

# MALAYSIAN MINERALS YEARBOOK 2010



MINERALS AND GEOSCIENCE DEPARTMENT MALAYSIA  
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT MALAYSIA

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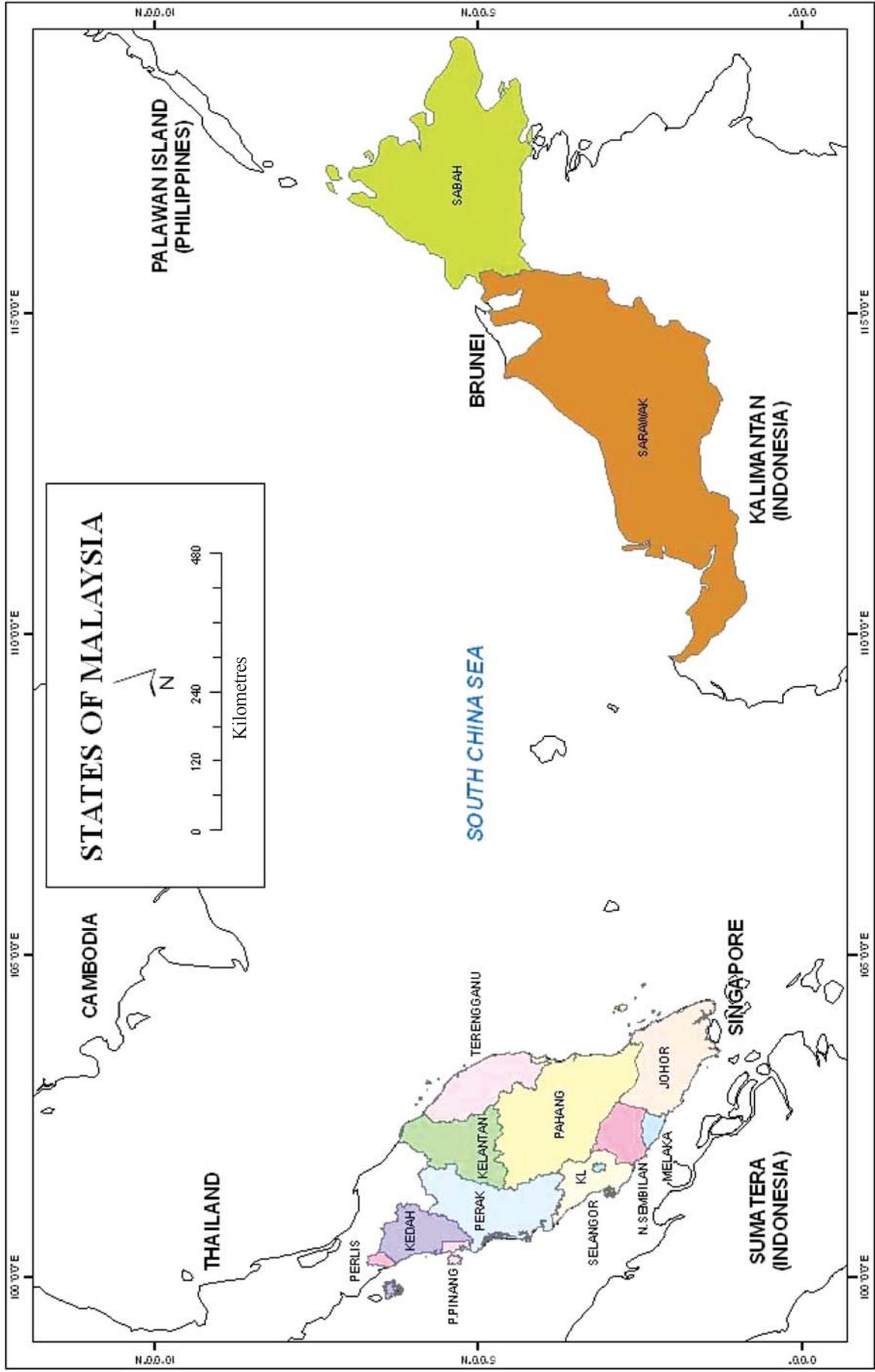
# **MALAYSIAN MINERALS YEARBOOK 2010**

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**MINERALS AND GEOSCIENCE DEPARTMENT MALAYSIA**  
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT MALAYSIA

Twentieth Issue

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## **PREFACE**

Each year, the Minerals and Geoscience Department Malaysia (JMG) undertakes a comprehensive compilation and review of the development in the country's mineral industry and publishes the results as the Malaysian Minerals Yearbook (MMYB). Its aim is to provide reliable and comprehensive information on the entire minerals produced in Malaysia.

This issue is the 20th edition of MMYB, and as in the previous editions the main focus of the publication is the metallic, non-metallic mineral and coal. In addition, it provides information on production and trade which will serve as a useful reference text for the mineral industry. This MMYB incorporates chapters devoted to each mineral commodity produced in Malaysia. Amongst the information included are commodity reviews, minerals production, import, export, prices and analyses of the mineral commodities.

Starting from this issue of MMYB the section on exploration and mining activities were no longer be reported but will be incorporated in another department's publication i.e. Malaysian Mining Industry report. However, a new chapter on manganese is included to give a full review due to the increase activities for this commodity.

The Minerals and Geoscience Department continuously strives to improve the quality of its publications for the benefit of the mineral fraternity. We welcome any constructive comments and suggestions by readers that may help us to meet the changing needs and requirements of the mineral sector.

Finally, I would like to extend my sincere appreciation to government agencies, various organisations, companies and individuals who have been continuously providing valuable information for the preparation of this report and looks forward to similar cooperation and assistance in the future.



DATO' YUNUS BIN ABDUL RAZAK  
Director General  
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November 2011

## **ACKNOWLEDGEMENTS**

Although the compilation of this report is principally the effort of the Minerals and Geoscience Department Malaysia, much of the information presented is based on data originally collected by other departments and agencies. The following sources are gratefully acknowledged:

### **Trade Statistics:**

- *External Trade Statistics 2010* published by the *Department of Statistics*

### **World Minerals Production:**

- *Mineral Commodity Summaries 2010* published by the *U.S Geological Survey (USGS)*
- *World Mineral Production 2005 - 2009* published by the *British Geological Survey*

### **Minerals prices:**

- *Monthly Commodity Price Bulletin* published by *United Nations Conference on Trade and Development (UNCTAD)*
- *UNCTAD Commodity Yearbook* published by *United Nations, Geneva*
- *Industrial Minerals* published by *Metal Bulletin Journals*
- *Malaysian Tin Bulletin* by *Tin Industry Board*

## EXPLANATORY NOTES

### Malaysian mineral production data

<b>Aggregates</b>	Production figures represent the total tonnage of crushed rocks, including crushed limestone for industrial and agricultural uses.
<b>Clays</b>	Production figures shown also include ball clay.
<b>Copper</b>	Mine production of copper is shown as copper-in-concentrates.
<b>Limestone</b>	Production figures shown include crushed limestone used for aggregates unless specified e.g. limestone for cement.
<b>Rare earths</b>	The annual production figures represent the aggregate tonnages of monazite and xenotime concentrates produced as by-products of tin mining.
<b>Silica</b>	Silica production figures represent the aggregate tonnage of silica sand, mine tailing sand and quartz rock powder.
<b>Tantalum-Niobium</b>	The annual production figures represent the aggregate tonnage of columbite and struverite concentrates produced as by-products of tin mining.
<b>Tin</b>	Mine production of tin is shown as tin content of concentrates (tin-in-concentrates).
<b>Titanium</b>	Production is shown as gross tonnage of ilmenite concentrates produced as a by-product of tin mining. A small amount of rutile may be included.
<b>Zirconium</b>	Production is shown as gross tonnage of zircon concentrates produced as a by-product of tin mining.

## Trade

In this edition, three consecutive years of import/export data are shown (2008, 2009, 2010). Export figures shown in the trade tables represent net exports (i.e. excluding re-exports).

## World production

The world production tables only give the major world producers. Other producers are included in the row depicted as 'other countries'.

## Price graphs

Where information is available, actual prices of mineral commodities are shown over a ten-year period.

## Local Terminology

In the review texts, heavy minerals produced in the process of alluvial tin ore beneficiation are referred to by the term 'amang' which is widely used in the local tin industry.

## Units of weight

t	=	tonne	=	1,000 kg
Mt	=	million tonne	=	1,000,000 tonne
kg	=	kilogram	=	1,000 gm
gm	=	gram	=	0.001 kg
tr oz	=	troy ounce	=	31.1035 gm

## Units of area

sq km	=	square kilometre	=	100 ha
ha	=	hectare	=	0.01 square kilometre

## Units of currency

RM	=	Ringgit Malaysia
US\$	=	US Dollar (2010 average exchange rate: 1US\$ = RM3.21)
£	=	British Pound (2010 average exchange rate: £1 = RM4.97)
A\$	=	Australian Dollar (2010 average exchange rate: 1A\$ = RM2.95)

## Conventions

'000	=	x thousand
0	=	quantity less than half the unit shown
-	=	nil
N.A	=	not available
n.y.a.	=	not yet available
e	=	estimated
p	=	preliminary

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## **MALAYSIAN MINERALS YEARBOOK 2010**

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## OVERVIEW

According to Bank Negara Report 2010, the Malaysian economy experienced a strong resumption of growth with the expansion of 7.2 per cent compared to a contraction of 1.7 per cent in 2009. The growth was driven mainly by robust domestic demand due to strong expansion in private sector.

During the year, the mining and quarrying sector rebound marginally by 0.2 per cent after experiencing a decline of 3.8 per cent in 2009. The growth was due to higher output to meet the increasing demand from major importer countries. However, crude oil output continued its decline trend mainly due to lower production from maturing oil fields and the shutdown of several oil fields for maintenance. Consequently, the share of the mining and quarrying sector to GDP continued to decline to 7.2 from 7.7 per cent recorded in 2009.

The manufacturing sector recorded a strong growth of 11.4 per cent after experienced a contraction of 9.4 per cent in 2009. The increase was driven largely by the strong growth in the first half-year, with expansion in both the export and domestic oriented industries.

The construction sector grew by 5.2 per cent in 2010 compared to 5.8 per cent in 2009. The growth was supported mainly by the expansion of the non-residential and civil engineering sub-sector. This reflected the increase in the construction of commercial properties, upgrading and repair of public buildings, and further progress in the implementation of infrastructure projects.

### Minerals Production

The total Malaysia's mineral production value during 2010 was RM3.9 billion. The mineral production increased by 29 per cent from RM3.1 billion recorded in 2009. The growth was largely contributed in the increase of all types of minerals group that is metallic, non-metallic and coal production.

With the improved in global mineral demand and market prices, most of metallic mineral commodities showed an increase in production value in 2010 except for bauxite and struverite. During the year, the value of metallic minerals production increased by 69 per cent to RM1.16 billion from RM687 million recorded in 2009. The production accounted 29 per cent share of the total mineral production value.

