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Aluminum

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During 2015, total aluminum production (primary plus aluminum recovered from scrap) in the United States decreased by 6% to 4.96 million metric tons (Mt), whereas apparent consumption increased by 3% to 5.22 Mt compared with that of 2014 (table 1). The increased consumption was satisfied by increased net imports and a drawdown of inventories. Net imports of crude metal in 2015 were 3.07 Mt, 130,000 metric tons (t) more than in 2014, an increase of 4%. Net imports of semifabricated aluminum products were 32,400 t; whereas, in 2014, exports exceeded imports and net exports of semifabricated products were 165,000 t (tables 10, 12). Total aluminum inventories in the United States stored in London Metal Exchange Ltd. (LME)-registered warehouses and by industry decreased by 25% compared with those in 2014 (table 1).

Domestic primary aluminum smelters produced 1.59 Mt of aluminum metal, 7% less than that in 2014. The value of production, based on the average U.S. market price, decreased by 22% to $3.09 billion owing to the lower production and lower unit values. At yearend, three companies were operating a total of eight primary aluminum smelters in six States. One additional smelter remained on care-and-maintenance status during the year and two other smelters that had been temporarily idled were permanently shut down. About 15% [305,000 metric tons per year (t/yr)] of U.S. primary smelting capacity was shut down in 2015. About 27% (545,000 t/yr) of domestic primary aluminum smelting capacity, including idle potlines at operating smelters, but excluding the permanently closed smelters, was idle at yearend (table 2). Aluminum prices decreased despite a drawdown in reported global inventories, as consumption growth slowed and increased global production from new smelting capacity outpaced decreases in production from shutdowns of obsolete and high-cost capacity. Combined world inventories of aluminum metal and alloys held by LME-registered warehouses decreased by 32% to 2.95 Mt from 4.31 Mt (London Metal Exchange Ltd., 2014, 2015). World primary production increased by 3.55 Mt to 57.5 Mt, an increase of 7%.

The aluminum price on the LME averaged $0.754 per pound, 11% less than that in 2014, and the 2015 annual average U.S. market price of primary aluminum ingot decreased by 16% to $0.882 per pound from $1.045 per pound in 2014. The U.S. market price premium to the LME price averaged 17% in 2015, compared with 24% in 2014 and 13% in 2013. The monthly average price premium was 29% in January, decreased to a low of 10% in October, and increased to 13% in December (table 8).

Aluminum recovered from purchased and tolled scrap decreased by 6% to 3.38 Mt in 2015 (table 3). Of this recovered metal, 57% came from new (manufacturing) scrap, and 43% came from old (obsolete aluminum products) scrap (table 1). Aluminum used beverage cans (UBCs) accounted for 43% of the old scrap consumed in 2015 and 18% of total scrap consumed (table 4). Secondary production from old scrap decreased by 13%, which was attributed to reduced scrap availability as scrap collectors and scrap yards retained increasing inventories as the price of primary aluminum trended lower throughout the year.

Apparent consumption of aluminum in the United States increased by about 3% compared with that in 2014. Owing to lower domestic primary production and increased consumption, the U.S. net import reliance for aluminum as a percentage of apparent consumption increased to 41% in 2015 from 33% in 2014 and was at its highest level since 2005. Producers of unwrought and semifabricated aluminum products in the United States and Canada reported that they shipped 88.7% of their products to markets in the United States and Canada and 11.3% to external markets (table 6).

Primary aluminum was produced in 42 countries in 2015. China (55%), Russia (6%), Canada (5%), the United Arab Emirates (4%), and India (4%), in decreasing order of metal produced, accounted for 74% of primary world production. World primary metal production increased by 7% compared with that of 2014, primarily owing to an 11% (3.1 Mt) increase in China. The United States was the seventh-leading producer of primary aluminum; it had been sixth in 2014 and fourth in 2013 (table 13).

Legislation and Government Programs

The U.S. Department of Commerce, International Trade Administration (ITA), conducted an antidumping administrative review of duties on aluminum extrusions imported from China between May 1, 2013, and April 30, 2014. In June 2015, the ITA published its final determinations and established dumping margins of 32.79% ad valorem for aluminum extrusions shipped by 39 companies included in the review that shipped aluminum extrusions from China during the period of review (U.S. Department of Commerce, International Trade Administration, 2015).

Production

Primary.—Primary aluminum production in the United States was 1.59 Mt, 7% less than that in 2014. Domestic production data were based on information compiled from U.S. Geological Survey (USGS) monthly surveys sent to eight primary aluminum smelters owned by three companies, all of which responded.

Noranda Aluminum Holding Corp. (Franklin, TN) and other power consumers reached a rate agreement with Ameren Missouri, the supplier of power to Noranda's smelter in

New Madrid, MO. Under terms of the 3-year contract, which was approved by the Missouri Public Service Commission on April 29, Noranda would pay $34 per megawatthour and be exempt from fuel adjustment charges. The contract, which became effective on June 1, 2015, lowered Noranda's cost by about 3 to 4 cents per pound of aluminum produced. The capacity of the New Madrid smelter was 263,000 t/yr (Noranda Aluminum Holding Corp., 2015b, c).

On August 4, an explosion in the billet casthouse at the New Madrid smelter halted billet production, and aluminum from the potlines was redirected to produce ingot and wire rod. Production of extrusion billet did not resume in 2015. The smelter produced at about 85% of its capacity during the year owing to production disruptions; a higher than normal rate of pot failure during the first half of 2015, an issue that started in August 2014; and low aluminum prices (Matyi, 2015e; Noranda Aluminum Holding Corp., 2015a).

On October 15, employees represented by the International Association of Machinists at the Intalco smelter in Ferndale, WA, ratified a contract with Alcoa Inc. that would last through March 31, 2017. In November 2015 and May 2016, Alcoa reached power supply agreements that would allow their Massena West (NY) and Intalco smelters, respectively, to remain open. In November, Alcoa had announced that it would temporarily shut down three smelters, totaling 503,000 t/yr of remaining operating capacity—the 279,000-t/yr Intalco, the 130,000-t/yr Massena West, and the 184,000-t/yr Wenatchee (WA)—smelters by early 2016. At the time of the announcement, the Massena West smelter was producing at full capacity, the Intalco smelter was producing at 82% capacity, and the Wenatchee smelter was producing at 78% capacity. Alcoa cited the need to close unprofitable capacity to improve the cost position of its upstream portfolio in the face of lower aluminum prices as the reason for the closures. Alcoa and the New York Power Authority reached a power supply agreement for 3½ years for the Massena West smelter, and Alcoa and the Bonneville Power Authority reached an agreement that would supply power to the Intalco smelter from July 1, 2016, through February 14, 2018 (Alcoa Inc., 2015b, d, 2016; Maltais, 2015f).

On June 11, a 5-year labor contract was ratified by the employees of Century Aluminum Co.'s (Chicago, IL) Hawesville, KY, smelter, ending a lockout that began on May 12. Century had locked out more than 500 employees represented by the United Steelworkers (USW), at the 205,000-t/yr smelter after several proposed contracts were reportedly rejected over issues related to compensation for new employees, health care premiums, and overtime. Management and temporary employees continued production without interruption during the lockout at 80% of capacity. Following the lockout, Century cited low aluminum prices for deciding to not restart the remaining pots. Additional pots were to be taken out of service when scheduled to be relined (Century Aluminum Co., 2015a, f, g; Maltais, 2015c; Matyi, 2015b, c, g).

