.9 ^r	330	2.8
Total	10,461	90.3	10,502	89.1
Exports ^e	1,125 ^r	9.7 ^r	1,285	10.9
Grand total	11,586 ^r	100.0	11,787	100.0

^eEstimated. ^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)

	2004	2005	2006 ^p
Wrought products:			
Sheet, plate, foil	4,750	4,700 ^r	4,690
Pipe, tube, extruded shapes	1,810	1,900	1,920
Rod, bar, wire, cable	397	397 ^r	420
Forgings (including impacts)	121	129	134
Powder, flake, paste	61	55	54
Total	7,140	7,180 ^r	7,210
Castings:			
Sand	221	289 ^r	335
Permanent and semipermanent mold	735	785 ^r	754
Die	1,250	1,110 ^r	1,170
Other	161	108 ^r	53
Total	2,370	2,290 ^r	2,310
Grand total	9,510	9,470 ^r	9,520

^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)
2005:								
Azerbaijan	--	--	2	\$24	--	--	2	\$24
Brazil	226	\$732	8,070	37,800	1,620	\$2,390	9,920	40,900
Canada	128,000	261,000	487,000	1,540,000	146,000	203,000	761,000	2,000,000
China	491	1,890	41,600	158,000	581,000	703,000	623,000	862,000
France	838	2,350	9,100	64,000	48	101	9,990	66,500
Germany	859	6,460	8,400	55,900	306	499	9,570	62,900
Hong Kong	236	568	7,480	33,100	11,200	17,700	18,900	51,400
Italy	177	500	3,170	22,600	⁽³⁾	4	3,350	23,100
Japan	4,520	19,000	10,700	110,000	34,900	51,600	50,100	181,000
Kazakhstan	--	--	7	797	--	--	7	797
Korea, Republic of	1,070	3,410	12,800	71,500	131,000	161,000	145,000	236,000
Mexico	184,000	342,000	232,000	697,000	75,200	109,000	490,000	1,150,000
Netherlands	131	1,380	685	5,130	103	237	919	6,750
Philippines	1	5	198	1,760	773	841	971	2,610
Russia	154	526	65	395	26	80	245	1,000
Saudi Arabia	8	18	31,100	77,000	--	--	31,100	77,000
Singapore	356	1,110	2,490	15,900	658	365	3,510	17,400
South Africa	1	9	312	3,400	--	--	314	3,410
Taiwan	360	1,780	9,320	42,500	48,400	66,700	58,100	111,000
Thailand	402	1,930	7,950	30,900	5,500	7,520	13,800	40,300
Ukraine	--	--	1	31	--	--	1	31
United Kingdom	329	2,700	17,300	122,000	469	1,070	18,100	126,000
Venezuela	12	91	1,790	7,110	21	87	1,820	7,280
Other	7,480	18,200	59,900	273,000	49,700	49,600	117,000	341,000
Total	329,000	666,000	951,000	3,370,000	1,090,000	1,370,000	2,370,000	5,410,000
2006:								
Azerbaijan	--	--	⁽³⁾	9	--	--	⁽³⁾	9
Brazil	129	667	7,720	42,900	682	1,500	8,530	45,000
Canada	119,000	310,000	475,000	1,760,000	146,000	252,000	740,000	2,320,000
China	2,510	10,000	38,600	190,000	895,000	1,480,000	936,000	1,680,000
France	83	210	13,800	91,400	22	199	13,900	91,800
Germany	558	2,970	10,100	62,600	268	978	10,900	66,500
Hong Kong	1,100	3,930	11,500	60,200	26,100	66,800	38,700	131,000
Italy	809	2,950	4,710	35,900	728	2,640	6,250	41,500
Japan	10,000	34,600	19,300	174,000	43,500	88,600	72,800	297,000
Kazakhstan	--	--	3	169	--	--	3	169
Korea, Republic of	747	2,930	14,200	80,800	153,000	258,000	168,000	342,000
Mexico	194,000	477,000	261,000	940,000	98,800	197,000	554,000	1,610,000
Netherlands	141	1,120	765	8,280	312	766	1,220	10,200
Philippines	3	25	239	4,170	233	197	475	4,390
Russia	1,140	4,040	207	1,370	24	149	1,370	5,550
Saudi Arabia	29	110	31,600	102,000	⁽³⁾	8	31,600	102,000
Singapore	167	765	1,990	18,000	241	1,330	2,400	20,100
South Africa	26	141	544	5,770	--	--	570	5,910
Taiwan	349	876	9,160	45,800	55,700	102,000	65,200	148,000
Thailand	1,450	4,910	7,150	27,200	13,400	23,800	22,000	55,900
Ukraine	6	37	18	157	--	--	24	193
United Kingdom	455	2,390	18,300	125,000	644	1,270	19,400	129,000
Venezuela	24	31	2,550	12,700	1	14	2,570	12,700
Other	13,900	46,700	62,000	317,000	46,600	64,200	123,000	428,000
Total	347,000	906,000	990,000	4,100,000	1,480,000	2,540,000	2,820,000	7,550,000

