



2008 Minerals Yearbook

BAUXITE AND ALUMINA

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In 2008, almost all the 9.55 million metric tons (Mt) of bauxite consumed in the United States was imported. World production totaled 205 Mt; the leading producing countries were Australia, China, and Brazil. U.S. production of alumina (calcined equivalent) was 4.30 Mt. Of the 4.28 Mt of alumina (calcined equivalent) shipped by domestic producers in 2008, an estimated 91% was used for metal production. World production of alumina was estimated to be 81,600 Mt; China, Australia, and Brazil were the leading producing countries.

Production

Bauxite.—For many years, domestic mines have supplied less than 1% of the U.S. requirement for bauxite, and all the domestic bauxite production was used in nonmetallurgical products, such as abrasives, chemicals, proppants, and refractories. Thus, the United States imported almost all the bauxite, especially metallurgical grade, that it required.

Alumina.—U.S. production of alumina, which was derived exclusively from imported metallurgical-grade bauxite, was slightly higher than that of 2007 (table 2). During the first half of the year, rising prices for alumina and aluminum resulted in high production rates at operating refineries. However, as prices declined in the second half of the year, and especially during the fourth quarter, output declined, and there was no expectation that previously idled capacity would reopen in the near term.

In October, Alcoa Inc. announced that it was reducing alumina production at its 2.3-million-metric-ton-per-year (Mt/yr) refinery in Point Comfort, TX, by an additional 550,000 metric tons per year (t/yr). In 2006, Alcoa had closed one of six digesters. Reduced demand and lower prices for alumina and aluminum during the second half of 2008 were cited as reasons for the production cut (Alcoa Inc., 2008d; 2008e, p. 23).

Consumption

Bauxite.—Domestic production and consumption data for bauxite and alumina were obtained by the U.S. Geological Survey from three voluntary surveys. The “Bauxite Consumption” survey was sent to 31 operations, 24 of which responded, representing approximately 89% of the bauxite consumed for uses other than cement listed in table 4.

Total domestic consumption of bauxite declined by 7% compared with that of 2007 as a result of cutbacks at alumina refineries during the second half of the year. In 2008, 98% of the bauxite consumed in the United States was refined to alumina [an estimated 2.17 metric tons (t) of dried bauxite was required to produce 1 t of alumina]; the remaining 2% was consumed in nonmetallurgical applications (table 4).

Alumina.—An estimated 94% of the imported alumina and alumina shipped by U.S. alumina refineries went to primary

aluminum smelters for metal production. In 2008, 14 domestic primary aluminum smelters consumed 5.32 Mt of alumina, an increase of 4% compared with the amount of alumina consumed in 2007. Consumption of various forms of alumina by the abrasives, chemicals, refractories, and other specialty industries accounted for the remainder of U.S. alumina use.

Prices

Most metallurgical-grade bauxite and alumina were purchased under long-term contracts. Contract terms for these mineral commodities normally were not made public. Spot prices for metallurgical-grade alumina and specialty forms of bauxite and alumina for nonmetallurgical applications, however, were published in trade journals.

Industrial Minerals (2008) quoted yearend prices for refractory-grade bauxite in China, 88% Al₂O₃ free on board (f.o.b.) ports, were as follows: Shanxi, round kiln, lump, \$610 to \$620 per metric ton; Shanxi, rotary kiln, lump, \$610 to \$620 per ton; and Guizhou, rotary kiln, lump, \$410 to \$430 per ton. The quoted f.o.b. price range for Guyanese refractory-grade bauxite was \$540 to \$570 per ton. The 2008 annual average values of U.S. imports of metallurgical-grade bauxite are listed in table 6.

Alumina prices generally followed the trend in aluminum prices. According to Metal Bulletin Ltd., metallurgical-grade alumina spot prices on international markets started 2008 in the range of \$350 to \$370 per ton and increased to \$390 to \$420 per ton by the end of January owing to firm demand by aluminum smelters worldwide. The price reached the \$400- to \$420-per-ton range by the end of April and by the beginning of July reached a range of \$420 to \$450 per ton. Prices gradually declined starting in mid-August to reach \$340- to \$360-per-ton range in mid-October. During the last 2.5 months of the year, prices declined dramatically to the \$210- to \$240-per-ton range in concert with the growing credit crisis and general collapse in commodity prices. Trade data released by the U.S. Census Bureau indicated that the 2008 annual average value of U.S. imports of calcined alumina was \$403 per ton cost, insurance, and freight at U.S. ports.

