



2009 Minerals Yearbook

MALAYSIA

THE MINERAL INDUSTRY OF MALAYSIA

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Malaysia's economy was dependent on exports of manufactured goods and the service sector. As the global financial crisis spread throughout the world during the second half of 2008, Malaysia's exports decreased and industrial output declined. The contraction in exports affected domestic demand. Private and public investment and consumption slowed significantly, reflecting depressed demand in most Malaysian exporting markets. Many companies deferred or cancelled investment decisions. Output from the industrial sector decreased by 7.7%, and mining and quarrying output decreased by 4.3% in response to the lower prices of condensate and crude oil. The manufacturing sector, which was dominated by the export-oriented electrical and electronics manufacturing industries, contracted by 10%. The construction sector, which was supported by the Government stimulus measures, grew by 5.7%. As a result, the country's gross domestic product (GDP) decreased by 1.7% in 2009 compared with that of 2008 (Department of Statistics, 2010, p. xxi-xxiv).

Minerals in the National Economy

Malaysia's identified mineral resources were barite, bauxite, clays, coal, copper, gold, ilmenite, iron ore, monazite, natural gas, petroleum, silica, silver, struverite, tin, and zircon. During the 20th century, mineral production played an important role in Malaysia's national economy; after many years of exploitation, such minerals as barite, bauxite, copper, ilmenite, iron ore, and tin were either depleted or the capacities to produce them had decreased significantly in recent years. In terms of contributing to the country's economy, the share of the mining and quarrying sector accounted for 13.0% of the GDP in 2009 compared with 17.2% in 2008. The mining and quarrying activity index was only about 95% in 2009, which was comparable to that of 2005 (Department of Statistics, 2010, p. 117, 240).

Government Policies and Programs

In Malaysia, the mineral activities are governed by the Mineral Development Act 1994 and the State Mineral Enactment. The Mineral Development Act 1994 defines the power of the Federal Government to regulate and conduct inspections of mineral exploration, mining, and related activities. The State Mineral Enactment gives the States the power to issue mineral prospecting and exploration licenses and mining leases. Apart from paying a corporate tax to the Federal Government, mine and quarry operators are required to pay value-based royalties to the State where their operation is located. Royalty rates depend on the mineral commodity and on the assessment of each of the individual States.

In 2009, the Government reviewed the second national mineral policy with the purpose of increasing the mineral sector's role in the socio-economic development of the country. The revised policy sought to ensure sustainable development

and the optimal use of mineral resources. Under the new policy, the development of the country's mineral resources was to be accomplished in an environmentally sound, responsible, and sustainable manner. The recovery, recycling, and reuse of metals and minerals would be encouraged, and the Government would urge further development of mineral-based products. Research and development were expected to lead to new technologies, innovations, and applications that could help reduce production costs and be used to create value-added mineral products. The Government planned to establish a mineral industry training fund that would be used to upgrade the skills of workers. The Government urged miners to revive abandoned mines, especially tin mines, and encouraged the States to issue more mining licenses (Ministry of Natural Resources and Environment, 2009).

Production

Malaysia produced bauxite, coal, feldspar, gold, ilmenite, iron ore, mica, natural gas, petroleum, tin, and zircon. Malaysia had been one of the major tin producing countries in the world; owing to depleted ore resources and lower ore grades, however, tin concentrate production had decreased in recent years. The country depended on imported tin concentrates and crude tin mainly from Australia and Indonesia to meet its demand for feedstocks for its smelter and refinery. In 2009, production of such commodities as mined gold, iron ore, pig iron, tin metal, and zirconium increased by more than 10% whereas production of bauxite, feldspar, ilmenite, mica, silica sand, crude steel, rare earths, rutile, and struverite decreased by more than 10% (table 1).

Structure of the Mineral Industry

Malaysia's mineral industry consisted of a small mining sector of coal and ferrous and nonferrous metals. Metallic and nonmetallic processing facilities were operated by private companies incorporated in Malaysia. Oil and gas exploration, production, and processing activities were owned and operated by Petroliaam Nasional Berhad (Petronas), which was a state-owned company, and by joint ventures of Petronas and foreign companies (table 2).

