



2005 Minerals Yearbook

ALUMINUM

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In 2005, 6 domestic companies operated 14 primary aluminum smelters in 12 States and produced 2.48 million metric tons (Mt) of metal. Smelters east of the Mississippi River accounted for about 70% of the production. The value of U.S. production was estimated to be \$4.98 billion. Five smelters were temporarily idled during the year. At yearend, about 1.2 million metric tons per year (Mt/yr) of domestic primary aluminum smelting capacity, including idled potlines at operating smelters, equivalent to about 32% of total capacity, was closed.

Aluminum recovered from purchased scrap decreased to 2.99 Mt. Of this recovered metal, about 64% came from new (manufacturing) scrap, and 36% came from old (discarded aluminum products) scrap. Aluminum used beverage cans (UBCs) accounted for about 60% of the reported old scrap consumption in 2005. According to the Aluminum Association Inc. (2006a), the recycling rate for aluminum UBCs was 52%.

The transportation and the container and packaging industries remained the leading markets for aluminum products in Canada and the United States in 2005. The transportation industry accounted for 37% of domestic metal shipments; containers and packaging, 22%; building and construction, 16%; consumer durables, 7%; electrical, 7%; machinery and equipment, 7%; and other uses, 4%.

U.S. imports for consumption of aluminum materials increased by 13% in 2005 compared with those of 2004. Canada remained the leading shipper of aluminum materials to the United States, followed by Russia. Total exports of aluminum materials from the United States in 2005 increased by 30% compared with those of 2004.

The monthly average U.S. market price of primary aluminum ingot increased dramatically during the latter half of 2005, exceeding \$1.00 per pound for the first time since January 1989. The 2005 annual average price increased to 91.06 cents per pound from 84.01 cents per pound in 2004.

At the end of 2005, total world inventories of aluminum, as reported by the International Aluminium Institute (IAI) (2006), increased slightly compared with those of 2004. Combined inventories of aluminum metal and alloys held by the London Metal Exchange Ltd. (LME), however, decreased.

Primary aluminum was produced in 42 countries in 2005. 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 2004. The increase in production in China was responsible for most of this increase in world production.

Production

Primary.—Domestic primary aluminum production, which totaled a reported 2,480,999 metric tons (t), decreased by 1%

compared with that of 2004. 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.

In December, Alcoa Inc. closed its 195,000-metric-ton-per-year (t/yr) Eastalco primary aluminum smelter in Frederick, MD. The facility was unable to secure a new, long-term, competitive power supply to replace the power arrangement with Allegheny Power that expired on December 31 (Alcoa Inc., 2005j).

Ormet Corp. temporarily closed the last two of six potlines at its 265,000-t/yr smelter in Hannibal, OH. The company reportedly based its decision on the continuing work stoppage by union employees at the facility and delays in raw material deliveries caused by the extended closing of the Belleville Locks and Dam on the Ohio River (Ormet Corp., 2005).

Century Aluminum Co. signed a memorandum of understanding (MOU) with Big Rivers Electric Corp. and Kenergy Corp. that would restructure and extend through 2023 the electricity service contract for its Hawesville, KY, primary aluminum smelter (Century Aluminum Co., 2005a). Alcan Inc. also signed an MOU with Big Rivers and Kenergy to restructure and extend the existing electricity service contract for its Sebree, KY, smelter through 2023. Both contracts were subject to approval by State and local regulators (Alcan Inc., 2005i).

Century also signed an agreement with Appalachian Power Company for electrical service to its Ravenswood, WV, smelter effective January 1, 2005. The agreement, which replaced the expired contract with Ohio Power Company, had an initial term of 2 years but would continue until Century gave a 12-month notice of cancellation. Both Appalachian and Ohio Power were subsidiaries of American Electric Power Company (Century Aluminum Co., 2005d).

Alcoa and TXU Energy Co. signed a letter of intent covering the development, construction, ownership, operation, and maintenance of a fifth power generating station at Alcoa's Rockdale, TX, smelter. The proposed new generating station would replace three of the four existing stations and guarantee that the smelter's power requirements would be met through 2038 (Alcoa Inc., 2005o).

Alcoa also announced investments to secure the long-term power needs of its Warrick, IN, smelter. The company planned to invest \$45 million to purchase equipment and the rights to mine coal from Vigo Coal Co. The investment also called for the addition of a coal preparation facility and material handling infrastructure to transport the coal to Alcoa's onsite powerplant. The mine would produce about 1 Mt/yr of coal, approximately 45% of the powerplant's annual fuel requirements (Alcoa Inc., 2005l). Alcoa also planned to invest \$330 million at its Newburgh, IN, powerplant to increase environmental performance and power efficiency and to lower costs. The plans

included the installation of scrubbers, boiler modifications to provide greater fuel flexibility, and the installation of new and improved coal handling facilities (Alcoa Inc., 2005f).

Alcan and workers represented by United Steelworkers (USW) ratified a new 5-year labor agreement at the Ravenswood rolling mill. The new contract, effective June 1, will expire on May 31, 2010. The mill produced aluminum plate, coil, and sheet products for the aerospace, aeronautical, and transportation industries (Alcan Inc., 2005h).

Kaiser Aluminum Corp. and USW ratified 5-year labor agreements covering workers at multiple Kaiser plants. The agreements, which will expire in 2010, covered workers in Newark, OH; Tulsa, OK; Richmond, VA; and Spokane, WA. The agreements provided similar terms at each plant, including a ratification bonus, a typical industry-level wage increase, and the opportunity to share in plant profitability (Kaiser Aluminum Corp., 2005b).

Kaiser announced a \$75 million expansion at its Trentwood, WA, rolling mill. The expansion included the addition of a state-of-the-art thick-plate stretcher, horizontal heat-treat furnaces, an ultrasonic inspection system, and other ancillary equipment that would enable Kaiser to supply heavy-gauge, heat-treat stretched plate to the aerospace and general engineering markets. The project was expected to be completed in 2008 (Kaiser Aluminum Corp., 2005c).

JW Aluminum Co. completed the initial phase of a major expansion program at its Russellville, AR, rolling mill. Capacity at the facility increased by 27,000 t/yr (60 million pounds per year). The expansion was in response to increased finstock (coiled aluminum sheet or foil used in manufacture of fins for heat exchanger applications) demand by the air conditioning industry. In addition to finstock, the mill produced light gauge converter foil for the flexible packaging industry, heavier gauge sheet for the building and construction markets, and other foil and sheet products (JW Aluminum Co., 2005).

