

BAUXITE AND ALUMINA¹

(Data in thousand metric dry tons unless otherwise noted)

Domestic Production and Use: In 2017, the quantity of bauxite consumed, nearly all of which was imported, was estimated to be 4.2 million tons, 15% less than that in 2016, with an estimated value of about \$130 million. More than 90% 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. Three domestic Bayer-process refineries had a combined alumina production capacity of 4 million tons per year. Two of the refineries produced an estimated 1.5 million tons in 2017; the other refinery has remained on care-and-maintenance status since 2016. About 60% 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:	2013	2014	2015	2016	2017^e
Bauxite:					
Production, mine	W	W	W	W	W
Imports for consumption ²	10,800	11,800	11,600	6,000	4,300
Exports ²	21	15	21	40	40
Stocks, industry, yearend ²	1,300	1,210	1,500	880	940
Consumption:					
Apparent ³	W	W	W	W	W
Reported	10,200	9,840	9,660	4,940	4,200
Price, average value, U.S. imports (f.a.s.), dollars per ton	27	27	28	28	30
Net import reliance ⁴ as a percentage of apparent consumption	>75	>75	>75	>75	>75
Alumina:					
Production, refinery ⁵	4,320	4,460	4,550	2,360	1,500
Imports for consumption ⁵	2,050	1,630	1,570	1,140	1,300
Exports ⁵	2,250	2,130	2,240	1,370	450
Stocks, industry, yearend ⁵	280	276	274	245	200
Consumption, apparent ³	4,210	3,970	3,880	2,170	2,400
Price, average value, U.S. imports (f.a.s.), dollars per ton	368	394	400	362	450
Net import reliance ⁴ as a percentage of apparent consumption	15	E	E	E	37

Recycling: None.

Import Sources (2013–16): Bauxite: Jamaica, 46%; Brazil, 30%; Guinea, 21%; Guyana, 2%; and other, 1%. Alumina⁵: Australia, 39%; Suriname, 24%; Brazil, 20%; Jamaica, 5%; and other, 12%.

Tariff:	Item	Number	Normal Trade Relations 12–31–17
	Bauxite, calcined (refractory grade)	2606.00.0030	Free.
	Bauxite, calcined (other)	2606.00.0060	Free.
	Bauxite, crude dry (metallurgical grade)	2606.00.0090	Free.
	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 2017, 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. Facilities at the 200,000-ton-per-year Gramercy refinery were being upgraded to produce higher value-added specialty alumina in a project scheduled for completion in 2018.

The average price free alongside ship (f.a.s.) for U.S. imports for consumption of metallurgical-grade alumina during the first 8 months of 2017 was \$456 per ton, 34% higher than that of the same period in 2016, and ranged between \$395 per ton and \$576 per ton. World alumina production through October 2017 increased by 13% compared with

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that of the same period in 2016. For the first 9 months of 2017, the estimated average price (f.a.s.) for U.S. imports for consumption of crude-dry bauxite was \$29 per ton, slightly higher than that of the same period in 2016. The owner of one of the alumina refineries in the United States also owned the mine which supplied imported bauxite. The other alumina refinery in the United States purchased bauxite from unrelated mines.

In June, the Government of Indonesia permitted exports of bauxite for the first time since January 2014 when exports were prohibited as part of a mining law. Export permits were issued for 5 years to companies that were constructing refineries in Indonesia. Two refineries have been completed in Indonesia since 2015 and another under construction was expected to be completed in 2019. The Government of Malaysia continued its ban on bauxite mining through at least yearend 2017 but did permit exports of stockpiled bauxite. The ban was imposed in January 2016 because of concerns about pollution from mines and uncovered stockpiles at ports. In June, an alumina refinery and an adjacent bauxite mine in Jamaica that had been shut down since 2009 were restarted by a new owner.

World Alumina Refinery and Bauxite Mine Production and Bauxite Reserves: Reserves data for Australia, China, Greece, India, Russia, and Vietnam were updated based on Government data and other sources.

	Alumina ⁵		Bauxite		Reserves ⁶
	2016	2017 ^e	2016	2017 ^e	
United States	2,360	1,500	W	W	20,000
Australia	20,900	20,600	82,000	83,000	⁷ 6,000,000
Brazil	10,900	11,000	34,400	36,000	2,600,000
Canada	1,570	1,570	—	—	—
China	60,900	72,300	65,000	68,000	1,000,000
Germany	1,900	1,900	—	—	—
Greece	821	820	1,800	1,800	250,000
Guinea	—	—	31,500	45,000	7,400,000
Guyana	—	—	1,700	1,500	850,000
India	6,030	6,170	23,900	27,000	830,000
Indonesia	600	1,500	1,400	3,600	1,000,000
Ireland	1,970	1,930	—	—	—
Jamaica	1,870	1,980	8,540	8,100	2,000,000
Kazakhstan	1,500	1,500	5,000	5,000	160,000
Malaysia	—	—	1,000	1,000	110,000
Russia	2,680	2,800	5,430	5,600	500,000
Saudi Arabia	1,430	1,450	3,840	3,900	210,000
Spain	1,580	1,570	—	—	—
Ukraine	1,510	1,660	—	—	—
Vietnam	600	600	1,200	2,000	3,700,000
Other countries	2,160	2,130	7,820	9,030	3,200,000
World total (rounded)	121,000	130,000	275,000	300,000	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 bauxite-based 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 about 2.3 billion tons.