

BAUXITE AND ALUMINA¹

(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, 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, and refractories.

Salient Statistics—United States:	2008	2009	2010	2011	2012^e
Production, bauxite, mine	NA	NA	NA	NA	NA
Imports of bauxite for consumption ²	12,400	7,770	9,320	10,700	11,100
Imports of alumina ³	2,530	1,860	1,790	2,280	1,850
Exports of bauxite ²	31	45	54	75	52
Exports of alumina ³	1,150	946	1,520	1,620	1,660
Consumption, apparent, bauxite and alumina (in aluminum equivalents) ⁴	3,450	2,360	2,320	2,750	2,620
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	26	30	29	39	36
Stocks, bauxite, industry, yearend ²	W	1,780	1,450	1,500	1,500
Net import reliance, ⁵ bauxite and alumina, as a percentage of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (2008–11):⁶ Bauxite: Jamaica, 43%; Guinea, 22%; Brazil, 19%; Guyana, 6%; and other, 10%. Alumina: Australia, 34%; Suriname, 22%; Brazil, 17%; Jamaica, 14%; and other, 13%. Total: Jamaica, 34%; Brazil, 20%; Guinea, 19%; Australia, 13%; and other, 14%.

Tariff: Import duties on bauxite and alumina were abolished in 1971 by Public Law 92–151. Duties can be levied only on such imports from nations with nonnormal trade relations. However, all countries that supplied commercial quantities of bauxite or alumina to the United States during the first 9 months of 2012 had normal-trade-relations status.

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

Government Stockpile: None

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Events, Trends, and Issues: The average monthly price (free alongside ship) for U.S. imports of metallurgical-grade alumina began the year at \$383 per ton, and in July the price was \$374 per ton. During the first 7 months of the year, the price ranged between \$356 per ton to \$463 per ton.

Based on production data from the International Aluminium Institute, world alumina production during 2012 increased by 5% compared with that in 2011. Bauxite production increased slightly in 2012 compared with production in 2011. Increases in bauxite production from expanded, new, and reopened mines in Australia, Brazil, China, Guinea, and India were mostly offset by declines in production from mines in Indonesia, which enacted strict mine export tariffs during 2012.

World Bauxite Mine Production and Reserves: Production and reserve estimates for Brazil and Indonesia have been revised or added based on new information available through Government reports and other sources.

	Mine production		Reserves ⁷
	2011	2012 ^e	
United States	NA	NA	20,000
Australia	70,000	73,000	6,000,000
Brazil	31,800	34,000	2,600,000
China	45,000	48,000	830,000
Greece	2,100	2,000	600,000
Guinea	17,600	19,000	7,400,000
Guyana	1,820	1,850	850,000
India	19,000	20,000	900,000
Indonesia	37,100	30,000	1,000,000
Jamaica	10,200	10,300	2,000,000
Kazakhstan	5,500	5,300	160,000
Russia	5,890	6,100	200,000
Sierra Leone	1,460	1,200	180,000
Suriname	4,000	4,200	580,000
Venezuela	4,500	4,500	320,000
Vietnam	600	300	2,100,000
Other countries	<u>2,850</u>	<u>3,100</u>	<u>2,100,000</u>
World total (rounded)	259,000	263,000	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 prove 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 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.

^eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

¹See 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.

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

³Calcined equivalent weights.

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

⁵Defined 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 2008–11. For 2008–11, the U.S. net import reliance as a percentage of apparent consumption ranged from 4% to 35% for alumina.

⁶Based on aluminum equivalents.

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