World Industry Structure

Production.—In 2008, world production of bauxite increased by 2% compared with that of 2007 (table 9). Mine production of 205 Mt was reported from 26 countries. The leading producers of bauxite, in decreasing order of tonnage mined, were Australia, China, Brazil, India, and Guinea. These countries accounted for more than three-quarters of total world production.

World output of alumina increased by 6% in 2008 compared with that of 2007 (table 10). The five principal producing

countries, in descending order of quantity of alumina produced, China, Australia, Brazil, the United States, and Jamaica, accounted for 70% of world production; China and Australia together accounted for more than 50%.

Mergers, Acquisitions, and Restructuring.—In November 2007, BHP Billiton Ltd. approached Rio Tinto plc with a takeover offer that was rejected by Rio Tinto's board of directors. BHP Billiton then made a public offer to the shareholders of Rio Tinto. In November 2008, BHP Billiton withdrew its offer to purchase Rio Tinto, citing the debt of Rio Tinto as unacceptable in light of the credit crisis developing during the fourth quarter (BHP Billiton Ltd., 2008b, d). Alcoa and Aluminum Corp. of China Ltd. (Chinalco) jointly acquired 12% of the stock of Rio Tinto (Alcoa Inc., 2008b).

World Review

Australia.—The Government of Australia proposed a cap- and-trade plan in an effort to reduce emissions of carbon dioxide and other greenhouse gases. Because aluminum smelters and alumina refineries are energy intensive and produce carbon dioxide and fluoride compounds, costs to the industry could be higher than for other industries. However, the proposal included provisions for the aluminum industry to mitigate these cost increases during the first several years if it is enacted (Department of Climate Change [Australia], 2008).

On June 3, Alcoa declared a force majeure on alumina contracts with its refineries in Western Australia as a result of an explosion at a natural gas facility owned by Apache Corp. (Houston, TX). Apache was one of two gas suppliers to Alcoa's refineries at Kwinana, Pinjarra, and Wagerup, which have a combined alumina capacity of 7.8 Mt/yr. The other supplier was still able to deliver gas to the refineries; the full impact of the gas shortage on alumina production was not announced. Apache resumed limited gas production in August, but full production was not expected until mid-2009 (Alcoa Inc., 2008c; Apache Corp., 2009).

In November, Alcoa announced that it was postponing expansion work on the Wagerup refinery until market conditions improve. The proposed project, which was originally scheduled to begin in 2010, would expand capacity of the refinery to 4.7 Mt/yr from 2.4 Mt/yr (Alcoa Inc., 2008f).

In May, BHP Billiton started an expansion and modernization project at the Worsley refinery. The project would increase refinery capacity to 4.6 Mt/yr from 3.5 Mt/yr and was scheduled to be completed in the first half of 2011. In addition to new refining capacity, the project would also involve expanding mining capacity and upgrading port facilities. The project remained on schedule despite the fourth quarter decline in alumina prices and the financial crisis (BHP Billiton Ltd., 2008a, 2009a).

Rio Tinto Alcan Inc. completed the expansion of the Gove refinery to 3.8 Mt/yr from 2 Mt/yr and began production in the second quarter of 2008. Production was halted at the 1.4-Mt/yr Yarwun refinery for about a month owing to a blockage in the waste pipeline, which occurred in July. Work continued on expansion of the Yarwun refinery to 3.4 Mt/yr, and initial production was expected in the second half of 2010, with full production expected in 2011. Rio Tinto Alcan

started a feasibility study for an expansion of the Weipa mine. If approved, the capacity of the mine would increase to 35 Mt/yr from 18 Mt/yr (Rio Tinto Alcan Inc., 2008b, c, p. 3–4).

Chinalco planned to start construction of a 10-Mt/yr bauxite mine at the Aurukun deposit and a 2.1-Mt/yr alumina refinery at Gladstone by yearend (CRU Alumina Monitor, 2008e).

Brazil.—Companhia Brasileira de Alumínio began production at the Mira Mine in August. Capacity of the mine was 1.85 Mt/yr with possible expansion to 5 Mt/yr (Companhia Brasileira de Alumínio, 2008).

In the second quarter, Companhia Vale do Rio Doce (Vale) completed construction of the Paragominas II mine, which had a capacity of 4.5 Mt/yr. Vale and its partners, Dubai Aluminum Co. Ltd. (Dubal) and Norsk Hydro Inc., began constructing a refinery in Barcarena during the fourth quarter. The initial capacity of the refinery would be 1.9 Mt/yr with completion and production to begin in early 2012. Bauxite for the refinery would come from the nearby Paragominas III Mine, which would have a capacity of 5 Mt/yr when completed in the second half of 2012 (Companhia Vale do Rio Doce, 2008, 2009).