Mineral Trade

The major export products were automotive parts, chemicals, electronics, and machinery. The volume of mineral commodity exports had declined in recent years. In 2009, the total trade increased to \$282.3 billion; of that amount, exports decreased by 16.6% to \$158.1 billion and imports increased by 16.6% to \$124.2 billion. Electrical and electronic products continued to be Malaysia's leading export category and accounted for 38.5% of the total exports. Owing to weak prices on the world

markets, the country's crude oil export revenue decreased by 41.9% to \$6.7 billion; however, its export volume decreased by 1.8% to 16.4 million metric tons (Mt) from 16.7 Mt in 2008. As a result of the weak price of liquefied natural gas (LNG), the export revenue from LNG decreased by 24.8% to \$8.9 billion and the export volume increased by 5.3% to 22.2 Mt. LNG was exported mainly to China, Japan, and the Republic of Korea (Department of Statistics, 2010, p. 177-190).

Commodity Review

Metals

Aluminum.—Malaysia did not have an aluminum refinery or smelter; most of its bauxite output, therefore, was exported to China, and Malaysia imported unwrought aluminum to meet its demand. Press Metal Sarawak Sdn Bhd (a subsidiary of Press Metal Berhad) completed the construction of its 120,000-metric-ton-per-year (t/yr) aluminum smelter in Mukah in the State of Sarawak; the smelter would be fully operational by yearend 2010. Press Metal had chosen the Aluminum Corp. of China Ltd. (Chalco) as its technical partner for the first phase of the \$300 million aluminum smelter project. Chalco's Guiyang Aluminum and Magnesium Research Institute would install the GY-200 aluminum smelting technology, which was equipped with 208 210-kiloampere prebaked cells. The company signed a memorandum of understanding with Sarawak Energy Berhad to supply 510 megawatts (MW) of electricity-generating capacity for the smelter by 2010. Capacity might be doubled by the end of 2012 through a second-phase expansion. Sumitomo Corp. of Japan considered acquiring a 20% share in the aluminum project. Sumitomo would provide funding for the first phase construction and, in return, would have sales rights to some of the output. Sumitomo would have the option to obtain an additional 5% interest in Press Metal Sarawak (China Metal Bulletin, 2009).

GIIG Holdings Sdn Bhd and Aluminum Corp. of China (a parent company of Chalco) signed an agreement to jointly develop an aluminum smelter in Samalaju Industrial Park at Bintulu in the State of Sarawak. The joint-venture company, Smelter Asia Sdn Bhd, would have the following three shareholders: Chalco, GIIG Holding, and a Sarawak company. Details on the amount of equity that each would hold in the company were still being worked out. Initial output capacity was planned to be 330,000 t/yr and could be increased to 1.25 million metric tons per year (Mt/yr). Construction of the smelter was scheduled to begin in 2011 and the smelter would be put into operation in 2013. Chalco had the option to purchase all aluminum output. The smelter would need 600 MW of power, which would be supplied by Sarawak Energy Bhd. The total cost of the construction was estimated to be \$1 billion. This would be the second aluminum smelter to be built in Samalaju Industrial Park after the aluminum smelter (which was under construction in 2008) that was jointly owned by Cahya Mata Sarawak Berhad and Rio Tinto Alcan (Aluminum Corp. of China Ltd., 2010, p. 8; China Metal Bulletin, 2010).

Gold.—Approximately 10 gold mines were operating in the country; all were located in the States of Kelantan, Pahang, and

Terengganu. About 98% of mined gold was from the State of Pahang, mainly the Penjom Gold Mine of Specific Resources Malaysia Sdn. Bhd., which was a wholly owned subsidiary of Avocet Mining plc of the United Kingdom. A lesser amount was from three small mines in the district of Lipis. In 2008, the company completed the expansion of its mining and plant capacity to increase plant throughput to 700,000 t/yr from 570,000 t/yr, to compensate for decreasing mined grades. Since 1996, the company mined a total of about 31.2 metric tons (t) (1 million troy ounces) of gold, and the mining area was estimated still to contain 37.4 t (1.2 million troy ounces) of gold resources (Avocet Mining plc, 2010, p. 16).