Alcan announced a \$27 million expansion at its Ravenswood rolling mill. Upon completion, scheduled for 2006, the expansion would increase the plant's production of aluminum plate, coil, and sheet products for the aerospace, aeronautical, and transportation industries. In October, Alcan signed a multiyear agreement with The Boeing Company to supply the aircraft manufacturer with a variety of high-performance aluminum products (Alcan Inc., 2005g).

Alcan announced the closure of its Vernon, CA, aluminum cast plate facility effective January 21, 2006. The plant produced aluminum cast plates for the mold- and tool-making industries (Alcan Inc., 2005k).

In early 2005, Honeywell International Inc. acquired Indalex Aluminum Solutions Group as part of its purchase of Novar Plc. In September, Sun Capital Partners Inc. agreed to purchase Indalex from Honeywell for \$425 million. Indalex is North America's leading independent supplier of extruded aluminum components and services with 2 casthouses and 16 extrusion facilities in the United States and Canada (Indalex Aluminum Solutions Group, 2005, 2006).

Ohio Valley Aluminum Co. acquired the assets of Boonville Casting, an aluminum billet casting company in Boonville, IN. The transaction added 41,000 t/yr (90 million pounds per year)

to Ohio Valley's aluminum extrusion billet casting capacity (Ohio Valley Aluminum Co., 2005§¹).

Secondary.—Metal recovered from new and old scrap decreased to 2.99 Mt in 2005, according to data derived by the USGS from its "Aluminum Scrap" survey (table 3). Of the 59 companies and/or plants to which monthly or annual survey requests were sent, 36 responded; they represented 82% of the total scrap consumed reported in table 4.

According to figures released by the Aluminum Association, the Can Manufacturers Institute, and the Institute of Scrap Recycling Industries Inc., 51.4 billion aluminum UBCs were recycled in the United States in 2005, for an aluminum beverage can recycling rate of 52%, a 0.8% increase from the 2004 rate (Aluminum Association Inc., 2006a).

Aleris International Inc., the company formed in 2004 from the merger of IMCO Recycling Inc. and Commonwealth Industries Inc., announced several acquisitions in 2005. Aleris purchased ALSCO Holdings Inc. (the parent of company of ALSCO Metals Corp.) (Aleris International Inc., 2005b). Headquartered in Raleigh, NC, ALSCO was a leading supplier of aluminum building products. ALSCO operated a rolling mill in Bellwood, VA, and coating and fabrication facilities in Roxboro, NC, Ashville, OH, and Beloit, WI (Aleris International Inc., 2005f). Following the purchase of ALSCO, Aleris evaluated its production facilities for potential redundancy and decided to permanently close and dismantle its Carson, CA, rolling mill and coating facility. The Carson mill supplied semifabricated aluminum coil and painted coil for building and construction, consumer durables, and electrical applications (Aleris International Inc., 2005e).

In addition to ALSCO, Aleris purchased certain assets of Ormet (Aleris International Inc., 2005d). Aleris planned to transfer selected equipment from Ormet's Hannibal rolling mill to its other mills, which was expected to increase Aleris' production capacity by about 57,000 t/yr (125 million pounds per year). Ormet's Bens Run, WV, recycling facility was to become part of Aleris's Aluminum Recycling segment. Aleris expanded its product line with the purchase of Specialty Blanks Inc, which produced aluminum fabricated products automotive wheels, cookware, and lighting (Aleris International Inc., 2005g).

In December, Aleris also completed the purchase of Alumitech Inc., an aluminum recycling operation headquartered in Cleveland, OH, from Zemex Corp. (Aleris International Inc., 2005c).

Wabash Alloys LLC announced plans to close its secondary aluminum smelter in Cleveland and move most of its production to the company's Wabash, IN, plant. Wabash is a leading producer of specification aluminum alloy from aluminum scrap with four smelters in the United States (excluding the Cleveland plant), two smelters in Canada, and one smelter in Mexico. North American production capacity was estimated to be about 590,000 t/yr (1.3 billion pounds per year) of metal (Schaffer, 2005b).

Arkansas Aluminum Alloys Inc. fired up a third furnace at its Hot Springs, AR, secondary aluminum plant that increased capacity to about 59,000 t/yr (130 million pounds per year). The facility produces specification aluminum ingot for diecasters and

¹References that include a section mark (§) are found in the Internet References Cited section.

foundries in the United States (Platts Metals Week, 2005a).

Jupiter Aluminum Corp. announced plans to expand capacity at its Hammond, IN, rolling mill to 159,000 t/yr (350 million pounds per year) from 109,000 t/yr (240 million pounds per year). The mill produces 3000 series alloys from aluminum scrap for residential siding and gutters as well as cookware and lighting components. A specialty of the mill is license plate coil used by the California, Illinois, and Indiana State governments (Schaffer, 2005a).

Kentucky Smelting Technology Inc. [a joint venture between Toyota Tsusho America Inc. (New York, NY) and Toyota Tsusho America's parent company Toyota Tsusho Corp. (Tokyo, Japan)] announced plans to build an aluminum smelting facility in Paris, KY. The new facility will produce molten aluminum alloys for Central Manufacturing Corp./Central Light Alloy (CMC/CLA), a manufacturer of aluminum wheels. CMC/CLA expected to double its production of aluminum wheels to 1.5 million wheels by late 2005 (Kentucky Cabinet for Economic Development, 2005§).

Industry Merger.—Falconbridge Limited and Noranda Inc. merged to form a new company that would continue under the name Falconbridge Limited. Falconbridge was a producer of nickel, copper, cobalt, and platinum-group metals as well as being one of the world's leading recyclers and processors of metal-bearing materials. Noranda was a copper and nickel company with investments in fully integrated aluminum and zinc assets. Noranda's primary aluminum smelter in New Madrid, MO, rolling mills, alumina refinery in Gramercy, LA, and bauxite operations in Jamaica were to continue to operate as a wholly owned subsidiary, Noranda Aluminum Inc. (Falconbridge Limited, 2005).

Consumption

According to the combined United States and Canada end-use shipment data for 2005 reported by the Aluminum Association, shipments of aluminum products to the transportation industry totaled 3.94 Mt. Shipments to the container and packaging industry, which was the second ranked end-use market, were 2.32 Mt. Total shipments, excluding exports, of aluminum products in 2005 increased slightly compared with those of 2004 (table 6).

