



2012 Minerals Yearbook

ALUMINUM

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During 2012, domestic primary smelters produced 2.07 million metric tons (Mt) of aluminum metal valued at \$4.61 billion, 4% more than the quantity and 9% less than the value in 2011. Most production was from smelters east of the Mississippi River. At yearend, five companies were operating 10 primary aluminum smelters in seven States. An additional three smelters were temporarily idle. During the year, one smelter and some capacity at another smelter that had been temporarily idled were permanently shut down. About 26% [700,000 metric tons per year (t/yr)] of domestic primary aluminum smelting capacity (table 2), including idle potlines at operating smelters, was idle at yearend. The 2012 annual average U.S. market price of primary aluminum ingot decreased by 13% to \$1.010 per pound from \$1.161 per pound in 2011.

Aluminum recovered from purchased and tolled scrap increased by 5% to 3.27 Mt. Of this recovered metal, 56% came from new (manufacturing) scrap, and 44% came from old (obsolete aluminum products) scrap. Aluminum used beverage cans (UBCs) accounted for 45% of the reported old scrap consumed in 2012 and 20% of total scrap consumed.

Apparent consumption of aluminum increased by 11% compared with that in 2011. United States and Canadian producers shipped 84.3% of their aluminum products to United States and Canadian markets, of which the transportation industry accounted for 29.9%; containers and packaging, 19.6%; building and construction, 11.0%; electrical, 8.0%; machinery and equipment, 6.5%; consumer durables, 6.2%; and other uses, 3.1%. Exports accounted for 15.7% of shipments from producers in Canada and the United States in 2012 (table 6).

At yearend 2012, total (unwrought, scrap, in process metal, and semifabricates) world inventories of aluminum, as reported by the International Aluminium Institute (IAI) (2013), were 5% lower than those at yearend 2011. Combined inventories of aluminum metal and alloys held by the London Metal Exchange Ltd. (LME), however, increased by 3%.

Primary aluminum was produced in 44 countries in 2012. China, Russia, Canada, and the United States, in decreasing order of metal produced, accounted for 63% of primary world production. World primary metal production increased by 3% compared with that of 2011 owing to increased production in China, Qatar, the United States, and several other nations. Commissioning of new smelters, brownfield expansions, as well as restarted capacity at smelters closed during recent years accounted for the increased production. These increases were partially offset by decreased production in Canada, Venezuela, the United Kingdom, the Netherlands, South Africa, Spain, and several other countries. High power prices and low aluminum prices were cited for shutdowns of smelters in the Netherlands, Spain, and the United Kingdom.

Primary production

In January, Alcoa Inc. (Pittsburgh, PA) announced that the temporary closures of the 215,000-t/yr Alcoa, TN, smelter and two of the six idled potlines (76,000 t/yr of capacity) at the 267,000-t/yr Rockdale, TX, smelter would be made permanent. The Rockdale smelter was shut down in 2008 owing to high electricity prices and declining aluminum prices, and the smelter in Tennessee was shut down in early 2009 owing to declining aluminum prices and demand. Subsequent efforts to obtain long-term power contracts for Rockdale at competitive prices were unsuccessful (Alcoa Inc., 2012g).

Alcoa and Bonneville Power Administration (BPA) signed a power supply contract for the 279,000-t/yr Intalco Works smelter at Ferndale, WA. Starting in January 2013, BPA agreed to provide 300 megawatts (MW) per year of power through September 2022. The prior long-term contract between Alcoa and BPA expired in May 2012, but power continued to be supplied to the smelter through short-term contracts during contract negotiations (Alcoa Inc., 2012f).

Production reached full capacity at Century Aluminum Co.'s (Monterey, CA) 244,000-t/yr Hawesville, KY, smelter during the first quarter of 2012. One of the five potlines was idled in March 2009 owing to low aluminum prices and was restarted in December 2010. Issues concerning training new employees were cited for the delay in reaching full capacity (Century Aluminum Co., 2012).

Noranda Aluminum Holding Corp. (Franklin, TN) delayed the planned expansion of its primary aluminum smelter in New Madrid, MO, to midyear-2013 from early 2013. The project would expand smelting capacity to 279,000 t/yr from 263,000 t/yr, and rampup of the new capacity was expected to be completed by yearend 2013 (Waite, 2012a).

A 5-year labor contract between Noranda and the United Steelworkers union was ratified on September 7 by employees at the New Madrid smelter. Work continued during contract negotiations after the previous contract set to expire on August 31 was extended through September 7 (Noranda Aluminum Holding Corp., 2012).

Ormet Corp. (Hannibal, OH) shut down two potlines at its 271,000-t/yr smelter, citing high power prices and low aluminum prices for the shutdowns. One potline was shut down in late July and the second at the end of August for a combined 90,000 t/yr of smelting capacity (Ormet Corp., 2012; Waite, 2012b).

Rio Tinto plc (London, United Kingdom) was making progress with a modernization project at its smelter in Sebree, KY, but completion was delayed until 2014 or 2015 from yearend 2012, as originally planned. Capacity of the smelter

would increase to approximately 210,000 t/yr from 196,000 t/yr (Platts Metals Week, 2012j).

Secondary production

A 3-month long strike at the Nichols Aluminum LLC (Lincolnshire, IL) remelt furnace and rolling mill in Davenport, IA, ended on April 6, and a new 5-year contract was ratified on September 28. Production at the smelter and rolling mill continued at a lower rate during the strike (Waite, 2012c).

In August, Aluminum Shapes, LLC (Delair, NJ) shut down one of its 48,000-t/yr furnaces for unplanned maintenance for 1 month. Aluminum Shapes' other furnace had been idle since 2010 because of low demand (Baltic, 2012).

In April, Bermco Aluminum Co. (Birmingham, AL) announced that it would move forward with construction of a new secondary aluminum smelter in Bessemer, AL. The 110,000-t/yr smelter would replace Bermco's Birmingham smelter. Lack of space to expand at the Birmingham smelter was cited for the move. The new smelter was expected to be completed in early 2013. In September, Bermco idled a 30,000-t/yr furnace at its secondary aluminum smelter in Birmingham. The lack of available scrap and decreased demand from some customers were cited for the shutdown. Two other furnaces continued to produce secondary aluminum ingot at the smelter (Platts Metals Week, 2012b, c).

In January, Sapa Extrusions North America (Rosemont, IL) [a subsidiary of Sapa Group (Stockholm, Sweden)] completed installation of a new 45,000-t/yr furnace for melting scrap in Cressona, PA. Sapa added the secondary smelting capacity and a billet casting pit to reduce the impact of volatile prices for aluminum billet from outside suppliers that can result from increased demand and short supply. The new capacity would be used mainly to produce specialty alloys (Sapa Group, 2012).

In March, Wise Alloys LLC (Muscle Shoals, AL) opened a new furnace to melt aluminum scrap from UBCs. The furnace was estimated to have a melting capacity of 225,000 t/yr of aluminum and increased the company's UBC melting capacity by 55% (Wise Alloys LLC, 2012).

Aleris International Inc. (Beachwood, OH) completed upgrades to secondary smelters in Chicago Heights, IL, and Morgantown, KY. A holding furnace and two rotary furnaces were installed at the Morgantown smelter, and a rotary furnace was installed at the Chicago Heights smelter. Both smelters produced secondary ingot, and the Morgantown smelter also processed dross and salt cake from other secondary aluminum smelters to produce secondary ingot (Fitzgerald, 2012a).

Consumption

Apparent consumption of aluminum in the United States increased by 16% in 2012 from that in 2011. Shipments of aluminum by United States and Canadian producers to their combined domestic markets increased by 5% in 2012 compared with the amount shipped in 2011. Shipments of aluminum to the building and construction, consumer durables, electrical products, machinery, and transportation sectors increased by 6%, 7%, 8%, 2%, and 14%, respectively, compared with those

in 2011. Shipments to the containers and packaging sector decreased by 2% (table 6).

The increase in aluminum shipments for use in transportation was a result of increased automobile production and sales. Domestic sales of new passenger cars and light trucks in 2012 increased by 12.9% compared with sales in 2011 (Petry, 2013). However, strong domestic automobile sales were partially offset by weakness in European markets owing to the European debt crises, especially during the early part of 2012. In 2012, automobile sales in the European Union (EU) declined by 8.2% compared with sales in 2011 (Curtin, 2013).

Part of the increase in shipments of aluminum to the transportation sector was attributed to increased deliveries of commercial aircraft. The Boeing Co. (Chicago, IL) reported that its deliveries of commercial aircraft increased by 26% compared with deliveries in 2011. Although a significant portion of the increased deliveries was 787 Dreamliners, an aircraft with a fuselage and wings made from composite materials instead of aluminum, deliveries of Boeing's other commercial aircraft increased by 17% compared with deliveries in 2011 (Boeing Co., The, 2013, p. 26).

