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ALUMINUM [ADVANCE RELEASE]

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Aluminum

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During 2020, total aluminum production (primary plus aluminum recovered from scrap) in the United States was 4.06 million metric tons (Mt), 11% less than that in 2019, and apparent consumption was 3.98 Mt, 20% less than the revised amount in 2019 (table 1). Primary production, secondary production, and net imports decreased, and total inventories were essentially unchanged. Net imports (imports minus exports) of total aluminum in 2020 were 2.11 Mt, 27% less than the 2.9 Mt in 2019. Net imports of crude metal in 2020 were 3.06 Mt, 490,000 metric tons (t) less than those in 2019, a decrease of 14%; net imports of semifabricated aluminum products decreased by 43% (265,000 t). Net exports of scrap increased by 3% (40,000 t) from those in 2019 (tables 10, 12). Total aluminum inventories in the United States stored in London Metal Exchange Ltd. (LME)-registered warehouses (including estimated off-warrant inventories) and by industry were essentially unchanged at yearend 2020 compared with those at yearend 2019 (table 1).

Domestic primary aluminum smelters produced 1.01 Mt of aluminum metal, 7% less than the amount in 2019; production decreased after 2 years in a row of increased production and was still near historic lows after a 30-year trend of declining production (fig. 1). The value of production, based on the average U.S. market price, decreased to $1.98 billion, 18% less than the value in 2019. The decrease in value in 2020 was due to a 7% decrease in production and a 10% decrease in price. At yearend, three companies were operating a total of six primary aluminum smelters in five States. One smelter remained on care-and-maintenance status throughout 2020 and another smelter was placed on care-and-maintenance status in July. About 49% [880,000 metric tons per year (t/yr)] of the 1.79 million metric tons per year (Mt/yr) of domestic primary aluminum smelting capacity, including idle potlines at operating smelters, was idle at yearend (table 2).

Primary aluminum was produced in 40 countries in 2020. China was the world's leading producer, accounting for 57% of world production. The other major producing countries were Russia (6%), India (5%), Canada (5%), the United Arab Emirates (4%), in descending order. World primary metal production increased by 4% compared with that in 2019. Increased production in China, Canada, and Bahrain was partially offset by decreased production in Argentina, India, and the United States (in order of production change). The United States was the 9th-ranked producer of primary aluminum, the same ranking since 2018; it had been ranked 12th in 2017, 10th in 2016, 7th in 2015, 6th in 2014, and 4th in 2013 (table 13).

Aluminum recovered from purchased and tolled scrap was 3.05 Mt in 2020, 12% less than that in 2019 (table 3). Of this recovered metal, 54% came from new (manufacturing) scrap, and 46% came from old (obsolete aluminum products) scrap (table 1). Aluminum used beverage cans (UBCs) accounted for 35% of the old scrap consumed in 2020 and 15% of total scrap consumed (table 4).

Aluminum prices generally declined through the first 5 months of the year, then generally increased through the rest of the year. The annual average aluminum price decreased by 10% compared with the annual average price in 2019. The average monthly price in December 2020 was 12% more than the average monthly price in December 2019. The aluminum spot price on the LME averaged $0.772 per pound, 5% less than the $0.813 per pound in 2019, and the 2020 annual average U.S. market price of primary aluminum ingot decreased by 10% to $0.897 per pound from $0.995 per pound in 2019 (table 8).

Globally, consumption decreased slightly as increased consumption in China was offset by decreased consumption in the United States and most other industrialized countries. Production increased from new smelting capacity in China offsetting decreased production from shutdowns of capacity in some locations (CRU Aluminium Monitor, 2021). Combined world inventories of aluminum metal and alloys held by LME-registered warehouses (including estimated off-warrant stocks) increased by approximately 25% to 2.95 Mt from 2.36 Mt (London Metal Exchange Ltd., 2019, 2020a, b, 2021). In 2020, world primary production increased by 4% to 65.2 Mt from the revised 62.9 Mt in 2019 (table 13).

Apparent consumption of aluminum in the United States decreased by 20% to 3.98 Mt compared with the revised 4.98 Mt in 2019. U.S. net import reliance for aluminum as a percentage of apparent consumption decreased to 39% in 2020 from 47% in 2019 and was at its lowest level since 2016 as net imports (excluding scrap) decreased by 741,000 t, offsetting the impact of decreased primary and secondary production by 81,000 t and 415,000 t, respectively. 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).

Legislation and Government Programs

On January 10, the U.S. Department of the Treasury's Office of Foreign Assets Control (OFAC) designated several Iranian individuals and businesses for sanctions in response to activities of the Government of Iran, including funding of terrorism. Among those designated were Al-Mahdi Aluminum Corp. and Iran Aluminum Co., producers of primary aluminum and alumina, and Khalagh Tabdir Pars Co., a trading firm that dealt with alumina and aluminum. On June 25, the OFAC imposed sanctions on four additional companies based in Iran that produced or exported aluminum, iron, and steel. South Aluminum Co., which completed a 300,000-t/yr smelter in April, was added to the sanctions list. All assets subject to U.S.

jurisdiction of those sanctioned were frozen and U.S. persons were generally prohibited from doing business with sanctioned individuals or businesses. The United States did not import any aluminum for consumption from Iran in 2019 or 2020 (U.S. Department of the Treasury, 2020a, b).

On January 24, the President of the United States imposed a 10% tariff on imported products made with aluminum under authority of section 232 of the Trade Expansion Act of 1962. In March 2018, a 10% tariff was imposed on imports of aluminum under the same authority. Concerns had been raised that domestic manufacturers were having to pay more for aluminum but that competitors were able to import finished products without having to pay a tariff on the aluminum contained in finished products (Executive Office of the President, 2020a; Roh, 2020d).

On August 6, the President of the United States announced that a tariff on unalloyed unwrought primary aluminum imported from Canada would be reinstated on August 16. The 10% tariff was imposed under authority of section 232 of the Trade Expansion Act of 1962. Although the tariff was initially imposed on June 1, 2018, it was removed on May 19, 2019, based on an agreement between the two countries. Under the agreement, the United States reserved the right to reinstate the tariff if imports surged. Imports of unalloyed unwrought primary aluminum from Canada from June 2019 to May 2020 increased by 87% compared with imports during the same period the prior 12 months. In response, Canada announced plans to reinstate tariffs on products from the United States that had been removed as a result of the agreement reached in May 2019, as allowed under the terms of that agreement. On September 15, the United States Trade Representative (USTR) removed the 10% tariff on unalloyed unwrought primary aluminum imported from Canada, retroactive to September 1. Canada announced that it would drop its plan to impose tariffs on products from the United States. In the announcement, the USTR stated that imports of unalloyed unwrought aluminum from Canada were expected to not exceed 83,000 t in September, 70,000 t in October, 83,000 t in November, and 70,000 t in December. If imports exceeded the stated amount for the month, then a decrease of the excess amount was expected in the next month. Also, if imports in the 4-month period exceeded the total amount permitted by 105%, then the 10% tariff would be imposed on all imports for that month retroactively. In 2021, the United States would reserve the right to reimpose the 10% tariff on all future imports if imports exceeded 105% of the expected amount in any month (Coyne, 2020b; Executive Office of the President, 2020b; Hotter, 2020a; Office of the United States Trade Representative, 2020).

On June 26, the U.S. Department of Commerce (DOC) announced a preliminary determination that subsidies were provided to certain producers and exporters of aluminum foil made in China. The investigation was initiated in June 2019 and reviewed aluminum foil imports between August 14, 2017, and December 31, 2018. The investigation determined that countervailable subsidies were provided to eight aluminum foil producers at rates ranging from 17.04% to 48.26% (U.S. Department of Commerce, 2020a).

In April, the DOC and the U.S. International Trade Commission (USITC) initiated antidumping and countervailing duty investigations into imports of common alloy aluminum sheet from 18 countries. The investigations were requested in March by The Aluminum Association Inc., which alleged that producers in the 18 countries sold common alloy aluminum sheet in the United States below market prices. The countries or localities named in the antidumping petition were Bahrain, Brazil, Croatia, Egypt, Germany, Greece, India, Indonesia, Italy, the Republic of Korea, Oman, Romania, Serbia, Slovenia, South Africa, Spain, Taiwan, and Turkey. The countervailing duty petition alleged that common alloy aluminum sheet producers in Bahrain, Brazil, India, and Turkey benefited from Government subsidy programs. The alleged dumping margins ranged from 12.51% to 151%. On October 9, the DOC issued its preliminary determinations of the antidumping duty investigation and issued preliminary antidumping rates for each producer. The final determination was expected to be issued in February 2021. The USITC continued its antidumping investigation of common alloy aluminum sheet imports from these countries and was expected to issue its final determination in April 2021 (Lazzaro, 2020h; Roh, 2020b; U.S. Department of Commerce, 2020b).

On October 20, the DOC initiated antidumping investigations into imports of aluminum foil from Armenia, Brazil, Oman, Russia, and Turkey. Countervailing duty investigations would also be conducted on imports of aluminum foil from Oman and Turkey. The preliminary antidumping and countervailing determinations were expected in early 2021. The USITC also was investigating the impact of aluminum foil imports from the five countries on producers in the United States (Lazzaro, 2020g).

Since 2014, the Government of Brazil has eliminated the 6% tariff on imported aluminum for a limited quota of metal during a specific time, citing the shutdown of smelting capacity caused by high power prices and other issues. This policy continued throughout 2020. In 2020, the initial quota of 150,000 t was reached on September 9. On October 22, the quota was increased by an additional 30,000 t as demand increased. Within 2 days, import licenses for the entire additional amount of aluminum exempt from the tariff were granted (Carvalho, 2014; Rostas, 2020a, b).