On September 9, Century temporarily shut down one of five potlines at the Hawesville smelter, and in October, two more potlines were temporarily shut down. The remaining two potlines continued to produce high-purity aluminum. Century cited low aluminum prices for the shutdown (Century Aluminum Co., 2015c, d).

In September, Century signed a 5-year power supply contract with a supplier for its 229,000-t/yr smelter in Mt. Holly, SC, which was to take effect in January 2016 (Carr, 2015). Century proposed to purchase all of the power supply for the Mt. Holly smelter from third-party sources and use Santee Cooper's transmission lines to deliver the power to the smelter. On November 30, however, Santee Cooper rejected the proposal, stating that it would result in other customers being forced to pay more. In December, Century temporarily shut down one potline after failing to secure a new power delivery contract with Santee Cooper (Century Aluminum Co., 2015e; Maltais, 2015g; Matyi, 2015a).

In May, Columbia Falls Aluminum Co. LLC announced that, having failed to obtain a new long-term power contract, the temporary shutdown of its 168,000-t/yr smelter in Columbia Falls, MT, would be permanent. Similarly, in July, Century announced that, having failed to obtain a new long-term power contract, the temporary shutdown of the 170,000-t/yr smelter in Ravenswood, WV, would be permanent. High power prices and low aluminum prices were cited as the reasons for the temporary shutdowns that began in October and February 2009, respectively (Century Aluminum Co., 2015b; Maltais, 2015d).

Secondary.—Domestic secondary aluminum production was 3.38 Mt, 6% less than that in 2014. Domestic production data were based on information compiled from USGS monthly and annual surveys sent to 53 secondary aluminum facilities. In 2015, responses were received from 32 of the facilities.

Alcoa restarted secondary aluminum production at its Texarkana, TX, plant that was idled in 2009, citing increased demand for rolled sheet by the automobile industry as the reason for restart. Two casting pits would produce rolling slab to be shipped to Alcoa's rolling mills in Davenport, IA, and Lancaster, PA. Rampup was expected to be completed in the first half of 2016 (Maltais, 2015a). Alcoa also completed expansion of automobile sheet capacity at its rolling mill in Tennessee in September and rampup would be completed in the first quarter of 2016 (Alcoa Inc., 2015a; Toh, 2015).

Novelis Inc. [a subsidiary of Hindalco Industries Ltd. (Mumbai, India)] continued construction of an expansion of its rolling mill in Oswego, NY, to 360,000 t/yr from 280,000 t/yr in order to supply automobile manufacturers. Completion was expected in early 2016 (Novelis Inc., 2016).

Aleris International Inc. (Cleveland, OH) continued an expansion of its rolling mill at Lewisport, KY, that was expected to be completed by early 2017. The rolling mill would have a capacity of approximately 215,000 t/yr of heat-treated sheet for automobile manufacturers (Aleris International Inc., 2016). The added capacity would replace a rolling mill in Decatur, AL, that Aleris closed in early 2015, citing a plan to streamline the company's production facilities (Berry, 2014).

Matalco Inc. (Brampton, Ontario, Canada) continued construction of a new secondary smelter in Lordstown, OH. When completed in March 2016, the smelter would produce extrusion billet and have a capacity of about 40,000 t/yr. Further expansion to 61,000 t/yr by yearend 2018 was planned (Israeli, 2015; Matyi, 2015d).

A mechanical failure at Logan Aluminum's rolling mill in Russellville, KY, halted production from December 29, 2014, through January 17, 2015. Capacity of the rolling mill was estimated to be 816,000 t/yr and accounted for approximately 45% of aluminum beverage can sheet rolling capacity in North America. Logan Aluminum is a joint venture between Novelis and Tri-Arrows Aluminum Inc. (Louisville, KY) (Laliberte, 2015a, b; Matyi, 2015f).

Consumption

Apparent consumption of aluminum in the United States increased for the sixth consecutive year, increasing to 5.22 Mt in 2015, 3% more than in 2014, and was at the highest level since 2006. Shipments of aluminum ingot and semifabricated products by producers in the United States and Canada to their combined domestic markets increased by 4% in 2015 compared with the amount shipped in 2014. Combined net U.S. imports of crude aluminum and semifabricated products from Canada increased slightly compared with those in 2014. Producers of unwrought and semifabricated aluminum products in the United States and Canada reported that they shipped 88.7% of their products to markets in the United States and Canada, of which the transportation industry accounted for 35.8%; containers and packaging, 18.3%; building and construction, 12.1%; electrical, 6.8%; machinery and equipment, 6.6%; consumer durables, 6.3%; and other markets, 2.8%. Exports to external markets accounted for 11.3% of shipments from producers in the United States and Canada in 2015 (table 6).

Shipments of aluminum to the transportation sector increased by 10% and accounted for 35.8% of shipments in 2015 compared with 32.9% of shipments in 2014. Increased automobile production and sales contributed to the increase in shipments of aluminum to the transportation sector. Total light-vehicle production in North America in 2015 increased by 3% compared with that of 2014. Passenger car production decreased by 0.9% but light-truck production increased by 5.7% compared with production in 2014. Total light-vehicle sales in 2015 were a record-high 17.84 million units, 5.9% more than in 2014 and 68% more than the number of units sold in 2009. Light-vehicle sales have increased every year since 2009 (Ward's Automotive Group, 2016a, b).

Increased deliveries of aluminum to the transportation sector were also attributed to increased intensity of use in automobiles. At yearend 2014, Ford Motor Co. started production of the F–150 Series truck using aluminum sheet for the body panels instead of steel. Ford was modifying its assembly line in Louisville, KY, to use aluminum sheet for body panels of the F–Series Super Duty trucks. The project was expected to be completed in the first quarter of 2016, with production of the 2017 model year trucks to begin in the second half of 2016 (Maltais, 2015e).

The increase in aluminum shipments for use in transportation was also partly attributed to increased deliveries of commercial aircraft. The Boeing Co. (Chicago, IL) reported that its deliveries of commercial aircraft increased by 5% compared with deliveries in 2014. Deliveries of the 787 Dreamliner, an aircraft with a fuselage and wings made from composite materials instead of aluminum, but which has a significant amount of aluminum in other parts, increased by 18% and accounted for 18% of commercial aircraft deliveries; deliveries of Boeing's other commercial aircraft increased by 3% compared with deliveries in 2014 (Boeing Co., The, 2016, p. 27).

Shipments of aluminum to the building and construction sector increased slightly owing to increased commercial and residential construction. In the United States, housing starts increased by 10.8% in 2015 compared with starts in 2014, and the number of houses completed in 2015 was 9.5% more than in 2014. Total U.S. construction spending during 2015 increased by 10.5% compared with that in 2014, which was attributed to a 12.8% increase in spending on residential construction and a 9.0% increase in spending on the more aluminum-intensive nonresidential construction (U.S. Census Bureau, 2016a, b).

