ALUMINUM[1]

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2022, three companies operated six primary aluminum smelters in five States. Two of these six smelters operated at full capacity throughout the year. The other four smelters operated at reduced capacity and one of these four smelters began a temporary shutdown in June. A seventh smelter remained on standby throughout the year. Domestic smelters were operating at about 52% of capacity of 1.64 million tons per year at yearend 2022. Estimated primary production decreased by 3% compared with that in 2021 but estimated secondary production from new and old scrap increased by 3% compared with that in 2021. Based on published prices, the value of primary aluminum production was about $2.90 billion, 7% more than the $2.71 billion in 2021. The average annual U.S. market price increased by about 8% from that in 2021. Transportation applications accounted for 35% of domestic consumption; the remainder was used in packaging, 23%; building, 16%; electrical, 10%; machinery, 7%; consumer durables, 6%; and other, 3%.

Salient Statistics—United States:	2018	2019	2020	2021	2022[e]
Production:					
Primary	891	1,093	1,012	889	860
Secondary (from old scrap)	1,570	1,540	1,420	1,520	1,500
Secondary (from new scrap)	2,140	1,920	1,630	1,780	1,900
Imports for consumption:					
Crude and semimanufactures	5,550	5,280	4,260	4,830	5,900
Scrap	695	596	542	680	640
Exports:					
Crude and semimanufactures	1,310	1,110	906	851	1,000
Scrap	1,760	1,860	1,840	2,100	2,100
Consumption, apparent[2]	4,900	4,980	3,930	4,080	5,100
Supply, apparent[3]	7,040	6,910	5,560	5,860	7,000
Price, ingot, average U.S. market (spot), cents per pound[4]	114.7	99.5	89.7	138.5	150
Stocks, yearend:					
Aluminum industry	1,570	1,600	1,490	1,870	2,000
London Metal Exchange (LME), U.S. warehouses[5]	186	120	235	69	17
Employment, number[6]	31,600	32,900	30,100	28,900	28,000
Net import reliance[7] as a percentage of apparent consumption	50	47	38	41	54

Recycling: In 2022, aluminum recovered from purchased scrap in the United States was about 3.4 million tons, of which about 56% came from new (manufacturing) scrap and 44% from old scrap (discarded aluminum products). Aluminum recovered from old scrap was equivalent to about 29% of apparent consumption.

Import Sources (2018–21): Canada, 50%; United Arab Emirates, 9%; Russia, 5%; China,[8] 4%; and other, 32%.

Tariff: Item	Number	Normal Trade Relations 12–31–22
Aluminum, not alloyed:		
Unwrought (in coils)	7601.10.3000	2.6% ad valorem.
Unwrought (other than aluminum alloys)	7601.10.6000	Free.
Aluminum alloys, unwrought (billet)	7601.20.9045	Free.
Aluminum scrap:		
Used beverage container scrap	7602.00.0030	Free.
Industrial process scrap	7602.00.0091	Free.

Depletion Allowance: Not applicable.[1]

Government Stockpile: None.

Events, Trends, and Issues: In June, a 250,000-ton-per-year primary aluminum smelter in Hawesville, KY, idled its full production for an estimated 9 to 12 months owing to high energy costs. In July, a 161,000-ton-per-year primary aluminum smelter in Newburgh, IN, curtailed one of three operating aluminum smelting lines, citing operational challenges. In July, force majeure was declared at a rolling mill and aluminum packaging products manufacturer in Newburgh, IN, that produced approximately 310,000 tons per year of rolled aluminum. A shortage of magnesium, an essential component of aluminum packaging products, was cited for the declaration. Production at the plant was reduced by up to 50% before the declaration was lifted in September. In August, low local demand led to the permanent closure of aluminum beverage can manufacturing facilities in Phoenix, AZ, and St. Paul, MN.

Prepared by **Adam M. Merrill [(703) 648–7715, amerrill@usgs.gov]**

ALUMINUM

In October, construction began on a $2.5 billion aluminum recycling and rolling plant in Bay Minette, AL. When completed in 2025, the plant was expected to produce 600,000 tons per year of finished products, including beverage cans. Prices for aluminum increased through March, then generally trended downward throughout 2022 in the United States and in world markets.

In June, a tariff-rate quota system began that exempted certain aluminum imports from the United Kingdom from the 10% tariff imposed since 2018 under the authority of section 232 of the Trade Expansion Act of 1962. The quota system consisted of quantity limits during two periods in 2022 and the requirement that imports of aluminum articles be accompanied by a certificate of analysis for the smelted primary aluminum contained within in the articles. To be eligible for the tariff exemption, imports could not contain primary aluminum from Belarus, China, or Russia.

In April, a 447,000-ton-per-year primary aluminum smelter in Sao Luis, Brazil, restarted operations with full production expected by yearend. Several European aluminum producers announced production curtailments owing to high energy costs. In August, a 175,000-ton-per-year primary aluminum smelter in Slovakia ceased production, and a 94,000-ton-per-year primary aluminum smelter in Norway curtailed operation of a single potline. In September, a 70,000-ton-per-year primary aluminum smelter in Germany reduced production by 50%, and a 290,000-ton-per-year primary aluminum smelter in France reduced production by 22%. By yearend, a Norwegian primary aluminum smelter reduced production across two facilities by 110,000 to 130,000 tons per year. These facilities have annual capacities of 197,000 tons per year and 270,000 tons per year of primary aluminum.

World Smelter Production and Capacity: Capacity data for China were revised based on company and Government reports.

	Smelter production		Yearend capacity	
	2021	2022[e]	2021	2022[e]
United States	889	860	1,640	1,600
Australia	1,570	1,500	1,720	1,700
Bahrain	1,560	1,600	1,550	1,600
Canada	3,140	3,000	3,270	3,300
China	38,900	40,000	42,300	44,000
Iceland	[e]750	750	890	900
India	3,970	4,000	4,060	4,100
Norway	[e]1,400	1,400	1,430	1,400
Russia	3,640	3,700	4,020	4,000
United Arab Emirates	2,540	2,700	2,780	2,800
Other countries	9,140	9,100	12,300	12,000
World total (rounded)	67,500	69,000	76,000	77,000

World Resources:[9] Global resources of bauxite are estimated to be between 55 billion and 75 billion tons and are sufficient to meet world demand for metal well into the future.

Substitutes: Composites can substitute for aluminum in aircraft fuselages and wings. Glass, paper, plastics, and steel can substitute for aluminum in packaging. Composites, magnesium, steel, and titanium can substitute for aluminum in ground transportation uses. Composites, steel, vinyl, and wood can substitute for aluminum in construction. Copper can replace aluminum in electrical and heat-exchange applications.

[e]Estimated.

[1]See also the Bauxite and Alumina chapter.

[2]Defined as primary production + secondary production from old scrap + imports – exports ± adjustments for stock changes; excludes imported scrap.

[3]Defined as primary production + secondary production + imports – exports ± adjustments for stock changes; excludes imported scrap.

[4]Source: S&P Global Platts Metals Week.

[5]Includes aluminum alloy. Starting with 2019, also includes off-warrant stocks of primary and alloyed aluminum; estimated for 2019.

[6]Alumina and aluminum production workers (North American Industry Classification System—3313). Source: U.S. Department of Labor, Bureau of Labor Statistics.

[7]Defined as imports – exports ± adjustments for industry stock changes; excludes imported scrap.

[8]Includes Hong Kong.

[9]See Appendix C for resource and reserve definitions and information concerning data sources.