Production

Primary.—Domestic production data were based on information compiled from U.S. Geological Survey (USGS) monthly surveys sent to seven primary aluminum smelters owned by three companies, all of which responded. Primary aluminum production in the United States was 1.01 Mt, 7% less than that in 2019 (table 1). Decreased production was attributed to the shutdown of one smelter in July, decreased production at another smelter in December attributed to power supply and weather-related issues, and a maintenance shutdown of one potline started in 2019 that continued all year. These decreases were partially offset by increased production from a potline that reached full production in March after regular maintenance was completed in 2019. Primary aluminum production in North America continued despite the coronavirus disease 2019 (COVID-19) pandemic. As other industries

announced shutdowns in response to the pandemic in March, Alcoa Corp. stated that production continued at all its facilities, which included primary smelters in Evansville, IN, Ferndale, WA, and Massena, NY, as well as in Australia, Brazil, Canada, Iceland, Norway, Saudi Arabia, and Spain. Century Aluminum Co. stated that it did not decrease production from its smelters in Hawesville, KY, Mount Holly, SC, and Sebree, KY, nor from its smelter in Iceland. Magnitude 7 Metals LLC continued production from its smelter in New Madrid, MO. Because the process to restart primary aluminum smelters takes several weeks and is expensive, companies tried to avoid shutdowns as much as possible while implementing measures to keep enough distance between employees to minimize the risk of spreading the virus. In July, Alcoa temporarily shut down the remaining 230,000 t/yr of operating capacity at the 279,000-t/yr smelter in Ferndale, WA, citing high production costs and low aluminum prices. The other 49,000 t/yr of capacity was shut down in 2008. An economic review of the Ferndale smelter was announced in October 2019 before the pandemic although the deteriorating market situation attributed to the pandemic was cited as a contributing factor for the shutdown (Alcoa Corp., 2020b, p. 1, 3; 2020c; Century Aluminum Co., 2020a).

Century Aluminum Co. completed the restart of a 50,000-t/yr potline in the first quarter of 2020 at its 252,000-t/yr smelter in Hawesville, KY. The potline was shut down in March 2019 for maintenance work and was producing at full capacity in early 2020. Another 50,000-t/yr potline at the Hawesville smelter that was shut down for maintenance in October 2019 was out of service for the entire year. Century decided to delay the maintenance work citing low aluminum prices in the second quarter of the year, uncertainties about the impact of the pandemic on aluminum demand and prices, as well as company finances. On March 24, employees represented by the United Steelworkers union at the Hawesville smelter agreed to extend their labor contract to April 1, 2021; the contract would have expired on March 31, 2020. In December, the Hawesville smelter experienced issues involving cold weather and electrical equipment that disrupted production from an undisclosed amount of capacity. The affected capacity was expected to be producing by early 2021 (Century Aluminum Co., 2020a, b, 2021).

Secondary and Semifabricated Products.—Domestic production data were based on information compiled from USGS monthly and annual surveys sent to 52 secondary aluminum facilities. For 2020, responses were received from 30 facilities. Domestic secondary aluminum production was 3.05 Mt, 12% less than that in 2019 (table 1). Decreased secondary aluminum production was attributed to temporary shutdowns at smelters in response to market conditions and safety concerns related to the COVID-19 pandemic. Because shutdown and restart costs of secondary aluminum smelters are relatively low compared with those of primary aluminum smelters, short-term shutdowns are more economically feasible.

At least 9 of the 10 States that collect deposits on beverage containers adjusted redemption center rules to be consistent with lockdown orders in response to the COVID-19 pandemic. Starting in mid-March, these States generally ordered redemption centers to close, suspended enforcement of deposit redemptions at retail locations still open, and encouraged consumers to return containers once the redemption centers reopened. As a result, supplies of UBC scrap decreased while demand for can sheet and beverages in aluminum cans remained firm. In response to the shortage of domestic UBC scrap, imports of UBC scrap in May increased by 37% compared with imports in April and increased by 45% compared with those in May 2019. By July, as many of the States permitted redemption centers to reopen and domestic supplies increased, UBC imports decreased but were still significantly higher for the rest of the year than in the corresponding months in 2019. As infections increased in the fall, some States suspended deposit redemption enforcement again (Container Recycling Institute, 2020, 2021; Stewart, 2020).

Starting in March, several secondary aluminum producers, extruders, rolling mills, and their customers announced short-term shutdowns citing the pandemic and its economic impacts. By May, many of these facilities restarted production, but shutdowns were reported at specific locations in response to outbreaks of the virus throughout the remainder of the year. In March, Novelis Inc. [a subsidiary of Hindalco Industries Ltd. (India)] shut down production of automobile sheet from its rolling mill in Oswego, NY, although beverage can sheet production continued. Production at the Lewisport, KY, rolling mill was shut down for about 3 weeks, but Novelis restarted production on March 30. On March 19, Constellium SE (France) announced that it would shut down production at several rolling mills in Europe and North America until conditions allowed affected locations to restart production but did not provide details on which facilities were affected. Most of the shutdowns lasted only a couple of months before production resumed (Lazzaro, 2020b, e, f; S&P Global Platts Metals Daily, 2020).

On March 30, Aleris Corp. shut down its rolling mill in Lewisport, KY, which produced automobile body sheet. On April 6, Arconic Corp. shut down its rolling mill in Alcoa, TN, and its extrusion plant in Massena, NY. Arconic restarted production at the Massena extrusion facility on April 20, and production from the Tennessee rolling mill resumed by the end of April. The Massena plant produced extrusions for the aerospace, automotive, and defense industries, and the Tennessee rolling mill produced automobile body sheet (Lazzaro, 2020a, f).

Gränges AB (Sweden) stopped production from its rolling mill in Salisbury, NC, in April citing market disruptions caused by the COVID-19 pandemic. Production at the rolling mill restarted during the third quarter of the year. The 40,000-t/yr rolling mill produced aluminum sheet used for automotive heat shields and in air conditioning systems. Gränges also stopped work in April on an upgrade project on its rolling mill in Newport, AR, but restarted construction in the third quarter of the year. The Newport rolling mill had 20,000 t/yr of capacity and produced foil for food service, health care, and pharmaceutical uses (Gränges AB, 2020, p. 2; Lazzaro, 2020d).

By the end of the first week in April, Hydro ASA (Norway) shut down 25% of its extrusion plant capacity in the United States. Additionally, about 40% of Hydro's U.S. extrusion capacity was producing at reduced levels. Hydro also decreased production from its secondary smelters in Commerce, TX, and Henderson, KY, for several months. Both

smelters produced extrusion billet from recycled scrap and each had 90,000 t/yr of capacity, but details of the production rate were not available. Hydro's secondary smelters in Azuqueca, Spain, Clervaux, Luxembourg, Deeside, United Kingdom, Luce, France, and Rackwitz, Germany, were restarted in mid-April after being temporarily shut down in February or March. Hydro's customers were mostly in the automotive and construction industries (Blamey, 2020a, b; Hydro ASA, 2020b, c; Lazzaro, 2020f).

On June 29, Keymark Corp. temporarily shut down production from its plant in Fonda, NY, citing an outbreak of COVID-19 cases. The plant had approximately 500 employees, 74 of whom tested positive for COVID-19. The plant was reopened later in the year. The plant produced anodized and painted aluminum extrusions and had a cast house that produced extrusion billet from primary aluminum and scrap. The production capacity of the plant was not available (Roh, 2020c).

Despite the COVID-19 pandemic, secondary production capacity increased in 2020 with the startup of a new secondary aluminum smelter and the completion of several projects that had been in process since 2018.

Matalco Inc. (Canada) completed construction of a new secondary aluminum smelter in Wisconsin Rapids, WI, and started production on November 19. The smelter capacity was approximately 110,000 t/yr and its products included extrusion billet and rolling slab (Coyne, 2020d).

During the second quarter of the year, Arconic completed an expansion project at its rolling mill in Alcoa, TN, which had been started in February 2019. The project increased capacity for automobile body sheet and industrial applications, but the amount of additional capacity was not available (Arconic Inc., 2019; Arconic Corp., 2020b).

JW Aluminum Holding Corp. completed an expansion project to increase the capacity of its rolling mill and secondary smelter in Goose Creek, SC. The project increased capacity by 80,000 t/yr. Construction started in June 2018 (South Carolina Department of Commerce, 2018; JW Aluminum Holding Corp., undated).

Logan Aluminum Inc. completed a 200,000-t/yr expansion of its rolling mill in Guthrie, KY, and started shipments in December. Construction of the project started in November 2018. Logan Aluminum was a joint venture between Novelis and Tri-Arrows Aluminum Inc. (Matyi, 2018; Novelis Inc., 2019, 2021).

Novelis continued construction on a modernization and upgrade project of its rolling mill in Greensboro, GA. The project would enable the plant to consume used scrap for making automotive body sheet but would not increase capacity significantly. The project started in October 2019 and was expected to be completed by yearend 2021 (Novelis Inc., 2019).

Work on a rolling mill being built by Braidy Industries Inc. in Ashland, KY, was delayed pending additional funding. In 2019, United Company RUSAL Plc (Russia) announced that it would invest $200 million in the rolling mill. The full cost of the rolling mill was projected to be $1.5 billion, and the future of the mill was in question. The rolling mill would produce sheet for the automobile industry (Watkins, 2020).