Aluminum shipments to the containers and packaging sector increased slightly compared with those in 2014, and shipments to the machinery and equipment sector were unchanged. Shipments to the consumer durables and electrical products sectors decreased slightly and shipments to other markets decreased by 5%.

Stocks

According to data reported by The Aluminum Association Inc. (2015, 2016), United States and Canadian producers' combined inventories of aluminum ingot, mill products, and scrap increased by 5% to 1.35 Mt at yearend 2015 from 1.28 Mt at yearend 2014. The LME reported that primary aluminum metal ingot stocks in its approved U.S. warehouses decreased to 460,000 t at yearend 2015 from 1.11 Mt at yearend 2014 and 1.86 Mt at yearend 2013. At yearend 2015, LME warehouses in the United States also held 47,100 t of North American Special Aluminum Alloy Contract (NASAAC) metal ingot, a 42% decrease from the 80,700 t held at yearend 2014 (London Metal Exchange Ltd., 2014, 2015).

Global yearend 2015 inventories of unalloyed aluminum metal held by LME-registered warehouses decreased by 31% to 2.89 Mt from 4.21 Mt at yearend 2014, and aluminum alloy inventories decreased by 42% to 62,200 t from 107,000 t (London Metal Exchange Ltd., 2014, 2015).

LME stocks decreased sharply during 2014 and 2015 despite a court-ordered stay in implementing new LME load-out rules. In 2013, in response to industry complaints that long load-out times from LME-registered warehouses were distorting the aluminum market and consequent investigations launched by Government regulators in Europe and the United States, the LME adopted new rules that were intended to reduce wait times to less than 50 days. At the time of adoption, delivery wait times approached 1 year at Detroit, MI, and Vlissingen, Netherlands. The new rules would have taken effect April 1, 2014, but on March 27, 2014, the High Court of Justice of England and Wales found that the market consultation conducted by the LME did not satisfy legal requirements and ordered that the proposed rules not to be implemented as scheduled (Blamey and Cooke, 2014).

The long wait times had developed after LME inventories increased in the wake of the financial crisis of 2008–09, when producers increased delivery of primary aluminum to the LME

as manufacturers required less aluminum. Low interest rates and low storage rates offered by owners of LME-registered warehouses encouraged investors to use aluminum in long-term financing deals. Inventories of primary aluminum at LME-registered warehouses, which were about 930,000 t at yearend 2007, more than doubled to 2.34 Mt by yearend 2008, nearly doubled again to 4.62 Mt by yearend 2009, and continued on an upward trend to 5.45 Mt at yearend 2013. With recovery in aluminum consumption, daily limits on delivery of metal from LME-registered warehouses resulted in the extended delivery wait times (London Metal Exchange Ltd., 2007, 2008, 2009, 2013a, b, 2014, 2015; CRU Aluminum Monitor, 2013a, b).

Prices

The monthly average U.S. spot market price of primary aluminum metal, as reported by Platts Metals Week, averaged $1.055 per pound in January, and generally decreased throughout the year to a monthly average of $0.769 per pound in December. The annual average price in 2015 decreased to $0.882 per pound from $1.045 per pound in 2014. In 2015, the annual average LME cash price decreased to $0.754 per pound from to $0.846 per pound in 2014. The U.S. market price premium to the LME cash price averaged 29% in January, decreased to 14% in May, and averaged 17% for the year, a decrease from 24% in 2014. The indicator prices for selected secondary aluminum ingots and scrap, as published in American Metal Market, followed the same trend as primary ingot prices. The decline in scrap prices, however, was more pronounced as many secondary smelters and rolling mills increased their consumption of primary aluminum, at the expense of scrap, owing to primary aluminum's low price (table 8).

Foreign Trade

In 2015, as a result of increased consumption and decreased primary production, net imports of unmanufactured aluminum materials [crude metal and alloys, semifabricated (plates, sheet, and bars), and scrap] increased by 28% compared with net imports in 2014 (tables 10, 12). Total imports of unmanufactured aluminum increased by 5% during 2015 compared with those of 2014. Imports for consumption of crude aluminum metal and alloy increased slightly, imports of semifabricated aluminum materials increased by 19%, and scrap imports decreased by 7%. Canada remained the leading source country, accounting for 56% of unmanufactured aluminum imports in 2015; no other nation accounted for more than 10% of total unmanufactured aluminum imports (table 12).

Exports of unmanufactured aluminum decreased by 7% during 2015 compared with those of 2014 (table 10). Exports of crude aluminum and scrap decreased by 14% and 10%, respectively, and semifabricated aluminum material exports decreased slightly. In 2015, about 78% of U.S. exports of unmanufactured aluminum were shipped to Canada, China, or Mexico. Mexico (40%) and Canada (38%) were the leading destinations for semifabricated aluminum exports. China accounted for 29% of unmanufactured U.S. aluminum exports during 2015, 96% of which was scrap (table 10).

World Industry Structure

Production.—World primary aluminum production increased by 7% in 2015 compared with that of 2014 owing to new smelters in China, India, and the United Arab Emirates, and restart of capacity in Russia. These gains were partially offset by smelter closures in Australia, Brazil, South Africa, and the United States as a result of lower aluminum prices, high power costs, and unfavorable currency exchange rates. China was the leading producer and accounted for 55% of global primary aluminum production. Russia, Canada, the United Arab Emirates, and India, in decreasing order of production, accounted for an additional 19% of production (table 13).

Mergers, Acquisitions, and Divestitures.—Alcoa announced that it would split into two separate companies in a transaction expected to be competed in the second half of 2016. One company, to retain the Alcoa name, would include the bauxite mines, alumina refineries, aluminum smelters, casthouses, and powerplants. The other company would receive downstream assets focused on value-added products for the aerospace and automobile industries, including rolling mills and specialty metal assets such as production capacity for aluminum-lithium alloys, nickel alloys, and titanium. During the past several years, Alcoa had been preparing for this restructuring by shutting down or selling high-cost upstream assets and investing in assets that produce value-added products (Alcoa Inc., 2015f).

In July, BHP Billiton Ltd. (Melbourne, Victoria, Australia) completed the spinoff of its alumina, aluminum, bauxite, coal, lead, manganese, nickel, silver, and zinc assets to create a new company named South32, headquartered in Perth, Western Australia, Australia. South32's aluminum assets included the Mozal smelter in Mozambique (565,000 t/yr), the Hillside smelter in South Africa (715,000 t/yr), and BHP Billiton's 40% share of the Alumar smelter in Brazil (447,000 t/y), as well as bauxite mines and alumina refineries in Australia and Brazil (BHP Billiton Ltd., 2014a, b; 2015b).

Constellium plc (Amsterdam, Netherlands) completed the acquisition of Wise Metals Intermediate Holdings LLC (Muscle Shoals, AL) in January. Wise owned a secondary smelter and rolling mill in Muscle Shoals, AL, which produced beverage can sheet and other sheet products. Constellium announced that it would increase capacity of the rolling mill to 700,000 t/yr from 450,000 t/yr, with the additional capacity being used to supply sheet to automobile manufacturers, but a construction schedule was not released (Blamey, 2014; Wookey, 2015).