The revival of the global aerospace industry led to the signing of several multiyear supply agreements between aircraft manufacturers and aluminum companies. Alcoa announced the signing of a multiyear contract (2005-09) with Chinese aircraft manufacturer Shanghai Aircraft Manufacturing Factory to provide aluminum extrusions for the horizontal stabilizer tail section assembly of the Boeing 737. In December 2004, Alcoa had signed a similar supply agreement for 2005 to 2007 with Xian Aircraft of China (Alcoa Inc., 2005c). Alcoa also signed a long-term agreement, which runs through December 2011, to supply Airbus S.A.S. with high-performance sheet and plate products for its new A380F cargo and A350 wide body passenger planes (Alcoa Inc., 2005m). To help meet the increase in demand for aerospace products, Alcoa announced plans to increase its global aerospace heat-treated sheet and plate production capacity by 50%. Expansions were scheduled for the

Davenport, IA, mill and mills in Italy, Russia, and the United Kingdom (Alcoa Inc., 2005k).

Kaiser signed a long-term contract with Boeing to supply heavy-gauge aluminum plate for use in Boeing's commercial aircraft products (Kaiser Aluminum Corp., 2005a). Kaiser also signed a new agreement to supply Airbus with heat-treated aluminum sheet and plate from 2005 through 2011 (Kaiser Aluminum Corp., 2005d).

Alcan signed a multiyear agreement to supply Boeing with a variety of high-performance aluminum products primarily for Boeing's 737 and 777 commercial aircrafts. Alcan's Ravenswood rolling mill would be the major source of these materials (Alcan Inc., 2005a). Corus Group plc signed a 5-year agreement (2007-11) with Airbus to supply 20,000 t/yr of aluminum plate and sheet for commercial and military aircraft and helicopters (Corus Group plc, 2005).

In the automotive sector, Alcoa signed a letter of intent with Fujikura Ltd. (Toyota, Japan) in which Alcoa would obtain complete ownership of Alcoa Fujikura Limited's (AFL) automotive business based in Detroit, MI, and Fujikura would obtain full ownership of AFL's telecommunications businesses based in Nashville, TN. Alcoa and Fujikura held 51% and 49%, respectively, of the two AFL business units prior to the planned change in ownership. According to the companies, the realignment would allow each of the companies to focus on their respective core capabilities (Alcoa Inc., 2005d). Alcoa announced the closure of its Hawesville, KY, automotive casting facility owing to excess capacity in its automotive castings manufacturing system. Alcoa expected to continue operating its automotive casting facilities in Farsund, Norway, and Fruitport, MI (Alcoa, 2005i). Alcoa opened a new manufacturing plant in Salisbury, NC, to provide wheel and tire assemblies for Freightliner LLC facilities in North Carolina and South Carolina. Freightliner is the leading heavy-duty truck manufacturer in North America and a leading manufacturer of medium-duty and specialized commercial vehicles (Alcoa Inc., 2005g).

Bodine Aluminum Inc. (a subsidiary of Toyota Motor Manufacturing North America Inc.) began producing cast aluminum engine blocks at its new plant in Jackson, TN. Initial capacity of the plant was 1 million engine blocks per year consuming about 22,700 t/yr (50 million pounds per year) of aluminum. The blocks would be sent to Toyota's engine plant in Georgetown, KY, and then installed in the Camry and Avalon sedans also manufactured in Kentucky (Toyota Motor Corp., 2005).

In order to meet the growing demand for specialty beverage cans, Ball Corporation converted a 12-ounce beverage can line in its Golden, CO, plant to 24-ounce specialty cans. The company subsequently announced plans to convert a can manufacturing line at its plant in Monticello, IN, to 16-ounce cans from 12-ounce cans. Ball operated 19 metal beverage can plants in North America, 12 can plants in Europe, 7 owned and jointly owned packaging plants in China, and 2 joint-venture beverage can plants in Brazil (Ball Corporation, 2005).

Stocks

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 1.43 Mt at yearend 2005 from 1.47 Mt in 2004 (Aluminum Association Inc., 2006b). The LME, however, reported that primary aluminum metal ingot stocks at its U.S. warehouses increased to 80,100 t at yearend 2005 from 11,900 t at yearend 2004. At yearend 2005, U.S. LME warehouses also held about 129,000 t of North American Special Aluminium Alloy Contract (NASAAC) metal ingot, an increase from the 104,000 t held at yearend 2004 (London Metal Exchange Ltd., 2005).

Prices

The monthly average U.S. market price of primary aluminum metal, as reported by Platts Metals Week, rose dramatically during the latter half of 2005. The monthly average price began the year at 89.75 cents per pound, rose to 96.85 cents per pound by March, and then decreased to 83.35 cents per pound in June, the low average price for the year. In July, the monthly average price began to trend upward and in December reached an average of \$1.061 per pound, the first time the monthly average U.S. market price exceeded \$1.00 per pound since January 1989. The annual average price in 2005 increased to 91.06 cents per pound, up significantly from 84.01 cents per pound in 2004.

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 2005 average annual LME cash price increased to 86.1 cents per pound from 77.8 cents per pound in 2004. The COMEX monthly average spot settlement price increased from 88.4 cents per pound in January to \$1.032 per pound in December and averaged 89.3 cents per pound for the year.

Purchase prices for aluminum scrap, as quoted by American Metal Market, also fluctuated during the first half of the year and closed at higher levels than those at the beginning of the year. The 2005 yearend price ranges for selected types of aluminum scrap were as follows: mixed low-copper-content aluminum clips, 67.0 to 68.0 cents per pound; old sheet and cast aluminum, 63.0 to 64.0 cents per pound; and clean, dry aluminum turnings, 62.0 to 63.0 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 64.0 to 65.0 cents per pound and closed the year at 74.0 to 76.0 cents per pound. The annual average American Metal Market price for aluminum UBCs increased to 65.4 cents per pound in 2005 from 61.0 cents per pound in 2004.

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 2005 were as follows: alloy A380 (3% zinc content), 96.4 cents per pound; alloy B380 (1% zinc content), 99.2 cents per pound; alloy A360 (0.6% copper content), \$1.007 per pound; alloy A413 (0.6% copper content), \$1.005 per pound; and alloy 319, \$1.010 per pound. Platts Metals Week published an annual average U.S. price of 82.7 cents per pound for A380 alloy (3% zinc content). The average annual LME cash price for

a similar A380 alloy was 74.7 cents per pound and the annual average LME NASAAC cash price was 75.4 cents per pound.