On December 15, 2020, approximately 400 employees of Constellium represented by the United Steelworkers union went on strike at a secondary smelter and rolling mill in Muscle Shoals, AL. A dispute over terms of a new labor contract was cited as the reason for the strike. The smelter and rolling mill recycled UBCs and other scrap to produce can sheet and other types of aluminum sheet. On January 11, 2021, the employees voted to accept a 5-year contract offer and returned to work the next day. During the labor dispute, production continued at a lower rate by approximately 800 workers not involved in the dispute (Roh, 2020f, 2021).

Consumption

Apparent consumption of aluminum in the United States decreased to 3.98 Mt in 2020, 20% less than the revised 4.98 Mt in 2019 (table 1). Combined net imports of crude aluminum and semifabricated products to the United States from Canada increased by 15% from that in 2019 (tables 10, 12). Shipments of aluminum ingot and semifabricated products by producers in the United States and Canada to their combined domestic markets decreased by 12.3% in 2020 compared with the amount shipped in 2019. 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 31.2%; containers and packaging, 20.4%; building and construction, 13.1%; electrical, 7.9%; machinery and equipment, 6.8%; consumer durables, 6.5%; and other markets, 2.8%. Exports to external markets accounted for 11.3% of shipments from producers in the United States and Canada in 2020 (table 6).

Shipments of aluminum to the transportation sector decreased by 24.1% and accounted for 35.2% of domestic shipments in 2020 compared with 40.6% of domestic shipments in 2019 (table 6). Total light-vehicle sales in the United States in 2020 were 14.47 million units, 15% less than the 16.96 million units in 2019. Production of vehicles in the United States was 1.92 million units in 2020, 23% less than the 2.51 million units in 2019 (Bureau of Economic Analysis, 2021).

Several automobile manufacturers temporarily stopped production in March or April in response to the COVID-19 pandemic. Most manufacturers restarted production by the end of May. On March 18, Fiat Chrysler Automobiles N.V., Ford Motor Co., and General Motors Co. announced that they would stop production until at least March 30 at all assembly lines in the United States, Canada, and Mexico. The United Auto Workers union, which represented many of the employees on the assembly lines, asked for a temporary work stoppage citing concerns about the COVID-19 pandemic. Honda Motor Co. stopped production at its plants in North America on March 23 for at least 6 days, citing anticipated decreased demand and concerns about the COVID-19 pandemic. Toyota Motor Corp. stopped production at its plants in North America for at least 2 days starting March 23. Several automobile plants in Asia, Europe, and South Africa also shut down citing concerns about the COVID-19 pandemic. Decreased demand for aluminum by automobile makers and concerns about the COVID-19 pandemic were cited for shutdowns at secondary aluminum producers, extruders, and rolling mills in Europe and North America (Coyne, 2020a, c; Holman, 2020a, b; Latham, 2020b).

The Boeing Co. (Chicago, IL) reported that its deliveries of commercial aircraft decreased by 59% in 2020 compared with deliveries in 2019 and were 81% less than deliveries in 2018, which were attributed to suspension of deliveries of the 737 MAX aircraft. The 737 MAX was grounded and deliveries were suspended in March 2019 after investigations of two crashes involving the 737 MAX identified a software flaw in a computerized system. Production of the aircraft decreased from 52 per month to 42 per month in April 2019 through yearend 2019 and was suspended in January 2020 until May 2020 when production resumed at a low rate for the rest of the year. In November, the aircraft was certified to return to service and deliveries resumed. Deliveries of Boeing's other commercial aircraft decreased by 55% in 2020 compared with deliveries in 2019 and were 50% less than deliveries in 2018 and accounted for 73% of Boeing's commercial aircraft deliveries in 2020 (66% in 2019 and 28% in 2018). Decreased deliveries of Boeing's other commercial aircraft were attributed to airlines deferring deliveries citing decreased air travel resulting from the COVID-19 pandemic. On March 25, Boeing shut down production of aircraft for at least 2 weeks at its locations near Seattle, WA, citing concerns raised by its employees (Boeing Co., The, 2019a, b, 2020; 2021, p. 25, 35, 55).

Shipments of aluminum to the building and construction sector decreased by 5.6% in 2020 from those in 2019 and accounted for 14.7% of domestic shipments in 2020 compared with 13.7% of domestic shipments in 2019 (table 6). In the United States, housing starts increased by 7% in 2020 compared with starts in 2019, and the number of houses completed in 2020 was slightly more than that in 2019. Total U.S. construction spending during 2020 increased by 4.8% compared with that in 2019, with spending on residential construction increasing by 11.9%, but spending on the more aluminum-intensive nonresidential construction was essentially unchanged (U.S. Census Bureau, 2021a, b).

Aluminum shipments for containers and packaging increased slightly in 2020 compared with those in 2019 and accounted for 23% of domestic shipments in 2020 compared with 19.9% of domestic shipments in 2019 (table 6). Increased consumption of beverages at home instead of in bars and restaurants resulting from closure orders in response to the COVID-19 pandemic was cited for increased shipments of can sheet and foil for packaging (Stewart, 2020). Aluminum shipments for electrical products increased slightly in 2020 compared with shipments in 2019. Installation of transmission lines from new solar and wind power generation capacity was attributed as the reason for increased shipments for electrical products. In 2020, aluminum shipments decreased compared with those in 2019 for consumer durables (12.9%), machinery and equipment (10%), and other markets (10.1%) (table 6).

Research and Development

ELYSIS Corp., a joint venture between Alcoa and Rio Tinto plc, completed construction of its research and development smelter that would use inert ceramic anodes in Saguenay, Quebec, Canada, in December. Construction on the smelter started in August 2019. Commissioning of the facility was scheduled for completion in the first half of 2021. Capacity of the smelter was not available. RUSAL continued testing primary aluminum production using inert ceramic anodes at its Krasnoyarsk, Russia, smelter. Details about when RUSAL planned to use the process for full-scale production using the inert ceramic anodes were not available. Production of primary aluminum using an inert ceramic anode instead of a carbon anode would eliminate direct carbon emissions from carbon dioxide and perfluorocarbons and could extend the service life of smelting pots (ELYSIS Corp., 2020; Hotter, 2020b; United Company RUSAL Plc, 2020).

Stocks

According to data reported by The Aluminum Association Inc. (2020, 2021), United States and Canadian producers' combined inventories of aluminum ingot, mill products, and scrap decreased by 7% to 1.49 Mt at yearend 2020 from 1.6 Mt at yearend 2019. LME-approved U.S. warehouses (including estimated off-warrant stocks) held a total of 235,000 t of combined primary aluminum and alloyed aluminum at yearend 2020, 96% more than that at yearend 2019. Primary aluminum metal ingot stocks in LME-approved U.S. warehouses (including estimated off-warrant stocks) increased by 180% to 209,000 t at yearend 2020 from 75,000 t at yearend 2019. At yearend 2020, LME warehouses in the United States also held 25,400 t of North American Special Aluminum Alloy Contract metal ingot (including estimated off-warrant stocks), 45% less than the 46,600 t held at yearend 2019. Global yearend 2020 inventories of unalloyed aluminum metal held by LME-registered warehouses (including estimated off-warrant stocks) increased by 27% to 2.92 Mt from 2.30 Mt at yearend 2019, but aluminum alloy inventories decreased by 49% to 28,800 t from 56,100 t (London Metal Exchange Ltd., 2019, 2020a, b, 2021).

Prices

The monthly average U.S. spot market price of primary aluminum metal, as reported by S&P Global Platts Metals Week, averaged $0.945 per pound in January, then decreased gradually in February and March, reaching $0.866 per pound. The monthly average price dropped sharply in April to $0.765 per pound and reached the yearly low of $0.750 per pound in May. In June, the monthly average price of primary aluminum ingot increased to $0.797 per pound and then to $0.850 per pound in July. In August the price increased sharply to $0.936 per pound, then increased sharply again in November to $1.010 per pound and to $1.060 per pound in December. The annual average price in 2020 decreased to $0.897 per pound from $0.995 per pound in 2019. In 2020, the annual average LME cash price decreased to $0.772 per pound from $0.813 per pound in 2019. The indicator prices for selected scrap and secondary aluminum alloy ingot, as published in Fastmarkets-AMM, followed the same trend as primary ingot prices. Scrap and secondary alloy ingot prices increased gradually in the first quarter of the year, then declined during the second quarter. Starting in July, scrap and secondary alloy ingot prices gradually increased each month through the rest of the year, with a sharp increase in December (table 8).

Foreign Trade

Imports of unmanufactured aluminum decreased by 17% during 2020 compared with that in 2019. Imports for consumption of crude aluminum metal and alloys decreased by 14%, semifabricated aluminum materials imports decreased by 30%, and imports of scrap decreased by 9%. Canada remained the leading source country, accounting for 70% of crude metal and alloys, 20% of semifabricated aluminum materials, 65% of scrap, and 59% of total unmanufactured aluminum imports in 2020. China accounted for 11% of semifabricated aluminum material imports, up from 9% in 2019 but down from 18% in 2018 and 33% in 2017. Mexico accounted for 26% of scrap imports. The United Arab Emirates accounted for 10% of crude aluminum metal and alloy imports. Russia accounted for 3% of crude aluminum metal and alloy imports, down from 5% in 2019, 9% in 2018, and 15% in 2017 (table 12).