Peninsular Gold Ltd. of the United Kingdom through its subsidiary Raub Australian Gold Mining Sdn. Bhd. conducted a gold development project at Raub in the State of Pahang. The area around Raub had been the site of extensive gold mining in the past. The company identified 6.3 t (202,000 troy ounces) of gold in 8.6 Mt of tailings. The company completed a 1.1-Mt/yr carbon-in-leach processing plant to recover gold from the tailings in 2009. In addition, the company discovered about 6.8 t (218,000 troy ounces) in the area. In 2009, the company recovered 6.4 kilograms (kg) (19,883 troy ounces) of gold. The company had another gold project, Tersang, which was located about 20 kilometers (km) north of Raub and which had identified gold resources of 16 t (528,000 troy ounces). The company believed that Tersang could potentially have up to 31.2 t (1 million troy ounces) of gold. The Pahang Government approved Peninsular Gold's applications for two new tenements—Kg. Tersang, Mukim Batu Talam in Raub and Sg. Tenggelan, Mukim Telang in the district of Lipis (Peninsular Gold Ltd., 2010).

Iron and Steel.—Malaysian iron ore production was from small-scale mines located in the States of Johor, Pahang, Perak, and Terengganu. The low-grade iron ores were consumed by the pipe-coating industry that supplied the oil and gas sector and cement plants. The high-grade iron ore was exported to China. The country imported high-grade iron ore from, in descending order of amount received, Brazil, Chile, Mexico, and Bahrain. The country's iron and steel producers operated at about 60% of capacity because of the weak demand from the construction sector. The Malaysian Iron and Steel Federation (MISF) estimated that the country's steel consumption was about 7.1 Mt in 2009 compared with 8.4 Mt in 2008. After consultation with MISF, the Government implemented mandatory standards for imported and locally produced long and flat products to prevent substandard products in the country, which took effect on August 1, 2009. Imported iron and steel products, which have no Malaysian standards, would be tested and verified using the existing international standards. The adoption of the international standard would be effective beginning on April 1, 2010. Import duties were revised downwards for both long and flat products. Import duties for long products were reduced to 10% on August 1, 2009, and to 5% on January 1, 2010. For flat products, import duties were reduced to 25% and would be further reduced to between 0% and 10% on January 1, 2018 (SIRIM QAS International Sdn Bhd., 2009, p. 1-9; Southeast Asia Iron and Steel Institute, 2009).

Vale S.A. of Brazil, which was the leading iron ore supplier in the world, planned to establish a distribution center for iron ore fines and a pelletizing plant at Teluk Rubiah, Lumut, in the State of Perak. The \$900 million project included the construction of a terminal, which would be able to handle 400,000 dead-weight-ton bulk vessels and would have an initial capacity to stockpile 30 Mt/yr of iron ore. It could be expanded to 90 Mt/yr in the future. The company aimed to sell to the iron ore markets in Asia and the Middle East and to compete with Rio Tinto plc and BHP Billiton Ltd. The terminal was scheduled to be completed by the first half of 2013 (Southeast Asia Iron and Steel Institute, 2010b).

Ann Joo Steel Bhd. (a subsidiary of Ann Joo Group) renovated its electric arc furnace to increase its steelmaking output capacity to 900,000 t/yr in 2008. In 2007, Ann Joo had awarded a contract to China's Tangshan Iron and Steel Design and Research Institute to design and build a 450-cubic-meter blast furnace and a 75-square-meter sinter machine at its plant site. The blast furnace, which would have pig iron output capacity of 500,000 t/yr, was scheduled to be put into operation by the end of 2010. Ann Joo also planned to expand the pig iron output capacity to 1.1 Mt/yr through the addition of another blast furnace, a sinter machine, and a 45-t converter under a second-phase expansion (Southeast Asia Iron and Steel Institute, 2010a).