In terms of quantity, the metallic minerals that increased in production were iron ore (3.5 million tonnes), manganese (889,703 tonnes), ilmenite (19,036 tonnes), rutile (7,567 tonnes), tin (2,668 tonnes), zircon (1,267 tonnes), rare earth minerals (732 tonnes) and gold (3,766 kg); whilst those metallic minerals which decreased in output were bauxite (124,274 tonnes) and struverite (84 tonnes).

The non-metallic minerals production value continued to maintain its dominant share of the country's mineral contribution that accounted for 64 per cent share of the total mineral output value in 2010. The overall non-metallic mineral production value increased to RM2.57 billion from RM2.07 billion recorded in 2009. In 2010, all non-metallic minerals except barytes had showed an increase in production. The major contributor within the non-metallic minerals was rock aggregates that registered an increase production to 101.8 million tonnes compared with 86.5 million tonnes in 2009. This was attributed to high demand for the material by the construction industry. Others non-metallic minerals that experienced an increase in production were clays (27.5 million tonnes), limestone for cement (22.4 million tonnes), sand and gravel (30.7 million tonnes), silica sand (932,159 tonnes), kaolin (530,331 tonnes), feldspar

(455,497 tonnes) and mica (4,415 tonnes). However, barytes production decreased to 1,000 tonnes compared with 22,390 tonnes produced in the previous year.

The production value of energy mineral represented solely by coal, registered a decrease in production value to RM262 million in 2010 compared with RM320 million recorded in 2009. However, in term of quantity, a total of 2.40 million tonnes of coal was produced during the year.

### **Manufactured Mineral-Based Products**

The overall production value of manufactured mineral-based products in 2010 rose by 13 percent to RM53.3 billion compared to RM47.0 billion recorded in the previous year. The metallic mineral-based products increased by 19 per cent while non-metallic mineral-based products increased marginally by two per cent. In terms of contribution to the total output value, the metallic mineral-based products accounted for 70 per cent and the remaining 30 per cent was contributed by non-metallic mineral-based products. Most of the metallic mineral-based products showed increased in production in 2010.

The main contributing industries for the non-metallic mineral-based products include hydraulic cement, glass and glass products and fertilisers. The hydraulic cement industry production value increased by one per cent to RM4.42 billion in 2010. The glass and glass products industry decreased by seven per cent to RM2.85 billion, while the fertilisers industry dropped by six per cent to RM2.29 billion from RM2.43 billion in 2009.

### **Export and Import of Major Minerals**

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In 2010, the total mineral export value registered an increase to RM798.6 million compared with RM548.5 million in 2009. The main minerals exported were non-metallic minerals which contributed about 53 per cent, metallic minerals 39 per cent and coal export remains at about eight per cent. The major minerals exported during the year were iron ore, aggregates, limestone flux and coal.

The export value of non-metallic minerals rose to RM425.5 million compared with RM379.6 million recorded in 2009. This was contributed from increased in the export of rock aggregates, clay and other refractory minerals, kaolin and silica sand. During the year, the rock aggregates exports increased to RM227.6 million in 2010 from RM159.6 million registered in 2009. Similarly, the clay and other refractory minerals exports value soared to RM11.5 million compared with RM6.18 million in 2009.

The export value of metallic mineral ores and concentrates and coal increased significantly by more than one fold to RM311.8 million compared with RM142.7 million in 2009 and RM61.2 million compared with RM26.3 million in 2009 respectively.

On the other hand, the overall import value of minerals recorded an increase of 43 per cent to RM8.17 billion compared with RM5.68 billion in 2009. The major mineral commodities imported during the year were coal with a value of RM5.2 billion; iron ore, RM1.3 billion; tin ore, RM1.1 billion; phosphate, RM137.5 million; gypsum, RM82 million; clay & other refractory minerals, RM62.2 million and kaolin, RM59.6 million.

## Import and Export of Mineral-Based Products

The overall export value of major mineral-based products increased by nine per cent to RM24.4 billion compared with RM22.3 billion in 2009. The increased was contributed mainly from the increase in export value of metallic mineral-based products. In 2010, about 84 per cent of the exported mineral-based products were of metallic mineral and 16 per cent was of non-metallic mineral-based products. The export value for metallic mineral-based products recorded an increased of 10 per cent to RM20.42 billion, while the non-metallic mineral-based products decreased to RM3.98 billion.

The major metallic mineral-based products exported were iron and steel products with a value of RM8.39 billion followed by copper manufactures, RM4.48 billion; aluminium-based products, RM2.58 billion; tin metal and tin-based products, RM2.36 billion; and non-monetary gold, RM1.60 billion.

As for the non-metallic mineral-based products, the major exports contributor were glass and glassware products with a value of RM2.35 billion, decreased by 5 per cent from RM2.48 billion registered in 2009. Other major non-metallic minerals-based products exported were cement with a value of RM623 million; clay-based and ceramic products RM619.2 million; lime, RM126.8 million; limestone flux, RM85.8 million; and dimension stone, RM25.7 million.

In addition, the total imports value of mineral-based products recorded an increase of 21 per cent to RM46.42 billion in 2010. The total import value of metallic mineral-based products increased by 20 per cent to RM42.95 billion, whilst the non-metallic mineral-based products increased by 32 per cent to RM3.48 billion compared with RM2.77 billion recorded in 2009.

The main non-metallic mineral-based products imported during the year were glass, RM1.69 billion; glassware, RM698 million; clay-based and ceramics products, RM522 million; and cement, RM416 million. Whilst, the main metallic mineral-based products imported were iron and steel, RM18.21 billion; gold (non-monetary), RM6.66 billion; copper, RM9.56 billion; aluminium, RM5.38 billion; zinc-based, RM1.03 billion; tin-based, RM865 million; tin metal; RM690 million; and lead-based, RM344 million.

## Mineral Exploration Development

In 2010, Minerals and Geoscience Department continued its mineral exploration activity for metallic, industrial and energy minerals. A regional reconnaissance, follow-up and detailed geochemical surveys over previously identified anomalous areas for selected metallic mineral were carried out. As a result, several potential localities for gold, iron ore, tin and manganese were delineated.

The reconnaissance geochemical surveys for manganese were carried out in Batu Kurau, Perak; Gua Musang and Kuala Krai area, Kelantan; and other metallic minerals in Tawau area, Sabah; and Lawas area, Sarawak.

A follow-up and detailed geochemical survey for metallic minerals were carried over anomalous areas in Johor (Tenggaroh), Kelantan (Sg. Riau, Chiku), Terengganu (Setiu and Bukit Besi), Pahang (Bentong and Bukit Ibam), Sarawak (Gunung Ampunok) and Sabah (Ulu Kalumpang and Kunak). Anomalies for iron ore and tin were identified in Terengganu and Pahang. Gold anomalies were identified in most of the states.

Investigations for non-metallic minerals were also carried out in several states of Peninsular Malaysia, Sabah and Sarawak. These include survey for limestone, dimension stone, clay, sericite, silica sand, quartz (silica rock), feldspar and construction sand.

Areas with significant reserves for dimension stone, construction sand, feldspar, silica sand, quartz (silica rock), limestone and clay were identified. Occurrences of titanium and sericite were also observed. An evaluation of limestone resources for dimension stone was carried out in Raub and Chegar Perah, Pahang. Investigation and assessment on clay resources for industrial uses were conducted over areas in Lundu-Semantan and Mukah-Balingian in Sarawak and Mansuli, Lahad Datu in Sabah.

A follow-up survey for feldspar was conducted over an area in Dabong, Kuala Betis, Blau and Lojing in Kelantan. Consequently, the survey area was extended into Merapoh area in Pahang.

Other non-metallic minerals investigated during the year were sericite and mica in Kg. Coldstream area in Perak. Evaluation of sand deposits for construction purposes was conducted over areas in Seberang Prai, Pulau Pinang and Terengganu.

Investigation to delineate and determine the quality of silica sand deposits were carried out over selected areas in Kemaman, Setiu and Marang in Terengganu. The study showed there were 27.2 million tonnes of silica sand suitable for glass sand, silica flux, foundry sand and silica bricks. A similar survey was carried out in Sarawak over selected areas in Lawas, Sibu and Sarikei.

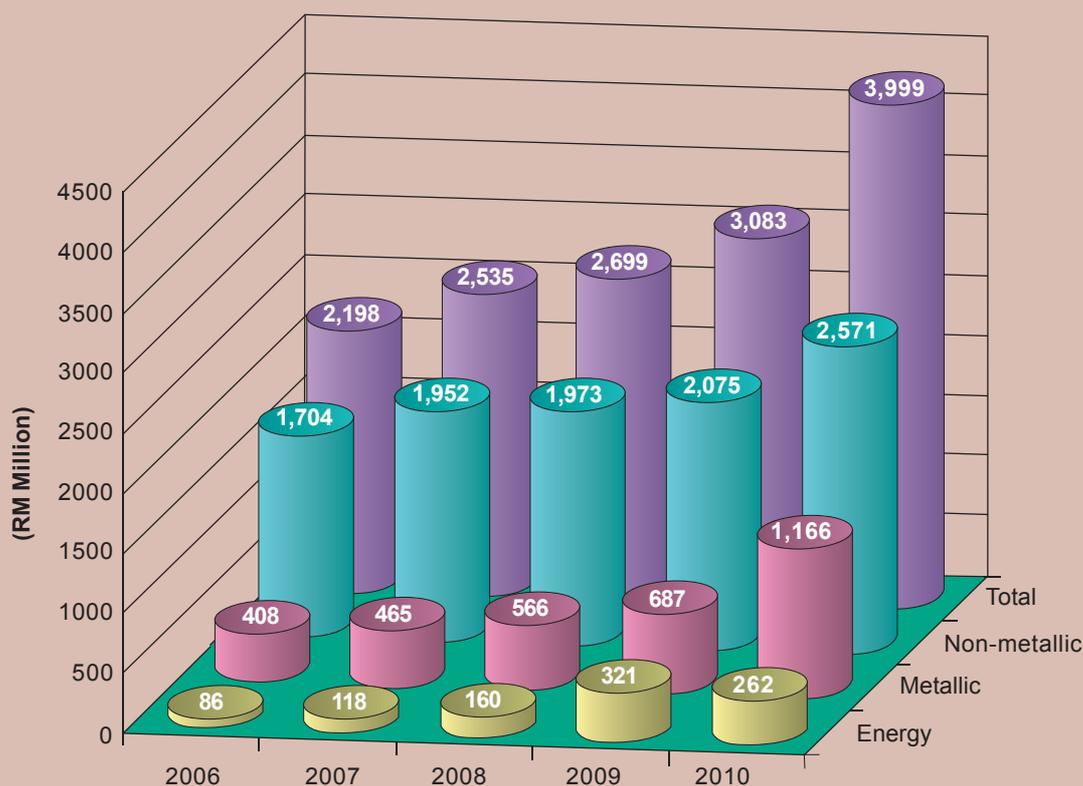
Exploration and evaluation on coal resources was carried out in Sarawak and Sabah where a number of coal potential sites have been identified. Seven coal seams with thickness ranging from 2.0 m to 12.0 m were recorded in Murum-Plieran area and Belaga, Sarawak. In Sabah, a total of 12 coal seams were delineated in the Sinobang Block, 11 coal seams in Ulu Pinangah Block and seven seams in Susui Block with indicated reserves of 1.2 million tonnes, 3.5 million tonnes and 44.5 million tonnes respectively.

