

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 mined by one company from surface mines in Alabama and Georgia; virtually all of it 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 about one-half of the alumina it required. Of the total alumina used, about 90% went to primary aluminum smelters and the remainder to nonmetallurgical uses. Annual alumina capacity was 6.2 million tons, with five Bayer refineries in operation at yearend.

Salient Statistics—United States: ²	1994	1995	1996	1997	1998^e
Production, bauxite, mine	W	W	W	NA	NA
Imports of bauxite for consumption ³	11,200	10,800	10,700	11,200	10,500
Imports of alumina ⁴	3,120	4,000	4,330	3,830	3,900
Exports of bauxite ³	137	120	154	97	100
Exports of alumina ⁴	1,040	1,040	918	1,270	1,400
Shipments of bauxite from Government stockpile excesses ³	5	874	612	1,430	1,200
Consumption, apparent, bauxite and alumina (in aluminum equivalents) ⁵	3,840	4,330	4,380	4,210	4,000
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	26	24	27	25	24
Stocks, bauxite, industry, yearend ³	1,600	1,730	1,930	2,260	2,100
Net import reliance, ⁶ bauxite and alumina, as a percent of apparent consumption	99	99	100	100	100

Recycling: None.

Import Sources (1994-97):⁷ Bauxite: Guinea, 38%; Jamaica, 29%; Brazil, 16%; Guyana, 9%; and other, 8%. Alumina: Australia, 72%; Jamaica, 8%; Suriname, 7%; and other, 13%. Total: Australia, 32%; Guinea, 22%; Jamaica, 20%; Brazil, 10%; and other, 16%.

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 7 months of 1998 had normal-trade-relations status.

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

Government Stockpile:

Material	Stockpile Status—9-30-98⁸				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1998	Disposals FY 1998
Bauxite, metal grade:					
Jamaica-type	8,670	1,340	8,670	1,220	1,220
Suriname-type	3,740	911	3,740	813	813
Bauxite, refractory-grade, calcined	74	46	4	81	⁹ 20

Events, Trends, and Issues: World output of bauxite and alumina for 1998 increased slightly to accommodate the modest increase in world primary aluminum metal production.

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U.S. alumina plant engineered capacity remained essentially unchanged from that of yearend 1997. However, the 600,000-ton-per-year alumina plant in St. Croix, VI, which had been idled since 1994, was brought back onstream.

Spot prices for metallurgical-grade alumina, as published by Metal Bulletin, decreased gradually during the first three quarters of the year. The published price range began the year at \$205 to \$225 per ton. By the end of September, the price range had decreased to \$165 to \$185 per ton.

The revised fiscal year (FY) 1999 Annual Materials Plan submitted by the Defense National Stockpile Center proposed the sale of 3.56 million dry metric tons of metallurgical-grade bauxite (2.03 million tons of Jamaica-type and 1.52 million tons of Suriname-type) from the National Defense Stockpile during the period October 1, 1998, to September 30, 1999. In addition, the revised FY 1999 plan provided for the sale of 61,000 calcined metric tons of refractory-grade bauxite. These are the maximum amounts that could be sold under the new plan and not necessarily the amounts that would actually be offered for sale.

World Bauxite Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ¹⁰	Reserve base ¹⁰
	1997	1998 ^e		
United States	NA	NA	20,000	40,000
Australia	44,100	45,000	3,200,000	7,000,000
Brazil	12,300	12,500	3,900,000	4,900,000
China	8,000	8,500	720,000	2,000,000
Guinea	16,500	16,500	7,400,000	8,600,000
Guyana	2,500	2,600	700,000	900,000
India	5,800	6,000	1,500,000	2,300,000
Jamaica	11,900	12,600	2,000,000	2,000,000
Russia	3,350	3,400	200,000	200,000
Suriname	4,000	4,000	580,000	600,000
Venezuela	5,080	4,500	320,000	350,000
Other countries	<u>9,290</u>	<u>9,370</u>	<u>4,100,000</u>	<u>4,700,000</u>
World total (rounded)	123,000	125,000	25,000,000	34,000,000

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. W Withheld to avoid disclosing company proprietary data.

¹See also Aluminum. As a general rule, 4 tons of dried bauxite are required to produce 2 tons of alumina, which, in turn, provide 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 (all in aluminum equivalents).

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 31% for alumina in 1998. For the years 1994-97, the net import reliance ranged from about 99% to 100% for bauxite and from 32% to 42% for alumina.

⁷Aluminum equivalents.

⁸See Appendix C for definitions.

⁹Dry equivalent weight—31,500 metric tons.

¹⁰See Appendix D for definitions. Revisions for Australia, Brazil, Guinea, and India were based on updated data published by official Government sources.