The increase in aluminum shipments for use in building and construction resulted from increased nonresidential and residential construction. Sales of new homes were 19.9% higher in 2012 than in 2011 (U.S. Census Bureau, 2013c). The U.S. Census Bureau and the U.S. Department of Housing and Urban Development jointly reported that housing starts increased by 28.1% in 2012 compared with starts in 2011. The number of houses completed was 11.4% more than in 2011 (U.S. Census Bureau, 2013b). Total construction spending during 2012 increased by 9.2% compared with that in 2011, which was attributed to increased spending on residential construction (16.8%) and private nonresidential construction (15.4%). These increases were partially offset by a 2.7% decrease in spending on public construction (U.S. Census Bureau, 2013a). Increased home construction and sales were attributed to increasing home values and lower mortgage interest rates.

Stocks

According to data reported by the Aluminum Association Inc. (2012; 2013), United States and Canadian producers' combined inventories of aluminum ingot, mill products, and scrap increased by 8% to 1.14 Mt at yearend 2012 from 1.06 Mt at yearend 2011. The LME reported that primary aluminum metal ingot stocks at its U.S. warehouses decreased by 11% to 1.97 Mt at yearend 2012 from 2.20 Mt at yearend 2011. At yearend 2012, LME warehouses in the United States also held 147,000 metric tons (t) of North American special aluminum alloy contract (NASAAC) metal ingot, a 7% decrease from the 157,000 t held at yearend 2011 (London Metal Exchange 2011; 2012).

Prices

The monthly average U.S. market price of primary aluminum metal, as reported by Platts Metals Week, started the year at \$1.034 per pound in January and gradually rose to a peak

of \$1.079 per pound in March. The monthly average price declined gradually through August when it reached a low of \$0.939 per pound. The price was volatile the remainder of the year, rallying in early September, with the monthly average price rising to \$1.033 per pound before gradually declining to \$0.983 per pound in November. The price rebounded to \$1.051 per pound in December. The annual average price in 2012 decreased to \$1.010 per pound from \$1.161 per pound in 2011. The LME monthly average cash prices for primary aluminum ingot followed the same general trend as the U.S. market price, and the 2012 annual average LME cash price decreased to \$0.916 per pound from \$1.088 per pound in 2011. The indicator prices for selected secondary aluminum ingots and scrap, as published in American Metal Market, followed the same trend as primary ingot prices (table 8).

Foreign Trade

In 2012, total net imports of aluminum-base materials were essentially unchanged compared with net imports in 2011 (tables 11 and 12). Imports for consumption of crude aluminum increased by 3%, while imports of semifabricated aluminum materials (plates, sheet, and bars) decreased by 3%, and scrap imports increased slightly. Canada remained the leading source country, accounting for 59% of the total (crude, semifabricated, and scrap) imports in 2012; Russia (7%) and the United Arab Emirates (6%) were the second and third ranked suppliers. Imports of crude metal and alloys from Canada accounted for 44% of all aluminum imports during 2012 (table 12).

Total exports of aluminum increased slightly during 2012 compared with those of 2011 (tables 9 and 10). Exports of crude aluminum (metal and alloys) and semifabricated aluminum materials increased by 15% and 12%, respectively, but exports of scrap decreased by 5%. About 79% of total U.S. exports of unmanufactured aluminum (crude, semifabricated, and scrap) in 2012 were shipped to Canada, China, or Mexico. The aluminum shipped to China was 97% scrap and accounted for 40% of all U.S. aluminum exports during 2012 (table 10).

A labor dispute and employee lockout at Rio Tinto's Alma smelter in Saguenay-Lac-Saint-Jean, Quebec, Canada, had a noticeable impact on the availability of wire rod in the United States. Two-thirds of the smelter's 438,000-t/yr capacity was shut down for the first half of the year. The Alma smelter accounted for one-quarter of the aluminum wire rod capacity in North America, and U.S. wire manufacturers substituted imported material from Iceland, the Middle East, and South America (Rio Tinto Alcan Inc., 2012b; Rio Tinto plc, 2012b, p. 5; Waite, 2012d).

World Industry Structure

Production.—World primary aluminum production increased by 3% in 2012 compared with that of 2011 owing to new smelters and smelter expansions in China and Qatar, as well as restarts of capacity in the United States. These gains were partially offset by smelter closures in several countries as a result of lower aluminum prices, high power costs, financial challenges, labor disputes, and technical issues. China, Russia, Canada, and the United States, in decreasing order of

production, accounted for 63% of total world primary aluminum production. China was the leading producer and accounted for 44% of global production.

During the fourth quarter of 2008 and early 2009, many primary smelters announced shutdowns in response to declining prices as demand for aluminum receded in the face of the financial crisis. Throughout 2010, most of these shutdowns continued, although several restarts were announced in the second half of the year. In 2011, more restarts were announced as prices and demand for aluminum increased. In 2012, new capacity was ramped up although price declines and other factors resulted in some smelter shutdowns, and world production was 16% greater than the prerecession level of 2008.

Stocks.—As aluminum prices recovered from their low level during the financial crisis in 2009, smelter restarts during late 2010 and early 2011 led to increased aluminum inventories by yearend 2011. At yearend 2012, however, combined IAI and LME inventories of primary and alloyed aluminum were essentially unchanged from yearend 2011. Significant decreases in aluminum alloy inventories were offset by increased primary aluminum inventories as speculators preferred primary aluminum to alloyed aluminum. Yearend 2012 inventories of unalloyed aluminum metal held by the LME increased by 5% to 5.21 Mt from 4.98 Mt at yearend 2011, and aluminum alloy inventories decreased by 38% to 87,700 t from 142,000 t. (London Metal Exchange Ltd., 2011; 2012).

The increased inventories at LME warehouses were offset by decreases in IAI total aluminum inventories, which decreased by 5% to 2.28 Mt at yearend 2012 from 2.39 Mt at yearend 2011. Total aluminum includes unwrought aluminum plus unprocessed scrap, metal in process, and finished semifabricated (mill) products. Unwrought aluminum inventories held by IAI member producers decreased by 10% to 1.26 Mt at yearend 2012 from 1.40 Mt at yearend 2011. Unwrought aluminum is defined by the IAI as aluminum in its basic form made from primary metal or from scrap and that is metallurgically unworked (International Aluminium Institute, 2013).

Mergers and Acquisitions.—Norsk Hydro ASA (Oslo, Norway) sold its 75,000-t/yr secondary smelter which produced extrusion ingot in Taiwan to Ting Sin Metal Co. Ltd. in October (Norsk Hydro ASA, 2012a). Norsk Hydro also agreed to combine its extruded products division with Sapa Holdings HB [a subsidiary of Orkla ASA (Oslo)] in a joint venture owned equally by both companies. The new company would be known as Sapa and would have fabrication facilities throughout Europe and North America, as well as in Argentina, Brazil, China, India, and Vietnam. The merger was expected to be completed in the first half of 2013 (Norsk Hydro ASA, 2012b).

World Review

Australia.—Aluminum production in Australia declined by 4% (81,000 t) in 2012 compared with production in 2011 owing to the shutdown of Norsk Hydro's 180,000-t/yr Kurri Kurri smelter in New South Wales. One-third of Kurri Kurri's capacity was shut down in February, and the remaining capacity was shut down in August. Low prices and demand for aluminum, as well as unfavorable currency valuations, were cited for the shutdown (Norsk Hydro ASA, 2012c, d).

Azerbaijan.—Production in Azerbaijan more than doubled as Det.AL Group (Baku) continued to ramp up its new 100,000-t/yr Ganja smelter which started production in November 2011. Production at full capacity was expected to be reached in 2013 (Platts Metals Daily, 2012a).

Bahrain.—Aluminium Bahrain B.S.C. (Alba) (Bahrain) completed upgrading one potline at its smelter, increasing capacity to 937,000 t/yr from 880,000 t/yr. Further upgrades to two other potlines were being made to increase smelter capacity to 970,000 t/yr. Alba also was conducting a bankable feasibility study for a new potline that would increase smelter capacity by an additional 400,000 t/yr (Aluminium Bahrain B.S.C., 2012a, b).

Bosnia and Herzegovina.—Production decreased slightly because Alminij d.d. Mostar (Mostar) cut production at its 135,000-t/yr smelter to 118,000 t/yr in July, citing high power costs and low aluminum prices (CRU Aluminum Monitor, 2012d).

Brazil.—In September, Brazil's Government required utility companies to cut electricity rates by as much as 28% as a condition of renewing operating licenses through 2017. Many companies in the mining and metals industries, including primary aluminum smelters, had lobbied for relief from Brazil's high power prices, which reportedly averaged \$163 per MW hour, significantly higher than in other parts of the world (Orihuela and Spinetto, 2012).

Production at Companhia Brasileira de Alumínio's [a subsidiary of Votorantim Group (São Paulo)], 475,000-t/yr smelter at Sorocaba increased by 11.2% compared with production in 2011. Technical issues throughout 2011 caused a 13% decline compared with production in 2010 (Votorantim Group, 2011; Associação Brasileira do Alumínio, 2013).

Brazil recycled a record-high 98.3% of all aluminum beverage cans sold in the country during 2011, an increase from 97.6% in 2010 and the previous record rate of 98.2% achieved in 2009. Brazil collected and recycled 248,700 t of UBCs, the equivalent of 18.4 billion aluminum cans. Since 2001, Brazil has had the highest aluminum can recycling rate among countries that do not have mandatory recycling laws (Associação Brasileira do Alumínio, 2012).

