

## BAUXITE AND ALUMINA<sup>1</sup>

(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 90% was converted to alumina. Of the total alumina used, about 90% went to primary aluminum smelters and the remainder went to nonmetallurgical uses. Annual alumina production capacity was 5.75 million tons, with three Bayer refineries operating throughout the year and one temporarily idled. Domestic bauxite was used in the production of nonmetallurgical products, such as abrasives, chemicals, and refractories.

<b>Salient Statistics—United States:</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010<sup>e</sup></b>
Production, bauxite, mine	NA	NA	NA	NA	NA
Imports of bauxite for consumption <sup>2</sup>	12,900	11,200	12,400	7,770	9,050
Imports of alumina <sup>3</sup>	1,860	2,440	2,530	1,860	1,670
Exports of bauxite <sup>2</sup>	43	30	31	23	43
Exports of alumina <sup>3</sup>	1,540	1,160	1,150	946	1,700
Shipments of bauxite from Government stockpile excesses <sup>2</sup>	—	—	—	—	—
Consumption, apparent, bauxite and alumina (in aluminum equivalents) <sup>4</sup>	3,290	3,630	3,410	2,510	2,070
Price, bauxite, average value U.S. imports (f.a.s.) dollars per ton	28	31	26	30	27
Stocks, bauxite, industry, yearend <sup>2</sup>	W	W	W	W	W
Net import reliance, <sup>5</sup> bauxite and alumina, as a percentage of apparent consumption	100	100	100	100	100

**Recycling:** None.

**Import Sources (2006–09):**<sup>6</sup> Bauxite: Jamaica, 35%; Guinea, 24%; Brazil, 17%; Guyana, 8%; and other, 16%. Alumina: Australia, 39%; Jamaica, 17%; Brazil, 16%; Suriname, 16%; and other, 12%. Total: Jamaica, 29%; Brazil, 17%; Guinea, 16%; Australia, 14%; and other, 24%.

**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 2010 had normal-trade-relations status.

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

### **Government Stockpile:**

#### **Stockpile Status—9-30-10<sup>7</sup>**

<b>Material</b>	<b>Uncommitted inventory</b>	<b>Authorized for disposal</b>	<b>Disposal plan FY 2010</b>	<b>Disposals FY 2010</b>
Bauxite, metal grade Jamaica-type	—	—	—	—

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**Events, Trends, and Issues:** The monthly average price (f.a.s.) for U.S. imports of metallurgical-grade alumina began the year at \$343 per ton. By April, the price had peaked at \$465 per ton, then declined to \$323 per ton by August.

World production of alumina increased compared with that of 2009. Based on production data from the International Aluminium Institute and industry sources in China, world alumina production during 2010 increased by 14% compared with that in 2009. Increases in production from reopened, new, and expanded mines in Australia, Brazil, Guinea, India, and Jamaica accounted for most of the 6% increase in worldwide production of bauxite in 2010 compared with that of 2009.

**World Bauxite Mine Production and Reserves:** Reserves estimates for Australia, Brazil, Guyana, and India have been revised based on new information available through company and government reports.

	Mine production		Reserves <sup>8</sup>
	2009	2010 <sup>e</sup>	
United States	NA	NA	20,000
Australia	65,200	70,000	5,400,000
Brazil	28,200	32,100	3,400,000
China	40,000	40,000	750,000
Greece	2,100	2,000	600,000
Guinea	15,600	17,400	7,400,000
Guyana	1,760	1,800	850,000
India	16,000	18,000	900,000
Jamaica	7,820	9,200	2,000,000
Kazakhstan	5,130	5,300	360,000
Russia	5,780	4,700	200,000
Suriname	4,000	3,100	580,000
Venezuela	2,500	2,500	320,000
Vietnam	30	30	2,100,000
Other countries	4,740	4,440	3,300,000
World total (rounded)	199,000	211,000	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. 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.

<sup>e</sup>Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data. — Zero.

<sup>1</sup>See 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.

<sup>2</sup>Includes all forms of bauxite, expressed as dry equivalent weights.

<sup>3</sup>Calcined equivalent weights.

<sup>4</sup>The sum of U.S. bauxite production and net import reliance.

<sup>5</sup>Defined 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, but the United States was a net exporter of alumina in 2010. For 2006–09, the U.S. net import reliance as a percentage of apparent consumption was 100% for bauxite and ranged from being a net exporter to 31% for alumina.

<sup>6</sup>Based on aluminum equivalents.

<sup>7</sup>See Appendix B for definitions.

<sup>8</sup>See Appendix C for resource/reserve definitions and information concerning data sources.