Magnesium.—CVM Minerals Ltd. (a subsidiary of Ho Wah Genting Bhd of Malaysia, which was incorporated in Hong Kong) started the construction of a magnesium smelter at the Kamunting Raya Industrial Park in the State of Perak. The 30,000-t/yr Pidgeon process smelter was designed by Beijing Tieforce Engineering Co. Ltd. The construction of the smelter was divided into two phases. The first phase construction of a 15,000-t/yr production line was scheduled to be completed in April 2009. Owing to technical problems, the startup of the operation was postponed to March 2010. The raw material (dolomite) was sourced from CVM's Dolomite Hills, which is located about 60 km from the smelter and which had ore resources of 20 Mt. The technical staffs were trained by Shanxi Wenxi Hongfu Magnesium Co. Ltd. in Wenxi, Shanxi Province, China (CVM Minerals Ltd., 2009).

Rare Earths.—Globally, the production and resources of rare earths were dominated by China. Lynas Corp. Ltd. of Australia planned to develop the rare-earth deposit at Mount Weld in Western Australia and to ship rare-earth concentrates to Malaysia for further processing. Lynas secured approval from the Malaysian Government to build an advanced material plant in the Gebeng III industrial area, which is located near the Port of Kuantan in the State of Pahang. The construction of the plant was underway and was scheduled to be completed in late 2009. Owing to financial problems, the company suspended the construction of the concentration plant in Australia and the advanced material plant in Malaysia in February 2009. After the company issued new shares in Lynas to raise funds in the stock exchange, the construction work restarted in November 2009. The plant would have an initial output capacity of 11,000 t/yr of rare-earth-oxide-equivalent products. Given the global shortfall in the supply of rare earths, Lynas planned to increase the output capacity to 22,000 t/yr in a second-phase expansion. The

company planned to have the separation plant in operation in the third quarter of 2011 (Lynas Corp. Ltd., 2010).

Tin.—Owing to depleted resources and lower ore grades after more than 100 years of active mining operations, Malaysia's tin mine production decreased to about 2,400 t in 2009 from more than 6,000 t in 2000. Solder production was the leading tin consuming sector in Malaysia, followed by tinplate and pewter. Recently, tin consumption in Malaysia decreased to less than 3,000 t in 2009 from more than 5,000 t in 2000. The decrease in tin consumption was mainly from the solder and the pewter sectors; consumption by other consumers remained at the same level during that period. Owing to an increase in tin mine operating costs, Malaysian tin miners had difficulty operating profitably despite the higher demand for and price of tin. Malaysia Smelting Corp. Bhd. (MSC) was Malaysia's sole integrated tin producer; it produced 36,407 t of refined tin at its Butterworth smelter in 2009, which was about 15% more than it produced in 2008. The increase in tin production was a result of MSC's ability to source raw material from overseas markets. In 2009, Malaysia imported 22,928 t of tin concentrates compared with 20,987 t in 2008, mainly from Australia, Indonesia, and South Africa. Domestic mined tin production decreased in 2009. MSC exported a total of 18,946 t of refined tin mainly to the Republic of Korea, Singapore, Japan, and Taiwan (in descending order by volume) and an additional 17,797 t was either for domestic consumption or shipped to London Metal Exchange Ltd. warehouses in Pasir Gudang (Malaysia Smelting Corp. Bhd., 2010, p. 124-126; Malaysian Tin Bulletin, 2010).

Mineral Fuels

Coal.—Malaysia's coal resources are located in the States of Perak, Perlis, Sabah, Sarawak, and Selangor. Coal was produced from the areas of Bintulu, Merit-Pila, Silantek, and Tutoh in the State of Sarawak. The country has coal resources of about 1.9 billion metric tons (Gt), of which 281 Mt was measured, 378 Mt was indicated, and 1.3 Gt was inferred. About 1.5 Gt of the country's coal resource is located in Sarawak and more than 300 Mt is found in Sabah. Owing to a lack of infrastructure, most of the coal in the interior areas of the country had not been exploited. Coal resources located in Sabah were in the Maliau Basin Conservation area, which the Government had designated as a protected area. Mining and exploration for coal were conducted only in Sarawak. Power-generating plants consumed about 70% of the total supply of coal (domestic production and imports), and the remaining supply was consumed by the cement and iron and steel sectors. Despite Malaysia's position as a natural gas exporter, Tenaga Nasional Berhad planned to decrease the use of natural gas at its powerplants to 49% from 72% and to shift to the use of coal because of a shortage in the supply of natural gas in the domestic market. Coal demand for powerplants would increase; as a result, coal consumption was expected to increase to 19.5 Mt in 2010. Domestic coal could not meet the demand and the country was expected to increase coal imports to fill the gap. Most imported coal was from Australia, Indonesia, South Africa, and Vietnam (Minerals and Geoscience Department, 2009, p. 98-101).