Novelis Inc. [a subsidiary of Hindalco Industries Ltd. (Mumbai, India)] continued expansion of its recycling facility and rolling mill in Pindamonhangaba to 390,000 t/yr from 200,000 t/yr, with completion expected by yearend 2013. The recycling center melts UBCs and other scrap, and the rolling mill produces can sheet and other rolled products (Novelis Inc., 2012b).

Canada.—In 2012, aluminum production in Canada declined by 7% (203,000 t) compared with production in 2011 because of a labor dispute at one smelter and a power failure at another smelter. A labor dispute and employee lockout that started January 1 at Rio Tinto's 438,000-t/yr Alma smelter at Saguenay-Lac-Saint-Jean, Quebec, ended on July 5 when a new contract was ratified. Two-thirds of the smelter's capacity was shut down during the dispute (Rio Tinto Alcan Inc., 2012b; Rio Tinto plc, 2012b, p. 5).

Rio Tinto's 100,000-t/yr Shawinigan, Quebec, smelter returned to full capacity in March after production was cut by

one-half owing to a power failure on December 29, 2011. The smelter, which uses Soderberg technology, was scheduled to be shut down permanently by yearend 2014 to comply with Provincial environmental regulations (Rio Tinto Alcan Inc., 2012c; Rio Tinto plc, 2012b, p. 16).

Construction continued on a new 60,000-t/yr smelter at Saguenay-Lac-Saint-Jean, Quebec, with the first metal expected in February 2013. The smelter would use pots designed by Rio Tinto Alcan that were expected to increase energy efficiency and production. Further expansions of the smelter to 460,000 t/yr were being studied. The smelter would replace Rio Tinto's 176,000-t/yr Arvida smelter which started production in 1926 (Rio Tinto Alcan Inc., 2012d).

Rio Tinto delayed completion of the modernization of the Kitimat, British Columbia, smelter to yearend 2014 citing challenging market conditions. When completed, the smelter would have a capacity of 420,000 t/yr from new prebaked pots which are replacing Soderberg pots. A new labor contract between Rio Tinto and employees at the Kitimat smelter and nearby powerplant was ratified on July 27 (Rio Tinto Alcan Inc., 2012a; Rio Tinto plc, 2013a, p. 23, 44).

Rochester Aluminum Smelting Canada Ltd. (Concord, Ontario) installed a 22,000-t/yr furnace at its secondary smelter in Concord, Ontario. The new furnace replaced two furnaces that each had a capacity of 11,000 t/yr, which cost more to operate. The secondary smelter produces aluminum used by steel mills for deoxidation (Fitzgerald, 2012b).

China.—Primary aluminum production in China was 12% more in 2012 than in 2011 as the industry continued to evolve. Production from new smelters built principally in the northwestern provinces near coal-fired powerplants more than offset declines from older smelters in the eastern and southern provinces employing less efficient technology and that experienced power shortages and high power prices. The National Government was making efforts to encourage expansion of smelters in the northwestern Xinjiang Province, where rapid smelter expansions took place during the past year, but at the same time, limiting expansion to available power supplies and transportation infrastructure. In order to deal with power shortages and high power prices, many smelters were building captive powerplants. Permanent shutdowns of smelters with obsolete technology mandated by a 2011 National Government policy also contributed to the production decline in some eastern provinces. In the face of low aluminum prices, the National Government and some Provincial governments took action to support prices.

Significant expansion of China's primary and secondary aluminum industry capacity took place in 2012, as did expansion of value-added downstream products. China's primary aluminum capacity was approximately 26.9 Mt/yr at yearend 2012, an increase from 25.6 Mt/yr at yearend 2011. Expansions underway were expected to increase total capacity to approximately 30.2 Mt/yr by yearend 2013 (China Metal Market—Alumina and Aluminum, 2012e; 2013a). Secondary aluminum production in China during 2011 was 5.2 Mt, 6.6% more than that of 2010. China exported 680,000 t of secondary aluminum during 2011 (China Metal Market—Alumina and Aluminum, 2012c).

The Ministry of Industry and Information Technology issued a policy to permanently shut down 270,000 t/yr of obsolete primary smelting capacity by yearend to conserve power and reduce pollution. The policy also applied to outdated technology used to produce cement, coking coal, copper, ferrous alloys, iron and steel, lead, and zinc (China Metal Market—Alumina and Aluminum, 2012m). The Henan Provincial government issued a policy to permanently shut down 179,000 t/yr of obsolete smelting capacity by yearend 2012, 48,000 t/yr of which had been permanently shut down in 2011 (China Metal Market—Alumina and Aluminum, 2012g).

In response to low aluminum prices and weak demand, the National and certain provincial governments took action to support primary aluminum smelters. The State Reserve Bureau purchased 100,000 t of aluminum in November in order to boost the market price and announced plans to purchase an additional 100,000 t (CRU Aluminum Monitor, 2012b). The Yunnan Provincial government also started a stockpile program to help aluminum smelters in the province. Aluminum would be warehoused and the smelters could use the metal as collateral for loans from banks, with the Yunnan Province government paying the interest on the loans. In November, 100,000 t was purchased for the provincial stockpile (China Metal Market—Alumina and Aluminum, 2012k; 2013a).

Some Provincial and municipal governments also provided subsidies to smelters in response to high power prices and low aluminum prices. The Gansu Provincial government provided preferential power prices to energy-intensive industries, including primary aluminum smelters (China Metal Market—Alumina and Aluminum, 2012i). The municipal government of Luoyang, Henan Province, started providing subsidies to aluminum smelters in September (China Metal Market—Alumina and Aluminum, 2012j). In July, the Ningxia Provincial government started providing preferential power prices to energy-intensive industries, including primary aluminum smelters, which enabled smelters in Ningxia to maintain production levels (China Metal Market—Alumina and Aluminum, 2012i).

Gansu Province.—In August, JISCO Dongxing Special Aluminum Alloy Co. Ltd. completed the ramp up of a 450,000-t/yr smelter in Jiuquan, which began producing in December 2011. An expansion was started in June that would increase capacity to 1 Mt/yr and was expected to be completed in mid-2014 (China Metal Market—Alumina and Aluminum, 2012i).

In September, Gansu Hongtai Aluminum Co. Ltd. (a subsidiary of Qingdao Dezheng Group Ltd.) started construction of a 1-Mt/yr aluminum smelter in Baiyin. The project also included a 2,000-MW powerplant and a 15-Mt/yr coal mine (China Metal Market—Alumina and Aluminum, 2012j; CRU Aluminum Monitor, 2012f).

Lintao Aluminum Co. Ltd. was constructing a 50,000-t/yr potline to replace the smelter's two obsolete potlines which were shut down in 2005 and 2006. When completed in early 2013, the smelter in Lintai County would use abundant hydroelectric power (China Metal Market—Alumina and Aluminum, 2012d).

Guangxi Province.—In May, Guangxi Yin Hai Aluminum Co. Ltd. restarted potlines at two smelters which were shut

down in August and September 2011 owing to power shortages. The smelters each had a capacity of 225,000 t/yr and each had been producing at a rate of 110,000 t/yr during the shutdown (Platts Metals Week, 2012f).

In February, Guangxi Suyuan Investment Co. Ltd. started construction of a smelter in Xinshan. The first 200,000 t/yr of capacity was to be completed in August 2013, and an expansion to 300,000 t/yr was planned. The project also included a 600-MW powerplant and a 300,000-t/yr rolling mill (China Metal Market—Alumina and Aluminum, 2012g).

Guizhou Province.—In June, Huangguoshu Aluminum Co. Ltd. completed expansion of its smelter in Anshun and started production in October. The project increased capacity to 180,000 t/yr from 115,000 t/yr (China Metal Market—Alumina and Aluminum, 2012k).

Aluminum Corp. of China (Chinalco) temporarily shut down some capacity at its 255,000-t/yr smelter in Zuiyi during the first quarter, citing power shortages from hydroelectric powerplants experiencing drought conditions. Chinalco restarted the idled pots in May (China Metal Market—Alumina and Aluminum, 2012f, g).

Henan Province.—Sanmenxia Tianyuan Aluminum Co. Ltd. shut down its 150,000-t/yr smelter in Hubin in September, citing high power costs and low aluminum prices. The company had already shut down its 120,000-t/yr smelter in Mianchi in October 2011, citing the high cost of power in the Province. The company indicated that both shutdowns would likely be permanent (Platts Metals Week, 2012g).

Citing low aluminum prices and the high cost of power, Shenhuo Group Ltd. temporarily shut down the 140,000-t/yr Qingyang smelter and the 120,000-t/yr Xinfeng smelter during the first quarter of the year (CRU Aluminum Monitor, 2012a).

Inner Mongolia Province.—In July, Chinalco started construction of an integrated aluminum project in Jungar. In addition to a 500,000-t/yr smelter, the project would include a 1.2-Mt/yr alumina refinery that would produce alumina from coal ash, a 1,050-MW captive powerplant, and a 10-Mt/yr coal mine (CRU Aluminum Monitor, 2012d).