-- 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	2005		2006	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	329,000	\$666,000	346,000	\$906,000
Scrap	1,090,000	1,370,000	1,480,000	2,550,000
Plates, sheets, bars, strip, etc.	886,000	2,910,000	923,000	3,580,000
Castings and forgings	25,700	216,000	24,200	237,000
Semifabricated forms, n.e.c.	39,500	247,000	42,600	287,000
Total	2,370,000	5,410,000	2,820,000	7,550,000
Manufactures:				
Foil and leaf	87,000	320,000	95,100	401,000
Powders and flakes	9,430	46,500	7,410	41,300
Wire and cable	38,800	115,000	40,500	148,000
Total	135,000	482,000	143,000	591,000
Grand total	2,500,000	5,890,000	2,960,000	8,140,000

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	2005		2006	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	3,660,000	\$7,140,000	3,440,000	\$9,040,000
Plates, sheets, strip, etc., n.e.c. ²	927,000	2,710,000	914,000	3,230,000
Pipes, tubes, etc.	32,800	181,000	34,000	216,000
Rods and bars	232,000	774,000	269,000	1,050,000
Scrap	482,000	658,000	527,000	930,000
Total	5,330,000	11,500,000	5,180,000	14,500,000
Manufactures:				
Foil and leaf ³	136,000	506,000	141,000	600,000
Powders and flakes	6,320	25,800	6,320	31,200
Wire	195,000	432,000	197,000	571,000
Total	337,000	964,000	344,000	1,200,000
Grand total	5,670,000	12,400,000	5,530,000	15,700,000

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)
2005:								
Argentina	65,600	\$126,000	2,980	\$7,490	--	--	68,600	\$134,000
Australia	63,200	132,000	134	1,650	1,300	\$2,620	64,600	137,000
Bahrain	22,700	46,600	15,500	38,600	--	--	38,200	85,200
Belgium	36	152	13,100	41,300	28	35	13,200	41,500
Brazil	194,000	367,000	34,200	96,500	126	243	228,000	464,000
Canada	1,920,000	3,750,000	514,000	1,500,000	310,000	424,000	2,740,000	5,680,000
China	68,200	136,000	121,000	345,000	247	454	190,000	481,000
France	789	7,570	6,340	33,600	99	162	7,220	41,300
Germany	2,400	7,920	114,000	413,000	334	447	116,000	421,000
Italy	757	3,410	2,860	16,200	--	--	3,620	19,600
Japan	536	1,750	20,400	89,800	521	1,950	21,500	93,500
Korea, Republic of	87	437	2,810	12,800	--	--	2,900	13,200
Mexico	97	187	22,400	82,800	105,000	143,000	127,000	226,000
Netherlands	436	1,580	2,660	14,000	79	92	3,170	15,600
Norway	4,060	7,940	111	524	2	29	4,180	8,490
Panama	39	66	464	1,650	3,590	5,260	4,100	6,970
Russia	819,000	1,570,000	55,100	160,000	6,830	12,500	880,000	1,740,000
Slovenia	--	--	4,000	13,100	--	--	4,000	13,100
South Africa	77,700	149,000	52,100	152,000	--	--	130,000	301,000
Spain	79	279	3,100	8,050	106	203	3,280	8,530
Tajikistan	127,000	239,000	--	--	--	--	127,000	239,000
United Arab Emirates	79,100	164,000	576	1,450	718	1,170	80,400	166,000
United Kingdom	22,600	45,800	7,410	32,800	2,470	3,380	32,500	81,900
Venezuela	145,000	280,000	11,200	24,400	8,950	12,100	165,000	317,000
Other	49,200	105,000	185,000	581,000	41,100	50,500	276,000	736,000
Total	3,660,000	7,140,000	1,190,000	3,670,000	482,000	658,000	5,330,000	11,500,000
2006:								
Argentina	59,400	155,000	129	1,480	--	--	59,500	156,000
Australia	58,200	152,000	186	1,130	2,760	6,560	61,100	160,000
Bahrain	76,000	208,000	15,100	46,400	--	--	91,100	254,000
Belgium	216	727	7,860	36,400	122	242	8,200	37,400
Brazil	128,000	332,000	33,400	109,000	639	1,220	162,000	442,000
Canada	1,960,000	5,270,000	517,000	1,860,000	349,000	596,000	2,830,000	7,720,000
China	62,600	157,000	162,000	545,000	5	27	225,000	703,000
France	711	8,450	4,840	30,700	76	330	5,630	39,500
Germany	5,320	15,300	126,000	519,000	429	931	132,000	536,000
Italy	203	972	3,530	20,400	(3)	7	3,730	21,400
Japan	624	2,450	15,400	83,100	797	2,780	16,800	88,300
Korea, Republic of	872	2,780	2,880	12,500	195	383	3,950	15,700
Mexico	3,940	14,200	21,100	90,100	115,000	217,000	140,000	321,000
Netherlands	721	2,590	2,240	14,000	112	173	3,070	16,800
Norway	312	985	295	1,230	--	--	607	2,220
Panama	93	194	298	1,100	3,130	6,430	3,520	7,720
Russia	660,000	1,670,000	51,500	192,000	8,360	19,000	720,000	1,880,000
Slovakia	(3)	4	2	9	--	--	2	13
Slovenia	--	--	4,170	16,000	--	--	4,170	16,000
South Africa	80,000	201,000	54,300	169,000	--	--	134,000	370,000
Spain	147	581	1,300	5,310	--	--	1,450	5,890
Tajikistan	25,700	60,300	--	--	--	--	25,700	60,300
Ukraine	--	--	(3)	2	--	--	(3)	2
United Arab Emirates	99,600	266,000	54	165	1,670	3,290	101,000	270,000
United Kingdom	32,600	81,400	6,220	45,500	1,750	2,930	40,500	130,000
Venezuela	133,000	314,000	17,200	49,700	2,850	6,170	153,000	370,000
Other	48,400	128,000	170,000	643,000	40,100	67,200	258,000	838,000
Total	3,440,000	9,040,000	1,220,000	4,490,000	527,000	931,000	5,180,000	14,500,000