Aleris was restructuring its business to focus on rolled aluminum products. In February, it completed the sale of its recycling and specification alloys businesses, including 18 production facilities in North America and 6 in Europe, to Signature Group Holdings. Signature subsequently changed its name to Real Alloys Inc. In March, Aleris completed the sale of its extrusion business, including four production facilities in Europe and one in China, to Sankyo Tateyama Inc. (Aleris International Inc., 2014, 2015a, b; Baltic, 2014).

In July, Toyota Tsusho America Inc. acquired Bermco Aluminum Co. (Birmingham, AL), which owned an 110,000-t/yr secondary smelter (Davidson, 2014; Allagh, 2015).

World Review

Australia.—Primary aluminum production in Australia declined by 3% (59,000 t) in 2015 compared with production in 2014 and was 15% less than production in 2011 owing to smelter shutdowns during 2013 and 2014.

Bahrain.—In September, Aluminium Bahrain B.S.C. (Alba) obtained an environmental permit necessary to increase capacity of its smelter to 1.45 million metric tons per year (Mt/yr) from 935,000 t/yr by adding a sixth potline. Construction was expected to start in 2016 with completion expected in 2019 (Blamey, 2015a).

Brazil.—Primary aluminum production decreased to 772,000 t, 20% less than that in 2014 and the lowest level since 1990. Since 2013, high power costs have been cited as the reason for decreased production at several smelters. Annual average industrial power prices in 2014 increased by 23% compared with those in 2013 (Carvalho, 2014; Assalve, 2015b; Associação Brasileira do Alumínio, 2016).

Alcoa and BHP Billiton Ltd. (Melbourne, Victoria, Australia) temporarily shut down the remaining 124,000 t/yr of capacity at the 447,000-t/yr Alumar smelter in Sao Luis. Low aluminum prices and high power costs were cited as the reason for the shutdown of potlines that began in 2013. Alcoa owned 60% of the smelter and the other 40% was owned by BHP Billiton until the creation of South32. Alcoa also announced that the shutdown of the 96,000-t/yr Pocos de Caldas smelter would be made permanent. Alcoa temporarily shut down the smelter in May 2014 citing high power prices (Alcoa Inc., 2015c, e; BHP Billiton Ltd., 2015a).

With the high power prices and smelter shutdowns continuing in 2015, the Government extended the elimination of a 6% tariff on unwrought primary aluminum to an additional 350,000 t of aluminum imports through August 17, 2016. In 2014, the tariff was eliminated on up to 300,000 t of aluminum as shutdowns of primary smelting capacity forced manufacturers to rely on imports (Assalve, 2015a).

Canada.—Rio Tinto plc completed an expansion and modernization project and started production at its primary smelter in Kitimat, British Columbia. The project increased the capacity to 420,000 t/yr from 280,000 t/yr. Production rampup was expected to be completed in the first half of 2016 (Rio Tinto plc 2015a, p. 18; b).

Rio Tinto increased the capacity of the Alma, Quebec, smelter to 466,000 t/yr from 440,000 t/yr (Rio Tinto plc, 2016, p. 232). Rio Tinto increased billet capacity at the casthouse of the Arvida smelter in Saguenay, Quebec, to 142,000 t/yr from 132,000 t/yr (Maltais, 2015i).

In September, the Provincial government of Quebec signed a power supply agreement with the owners of the Aluminerie Alouette smelter in Sept-Iles. The contract would start in 2017 and last through 2029. The 600,000-t/yr smelter was a joint venture between Rio Tinto (40%), AMAG Austria Metall (20%), Norsk Hydro ASA (20%), Investissement Quebec (13.3%), and Marubeni Metals and Minerals (6.7%). A feasibility study of possibly expanding the Aluminerie Alouette smelter would be required, and expansion to 900,000 t/yr was being considered (Blamey, 2015b; Maltais, 2015b).

China.—Primary aluminum production in 2015 was 31.4 Mt, 11% more than that in 2014, whereas primary smelting capacity increased by about 9% to 38 Mt/yr at yearend 2015. Capacity increases were focused in Gansu, Liaoning, Qinghai, Shandong, and Yunnan Provinces and Inner Mongolia and Xinjiang Uyghur Autonomous Regions. Primary aluminum smelters in China shut down a total of 1.16 Mt/yr of capacity in November in response to low demand and prices. Total capacity shutdowns in China through the end of November were 3.5 Mt/yr and were estimated to be 5 Mt/yr at yearend. Lending restrictions prevented many smelters from obtaining the credit needed to continue producing during the downturn in prices. During the first half of 2015, aluminum consumption in China was 14.72 Mt, 12% more than the amount consumed during the same period in 2014. Consumption growth slowed during the second half of the year, and consumption was 30.6 Mt in 2015, 9% more than the amount consumed in 2014 (Leung, 2015a, b; China Metal Market—Alumina and Aluminum, 2016).

France.—Trimet expanded capacity of the St. Jean-de-Maurienne smelter to 145,000 t/yr from 90,000 t/yr (Trimet Aluminium SE, 2014, 2015).

Germany.—In November, Novelis completed expansion of the capacity of its rolling mill in Nachterstedt to 350,000 t/yr from 230,000 t/yr to supply increased consumption by automobile manufacturers (Maltais, 2015h).

Norsk Hydro signed an 8-year contract for Axpo Trading Ltd. of Switzerland to supply power, starting in 2018, to its 235,000-t/yr Neuss smelter (Lim, 2015). Norsk Hydro started an expansion of its rolling mill in Grevenbroich to 200,000 t/yr from 50,000 t/yr. The expansion was expected to be completed in 2016 and would supply automobile manufacturers (Norsk Hydro ASA, 2015).

Hungary.—The Alumetal S.A. Capital Group (Kety, Poland) was building a secondary aluminum smelter in Komarom. The 60,000-t/yr smelter was expected to be completed by yearend 2016 and would supply casting alloys to consumers in Hungary and elsewhere in Europe (Alumetal S.A. Capital Group, The, 2016, p. 44–45).

India.—Primary aluminum production in 2015 increased by 21% compared with that in 2014 as new capacity ramped up. Vedanta Resources plc (London, United Kingdom) ramped up production at the 325,000-t/yr Korba II smelter to full capacity and ramped up production at the 1.25-Mt/yr Jharsuguda II smelter, which was completed in the fourth quarter of 2014, to about two-thirds of capacity (Vedanta Resources plc, 2014; 2015, p. 9–10; 2016, p. 9).

By yearend, Hindalco had ramped up production at the 360,000-t/yr Aditya smelter to 80% of capacity. The smelter was commissioned in January 2014. The 360,000-t/yr Mahan smelter, which started production during the first quarter of 2013, reached full capacity during 2015. Both smelters had 900-megawatt (MW) captive powerplants and would be supplied with alumina from Hindalco's 1.5-Mt/yr Utkal alumina refinery that was commissioned in the second quarter of 2013 (Hindalco Industries Ltd., 2014, 2016).