Natural Gas and Petroleum.—Malaysia remained a net exporter of natural gas and crude oil. Production of net natural gas decreased by about 4% to 58.6 billion cubic meters in 2009. The decrease in natural gas production was caused by the slow growth of external demand for LNG and an unplanned maintenance shutdown at several gasfields in Peninsular Malaysia. Production of crude oil and condensate decreased by about 4.4% to 241 million barrels in 2009. The decreased production of crude oil was in accordance with the production limits set by the National Depletion Policy. Crude oil production decreased by 11.7% in Peninsular Malaysia and accounted for 45% of the country's total output. Production in Sabah increased by 20%, which was attributed to increased output from the deepwater oilfield in Klkeh (Bank Negara Malaysia, 2010, p. 27).

Outlook

With the global economy recovering only slowly, Malaysia's economy is projected to grow at a slower rate during the next 3 years than in the previous several years. Private and public spending, however, will likely continue to support economic growth. The Government is aware of the country's economic need to reduce its dependence on external markets and to produce a more-diversified range of goods for export. To improve the investment climate and build a more competitive economy, the Government plans to privatize state-owned companies, sell Government land, and reassess Government subsidies. The Government plans to further relax some rules regarding foreign investment in Malaysian companies and properties, initial public offerings, and the financial sector. The construction sector is expected to expand as a result of increased investment by the Government in infrastructure under the Ninth Malaysia Plan, and the demand for construction steel products will also likely increase. Several natural gas and oil projects are set to come onstream during the next several years. In accordance with the National Depletion Policy, the production

of oil is expected to decrease or to remain at the same level as in previous years (Citigroup Global Markets Singapore PTE Ltd., 2010).

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TABLE 1
MALAYSIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2005	2006	2007	2008	2009
METALS					
Aluminum, bauxite, gross weight	4,735	91,806	156,785	295,176 ^r	263,432
Gold, mine output, Au content ³	4,250	3,497	2,913	2,489 ^r	2,794
Iron and steel:					
Iron ore, gross weight	949,605	667,082	802,030	981,932 ^r	1,470,186
Pig iron, direct-reduced iron and hot-briquetted iron	1,349	1,277	1,872	1,957	2,388
Steel, crude	5,296	5,834	6,895	6,423	5,787
Lead metal, secondary ^c	71,000	73,000	73,000	73,000	72,000
Niobium (columbium)-tantalum metals, struverite, gross weight	552	93	52	216 ^r	176
Rare-earth metals, monazite, gross weight	320	894	682	233 ^r	25
Silver, mine output, Ag content ³	401	410	295	349 ^r	367
Tin:					
Mine output, Sn content	2,857	2,398	2,263	2,605 ^r	2,412
Metal, smelter	36,924	22,850	25,471	31,691 ^r	36,407
Titanium:					
Ilmenite concentrate, gross weight	38,196	45,649	59,310	36,779 ^r	15,983
Rutile	5,509	16,921	1,450	1,834	1,502
Dioxide ^e	56,000	56,000	56,000	56,000	56,000
Zirconium, zircon concentrate, gross weight	4,954	1,690	7,393	984 ^r	1,145
INDUSTRIAL MINERALS					
Cement, hydraulic	16,658 ^r	19,457 ^r	21,909 ^r	19,629 ^r	19,457
Clays and earth materials	28,757	25,081	28,102	25,065 ^r	25,000 ^e
Feldspar	117,180	142,358	358,775	457,377 ^r	356,620
Kaolin	494,511	341,223	587,508	506,462 ^r	463,736
Mica	4,542	5,152	6,118	5,593 ^r	4,323
Nitrogen, N content of ammonia	920,000	950,000	950,000	950,000	950,000
Sand and gravel	17,072	25,225	22,370	24,472 ^r	23,000 ^e
Silica sand, Peninsular Malaysia and Sarawak	531,891	512,277	719,221	1,466,904 ^r	161,115
Stone:					
Aggregate	62,761	79,912	79,118	75,883 ^r	75,000 ^e
Dolomite	38,500	37,702	49,320	57,900 ^r	49,000 ^e
Limestone	30,868	33,471	33,688 ^r	35,228 ^r	34,000 ^e
MINERAL FUELS AND RELATED MATERIALS					
Coal	789,356	901,801	1,074,936	1,166,525 ^r	1,050,000 ^e
Gas, natural:					
Gross	70,471	70,191	71,170	68,000	65,000
Net ⁴	59,904 ^r	59,668 ^r	60,804 ^r	61,004 ^r	58,560
Liquefied natural gas	21,948	21,948	22,900 ^r	22,870 ^r	22,180
Petroleum:					
Crude and condensate	267,720	243,455	249,295	251,811 ^r	240,843
Refinery products ^{e,5}	218,000	208,000	220,000	210,000	200,000

