

BAUXITE AND ALUMINA¹

(Data in thousand metric dry tons unless otherwise noted)

Domestic Production and Use: In 2019, the quantity of bauxite consumed was estimated to be 5.1 million tons, 30% more than that reported in 2018, with an estimated value of about \$162 million. About 73% of the bauxite was refined by the Bayer process for alumina or aluminum hydroxide, and the remainder went to products such as abrasives, cement, chemicals, proppants, refractories, and as a slag adjuster in steel mills. Two domestic Bayer-process refineries with a combined alumina production capacity of 1.7 million tons per year produced an estimated 1.6 million tons in 2019, slightly more than that in 2018. One other refinery with 2.3 million tons per year of capacity that had been on care-and-maintenance status since 2016 was permanently shut down in December. About 66% of the alumina produced went to primary aluminum smelters, and the remainder went to nonmetallurgical products, such as abrasives, ceramics, chemicals, and refractories.

Salient Statistics—United States:	2015	2016	2017	2018	2019^e
Bauxite:					
Production, mine	W	W	W	W	W
Imports for consumption ²	11,500	6,050	4,360	4,200	5,100
Exports ²	21	40	29	17	20
Stocks, industry, yearend ²	1,500	880	880	600	300
Consumption:					
Apparent ³	W	W	W	W	W
Reported	9,660	5,360	3,510	3,890	5,100
Price, average value, U.S. imports (f.a.s.), dollars per ton	28	28	31	31	32
Net import reliance ⁴ as a percentage of apparent consumption	>75	>75	>75	>75	>75
Alumina:					
Production, refinery ⁵	4,550	2,360	1,430	1,570	1,600
Imports for consumption ⁵	1,570	1,140	1,330	1,530	2,100
Exports ⁵	2,210	1,330	481	288	200
Stocks, industry, yearend ⁵	274	320	264	275	300
Consumption, apparent ³	3,920	2,130	2,340	2,800	3,500
Price, average value, U.S. imports (f.a.s.), dollars per ton	400	362	486	592	500
Net import reliance ⁴ as a percentage of apparent consumption	E	E	38	44	54

Recycling: None.

Import Sources (2015–18): Bauxite:² Jamaica, 51%; Brazil, 23%; Guinea, 10%; Guyana, 7%; and other, 9%. Alumina:⁵ Brazil, 39%; Australia, 31%; Jamaica, 9%; Canada, 5%; and other, 16%.

Tariff:	Item	Number	Normal Trade Relations 12–31–19
	Bauxite, calcined (refractory grade)	2606.00.0030	Free.
	Bauxite, calcined (other)	2606.00.0060	Free.
	Bauxite, crude dry (metallurgical grade)	2606.00.0090	Free.
	Aluminum oxide (alumina)	2818.20.0000	Free.
	Aluminum hydroxide	2818.30.0000	Free.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Government Stockpile: None

Events, Trends, and Issues: In 2019, two domestic alumina refineries produced alumina from imported bauxite. A 500,000-ton-per-year alumina refinery in Burnside, LA, produced specialty-grade alumina. A 1.2-million-ton-per-year alumina refinery in Gramercy, LA, produced alumina principally for aluminum smelting. A project at the Gramercy refinery was adding another production line for specialty-grade alumina but the amount of additional capacity and a projected completion date were not announced. A 2.3-million-ton-per-year alumina refinery in Point Comfort, TX, was permanently shut down in December. The average prices free alongside ship (f.a.s.) for U.S. imports for consumption of crude-dry bauxite and metallurgical-grade alumina during the first 8 months of 2019 were \$32 per ton, slightly more than that of the same period in 2018, and \$497 per ton, 12% lower than that in the same period of 2018, respectively.