Inner Mongolia Jinlian Aluminum Semis Co. Ltd. was constructing a 450,000-t/yr smelter in Hologol, along with a 1,100-MW powerplant, a 10-Mt/yr coal mine, and a 500,000-t/yr rolling mill. Expansion of the smelter to 1 Mt/yr was planned (China Metal Market—Alumina and Aluminum, 2012g).

Huomei Group Ltd. and Hangzhou Jiniang Group Ltd. started construction of a 450,000-t/yr smelter in Houlinhe during the first quarter of the year. Further expansion of the smelter to 1 Mt/yr was planned, as well as a rolling mill, a 1,100-MW powerplant, and a 10-Mt/yr coal mine (China Metal Market—Alumina and Aluminum, 2012c).

CPI Huomei Hongjun Aluminum and Power Co. Ltd. ramped up new capacity at its smelter in Tongliao during the first quarter of the year. The expansion increased the smelting capacity to 780,000 t/yr from 430,000 t/yr (China Metal Market—Alumina and Aluminum, 2012a).

Liaoning Province.—China Zhongwang Holdings Ltd. started construction of an aluminum smelter in Yingkou. The

first phase, with 400,000 t/yr of capacity, was expected to be completed in October 2013, and an expansion to 800,000 t/yr was to be built later. The company manufactures extruded aluminum parts for the electrical, machinery, and transportation sectors, and the smelter would enable it to supply its own billet (CRU Aluminum Monitor, 2012e).

In June, Chinalco completed expanding its smelter in Fushun to 310,000 t/yr from 210,000 t/yr, and ramped up the new pot line to full capacity in August (China Metal Market—Alumina and Aluminum, 2012g, j).

Ningxia Province.—Chinalco began construction of a 1-Mt/yr smelter with a 2,000-MW powerplant in Guyuan. The smelter would be built in two phases starting in October (China Metal Market—Alumina and Aluminum, 2012h).

Qinghai Province.—Sanmenxia Tianyuan was constructing a 500,000-t/yr smelter in Xining, with initial production expected in 2013 (Platts Metals Week, 2012g).

The Huanghe Xinye Aluminum Co. Ltd. smelter in Xining, Qinghai Province reached full capacity in January. The expansion, which was completed in March 2011, increased capacity to 550,000 t/yr from 250,000 t/yr (China Metal Market—Alumina and Aluminum, 2012b).

In January, West Hydropower Co. Ltd. started production from its new 150,000-t/yr smelter in Minhe County. Further expansion of the smelter to 400,000 t/yr and a rolling mill were reportedly being considered (China Metal Market—Alumina and Aluminum, 2012b; CRU Aluminum Monitor, 2012c).

Qinghai Material Industry Group Co. Ltd. completed modernization of its smelter in Datong County. The project increased capacity to 300,000 t/yr from 250,000 t/yr and the new capacity was put into production in December (China Metal Market—Alumina and Aluminum, 2013a).

In April, Tianrui Group Ltd. started construction of an industrial complex that would include an aluminum smelter, a powerplant, and a rolling mill in Xining. The smelter was expected to be completed in 2015 (China Metal Market—Alumina and Aluminum, 2012f).

In June, Chinalco started to expand its smelter in Xining to 900,000 t/yr from 400,000 t/yr. The project would include a 1,050-MW captive powerplant (China Metal Market—Alumina and Aluminum, 2012g).

Shaanxi Province.—Shaanxi Yulin Nonferrous Metals Co. Ltd. completed a 650,000-t/yr smelter in Yulin and started production in June. The project also included a 1,650-MW powerplant and 8-Mt/yr coal mine (China Metal Market—Alumina and Aluminum, 2012e).

In December, Shanxi Yangquan Aluminum Co. Ltd. permanently shut down its 40,000-t/yr smelter in Yangquan, citing high power prices and obsolete technology (China Metal Market—Alumina and Aluminum, 2013b).

Shandong Province.—In March, Shandong Yili Aluminum and Power Co. Ltd. completed the ramp up of its 400,000-t/yr smelter in Longkou. The smelter was completed in October 2011, and production started in November 2011 (China Metal Market—Alumina and Aluminum, 2012d).

Xinjiang Province.—During the first quarter of the year, Xinjiang Tianshan Aluminum Co. Ltd. started production from its 460,000-t/yr smelter in Shihezhi. A 300,000-t/yr rolling mill

also started production and a captive powerplant was built. Further expansions were planned to increase smelting capacity to 1.6 Mt/yr, rolling capacity to 1 Mt/yr, and power generation to 3,500 MW by 2017 (China Metal Market—Alumina and Aluminum, 2012c; CRU Aluminum Monitor, 2012c).

In July, Xinfu Xinjiang Aluminum & Power Co. (a subsidiary of Shandong Chiping Xinfu Group) completed expanding its smelter in Wujiacu to 800,000 t/yr from 400,000 t/yr (China Metal Market—Alumina and Aluminum, 2012h).

Xinjiang Qiya Aluminum and Power Ltd. completed its 450,000-t/yr smelter in Wucaiwan and started production in August. Further expansion of the smelter to 800,000 t/yr and a 1,440-MW powerplant were planned (China Metal Market—Alumina and Aluminum, 2012j; CRU Aluminum Monitor, 2012e).

Xinjiang Shenhua Coal and Power Co. completed a 130,000-t/yr smelter in Wucaiwan and started production in October. Expansion of the smelter to 1.6 Mt/yr was planned (CRU Aluminum Monitor, 2012g).

In December, East Hope Group Ltd. completed expanding its smelter in Jimsar County to 600,000 t/yr from 300,000 t/yr. The first phase of the smelter was completed at yearend 2011 and started commercial production in the first quarter of 2012. Rampup of the second phase was expected to be completed in early 2013. Further expansions were planned to increase capacity to 2 Mt/yr by the end of 2014 (Platts Metals Daily, 2012b).

Xinjiang Jiarun Co. Ltd. was constructing an 800,000-t/yr smelter in Manas County. The first phase of the smelter, with a capacity of 400,000 t/yr was completed at yearend 2012 and the second phase was expected to be completed in 2013. Further expansion to 1.6 Mt/yr was planned (China Metal Market—Alumina and Aluminum, 2012h).

In January, construction started on a 1-Mt/yr smelter in Shanshan County. The project, a joint venture between Chinalco (65%) and Jiaozuo Wanfang Aluminum Co. Ltd. (35%), was to include a 1,750-MW captive powerplant and a nearby 10-Mt/yr coal mine (China Metal Market—Alumina and Aluminum, 2012i).

Xinjiang Joinworld Co. Ltd. was planning to construct a smelter and rolling mill to produce high-purity aluminum (99.99%) in Urumchi. When completed, the smelter would have a capacity of 90,000 t/yr and would supply high-purity aluminum foil for electronics manufacturers (China Metal Market—Alumina and Aluminum, 2012i).

Yunnan Province.—In February, Yunnan Dongyuan Aluminum Co. Ltd. shut down 30,000 t/yr of capacity at its 410,000-t/yr smelter in Fuyuan County. A drought caused low water levels at hydroelectric powerplants in the area, resulting in a power shortage at the smelter (China Metal Market—Alumina and Aluminum, 2012n).

Yunnan Yongxin Aluminum Co. Ltd. completed its 330,000-t/yr smelter in Jianshui County and started production during the second quarter of the year. The smelter ramped up to full capacity by yearend (China Metal Market—Alumina and Aluminum, 2012h).

Germany.—Norsk Hydro signed a 5-year power supply contract with a Swedish utility company to enable the

230,000-t/yr Neuss smelter to increase production to 150,000 t/yr from 50,000 t/yr, starting in the first half of 2013. The German Government was providing financial assistance to energy-intensive industries, including the Neuss smelter, to offset high power prices (Wookey, 2012).

In November, Novelis started construction of a 400,000-t/yr secondary aluminum smelter at its rolling mill in Nachterstedt. Recycled UBCs and other scrap would be used to make sheet ingot when completed in mid-2014 (Novelis Inc., 2012a).

Iceland.—Rio Tinto completed a billet casthouse at the ISAL smelter in Straumsvik and started billet production in the second quarter of the year. The casthouse was part of an expansion and modernization project that would increase the capacity of the smelter to 230,000 t/yr from 190,000 t/yr by July 2014 (Rio Tinto plc, 2012a, p. 7).

India.—Production of aluminum in India increased slightly (33,000 t) owing to expansions of existing smelters, partially offset by reduced production at one smelter caused by power shortages that began in 2011. Vedanta Resources plc completed expansion of the Jharsuguda smelter to 550,000 t/yr from 500,000 t/yr during the second quarter. Work on the 325,000-t/yr Korba III smelter was also progressing toward completion in mid-2014 (Vedanta Resources plc, 2012; 2013).

Hindalco was expanding the Hirakud smelter to 213,000 t/yr from 161,000 t/yr with completion scheduled for early 2013. Construction of the 359,000-t/yr Mahan smelter and an adjacent 900-MW powerplant continued during the year, with completion expected in early 2013 (Hindalco Industries Inc., 2012a, p. 51). Construction of the 359,000-t/yr Aditya smelter and an adjacent 900-MW powerplant also was progressing, although at a revised slower rate, with completion expected in early 2013 (Hindalco Industries Inc., 2012b).