Exports of unmanufactured aluminum decreased by 7% during 2020 compared with the amount in 2019. Exports of crude aluminum and semifabricated aluminum material decreased by 12% and 20%, respectively, and scrap exports decreased slightly. In 2020, 42% of United States exports of unmanufactured aluminum were shipped to Canada, China, and Mexico, compared with 52% in 2019, 63% in 2018, and 76% in 2017. Canada and Mexico were the leading destinations for semifabricated aluminum exports, receiving 43% and 38%, respectively. Scrap accounted for 67% of total aluminum exports in 2020, with Malaysia (23%), India (17%), the Republic of Korea (16%), China (8%), and Mexico (8%) the leading destinations. In 2019, China was the destination for 17% of scrap exports. China accounted for 6% of unmanufactured aluminum exports during 2020, down from 12% in 2019, 17% in 2018, and 30% in 2017; 87% of the exports to China in 2020 were scrap, down from 91% in 2019 (table 10).

World Industry Structure

Production.—World primary aluminum production increased by 4% in 2020 compared with that in 2019 (table 13). Increased production in Bahrain, Canada, and China was partially offset by shutdowns of production lines in Argentina, India, and the United States. The restart of capacity after a labor dispute was cited for increased production at one smelter in Canada. In China, several smelters increased production after experiencing flooding in 2019, and new capacity was put into production. China was the leading producer and accounted for 57% of global primary aluminum production. Russia, India, Canada, and the United Arab Emirates, in descending order of production, accounted for an additional 20% of production (table 13). Since 2000, production increased in China by 34.3 Mt (1,224%), India by 2.91 Mt (452%), the United Arab Emirates by 2.05 Mt (436%), Bahrain by 1.04 Mt (204%), Canada by 746,000 t (31%), and Russia by 394,000 t (12%), but production decreased in the United States by 2.66 Mt (72%) and Australia by 187,000 t (11%).

Mergers, Acquisitions, and Divestitures.—Arconic completed the sale of its rolling mill in Itapissuma, Brazil, to Companhia Brasileira de Alumínio (CBA) in February. The rolling mill had 50,000 t/yr of capacity to produce sheet and foil. Arconic also completed the sale of its extrusion plant in the Republic of Korea in March. On April 1, Arconic split into two companies—Arconic Corp. would produce aluminum sheet, plate, extrusions, and architectural products, and Howmet Aerospace Inc. would produce aerospace products (Rostas, 2019; Arconic Corp., 2020a, b).

On November 8, Alcoa announced an agreement to sell the Warrick rolling mill in Evansville, IN, to Kaiser Aluminum Corp. The rolling mill capacity was 310,000 t/yr and was used to produce sheet for beverage cans and other packaging products. Alcoa would continue to own the 269,000-t/yr primary aluminum smelter adjacent to the rolling mill and would supply rolling ingot to the mill. The sale was expected to be completed by April 2021 pending regulatory approval (Alcoa Corp., 2020a; Roh, 2020a).

On April 14, Novelis completed the acquisition of Aleris. On September 30, Novelis completed the sale of the rolling mill in Duffel, Belgium, to GFG Alliance SA. Divestiture of the Duffel rolling mill was required by European Union regulators to satisfy concerns about the impact of the acquisition of Aleris on competition in Europe's automobile body sheet market. On November 8, Novelis sold the Lewisport, KY, rolling mill to American Industrial Partners Inc. The sale of the rolling mill was required by the U.S. Department of Justice for approval of the acquisition of Aleris. The rolling mill produced aluminum sheet used by the automotive industry (Novelis Inc., 2020; Roh, 2020e).

World Review

Argentina.—Primary aluminum production decreased by 30% (127,000 t) compared with that in 2019. In March, Aluar Ltd. shut down 25% of the capacity at its 460,000-t/yr smelter in Puerto Madryn in compliance with a Government mandate in response to the COVID-19 pandemic. Aluar further decreased the production rate of the smelter to one-half of its capacity in April. In October, capacity was restarted at the smelter. By the end of December, approximately 70% of the smelting capacity was producing, and Aluar planned to be producing at 75% of capacity by the end of January 2021. Increased demand from Brazil was cited as the reason for the capacity restart (Ribeiro, 2020; Rostas, 2021).

Bahrain.—Aluminum production increased to 1.55 Mt, 13% more than that in 2019 and 53% more than that in 2018, attributed to new capacity that was ramped up during 2019 producing throughout 2020. In November 2018, Aluminium Bahrain B.S.C. (Alba) completed construction of the sixth potline at its smelter, increasing capacity to 1.54 Mt/yr from 960,000 t/yr (Aluminium Bahrain B.S.C., 2018, 2020, 2021).

Brazil.—Primary aluminum production increased by 5% (34,000 t) compared with that in 2019 as capacity that was shut down in 2019 was restarted. The restart of some capacity was partially offset by the shutdown of other capacity. Increased production was attributed mostly to the rampup of production in 2019 at the 460,000-t/yr Alumínio Brasileiro S.A (Albras) smelter in Barcarena. In 2018, the Albras smelter shutdown production from 230,000 t/yr of capacity owing to a shortage of alumina from the adjacent Alumina do Norte do Brasil S.A. alumina refinery. By January 2020, the Albras smelter was

producing at full capacity. However, on March 6, a fire in an electrical transformer forced the shutdown of 115,000 t/yr of capacity at the smelter. Production from the affected capacity was restarted on March 26 and rampup was completed by midyear. The Albras smelter was a joint venture between Hydro (51%) and Nippon Amazon Aluminium Co. Ltd. (49%) (Hydro ASA, 2019a, 2020a, d).

CBA was expanding billet capacity at its smelter in Sao Paulo to 90,000 t/yr from 75,000 t/yr. The expansion was expected to be completed in 2021. Novelis continued expanding its secondary smelting and rolling capacity in Pindamonhangaba. Smelting capacity would increase to 450,000 t/yr from 390,000 t/yr and rolling capacity would increase to 680,000 t/yr from 580,000 t/yr. The mill produced beverage can sheet and other aluminum packaging products from UBCs and other scrap. The project was scheduled to be completed in 2021 (Novelis Inc., 2018, 2021; Rostas, 2019; Companhia Brasileira de Alumínio, 2021, p. 89).

Canada.—Production increased by 9% (265,000 t) compared with that in 2019 attributed to production increasing from the Aluminerie de Bécancour Inc. smelter in Quebec after a labor dispute was resolved in July 2019. The smelter was a joint venture of Alcoa (74.95%) and Rio Tinto (25.05%) and had 450,000 t/yr of capacity. Increased production was partially offset by decreased production from the 420,000-t/yr Kitimat smelter in British Columbia. Continued relining of pots that started in the third quarter of 2019 was cited by Rio Tinto for production decreasing by 56,000 t compared with production in 2019 (Poole, 2019; Rio Tinto plc, 2019, p. 4; 2021, p. 11, 24).

In March, the Aluminium Association of Canada Inc. reached an agreement with the government of the Province of Quebec to allow primary aluminum smelters in the Province to continue producing. The government of Quebec had issued an order for all nonessential industries to shut down temporarily because of the COVID-19 pandemic. Quebec had approximately 2.5 Mt/yr of primary aluminum capacity owned by Alcoa, Aluminerie Alouette Inc., and Rio Tinto (McBeth, 2020).

In June, Alcoa continued a modernization project at the Deschambault smelter in Quebec. The project would increase smelting capacity to 286,000 t/yr from 260,000 t/yr and was expected to be completed by yearend 2021 (Alcoa Corp., 2019, p. 3; Roh, 2019).

China.—Primary aluminum production in 2020 was 37.1 Mt, 6% more than the 35 Mt in 2019, and accounted for 57% of total world production. Increased production was attributed to new capacity put into production and recovery of production from smelters which temporarily shut down in 2019 after accidents and flooding associated with a typhoon. Although shutdowns during winter months in the eastern and northern Provinces were enforced, this practice had been in place for several years to control pollution, so the net impact was limited on production comparisons. Although the outbreak of the COVID-19 pandemic affected many industries in China during the first quarter of the year, primary aluminum smelters generally were exempted from shutdown orders or were already producing at lower rates because of the winter shutdown orders. At the end of December, primary aluminum smelting capacity was 42.3 Mt/yr, a slight increase from 41.3 Mt/yr at yearend 2019, and 39.1 Mt/yr was producing. Expansions in 2021 were projected to increase capacity by 2.8 Mt/yr (China Metal Market—Alumina and Aluminum, 2020g, 2021c, e).

In February, supplies of anodes and coal tar pitch used to make anodes used in smelters were reported to be constrained. Coal deliveries to some powerplants also slowed. Several industry sources in China reported that downstream demand for aluminum decreased and that aluminum stocks were high. Bauxite deliveries to ports were not interrupted as of the end of February, but shipments from ports to inland alumina refineries were delayed because of limited rail and truck service. Some alumina refineries decreased production owing to shortages of bauxite and caustic soda used in refining alumina. Alumina prices in China and other parts of the world increased in February because of supply shortages and concerns about future availability. Health officials in China imposed travel and work restrictions in parts of the country most affected by the COVID-19 pandemic to contain it, and higher rates of absenteeism were attributed to concerns about the virus in some regions (Goh, 2020; Latham, 2020a; Lazzaro, 2020c; Liu, 2020; Tana, 2020).

Since 2017, in an effort to control pollution during winter months, the Government of China has required aluminum smelters and alumina refineries in certain areas to shut down capacity from October 1 to the following March 31. The policy required aluminum smelters and alumina refineries to close 30% of their capacity and carbon anode plants to close 50% of their capacity. The policy also required secondary aluminum smelters in the affected locations to decrease production by 50%. The policy applied to facilities in 26 cities. The policy was expected to be renewed each winter in the future (Hotter, 2017; Mok, 2017; China Metal Market—Alumina and Aluminum, 2018).