# **MINERALS IN BRIEF**

## MALAYSIA'S MINERALS PRODUCTION 2009 - 2010

Mineral	2009		2010	
	Tonnes (unless stated otherwise)	Value (RM)	Tonnes (unless stated otherwise)	Value (RM)
<b>Energy Minerals</b>				
Coal	2,138,390	320,758,500	2,397,340	261,659,350
<b>Total</b>		<b>320,758,500</b>		<b>261,659,350</b>
<b>Metallic Minerals</b>				
Iron ore	1,470,186	147,018,600	3,557,813	423,731,784
Gold (gm)	2,794,167	307,553,962	3,765,936	397,183,643
Tin-in-concentrates	2,410	114,812,400	2,668	172,359,714
Manganese	468,963	98,482,230	899,703	143,840,946
Bauxite	274,456	9,220,120	124,274	15,923,523
Zircon	1,145	2,061,000	1,267	5,623,601
Ilmenite	15,983	3,995,750	19,036	4,715,760
Struverite	176	3,168,000	84	1,621,352
Rare earth minerals	25	32,500	732	797,244
Silver (gm)	366,971	664,218	435,862	449,047
Rutile	1,502	45,060	7,567	154,760
<b>Total</b>		<b>687,053,839</b>		<b>1,166,401,374</b>
<b>Non-Metallic Minerals</b>				
Aggregates	86,497,394	1,380,987,459	101,809,657	1,637,092,642
Sand and gravel	17,382,050	246,452,676	30,698,267	448,909,308
Clay & earth materials	22,966,036	158,698,220	27,543,322	195,245,410
Limestone (for cement)	22,165,099	181,268,205	22,431,147	188,297,330
Kaolin	487,632	36,769,972	530,331	41,670,793
Silica sand	630,394	26,786,833	932,159	35,887,327
Feldspar	410,053	33,911,120	455,497	21,128,470
Mica	4,324	2,377,984	4,515	2,428,280
Barytes	22,390	7,724,550	1,000	155,000
<b>Total</b>		<b>2,074,977,018</b>		<b>2,570,814,559</b>
<b>Grand total</b>		<b>3,082,789,358</b>		<b>3,998,875,283</b>

## MALAYSIA'S PRODUCTION VALUE OF MINERALS 2006 - 2010



## STATISTIC OF SELECTED MINERAL-BASED MANUFACTURING INDUSTRIES

Raw material (Industry code)	Sales value of own manufactured products (Ex-factory, RM)	
	2009	2010p
<b>Metallic</b>		
Basic iron and steel products (27100)	16,408,190,000	19,638,276,000
Other basic precious and non-ferrous metals (27209)	4,243,486,000	5,940,889,000
Wire, wire products and metal fasteners (28992)	3,401,032,000	3,766,955,000
Tin cans and metal boxes (28991)	1,992,938,000	1,940,102,000
Tin smelting	1,733,405,837	2,447,070,436
Structural metal products (28110)	1,662,715,000	1,520,216,000
Brass, copper, pewter and aluminium products (28993)	1,198,818,000	1,386,510,000
Other fabricated metal products not elsewhere classified (28999)	1,143,909,000	1,061,408,000
<b>Sub-total</b>	<b>31,784,493,837</b>	<b>37,701,426,436</b>
<b>Non-metallic</b>		
Hydraulic cement (26941)	4,356,694,000	4,418,156,000
Fertilisers and nitrogen (24120)	2,430,188,000	2,289,509,000
Glass and glass products (26100)	2,625,692,000	2,853,245,000
Structural non-refractory clay and ceramic products (26930)	1,578,434,000	1,339,326,000
Ready-mix concrete (26951)	1,537,799,000	1,566,563,000
Other articles of concrete, cement and plaster (26959)	1,570,432,000	1,372,080,000
Other non-metallic mineral products, n.e.c (26990)	445,813,000	1,000,552,000
Non-structural non-refractory ceramic ware (26910)	317,726,000	380,492,000
Refractory ceramic products (26920)	393,196,000	358,720,000
<b>Sub-total</b>	<b>15,255,974,000</b>	<b>15,578,643,000</b>
<b>Total Value</b>	<b>47,040,467,837</b>	<b>53,280,069,436</b>

Source: Monthly Manufacturing Statistics Malaysia, January 2011, Department of Statistics

## EXPORT AND IMPORT VALUE OF MAJOR MINERALS

Minerals	2009 Ringgit (RM)		2010p Ringgit (RM)	
	Export	Import	Export	Import
<b>Metallic</b>				
Copper ore and concentrate (SITC: 283-100-000)	23,028,000	252,000	1,049,000	217,000
Bauxite (SITC: 285-100-000)	31,698,000	3,355,000	5,717,000	15,623,000
Ilmenite (SITC: 287-830-100)	6,220,000	53,843,000	7,116,000	46,894,000
Iron ore (SITC: 281)	75,917,000	895,121,000	292,077,000	1,309,897,000
Monazite (SITC: 286-200-000)	385,000	—	2,675,000	—
Columbite (SITC: 287-850-110)	—	—	—	—
Zircon and concentrate (SITC: 287-840-100)	3,970,000	10,652,000	2,522,000	55,980,000
Tin ore and concentrate (SITC: 287-600-000)	1,287,000	569,146,000	697,000	1,050,605,000
Lead ore and concentrate (SITC: 287-400-000)	154,000	101,000	—	—
<b>Sub-total</b>	<b>142,659,000</b>	<b>1,532,470,000</b>	<b>311,853,000</b>	<b>2,479,216,000</b>
<b>Non-metallic</b>				
Aggregates (SITC: 273-4)	159,557,000	23,038,000	227,620,000	24,778,000
Clay & other refractory min. (SITC: 278-2)	6,183,000	43,130,000	11,485,000	62,166,000
Feldspar (SITC: 278-53)	10,173,000	22,035,000	7,985,000	51,656,000
Gypsum (SITC: 273-230-000)	1,350,006	77,331,000	248,000	82,060,000
Kaolin (SITC: 278-260-000)	22,699,000	53,655,000	25,454,000	59,592,000
Silica sand (SITC: 273-310-000)	23,841,000	4,760,000	26,418,000	5,526,000
Sand & gravels (SITC: 273-390-000)	823,000	7,668,000	866,000	9,174,000
Mica powder (SITC: 278-522-000)	5,012,000	2,212,000	6,585,000	6,219,000
Dimension stone (SITC: 273-1)	66,091,000	14,215,000	25,736,000	17,157,000
Limestone Flux (SITC: 273-220-000)	81,998,000	383,000	85,849,000	80,000
Barytes (SITC: 278-921-000 & 278-922-000)	1,879,000	26,640,000	7,227,000	29,046,000
Phosphate (SITC: 272-3)	—	79,896,000	—	137,461,000
<b>Sub-total</b>	<b>379,606,000</b>	<b>354,963,000</b>	<b>425,473,000</b>	<b>484,915,000</b>
<b>Energy</b>				
Coal (SITC: 321)	26,228,000	3,791,702,000	61,219,000	5,208,678,000
<b>Sub-total</b>	<b>26,228,000</b>	<b>3,791,702,000</b>	<b>61,219,000</b>	<b>5,208,678,000</b>
<b>Total Value</b>	<b>548,493,000</b>	<b>5,679,135,000</b>	<b>798,545,000</b>	<b>8,172,809,000</b>

## EXPORT VALUE OF MAJOR MINERAL-BASED PRODUCTS

Commodity	2009 Ringgit (RM)	2010p Ringgit (RM)
<b>Metallic Product</b>		
Iron & steel (SITC: 671 to 679)	8,771,379,000	8,387,145,000
Copper-based (SITC: 682)	2,787,364,000	4,483,301,000
Gold, non-monetary (SITC: 971)	2,296,413,000	1,596,834,000
Aluminium-based (SITC: 684)	1,938,039,000	2,575,345,000
Tin metal (SITC: 687-110-000)	1,047,422,000	2,083,523,000
Zinc-based (SITC: 686)	520,038,000	433,432,000
Tin-based (SITC: 687) other than SITC: 687-110-000	272,614,000	281,421,000
Titanium dioxide pigments (SITC: 533-1)	206,822,000	277,868,000
Lead-based (SITC: 685)	153,724,000	265,280,000
Titanium oxides (SITC: 522-560-000)	39,931,000	34,020,000
<b>Sub-total</b>	<b>18,033,746,000</b>	<b>20,418,169,000</b>
<b>Non-metallic Product</b>		
Glass (SITC: 664)	1,411,440,000	1,366,993,000
Glass ware (SITC: 665)	1,069,023,000	985,954,000
Cement (SITC: 661-2)	876,436,000	623,859,000
Clay-based and ceramics (SITC: 662)	597,659,000	619,227,000
Lime (SITC: 661-1)	101,075,000	126,834,000
Limestone flux (SITC: 273-220-000)	81,998,000	85,849,000
Pottery (SITC: 666)	80,513,000	92,650,000
Dimension stone block (SITC: 273-1)	66,091,000	25,736,000
Monumental or building stone (SITC: 661)	22,633,000	25,876,000
Activated clay (SITC: 598-650-100)	19,086,000	25,624,000
<b>Sub-total</b>	<b>4,325,954,000</b>	<b>3,978,602,000</b>
<b>Total Export Value</b>	<b>22,359,700,000</b>	<b>24,396,771,000</b>