National Aluminium Co. Ltd. (Nalco) (Bhubaneswar) operated the 345,000-t/yr Angul smelter at a rate of about 310,000 t/yr during the first half of the year. Production from the smelter and its captive powerplant were reduced in September 2011 owing to shortages of coal (National Aluminium Co. Ltd., 2012a). Nalco completed expansion of its Angul smelter that increased capacity to 460,000 t/yr from 345,000 t/yr during the first half of the year (National Aluminium Co. Ltd., 2012b).

Italy.—Production of aluminum declined by 35% (58,000 t) in Italy during 2012 compared with production in 2011 as a result of reduced output at and closure in November of Alcoa's 150,000-t/yr smelter in Portovesme owing to high power costs and low aluminum prices. Alcoa, which had been trying to sell the smelter prior to the shutdown, planned to keep the smelter in condition for a restart to maintain its marketability. In 2009, the European Commission ruled that power contracts between Alcoa and the Italian Government did not comply with EU regulations. Short-term agreements between Alcoa and the Government enabled the smelter to remain open for 3 years, but a new contract could not be negotiated that complied with EU regulations and would enable the smelter to remain competitive. With the shutdown of the Portovesme smelter, Italy no longer produced primary aluminum (Alcoa, 2012e; American Metal Market, 2012; Trabattoni, 2012).

Korea, Republic of.—In October, Novelis completed its 265,000-t/yr secondary smelter in Yeongju. The smelter would

melt UBCs and supply rolling ingot for the adjacent rolling mill and another rolling mill at Ulsan (Novelis Inc., 2012b).

Malaysia.—Press Metal Berhad's (Selangor) production increased by 50% (40,000 t) following completion and startup in the second half of the year at the 240,000-t/yr Samalaju smelter (Press Metal Berhad, 2012).

Netherlands.—Aluminum production declined by 50% (150,000 t) in 2012 compared with production in 2011 after Zeeland Aluminum Co. (Zalco) (Vlissingen) closed its 275,000-t/yr smelter in Vlissingen in December 2011. The Zalco smelter, which had filed for bankruptcy when it closed, was sold in June. Century Aluminum purchased the 150,000-t/yr anode plant to supply its smelter at Grundartangi, Iceland, and UTB Industry, a Dutch machinery wholesaler, purchased the potlines and casthouse. The potlines were to be demolished because of the high cost of operating them, but the casthouse was to be used for secondary aluminum production (Platts Metals Week, 2012h).

New Zealand.—Production from Rio Tinto's 350,000-t/yr Tiwia Point smelter declined by 9% compared with production in 2011. Low water levels reduced available power from hydroelectric powerplants which were the smelter's primary power supply, and Rio Tinto was unable to obtain additional power for the smelter (Platts Metals Week, 2012i; Rio Tinto plc, 2013b, p. 19).

Norway.—Norsk Hydro shut down a casthouse used to produce secondary aluminum ingot at Ardal in August, citing the high costs of melting scrap. The remaining casthouse would continue using aluminum from Hydro's primary smelter (Norsk Hydro ASA, 2012e).

Romania.—Alro S.A. [a subsidiary of Vimetco N.V. (Bucharest)] decreased production from the Slatina smelter by 5% compared with production in 2011 citing power shortages. Hidroelectrica S.A., the main power provider for the 265,000-t/yr smelter, declared a force majeure in January, resulting in disruption of power supplies and higher costs for power (Alro S.A., 2012a, b).

Russia.—In February, United Company RUSAL (Moscow) completed the first stage of a project at the Nadvoisty smelter that increased specialty ingot production from 15,000 t/yr to 45,000 t/yr. A second stage of the modernization project would increase specialty ingot capacity to match the smelter's capacity of 81,000 t/yr. RUSAL also completed modernization projects adding capacity to produce specialty ingot and rolling slab at the Volkhov and Ural smelters about midyear. Further upgrades, expected to be completed by the first quarter of 2013, would add capacity for wire rod at the Kandalaksha smelter and for rolling slab at the Volgograd smelter. When completed, all production from these five smelters would be in the form of value-added products such as rolling slab, specialty ingot, or wire rod (United Company RUSAL, 2012d, h).

RUSAL announced plans to increase production of value added products at its smelters in Siberia to 1.26 Mt/yr from 1.13 Mt/yr in 2012, and to 1.93 Mt/yr by 2016. The Bratz, Krasnoyarsk, and Sayanogorsk smelters were upgraded during the year to increase combined rolling slab production for the automotive sheet and packaging markets to 507,000 t/yr from 424,000 t/yr. The Novokuznetsk smelter was to be upgraded

to produce extrusion billet for the building and construction market. The Irkutsk smelter was to be upgraded to produce wire rod from aluminum-rare-earth-element alloys for the cable industry (United Company RUSAL, 2012e).

RUSAL was progressing on the Boguchansky smelter, with production from the first 147,000-t/yr potline expected to start in August 2013. When completed in 2016, the smelter would have a capacity of 600,000 t/yr. The smelter would be powered by the 3,000-MW Boguchanskaya hydroelectric powerplant on the Angara River that started producing power from two of its nine turbines in October. The Boguchanskaya hydroelectric powerplant was a joint venture between RUSAL and RusHydro and was expected to be fully operational in 2013 (United Company RUSAL, 2012a, b, f).

Construction of infrastructure needed for the 750,000-t/yr Taishet smelter was progressing, but construction of the smelter was delayed until economic conditions improve (United Company RUSAL, 2012g).

RUSAL planned to permanently close 275,000 t/yr of high-cost capacity at its smelters in western Russia by 2018. The Bogoslovsk smelter shut down 150,000 t/yr of capacity by yearend 2012; the Nadvoitsy and Volkhov smelters were to shut down 75,000 t/yr total capacity in 2015; and the Novokuznetsk smelter was to shut down two potlines with a combined 50,000 t/yr of capacity in 2018. Expiring power contracts and the high price of power in western Russia were cited for the closures (United Company RUSAL, 2012c).

Saudi Arabia.—In December, Alcoa (25.1%) and Saudi Arabian Mining Co. (Ma'aden) (Riyadh) (74.9%) produced the first aluminum from their joint-venture smelter in Ras Al Khair. The 740,000-t/yr smelter was to ramp up to full capacity during 2013. Alcoa and Ma'aden also broke ground in December for the second phase of the rolling mill adjacent to the smelter that would produce foil stock and sheet for the automotive and construction markets. When commissioned, the initial rolling mill capacity would produce sheet for containers and packaging. The entire rolling mill was expected to be completed in 2014 (Alcoa Inc., 2012a, h).

South Africa.—Primary aluminum production from the 715,000-t/yr Hillside smelter decreased by 21% compared with production in 2011. BHP Billiton Ltd. (Melbourne, Victoria, Australia) attributed the production decline to a major unplanned outage of its anode furnace during the first quarter of the year. The smelter returned to full capacity by yearend, but the shutdown resulted in South Africa's total aluminum production declining by 18% (144,000 t) compared with production in 2011 (Platts Metals Week, 2012d; BHP Billiton Ltd., 2013, p. 2, 7).

Spain.—Alcoa temporarily shut down the 93,000-t/yr Aviles and 87,000-t/yr La Coruna smelters during the first half of the year, resulting in a 37% (135,000 t) decrease in primary aluminum production in Spain during 2012. High costs for power and raw materials combined with falling aluminum prices were cited for the closures (Alcoa Inc., 2012e).

United Arab Emirates.—In October, Emirates Aluminium Ltd. (EMAL) (Abu Dhabi) increased capacity of the Al Taweelah smelter to 800,000 t/yr from 750,000 t/yr. Construction continued on a new potline that would further

increase capacity to 1.3 Mt/yr when completed in 2014. EMAL was a partnership between Dubai Aluminium Co. Ltd. and Mubadala Development Co. (Emirates Aluminium Ltd., 2012a, b).

United Kingdom.—Primary aluminum production in the United Kingdom decreased by 72% (153,000 t) during 2012 owing to the permanent closure of Rio Tinto's 182,000-t/yr smelter at Lynemouth on March 29. The high cost of power associated with compliance to emerging regulatory requirements was cited as the reason for the shutdown of the smelter which started production in 1972 (Rio Tinto plc, 2011; 2012b, p. 17).

Venezuela.—Primary aluminum production in Venezuela during 2012 was 47% (180,000 t) lower than in 2011 owing to shortages of raw materials at both of the country's smelters, including aluminum fluoride, cryolite, and petroleum coke, which began in 2011 and continued through 2012. During the first half of 2012, the 170,000-t/yr Alcasa smelter produced at a rate of about 65,000 t/yr, and the production rate at the 430,000-t/yr Venalum smelter decreased to about 105,000 t/yr. In the middle of the year, the smelters received emergency Government funding to purchase raw materials, although the production rates did not increase significantly (Platts Metals Daily, 2012c; Platts Metals Week, 2012a, e).

Outlook

Aluminum prices, which had increased during the second half of 2012, declined during the first half of 2013. As of June 1, 2013, about 25% (690,000 t/yr) of domestic primary aluminum smelting capacity was idled. World demand for aluminum in 2013 was not expected to change significantly from that in 2012 because the rate of economic expansion in China had declined and aluminum consumption in Europe continues to stagnate. Further uncertainties about Japan's economy were expected to contribute to declining aluminum consumption in that country.