Guizhou Province.—Yuanhao Aluminum Co. Ltd. started construction of an aluminum smelter in Xingyi. Total capacity of the smelter would be 330,000 t/yr, and the first potline was scheduled for completion in May 2021 (China Metal Market—Alumina and Aluminum, 2021a).

Inner Mongolia Autonomous Region.—Inner Mongolia Chuangyuan Metal Co. Ltd. was expanding its smelter in Huolingele from 400,000 to 800,000 t/yr. The additional capacity was expected to be producing in early 2021 (China Metal Market—Alumina and Aluminum, 2020c).

Sichuan Province.—Guangyuan Zhongfu Aluminum Co. Ltd. completed ramping up production from a 250,000-t/yr aluminum smelter in Guangyuan in June. Construction on the potline started in March 2019, and trial production started in November 2019. An additional 250,000 t/yr of capacity was under construction, and production started in July from completed capacity (China Metal Market—Alumina and Aluminum, 2020b, e).

Yunnan Province.—In March, Yunlv Haixin Aluminum Co. Ltd. started production from the second phase of its 340,000-t/yr smelter in Zhaotong. In June, production from the third phase of the smelter started. The first phase started production in July 2018. In September, Yunnan Wenshan Aluminum Co. Ltd. completed construction of a 500,000-t/yr smelter in Wenshan. Production from completed smelting pots started in May, and by September, production was being ramped up to full

capacity. Yunnan Shenhuo Group Co. Ltd. completed ramping up production from its new 450,000-t/yr smelter in Funing County in November. Construction started in July 2018 and trial production started in December 2019. An additional 150,000 t/yr of capacity was completed, increasing capacity to 600,000 t/yr, and started production in December (China Metal Market—Alumina and Aluminum, 2020a, d, 2021a, b).

In November, Yunnan Qiya Aluminum Co. Ltd. started production from a 350,000-t/yr smelter in Heqing. In September, Yunnan Hongtai New Material Co. Ltd. (a subsidiary of Shandong Weiqiao Aluminum and Power Co. Ltd.) started production from the first 150,000 t/yr of capacity at its new smelter in Yanshan County. The smelter capacity would be 2.03 Mt/yr when completed. Construction of the first phase of the project started in December 2019, and capacity was ramped up as it was completed. The new smelter would replace the same amount of capacity owned by Shandong Weiqiao in Binzhou, Shandong Province, that would be shut down permanently as the new capacity started production. Hydroelectric powerplants in Yunnan Province would supply power to the smelter (China Metal Market—Alumina and Aluminum, 2020d, f, 2021d).

India.—Production decreased by 82,000 t to 3.56 Mt, slightly less than that in 2019. Decreased production was attributed to the shutdown of capacity by Hindalco, which reported decreasing production to about 90% of the 1.3-Mt/yr capacity at its smelters at the end of March. Production gradually increased during the second half of the year, but production in the fourth quarter was less than that in the first quarter of the year. Decreased prices and demand attributed to the impact of the COVID-19 pandemic were cited as the reason for decreased production (Hindalco Industries Ltd., 2020, p. 18; 2021, p. 19).

Iran.—Estimated production increased by 160,000 t, 55% more than that in 2019, as new capacity commissioned in 2019 was ramped up and capacity that was not producing for part of 2019 was restarted. In April, commercial production started from the South Aluminum Corp. smelter in Lamerd, located in the southern Province of Fars. Trial production started in September 2019. The first phase of the smelter capacity was about 44,000 t/yr. Expansion of the smelter to 300,000 t/yr was planned, but a schedule was not available. In the northern part of Iran, the Jajram smelter continued to ramp up and was producing at a rate of 40,000 t/yr in April 2020. The 130,000-t/yr Jajram smelter started production in the first quarter of 2020 and used alumina from an adjacent 260,000-t/yr alumina refinery, which was supplied by an adjacent bauxite mine. A schedule for the rampup of both smelters was not available. Production by Hormozal Aluminum Co. and Almahdi Aluminum Co. were estimated to have increased to 2018 levels after decreasing by 67% and 56%, respectively, in 2019 (CRU Aluminium Monitor, 2019, 2021; Financial Tribune, 2019; Eqbali, 2020).

Luxembourg.—On April 6, Hydro restarted its 115,000-t/yr secondary smelter in Clervaux, which had been shut down for several weeks in March and April. The COVID-19 pandemic was cited as the reason for the temporary shutdown (Blamey, 2020a).

Malaysia.—Press Metal Aluminum Holdings Berhad completed construction of a 320,000-t/yr potline at its Samalaju smelter in Bintulu and started production in December. The project increased the capacity of the smelter to 960,000 t/yr from 640,000 t/yr. Rampup to full capacity was scheduled to be completed in the second half of 2021 (Press Metal Aluminum Holdings Berhad, 2020, p. 5; 2021).

New Zealand.—Production decreased by 5% (18,000 t) compared with that in 2019. On April 3, Rio Tinto shut down some capacity at the Tiwai Point smelter to comply with an order that nonessential businesses be closed in response to the COVID-19 pandemic. Although the Government ordered the shutdown to last at least 4 weeks, the smelter continued to produce at approximately 90% of its 340,000-t/yr capacity through yearend. The smelter was a joint venture between Rio Tinto (79.36%) and Sumitomo Chemical Ltd. (20.64%). In January, Rio Tinto signed a power supply contract for the Tiwai Point smelter that would be effective through yearend 2024 (Rio Tinto plc, 2020, p. 8; 2021, p. 1, 24; Zhang, 2020).

Norway.—Hydro restarted production from a 95,000-t/yr potline at the Husnes smelter in November. The potline was shut down in 2009 and was used as a source of spare parts for other potlines. A project started in 2019 included improvements to the casthouse to enable production of extrusion billet and forging stock for use in the automotive industry. Another potline, also with 95,000 t/yr of capacity, was already producing at full capacity (Hydro ASA, 2019b, 2020e).

Romania.—ALRO S.A. (a subsidiary of Vimetco N.V.) continued a modernization project at its smelter in Slatina. The project would upgrade potline technology to increase efficiency and decrease production costs. Capacity would not be increased at the smelter, but processed product capacity would be increased to 120,000 t/yr from 90,000 t/yr when the project was completed in 2022 (ALRO S.A., 2019, 2021).

Russia.—RUSAL continued construction on the Taishet smelter. Construction started in 2006 but was stopped in 2009 owing to financial conditions and then resumed in 2017. A completion schedule was not available. The smelter would have about 430,000 t/yr of capacity (United Company RUSAL Plc, 2021, p. 9, 25, 53).

Slovakia.—Production decreased by 13% (23,000 t) compared with that in 2019. In December 2019, Hydro temporarily shut down 35,000 t/yr of capacity at the 175,000-t/yr Slovalco smelter citing high power costs and low aluminum prices. The smelter was a joint venture between Hydro (55.3%) and Penta Investments Ltd. (44.7%) (Hydro ASA, 2019c; 2021, p. 50, 54).

Spain.—On October 4, workers at the 228,000-t/yr San Ciprian smelter went on strike after 4 months of negotiations concerning the possible sale of the smelter. On October 8, Alcoa announced that it would shut down the smelter, citing high production costs and the lack of a buyer. The union representing the workers challenged the shutdown and dismissal process in court, and on December 17, the court ruled in favor of the union. After the court ruling, Alcoa suspended the plans to shut down the smelter. The strike was suspended on January 22, 2021, and Alcoa agreed to sell the smelter to a Government-owned entity. Production continued during the strike (Alcoa Corp., 2021, p. 10–11).

Venezuela.—In January, production was restarted at the Venalum smelter. By August, 30 smelting pots were reported to be producing. In March 2019, the 170,000-t/yr Alcasa and

440,000-t/yr Venalum smelters were shut down after a power failure at the Guri Dam hydroelectric powerplant (Van, 2019; Rodríguez León, 2020).

Outlook

World consumption of aluminum in 2021 is expected to increase with economic recovery as the COVID-19 pandemic is contained. Inventories at LME-registered warehouses are expected to remain stable after destocking during the past few years.

Primary aluminum smelters in the United States are expected to maintain production at the current rate as contracts ensure power supplies at favorable prices and the price of aluminum is greater than the cost of production. Limited expansion of new capacity is expected in locations where power costs are relatively low, most notably in Russia, and in countries that want to encourage production of value-added products from mineral resources such as Indonesia. In China, construction of new capacity is expected to continue as some projects were in progress at yearend and the further shutdown of unprofitable capacity is not expected to be significant.

In the short term, automobile sales are expected to decline in 2021 as supplies of computer chips used in many automobile models made in the United States are reported to be in short supply. Several assembly lines reported short-term shutdowns until chip inventories could be replenished. This is expected to have an impact on aluminum shipments to the transportation sector. Aluminum consumption per vehicle by the domestic automobile industry is expected to continue to increase as automobile manufacturers substitute aluminum sheet for steel in more models. Many automobile manufacturers plan to continue increasing fuel efficiency, and substitution of aluminum for steel is expected to be important to increasing fuel efficiency. As automobile manufacturers have gained experience with aluminum sheet, its use has increased beyond vehicle types with high customer brand loyalty and whose users are not as price sensitive, such as light trucks, luxury sedans, sports cars, and sport utility vehicles, a trend that is expected to continue in the near term. Sales of electric vehicles are expected to continue at a faster pace and would have an impact on the volume of aluminum consumed in vehicles and on the ratio of primary to secondary aluminum consumed by the automobile industry. A significant share of the aluminum content in automobiles with internal combustion engines is secondary aluminum used for the engine block as well as the oil pan, radiator, and transmission casing which are all eliminated in electric vehicles. Use of aluminum sheet is expected to be common in many electric vehicles, and aluminum is expected to be used in the battery carriage. However, the alloy specifications for battery carriages and wheels require primary aluminum. As aluminum producers adjust to the new consumption patterns by the automobile industry, imbalances in scrap and secondary aluminum may occur in future years. Aluminum consumption by United States and European aircraft manufacturers is expected to rebound after production cuts in 2020 in response to the COVID-19 pandemic and the production stoppage of Boeing's 737 MAX. In the long term, aluminum use for aerospace is expected to increase as older aircraft are retired as they reach the end of useful service and as air travel again increases in emerging economies after the COVID-19 pandemic subsides. 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, new aluminum alloys have been developed by the industry to compete with these materials (Janson, 2020).