Source: Department of Statistics

## IMPORT VALUE OF MAJOR MINERAL-BASED PRODUCTS

Commodity	2009 Ringgit (RM)	2010p Ringgit (RM)
<b>Metallic Product</b>		
Iron & steel (SITC: 671 to 679)	15,778,289,000	18,213,867,000
Gold, non-monetary (SITC: 971)	6,846,012,000	6,664,924,000
Copper-based (SITC: 682)	6,368,268,000	9,556,420,000
Aluminium-based (SITC: 684)	4,119,149,000	5,383,812,000
Zinc-based (SITC: 686)	837,744,000	1,030,672,000
Tin-based (SITC: 687) other than SITC: 687-110-000	637,063,000	865,032,000
Tin metal (SITC: 687-110-000)	633,653,000	690,213,000
Lead-based (SITC: 685)	301,769,000	344,437,000
Titanium dioxide pigments (SITC: 533-1)	82,235,000	129,840,000
Titanium oxides (SITC: 522-560-000)	63,495,000	66,441,000
<b>Sub-total</b>	<b>35,667,677,000</b>	<b>42,945,658,000</b>
<b>Non-metallic Product</b>		
Glass (SITC: 664)	1,338,767,000	1,688,138,000
Glass ware (SITC: 665)	627,742,000	698,415,000
Clay-based and ceramics (SITC: 662)	337,032,000	521,720,000
Cement (SITC: 661-2xx)	257,551,000	415,557,000
Pottery (SITC: 666)	49,029,000	55,588,000
Monumental or building stone (SITC: 661-3)	69,463,000	98,985,000
Dimension stone block (SITC: 273-1)	73,675,000	17,157,000
Lime (SITC: 661-1)	14,461,000	3,148,000
Activated clay (SITC: 598-650-100)	2,818,000	517,000
Limestone flux (SITC: 273-220-000)	383,000	80,000
<b>Sub-total</b>	<b>2,770,921,000</b>	<b>3,479,305,000</b>
<b>Total Import Value</b>	<b>38,438,598,000</b>	<b>46,424,963,000</b>

Source: Department of Statistics

## SUMMARY OF MALAYSIAN PRODUCTION OF MINERAL COMMODITIES 2010

Commodity	Unit	Johor	Kedah	Kelantan	Melaka	N.Sembilan	Pahang	Perak	Perlis	P.Pinang	Selangor/KL	Terengganu	Sabah	Sarawak	Total
<b>Metallic minerals</b>															
Bauxite	tonnes	124,274	-	-	-	-	-	-	-	-	-	-	-	-	124,274
Gold	grams	-	-	101,417	-	3,655,669	-	-	-	-	-	8,850	-	-	3,765,936
Iron Ore	tonnes	586,615	91,918	209,856	-	2,465,418	35,580	-	-	-	-	168,426	-	-	3,557,813
Manganese	tonnes	-	-	899,703	-	-	-	-	-	-	-	-	-	-	899,703
REM (Monazite)*	tonnes	-	-	-	-	-	622	-	-	-	-	-	-	-	622
REM (Xenotime)*	tonnes	-	-	-	-	-	110	-	-	-	-	-	-	-	110
Silver	grams	-	-	-	-	435,862	-	-	-	-	-	-	-	-	435,862
Ta-Nb mineral*	tonnes	-	-	-	-	-	84	-	-	-	-	-	-	-	84
Tin-in-concentrates	tonnes	50	-	-	-	201	2,395	-	-	-	17	5	-	-	2,668
Ilmenite*	tonnes	-	-	-	-	-	19,036	-	-	-	-	-	-	-	19,036
Rutile*	tonnes	-	-	-	-	-	7,567	-	-	-	-	-	-	-	7,567
Zircon*	tonnes	-	-	-	-	-	1,267	-	-	-	-	-	-	-	1,267
<b>Non-metallic minerals</b>															
Aggregates	tonnes	26,704,461	4,165,104	2,543,743	4,138,715	3,783,474	3,888,522	13,691,222	784,235	5,098,225	21,612,438	3,987,957	1,933,666	9,477,895	101,809,657
Barytes	tonnes	-	-	-	-	-	1,000	-	-	-	-	-	-	-	1,000
Clay & earth mat.	tonnes	5,444,958	3,996,551	187,732	623,493	1,612,947	949,311+	6,361,050	2,418,384	65,584	1,726,846	2,542,808	292,158+	1,321,500	27,543,322
Feldspar	tonnes	-	-	379,657	-	75,840	-	-	-	-	-	-	-	-	455,497
Kaolin	tonnes	62,878	-	-	-	-	194,300	273,153	-	-	-	-	-	-	530,331
Limestone	tonnes	-	4,180,973	226,771	-	2,088,049	1,990,776	14,418,174	2,614,740	-	1,409,508	-	154,953	5,314,639	32,398,583
Mica	tonnes	-	-	-	-	-	-	4,515	-	-	-	-	-	-	4,515
Sand & gravel	tonnes	6,272,874	2,247,848	623,000	459,001	1,705,690	2,198,087	7,269,500	-	-	4,932,917	1,244,876	923,500	2,820,974	30,698,267
Silica sand	tonnes	608,967	-	-	-	-	-	94,500	-	-	18,553	-	-	210,139	932,159
<b>Energy minerals</b>															
Coal	tonnes	-	-	-	-	-	-	-	-	-	-	-	-	2,397,340	2,397,340

**Notes:**

- Selangor's production includes Federal Territory of Kuala Lumpur
- Aggregates production includes crushed limestone
- Aggregates production in Sarawak and Sabah includes gravel
- Clay production refers to clay and earth materials production
- Limestone production includes limestone for aggregate, cement and agriculture but excludes dimension stone
- Silica production includes silica sand, sand as by-product of tin mining and crushed quartz rock
- REM = Rare Earth Mineral
- \* By-product includes production from mineral processing (amang) plants only
- Estimated

# **Metallic Minerals**

## COMMODITY REVIEW

### ALUMINIUM

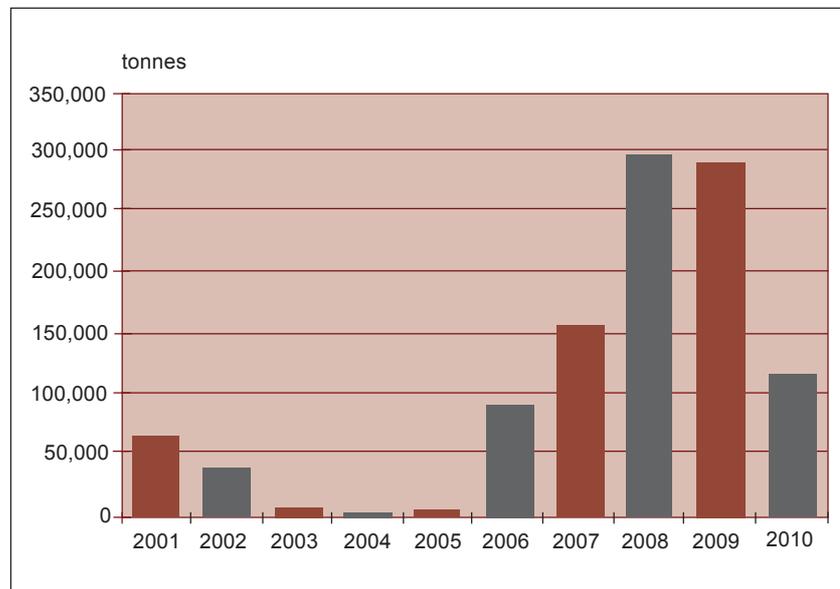
#### Malaysia's Production of Bauxite 2007 - 2010

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Johor	156,785	2	295,176	2	274,456	2	124,274	2

#### Malaysia's Historic Production (Bauxite)

Year	tonnes
2001	64,161
2002	39,975
2003	5,732
2004	2,040
2005	4,735
2006	91,806
2007	156,785
2008	295,176
2009	274,456
2010	124,274

#### Malaysia's Production of Bauxite (2001-2010)



#### External Trade

##### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2606	Bauxite incl. calcined	61,027	38,544	28,500	17,577	50,323	5,717
2818	Alumina & Al hydrate	4,142	4,096	6,873	5,463	4,755	33,911
7601	Unwrought (a)	137,519	110,463	112,194	692,555	724,911	792,308
7602	Waste & scrap	1,778	6,210	11,957	16,385	24,495	29,901
7603	Powder & flakes	8,555	620	2,011	10,886	4,459	8,211
7604	Bar, rods & profile (a)	44,095	11,008	12,890	129,522	91,942	141,952
7605	Wire	102,934	25,349	31,656	171,674	166,063	248,915
7606	Plates, sheets & strip	11,128	5,080	12,733	116,068	77,494	133,816
7607	Foil	59,348	20,970	24,931	292,363	243,468	282,987
7608	Tubes & pipes (a)	19,055	3,931	3,661	60,594	95,143	114,685
7609	Tubes & pipes fitting	10,156	962	1,550	33,049	71,325	37,162

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2606	Bauxite incl. calcined	16,973	1,770	8,193	13,084	3,355	15,623
2818	Alumina & Al hydrate	37,829	71,076	139,311	63,500	319,469	188,500
7601	Unwrought (a)	465,682	310,773	381,233	2,337,283	2,008,968	2,820,736
7602	Waste & scrap	104,423	61,754	64,318	344,542	245,970	289,651
7603	Powder & flakes	696	647	445	9,934	5,502	8,153
7604	Bars, rods & profiles (a)	159,740	39,558	20,440	710,850	383,743	251,422
7605	Wire	12,726	4,759	13,669	102,956	62,256	198,318
7606	Plates, sheets & strip	733,522	77,948	89,413	6,543,774	1,044,967	1,397,070
7607	Foil	946,137	14,839	21,365	438,264	307,003	393,234
7608	Tubes & pipes (a)	34,753	21,363	22,659	159,895	147,665	159,344
7609	Tubes & pipes fitting	28,990	948	1,788	24,804	17,832	27,720

Note(s): (a) = including alloys

Source: Department of Statistics

## Malaysia's exports of bauxite, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Bauxite (HS: 2606.00.000)</i>						
Indonesia	3,774	646,000	7,000	11,957,000	4,000	3,076,000
Japan	–	–	4,000	11,547,000	–	–
China	24,578	7,077,000	13,039	4,453,000	6,500	1,567,000
United States of America	–	–	1,000	2,625,000	–	–
Thailand	21,2011	1,752,000	13,505	1,116,000	18,000	1,074,000
Others	11,474	2,302,000	–	–	–	–
<b>Total</b>	<b>61,026</b>	<b>11,777,000</b>	<b>38,545</b>	<b>31,698,000</b>	<b>28,500</b>	<b>5,717,000</b>

## Malaysia's imports of bauxite, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Bauxite (HS: 2606.00.000)</i>						
China	14,617	9,755,000	1,384	2,418,000	7,641	12,718,000
Australia	1,043	1,855,000	–	–	213	1,437,000
Oman	–	–	–	–	99	677,000
United Arab Emirates	–	–	–	–	50	500,000
United States of America	70	444,000	52	441,000	18	112,000
Others	1,242	1,030,000	334	496,000	172	179,000
<b>Total</b>	<b>16,973</b>	<b>13,084,000</b>	<b>1,770</b>	<b>3,355,000</b>	<b>8,193</b>	<b>15,623,000</b>