Trade

Total exports of aluminum materials from the United States in 2005 were 30% higher than those of 2004 (table 8). About 80% of total U.S. exports in 2005 was shipped to Canada, China, and Mexico. More than 90% of the shipments to China was 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 accounting for more than one-half of the total imports in 2005, and Russia continued to be the second ranked supplier (table 11).

World Industry Structure

World production of primary aluminum metal increased by 7% in 2005 compared with that of 2004 (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 slightly to 1.80 Mt at yearend 2005 from 1.79 Mt at yearend 2004. 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 increased to 3.19 Mt at yearend 2005 from 3.18 Mt at yearend 2004. Total aluminum includes unwrought aluminum plus unprocessed scrap, metal in process, and finished semifabricated (mill) products (International Aluminium Institute, 2006).

Yearend 2005 inventories of primary aluminum metal held by the LME decreased to 644,000 t from 693,000 t at yearend 2004. Aluminum alloy inventories, however, increased to 52,900 t at yearend 2005 from 40,400 t at yearend 2004, and NASAAC ingot inventories increased to 129,000 t at yearend 2005 from 104,000 t at yearend 2004 (London Metal Exchange Ltd., 2005).

World Review

Argentina.—Aluar Aluminio Argentino S.A.I.C. (Aluar) announced the start of an expansion project at its primary aluminum smelter in Puerto Madryn that would increase capacity at the 275,000-t/yr smelter by 122,500 t/yr. The project included construction of a new 90,200-t/yr potline, increasing total capacity at the three existing potlines by 32,300 t/yr, expansion of the anode facility, and construction of a new billet casting station. Completion of the project was scheduled for mid-2007 (Aluar Aluminio Argentino S.A.I.C., 2005§).

Armenia.—RUSAL announced the restart of production at its ARMENAL foil plant in Yerevan upon completion of the first stage of its 18-month modernization program begun in November 2004. In 2007, when the technical upgrades are expected to be completed, the plant will have a 25,000-t/yr capacity including 18,000 t/yr of thin foil (6 to 8 micrometers thick) and 7,000 t/yr of kitchen foil (RUSAL, 2005c).

Bahrain.—Aluminium Bahrain B.S.C. (Alba) commissioned the world's longest aluminum reduction line, which was more than 1 kilometer in length. In addition to the 336 pots in Line 5, the \$1.7 billion project included a powerplant, a carbon plant, and casthouse improvements. The new 307,000-t/yr potline, which utilized an improved version of AP30 technology, increased the smelter's capacity to 830,000 t/yr, making it one of the world's largest capacity smelters (Aluminium Bahrain B.S.C., 2005).

Brazil.—As part of a \$1.6 billion investment in its Brazilian operations, Alcoa announced plans to modernize its 93,000-t/yr Pocos de Caldas aluminum smelter. The installation of dry scrubbers was expected to lower emissions and costs as well as improve the operating efficiency of the smelter (Alcoa Inc., 2005b).

Companhia Brasileira de Alumínio (CBA) announced a series of investments in its aluminum and energy operations. In addition to expansions at its bauxite mining and refining operations, CBA announced the completion of an expansion at its Alumínio (Sorocoba) smelter in Sao Paulo to 400,000 t/yr and the potential of a further expansion to about 470,000 t/yr in 2007. CBA also announced investments in three additional powerplants with the goal of becoming self-sufficient in its energy requirements (Votorantim Group, 2005§).

Aleris acquired Tomra Latasa Recicagem, a recycling operation in Sao Paulo, from Tomra Systems ASA of Norway. Aleris expected the purchase to provide it with greater access to aluminum scrap and to complement the company's existing operations in Brazil (Aleris International Inc., 2005a).

In 2004, Brazil recycled a record 95.7% of all aluminum beverage cans sold during the year. Brazil collected and recycled more than 9 billion aluminum cans, the equivalent of more than 121,000 t of aluminum, making Brazil the world leader in aluminum can recycling rates for the fourth consecutive year among countries that do not have mandatory recycling laws (Associação Brasileira do Alumínio, 2005§).

Alcoa's Brazilian affiliate, Alcoa Alumínio S.A., and Tetra Pak, Klabin, and TSL Ambiental opened the world's first aseptic carton packaging recycling facility located in Piracicaba. The plant uses plasma technology, which enables the total separation of the aluminum, paper, and plastic components of the cartons. Other processes separated the paper but kept the plastic and aluminum together. The new facility has the capacity to process 8,000 t/yr of plastic and aluminum, which corresponds to recycling approximately 32,000 t/yr of aseptic packaging (Alcoa Inc., 2005h).

Cameroon.—Alcoa and the Government of Cameroon have signed a letter of intent for the potential upgrade and expansion of their joint-venture Alucam smelter and the construction of a new hydroelectric power station at a total estimated cost of \$900 million. Capacity at the 90,000-t/yr smelter would increase to 260,000 t/yr through upgrades (20,000 t/yr) to the existing potline and the construction of a second 150,000-t/yr potline. Project feasibility would require the construction of the Lom Pangar dam by the Government. In addition to fulfilling the project's electricity requirements, the Lom Pangar dam would contribute to increasing the overall availability of electricity to Cameroon. A decision on the project was expected by the end of 2006 (Alcoa Inc., 2005b).

Canada.—The expansion of the Aluminerie Alouette Inc. aluminum smelter at Sept Iles was completed in June, on budget and 3 months ahead of schedule. Begun in May 2003, the project increased capacity to 550,000 t/yr from 245,000 t/yr. Aluminerie Alouette is a consortium made up of five shareholders—Alcan (40%), Austria Metall AG (20%), Norsk Hydro ASA (20%), Société Générale de Financement du Québec (SGF) (13.33%), and Marubeni Corp. (6.67%) (Aluminerie Alouette Inc., 2005).

Alcan has invested \$4.7 million to increase its share of extrusion billet capacity at the Aluminerie de Bécancour Inc. (ABI) smelter of which it holds a 25.05% ownership. Alcoa holds the remainder of the plant. The addition of a continuous homogenization furnace and ancillary casting equipment would increase billet production capacity to 234,000 t/yr from 120,000 t/yr, and Alcan's share would increase to 63,000 t/yr from 34,000 t/yr. The increased capacity was expected to come onstream in 2007 (Alcan Inc., 2005f).