Expansion of the Alunorte refinery was completed and production began in August. The capacity of the refinery, owned by Vale and Norsk Hydro, was increased to 6.3 Mt/yr from 4.4 Mt/yr (Norsk Hydro Inc., 2008).

Despite lower alumina prices and the financial crisis, Alcoa continued to construct the Juruti bauxite mine in Para State and to expand the Alumar refinery in Sao Luis with expected completion in the first half of 2009. The mine would have a capacity of 2.6 Mt/yr, and the refinery capacity would increase to 3.5 Mt/yr from 1.4 Mt/yr (Alcoa Inc., 2009). The expansion project at the Alumar refinery, jointly owned by Alcoa and BHP Billiton, was on schedule for completion in mid-2009 (BHP Billiton Ltd., 2008c).

Cameroon.—Dubal, Hindalco Industries Ltd., and Hydromine Ltd. created a joint venture to mine bauxite and refine alumina in Cameroon. The project, which would produce 3.2 Mt/yr of bauxite from a mine near the refinery, was scheduled to be completed in 2013 (CRU Alumina Monitor, 2008i).

China.—In January, the Government eliminated the 3% import tariff on alumina. Cold weather forced numerous aluminum smelters to reduce production as electricity was rationed, resulting in reduced demand for alumina during the first quarter (CRU Alumina Monitor, 2008j). In February, China announced that preferential pricing of electricity for aluminum smelters and alumina refineries would be eliminated in response to power shortages (Thompson Financial News Ltd., 2008).

An earthquake in Sichuan Province on May 12 reportedly damaged the 100,000-t/yr Aba aluminum smelter and reduced the rate of production to 50,000 t/yr. Although three other smelters in the province reported that they had no damage, concerns about damage to railroads that delivered alumina to the smelters and hauled ingot to customers resulted in a temporary increase in prices in Chinese markets and on the London Metal Exchange Ltd. (LME) (Platts Metals Week, 2008b). The Chongqing alumina refinery, which was under construction, also suffered damage from the earthquake. Chinalco started cleanup efforts immediately, and construction resumed on the 800,000 t/yr refinery with the goal of reaching full production in 2009 (Aluminum Corp. of China Inc., 2008b).

In February, the 1.6-Mt/yr Guangxi Huayin refinery, completed at yearend 2007, was put into full operation (Aluminum Corp. of China Inc., 2008a). Chinalco also commissioned a bauxite mine with a capacity of 2.1 Mt/yr to supply the refinery (CRU Alumina Monitor, 2008f). Work continued on the Zunyi alumina refinery, which would have a capacity of 800,000 t/yr when completed in late 2009 or early 2010 (Aluminum Corp. of China Inc., 2009, p. 51, 55). Chinalco planned two additional refinery increases—the Zhongzhou refinery was to be expanded to 2.7 Mt/yr from 2 Mt/yr, and a new 800,000-t/yr alumina refinery and an adjacent bauxite mine were planned in Shanxi Province; construction schedules were not provided (CRU Alumina Monitor, 2008d, f).

Coalmine Aluminium Co. completed an expansion to its refinery, increasing capacity to 1.6 Mt/yr from 1.2 Mt/yr (CRU Alumina Monitor, 2008a). In January, Yangquan Coal Corp. started production from its new 400,000-t/yr refinery, and construction on a second phase began in the second half of the year with capacity expected to reach 800,000 t/yr in early 2009 and 1.2 Mt/yr in 2010 (CRU Alumina Monitor, 2008b, c). In June, East Hope Group Ltd. completed expansion of its refinery in Henan Province to 2.1 Mt/yr from 1.6 Mt/yr (CRU Alumina Monitor, 2008f).

Zhaofeng Aluminium and Electricity Group started construction of the second phase of its refinery that would increase capacity to 800,000 t/yr from 400,000 t/yr. Guizhou Guangly Aluminium Co. Ltd. began construction of a bauxite mine with a capacity of 1.6 Mt/yr in Qingzhen, Guizhou Province; the construction schedule was not announced (CRU Alumina Monitor, 2008c). Yimei Group Ltd. was expanding its alumina refinery to 600,000 t/yr from 200,000 t/yr with startup scheduled for mid-2009 (CRU Alumina Monitor, 2008g). Shandong Xinfu Aluminium Electricity Group Co. was building a 1.6-Mt/yr refinery in Jingxi. Full production was expected in 2009 (Boyko, 2008).