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In April, the Government of Malaysia ended its ban on bauxite mining that was imposed in January 2016 because of concerns about pollution from mines and uncovered stockpiles at ports. During the mining ban, exports of stockpiled bauxite were allowed and media sources reported that some mines continued illegal mining. In May, a court in Brazil lifted restrictions on production at a 6.3-million-ton-per-year alumina refinery. In February 2018, the Government of Brazil ordered the alumina refinery and a nearby 10-million-ton-per-year bauxite mine to shut down one-half of their capacities, citing concerns that leaks from disposal areas may have taken place after heavy rainfall in the area. The mine and refinery were ramped up to their full capacities by yearend. In March, a new 22.8-million-ton-per-year bauxite mine was commissioned in Queensland, Australia. In April, a new 2-million-ton-per-year alumina refinery in the United Arab Emirates was commissioned. In August, a new 12-million-ton-per-year bauxite mine in Guinea was commissioned and started exporting bauxite to the alumina refinery in the United Arab Emirates for which it would be the principal bauxite source. In October, a 1.65-million-ton-per-year alumina refinery in Jamaica shut down for a modernization project that would take about 2 years to complete.

In January, the U.S. Department of the Treasury lifted sanctions that were imposed in April 2018 against several Russian individuals and businesses in response to activities of the Government of Russia. Among the designated companies was a producer of bauxite, alumina, and aluminum. Prior to the sanctions being lifted, a winddown period was granted to companies with contracts with the sanctioned company. The winddown period was extended several times until the sanctions were lifted and deliveries to consumers in the United States were not disrupted.

World Alumina Refinery and Bauxite Mine Production and Bauxite Reserves:

	Alumina ⁵		Bauxite		Reserves ⁶
	2018	2019 ^e	2018	2019 ^e	
United States	1,570	1,600	W	W	20,000
Australia	20,400	20,000	86,400	100,000	76,000,000
Brazil	8,100	8,900	29,000	29,000	2,600,000
Canada	1,570	1,500	—	—	—
China	72,500	73,000	79,000	75,000	1,000,000
Guinea	180	300	57,000	82,000	7,400,000
India	6,430	6,700	23,000	26,000	660,000
Indonesia	1,000	1,000	11,000	16,000	1,200,000
Jamaica	2,480	2,100	10,100	8,900	2,000,000
Malaysia	—	—	500	900	110,000
Russia	2,760	2,700	5,650	5,400	500,000
Saudi Arabia	1,770	1,800	3,890	4,100	200,000
Vietnam	1,310	1,300	4,100	4,500	3,700,000
Other countries	11,400	12,000	17,000	15,000	5,000,000
World total (rounded)	131,000	130,000	⁸ 327,000	⁸ 370,000	30,000,000

World Resources: Bauxite resources are estimated to be 55 billion to 75 billion tons, in Africa (32%), Oceania (23%), South America and the Caribbean (21%), Asia (18%), and elsewhere (6%). Domestic resources of bauxite are inadequate to meet long-term U.S. demand, but the United States and most other major aluminum-producing countries have essentially inexhaustible subeconomic resources of aluminum in materials other than bauxite.

Substitutes: Bauxite is the only raw material used in the production of alumina on a commercial scale in the United States. Although currently not economically competitive with bauxite, vast resources of clay are technically feasible sources of alumina. Other raw materials, such as alunite, anorthosite, coal wastes, and oil shales, offer additional potential alumina sources. Synthetic mullite, produced from kaolin, bauxitic kaolin, kyanite, and sillimanite, substitutes for bauxite-based refractories. Silicon carbide and alumina-zirconia can substitute for abrasives but cost more.

^eEstimated. E Net exporter. W Withheld to avoid disclosing company proprietary data. — Zero.

¹See also Aluminum. As a general rule, 4 tons of dried bauxite is required to produce 2 tons of alumina, which, in turn, produces 1 ton of aluminum.

²Includes all forms of bauxite, expressed as dry equivalent weights.

³Defined as production + imports – exports + adjustments for industry stock changes.

⁴Defined as imports – exports + adjustments for industry stock changes.

⁵Calcined equivalent weights.

⁶See Appendix C for resource and reserve definitions and information concerning data sources.

⁷For Australia, Joint Ore Reserves Committee-compliant reserves were 2.2 billion tons.

⁸Excludes U.S. production.