

BAUXITE AND ALUMINA¹

(Data in thousand metric dry tons, unless otherwise noted)

Domestic Production and Use: Domestic ore, which for many years has accounted for less than 1% of the U.S. requirement for bauxite, was used in the production of nonmetallurgical products, such as abrasives, chemicals, and refractories. Thus, nearly all bauxite consumed in the United States was imported; of the total, about 95% was converted to alumina. Also, the United States imported approximately one-half of the alumina it required. Of the total alumina used, about 90% went to primary aluminum smelters and the remainder went to nonmetallurgical uses. Annual alumina capacity was 5.75 million tons, with three Bayer refineries in operation and one temporarily idled at midyear.

Salient Statistics—United States: ²	1998	1999	2000	2001	2002^e
Production, bauxite, mine	NA	NA	NA	NA	NA
Imports of bauxite for consumption ³	11,600	10,400	9,030	8,670	8,500
Imports of alumina ⁴	4,050	3,810	3,820	3,100	3,000
Exports of bauxite ³	108	168	147	88	70
Exports of alumina ⁴	1,280	1,230	1,090	1,250	1,200
Shipments of bauxite from Government stockpile excesses ³	3,300	4,180	1,100	3,640	1,000
Consumption, apparent, bauxite and alumina (in aluminum equivalents) ⁵	5,000	4,870	3,840	3,670	3,300
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	23	22	23	23	21
Stocks, bauxite, industry, yearend ³	1,860	1,440	1,300	1,750	1,300
Net import reliance, ⁶ bauxite and alumina, as a percentage of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (1998-2001):⁷ Bauxite: Guinea, 39%; Jamaica, 28%; Brazil, 14%; Guyana, 11%; and other, 8%. Alumina: Australia, 63%; Suriname, 15%; Jamaica, 9%; and other, 13%. Total: Australia, 29%; Guinea, 21%; Jamaica, 19%; Brazil, 9%; and other, 22%.

Tariff: Import duties on bauxite and alumina were abolished in 1971 by Public Law 92-151. Only imports from non-normal-trade-relations nations were dutiable. Countries that supplied commercial quantities of bauxite or alumina to the United States during the first 8 months of 2002 had normal-trade-relations status.

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

Government Stockpile:

Stockpile Status—9-30-02⁸

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2002	Disposals FY 2002
Bauxite, metal grade:					
Jamaica-type	1,710	5,350	1,710	2,030	2,530
Suriname-type	—	1,450	—	—	—
Bauxite, refractory-grade, calcined	42	2	42	44	1

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Events, Trends, and Issues: World production of bauxite increased slightly compared with that for 2001. Based on production data from the International Aluminium Institute, world alumina production during the first 2 quarters of 2002 was essentially unchanged from that for the same period in 2001.

The 2003 fiscal year Annual Materials Plan (AMP) submitted to Congress by the Defense National Stockpile Center proposed the sale of 2.03 million dry metric tons of Jamaica-type, metallurgical-grade bauxite and 43,700 calcined metric tons of refractory-grade bauxite from the National Defense Stockpile during the period October 1, 2002, to September 30, 2003. These or remaining inventory, whichever are lower, are the maximum amounts that could be sold under the new AMP and not necessarily the amounts that would actually be offered for sale.⁹

Spot prices for metallurgical-grade alumina, as published by Metal Bulletin, fluctuated during the year. The published price range began the year at \$130 to \$140 per ton. By the end of May, the price range had increased to \$157 to \$160 per ton before beginning a downward slide. At the end of September, the price range was \$142 to \$147 per ton.

World Bauxite Mine Production, Reserves, and Reserve Base: Reserves and reserve base estimates for Australia and Brazil have been revised based on new information from official country sources.

	Mine production		Reserves ¹⁰	Reserve base ¹⁰
	2001	2002 ^e		
United States	NA	NA	20,000	40,000
Australia	53,300	55,000	4,400,000	8,700,000
Brazil	13,900	13,200	1,800,000	2,900,000
China	9,500	10,000	700,000	2,300,000
Guinea	15,700	16,000	7,400,000	8,600,000
Guyana	1,990	1,500	700,000	900,000
India	8,390	9,000	770,000	1,400,000
Jamaica	12,400	13,000	2,000,000	2,500,000
Russia	4,000	3,700	200,000	250,000
Suriname	4,510	4,500	580,000	600,000
Venezuela	4,400	5,000	320,000	350,000
Other countries	9,810	10,400	3,600,000	4,700,000
World total (rounded)	138,000	141,000	22,000,000	33,000,000

World Resources: Bauxite resources are estimated to be 55 to 75 billion tons, located in South America (33%), Africa (27%), Asia (17%), Oceania (13%), and elsewhere (10%). Domestic resources of bauxite are inadequate to meet long-term 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 anorthosite, alunite, coal wastes, and oil shales, offer additional potential alumina sources. Although it would require new plants using new technology, alumina from these nonbauxitic materials could satisfy the demand for primary metal, refractories, aluminum chemicals, and abrasives. Synthetic mullite, produced from kyanite and sillimanite, substitutes for bauxite-based refractories. Although more costly, silicon carbide and alumina-zirconia substitute for bauxite-based abrasives.

^eEstimated. NA Not available. — Zero.

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 U.S. Virgin Islands.

³Includes all forms of bauxite, expressed as dry equivalent weights.

⁴Calcined equivalent weights.

⁵The sum of U.S. bauxite production and net import reliance.

⁶Defined as imports - exports + adjustments for Government and industry stock changes (all in aluminum equivalents). Treated as separate commodities, the net import reliance equaled 100% for bauxite and 30% for alumina in 2002. For the years 1998-2001, the net import reliance was 100% for bauxite and ranged from 29% to 36% for alumina.

⁷Aluminum equivalents.

⁸See Appendix B for definitions.

⁹Defense Logistics Agency, 2002, FY 2003 Annual Materials Plan announced: Fort Belvoir, VA, Defense Logistics Agency news release, October 1, 2 p.

¹⁰See Appendix C for definitions.