Shanxi Wusheng Aluminium Ltd. received regulatory approval to expand its refinery in Shanxi Province to 500,000 t/yr from 200,000 t/yr. A construction schedule was not announced (CRU Alumina Monitor, 2008a). Yunnan Aluminium Co. announced that it planned to build an 800,000-t/yr refinery in Yunnan Province by yearend 2009 (American Metal Market, 2008).

Mengxi High and New Technology Co. Ltd. started construction of an alumina refinery at Erdos, Inner Mongolia. The refinery would have a capacity of 400,000 t/yr and reportedly would be the first refinery in the world to use fly ash from a coal-fired powerplant as the source of alumina (CRU Alumina Monitor, 2008e).

Dominican Republic.—Sierra Bauxita Dominica SA halted mining in October when the Government expropriated bauxite stockpiles at the Cabo Rojo port, and a new mining concession was not issued to the company. Production in 2007 was estimated to be 500,000 metric tons (Sierra Bauxita Dominica SA, written commun., October 23, 2008).

Ghana.—In June, Alcoa sold its 10% share of the idle 200,000-t/yr Volta Aluminum Co. (VALCO) smelter to the Government of Ghana. The smelter had been closed since March 2007 owing to low water levels at the Volta Dam, the

power source for the smelter (Kpodo, 2008). The Government planned to restart the smelter using power from the Volta Dam and a new powerplant that would use natural gas from Nigeria. The Government said that a bauxite mine and alumina refinery would be built to supply the smelter in the future; no plans were detailed for the restart and proposed mine and refinery (Mineprocessing.com, 2008).

Guinea.—Following the death of President Lansana Conte in December, the new Government announced plans to review all contracts with mining companies operating in Guinea. Among the companies notified of the Government's review were Alcoa, Rio Tinto Alcan, and United Company Rusal (Rusal), which have bauxite interests in the country; Rusal also owns a 640,000-t/yr alumina refinery at Friguia (Matthews, 2008).

Global Alumina Corp. continued with a feasibility study for a refinery in Guinea. The refinery would have an initial capacity of 3.3 Mt/yr with possible expansion to 5 Mt/yr. If constructed, startup was slated for late 2011. The project was a joint venture with BHP Billiton, Dubai, and Mubadala Development Co. (Global Alumina Corp., 2008).

Guyana.—China-based Chongqing Bosai Minerals Group Co. Ltd. (Bosai) and the Government of Guyana signed an agreement to construct a 1-Mt/yr alumina refinery. Construction was expected to start in 2009 with completion in mid-2011. Bosai would own 70%, and the Government would own 30% of the refinery (CRU Alumina Monitor, 2008h).

India.—National Aluminum Co. Ltd. (Nalco) was expanding capacity of the Damanjodi refinery to 2.1 Mt/yr from 1.58 Mt/yr. A further expansion project for the refinery was being planned to increase capacity to 3 Mt/yr; a construction schedule was not announced. Nalco was also expanding capacity of the Panchpatmali bauxite mine to 6.3 Mt/yr from 4.8 Mt/yr, with further expansion to 9 Mt/yr being planned. Although the initial refinery and mine expansions were slated to be completed by yearend, no details had been announced. Nalco was also negotiating with the Andhra Pradesh state government for permits to develop a 4.2-Mt/yr bauxite mine and construct a 1.4-Mt/yr alumina refinery (National Aluminum Co. Ltd., 2008).

Hindalco Industries Inc. progressed on several projects. Expansion of the Muri refinery was completed and production initiated, increasing capacity to 450,000 t/yr from 110,000 t/yr. Construction of the 1.5-Mt/yr Utkal refinery was underway and was scheduled for completion in early 2011. Mining of bauxite adjacent to the refinery was expected to start by yearend 2009. Work progressed on the Aditya aluminum complex that included an alumina refinery with a capacity of 1 to 1.5 Mt/yr, an aluminum smelter with a capacity of 260,000 to 359,000 t/yr, and a captive powerplant. Initial smelter production was scheduled for October 2011, and initial production from the refinery was expected by January 2013. Hindalco was seeking permits to mine bauxite adjacent to the Belgaum refinery as part of an expansion plan to increase refining capacity to 450,000 t/yr from 110,000 t/yr (Hindalco Industries Ltd., 2008).

Vedanta Resources plc was moving forward with a staged expansion of the Lanjarh alumina refinery to 5 Mt/yr from 1.4 Mt/yr. The first stage would add 600,000 t/yr of capacity by March 2010. An additional digester would add 1 Mt/yr of capacity by mid-2010, with two more 1-Mt/yr digesters to be completed by mid-2011 (Vedanta Resources plc, 2008).

