

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, about 95% was converted to alumina. However, the United States also 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. Domestic bauxite was used in the production of nonmetallurgical products, such as abrasives, chemicals, and refractories.

Salient Statistics—United States: ²	1999	2000	2001	2002	2003^e
Production, bauxite, mine	NA	NA	NA	NA	NA
Imports of bauxite for consumption ³	10,400	9,030	8,670	7,710	8,300
Imports of alumina ⁴	3,810	3,820	3,100	3,010	2,300
Exports of bauxite ³	168	147	88	52	140
Exports of alumina ⁴	1,230	1,090	1,250	1,270	1,000
Shipments of bauxite from Government stockpile excesses ³	4,180	1,100	3,640	297	1,710
Consumption, apparent, bauxite and alumina (in aluminum equivalents) ⁵	4,870	3,840	3,670	2,860	3,000
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	22	23	23	20	20
Stocks, bauxite, industry, yearend ³	1,440	1,300	1,740	1,260	1,000
Net import reliance, ⁶ bauxite and alumina, as a percentage of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (1999-2002):⁷ Bauxite: Guinea, 38%; Jamaica, 31%; Brazil, 12%; Guyana, 11%; and other, 8%. Alumina: Australia, 61%; Suriname, 18%; Jamaica, 9%; and other, 12%. Total: Australia, 29%; Jamaica, 21%; Guinea, 21%; Suriname, 8%; and other, 21%.

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 non-normal-trade-relations. However, all countries that supplied commercial quantities of bauxite or alumina to the United States during the first 8 months of 2003 had normal-trade-relations status.

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

Government Stockpile:**Stockpile Status—9-30-03⁸**

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2003	Disposals FY 2003
Bauxite, metal grade:					
Jamaica-type	—	5,760	—	2,030	1,710
Suriname-type	—	719	—	—	—
Bauxite, refractory-grade, calcined	42	—	42	44	—

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Events, Trends, and Issues: World production of bauxite was essentially unchanged from that for 2002. Based on production data from the International Aluminium Institute, world alumina production during the first 2 quarters of 2003 increased 6% compared with that for the same period in 2002.

The 2004 fiscal year Annual Materials Plan (AMP) submitted to Congress by the Defense National Stockpile Center proposed the sale of 43,700 calcined metric tons of refractory-grade bauxite from the National Defense Stockpile during the period October 1, 2003, to September 30, 2004. This or the remaining inventory, whichever is lower, is the maximum amount that could be sold under the new AMP and not necessarily the amount that would actually be offered for sale.⁹

Spot prices for metallurgical-grade alumina, as published by Metal Bulletin, trended upward during the year. The published price range began the year at \$175 to \$190 per ton. By the end of April, the price range had increased to \$280 to \$300 per ton. At the end of September, the price range was holding at \$275 to \$295 per ton.

World Bauxite Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ¹⁰	Reserve base ¹⁰
	<u>2002</u>	<u>2003^e</u>		
United States	NA	NA	20,000	40,000
Australia	54,000	55,000	4,400,000	8,700,000
Brazil	13,900	13,500	1,900,000	2,500,000
China	12,000	12,000	700,000	2,300,000
Guinea	15,700	16,000	7,400,000	8,600,000
Guyana	2,000	1,500	700,000	900,000
India	9,270	9,000	770,000	1,400,000
Jamaica	13,100	13,400	2,000,000	2,500,000
Russia	3,800	3,800	200,000	250,000
Suriname	4,500	4,500	580,000	600,000
Venezuela	5,000	5,000	320,000	350,000
Other countries	<u>11,200</u>	<u>10,700</u>	<u>4,300,000</u>	<u>5,000,000</u>
World total (rounded)	144,000	144,000	23,000,000	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-base refractories. Although more costly, silicon carbide and alumina-zirconia substitute for bauxite-base 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 22% for alumina in 2003. For the years 1999-2002, 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, 2003, FY 2004 Annual Materials Plan announced: Fort Belvoir, VA, Defense Logistics Agency news release, October 1, 2 p.

¹⁰See Appendix C for definitions.