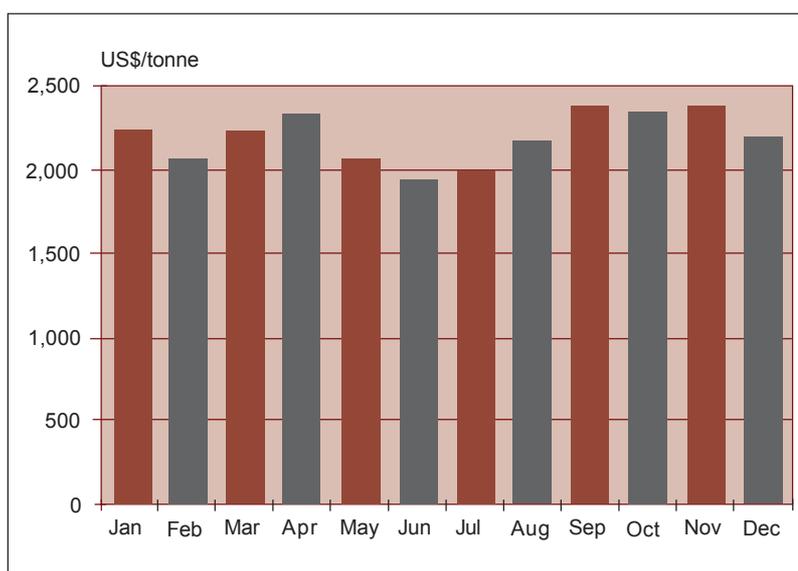
Source: Department of Statistics

## Price

## Average Monthly Aluminium Price in 2010

2010	US\$/tonne
January	2,234.80
February	2,048.60
March	2,205.20
April	2,316.40
May	2,040.10
June	1,931.00
July	1,987.80
August	2,117.60
September	2,162.00
October	2,346.10
November	2,332.60
December	2,350.10
<b>Annual Avg</b>	<b>2,172.69</b>

## Average Monthly Aluminium Price in 2010



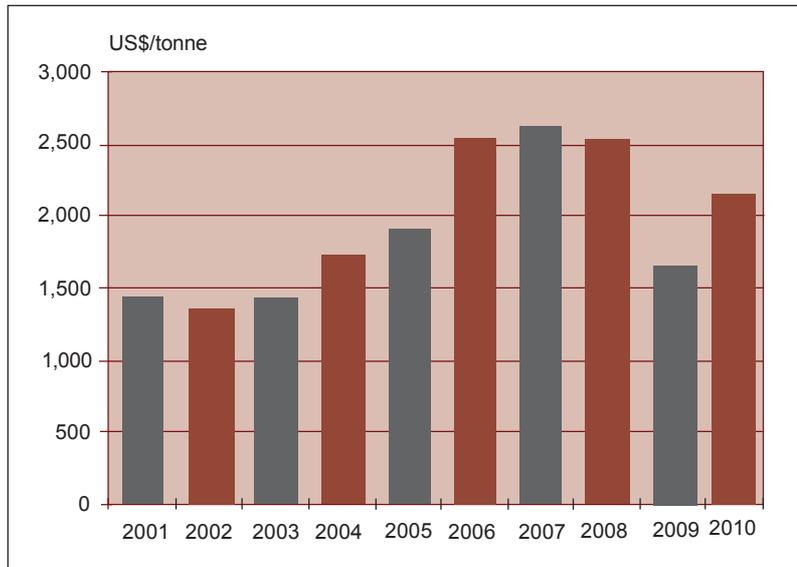
## Average Annual Aluminium Price (2001 - 2010)

Year	US\$/tonne
2001	1,443.64
2002	1,368.36
2003	1,431.31
2004	1,715.54
2005	1,898.12
2006	2,569.43
2007	2,637.80
2008	2,572.36
2009	1,664.44
2010	2,172.69

London Metal Exchange,  
High Grade, Cash

Source: UNCTAD

## Average Annual Aluminium Price (2001 - 2010)



## World Mine Production of Bauxite

Country	tonnes			% of 2010e
	2008	2009	2010e	
Australia	62,400,000	65,200,000	70,000,000	33.2
China	35,000,000	40,000,000	40,000,000	19.0
Brazil	22,000,000	28,200,000	32,100,000	15.2
India	21,000,000	16,000,000	18,000,000	8.5
Guinea	18,500,000	15,600,000	17,400,000	8.3
Jamaica	14,000,000	7,820,000	9,200,000	4.4
Venezuela	5,500,000	2,500,000	2,500,000	1.2
Kazakhstan	4,900,000	5,130,000	5,300,000	2.5
Suriname	5,200,000	4,000,000	3,100,000	1.5
Russia	6,300,000	5,780,000	4,700,000	2.2
Greece	2,220,000	2,100,000	2,000,000	1.0
Other countries	8,680,000	6,530,000	6,270,000	3.0
<b>World total (rounded)</b>	<b>205,000,000</b>	<b>199,000,000</b>	<b>211,000,000</b>	

Source: United States Geological Survey

## Review

Bauxite is the most common aluminium ore. It is hard, reddish and clayey-like material. The bauxite produced by washing and screening through run-off-mill to remove clays and limonitic materials. In Malaysia, it was first discovered and mined in Johor during colonial era. Currently, there is bauxite mining and production but in small quantity due to lower demand and depleting resource in the mining lease area. There were two bauxite mines located in Johor namely, Johore Mining and Stevedoring Sdn Bhd (JOMIS) at Sungai Rengit in Pengerang and Syarikat Generasi Karisma Sdn Bhd in Pagoh.

In 2010, bauxite production continued its decreasing trend after reaching the highest production level in 2008. In 2010, the total production recorded a huge dropped of 55 per cent to 124,274 tonnes compared with 274,456 tonnes in 2009.

The total export value dropped significantly to RM5.7 million from RM31.7 million in 2009 due to lower export of bauxite amounted to 28,500 tonnes, decreased by about 26 per cent from the previous year. The export destinations of bauxite were mainly to Thailand, China and Indonesia. Malaysia also imported bauxite mainly from China, Australia, Oman, U.A.E and U.S.A. In 2010, a total of 8,193 tonnes valued at RM15.6 million was imported. The principal consumers of aluminium metal in Malaysia are the building and construction industries, semi-fabricating industries for rolling, extrusion and foil production and general industrial uses.

In Malaysia, there are other potential resources of bauxite that mainly found in Sarawak and Sabah. In Sarawak, potential resources of bauxite occur at Bukit Gebong, Lundu-Semantan, Tanjung Seberang and Bukit Batu. In Sabah, several localities have been found to contain ferruginous bauxite resources, such as in Labuk Valley and at Bukit Mengkabau.

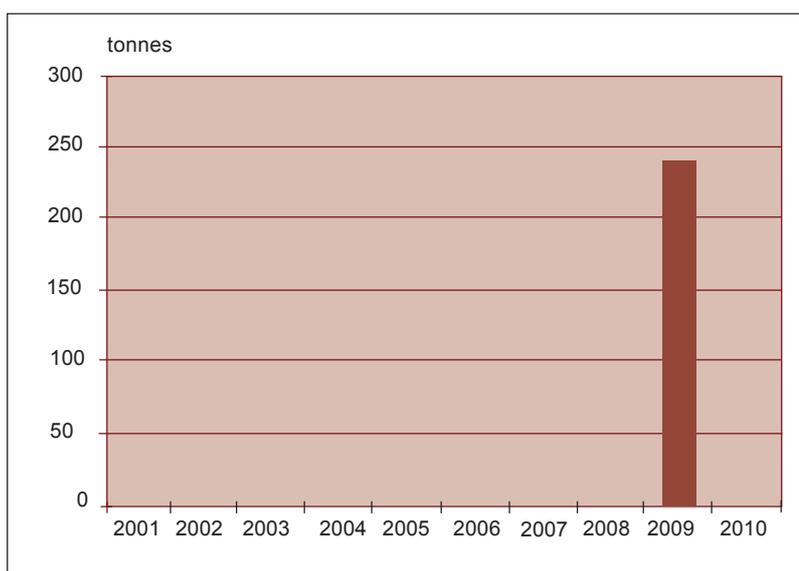
To date, there were three aluminium smelters proposed to be setup in Sarawak. However, only Press Metal Smelter has already in operation since November 2009 with a capacity of 60,000 tonnes per year. The second proposed smelter was a joint venture project between Rio Tinto Alcan (RTA) and Cahaya Mata Sarawak (CMS) to be known as Sarawak Aluminium Company (SALCO) and the plant capacity is 720,000 tonnes per year. The third joint venture was between GIIG Holdings Sdn Bhd and Aluminium Corporation of China Ltd (CHALCO) to be located in Similajau Industrial Park, Bintulu. The joint venture company is Smelter Asia Sdn Bhd with an initial capacity of 330,000 tonnes per year and the construction scheduled to begin in early 2011. ■

## COPPER

### Malaysia's Historic Production of Copper-in-concentrates

Year	Tonnes
2001	–
2002	–
2003	–
2004	–
2005	–
2006	–
2007	–
2008	–
2009	240
2010	–

### Malaysia's Production of Copper (2001 - 2010)



## External Trade

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### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2603	Ores & concentrates	–	5,309	338	–	23,027	1,049
7401	Mattes & cement copper	588	963	1,701	1,974	3,014	4,889
7402	Unrefined	59	5	16	476	128	429
7403	Refined (a)	5,768	4,677	16,569	13,506	61,841	35,139
7404	Waste & scrap	21,477	28,479	37,336	191,134	160,277	1,264,944
7405	Master alloys	–	–	–	–	–	–
7406	Powder & flakes	26,012	10,203	13,399	276,650	130,007	227,916
7407	Bars, rods & profile (a)	261,273	21,134	26,503	1,065,584	381,392	637,214
7408	Wire (a)	45,138	35,036	49,377	925,164	659,822	1,153,598
7409	Plates, sheets & strip (a)	3,104	7,429	11,783	356,974	173,393	351,819
7410	Foil (a)	27,755	20,394	25,609	724,520	502,299	711,033
7411	Tubes & pipes (a)	36,016	24,206	40,296	1,016,742	531,858	1,087,637
7412	Tubes & pipes fitting (a)	530	243	264	6,463	4,737	4,872

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2603	Ores & concentrates	2	27	131	19	252	217
7401	Mattes & cement copper	5	-	-	271	-	-
7402	Unrefined	465	93	498	2,620	1,567	6,732
7403	Refined (a)	689,714	147,844	24,426	4,515,582	2,531,831	553,276
7404	Waste & scrap	24,628	8,902	13,151	519,412	130,042	224,585
7405	Master alloys	285	285	262	16,933	7,212	5,761
7406	Powder & flakes	9,936	262	354	7,212	5,761	8,976
7407	Bars, rods & profile (a)	69,295	5,875	8,400	35,996	81,915	134,156
7408	Wire (a)	54,957	31,624	50,704	885,359	604,723	1,217,538
7409	Plates, sheets & strip (a)	5,104,646	32,575	45,679	1,483,316	827,689	1,340,396
7410	Foil (a)	130,494	14,835	33,560	621,396	281,786	470,596
7411	Tubes & pipes (a)	75,576	20,361	30,036	777,900	495,413	764,650
7412	Tubes & pipes fitting (a)	73,598	2,637	3,180	91,509	50,579	80,553