Malaysia.—Press Metal Berhad's Samalaju smelter was expanded to 520,000 t/yr from 320,000 t/yr. The smelter was

being expanded to 640,000 t/yr with completion expected by yearend 2018 (Phang, 2014; Press Metal Berhard, 2016).

Netherlands.—In March, Aluminum Delfzijl (Aldel) (a subsidiary of Klesch Group) restarted its 110,000-t/yr primary smelter in Groningen. The smelter had shut down on December 30, 2013, after it filed for bankruptcy protection, citing high power prices and low aluminum prices as the reasons for closure. The restart was enabled by a contract to obtain power from a supplier in Germany (Bhal, 2014; Thomas, 2014; Klesch Group, 2015).

Russia.—Primary aluminum production in Russia increased by 7% (230,000 t) compared with that in 2014. United Company RUSAL Plc completed construction of the first 147,000-t/yr potline at the Boguchansky smelter and ramped up production from the potline to full capacity by yearend. Expansion of the smelter to 588,000 t/yr was planned by yearend 2018. The smelter would be powered by the 3,000-MW Boguchanskaya hydroelectric powerplant on the Angara River (United Company RUSAL Plc, 2016, p. 22).

Outlook

World demand for aluminum in 2016 is expected to increase in proportion to growth in global gross domestic product. Inventories at LME-registered warehouses are expected to continue to decline as policy changes to address the complaints about long load-out times are implemented.

During the first half of 2016, three smelters in the United States shut down a combined 700,000 t/yr of capacity. Some U.S. smelters still producing are at risk of shutting down and, owing to high power prices, it seems unlikely that already shuttered capacity will restart in the near future. The global trend of permanently closing older smelters or modernizing them in order to comply with environmental regulations, increase efficiency, and reduce costs is expected to continue, although most high-cost smelters outside of China had already been shut down by yearend 2015. Although several new smelters located where power costs are relatively low are under construction or have been proposed, completion of many outside of China is not expected until there is more certainty about consumption and net capacity increases in China. In China, construction of new capacity is expected to be limited, but the further shutdown of unprofitable capacity is not expected to be significant.

Aluminum consumption by the domestic automobile industry is expected to increase as automobile manufacturers increase the per vehicle aluminum content, including the substitution of aluminum sheet for steel in certain truck models, in response to increasing fuel efficiency standards. However, because of its higher cost, the growth in aluminum sheet use in automobiles may be restricted to vehicle types with high customer brand loyalty such as light trucks, luxury sedans, and sports cars. Aluminum consumption by U.S. and European aircraft manufacturers is expected to increase as airlines continue to replace older aircraft with newer, more fuel efficient models. However, the rate of aircraft replacement may slow if relatively low oil prices are sustained. Competition from carbon composites, magnesium, and high-strength steel is expected to continue as the transportation sector seeks lighter weight materials to improve fuel efficiency; however, the aluminum industry continues to develop new aluminum alloys to compete with other materials.

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TABLE 1
SALIENT ALUMINUM STATISTICS[1]

(Thousand metric tons unless otherwise specified)

		2011	2012	2013	2014	2015
United States:						
Primary production:						
Quantity		1,986	2,070	1,946	1,710	1,587
Value	millions	$5,083	$4,608	$4,042	$3,937	$3,085
Price, average, U.S. market, spot	cents per pound	116.1	101.0	94.2	104.5	88.2
Inventories (December 31):						
Aluminum industry[2]		1,060	1,140	1,130	1,280	1,350
London Metal Exchange, U.S. warehouses[3]		2,360	2,120	1,950	1,190	507
Secondary recovery:[4]						
New scrap		1,670 r	1,760 r	1,790 r	1,880 r	1,910
Old scrap		1,440 r	1,630 r	1,630	1,700	1,470
Total		3,110 r	3,380 r	3,420 r	3,570 r	3,380
Exports, crude, semicrude, and scrap		3,420	3,480	3,390	3,230	3,010
Imports for consumption, crude and semicrude[5]		3,710	3,760	4,160	4,290	4,560
Supply, apparent[6]		5,210	5,890 r	6,320 r	6,950 r	7,120
Consumption, apparent[7]		3,530 r	4,130 r	4,530	5,070 r	5,220
World, production		46,800 r	49,200 r	51,900 r	54,000 r	57,500 e

eEstimated. rRevised.

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

[2]Data from The Aluminum Association Inc.; includes ingot, semifabricated material, and scrap inventory levels for producers in the United States and Canada.

[3]Includes aluminum alloyed material.

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

[5]Does not include scrap.

[6]Defined 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.

[7]Apparent supply less recovery from purchased new scrap.

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

Company and location	Yearend capacity (thousand metric tons) 2014	2015	Ownership in 2015
Alcoa Inc.:			
Evansville, IN (Warrick)	269	269	Alcoa Inc., 100%.
Ferndale, WA (Intalco)	279	279	Do.
Massena, NY	130	130	Do.
Rockdale, TX	191 [2]	191 [2]	Do.
Wenatchee, WA	184	184	Do.
Total	1,050	1,050	
Century Aluminum Co.:			
Hawesville, KY	252	252	Century Aluminum Co., 100%.
Mount Holly, SC	229 [3]	229 [3]	Do.
Ravenswood, WV	170 [2]	-- [4]	Do.
Sebree, KY	205	205	Do.
Total	856	686	
Columbia Falls Aluminum Co., Columbia Falls, MT	168 [2]	-- [4]	Glencore International AG, 100%.
Noranda Aluminum Holding Corp., New Madrid, MO	263	263	Noranda Aluminum Holding Corp., 100%.
Grand total	2,340	2,000	

Do. Ditto. -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Temporarily idle at yearend.
[3]Alcoa Inc. sold its interest in the smelter on December 1, 2014. Prior ownership was Alcoa Inc., 50.3%; Century Aluminum Co., 49.7%.
[4]Shutdown was made permanent in 2015.

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
2014:			
Secondary smelters[r]	2,150,000	1,520,000	1,620,000
Independent mill fabricators	1,700,000	1,450,000	1,550,000
Foundries	97,300	80,500	86,100
Other consumers	6,690	6,690	6,690
Total[r]	3,960,000	3,050,000	3,260,000
Estimated full industry coverage[r]	4,270,000	3,290,000	3,570,000
2015:			
Secondary smelters	1,840,000	1,310,000	1,400,000
Independent mill fabricators	1,760,000	1,500,000	1,600,000
Foundries	97,300	80,500	86,100
Other consumers	4,180	4,180	4,180
Total	3,690,000	2,900,000	3,100,000
Estimated full industry coverage	3,980,000	3,120,000	3,380,000