Indonesia.—State-owned PT Aneka Tambang (Antam) announced plans to complete construction of a 300,000-t/yr alumina refinery in 2012 (CRU Alumina Monitor, 2008g).

Italy.—In the fourth quarter, Rusal closed 550,000 t/yr of production capacity at the Eurallumina refinery in Porto Vesme in response to decreased alumina prices. The refinery had a capacity of 1.1 Mt/yr (CRU Alumina Monitor, 2008k).

Jamaica.—In December, Rusal closed 420,000 t/yr of production capacity at the Kirkvine and Ewarton refineries in response to decreased alumina prices. The refineries had a combined capacity of 1.2 Mt/yr (CRU Alumina Monitor, 2008k).

In March, Century Aluminum announced that it was conducting a feasibility study for a 1.5-Mt/yr refinery and that it had secured bauxite reserves to supply the proposed refinery. Further details on the project schedule were not announced (Platts Metals Week, 2008a).

Russia.—Rusal sold the Pikalyovo refinery to Basel Cement. The refinery had produced alumina from nepheline syenite and had a capacity of 300,000 t/yr but had been closed since 2006 because the price of nepheline rose to unprofitable levels. After the sale, the refinery was converted to produce cement (United Company Rusal, 2008b).

Rusal and Gazprom signed an agreement for gas supplies for the Komi alumina refinery that was under construction. Construction had started in May 2007 but was put on hold during the negotiations for gas that lasted more than a year. Construction was expected to resume in 2009. When completed, the refinery would have a capacity of 1.4 Mt/yr (CRU Alumina Monitor, 2008g).

Saudi Arabia.—Rio Tinto Alcan withdrew from its plan to invest in a joint venture with Saudi Arabian Mining Co. (Ma'aden) to build an aluminum complex that included a 3-Mt/yr bauxite mine, a 1.6-Mt/yr alumina refinery, and a 720,000-t/yr smelter at Az Zabirah. Rio Tinto Alcan was continuing to provide technical support as Ma'aden continued to plan the operation. Plans for the complex were being revised in light of global economic conditions with completion projected in 2012 (Rio Tinto Alcan Inc., 2008a).

Sierra Leone.—Titanium Resources Group Ltd. sold its bauxite mine to Vimetco in July. The mine has a capacity of 1.2 Mt/yr (Vimetco N.V., 2008).

Suriname.—BHP Billiton canceled plans for the Bakhuis bauxite project and planned to close operations at the Paranam refinery when the company's bauxite reserves are mined out in 2010 (Freed, 2008; BHP Billiton Ltd., 2009b, p. 8).

Vietnam.—Vietnam National Coal-Minerals Industries Group (Vinacomin) signed an agreement for Chinalco to construct a 600,000-t/yr refinery in Dak Nong Province. The refinery and adjacent bauxite mine would be completed in 2010 and could be expanded to 1.8 Mt/yr by 2015 (CRU Alumina Monitor, 2008f). Vinacomin was developing a bauxite mine and a 600,000-t/yr alumina refinery in Lam Dong Province with projected completion in 2010 (Intellasia News Services, 2008).

Alcoa World Alumina and Chemicals (AWAC) signed an agreement with Vinacomin to study the feasibility of constructing a 600,000-t/yr refinery at Nhan Co. in Dak Nong Province. If constructed, ownership of the refinery and adjacent

bauxite mine would be Vinacomin (51%), AWAC (40%), and other investors (9%). AWAC and Vinacomin also agreed to conduct studies on the Gia Nghia bauxite mine and alumina refinery, also located in Dak Nong Province. The refinery would have a capacity of 1 to 1.5 Mt/yr if constructed (Alcoa Inc., 2008b).

Rusal and An Vien Group Ltd. signed a memorandum of understanding to develop a bauxite mine and alumina refining complex in Binh Phuoc. A feasibility study was expected to be completed by yearend 2010, and construction would begin in early 2012 if the project proves to be feasible. The refinery would have a capacity of 1.5 Mt/yr (United Company Rusal, 2008a).