Note(s): (a) = including alloys

Source: Department of Statistics

## Malaysia's exports of copper ores and concentrates, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Copper ores &amp; concentrates (HS: 2603.00.000)</i>						
Hong Kong	-	-	-	-	220	614,000
Indonesia	-	-	-	-	2	108,000
Vietnam	-	-	-	-	92	259,000
China	-	-	-	-	24	68,000
Namibia	-	-	3,765	15,905,000	-	-
Other	-	-	1,544	7,123,000	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>5,308</b>	<b>23,028,000</b>	<b>338</b>	<b>1,049,000</b>

## Malaysia's imports of copper ores and concentrates, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Copper ores &amp; concentrates (HS: 2603.00.000)</i>						
China	–	–	–	–	72	32,000
Indonesia	–	–	–	–	52	33,000
United States of America	2	13,000	–	–	5	122,000
Japan	–	–	–	–	2	30,000
Thailand	–	–	20	181,000	–	–
Other	1	6,000	7	71,000	–	–
<b>Total</b>	<b>3</b>	<b>19,000</b>	<b>27</b>	<b>252,000</b>	<b>131</b>	<b>217,000</b>

Source: Department of Statistics

## Price

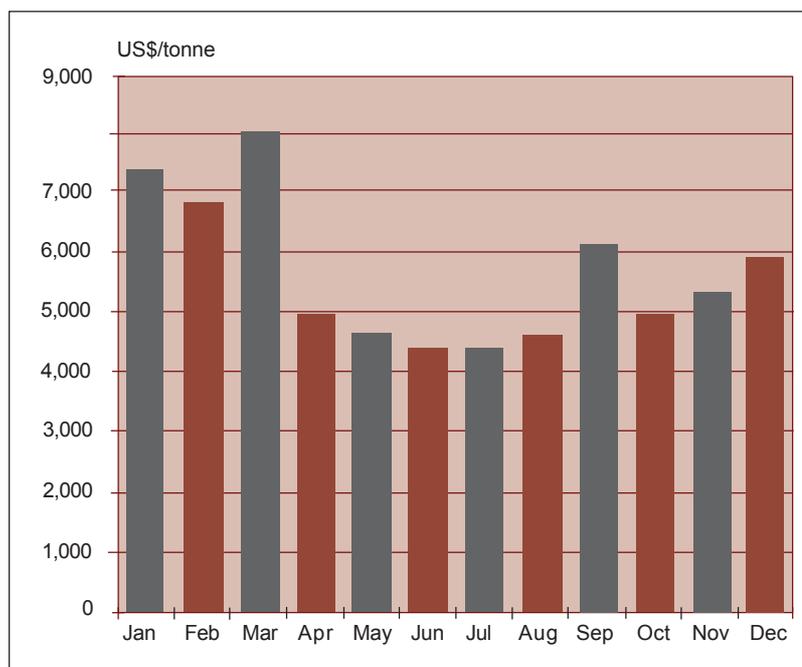
20

## Average Monthly Copper Price in 2010

2010	US\$/tonne
January	7,385.70
February	6,857.00
March	8,020.50
April	5,054.50
May	4,664.50
June	4,404.20
July	4,406.40
August	4,651.00
September	6,195.80
October	4,953.00
November	5,302.60
December	5,863.30
<b>Annual Avg</b>	<b>5,646.54</b>

Source: UNCTAD

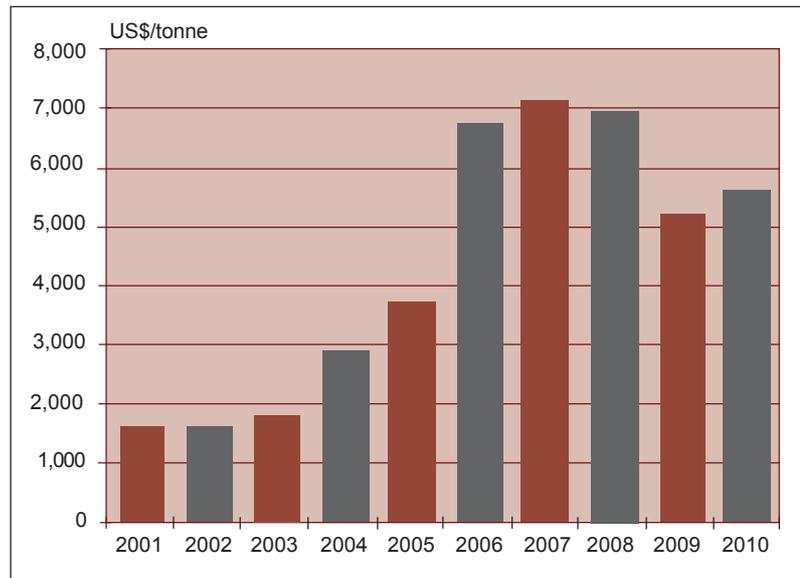
## Monthly Average Copper Price in 2010



Average Annual Copper Price  
(2001 - 2010)

Year	US\$/tonne
2001	1,577.90
2002	1,583.70
2003	1,778.80
2004	2,865.09
2005	3,678.13
2006	6,720.80
2007	7,117.25
2008	6,955.01
2009	5,127.25
2010	5,646.54

## Average Annual Copper Price (2001 - 2010)



London Metal Exchange,  
Grade A, Cash

Source: UNCTAD

## World Mine Production of Copper 2008 - 2010

Country	tonnes (metal content)			% of 2010
	2008	2009	2010p	
Chile	5,330,000	5,390,000	5,520,000	34.1
United States of America	1,310,000	1,180,000	1,120,000	6.9
Peru	1,270,000	1,275,000	1,285,000	7.9
China	950,000	995,000	1,150,000	6.1
Australia	886,000	854,000	900,000	7.1
Russia	750,000	725,000	750,000	4.6
Indonesia	651,000	996,000	840,000	5.2
Canada	607,000	491,000	480,000	3.0
Zambia	546,000	697,000	770,000	4.8
Kazakhstan	420,000	390,000	400,000	2.5
Poland	430,000	439,000	430,000	2.7
Mexico	247,000	238,000	230,000	1.4
Other countries	2,030,000	2,190,000	2,300,000	14.2
<b>World total (rounded)</b>	<b>15,400,000</b>	<b>15,900,000</b>	<b>16,200,000</b>	

Source: United States Geological Survey

## Review

In 2010, no copper production recorded in the country after a small production of 240 tonnes in 2009 by the Mengapur Copper Mine located in Sri Jaya, Pahang. During the year, the mining operation was at a very minimal level by the mine over the Mengapur polymetallic deposit located in the Central Belt district of Peninsular Malaysia.

In a statement reported by the Business Times, Monument Mining Ltd a Canadian based company plans to acquire the Mengapur polymetallic project. The acquisition remains subject to due diligence, updating of historical resource and reserve estimates, signing of a definitive sale and purchase agreement, financing, board and regulatory approvals and other conditions. Upon completion of the acquisition Monument Mining Ltd would hold 70 per cent pre-financing interest in the project.

Monument Mining is a gold mining production and exploration company, currently operating in Malaysia at its two principal properties, namely Selinsing gold mine project and Damar Buffalo Reef prospect in Raub, Pahang of which are 100 per cent owned by the company.

Potential copper resources areas have previously been found in Sabah located at Tampang, Bidu-Bidu Hills, Kiabau, Pinanduan, Karang, Gunung Nungkok and Bambang. In Sarawak, areas with base metals (copper) potential have been identified in Bukit Jebong-Biawak, Kendai, Bau, Gunung Buri, Bukit Subong-Bukit Pan and Bukit Nimong. In Peninsular Malaysia, available data indicated that the Central Belt area in Pahang and Kelantan are potentially favourable for base metals such as lead, zinc, copper and gold mineralisation.

In 2010, Malaysia exports of copper and copper based products amounting to RM5,481 million, increased from RM2,632 million recorded in 2009. Whilst, the imports value decreased to RM4,807 million from RM5,019 million recorded in 2009. ■

## GOLD

### Malaysia's Production of Raw Gold 2007- 2010

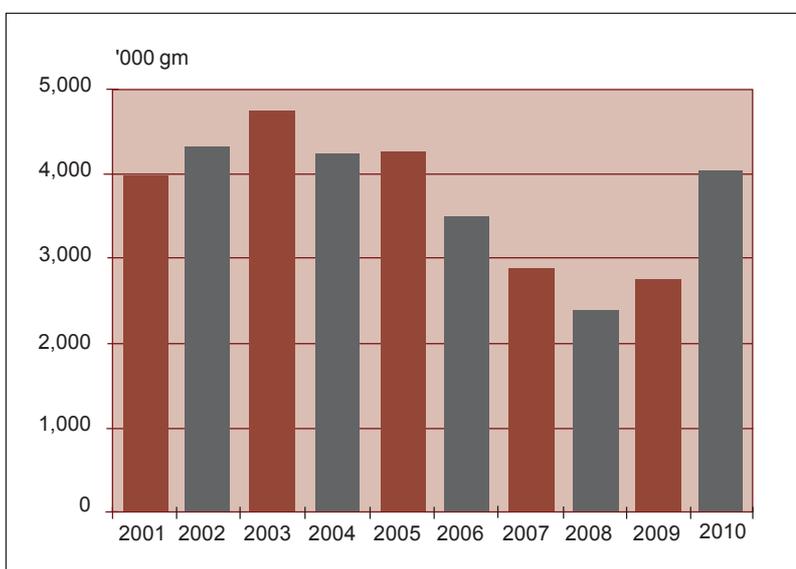
State	2007		2008		2009		2010	
	grams	mines	grams	mines	grams	mines	grams	mines
Johor	–	–	–	–	–	–	–	–
Kelantan	80,151	5	37,159	3	49,844	4	101,417	6
Pahang	2,832,489	6	2,449,961	4	2,711,770	6	3,655,669	8
Terengganu	–	–	2,876	3	32,553	2	8,850	2
<b>Total</b>	<b>2,912,640</b>	<b>11</b>	<b>2,489,996</b>	<b>10</b>	<b>2,794,167</b>	<b>12</b>	<b>3,765,936</b>	<b>16</b>

Note(s): mines = indicates maximum number of mines operating during the year

### Malaysia's Historic Production of Gold

Year	'000 gm
2001	3,965
2002	4,289
2003	4,739
2004	4,221
2005	4,249
2006	3,497
2007	2,913
2008	2,490
2009	2,794
2010	3,765

### Malaysia's Production of Raw Gold (2001 - 2010)



## External Trade

### Exports

H.S.	Commodity	kg			RM '000		
		2008	2009	2010p	2008	2009	2010p
2616.90.100	Ores & concentrates	–	–	–	–	–	–
7108.11.000	Powder	184	–	429	997	–	13,931
7108.12.000	Unwrought (a)	107,398	96,476	9,101	132,136	126,009	472,782
7108.13.000	Semi-manufactures (a)	12,801,896	21,035	77,123	995,952	648,654	510,264
7109.00.000	Rolled gold unworked	576,068	483,811	1,821,477	21,681	13,140	44,430
7112.10.000	Waste and scrap	–	–	–	–	–	–