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto.

¹Table includes data available through October 5, 2010.

²In addition to the commodities listed, a variety of crude construction materials, which include clays and stone, fertilizers, and salt, is produced but not reported, and information is inadequate to make reliable estimates of output.

³Includes byproduct from tin mines in Peninsular Malaysia and gold mines in Peninsular Malaysia and the State of Sarawak.

⁴Includes production from Peninsular Malaysia and the States of Sabah and Sarawak.

⁵Gross less volume of reinjected and flared.

Sources: Ministry of Primary Industry, Minerals and Geoscience Department (Kuala Lumpur), Malaysian Minerals Yearbook 2009; U.S. Geological Survey Minerals Questionnaire, 2009; and Southeast Asia Iron and Steel Institute, Steel Statistical Yearbook, 2009.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Bauxite		Johore Mining and Stevedoring Co. Sdn. Bhd.	Teluk Rumania and Sg. Rengit, Johor	400.
Cement ¹		Cement Industries of Malaysia Bhd. (United Engineers Malaysia Bhd., 53.97%, and others, 46.03%)	Kangar, Perlis, and Bahau, Negeri Sembilan	3,400 cement; 2,800 clinker.
Do.		CMS Cement Sdn Bhd (subsidiary of Cahya Mata Sarawak Bhd)	Bintulu and Kuching, Sarawak	1,750 cement; 600 clinker.
Do.		Holcim (Malaysia) Sdn Bhd (Holcim Ltd.)	Pasir Gudang, Johor	1,200 cement.
Do.		Lafarge Malayan Cement Bhd. (subsidiary of Lafarge S.A.)	Rawang, Selangor; Kanthan, Perak, Langkawi, Kedah; and Pasir Gudang, Johor	12,950 cement; 8,200 clinker.
Do.		YTL Cement Berhad (subsidiary of YTL Group)	Bukit Sagu, Pahang; Padang Rengas, Perak; and Pasir Gudang and Wesport, Johor	5,700 cement; 4,200 clinker.
Do.		Perak-Hanjoong Simen Sdn. Bhd. (Gopeng Bhd., 45%, and Korea Heavy Industries and Construction Co. and others, 55%)	Padang Rengas, Perak	3,400 cement; 3,000 clinker.
Do.		Tasek Corp. Bhd (publicly owned company)	Ipoh, Perak	2,300 cement; 2,300 clinker.
Gas:				
Natural	million cubic meters per day	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	45.
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	3.
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	80.
Liquefied		Malaysia LNG Sdn. Bhd. (Petroleum Nasional Berhad, 65%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 5%)	Tanjung Kidurong, Bintulu, Sarawak	8,100.
Do.		Malaysia LNG Dua Sdn. Bhd. (Petroleum Nasional Berhad, 60%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 10%)	do.	7,800.
Do.		Malaysia LNG Tiga Sdn. Bhd. (Petroleum Nasional Berhad, 60%; Shell Gas N.V., 15%; Nippon Oil LNG (Netherlands) BV, 10%; Sarawak State government, 10%; Diamond Gas Netherlands BV, 5%)	do.	6,800.
Gold, refined	kilograms	Specific Resources Malaysia Sdn. Bhd. (joint venture of Pahang State Development Corp. and Avocet Mining Plc)	Penjom, Pahang	4,000.
Iron and steel:				
Direct-reduced iron		Lion DRI Sdn Bhd (Lion Group)	Banting, Selangor	1,540.
Do.		Perwaja Steel Sdn. Bhd. (Kinsteel Bhd, 51%, and Maju Holdings Sdn. Bhd., 49%)	Kemaman, Terengganu	1,800.
Hot-briquetted iron		Amsteel Mills Sdn Bhd (Lion Group)	Labuan Island, offshore Sabah	880.
Crude steel		do.	Banting, Selangor	1,250.
Do.		do.	Klang, Selangor	750.
Do.		Ann Joo Steel Bhd (Ann Joo Group)	Prai, Penang	900.
Do.		Antara Steel Sdn. Bhd. (Lion Grop)	Pasir Gudang, Johr	600.
Do.		Kinsteel Sdn Bhd	Kuantan, Pahang	500.
Do.		Megasteel Sdn Bhd (Lion Group)	Banting, Selangor	700.
Do.		Malaysia Steel Works Bhd	Bukit Raja, Selangor	450.
Do.		Perwaja Steel Sdn. Bhd. (Kinsteel Bhd, 51%, and Maju Holdings Sdn. Bhd., 49%)	Kermaman, Terengganu	1,500.
Do.		Southern Steel Bhd. [Camerlin (a member of Hong Leong Group Malaysia), 40.75%; Natsteel Ltd., 27.03; others, 32.22%]	Prai, Penang	1,300.

