BAUXITE AND ALUMINA[1]

(Data in thousand metric dry tons unless otherwise noted)

Domestic Production and Use: Nearly all bauxite consumed in the United States was imported; of the total consumed, more than 95% was converted to alumina. Of the total alumina used, more than 90% went to primary aluminum smelters and the remainder went to nonmetallurgical uses. Annual alumina production capacity was 5.64 million tons, with four Bayer refineries operating throughout the year. Domestic bauxite was used in the production of nonmetallurgical products, such as abrasives, chemicals, proppants, and refractories.

Salient Statistics—United States:	2009	2010	2011	2012	2013[e]
Production, bauxite, mine	NA	NA	NA	NA	NA
Imports of bauxite for consumption[2]	7,770	9,310	10,200	11,000	10,400
Imports of alumina[3]	1,860	1,720	2,160	1,790	2,170
Exports of bauxite[2]	45	54	76	42	19
Exports of alumina[3]	946	1,520	1,660	1,680	1,450
Consumption, apparent, bauxite and alumina (in aluminum equivalents)[4]	2,480	2,580	2,250	2,890	2,720
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	28	27	30	28	28
Stocks, bauxite, industry, yearend[2]	1,780	95	272	440	540
Net import reliance,[5] bauxite and alumina, as a percentage of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (2009–12):[6] Bauxite: Jamaica, 45%; Guinea, 24%; Brazil, 21%; Guyana, 4%; and other, 6%. Alumina: Australia, 33%; Suriname, 31%; Brazil, 14%; Jamaica, 10%; and other, 12%. Total: Jamaica, 30%; Brazil, 18%; Guinea, 18%; Australia, 11%; and other, 23%.

Tariff: Item	Number	Normal Trade Relations 12–31–13
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: The average price (free alongside ship) for U.S. imports for consumption of metallurgical-grade alumina through August was $368 per ton, 3% less than the average price during the same period in 2012. During the first 8 months of the year, the price ranged between $351 per ton to $533 per ton. According to production data from the International Aluminium Institute, world alumina production through September 2013 increased by 5% compared with that of the same period in 2012. Bauxite production increased slightly in 2013 compared with production in 2012.

In February 2013, the owner of the 540,000-ton-per-year Burnside, LA, alumina refinery filed for chapter 11 bankruptcy protection, citing high power prices, low aluminum prices, high debt levels, and legacy costs. In August, the company shut down 360,000 tons per year of capacity at the refinery. It also shut down two of the six potlines at its 270,000-ton-per-year Hannibal, OH, smelter in August, in addition to the two potlines that were shut down in August 2012, leaving only 90,000 tons per year of capacity operating, which was subsequently shut down in October. In October, the owner entered into an agreement to sell the refinery, pending approval of the bankruptcy court.

Production from a 1.4-million-ton-per-year alumina refinery in Lanjigarh, India, was restarted in July at about 60% of its capacity. A shortage of bauxite was cited when the refinery shut down in December 2012. The refinery used bauxite purchased from other parts of India while the owner sought permits to mine nearby bauxite deposits.

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Several companies were planning to build alumina refineries in Indonesia in response to a law restricting exportation of unprocessed mineral ores. A 20% tax on exports of unprocessed mineral ores was implemented in 2012, and exports would be banned after 2014. Many of the companies planning to build refineries in Indonesia were based in China, where the Government was encouraging companies to invest in power-intensive industries in other countries.

World Bauxite Mine Production and Reserves: The reserve estimates for India and several other countries have been revised based on new information available through Government reports and other sources.

	Mine production		Reserves[7]
	2012	2013[e]	
United States	NA	NA	20,000
Australia	76,300	77,000	6,000,000
Brazil	34,000	34,200	2,600,000
China	47,000	47,000	830,000
Greece	2,100	2,000	600,000
Guinea	17,800	17,000	7,400,000
Guyana	2,210	2,250	850,000
India	19,000	19,000	540,000
Indonesia	29,000	30,000	1,000,000
Jamaica	9,340	9,500	2,000,000
Kazakhstan	5,170	5,100	160,000
Russia	5,720	5,200	200,000
Suriname	3,400	3,400	580,000
Venezuela	2,000	2,500	320,000
Vietnam	100	100	2,100,000
Other countries	5,020	5,000	2,400,000
World total (rounded)	258,000	259,000	28,000,000

World Resources: Bauxite resources are estimated to be 55 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. However, the vast U.S. resources of clay are technically feasible sources of alumina. Other domestic raw materials, such as alunite, anorthosite, coal wastes, and oil shales, offer additional potential alumina sources. Although it would require new plants using different technology, alumina from these nonbauxitic materials could satisfy the demand for primary metal, refractories, aluminum chemicals, and abrasives. A process for recovering alumina from clay was being tested in Canada to determine if it would be economically competitive with the processes now used for recovering alumina from bauxite. Processes for using other aluminum-bearing resources have not yet been proven to be economically competitive with those now used for bauxite. Synthetic mullite, produced from kyanite and sillimanite, substitutes for bauxite-based refractories. Although more costly, silicon carbide and alumina-zirconia can substitute for bauxite-based abrasives.

[e]Estimated. NA Not available.

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

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

[3]Calcined equivalent weights.

[4]The sum of U.S. bauxite production and net import reliance.

[5]Defined as imports – exports + adjustments for Government and industry stock changes (all in aluminum equivalents). Treated as separate commodities, the U.S. net import reliance as a percentage of apparent consumption equaled 100% for bauxite in 2009–12. For 2009–12, the U.S. net import reliance as a percentage of apparent consumption ranged from being a net exporter to 35% for alumina.

[6]Based on aluminum equivalents.

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