Lingering effects of the sovereign debt issues in Europe raised concerns about economic growth and consumer demand, and automobile sales declined during the early part of 2013 compared with sales in the same period of 2012. In the United States, consumption of aluminum was expected to increase during 2013, led by increased automobile manufacturing and home construction. Demographic trends suggested that European automobile sales may stay at the 2012 levels or decline further even after Europe's economy recovers (Curtin, 2013). However, substitution of aluminum for steel in the automobile industry and increased aircraft manufacturing to replace older aircraft with more efficient aircraft were expected to contribute to increased aluminum consumption in the future in those applications.

Automakers were reportedly working with aluminum producers to develop vehicles with aluminum frames and doors to reduce vehicle weight and increase fuel efficiency in response to increased Corporate Average Fuel Economy standards. Substituting steel with aluminum in these parts could increase the average amount of aluminum per vehicle to 249 kilograms by 2025 from 156 kilograms in 2012 (Kelly, 2012). In anticipation of increased consumption of aluminum sheet by automobile manufactures, Alcoa started construction of an

expansion of its rolling mill at Davenport, IA. The project was expected to be completed by yearend 2013 (Alcoa Inc., 2012c).

To meet anticipated consumption increases in the aerospace industry, Alcoa was increasing its capacity to produce aluminum-lithium alloys. Projects located at Lafayette, IN, Upper Burrell, PA, and Kitts Green, United Kingdom, would increase capacity to produce aluminum-lithium alloy billet and rolling ingot for making lighter aircraft. The new alloys were developed in response to competitive threats from composite materials for aircraft manufacture introduced in recent years. Capacity at the Lafayette project was planned to be 20,000 t/yr of aluminum-lithium alloys and was expected to be completed by yearend 2014 (Alcoa Inc., 2012b, d). Chinalco also developed a new aluminum-lithium alloy to be used in the aerospace industry. The alloy would be produced by Southwest Aluminum Group Co. Ltd., a subsidiary of Chinalco (China Metal Market—Alumina and Aluminum, 2012b).

Relatively high electricity prices in parts of the United States diminish the likelihood that domestic smelters currently shut down will reopen in the near term. Owners of several operating smelters were negotiating for lower power prices in order to continue operating despite low aluminum prices. Production declines at several smelters in Canada, Europe, and India were announced in the early part of 2013, citing low aluminum prices, high power costs, power shortages, and the high cost of compliance with increasingly stringent environmental regulations. Older smelters in Canada, China, and the United States were being modernized to replace obsolete technology to comply with environmental regulations, increase efficiency, and reduce costs. New smelter construction where power costs are relatively low was expected to continue to replace production at high-cost smelters in the United States and elsewhere.

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TABLE 1
SALIENT ALUMINUM STATISTICS¹

(Thousand metric tons unless otherwise specified)

	2008	2009	2010	2011	2012
United States:					
Primary production:					
Quantity	2,658	1,727	1,726	1,986	2,070
Value	\$7,062	\$3,025	\$3,975	\$5,083	\$4,608
Price, average, U.S. market, spot	120.5	79.4	104.4	116.1	101.0
Inventories (December 31):					
Aluminum industry ²	1,220	937	1,010	1,060	1,140
London Metal Exchange, U.S. warehouses ³	1,290	2,200	2,230	2,360	2,120
Secondary recovery: ⁴					
New scrap	2,130	1,570	1,540	1,640 ^r	1,830
Old scrap	1,500	1,260	1,250	1,470 ^r	1,440
Total	3,630	2,820	2,790	3,120 ^r	3,270
Exports, crude, semicrude, and scrap	3,280	2,710	3,040	3,420	3,480
Imports for consumption, crude and semicrude ⁵	3,710	3,680	3,610	3,710	3,760
Supply, apparent ⁶	6,070	4,890	5,000	5,210 ^r	5,780
Consumption, apparent ⁷	3,940	3,320	3,460	3,570 ^r	3,950
World, production	39,700	37,300 ^r	41,200	44,400	45,900 ^e

^rRevised.

¹Data are rounded to no more than three significant digits except "Primary production: Quantity and Value" and "Price, average, U.S. market, spot."

²Data from the Aluminum Association Inc.; includes ingot, semifabricated material, and scrap inventory levels for 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.

⁵Excludes scrap.

⁶Defined as domestic primary metal production plus secondary recovery plus imports (excluding scrap) minus exports plus adjustments for London Metal Exchange (U.S. warehouses) and industry stock changes.

⁷Apparent supply less recovery from purchased new scrap.

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

Company and location	Yearend capacity (thousand metric tons)		Ownership in 2012
	2011	2012	
Alcoa Inc.:			
Alcoa, TN	215 ²	--	Alcoa Inc., 100%.
Evansville, IN (Warrick)	269	269	Do.
Ferndale, WA (Intalco)	279	279	Do.
Massena, NY (St. Lawrence)	125	125	Do.
Massena, NY	130	130	Do.
Mount Holly, SC	229	229	Alcoa Inc., 50.3%; Century Aluminum Co., 49.7%.
Rockdale, TX	267 ²	191 ²	Alcoa Inc., 100%.
Wenatchee, WA	184	184	Do.
Total	1,700	1,410	
Century Aluminum Co.:			
Hawesville, KY	244	244	Century Aluminum Co., 100%.
Ravenswood, WV	170 ²	170 ²	Do.
Total	414	414	
Columbia Falls Aluminum Co., Columbia Falls, MT	168 ²	168 ²	Glencore International AG, 100%.
Goldendale Aluminum Co., Goldendale, WA	-- ^r	--	Private interest, 60%; employees, 40%.
Noranda Aluminum Holding Corp., New Madrid, MO	263	263	Noranda Aluminum Holding Corp., 100%.
Ormet Primary Aluminum Corp., Hannibal, OH	271 ^r	271	Ormet Corp., 100%.
Rio Tinto Alcan Inc., Seabee, KY	196	196	Rio Tinto Alcan Inc., 100%.
Grand total	3,010 ^r	2,720	

^rRevised. Do. Ditto. -- Zero.

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

²Temporarily idle at yearend.

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

(Metric tons)

Class	Consumption	Calculated recovery	
		Aluminum	Metallic
2011:			
Secondary smelters	2,060,000 ^r	1,400,000	1,500,000
Independent mill fabricators ^r	1,480,000	1,260,000	1,340,000
Foundries	50,700	41,400	44,300
Other consumers	5,770	5,770	5,770
Total ^r	3,600,000	2,710,000	2,890,000
Estimated full industry coverage ^r	3,890,000	2,920,000	3,120,000
2012:			
Secondary smelters	2,160,000	1,470,000	1,580,000
Independent mill fabricators	1,520,000	1,290,000	1,370,000
Foundries	85,600	70,700	75,700
Other consumers	5,700	5,700	5,700
Total	3,770,000	2,840,000	3,030,000
Estimated full industry coverage	4,080,000	3,070,000	3,270,000

^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 2012^{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	18,900	312,000	312,000	19,300
Can stock clippings	8,060	110,000	110,000	8,140
Other wrought sheet and clippings	4,640	218,000	218,000	5,030
Casting	2,150	47,900	48,300	1,810
Borings and turnings	3,750 ^r	122,000	122,000	4,250
Dross and skimmings	15,900	643,000	645,000	13,200
Total	53,400	1,450,000	1,460,000	51,700
Old scrap:				
Castings	2,530	118,000	117,000	3,290
Extrusion	7,610 ^r	157,000	157,000	7,560
Aluminum cans ⁴	28,400 ^r	161,000	161,000	28,600
Other wrought products	9,230 ^r	160,000	162,000	7,460
Auto shredder scrap	1,350 ^r	102,000	102,000	1,810
Total	49,100 ^r	698,000	699,000	48,700
Sweated pig	55	1,850	1,720	183
Grand total secondary smelters	103,000 ^r	2,150,000	2,160,000	101,000

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 2012^{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	731	176,000	175,000	1,190
Can stock clippings	2,660	162,000	164,000	581
Other wrought sheet and clippings	8,770	268,000	270,000	6,210
Casting	243	17,100	17,100	243
Borings and turnings	414	14,100	14,100	459
Dross and skimmings	487	4,750	4,800	432
Total	13,300	641,000	645,000	9,120
Old scrap:				
Castings	3,750	153,000	152,000	4,540
Extrusion	831	16,200	16,000	1,010
Aluminum cans ⁴	2,100 ^r	584,000	583,000	2,360
Other wrought products	381	222,000	212,000	10,600
Auto shredder scrap	102	2,680	2,470	312
Total	7,160 ^r	978,000	966,000	18,800
Grand total integrated aluminum companies, etc.	20,500 ^r	1,620,000	1,610,000	27,900
All scrap consumed:				
New scrap:				
Extrusion	19,600	488,000	487,000	20,500
Can stock clippings	10,700	272,000	274,000	8,720
Other wrought sheet and clippings	13,400	486,000	488,000	11,200
Casting	2,390	65,100	65,400	2,050
Borings and turnings	4,160 ^r	137,000	136,000	4,710
Dross and skimmings	16,400 ^r	647,000	650,000	13,600
Total	66,700	2,090,000	2,100,000	60,800
Old scrap:				
Castings	6,280	271,000	270,000	7,840
Extrusion	8,440 ^r	173,000	173,000	8,570
Aluminum cans ⁴	30,500 ^r	745,000	744,000	30,900
Other wrought products	9,610 ^r	383,000	374,000	18,100
Auto shredder scrap	1,450 ^r	105,000	104,000	2,130
Total	56,300 ^r	1,680,000	1,660,000	67,500
Sweated pig	55	1,850	1,720	183
Grand total of all scrap consumed	123,000 ^r	3,770,000	3,770,000	129,000

^rRevised.