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TABLE 1
SALIENT ALUMINUM STATISTICS[1]

(Thousand metric tons, unless otherwise specified)

		2016	2017	2018	2019	2020
United States:						
Primary production:						
Quantity		818	741	891	1,093	1,012
Value	millions	$1,450	$1,611	$2,264	$2,398	$1,983
Price, average, U.S. market, spot	cents per pound	80.4	98.3	114.7	99.5	89.7
Stocks, December 31:						
Aluminum industry[2]		1,395 r	1,465 r	1,573 r	1,596 r	1,491
London Metal Exchange Ltd., U.S. warehouses[3]		362	254	186	120	235
Secondary recovery:[4]						
New scrap		2,010	2,050	2,140	1,920	1,630
Old scrap		1,570	1,590	1,570	1,540	1,420
Total		3,580	3,630	3,710	3,470	3,050
Exports, crude, semicrude, and scrap		2,820	2,900	3,080	2,970 r	2,750
Imports for consumption, crude and semicrude[5]		5,410	6,220	5,550	5,280 r	4,320
Supply, apparent[6]		7,100	7,730	7,040	6,910 r	5,620
Consumption, apparent[7]		5,090	5,680	4,900	4,980 r	3,980
World, production[8]		59,400 r	59,500	63,600	62,900 r	65,200

rRevised.
[1]Table includes data available through June 17, 2021. Data are rounded to no more than three significant digits except primary production, prices, and aluminum industry stocks; may not add to totals shown.
[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. Includes estimated off-warrant inventories at yearend 2019 and reported off-warrant inventories at yearend 2020.
[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 Ltd. (U.S. warehouses) and industry stock changes.
[7]Defined as domestic primary metal production plus secondary recovery from old scrap plus imports (excluding scrap) minus exports plus adjustments for London Metal Exchange Ltd. (U.S. warehouses) and industry stock changes.
[8]May include estimated data.

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

Company and location	Yearend capacity (thousand metric tons) 2019	2020	Ownership in 2020
Alcoa Corp.:			
Evansville, IN (Warrick)	269	269	Alcoa Corp., 100%.
Ferndale, WA (Intalco)	279	279 [2]	Do.
Massena, NY	130	130	Do.
Wenatchee, WA	146 [2]	146 [2]	Do.
Total	824	824	
Century Aluminum Co.:			
Hawesville, KY	252	252	Century Aluminum Co., 100%.
Mount Holly, SC	231	231	Do.
Sebree, KY	218	218	Do.
Total	701	701	
Magnitude 7 Metals LLC,[3] New Madrid, MO	263	263	Magnitude 7 Metals LLC, 100%.
Grand total	1,790	1,790	

Do. Ditto.
[1]Table includes data available through June 17, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Temporarily idle at yearend.
[3]A subsidiary of ARG International AG.

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
2019:			
Secondary smelters	2,010,000	1,440,000	1,540,000
Independent mill fabricators	1,590,000	1,360,000	1,450,000
Foundries	84,500	72,200	77,300
Other consumers	3,270	3,270	3,270
Total	3,680,000	2,880,000	3,070,000
Estimated full industry coverage	3,970,000	3,100,000	3,470,000
2020:			
Secondary smelters	1,710,000	1,240,000	1,330,000
Independent mill fabricators	1,370,000	1,180,000	1,250,000
Foundries	76,100	65,100	69,600
Other consumers	2,950	2,950	2,950
Total	3,160,000	2,490,000	2,660,000
Estimated full industry coverage	3,420,000	2,690,000	3,050,000

[1]Table includes data available through June 17, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Excludes recovery from other than aluminum-base scrap.

TABLE 4
U.S. STOCKS, RECEIPTS, AND CONSUMPTION OF PURCHASED NEW AND OLD ALUMINUM SCRAP IN 2020[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	17,100	307,000	308,000	15,800
Can stock clippings	3,560	37,900	37,300	4,120
Other wrought sheet and clippings	3,890	175,000	175,000	3,860
Castings	3,480	63,700	62,900	4,250
Borings and turnings	2,830	120,000	119,000	3,580
Dross and skimmings	10,700	379,000	377,000	13,100
Total	41,600	1,080,000	1,080,000	44,800
Old scrap:				
Castings	2,390	169,000	168,000	2,940
Extrusions	6,980	157,000	156,000	7,680
Aluminum cans[4]	7,210	50,900	52,000	6,080
Other wrought products	3,290	116,000	116,000	3,340
Auto shredder scrap	3,980	137,000	137,000	3,920
Total	23,900	630,000	630,000	24,000
Grand total secondary smelters	65,500	1,710,000	1,710,000	68,700
Integrated aluminum companies, foundries, independent mill fabricators, other consumers:				
New scrap:				
Extrusions	3,190	224,000	225,000	2,730
Can stock clippings	1,470	260,000	259,000	1,560
Other wrought sheet and clippings	10,200	211,000	216,000	5,440
Castings	240	14,700	14,700	240
Borings and turnings	706	11,800	11,800	735
Dross and skimmings	123	1,370	1,360	127
Total	15,900	723,000	729,000	10,800
Old scrap:				
Castings	4,830	149,000	149,000	4,830
Extrusions	--	--	--	--
Aluminum cans[4]	1,070	419,000	419,000	1,220
Other wrought products	11,500	144,000	147,000	8,280
Auto shredder scrap	434	7,970	7,590	805
Total	17,800	719,000	722,000	15,100
Grand total integrated aluminum companies, and so forth	33,700	1,440,000	1,450,000	26,000
All scrap consumed:				
New scrap:				
Extrusions	20,300	531,000	533,000	18,600
Can stock clippings	5,030	297,000	297,000	5,680
Other wrought sheet and clippings	14,100	386,000	391,000	9,300
Castings	3,720	78,300	77,600	4,490
Borings and turnings	3,530	132,000	131,000	4,320
Dross and skimmings	10,900	380,000	378,000	13,300
Total	57,600	1,810,000	1,810,000	55,600
Old scrap:				
Castings	7,220	318,000	317,000	7,770
Extrusions	6,980	157,000	156,000	7,680
Aluminum cans[4]	8,280	470,000	471,000	7,300
Other wrought products	14,800	260,000	263,000	11,600
Auto shredder scrap	4,410	145,000	144,000	4,730
Total	41,700	1,350,000	1,350,000	39,100
Grand total of all scrap consumed	99,200	3,150,000	3,160,000	94,700

-- Zero.

[1]Table includes data available through June 17, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes imported scrap. According to reporting companies, 3.08% of total receipts of aluminum-base scrap, or 101,012 metric tons, was received on toll arrangements.

[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)

	2019		2020	
	Production	Net shipments[2]	Production	Net shipments[2]
Diecast alloys:				
13% Si, 360, etc. (0.6% Cu, maximum)	27,300	27,600	27,700	28,200
380 and variations	237,000	238,000	222,000	224,000
Sand and permanent mold:				
95/5 Al-Si, 356, etc. (0.6% Cu, maximum)	37,600	37,100	33,200	33,200
No. 12 and variations	1,360	1,360	1,360	1,360
No. 319 and variations	46,200	45,200	26,000	27,800
F-132 alloy and variations	2,990	3,220	2,330	2,380
Al-Mg alloys	7,650	7,390	7,710	8,630
Al-Zn alloys	(3)	(3)	(3)	(3)
Al-Si alloys (0.6% to 2.0% Cu)	1,590	1,590	2,240	2,310
Al-Cu alloys (1.5% Si, maximum)	(3)	(3)	(3)	(3)
Al-Si-Cu-Ni alloys	928	973	1,070	1,110
Other	44,500	44,500	394	832
Wrought alloys, extrusion billets	722,000	722,000	659,000	660,000
Miscellaneous:				
Steel deoxidation	9,530	9,530	9,070	9,070
Pure (97.0% Al)	W	W	W	W
Other[4]	60,400	59,300	77,800	76,700
Total	1,200,000	1,200,000	1,070,000	1,080,000
Less consumption of materials other than scrap:				
Primary aluminum	154,000	XX	148,000	XX
Primary silicon	22,900	XX	20,200	XX
Other	10,400	XX	8,960	XX
Net metallic recovery from aluminum scrap and sweated pig consumed in production of secondary aluminum ingot[5]	1,010,000	XX	893,000	XX

W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous: Other." XX Not applicable.

[1]Table includes data available through June 17, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes inventory adjustment.

[3]Withheld to avoid disclosing company proprietary data; included with "Sand and permanent mold: Other."

[4]Includes other diecast alloys.