In July, Alcan and members of the Canadian Auto Workers Local 2301 ratified a new 3-year labor agreement covering workers at the Kitimat, British Columbia, smelter (Alcan Inc., 2005c).

China.—Shanghai Sigma Metals Inc. announced plans to increase production at its new secondary aluminum smelter by the end of 2006 to 300,000 t/yr from about 140,000 t/yr in 2005. Shanghai Sigma's goal was to increase ingot production by another 120,000 t/yr in a second stage expansion by 2010 (Foster, 2005).

France.—Alcan began discussions with workers as part of the planned progressive closure of its 50,000-t/yr Lannemezan smelter. The closure process was expected to begin by June 2006 and would be completed during 2008, depending on economic and operational conditions (Alcan Inc., 2005j).

Germany.—As part of a restructuring of its primary aluminum plants owing to increased power costs, Norsk Hydro announced the closure of its 130,000-t/yr smelter and carbon plant at Hamburger Aluminium Werk GmbH (HAW) by yearend and the permanent closure of its 70,000-t/yr smelter in Stade by the end of 2006. Norsk Hydro planned to keep the HAW casthouse operating to supply the nearby rolling mill (Norsk Hydro ASA, 2005).

VAW-Imco Guss und Recycling GmbH (a subsidiary of Aleris) opened its newest secondary aluminum smelter having an initial capacity of 60,000 t/yr. The facility in Stuttgart could be expanded to 120,000 t/yr if needed (Mason, 2005).

Ghana.—Alcoa and the Government of Ghana finalized an agreement to restart Volta Aluminium Co.'s (Valco) 200,000-t/yr aluminum smelter in Tema. The smelter has been closed since April 2003. Plans were underway to restart three of the five potlines at Valco representing 120,000 t/yr of capacity. Alcoa and the Government continued discussions on the development of an integrated aluminum industry in Ghana that included bauxite mining, alumina refining, aluminum production, and rail transportation infrastructure upgrades (Alcoa Inc., 2005e).

Hungary.—Alcoa announced an \$83 million modernization project at Alcoa-Kofem Ltd. The modernization includes the expansion of flat-rolled mill products capability and related infrastructure, the addition of Dura-Bright® aluminum wheel

production, and a new manufacturing operation for airfoil castings (Alcoa Inc., 2005a).

Iceland.—Century announced that its subsidiary, Nordural ehf, had obtained sufficient electricity to accelerate the expansion of its primary aluminum smelter to 220,000 t/yr by mid-to-late 2006 rather than the 2007 timeframe that had been announced previously (Century Aluminum Co., 2005b).

Century also announced that Nordural had signed an agreement with a major Icelandic geothermal power producer, Hitaveita Sudurnesja hf., and the municipality of Reykjanesbaer to explore the feasibility of constructing a new aluminum smelter in Helguvik or at a mutually agreeable site. If the project goes forward, startup would be targeted for 2010 to 2015 (Century Aluminum Co., 2005c).

India.—Vedanta Resources plc approved a \$2.1 billion aluminum project in Jharsuguda, Orissa. The project included a 500,000-t/yr primary aluminum smelter and a captive powerplant. The smelter would be built in two phases of 250,000 t/yr each. Construction was expected to begin in 2006 with completion of phase 1 expected by mid-2009, and phase 2, by yearend 2010. Alumina for the smelter would be provided by Vedanta's 1-Mt/yr greenfield refinery in Orissa, which was scheduled to be commissioned in 2007 (American Metal Market, 2005).

In addition to the Vedanta project, several other projects were under discussion. Hindalco Industries Ltd. reported the signing of an MOU with the State government of Orissa for an integrated aluminum project that included a 260,000-t/yr smelter, a 1-Mt/yr alumina refinery, a captive powerplant, and bauxite mines with a capacity of 3 Mt/yr (Metal Bulletin, 2005b). Jindal South West Holdings Ltd. (a subsidiary of the steel conglomerate O.P. Jindal Group) announced plans to invest in a new aluminum complex in the State of Andhra Pradesh. The plans included a 1.5-Mt/yr alumina refinery, a 250,000-t/yr smelter, and a powerplant. The State mining company, Andhra Pradesh Mineral Development Corp., was expected to provide bauxite for the project (Metal Bulletin, 2005c). Dubai Aluminum Company Ltd. (Dubal) and Larsen & Toubro Ltd. signed a \$3.6 billion agreement for the development of an integrated aluminum complex in Orissa. The first phase included a bauxite mine and a 1.5-Mt/yr alumina refinery. Phase 2 would double the size of the refinery and add an aluminum smelter (CRU Alumina Monitor, 2005a).

Iran.—Announced expansions at the country's two aluminum smelters and an announced agreement to build a greenfield plant in the southern portion of the country would increase Iran's smelter capacity to 780,000 t/yr from 230,000 t/yr. Iranian Aluminium Co. (Iralco) planned to expand its smelter in Arak to 180,000 t/yr from 120,000 t/yr. Almahdi Aluminium Corp. announced a two-phase expansion of its 110,000-t/yr smelter in Bandar Abbas. Each phase would add 110,000 t/yr of capacity increasing the smelter's capacity to 330,000 t/yr by 2009 (Metal Bulletin, 2005d). China's Citic Group and a subsidiary of Aluminium Corp. of China (Chalco) were awarded a \$900 million contract to build the first phase of a smelter for Iran's South Aluminium Corp. in Tehran. Phase one included a 270,000-t/yr smelter, a 150,000-t/yr anode plant, and port facilities (Metal Bulletin, 2005a).

Japan.—Two of Japan's leading producers of aluminum cans have merged. The new venture would be owned by Mitsubishi

Materials Corp. (80%), Japan's leading maker of aluminum cans with a production capacity of 3.7 billion cans per year, and Hokkai Can Co. Ltd. (20%), which produces about 1.3 billion aluminum cans per year, 1.4 billion steel cans per year, and 1 billion polyethylene terephthalate (PET) bottles per year (McCulloch, 2005).