### Imports

H.S.	Commodity	kg			RM '000		
		2008	2009	2010p	2008	2009	2010p
2616.90.100	Ores & concentrates	–	1,555	22,527	–	4,883	3,726
7108.11.000	Powder	24,023	382	24	893	2,239	769
7108.12.000	Unwrought (a)	1,799	3,264	328,146	140,117	342,371	1,243,476
7108.13.000	Semi-manufactures (a)	543,777	84,407	182,124	7,781,529	5,611,083	3,729,968
7109.00.000	Rolled gold unworked	1,478	1,319	3,200	3,634	3,082	1,314
7112.10.000	Waste and scrap	–	–	–	–	–	–

Note(s): (a) = including alloys

Source: Department of Statistics

## Malaysia's exports of gold (non-monetary), by country

Country	2008		2009		2010p	
	Quantity (kg)	Value (RM)	Quantity (kg)	Value (RM)	Quantity (kg)	Value (RM)
<i>Gold, Non-Monetary (HS: 7108)</i>						
Switzerland	10,763	879,658,000	80,938	1,266,980,000	3,140	258,845,000
Japan	40,608	402,321,000	70,635	356,655,000	140,573	220,238,000
Hong Kong	26,221	184,575,000	92,277	90,116,000	14,458	233,245,000
China	126,261	64,802,000	374,658	41,533,000	71,287	37,741,000
United Arab Emirates	379	32,839,000	1,002	23,866,000	188	20,613,000
Others	779,175	897,045,000	1,492,789	517,263,000	2,841,137	826,152,000
<b>Total</b>	<b>983,407</b>	<b>2,461,240,000</b>	<b>2,112,299</b>	<b>2,296,413,000</b>	<b>3,070,783</b>	<b>1,596,834,000</b>

## Malaysia's imports of gold (non-monetary), by country

Country	2008		2009		2010p	
	Quantity (kg)	Value (RM)	Quantity (kg)	Value (RM)	Quantity (kg)	Value (RM)
<i>Gold, Non-Monetary (HS: 7108)</i>						
United Arab Emirates	102,144	3,222,506,000	124,542	3,309,959,000	503,724	3,577,065,000
Japan	186,893	2,172,195,000	291,166	1,448,544,000	181,173	277,236,000
Singapore	72,085	1,756,307,000	262,784	1,081,468,000	893,613	1,558,365,000
Switzerland	28,941	1,325,369,000	5,531	595,321,000	8,060	919,264,000
Hong Kong	121,011	235,374,000	8,220	218,363,000	3,354	134,168,000
Others	2,791,671	841,968,000	5,993,993	326,296,000	3,510,211	434,398,000
<b>Total</b>	<b>3,302,745</b>	<b>9,553,719,000</b>	<b>6,686,236</b>	<b>6,979,951,000</b>	<b>5,100,136</b>	<b>6,900,496,000</b>

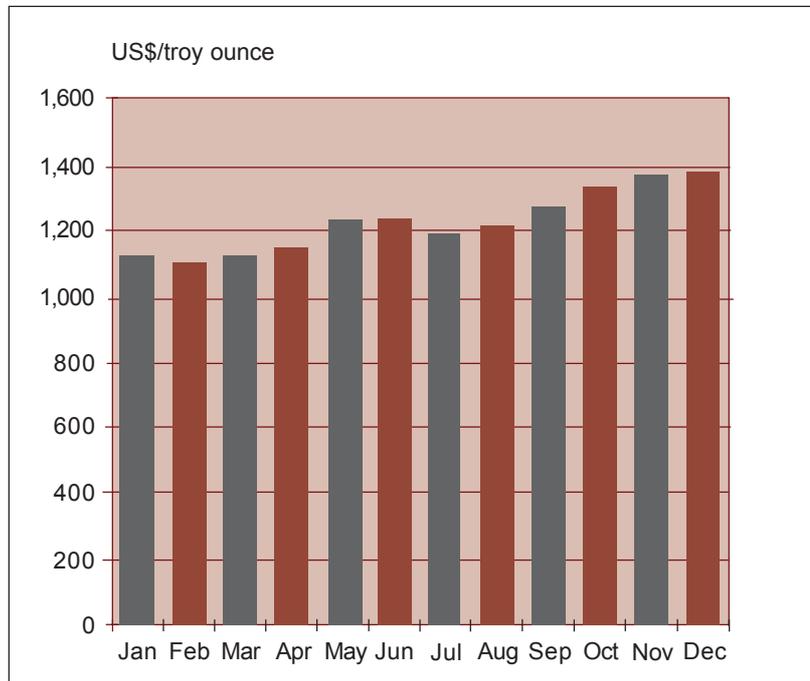
Source: Department of Statistics

## Price

### Average Monthly Gold Price in 2010

2010	US\$/troy ounce
January	1,118.00
February	1,095.40
March	1,113.34
April	1,148.69
May	1,237.50
June	1,232.92
July	1,192.97
August	1,215.81
September	1,270.98
October	1,342.02
November	1,369.89
December	1,390.55
<b>Annual Avg</b>	<b>1,227.34</b>

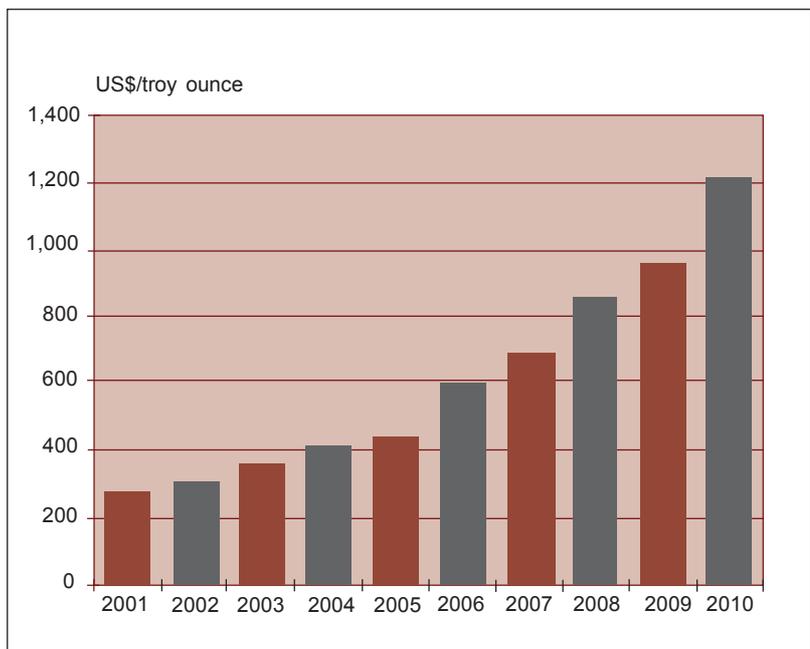
### Average Monthly Gold Price in 2010



### Average Annual Gold Price (2001 - 2010)

Year	US\$/troy ounce
2001	270.99
2002	301.57
2003	363.51
2004	421.08
2005	444.88
2006	604.39
2007	696.70
2008	871.71
2009	973.00
2010	1,227.34

### Average Annual Gold Price (2001 - 2010)



London, 99.5% fine,  
Afternoon Fixing

Source: UNCTAD

## World Mine Production of Gold

Country	kilograms (metal content)			% of 2010p
	2008	2009	2010p	
China	285,000	320,000	345,000	13.8
Australia	215,000	222,000	255,000	10.2
United States of America	233,000	223,000	230,000	9.2
South Africa	213,000	198,000	190,000	7.6
Russia	176,000	191,000	190,000	7.6
Peru	180,000	182,000	170,000	6.8
Canada	95,000	97,000	90,000	3.6
Indonesia	60,000	130,000	120,000	4.8
Other countries	807,000	884,000	915,000	36.5
<b>World total (rounded)</b>	<b>2,380,000</b>	<b>2,450,000</b>	<b>2,500,000</b>	

Source: United States Geological Survey

## Review

During 2010, there were a total of 16 gold mines operating in the country which were located in the states of Pahang, Kelantan and Terengganu. The total gold production in the year was 3,765 kg increased by 35 per cent compared with 2,794 kg produced in 2009. The increase in production was contributed by the increased in demand resulted from higher gold prices during the year. The production has been on upward trend since 2008. The average gold prices in 2010 were at US\$1,227.34 per troy ounce increased from US\$973 per troy ounce recorded in 2009.

Gold production mainly came from the state of Pahang which contributed about 97 per cent of the total gold produced in the country. The major gold mines in Pahang are Penjom Gold Mine at Penjom, Selinsing Gold Mine in Sg. Koyan and Raub Australian Gold Mining Sdn Bhd in Raub. Most of the gold produced in Malaysia came from the Penjom Gold Mine. The gold production from the Penjom Gold Mine increased significantly in the third quarter of 2010, after intensive waste stripping in the first six months of the year, and as higher grade ores were accessed, notably at the Jalis zone. However, the total gold production from the mine declined to 1,756 kg compared with 2,040 kg in 2009 due to depleting resources within the mining lease area.

Selinsing Gold Mine is a new project developed by Monument Mining Limited which is a Canadian gold mining and exploration company. It is located in Bukit Selinsing near Sungai Koyan, north of Raub situated on the Raub Bentong Suture. This mine started its operation in 2009 and a full gold production in September 2010. Its production during the year was 1,126 kg. Besides Selinsing Gold Mine project, the company was also continuing with its evaluation on the Damar Buffalo Reef Prospect (Buffalo Reef) adjacent to the Selinsing mining area.