[5]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	2019 Quantity (thousand metric tons)	2019 Percent of grand total	2020 Quantity (thousand metric tons)	2020 Percent of grand total
Containers and packaging	2,220	17.8	2,250	20.4
Building and construction	1,530	12.3	1,450	13.1
Transportation	4,540 r	36.4 r	3,450	31.2
Electrical	871 r	7	876	7.9
Consumer durables	832 r	6.6 r	725	6.5
Machinery and equipment	837 r	6.7 r	753	6.8
Other markets	347 r	2.8	312	2.8
Total	11,200	89.6	9,810	88.7
Exports	1,300	10.4	1,250	11.3
Grand total	12,500	100	11,100	100

rRevised.
[1]Table includes data available through June 17, 2021. 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)

	2018	2019	2020
Wrought products:[3]			
Sheet, plate, foil	5,760	5,840	5,230
Pipe, tube, extruded shapes	2,710	2,600	2,280
Rod, bar, wire, cable	438	439	475
Forgings (including impacts)	168	163	120
Powder, flake, paste	63	57	51
Total	9,140	9,100	8,160
Castings:			
Sand	272	352	210
Permanent and semipermanent mold	517	494	435
Die	1,410	1,300	1,140
Other	15	4	9
Total	2,220	2,150	1,790
Grand total	11,400	11,200	9,950

[1]Table includes data available through June 17, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]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.
[3]Wrought products data series includes net shipments in both the United States and Canada.

Source: The Aluminum Association Inc.

TABLE 8
ALUMINUM PRICES[1]

(Dollars per pound)

Material	2019	2020
Primary aluminum, average:[2]		
U.S. market	0.995	0.897
London Metal Exchange cash price	0.813	0.772
NASAAC[3] cash price, average	0.548	0.622
Secondary alloy, average:[4]		
A319 (3% Cu)	0.841	0.797
A356 (0.2% Cu)	0.954	0.883
A360 (0.6% Cu)	0.910	0.855
A380 (3% Zn)	0.734	0.740
A413 (0.6% Cu)	0.914	0.862
Scrap, average:[4]		
Clean, dry turnings	0.353	0.357
Mixed low-copper-content clips	0.460	0.436
Old cast	0.399	0.414
Old sheet	0.409	0.412
Used beverage cans	0.550	0.499

[1]Table includes data available through June 17, 2021.
[2]Source: S&P Global Platts Metals Week.
[3]North American Special Aluminum Alloy Contract.
[4]Source: Fastmarkets-AMM.

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

	2019		2020	
Class	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Crude, semicrude, and scrap:				
Metals and alloys, crude	233,000	$541,000	205,000	$427,000
Scrap	1,860,000	2,280,000	1,850,000	2,260,000
Plates, sheets, bars, strip, etc.	879,000 r	4,620,000 r	700,000	3,560,000
Castings and forgings	19,800	337,000	13,400	280,000
Semifabricated forms, n.e.c.[2]	58,400	436,000	54,500	369,000
Total	3,050,000 r	8,210,000 r	2,820,000	6,900,000
Manufactures:				
Foil and leaf	71,000	323,000	73,600	321,000
Powders and flakes	5,260	31,800	3,700	22,600
Wire and cable	15,100	72,400	7,880	43,500
Total	91,400	427,000	85,200	387,000
Grand total	3,140,000 r	8,640,000 r	2,900,000	7,280,000

rRevised.
[1]Table includes data available through May 27, 2021. 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 OR LOCALITY[1]

Country or locality	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)
2019:								
Brazil	1,110 r	$2,440	6,360 r	$50,900 r	23,700	$41,600	31,200 r	$95,000 r
Canada	98,300	208,000	336,000 r	1,350,000 r	93,000	162,000	527,000	1,720,000 r
China	1,810	3,960	29,600 r	248,000 r	316,000	352,000	347,000 r	604,000 r
France	7,040	27,300	9,570 r	100,000 r	2,240	9,870	18,900 r	138,000 r
Germany	2,510	6,480	7,030 r	58,000 r	8,980	15,200	18,500 r	79,700 r
Hong Kong	31	100	1,540 r	18,800 r	91,000	122,000	92,500	141,000 r
India	326	1,370	2,320 r	21,500 r	270,000	321,000	272,000	344,000 r
Indonesia	508	648	83 r	1,610 r	89,700	101,000	90,300	103,000
Italy	83	292	2,610 r	31,800 r	11,600	14,800	14,200 r	46,900 r
Japan	1,880	5,010	19,300 r	229,000 r	15,700	26,100	36,900 r	261,000 r
Korea, Republic of	598	1,790	28,200 r	231,000 r	273,000	324,000	302,000 r	557,000 r
Malaysia	2,890	4,050	3,470 r	30,700 r	290,000	298,000	297,000	332,000 r
Mexico	108,000	251,000	371,000 r	1,700,000 r	186,000	255,000	664,000 r	2,200,000 r
Philippines	10	37	378 r	10,800 r	11,600	11,800	12,000	22,600 r
Russia	6	838	159 r	3,810 r	7,960	8,970 r	8,120	13,600 r
Saudi Arabia	7	78	843 r	10,200 r	2,910	3,740	3,760 r	14,000 r
Singapore	504	2,670	2,340 r	45,900 r	6,350	7,100	9,190 r	55,700 r
Taiwan	2,380	6,560	6,150 r	50,400 r	60,700	79,300	69,300 r	136,000 r
Thailand	459	934	1,720 r	14,400 r	36,000	37,000	38,200 r	52,400 r
United Kingdom	880	4,380	9,980 r	103,000 r	2,520	4,440	13,400 r	112,000 r
Venezuela	3	9	25 r	223 r	--	--	28 r	232 r
Other	4,100	12,200	40,900 r	310,000 r	62,200	85,700	107,000 r	408,000 r
Total	233,000	541,000	879,000 r	4,620,000 r	1,860,000	2,280,000	2,970,000 r	7,440,000 r
2020:								
Brazil	122	431	3,100	31,200	5,530	7,380	8,750	39,000
Canada	76,500	149,000	300,000	1,130,000	72,300	122,000	449,000	1,400,000
China	1,850	3,470	21,400	183,000	154,000	162,000	178,000	348,000
France	3,370	12,000	7,490	69,100	1,140	6,220	12,000	87,200
Germany	1,890	6,080	5,350	46,100	8,440	20,900	15,700	73,100
Hong Kong	39	85	736	14,800	69,000	74,800	69,800	89,700
India	478	1,010	1,530	15,400	307,000	371,000	309,000	387,000
Indonesia	8	21	94	1,510	97,500	108,000	97,600	109,000
Italy	200	417	1,990	28,400	5,130	4,840	7,320	33,600
Japan	1,580	5,510	13,100	159,000	19,900	32,400	34,600	197,000
Korea, Republic of	674	2,320	20,900	176,000	287,000	359,000	308,000	537,000
Malaysia	3,740	5,280	2,570	23,500	418,000	450,000	425,000	479,000
Mexico	106,000	218,000	269,000	1,250,000	152,000	202,000	527,000	1,670,000
Philippines	237	376	393	4,250	5,740	6,520	6,370	11,100
Russia	1	75	41	1,500	31,100	36,900	31,100	38,500
Saudi Arabia	13	100	528	2,790	1,840	2,180	2,380	5,070
Singapore	119	1,560	3,070	40,600	2,930	2,700	6,120	44,900
Taiwan	4,270	9,100	4,820	45,100	42,700	80,300	51,800	135,000
Thailand	421	835	823	7,400	74,000	88,400	75,200	96,600
United Kingdom	360	1,570	7,040	74,700	3,050	5,530	10,500	81,800
Venezuela	--	--	2	19	--	--	2	19
Other	2,730	9,170	36,400	261,000	86,800	120,000	126,000	391,000
Total	205,000	427,000	700,000	3,560,000	1,850,000	2,260,000	2,750,000	6,250,000

rRevised. -- Zero.
[1]Table includes data available through May 27, 2021. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes castings, forgings, and unclassified semifabricated forms.

Source: U.S. Census Bureau.

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

Class	2019 Quantity (metric tons)	2019 Value (thousands)	2020 Quantity (metric tons)	2020 Value (thousands)
Crude, semicrude, and scrap:				
Metals and alloys, crude	3,790,000	$8,280,000	3,270,000	$6,320,000
Plates, sheets, strip, etc., n.e.c.[2]	1,490,000 r	5,000,000 r	1,050,000	3,410,000
Pipes, tubes, etc.	26,600	210,000	25,400	187,000
Rods and bars	203,000	871,000	2,030	12,000
Scrap	596,000	847,000	542,000	685,000
Total	6,100,000 r	15,200,000 r	4,890,000	10,600,000
Manufactures:				
Foil and leaf[3]	91,500	410,000	90,600	364,000
Powders and flakes	13,800	54,900	12,500	46,600
Wire	121,000	305,000	5,930	32,100
Total	227,000	770,000	109,000	443,000
Grand total	6,330,000 r	16,000,000 r	4,990,000	11,100,000

rRevised.
[1]Table includes data available through June 1, 2021. 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 OR LOCALITY[1]

