

BAUXITE AND ALUMINA¹

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

Domestic Production and Use: Domestic ore, which 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, proppants, and refractories. Thus, nearly all bauxite, and certainly all metallurgical bauxite, was imported; of the total, about 95% was converted to alumina. Also, the United States imported nearly 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 5.5 million tons, with four Bayer refineries in operation at yearend.

Salient Statistics—United States: ²	1992	1993	1994	1995	1996^e
Production, bauxite, mine	W	W	W	W	W
Imports of bauxite for consumption ³	11,400	11,900	11,200	10,800	10,500
Imports of alumina ⁴	4,700	3,940	3,120	4,000	4,300
Exports of bauxite ³	68	92	137	120	170
Exports of alumina ⁴	1,140	1,240	1,040	1,040	920
Shipments of bauxite from Government stockpile excesses	437	565	5	874	650
Consumption, apparent, bauxite and alumina (in aluminum equivalents) ⁵	4,860	4,510	3,840	4,330	4,370
Price, bauxite, dollars per ton, f.o.b. mine	15-18	15-24	15-24	15-18	15-18
Stocks, bauxite, industry, yearend	2,300	1,600	1,600	1,700	1,600
Employment, bauxite mine, number	35	35	35	20	20
Net import reliance, ⁶ bauxite and alumina as a percent of apparent consumption	100	100	99	99	100

Recycling: None.

Import Sources (1992-95):⁷ Bauxite: Guinea, 36%; Jamaica, 29%; Brazil, 14%; Guyana, 12%; and other, 9%. Alumina: Australia, 71%; Jamaica, 9%; Suriname, 7%; and other, 13%. Total: Australia, 31%; Jamaica, 21%; Guinea, 20%; Brazil, 9%; and other, 19%.

Tariff: Import duties on bauxite and alumina were abolished in 1971 by Public Law 92-151. Only imports from non-most-favored nations were dutiable. Countries that supplied commercial quantities of bauxite or alumina to the United States during the first 7 months of 1996 had most-favored-nation status.

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

Government Stockpile:

Stockpile Status—9-30-96

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposals Jan.-Sept. 96
Bauxite, metal grade:				
Jamaica-type	10,500	673	10,500	⁸ 610
Suriname-type	4,980	—	4,980	—
Bauxite, refractory-grade, calcined	153	36	95	⁹ 2

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Events, Trends, and Issues: World output of bauxite and alumina for 1996 increased to accommodate the approximately 5% increase in world primary aluminum metal production.

U.S. alumina plant engineered capacity remained essentially unchanged from that of yearend 1995. The 600,000-ton-per-year alumina plant in St. Croix, VI, remained idle.

Spot prices for metallurgical-grade alumina, as published by Metal Bulletin, decreased significantly during the first three quarters of 1996. The published price range began the year at \$220 to \$250 per ton. By the end of September, the price range had decreased to \$145 to \$150 per ton.

The fiscal year (FY) Annual Materials Plan (AMP) submitted by the Defense National Stockpile Center proposed the sale of 915,000 dry metric tons of metallurgical-grade bauxite (610,000 tons of Jamaica-type and 305,000 tons of Suriname-type) during the period October 1, 1996, to September 30, 1997. In addition, the FY 1997 AMP provided for the sale of 81,000 calcined metric tons of refractory-grade bauxite from the National Defense Stockpile. These are the maximum amounts that could be sold under the new AMP 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
	<u>1995</u>	<u>1996^e</u>		
United States	W	W	20,000	40,000
Australia	42,655	43,400	5,600,000	7,900,000
Brazil	8,761	8,800	2,800,000	2,900,000
China	5,000	5,500	150,000	1,500,000
Guinea	14,400	14,400	5,600,000	5,900,000
Guyana	2,100	2,100	700,000	900,000
India	4,800	5,000	1,000,000	1,200,000
Jamaica	10,857	11,800	2,000,000	2,000,000
Russia	3,100	3,100	200,000	200,000
Suriname	3,300	3,300	580,000	600,000
Venezuela	5,184	4,000	320,000	350,000
Other countries	<u>9,009</u>	<u>9,500</u>	<u>3,800,000</u>	<u>4,400,000</u>
World total (rounded)	¹¹ 109,000	¹¹ 111,000	23,000,000	28,000,000

World Resources: Bauxite resources are estimated to be 55 to 75 billion tons, 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. 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).

⁷Aluminum equivalents.

⁸Sold under long-term contract commenced in 1993.

⁹Dry equivalent weight - 2,930 metric tons.

¹⁰See Appendix C for definitions.

¹¹Excludes U.S. production.