[r]Revised.
[1]Excludes recovery from other than aluminum-base scrap.
[2]Data 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 2015[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	354,000	351,000	17,300
Can stock clippings	7,200	39,800	43,200	3,850
Other wrought sheet and clippings	6,920	246,000	250,000	2,300
Casting	3,620	48,600	50,500	1,770
Borings and turnings	5,390	88,700	91,900	2,170
Dross and skimmings	21,200	447,000	461,000	7,060
Total	58,400	1,220,000	1,250,000	34,500
Old scrap:				
Castings	4,820	105,000	107,000	2,240
Extrusion	9,780	142,000	143,000	9,000
Aluminum cans[4]	32,400	71,500	95,800	8,160
Other wrought products	11,300	167,000	167,000	11,400
Auto shredder scrap	2,130	74,700	74,300	2,550
Total	60,400	560,000	587,000	33,300
Sweated pig	183	1,810	1,810	183
Grand total secondary smelters	119,000	1,790,000	1,840,000	67,900
Integrated aluminum companies, foundries, independent mill fabricators, other consumers:				
New scrap:				
Extrusion	1,020	286,000	286,000	1,170
Can stock clippings	1,830	189,000	189,000	1,820
Other wrought sheet and clippings	2,140	394,000	386,000	10,300
Casting	243	16,500	16,500	243
Borings and turnings	725	13,500	13,500	758
Dross and skimmings	96	6,200	6,190	103
Total	6,050	904,000	896,000	14,400
Old scrap:				
Castings	4,840	163,000	163,000	4,840
Extrusion	831	65,900	65,900	831
Aluminum cans[4]	1,690	567,000	568,000	1,450
Other wrought products	9,830	162,000	160,000	12,300
Auto shredder scrap	539	5,670	5,820	385
Total	17,700	964,000	962,000	19,800
Grand total integrated aluminum companies, etc.	23,800	1,870,000	1,860,000	34,200
All scrap consumed:				
New scrap:				
Extrusion	15,000	640,000	637,000	18,500
Can stock clippings	9,030	228,000	232,000	5,670
Other wrought sheet and clippings	9,060	639,000	636,000	12,600
Casting	3,860	65,200	67,000	2,020
Borings and turnings	6,110	102,000	105,000	2,930
Dross and skimmings	21,300	453,000	467,000	7,170
Total	64,400	2,130,000	2,140,000	48,900
Old scrap:				
Castings	9,650	267,000	270,000	7,080
Extrusion	10,600	208,000	209,000	9,830
Aluminum cans[4]	34,100	639,000	663,000	9,600
Other wrought products	21,100	329,000	326,000	23,600
Auto shredder scrap	2,670	80,400	80,100	2,940
Total	78,100	1,520,000	1,550,000	53,100
Sweated pig	183	1,810	1,810	183
Grand total of all scrap consumed	143,000	3,650,000	3,690,000	102,000

[1]Includes imported scrap. According to reporting companies, 7.78% of total receipts of aluminum-base scrap, or 301,000 metric tons, was received on toll arrangements.

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

[3]Includes inventory adjustment.

[4]Used 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 STATES[1]

(Metric tons)

	2014		2015	
	Production	Net shipments[2]	Production	Net shipments[2]
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	47,100	47,100	35,300	33,900
380 and variations	180,000	180,000	157,000	166,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	57,900	57,800	51,200	51,100
No. 12 and variations	998	998	1,360	1,360
No. 319 and variations	78,600	78,300	82,600	82,600
F-132 alloy and variations	4,960	4,980	4,220	4,140
Al-Mg alloys	10,100	10,100	10,800	9,620
Al-Zn alloys	2,060	2,090	2,140	1,830
Al-Si alloys (0.6% to 2.0% Cu)	3,390	3,380	2,800	2,770
Al-Cu alloys (1.5% Si, maximum)	954	1,020	861	788
Al-Si-Cu-Ni alloys	2,270	2,130	2,080	2,080
Other	63	82	89	68
Wrought alloys, extrusion billets	748,000 r	749,000 r	754,000	757,000
Miscellaneous:				
Steel deoxidation	26,200	26,200	9,250	9,250
Pure (97.0% Al)	W	W	W	W
Other[3]	42,000	41,000	43,900	45,600
Total	1,200,000 r	1,200,000 r	1,160,000	1,170,000
Less consumption of materials other than scrap:				
Primary aluminum	178,000 r	XX	208,000	XX
Primary silicon	21,100 r	XX	24,300	XX
Other	13,200 r	XX	14,900	XX
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot[4]	992,000 r	XX	910,000	XX

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

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes inventory adjustment.
[3]Includes other diecast alloys.
[4]No allowance made for melt loss of primary aluminum and alloying ingredients.

TABLE 6
DISTRIBUTION OF END-USE SHIPMENTS OF ALUMINUM PRODUCTS
IN THE UNITED STATES AND CANADA, BY INDUSTRY[1]

Industry	2014 Quantity (thousand metric tons)	2014 Percent of grand total	2015[p] Quantity (thousand metric tons)	2015[p] Percent of grand total
Containers and packaging	2,090	18.1	2,130	18.3
Building and construction	1,390	12.0	1,420	12.1
Transportation	3,810	32.9	4,180	35.8
Electrical	807 [r]	6.9	798	6.8
Consumer durables	748	6.5	741	6.3
Machinery and equipment	768 [r]	6.6 [r]	767	6.6
Other markets	343 [r]	3.0 [r]	327	2.8
Total	9,960	86.0	10,400	88.7
Exports	1,620	14.0	1,320	11.3
Grand total	11,600	100	11,700	100

[p]Preliminary. [r]Revised.
[1]Data 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)

	2013	2014	2015[p]
Wrought products:[3]			
Sheet, plate, foil	4,830 [r]	5,020	5,220
Pipe, tube, extruded shapes	1,950 [r]	2,100 [r]	2,220
Rod, bar, wire, cable	720	664 [r]	630
Forgings (including impacts)	138	155	158
Powder, flake, paste	56	68 [r]	71
Total	7,690 [r]	8,010 [r]	8,300
Castings:			
Sand	132	214	295
Permanent and semipermanent mold	604	563	526
Die	1,240	1,330	1,470
Other	18	15	7
Total	2,000	2,120	2,300
Grand total	9,680 [r]	10,100 [r]	10,600

[p]Preliminary. [r]Revised.
[1]Net shipments derived by subtracting the sum of producers' domestic receipts of each mill shape from the domestic industry's gross shipments of that shape.
[2]Data are rounded to no more than three significant digits; may not add to totals shown.
[3]Wrought 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	2014	2015
Primary aluminum, average:[1]		
U.S. market	1.045	0.882
London Metal Exchange cash price	0.846	0.754
NASAAC[2] cash price, average	0.945 [r]	0.801
Secondary alloy, average:[3]		
A319 (3% Cu)	1.129	1.010
A356 (0.2% Cu)	1.140	1.035
A360 (0.6% Cu)	1.137	1.032
A380 (3% Zn)	1.085	0.938
A413 (0.6% Cu)	1.140	1.035
Scrap, average:[3]		
Clean, dry turnings	0.716	0.559
Mixed low-copper-content clips	0.755	0.610
Old cast	0.742	0.601
Old sheet	0.707	0.572
Used beverage cans	0.826	0.651

[r]Revised.
[1]Source: Platts Metals Week.
[2]North American Special Aluminum Alloy Contract.
[3]Source: American Metal Market.