Outlook

Demand for bauxite and alumina was expected to closely follow the downward trend of the aluminum market. During the fourth quarter of 2008 and early in 2009, alumina demand dropped sharply as numerous smelter closures were announced, prices continued to decline, and several mining and refining companies announced reduced production. World demand for bauxite and alumina was expected to remain at levels sharply lower than in prior years owing to declines in aluminum demand from numerous consumers worldwide. Consumer credit issues in the United States and Western Europe continued into 2009, resulting in reduced manufacturing of automobiles as well as home construction compared with that of prior years. Decreased consumption of aluminum in developed economies because of the economic events of 2008 could result in bauxite and alumina production remaining below the 2008 production level for the next several years. The impact of the global recession was also expected to reduce demand for aluminum in emerging economies as manufacturers that sell goods to the United States and other developed economies reduce output. Credit constraints threaten to reduce consumption of aluminum for infrastructure projects in developing nations as well as cause delays in mine and refinery expansion projects in many parts of the world. Projects in locations with high-grade bauxite deposits were still expected to move forward if they were projected to be in the lowest quartile of production costs. Adjacent alumina refineries were expected to be constructed at most new bauxite mines, and in some places, even aluminum smelters are being constructed near bauxite deposits. Further near-term cuts by domestic refiners were expected in response to weak demand.

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TABLE 1
SALIENT BAUXITE STATISTICS ¹

(Thousand metric tons)

	2004	2005	2006	2007	2008
United States:					
Exports, as shipped:					
Crude and dried	42	34	20	15	14
Calcined	21	18	14	8	10
Imports for consumption, as shipped:					
Crude and dried	9,640	11,800	11,600	9,840	10,500
Calcined	800	818	752	808	1,110
Consumption, dry equivalent	13,600	12,400	12,300	10,200 ^f	9,550
World, production	164,000	179,000	192,000 ^f	201,000 ^f	205,000 ^e

^eEstimated. ^fRevised.

¹Data are rounded to no more than three significant digits.

TABLE 2
SALIENT ALUMINA STATISTICS ¹

(Thousand metric tons)

	2004	2005	2006	2007	2008
United States:					
Production:					
Calcined alumina	4,990	4,750	4,610	3,770	3,900
Other alumina ²	529	708	618	717	610
Total:					
As produced or shipped ³	5,520	5,460	5,230	4,490	4,510
Calcined equivalent	5,350	5,220	4,700	4,240 ^e	4,300
Shipments:					
Calcined alumina	5,000	4,760	4,580	3,770	3,910
Other alumina ²	716	658	564	667	582
Total:					
As produced or shipped ³	5,720	5,420	5,150	4,440	4,490
Calcined equivalent	5,490	5,190	4,670	4,200	4,280
Stocks, yearend ⁴	957	834	942	437	636
Imports for consumption	1,650	1,860	1,860	2,440	2,530
Exports	1,230	1,210	1,540	1,160	1,150
World, production	61,700 ^f	64,400 ^f	71,500 ^f	77,000 ^f	81,600

^eEstimated. ^fRevised.

¹Data are rounded to no more than three significant digits.

²Trihydrate, activated, tabular, and other aluminas. Excludes calcium and sodium aluminates.

³Includes only the end product if one type of alumina was produced and used to make another type of alumina.

⁴Excludes consumers stocks other than those at primary aluminum plants.

TABLE 3
CAPACITIES OF DOMESTIC ALUMINA PLANTS, DECEMBER 31 ^{1,2}

(Thousand metric tons per year)

Company and plant	2007	2008
Alcoa Inc., Point Comfort, TX	2,300	2,300
Gramercy Alumina LLC, Gramercy, LA ³	1,250	1,250
Ormet Corp., Burnside, LA	600	600
Sherwin Alumina Co., Corpus Christi, TX ⁴	1,600	1,600
Total	5,750	5,750

¹Capacity may vary depending on the bauxite used.

²Data are rounded to no more than three significant digits; may not add to totals shown.

³Jointly owned by Century Aluminum Co. (50%) and Apollo Management LP (50%).

⁴Owned by Glencore International AG.

TABLE 4
U.S. CONSUMPTION OF BAUXITE,
BY INDUSTRY¹

(Thousand metric tons, dry equivalent)

Industry	2007	2008
Abrasive	W	W
Alumina	9,830 ^r	9,310
Chemical	W	W
Refractory	W	W
Total	10,200 ^r	9,550

^rRevised. W Withheld to avoid disclosing company proprietary data, included in "Total."

¹Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 5
AVERAGE VALUE OF U.S. IMPORTS OF CRUDE AND DRIED BAUXITE ¹

(Dollars per metric ton)

Country	2007		2008	
	Port of shipment f.a.s. ²	Delivered to U.S. ports c.i.f. ³	Port of shipment f.a.s. ²	Delivered to U.S. ports c.i.f. ³
Australia	23.81	36.31	NA	NA
Brazil	38.81	51.58	38.66	53.37
Guinea	32.97	48.43	35.04	47.50
Guyana	40.01	54.44	37.11	52.69
Jamaica	20.40	23.81	21.35	26.02
Weighted average	31.20	42.91	26.43	35.92

NA Not available.