Kazakhstan.—The joint-venture agreement signed in 2004 between RUSAL and Eurasian Financial-Industrial Co. was suspended. The original agreement included the construction of a 1.5-Mt/yr alumina refinery and a 500,000-t/yr aluminum smelter in northern Kazakhstan (Kassakovich, 2005).

Norway.—In January, Orkla ASA increased its holdings in Elkem ASA to 50.03% and subsequently launched a program to purchase all of the remaining shares in the company. In March, Alcoa announced the sale of its 46.5% stake in Elkem to Orkla for \$870 million. Alcoa's 50% interest in the Mosjoen and Lista aluminum smelters (co-owned with Elkem) was not included in the sale (Alcoa Inc., 2005n).

To meet new emission standards, Norsk Hydro announced plans to close the 22,000-t/yr Soderberg potline at its 77,000-t/yr Hoyanger smelter and the 48,000-t/yr Soderberg potline at its 220,000-t/yr Ardal smelter. The closures were expected to be completed by yearend 2006 (Norsk Hydro ASA, 2005).

Norsk Hydro announced plans to expand the casthouse capacity at its Sunndal smelter. The company planned to build a new 80,000-t/yr casting center for foundry alloys to help meet the increased demand from the automotive industry. The Sunndal casthouse also produced extrusion ingots (Platts Metals Week, 2005c).

Oman.—Alcan announced that it would construct a \$1.7 billion primary aluminum smelter in Sohar with partners Oman Oil Company S.A.O.C. and the Abu Dhabi Water and Electricity Authority. Alcan would take a 20% stake in the 350,000-t/yr smelter, which 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, of which Alcan would be eligible to acquire up to 60% of production. 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 energy requirements (Alcan Inc., 2005e).

Romania.—S.C. Alro S. A. announced plans to increase capacity at its 240,000-t/yr smelter in Slatina to 420,000 t/yr by 2008. The company also planned to increase capacity to 120,000 t/yr from 45,000 t/yr during the same timeframe to make value-added products at its subsidiary, Alprom S.A., which produced aluminum alloys, cast products, and rolled products (Marco Group GmbH, 2005§).

Russia.—RUSAL invested \$250 million in the construction of the Khakass aluminum smelter. The 300,000-t/yr plant was expected to produce its first metal by yearend 2006 (RUSAL, 2006).

ALSTOM signed a contract with RUSAL to supply 12 dry gas scrubbing units to RUSAL's 865,000-t/yr Krasnoyarsk smelter. The new scrubbers, which would capture hydrogen fluoride and dust emissions, were part of an extensive modernization program at the smelter that would increase capacity by about 55,000 t/yr (RUSAL, 2005d). At yearend, five of the scrubbers

and eight automated alumina feeders had been installed at the smelter (RUSAL, 2006).

RAO Unified Energy Systems and RUSAL signed a basic conditions of partnership agreement covering the construction of the Boguchanskaya hydropower plant and a greenfield 600,000-t/yr primary aluminum smelter in the Krasnoyarsk region. Preliminary estimates put the total cost of the project at more than \$4 billion. The feasibility study for the aluminum smelter was expected to be completed in 2006, and the entire project could take 7 years to complete (RUSAL, 2005b).

Alcan announced plans to invest \$55 million to construct new packaging plants in Moscow and St. Petersburg. The Moscow facility would focus on flexible packaging for the confectionary and dairy markets, and the St. Petersburg facility would be dedicated to producing packaging for the tobacco industry (Alcan Inc., 2005m). Ground was broken at the St. Petersburg site in December, and production was expected to begin by yearend 2006 (Alcan Inc., 2005d).

Serbia and Montenegro.—Salamon Enterprises (a subsidiary of RUSAL) purchased a 65.4% stake in Kombinat Aluminijuma Podgorica, which operated a 125,000-t/yr aluminum smelter and a 280,000-t/yr alumina refinery in Podgorica (CRU Alumina Monitor, 2005b).

Slovakia.—Alcan announced plans to invest \$35 million in a new aluminum extrusion plant in Slovakia to produce profiles for the building and construction sectors in Eastern Europe. The facility would have two aluminum extrusion press lines. Pending final approval from local authorities, production was expected to start in early 2007 (Alcan Inc., 2005l).

Tajikistan.—RUSAL and the Ministry of Energy selected Lahmeyer International of Germany to produce a bankable feasibility study for completion of the Rogunskaya hydroelectric project in Dushanbe. Construction of the powerplant was part of an October 2004 agreement between RUSAL and the Tajik Government on cooperation in the energy and the aluminum industries. Initial construction of the hydropower plant in Dushanbe began in 1976 but was subsequently suspended. The new target date for completion was 2010 (RUSAL, 2005a).

United Arab Emirates.—In Dubai, Dubai fully commissioned the recent expansion of potline 7, which increased capacity at its primary aluminum smelter to 761,000 t/yr of aluminum metal. SNC-Lavalin Group Inc. was awarded a \$284 million contract for the expansion of two existing potlines that would increase capacity at the smelter an additional 100,000 t/yr by the end of 2006 (Platts Metals Week, 2005b).

United Kingdom.—Novelis Inc. completed a \$2.5 million infrastructure investment at its Warrington recycling plant that increased the plant's aluminum UBC recycling capacity by 25%. The facility recycled 6 billion UBCs during the first 9 months of 2005, establishing a new plant recycling record. Novelis, which was spun off by Alcan in January, is a global leader in aluminum rolled products and aluminum can recycling with 36 operating facilities in 11 countries (Novelis Inc., 2005).

Outlook

World demand for aluminum was expected to increase during the next few years but at a slightly slower pace than that of the

past year or two. Demand from China was expected to continue to be the major driving force behind this increase. Although growth in the transportation and construction industries may slow somewhat, these industries will continue to dominate the aluminum market. Energy costs have always been an important factor in determining the location of primary aluminum smelters. This is especially true in this era of high energy costs and, in some areas, limited energy supply. New smelters are being built near inexpensive or renewable sources of energy. Recently completed and announced expansions are expected to be adequate to meet future world demand.