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

	2014		2015	
Class	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	361,000	$915,000	310,000	$730,000
Scrap	1,720,000	2,890,000	1,550,000	2,460,000
Plates, sheets, bars, strip, etc.	1,080,000	4,620,000	1,080,000	4,510,000
Castings and forgings	18,800	337,000	17,100	323,000
Semifabricated forms, n.e.c.[2]	52,600	445,000	48,300	426,000
Total	3,230,000	9,200,000	3,010,000	8,450,000
Manufactures:				
Foil and leaf	60,200	300,000	57,000	281,000
Powders and flakes	3,340	16,700	4,520	18,800
Wire and cable	46,800	168,000	43,700	154,000
Total	110,000	484,000	105,000	454,000
Grand total	3,340,000	9,680,000	3,120,000	8,900,000

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Not elsewhere classified.

Source: U.S. Census Bureau.

TABLE 10
U.S. EXPORTS OF ALUMINUM, BY COUNTRY[1]

Country	Metals and alloys, crude		Plates, sheets, bars, etc.[2]		Scrap		Total	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
2014:								
Brazil	5,210	$11,400	10,800	$76,200	477	$886	16,500	$88,500
Canada	120,000	305,000	413,000	1,610,000	102,000	206,000	635,000	2,130,000
China	599	2,080	41,000	280,000	1,060,000	1,770,000	1,100,000	2,050,000
France	4,980	15,900	15,900	138,000	2,200	11,800	23,100	165,000
Germany	3,430	12,000	12,600	116,000	4,240	4,810	20,300	133,000
Hong Kong	85	210	2,780	19,300	29,700	44,800	32,600	64,400
Italy	162	449	3,640	45,700	419	898	4,230	47,000
Japan	1,910	7,300	20,100	222,000	14,500	32,400	36,400	262,000
Kazakhstan	--	--	3	139	--	--	3	139
Korea, Republic of	535	2,260	29,500	222,000	169,000	261,000	199,000	486,000
Mexico	214,000	526,000	425,000	1,720,000	153,000	297,000	792,000	2,550,000
Netherlands	64	609	682	7,320	248	635	994	8,570
Philippines	15	59	274	3,950	--	--	289	4,000
Russia	--	--	200	2,330	46	63	246	2,390
Saudi Arabia	6	16	41,900	140,000	--	--	41,900	140,000
Singapore	1,380	5,010	4,770	41,600	23	39	6,170	46,700
South Africa	19	143	95	1,040	--	--	114	1,180
Taiwan	4,240	11,600	4,420	35,000	78,700	97,700	87,300	144,000
Thailand	90	183	1,470	11,200	4,500	6,500	6,060	17,900
Ukraine	--	--	(3)	4	--	--	(3)	4
United Kingdom	890	3,450	17,600	163,000	1,050	1,300	19,500	168,000
Venezuela	13	441	3,800	20,200	--	--	3,810	20,600
Other	3,180	10,700	106,000	514,000	96,300	152,000	205,000	677,000
Total	361,000	915,000	1,160,000	5,400,000	1,720,000	2,890,000	3,230,000	9,200,000
2015:								
Brazil	1,770	4,090	5,900	49,200	1,360	2,040	9,030	55,400
Canada	105,000	240,000	433,000	1,580,000	119,000	229,000	657,000	2,050,000
China	487	1,800	38,100	260,000	843,000	1,310,000	882,000	1,570,000
France	4,440	14,000	15,500	136,000	2,290	10,700	22,200	161,000
Germany	3,150	11,100	12,000	116,000	5,550	7,170	20,700	134,000
Hong Kong	38	135	1,960	17,400	30,100	34,900	32,100	52,400
Italy	61	301	2,860	38,200	160	1,300	3,080	39,800
Japan	1,830	7,300	22,400	235,000	14,000	32,700	38,200	275,000
Kazakhstan	--	--	65	463	--	--	65	463
Korea, Republic of	1,350	3,290	32,700	261,000	171,000	268,000	205,000	532,000
Mexico	180,000	410,000	460,000	1,810,000	181,000	311,000	821,000	2,530,000
Netherlands	1,300	3,710	788	8,160	209	360	2,290	12,200
Philippines	65	169	401	4,600	147	889	613	5,660
Russia	3	15	57	1,020	299	445	359	1,480
Saudi Arabia	8	59	5,960	27,600	94	116	6,070	27,800
Singapore	1,460	3,940	3,400	37,100	143	159	5,010	41,200
South Africa	14	87	188	1,920	--	--	202	2,010
Taiwan	4,540	12,300	4,450	36,400	37,700	57,100	46,700	106,000
Thailand	94	306	5,430	29,100	2,560	3,480	8,090	32,900
Ukraine	--	--	4	36	--	--	4	36
United Kingdom	734	3,430	17,200	159,000	1,340	1,230	19,200	164,000
Venezuela	11	48	1,230	11,100	--	--	1,240	11,200
Other	3,930	13,900	83,700	438,000	143,000	189,000	231,000	641,000
Total	310,000	730,000	1,150,000	5,260,000	1,550,000	2,460,000	3,010,000	8,450,000

-- Zero.

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

[2]Includes castings, forgings, and unclassified semifabricated forms.

[3]Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 11
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY CLASS[1]

Class	2014 Quantity (metric tons)	2014 Value (thousands)	2015 Quantity (metric tons)	2015 Value (thousands)
Crude and semicrude:				
Metals and alloys, crude	3,300,000	$7,610,000	3,380,000	$7,310,000
Plates, sheets, strip, etc., n.e.c.[2]	786,000	2,590,000	956,000	3,070,000
Pipes, tubes, etc.	30,500	247,000	32,400	242,000
Rods and bars	174,000	730,000	191,000	804,000
Scrap	559,000	931,000	521,000	795,000
Total	4,850,000	12,100,000	5,080,000	12,200,000
Manufactures:				
Foil and leaf[3]	169,000	685,000	179,000	626,000
Powders and flakes	16,100	61,900	19,500	71,300
Wire	223,000	595,000	202,000	507,000
Total	409,000	1,340,000	400,000	1,200,000
Grand total	5,260,000	13,500,000	5,480,000	13,400,000

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes circles, disks, plates, and sheets; not elsewhere classified.
[3]Does not include etched capacitor foil.

Source: U.S. Census Bureau.