-- 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	2002	2003	2004	2005	2006
Argentina	269	272	272	272 ^r	272 ^e
Australia	1,836	1,857	1,894	1,903	1,932
Azerbaijan	--	19	30	30	30 ^e
Bahrain	519	532	532	751	872
Bosnia and Herzegovina ^{e,3}	102	113	121	131	135 ^e
Brazil	1,318	1,381	1,457	1,499	1,498 ^p
Cameroon	67	77	86	90	87 ^e
Canada	2,709	2,792	2,592	2,894	3,051
China ^c	4,300	5,450	6,670	7,800	9,349
Egypt	195	195	216	244	252
France	463	443	451	442	421
Germany	653	661	668	648 ^r	537 ^e
Ghana	117	16	-- ^e	13	13
Greece	165	165	167	165	163
Hungary ^c	35	35	35	35	(4) ⁵
Iceland ⁶	285	286	271	272	320
India ⁷	671	799	862	942 ^r	1,104
Indonesia ^{c,7}	160	200	247 ^r	252 ^{r,5}	250 ⁵
Iran	169	182	213	220	220 ^e
Italy	190	191	195	195	194
Japan ⁸	6	6	6	7	7
Mexico ⁷	39	--	-- ^e	--	--
Mozambique	268	409	549	555	564
Netherlands	284	283	326	325	326
New Zealand	335 ^e	340 ^e	350	351	337
Norway	1,096	1,192	1,322	1,372	1,331
Poland ⁹	49	45	46	43	50
Romania ¹⁰	187	197	219	244	258
Russia	3,347	3,478	3,592	3,647	3,718
Serbia and Montenegro ^{3,11}	112	120 ^r	121 ^r	120 ^r	122
Slovakia ⁷	147	131 ^r	157 ^r	158 ^r	157
Slovenia ³	88	110	121	139	140
South Africa	707	738	866 ^r	846 ^r	895
Spain	380	389	398	395	350 ^e
Sweden	101	101	101	102	101
Switzerland	40	44	45	45	15 ^e
Tajikistan	308	319	358	380	414
Turkey ^c	63 ⁵	63	60	60	60
Ukraine ¹⁰	112	114	113	114	113
United Arab Emirates, Dubai ^c	536	560 ⁵	683 ⁵	722 ^r	730
United Kingdom	344	343	360	369 ^r	367
United States	2,707	2,703	2,516	2,481	2,284
Venezuela	605	601	624	615 ^r	610 ^e
Total	26,100	28,000	29,900	31,900	33,700

^eEstimated. ^pPreliminary. ^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 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, 2007.

³Primary ingot plus secondary ingot.

⁴Less than ½ unit.

⁵Reported figure.

⁶Ingot and rolling billet production.

⁷Primary ingot.

⁸Excludes high purity aluminum containing 99.995% or more as follows, in metric tons: 2002—40,443; 2003—43,697 (revised); 2004—55,402; 2005—45,413 (revised); and 2006—46,000 (estimated).

⁹Primary unalloyed ingot plus secondary unalloyed ingot.

¹⁰Primary unalloyed metal plus primary alloyed metal, thus including weight of alloying material.

¹¹In June 2006, Montenegro and Serbia formally declared independence from each other and dissolved their union. Mineral production data for 2006, however, still reflect the unified country.