	Metals and alloys, crude		Plates, sheets, bars, etc.[2]		Scrap		Total	
Country or locality	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
2019:								
Argentina	171,000	$393,000	21	$80	--	--	171,000	$393,000
Australia	267,000	564,000	849 r	5,020 r	389	$980	269,000	570,000
Austria	--	--	31,800 r	140,000 r	--	--	31,800 r	140,000 r
Bahrain	131,000	282,000	69,800 r	241,000	--	--	201,000	524,000 r
Brazil	1,640	3,600	35,300 r	104,000 r	174	222	37,100 r	108,000 r
Canada	2,090,000	4,540,000	202,000 r	772,000 r	376,000	534,000	2,670,000	5,840,000 r
China	14,800	32,600	132,000 r	419,000 r	220	781	147,000 r	452,000 r
France	5,540	42,500	19,900 r	82,500 r	1,030	1,280	26,500 r	126,000 r
Germany	386	3,630	110,000 r	420,000 r	2,170 r	2,890	113,000 r	426,000 r
India	183,000	389,000	53,700 r	151,000 r	23	27	237,000 r	540,000 r
Indonesia	--	--	69,200 r	194,000	1	3	69,200 r	194,000
Japan	78	470	47,400 r	160,000 r	10,200	16,700	57,700 r	177,000 r
Korea, Republic of	8,660	19,900	43,700 r	143,000 r	11,400	23,900	63,800 r	187,000 r
Mexico	415	1,070 r	35,900 r	161,000 r	151,000	213,000	187,000 r	375,000 r
Oman	6,770	13,700	84,900 r	207,000 r	--	--	91,700 r	220,000 r
Russia	205,000	403,000	18,500 r	64,400 r	--	--	224,000 r	468,000 r
South Africa	9,810	19,500	57,700 r	171,000 r	--	--	67,500 r	190,000 r
Taiwan	207	659	59,700 r	182,000 r	945	1,430	60,900 r	184,000 r
United Arab Emirates	473,000	1,030,000	3,710 r	11,500 r	134	410	477,000 r	1,040,000
United Kingdom	1,650	2,820	8,810 r	33,800 r	3,790	5,630	14,200 r	42,200 r
Venezuela	46	94	311 r	680 r	1,010 r	1,490	1,370 r	2,260 r
Other	218,000	541,000	405,000 r	1,340,000 r	37,200	44,000	659,000 r	1,920,000 r
Total	3,790,000	8,280,000	1,490,000 r	5,000,000 r	596,000	847,000	5,880,000 r	14,100,000 r
2020:								
Argentina	156,000	296,000	3	37	--	--	156,000	296,000
Australia	86,700	166,000	387	3,060	19	29	87,100	169,000
Austria	(3)	18	23,600	98,400	5	5	23,600	98,500
Bahrain	75,000	140,000	17,700	53,400	--	--	92,600	194,000
Brazil	--	--	9,070	24,600	8,300	8,320	17,400	33,000
Canada	2,300,000	4,480,000	212,000	751,000	353,000	439,000	2,870,000	5,670,000
China	794	2,720	115,000	346,000	120	377	116,000	349,000
France	2,320	26,000	11,900	48,900	915	1,730	15,100	76,600
Germany	574	5,020	61,700	249,000	2,960	6,060	65,200	260,000
India	90,700	161,000	22,700	63,100	343	849	114,000	225,000
Indonesia	--	--	20,100	58,400	--	--	20,100	58,400
Japan	(3)	5	14,900	65,700	775	7,270	15,700	73,000
Korea, Republic of	14,000	21,000	26,300	76,700	3,290	5,740	43,600	103,000
Mexico	705	1,250	36,700	152,000	142,000	178,000	180,000	331,000
Oman	99	172	63,000	144,000	--	--	63,100	145,000
Russia	113,000	192,000	20,400	68,500	39	100	133,000	260,000
South Africa	4,490	8,140	32,900	85,300	--	--	37,400	93,400
Taiwan	351	997	24,600	78,300	272	434	25,200	79,700
United Arab Emirates	335,000	633,000	1,850	5,170	35	324	337,000	638,000
United Kingdom	339	1,100	4,670	19,200	4,100	7,390	9,110	27,700
Venezuela	25	30	--	--	55	159	80	189
Other	86,000	189,000	327,000	1,010,000	24,900	29,300	438,000	1,230,000
Total	3,270,000	6,320,000	1,050,000	3,410,000	542,000	685,000	4,860,000	10,400,000

rRevised. -- Zero.
[1]Table includes data available through June 24, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes circles, disks, pipes, rods, tubes, etc.
[3]Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 13
ALUMINUM, PRIMARY: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1, 2]

(Thousand metric tons)

Country or locality	2016	2017	2018	2019	2020
Argentina	412	403	419	427	300 e
Australia	1,635	1,487	1,574	1,570	1,582
Azerbaijan	37	29	47	36 r	50 e
Bahrain	971	981	1,011	1,365	1,549
Bosnia and Herzegovina[3]	107	126 r	132 r	69 r	--
Brazil	793	802	659	650	684
Cameroon	65 e	67 r	85 r	63 r	70 e
Canada	3,209	3,212	2,923	2,854	3,119
China	32,698	32,273	35,802	35,044	37,080
Egypt	296	314	300 e	300 e	260 e
France[e]	425	429	380	430	430
Germany	547	550	529	540 r, e	550 e
Ghana[e]	40	35	42	42	30
Greece	181 [4]	182	187 r	182 r	182
Iceland	854	883 r	876 r	844 r	860 e
India	2,723	3,269	3,675	3,640	3,558
Indonesia	245	219	242	250 r	245
Iran[e]	341 r	338 r	350	290 r	450
Kazakhstan	246	254	258	278 r	250 e
Malaysia[e]	620	700	750	760	760
Montenegro[e]	40	50	60	60	60
Mozambique	571	577	571	565	571
Netherlands	36 r	29 r	90 r	100 r, e	150 e
New Zealand	339	337	341	351	333
Norway	1,247	1,253 r	1,295 r	1,300 r, e	1,330 e
Oman	386	253	380	391	397
Qatar	612	620	616	627	632
Romania[4]	273	282	283	280	271
Russia	3,561	3,583	3,627	3,637	3,639
Saudi Arabia	740	786	802	790 e	740 e
Slovakia	174 r	173 r	174 r	175 r	152
Slovenia	84	84	81	68 r	70 e
South Africa	701	716	714	717	717
Spain[e]	350	350	350	220 r	200
Sweden	124	123	125	120	117
Tajikistan	129	103	96	101 r	100 e
Turkey	79	80 e	80 e	80 e	80 e
United Arab Emirates	2,525 r	2,611 r	2,640	2,570 r	2,520
United Kingdom	48	47 r	44 r	39 r	48 e
United States	818	741	891	1,093	1,012
Venezuela	147	144	86	8 e	20 e
Total	59,400 r	59,500	63,600	62,900 r	65,200

eEstimated. rRevised. -- Zero.

[1]Table includes data available through June 16, 2021. All data are reported unless otherwise noted; totals may include estimated data. 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 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 a footnote.

[3]Primary ingot plus secondary ingot.

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

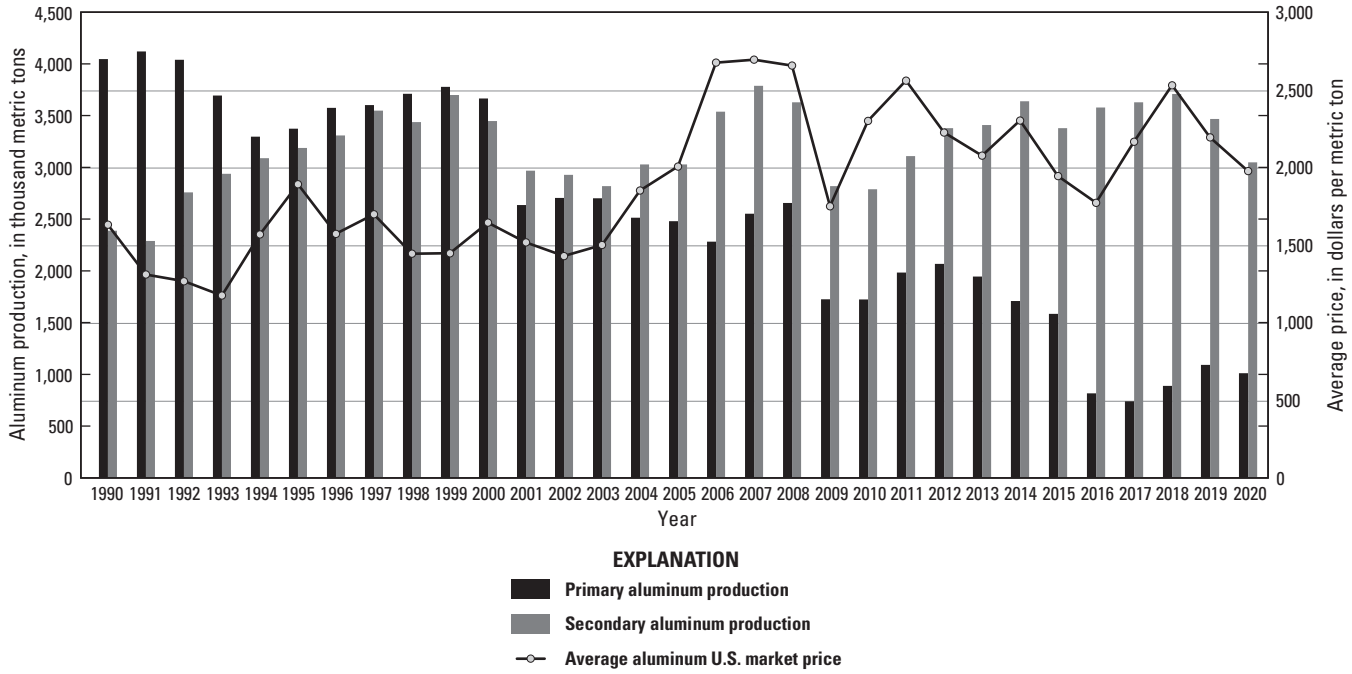

Figure 1. Chart showing the amount, in thousand metric tons, of primary and secondary aluminum produced in the United States and the average value, in dollars per metric ton, of primary aluminum from 1990 through 2020. There is an overall trend of declining primary aluminum production over the time period. Secondary aluminum production and the price of primary aluminum have fluctuated with the economic cycle over the time period.