¹Includes imported scrap. According to reporting companies, 2.50% of total receipts of aluminum-base scrap, or 96,300 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 integrated 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)

	2011		2012	
	Production	Net shipments ²	Production	Net shipments ²
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	47,600	46,400	47,000	47,200
380 and variations	242,000	236,000	195,000	196,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	51,000	50,000	52,900	53,100
No. 12 and variations	998	998	998	998
No. 319 and variations	68,200	66,100	82,800	82,900
F-132 alloy and variations	4,770	5,260	4,780	4,620
Al-Mg alloys	7,830	8,010	10,100	9,700
Al-Zn alloys	1,530	1,710	2,290	2,080
Al-Si alloys (0.6% to 2.0% Cu)	3,450	3,500	3,360	3,400
Al-Cu alloys (1.5% Si, maximum)	2,070	1,950	1,600	1,750
Al-Si-Cu-Ni alloys	2,550	3,240	1,850	1,870
Other	--	18	154	98
Wrought alloys, extrusion billets	508,000 ^r	510,000 ^r	527,000	525,000
Miscellaneous:				
Steel deoxidation	41,700	41,800	32,700	32,700
Pure (97.0% Al)	W	W	W	W
Aluminum-base hardeners	W	W	W	W
Other ³	39,500 ^r	46,700 ^r	41,100	36,600
Total	1,020,000	1,020,000	1,000,000	998,000
Less consumption of materials other than scrap:				
Primary aluminum	145,000 ^r	XX	129,000	XX
Primary silicon	24,500 ^r	XX	23,900	XX
Other	16,100 ^r	XX	12,900	XX
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot⁴				
	835,000 ^r	XX	838,000	XX

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

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

²Includes inventory adjustment.

³Includes other diecast alloys.

⁴No allowance made for 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	2011 ^r		2012 ^p	
	Quantity (thousand metric tons)	Percentage of grand total	Quantity (thousand metric tons)	Percentage of grand total
Containers and packaging	2,160	21.1	2,110	19.6
Building and construction	1,110	10.9	1,180	11.0
Transportation	2,820	27.5	3,220	29.9
Electrical	798	7.8	860	8.0
Consumer durables	631	6.2	672	6.2
Machinery and equipment	682	6.7	698	6.5
Other markets	322	3.1	341	3.1
Total	8,520	83.3	9,080	84.3
Exports ^c	1,700	16.7	1,690	15.7
Grand total	10,200	100.0	10,800	100

^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}

(Thousand metric tons)

	2010 ^r	2011	2012
Wrought products:³			
Sheet, plate, foil	4,450	4,640	4,770
Pipe, tube, extruded shapes	1,530	1,620 ^r	1,720
Rod, bar, wire, cable	543	621 ^r	676
Forgings (including impacts)	96	122 ^r	137
Powder, flake, paste	64	67 ^r	60
Total	6,680	7,070 ^r	7,370
Castings:			
Sand	147	178	127
Permanent and semipermanent mold	475	494	589
Die	949	1,010	1,110
Other	5	9	34
Total	1,580	1,690	1,860
Grand total	8,260	8,760	9,220

^rPreliminary. ^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
ALUMINUM PRICES

(Dollars per pound)

Material	2011	2012
Primary aluminum, average:¹		
U.S. market	1.161	1.010
London Metal Exchange cash price	1.088	0.916
NASAAC cash price, average ²	1.079	0.907
Secondary alloy, average:³		
A319 (3% Cu)	1.233	1.100
A356 (0.2% Cu)	1.255	1.126
A360 (0.6% Cu)	1.245	1.116
A380 (3% Zn)	1.175	1.044
A413 (0.6% Cu)	1.247	1.117
Scrap, average:³		
Clean, dry turnings	0.757	0.706
Mixed low-copper-content clips	0.819	0.748
Old cast	0.768 ⁴	0.733
Old sheet	0.750 ⁴	0.707
Used beverage cans	0.867	0.755

¹Source: Platts Metals Week.

²North American Special Aluminum Alloy Contract (NASAAC).

³Source: American Metal Market.

⁴Average price for April–December; prices for January through March were not available.

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

Class	2011		2012	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	314,000	\$891,000	360,000	\$902,000
Scrap	2,140,000	4,050,000	2,040,000	3,490,000
Plates, sheets, bars, strip, etc.	907,000	4,080,000	1,010,000	4,390,000
Castings and forgings	20,900	317,000	23,400	335,000
Semifabricated forms, n.e.c.	36,100	296,000	47,000	365,000
Total	3,420,000	9,640,000	3,480,000	9,480,000
Manufactures:				
Foil and leaf	122,000	527,000	93,800	424,000
Powders and flakes	4,660	27,700	2,970	15,600
Wire and cable	43,900	187,000	42,800	154,000
Total	171,000	741,000	140,000	594,000
Grand total	3,590,000	10,400,000	3,620,000	10,100,000

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. 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)
2011:								
Brazil	42	\$598	8,960	\$67,700	4,290	\$9,240	13,300	\$77,600
Canada	90,800	251,000	372,000	1,550,000	139,000	313,000	602,000	2,120,000
China	4,490	12,300	32,800	230,000	1,450,000	2,740,000	1,480,000	2,980,000
France	1,700	6,900	15,600	116,000	109	400	17,400	124,000
Germany	4,150	13,400	11,000	81,000	723	1,640	15,900	96,100
Hong Kong	25	123	3,070	21,300	34,500	61,500	37,600	82,900
Italy	44	186	3,510	43,200	182	353	3,740	43,800
Japan	2,190	8,680	16,500	187,000	15,600	35,200	34,400	231,000
Kazakhstan	--	--	3	60	37	83	40	143
Korea, Republic of	984	4,540	18,800	132,000	198,000	305,000	218,000	442,000
Mexico	195,000	544,000	291,000	1,260,000	131,000	299,000	617,000	2,110,000
Netherlands	145	466	1,100	18,100	826	1,800	2,070	20,400
Philippines	14	44	289	3,690	--	--	303	3,740
Russia	4	10	228	1,320	--	--	232	1,330
Saudi Arabia	3	53	50,900	187,000	(³)	6	50,900	187,000
Singapore	776	2,170	3,890	34,700	501	805	5,160	37,700
South Africa	39	197	159	2,130	--	--	198	2,330
Taiwan	2,500	7,910	10,000	56,700	62,900	91,500	75,400	156,000
Thailand	431	1,060	1,150	14,100	5,840	10,400	7,420	25,500
Ukraine	2	6	3	43	--	--	5	49
United Kingdom	2,000	9,070	16,400	135,000	914	1,700	19,300	145,000
Venezuela	3	11	2,810	13,400	--	--	2,810	13,400
Other	8,740	27,900	103,000	529,000	102,000	184,000	214,000	741,000
Total	314,000	891,000	964,000	4,690,000	2,140,000	4,050,000	3,420,000	9,640,000
2012:								
Brazil	112	573	11,800	76,800	3,400	5,880	15,300	83,200
Canada	98,400	244,000	401,000	1,580,000	102,000	216,000	602,000	2,040,000
China	4,500	14,000	41,500	304,000	1,380,000	2,380,000	1,430,000	2,700,000
France	3,270	13,600	20,300	158,000	288	1,210	23,900	173,000
Germany	3,820	12,400	11,300	96,600	472	1,260	15,600	110,000
Hong Kong	152	1,120	2,040	14,600	30,100	47,700	32,300	63,400
Italy	32	290	3,680	43,800	20	32	3,740	44,100
Japan	948	3,780	17,400	210,000	9,690	25,300	28,100	239,000
Kazakhstan	--	--	4	33	42	68	46	101
Korea, Republic of	301	1,990	20,600	152,000	189,000	289,000	210,000	442,000
Mexico	236,000	572,000	337,000	1,380,000	130,000	266,000	702,000	2,210,000
Netherlands	46	428	912	14,000	709	1,750	1,670	16,200
Philippines	23	83	333	4,510	5	12	361	4,610
Russia	7	38	203	1,790	--	--	210	1,830
Saudi Arabia	63	159	64,800	220,000	--	--	64,800	220,000
Singapore	1,200	3,130	4,340	37,600	268	532	5,800	41,300
South Africa	22	181	480	4,920	19	30	521	5,130
Taiwan	2,700	7,340	10,700	61,900	73,600	88,600	87,000	158,000
Tajikistan	--	--	--	--	39	64	39	64
Thailand	9	27	1,820	12,700	6,380	8,220	8,200	20,900
Ukraine	--	--	(³)	3	--	--	(³)	3
United Kingdom	987	4,860	17,500	155,000	700	1,030	19,200	161,000
Venezuela	26	96	969	6,520	--	--	995	6,610
Other	7,730	22,200	112,000	557,000	107,000	159,000	226,000	737,000
Total	360,000	902,000	1,080,000	5,090,000	2,040,000	3,490,000	3,480,000	9,480,000