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TABLE 1
 SALIENT ALUMINUM STATISTICS¹

	2001	2002	2003	2004	2005	
United States:						
Primary production:						
Quantity	thousand metric tons	2,637	2,707	2,703	2,516	2,481
Value	millions	\$4,000	\$3,870	\$4,060	\$4,660	\$4,980
Price, average, U.S. market, spot	cents per pound	68.8	64.9	68.1	84.0	91.0
Inventories (December 31):						
Aluminum industry ²	thousand metric tons	1,300	1,320	1,400	1,470	1,430
LME stocks in U.S. warehouses ³	do.	28	45	207	116	209
Secondary recovery:⁴						
New scrap	do.	1,760	1,750	1,750	1,870	1,930
Old scrap	do.	1,210	1,170	1,070	1,160	1,060
Total	do.	2,970	2,930	2,820	3,030	2,990
Exports, crude and semicrude	do.	1,590	1,590	1,540	1,820	2,370
Imports for consumption, crude and semicrude	do.	3,740	4,060	4,130	4,720	5,330
Supply, apparent ⁵	do.	7,990	8,070	7,880	8,460	8,390
Consumption, apparent ⁶	do.	6,230	6,320	6,130	6,590	6,460
World, production	do.	24,300	26,100	28,000 ^r	29,900 ^r	31,900 ^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.

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)		2005 ownership
	2004	2005	
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	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	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	Falconbridge 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	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
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
2005:			
Secondary smelters	1,550,000	1,110,000	1,190,000
Integrated aluminum companies	815,000	681,000	725,000
Independent mill fabricators	842,000	739,000	789,000
Foundries	82,000	67,700	72,300
Other consumers	8,640	7,810	7,830
Total	3,300,000	2,610,000	2,780,000
Estimated full industry coverage	3,540,000	2,800,000	2,990,000

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 2005^{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	14,000	282,000	288,000	8,280
Can stock clippings	1,960	73,000	74,700	163
Other wrought sheet and clippings	948	175,000	175,000	1,410
Casting	1,270	76,000	75,600	1,740
Borings and turnings	3,480	158,000	154,000	7,220
Dross and skimmings	4,940	372,000	372,000	4,000
Total	26,600	1,140,000	1,140,000	22,800
Old scrap:				
Castings	4,000	188,000	187,000	4,950
Extrusion	73	17,400	17,400	80
Aluminum cans ⁴	386	44,700	44,900	139
Other wrought products	1,690	19,500	21,100	98
Auto shredder scrap	2,420	130,000	129,000	3,760
Total	8,570	400,000	399,000	9,030
Sweated pig	289	9,390	9,490	198
Grand total, secondary smelters	35,400	1,540,000	1,550,000	32,000
Integrated aluminum companies, foundries, independent mill fabricators, other consumers:				
New scrap:				
Extrusion	6,810	604,000	597,000	13,500
Can stock clippings	2,780	237,000	239,000	916
Other wrought sheet and clippings	3,980	103,000	104,000	3,120
Casting	240	27,300	27,300	240
Borings and turnings	361	16,600	16,600	361
Dross and skimmings	250	7,540	7,620	168
Total	14,400	996,000	992,000	18,300
Old scrap:				
Castings	1,630	25,900	26,600	889
Extrusion	--	3,640	3,590	55
Aluminum cans ⁴	4,180	653,000	657,000	444
Other wrought products	2,400	68,000	68,000	2,400
Auto shredder scrap	24	648	620	52
Total	8,230	751,000	755,000	3,840
Sweated pig	15	595	609	1
Grand total, integrated aluminum companies, etc.	22,700	1,750,000	1,750,000	22,200
All scrap consumed:				
New scrap:				
Extrusion	20,800	886,000	885,000	21,800
Can stock clippings	4,740	310,000	314,000	1,080
Other wrought sheet and clippings	4,930	278,000	278,000	4,540
Casting	1,510	103,000	103,000	1,980
Borings and turnings	3,840	175,000	171,000	7,580
Dross and skimmings	5,190	379,000	380,000	4,160
Total	41,000	2,130,000	2,130,000	41,200

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 2005^{1, 2}

(Metric tons)

Class of consumer and type of scrap	Stocks, January 1	Net receipts ³	Consumption	Stocks, December 31
All scrap consumed—Continued:				
Old scrap:				
Castings	5,630	214,000	214,000	5,840
Extrusion	73	21,100	21,000	135
Aluminum cans	4,560	697,000	701,000	583
Other wrought products	4,090	87,500	89,100	2,490
Auto shredder scrap	2,450	131,000	129,000	3,810
Total	16,800	1,150,000	1,150,000	12,900
Sweated pig	304	9,990	10,100	198
Grand total, all scrap consumed	58,100	3,290,000	3,300,000	54,200

-- Zero.

¹Includes imported scrap. According to reporting companies, 12.5% of total receipts of aluminum-base scrap, or 416,000 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.

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)

	2004		2005	
	Production	Net shipments ²	Production	Net shipments ²
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	18,400	18,700	20,300	17,500
380 and variations	270,000	270,000	199,000	199,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	49,200	49,700	19,400	19,400
No. 12 and variations	--	15	1,670	1,650
No. 319 and variations	123,000	124,000	74,000	73,900
F-132 alloy and variations	26,000	26,400	22,600	22,500
Al-Mg alloys	1,490	1,300	19,400	19,700
Al-Zn alloys	2,020	2,110	2,370	2,210
Al-Si alloys (0.6% to 2.0% Cu)	551	551	291	289
Al-Cu alloys (1.5% Si, maximum)	3,910	3,910	5,180	4,940
Al-Si-Cu-Ni alloys	--	1	483	480
Other	236	257	6,850	6,820
Wrought alloys, extrusion billets	290,000	288,000	301,000	267,000
Miscellaneous:				
Steel deoxidation	24,600	25,000	18,100	18,100
Pure (97.0% Al)	W	W	W	W
Aluminum-base hardeners	W	W	W	W
Other ³	53,600	52,300	48,200	49,600
Total	863,000	862,000	739,000	704,000

See footnotes at end of table.