TABLE 12
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM, BY COUNTRY[1]

Country	Metals and alloys, crude		Plates, sheets, bars, etc.[2]		Scrap		Total	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
2014:								
Argentina	72,400	$160,000	1	$9	--	--	72,400	$160,000
Australia	27,800	69,500	167	1,140	88	$163	28,000	70,800
Bahrain	53,900	125,000	30,700	91,400	--	--	84,500	217,000
Belgium	1,370	8,020	3,440	19,300	48	138	4,860	27,500
Brazil	22,400	45,700	7,040	18,600	3,250	5,790	32,700	70,100
Canada	2,210,000	5,110,000	228,000	877,000	339,000	575,000	2,780,000	6,560,000
China	2,410	7,890	286,000	820,000	895	1,510	289,000	830,000
France	8,600	70,500	11,100	72,300	1,360	2,660	21,100	145,000
Germany	1,290	3,790	62,300	296,000	1,650	2,880	65,200	302,000
Italy	8,310	16,900	8,180	46,600	632	295	17,100	63,900
Japan	82	287	13,700	72,400	637	1,090	14,500	73,800
Korea, Republic of	15,300	37,600	25,300	82,600	87	132	40,600	120,000
Mexico	18,700	38,200	37,900	183,000	122,000	193,000	178,000	415,000
Netherlands	1,580	5,650	1,790	11,600	195	300	3,560	17,600
Norway	8,900	23,000	68	621	--	--	8,970	23,600
Panama	294	496	83	355	5,770	9,340	6,150	10,200
Russia	323,000	698,000	16,400	64,300	1,660	3,520	341,000	765,000
Slovenia	--	--	2,740	14,200	16	17	2,760	14,300
South Africa	26,300	56,200	57,200	178,000	--	--	83,500	234,000
Spain	2,870	6,780	942	6,350	1,410	2,380	5,220	15,500
Ukraine	1,520	2,580	--	--	--	--	1,520	2,580
United Arab Emirates	261,000	621,000	10	78	826	1,140	262,000	622,000
United Kingdom	1,110	3,700	10,400	46,200	7,370	10,900	18,900	60,800
Venezuela	105,000	211,000	315	631	14,000	24,100	119,000	236,000
Other	128,000	290,000	188,000	666,000	58,700	95,900	374,000	1,050,000
Total	3,300,000	7,610,000	991,000	3,570,000	559,000	931,000	4,850,000	12,100,000
2015:								
Argentina	85,900	187,000	5	47	--	--	85,900	187,000
Australia	19,400	44,800	220	2,500	251	393	19,800	47,700
Bahrain	74,400	168,000	34,900	102,000	--	--	109,000	269,000
Belgium	1,640	7,880	7,160	35,900	15	28	8,810	43,800
Brazil	3,700	8,420	10,000	27,100	13,300	21,400	27,000	56,900
Canada	2,230,000	4,670,000	253,000	945,000	340,000	515,000	2,820,000	6,130,000
China	3,260	8,560	391,000	1,110,000	369	813	395,000	1,120,000
France	10,800	87,600	10,500	67,700	159	133	21,500	155,000
Germany	6,830	18,300	70,200	298,000	1,160	7,320	78,200	324,000
Italy	7,620	14,000	10,900	56,000	760	333	19,300	70,400
Japan	15	70	27,100	120,000	738	1,400	27,800	122,000
Korea, Republic of	15,900	34,200	22,000	73,100	545	1,290	38,400	109,000
Mexico	21,700	42,400	42,900	197,000	97,100	144,000	162,000	383,000
Netherlands	1,780	5,860	2,730	15,300	467	730	4,980	21,900
Norway	14,000	31,500	59	613	--	--	14,000	32,100
Panama	142	224	43	188	4,830	6,660	5,010	7,070
Russia	279,000	617,000	16,900	65,200	739	1,430	297,000	683,000
Slovenia	--	--	2,420	12,500	21	23	2,450	12,600
South Africa	9,870	24,300	47,400	155,000	--	--	57,300	179,000
Spain	7,250	14,000	982	5,980	1,120	1,420	9,360	21,400
Ukraine	24	41	--	--	--	--	24	41
United Arab Emirates	293,000	662,000	17	102	1,410	2,090	294,000	665,000
United Kingdom	566	2,500	12,500	50,300	3,990	6,550	17,100	59,300
Venezuela	63,700	120,000	141	260	5,110	8,130	68,900	128,000
Other	232,000	537,000	215,000	773,000	48,900	76,200	496,000	1,390,000
Total	3,380,000	7,310,000	1,180,000	4,110,000	521,000	795,000	5,080,000	12,200,000

-- Zero.

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

[2]Includes 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	2011	2012	2013	2014	2015[e]
Argentina	416	413	440 [r]	443 [r]	440
Australia	1,945	1,864	1,778	1,704	1,645 [3]
Azerbaijan	20 [e]	55	53	50 [r]	50
Bahrain	881	890	913	931	961 [3]
Bosnia and Herzegovina[4]	131	126	110	100 [e]	100
Brazil	1,440	1,436	1,304	962	772 [3]
Cameroon	69	52 [r]	75	93	90
Canada	2,988	2,781	2,969	2,858	2,880 [3]
China[e]	20,000 [r]	23,500 [r]	26,500 [r]	28,300 [r, 3]	31,400 [3]
Egypt[e]	265	265	320 [3]	304 [r, 3]	300
France	334	349	346	360	420
Germany	432	410	492	531 [r]	530
Ghana	35 [r]	38 [r]	37 [r]	38 [r]	40
Greece	165	165	169	173 [r]	170
Iceland	781	803	736	800 [e]	800
India	1,667	1,700 [e]	1,703	1,939	2,355 [3]
Indonesia	244	248	255 [r]	211 [r]	250
Iran	322	337	295 [r]	354	350
Italy	141	110	--	--	-- [3]
Japan	43 [r]	26 [r]	29 [r]	46 [r]	30
Kazakhstan	249	250	250	208 [r]	200
Malaysia[e]	80 [3]	120	291 [r, 3]	400	440
Montenegro	93	75	16 [r]	44 [r, 3]	40
Mozambique	562	564	570	567	558 [3]
Netherlands[e]	300	110	50	--	75
New Zealand	354	327	325 [r]	328 [r]	333 [3]
Nigeria	18	26	2	--	-- [3]
Norway	1,389 [r]	1,145 [r]	1,155 [r]	1,250 [r]	1,225 [3]
Oman	373	360 [e]	354	364	377 [3]
Qatar	487	628	634	640 [e]	610 [3]
Romania[e, 5]	260 [r]	249 [3]	250 [3]	263 [3]	271 [3]
Russia	3,993	4,024 [r]	3,601 [r]	3,300 [r]	3,530 [3]
Saudi Arabia	--	--	187	665	682 [3]
Slovakia	187 [r]	181	163 [r]	168 [r]	171 [3]
Slovenia[4]	84 [r]	83 [r]	85 [r]	85 [r]	85
South Africa	809	665 [r]	822 [r]	745	695 [3]
Spain[e]	365	230	235	230	230
Sweden	111	129	131	113	115 [3]
Tajikistan	278	273	216	121 [r]	100
Turkey	65 [r, e]	44 [r]	42 [r]	54 [r]	50
Ukraine[5]	7	--	--	--	-- [3]
United Arab Emirates[e]	1,800	1,820	1,864 [3]	2,330 [3]	2,400 [3]
United Kingdom	213	60	44	42	47 [3]
United States	1,986	2,070	1,946	1,710	1,587 [3]
Venezuela	380	203 [r]	171 [r]	138 [r]	110
Total	46,800 [r]	49,200 [r]	51,900 [r]	54,000 [r]	57,500

[e]Estimated. [r]Revised. -- Zero.

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

[2]Primary aluminum is defined as "the weight of liquid aluminum as tapped from pots, excluding the weight of any alloying materials as well as that of any metal produced from either returned scrap or remelted material." International reporting practices vary from country to country, some 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 a footnote.
Includes data available through October 6, 2016.

[3]Reported figure.

[4]Primary ingot plus secondary ingot.

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