¹Computed from quantity and value data reported to U.S. Customs Service and compiled by the U.S. Census Bureau, Department of Commerce. Not adjusted for moisture content of bauxite or differences in methods used by importers to determine value of individual shipments.

²Free alongside ship valuation.

³Cost, insurance, and freight valuation.

TABLE 6
U.S. EXPORTS AND IMPORTS
FOR CONSUMPTION OF BAUXITE,
CRUDE AND DRIED, BY COUNTRY¹

(Thousand metric tons)

Country	2007	2008
Exports:		
Belgium	1	--
Canada	11	8
Germany	1	1
Ireland	(3)	3
Venezuela	(3)	1
Other	2	2
Total	15	14
Imports:		
Brazil	1,410	1,940
Guinea	1,960	2,350
Guyana	903	723
Jamaica ²	4,450	4,430
Sierra Leone	832	779
Other	290	260
Total	9,840	10,500

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Data from the Jamaica Bauxite Institute.

³Less than ½ unit.

Note: Total U.S. imports of crude and dried bauxite as reported by the U.S. Census Bureau were as follows: 2007—8.68 million metric tons (Mt) and 2008—9.94 Mt.

Sources: U.S. Census Bureau.

TABLE 7
U.S. EXPORTS AND IMPORTS FOR CONSUMPTION OF CALCINED BAUXITE, BY COUNTRY¹

(Thousand metric tons and thousand dollars)

Country	2007				2008			
	Refractory grade		Other grade		Refractory grade		Other grade	
	Quantity	Value ²	Quantity	Value ²	Quantity	Value ²	Quantity	Value ²
Exports:								
Canada	3	379	1	68	7	727	(3)	9
Mexico	1	272	3	691	1	525	(3)	130
Other	(3)	53	(3)	81	1	84	(3)	123
Total	4	705	4	839	9	1,340	1	262
Imports:								
Australia	--	--	174	13,000	--	--	162	3,430
Brazil	93	39,700	14	569	125	58,500	27	2,590
China	118	17,600	47	7,220	177	63,100	66	14,300
Greece	35	1,420	54	2,720	28	1,610	--	--
Guyana	36	6,320	212	9,680	39	13,800	305	14,500
Other	--	--	23	1,120 [†]	1	100	178	6,490
Total	282	65,000	525	34,300[†]	370	137,000	738	41,300

[†]Revised. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Value at foreign port of shipment as reported to U.S. Customs Service.

³Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 8
U.S. EXPORTS AND IMPORTS FOR CONSUMPTION OF ALUMINA,
BY COUNTRY¹

(Thousand metric tons, calcined equivalent, and thousand dollars)

Country	2007		2008	
	Quantity	Value ²	Quantity	Value ²
Exports:				
Canada	443 ^r	203,000	629	244,000
China	14	15,400	11	24,300
Iceland	308	108,000	311	99,100
Japan	15	86,000	10	40,600
Mexico	50 ^r	38,800	54	39,100
Netherlands	3	7,520	28	17,300
Norway	225	74,100	34	13,300
Other	105 ^r	176,000	72	207,000
Total	1,160	709,000	1,150	684,000
Imports:				
Australia	833	265,000	930	307,000
Brazil	390	142,000	523	207,000
Canada	67	54,300	49	40,200
Germany	92	106,000	74	103,000
Jamaica	620	250,000	468	173,000
Suriname	281	94,500	264	86,500
Venezuela	77	25,200	154	66,300
Other	77	103,000	72	121,000
Total	2,440	1,040,000	2,530	1,100,000

^rRevised.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Value at foreign port of shipment as reported to U.S. Customs Service.

Source: U.S. Census Bureau.

TABLE 9
BAUXITE: WORLD PRODUCTION, BY COUNTRY^{1,2}

(Thousand metric tons)