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

(Metric tons)

	2004		2005	
	Production	Net shipments ²	Production	Net shipments ²
Less consumption of materials other than scrap:				
Primary aluminum	122,000	XX	144,000	XX
Primary silicon	36,500	XX	26,800	XX
Other	6,800	XX	6,970	XX
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot ⁴				
	697,000	XX	561,000	XX

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 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	2004		2005 ^p	
	Quantity (thousand metric tons)	Percentage of grand total	Quantity (thousand metric tons)	Percentage of grand total
Containers and packaging	2,310	20.4 ^r	2,320	21.0
Building and construction	1,680	14.8	1,680	15.2
Transportation	3,860	34.0 ^r	3,940	35.6
Electrical	720 ^r	6.3 ^r	752	6.8
Consumer durables	713 ^r	6.3 ^r	708	6.4
Machinery and equipment	730	6.4	755	6.8
Other markets	416	3.7	424	3.8
Total	10,400 ^r	91.8	10,600	95.6
Exports ^c	930 ^r	8.2	484	4.4
Grand total	11,400	100.0	11,100	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)

	2003	2004	2005 ^p
Wrought products:			
Sheet, plate, foil	4,370 ^r	4,750 ^r	4,680
Pipe, tube, extruded shapes	1,670 ^r	1,810 ^r	1,900
Rod, bar, wire, cable	368 ^r	397 ^r	406
Forgings (including impacts)	107 ^r	121 ^r	129
Powder, flake, paste	56	61	55
Total	6,580 ^r	7,140 ^r	7,160
Castings:			
Sand	285 ^r	221 ^r	287
Permanent and semipermanent mold	719 ^r	735 ^r	780
Die	1,210	1,250 ^r	1,100
Other	189 ^r	161 ^r	107
Total	2,400 ^r	2,370 ^r	2,280
Grand total	8,970 ^r	9,510 ^r	9,440

^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)
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

See footnotes at end of table.

TABLE 8—Continued
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)
2004—Continued:								
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	33,200 ^f	72,300	244,000
Total	298,000	565,000	857,000	2,790,000	660,000	773,000	1,820,000	4,130,000
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

^fRevised. -- 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	2004		2005	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	298,000	\$565,000	329,000	\$666,000
Scrap	660,000	773,000	1,090,000	1,370,000
Plates, sheets, bars, strip, etc.	795,000	2,380,000	886,000	2,910,000
Castings and forgings	21,900	175,000	25,700	216,000
Semifabricated forms, n.e.c.	40,100	237,000	39,500	247,000
Total	1,820,000	4,130,000	2,370,000	5,410,000
Manufactures:				
Foil and leaf	85,000	287,000	87,000	320,000
Powders and flakes	12,300	53,500	9,430	46,500
Wire and cable	32,200	96,500	38,800	115,000
Total	129,000	437,000	135,000	482,000
Grand total	1,950,000	4,570,000	2,500,000	5,890,000

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	2004		2005	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	3,250,000	\$5,880,000	3,660,000	\$7,140,000
Plates, sheets, strip, etc., n.e.c. ²	724,000	1,950,000	927,000	2,710,000
Pipes, tubes, etc.	34,900	171,000	32,800	181,000
Rods and bars	179,000	581,000	232,000	774,000
Scrap	535,000	655,000	482,000	658,000
Total	4,720,000	9,240,000	5,330,000	11,500,000
Manufactures:				
Foil and leaf ³	107,000	378,000	136,000	506,000
Powders and flakes	5,360	18,700	6,320	25,800
Wire	175,000	359,000	195,000	432,000
Total	288,000	756,000	337,000	964,000
Grand total	5,010,000	10,000,000	5,670,000	12,400,000

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)
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
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

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.

Source: U.S. Census Bureau.

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

(Thousand metric tons)

Country	2001	2002	2003	2004	2005 ^c
Argentina	245	269	272	272 ^r	271
Australia	1,797	1,836	1,857	1,894 ^r	1,903 ³
Azerbaijan	--	--	19	30 ^e	30
Bahrain	523	519	532	532 ^r	751 ³
Bosnia and Herzegovina ⁴	95 ^r	102 ^r	113 ^r	121 ^r	131 ³
Brazil	1,140	1,318	1,381	1,457	1,499 ³
Cameroon	81	67	77	86 ^r	90 ³
Canada	2,583	2,709	2,792	2,592	2,894 ³
China ^c	3,250	4,300	5,450	6,670	7,800
Croatia ⁴	16	--	--	-- ^e	--
Egypt	191	195	195	216 ^r	244 ³
France	462	463	443	451 ^r	442 ³
Germany	652	653	661	668 ^r	668
Ghana	144	117	16 ^r	-- ^e	13 ³
Greece	166	165	165	167 ^r	165
Hungary ^c	34	35	35	35	35
Iceland ⁵	242 ^r	285 ^r	286 ^r	271	272 ³
India ⁶	624	671	799	862	898 ³
Indonesia ^{c,6}	180	160	200	230	240
Iran	146 ^r	169	182 ^r	213 ^r	220
Italy	187	190	191	195 ^r	195
Japan ⁷	7	6	6 ^r	6	7
Mexico ⁶	52	39	--	-- ^e	--
Mozambique	270 ^r	268 ^r	409 ^r	549 ^r	555 ³
Netherlands	294	284	283 ^r	326	325
New Zealand	322	335 ^e	340 ^e	350	351 ³
Norway	1,068	1,096	1,192	1,322	1,372 ³
Poland ⁸	45	49	45	46 ^r	43 ³
Romania ⁹	182	187	197 ^r	219 ^r	244 ³
Russia	3,300	3,347	3,478	3,592 ^r	3,647 ³
Serbia and Montenegro ⁴	100	112	112	115 ^e	115
Slovakia ⁶	134	147	165	160 ^e	160
Slovenia ⁴	77	88	110	121 ^r	139
South Africa	662	707	738	863	851
Spain	376	380	389	398	395
Sweden	102	101	101	101	102 ³
Switzerland	36	40	44	45	45
Tajikistan	289	308	319	358	380 ³
Turkey ^c	62 ³	63 ³	63	60	60

See footnotes at end of table.

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

(Thousand metric tons)

Country	2001	2002	2003	2004	2005 ^c
Ukraine ⁹	106	112	114	113	114 ³
United Arab Emirates, Dubai ⁶	500	536	560 ³	683 ³	750
United Kingdom	341	344	343	360	360
United States	2,637	2,707	2,703	2,516	2,481 ³
Venezuela	571	605	601	624	610
Total	24,300	26,100	28,000 ^r	29,900 ^r	31,900

^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 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, 2006.

³Reported figure.

⁴Primary ingot plus secondary ingot.

⁵Ingot and rolling billet production.

⁶Primary ingot.

⁷Excludes high purity aluminum containing 99.995% or more as follows, in metric tons: 2001—26,586; 2002—40,443; 2003—43,697 (revised); 2004—55,402 (revised); and 2005—47,000 (estimated).

⁸Primary unalloyed ingot plus secondary unalloyed ingot.

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