See footnotes at end of table.

TABLE 2—Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Nitrogen, ammonia		Asean Bintulu Fertilizer Sdn. Bhd. (Petroleum Nasional Berhad, 63.5%; P.T. Pupuk Sriwidjaja Indonesia, 13%; Thai Ministry of Finance, 13%; Philippines National Development Co., 9.5%; Singapore Temasek Holdings Pte. Ltd., 1%)	Bintulu, Sarawak	395.
Do.		Petronas Fertilizer Kedah Sdn. Bhd. (wholly owned subsidiary of Petroleum Nasional Berhad)	Gurun, Kedah	378.
Do.		Petronas Ammonia Sdn. Bhd. (wholly owned subsidiary of Petroleum Nasional Berhad)	Kerth, Terengganu	370.
Petroleum, crude	thousand 42-gallon barrels per day	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	390.
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	100.
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	184.
Do.	do.	do.	do.	184.
Do.	do.	Petronas Carigali Sdn. Bhd.	Offshore Terengganu	22.
Do.	do.	Murphy Sarawak Oil Co. Ltd.	Offshore Sarawak	15.
Tin:				
Concentrate		Delima Industries Sdn. Bhd.	Dengkil, Selangor	1.1.
Do.		Maiju Sama Sdn. Bhd.	Puchong, Selangor	1.6.
Do.		New Lahat Mines Sdn. Bhd.	Lahat, Perak	0.3.
Do.		Omsam Telecommunication Sdn. Bhd.	Bakap and Batu Gajah, Perak	0.5.
Do.		Rahman Hydraulic Tin Bhd.	Klian Intan, Perak	1.2.
Do.		S.E.K. (M) Sdn. Bhd.	Kampar, Perak	0.4.
Do.		Tasek Abadi Sdn Bhd.	Senudong and Kampar, Perak	0.5.
Refined		Malaysia Smelting Corp. Bhd. (The Straits Trading Co. Ltd., 37.44%; Malaysia Mining Corp., 37.44%; others, 25.12%)	Butterworth, Penang	35.
Titanium dioxide		Huntsman Trioxide Sdn. Bhd. (a subsidiary of Huntsman Tioxide)	Kemaman, Terengganu	56.

Do., do. Ditto.

¹All companies operated integrated plants.