-- 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 11
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY CLASS¹

Class	2011		2012	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	2,830,000	\$7,390,000	2,900,000	\$6,790,000
Plates, sheets, strip, etc., n.e.c. ²	739,000	2,760,000	682,000	2,460,000
Pipes, tubes, etc.	26,600	232,000	26,700	231,000
Rods and bars	114,000	531,000	146,000	620,000
Scrap	579,000	1,020,000	589,000	905,000
Total	4,290,000	11,900,000	4,350,000	11,000,000
Manufactures:				
Foil and leaf ³	138,000	585,000	130,000	517,000
Powders and flakes	11,500	48,000	11,900	47,000
Wire	166,000	491,000	232,000	644,000
Total	316,000	1,120,000	374,000	1,210,000
Grand total	4,600,000	13,100,000	4,720,000	12,200,000

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 12
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)
2011:								
Argentina	106,000	\$267,000	14	\$221	--	--	106,000	\$267,000
Australia	33,700	94,000	72	758	38	\$72	33,800	94,800
Bahrain	40	130	19,300	63,400	--	--	19,300	63,500
Belgium	340	1,970	1,480	8,910	284	513	2,100	11,400
Brazil	36,300	90,900	20,300	63,600	74	143	56,700	155,000
Canada	1,880,000	4,930,000	312,000	1,190,000	357,000	625,000	2,550,000	6,750,000
China	1,550	5,500	144,000	480,000	121	410	146,000	486,000
France	4,160	12,900	4,840	42,800	--	--	9,000	55,700
Germany	1,370	6,340	80,600	406,000	1,250	2,840	83,200	416,000
Italy	571	1,230	5,200	37,300	467	434	6,240	39,000
Japan	628	1,470	7,420	53,100	517	1,330	8,570	55,900
Korea, Republic of	8,540	13,700	3,190	18,300	208	312	11,900	32,300
Mexico	19,800	70,900	29,100	160,000	136,000	235,000	185,000	466,000
Netherlands	522	2,240	1,170	8,350	446	757	2,140	11,400
Norway	1,760	4,020	84	1,130	26	108	1,870	5,260
Panama	886	1,880	--	--	2,780	5,160	3,660	7,030
Russia	221,000	570,000	13,700	64,300	--	--	235,000	634,000
Slovenia	--	--	3,390	18,000	--	--	3,390	18,000
South Africa	14,100	36,600	51,800	192,000	--	--	65,900	228,000
Spain	451	2,010	138	959	--	--	589	2,970
Tajikistan	4,450	11,500	--	--	--	--	4,450	11,500
United Arab Emirates	242,000	662,000	2	33	1,030	1,920	243,000	664,000
United Kingdom	15,600	35,200	5,250	28,100	9,100	16,700	29,900	80,000
Venezuela	141,000	330,000	978	2,670	2,070	4,370	144,000	337,000
Other	89,900	239,000	176,000	684,000	67,600	126,000	333,000	1,050,000
Total	2,830,000	7,390,000	880,000	3,520,000	579,000	1,020,000	4,290,000	11,900,000

See footnotes at end of table.

TABLE 12—Continued
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)
2012:								
Argentina	77,500	169,000	4	81	--	--	77,500	169,000
Australia	26,400	63,100	47	650	40	59	26,500	63,800
Bahrain	25,900	62,400	23,500	71,900	14	5	49,400	134,000
Belgium	798	3,590	2,350	13,100	193	311	3,340	17,000
Brazil	9,200	21,600	18,300	51,200	2,860	1,120	30,400	73,900
Canada	1,910,000	4,390,000	293,000	1,060,000	350,000	531,000	2,550,000	5,970,000
China	1,310	4,810	109,000	376,000	166	335	111,000	381,000
France	3,670	11,400	4,190	38,500	38	145	7,890	50,000
Germany	767	3,670	80,300	397,000	216	414	81,300	401,000
Italy	5,940	12,300	5,620	35,900	774	809	12,300	49,000
Japan	40	113	4,270	46,300	1,660	1,970	5,970	48,400
Korea, Republic of	15,500	35,200	3,800	20,300	1,040	537	20,300	56,100
Mexico	35,600	218,000	30,400	155,000	128,000	199,000	194,000	572,000
Netherlands	1,300	5,050	1,160	7,550	552	791	3,000	13,400
Norway	6,610	15,800	63	1,030	--	--	6,680	16,800
Panama	790	1,430	158	605	3,340	5,370	4,290	7,400
Russia	291,000	652,000	15,000	67,200	--	--	306,000	719,000
Slovenia	--	--	3,350	17,000	--	--	3,350	17,000
South Africa	4,580	21,600	59,200	197,000	--	--	63,800	218,000
Spain	540	2,160	299	2,280	56	92	895	4,530
Tajikistan	13,900	26,200	--	--	--	--	13,900	26,200
Ukraine	5,310	10,400	1	21	--	--	5,310	10,400
United Arab Emirates	254,000	602,000	13	204	1,170	1,840	256,000	604,000
United Kingdom	654	2,780	11,800	50,300	7,060	11,200	19,500	64,200
Venezuela	46,000	93,000	651	1,320	2,600	5,310	49,300	99,600
Other	163,000	371,000	189,000	702,000	88,800	145,000	440,000	1,220,000
Total	2,900,000	6,790,000	855,000	3,310,000	589,000	905,000	4,350,000	11,000,000

-- Zero.

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

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

Source: U.S. Census Bureau.

TABLE 13
ALUMINUM, PRIMARY: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2008	2009	2010	2011	2012 ^e
Argentina	394	410	412	440 ^e	450
Australia	1,974	1,943	1,928	1,945	1,864 ³
Azerbaijan	62 ^r	--	--	20 ^{r,e}	54
Bahrain	872	848	851	881	890 ³
Bosnia and Herzegovina ⁴	123 ^e	96	118 ^e	131	126
Brazil	1,661	1,536	1,536	1,440	1,436 ³
Cameroon	91	73	76	69	52
Canada	3,120	3,030	2,963	2,984 ^r	2,781 ³
China ^e	13,200	12,900	16,200	18,100	20,300
Egypt	260	265	266 ^e	265 ^e	265
France	389	345	356	334	349
Germany	606	292	402 ^r	432 ^r	410 ³
Ghana	--	--	--	35 ^e	100
Greece	160	130	130 ^e	132 ^e	135
Iceland	761 ^r	805 ^r	806 ^r	781 ^r	820
India	1,402	1,598	1,607	1,667	1,700
Indonesia	243	258 ^r	253 ^r	244 ^r	250
Iran ^e	248	250	192 ^r	270 ^r	320
Italy ^e	180	171 ³	168	168	110
Japan	59	39	54	48 ^r	50
Kazakhstan	106	127	227	249	249 ³
Malaysia	--	15 ^r	60 ^r	80 ^r	120
Montenegro	107	64	82 ^r	93 ^r	80
Mozambique	536	545	557	562	564 ³
Netherlands ^e	301	300 ³	300	300	150
New Zealand	316	272 ^r	343 ^r	354 ^r	327 ³
Nigeria	11	13	21	18	26 ³
Norway	1,358	1,139 ^r	1,109 ^r	1,122 ^r	1,145 ³
Oman	49	351	367	373 ^r	360
Poland ⁴	48	--	--	--	--
Qatar	--	10	126 ^r	450 ^r	604 ³
Romania ⁵	265	201	241	261	249 ³
Russia	4,190	3,815	3,947	3,912 ^r	3,845 ³
Saudi Arabia	--	--	--	--	5
Slovakia	163	150	163 ^e	163 ^r	161
Slovenia ⁴	83	35	40	40 ^e	40
South Africa	811	809	807	809	665 ³
Spain ^e	408	360 ³	340	365	230
Sweden	112	70	93	111	129
Tajikistan	339	359	349	278 ^r	273 ³
Turkey ^e	65	35	60	60	60
Ukraine ⁵	113	50	25	7	--
United Arab Emirates	948	1,010	1,400 ^e	1,800 ^e	1,820
United Kingdom	326	253	186	213	60 ³
United States	2,658	1,727	1,726	1,986	2,070 ³
Venezuela	608 ^r	561 ^r	335	380 ^r	200
Total	39,700	37,300 ^r	41,200	44,400	45,900

^eEstimated. ^rRevised. -- Zero.

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

²Primary aluminum is defined as "The weight of liquid aluminum as tapped from pots, excluding the weight of any alloying materials as well as that of any metal produced from either returned scrap of remelted material."

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, the definition is provided in this table by a footnote. Table includes data available through May 6, 2013.

³Reported figure.

⁴Primary ingot plus secondary ingot.

⁵Primary unalloyed metal plus primary alloyed metal, thus including weight of alloying material.