Country	2004	2005	2006	2007	2008 ^c
Australia	56,593	59,959	61,780	62,398 ^r	61,389 ³
Bosnia and Herzegovina	917	1,032	854 ^r	867 ^r	860
Brazil	20,950	22,034	22,055	22,100	22,000
China ^e	17,000	22,000	27,000	30,000	35,000
Dominican Republic	79	535	500 ^e	500 ^e	400
Ghana	498	607	842	748 ^r	700
Greece	2,444	2,495	2,163	2,220	2,220
Guinea ⁴	15,254	16,817	18,784 ^r	18,519 ^r	18,500
Guyana ⁴	1,506	1,648	1,558	1,600	2,098 ³
Hungary	647	535 ^e	538	546	550
India	11,285	12,385	13,940	20,343 ^r	21,210 ³
Indonesia	1,331	1,442	1,502	1,251	1,400
Iran	420	438	500 ^e	500 ^e	500
Jamaica ^{4,5}	13,296	14,116	14,865	14,568	14,000
Kazakhstan	4,705 ^r	4,815 ^r	4,884 ^r	4,943 ^r	4,900
Malaysia	2	5	92	157 ^r	140
Montenegro	610 ⁶	672 ⁶	659	667 ^r	672 ³
Mozambique	7	10	11	9 ^r	9
Pakistan	5	7	7	8	8
Russia ^e	6,000	6,400	6,600	6,400	6,300
Sierra Leone	--	--	1,071 ^r	1,169 ^r	954 ³
Suriname	4,052	4,757	4,924	4,900	5,230
Tanzania	--	2	5	5	5
Turkey ⁷	366	475	771	344 ^r	350
United States	NA	NA	NA	NA	NA
Venezuela	5,842	5,900	5,928	5,900	5,500
Vietnam ^e	20	26 ³	30	30	30
Total	164,000	179,000	192,000 ^r	201,000 ^r	205,000

^eEstimated. ^rRevised. NA Not available. -- Zero.

¹World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through July 31, 2009.

³Reported figure.

⁴Dry bauxite equivalent of crude ore.

⁵Bauxite processed for conversion to alumina in Jamaica plus kiln-dried ore prepared for export.

⁶Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.

⁷Public-sector production only.

TABLE 10
ALUMINA: WORLD PRODUCTION, BY COUNTRY^{1, 2, 3}

(Thousand metric tons)

Country	2004	2005	2006	2007	2008
Australia	16,700	17,704	18,312	18,844	19,321
Azerbaijan	232	315	363	185	180 ^c
Bosnia and Herzegovina	360	450	390 ^r	304 ^r	340 ^c
Brazil	5,300	5,300	6,793	6,890	7,000
Canada	1,170	1,214	1,281 ^r	1,300 ^{r, c}	1,310 ^c
China ^c	6,990 ⁴	8,610	13,700	19,500	22,800
France ^c	300	200	200	200	200
Germany	1,174 ^r	1,255 ^r	1,393 ^r	1,388 ^r	1,395
Greece	750	750	750	750	750
Guinea	887	740	545 ^r	542 ^r	500 ^c
Hungary ^c	300	270 ^r	270	300 ^r	330
India ^c	2,600	2,700	2,800	2,900	3,000
Iran ^c	137 ⁴	200	250	250	250
Ireland ^c	1,100	1,100	1,100	1,100	1,800
Italy	1,114	1,093	1,159	1,327	1,330 ^c
Jamaica	4,023	4,086	4,099	3,941	4,000 ⁴
Japan ^{c, 5}	380 ^r	350 ^r	330 ^r	300 ^r	320
Kazakhstan	1,468	1,505	1,515	1,556	1,713
Montenegro	245 ⁶	235 ⁶	236 ^r	240	220
Romania	560	689	622	23 ⁷	--
Russia	3,269	3,259	3,265	3,300 ^c	3,200 ^c
Slovakia	157 ^r	162 ^r	161	160	163
Slovenia ^c	30	30	30	30	30
Spain ^{c, 8}	1,400	1,400	1,400	1,400	1,400
Suriname	2,039	1,944	2,153	2,200	1,953
Turkey	170 ^c	113	150	160 ^c	160 ^c
Ukraine	1,563	1,632	1,672	1,700 ^c	1,700 ^c
United Kingdom ^c	8	8	8 ⁴	27 ⁴	27
United States	5,350	5,220	4,700	4,240 ^r	4,300
Venezuela	1,900 ^c	1,920	1,892	1,900 ^c	1,900 ^c
Total	61,700 ^r	64,400 ^r	71,500 ^r	77,000 ^r	81,600

^cEstimated. ^rRevised. -- Zero.

¹Figures represent calcined alumina or the total of calcined alumina plus the calcined equivalent of hydrate when available; exceptions, if known, are noted.

²World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

³Table includes data available through July 31, 2009.

⁴Reported figure.

⁵Data presented are for alumina used principally for specialty applications. Information on aluminum hydrate for all uses is not adequate to formulate estimates of production levels. Production of aluminum hydroxide, in metric tons: 2004—750,000; 2005—740,000; 2006—720,000; 2007—700,000; and 2008—700,000.

⁶Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.

⁷Plant closed January 2007.

⁸Hydrate.