The Minerals and Geoscience Department had continuously undertaking exploration activities and had delineated potential gold areas in Sabah, Johor, Terengganu and Pahang. In Sabah, under the reconnaissance geochemical survey the department had identified prospective gold areas in Sungai Tingkayu, Kunak. In Johor, gold potential area was identified in Tenggaroh. Other gold potential areas are Sg. Tarom in Terengganu and Sg. Kincir and Batu Hitam in Pahang. ■

## IRON

## Malaysia's Production of Iron Ore

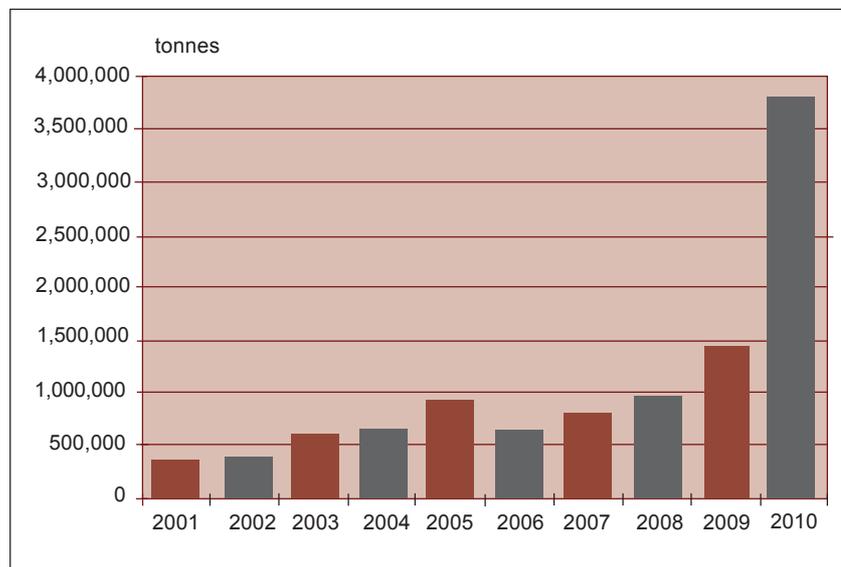
State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Pahang	508,886	8	511,554	6	972,753	18	2,465,418	36
Perak	110,000	1	99,000	1	26,500	1	35,580	3
Terengganu	100,692	1	170,555	6	62,010	6	389,686	11
Johor	82,452	4	200,823	4	390,601	5	586,615	10
Kelantan	–	–	–	–	18,322	1	209,856	7
Kedah	–	–	–	–	–	–	91,918	2
<b>Total</b>	<b>802,030</b>	<b>14</b>	<b>981,932</b>	<b>17</b>	<b>1,470,186</b>	<b>31</b>	<b>3,557,813</b>	<b>69</b>

mines = indicates highest number of mines operating during the year

## Malaysia's Historic Production of Iron Ore

Year	tonnes
2001	376,476
2002	404,350
2003	596,612
2004	663,732
2005	949,605
2006	667,082
2007	802,030
2008	981,932
2009	1,470,186
2010	3,557,813

## Malaysia's Production of Iron Ore (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2601	Ores & concentrates	824,536	834,521	2,814,152	71,517	75,766	292,077
7201	Pig iron	N.A	1077	3,509	1,482	2,577	20,971
7202	Ferro-alloys	N.A	3,392	582	21,468	14,659	3,858
7203	Direct reduced & sponge	N.A	284,253	102,093	5,001,838	332,189	692,680
7204	Waste & scrap	N.A	146,792	90,672	57,381	43,130	2,108,327
7205	Granules & powders	N.A	3,202	7,370	9,575	6,552	15,383
7206	Iron & steel ingots	N.A	133	118	1,027	1,195	686
7207	Semi-finished products	N.A	155,832	77,480	943,390	222,030	143,422
7218	Stainless steel ingots	N.A	39	262	2,099	720	3,283
7224	Other alloys steel ingots	N.A	62	480	188	699,155	3,263,001

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2601	Ores & concentrates	4,886,400	2,001,922	2,555,095	1,876,630	894,897	1,309,897
7201	Pig iron	N.A	68,462	3,509	483,027	87,464	6,664
7202	Ferro-alloys	N.A	1,086,235	63,232	779,924	454,295	421,940
7203	Direct reduced & sponge	N.A	9,455	9,455	133,123	20,068	72,360
7204	Waste & scrap	N.A	802,733	2,164,721	4,684,327	2,002,971	2,945,386
7205	Granules & powders	N.A	11,983	17,151	53,959	52,550	28,260
7206	Iron & steel ingots	N.A	256	171	23,779	1,874	1,783
7207	Semi-finished products	N.A	132,583	161,097	676,760	236,706	292,396
7218	Stainless steel ingots	N.A	243	194	2,107	6,919	4,750
7224	Other alloys steel ingots	N.A	24	40	84	514	549

Source: Department of Statistics

## Malaysia's exports of iron ore, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Iron ore (HS: 2601)</i>						
China	466,199	71,510,000	824,014	75,353,000	2,801,590	290,478,000
Vietnam	–	–	–	–	12,509	1,575,000
Indonesia	–	–	–	–	17	13,000
Thailand	20	7,000	19	5,000	36	11,000
Singapore	–	–	13	34,000	–	–
Others	95	33,783	490	525,000	–	–
<b>Total</b>	<b>524,010</b>	<b>80,396,954</b>	<b>824,536</b>	<b>75,917,000</b>	<b>2,814,152</b>	<b>292,077,000</b>

## Malaysia's imports of iron ore, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Iron ore (HS: 2601)</i>						
Brazil	3,507,380	1,266,996,000	1,469,516	530,844,000	1,718,732	851,215,000
Chile	932,621	395,874,000	298,284	126,614,000	423,892	241,475,000
Bahrain	268,754	140,027,000	307,783	160,362,000	348,588	204,737,000
Indonesia	–	–	–	–	57,154	7,744,000
China	115	191,000	535	887,000	6,534	4,320,000
Others	128,249	73,369,000	231,339	76,414,000	195	406,000
<b>Total</b>	<b>4,837,119</b>	<b>1,876,457,000</b>	<b>2,307,437</b>	<b>895,121,000</b>	<b>2,555,095</b>	<b>1,309,897,000</b>

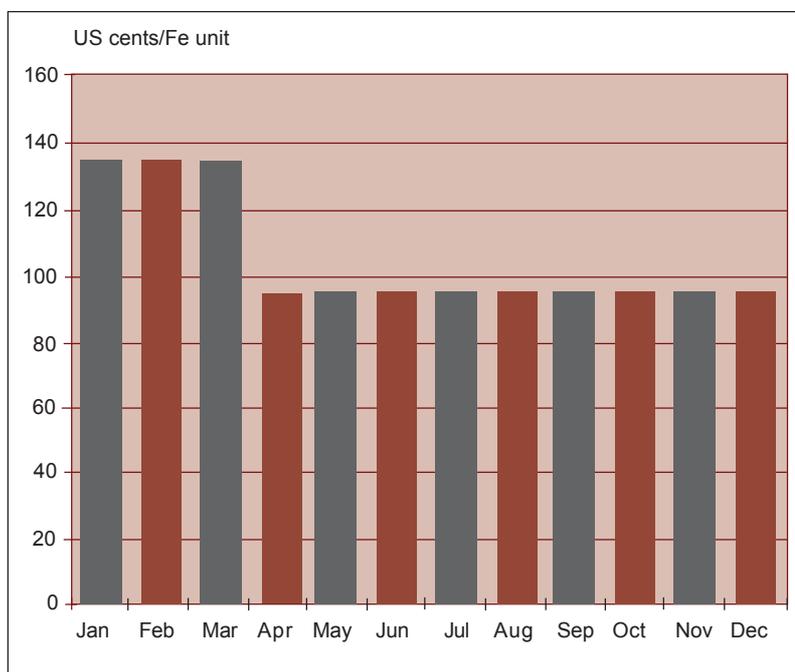
Source: Department of Statistics

## Price

### Average Monthly Price in 2010

2010	US cents/ Fe Unit
January	134.41
February	134.41
March	134.41
April	96.51
May	96.51
June	96.51
July	96.51
August	96.51
September	96.51
October	96.51
November	96.51
December	96.51
<b>Annual Avg</b>	<b>105.99</b>

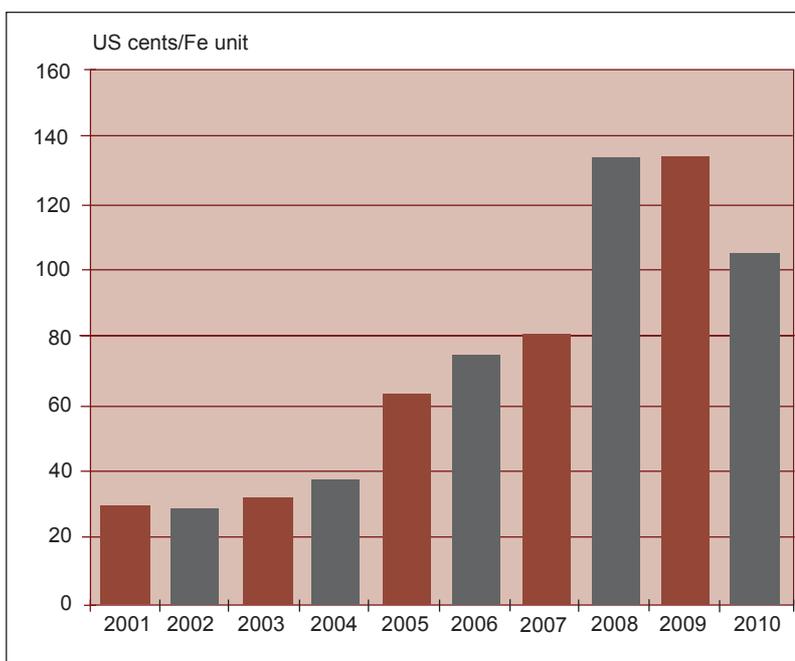
### Average Monthly Iron Ore Price in 2010



### Average Annual Iron Ore Price (2001 - 2010)

Year	US cents/ Fe Unit
2001	28.92
2002	28.62
2003	31.04
2004	36.45
2005	62.51
2006	74.39
2007	81.46
2008	134.41
2009	134.41
2010	105.99

### Average Annual Iron Ore Price (2001 - 2010)



Brazilian to Europe  
C. 64.5% Fe F.O.B

Note:

Price is reported in cents, U.S. currency, for each percentage point of iron in a tonne of ore, e.g., at 74.39¢/Fe unit, ore grading 64.5% iron would bear a price of  $74.39¢ \times 64.5 = \text{US}\$47.98/\text{t}$ .

Source: UNCTAD

## World Mine Production of Iron Ore

Country	tonnes			% of 2010
	2008	2009	2010p	
China	824,000,000	880,000,000	900,000,000	37.0
Brazil	355,000,000	300,000,000	370,000,000	15.2
Australia	342,000,000	394,000,000	420,000,000	17.3
India	220,000,000	245,000,000	260,000,000	10.7
Russia	100,000,000	92,000,000	100,000,000	4.1
Ukraine	73,000,000	66,000,000	72,000,000	3.0
South Africa	49,000,000	55,000,000	55,000,000	2.3
Canada	31,000,000	32,000,000	35,000,000	1.4
United States of America	54,000,000	27,000,000	49,000,000	2.0
Sweden	24,000,000	18,000,000	25,000,000	1.0
Other countries	146,000,000	135,000,000	144,000,000	5.9
<b>World total (rounded)</b>	<b>2,006,000,000</b>	<b>2,240,000,000</b>	<b>2,400,000,000</b>	

Source: United States Geological Survey

## Review

In 2010, iron ore production came from 67 small scale mines located in Pahang, Terengganu, Johor, Kelantan and Perak. The types of iron ore commonly produced are magnetite, hematite and ferro-manganese. Most of the iron ore produced are of low grade and locally consumed by the pipe-coating industry for oil and gas sector and by cement factories. The higher grade iron ore were exported mainly to China. In 2010, the iron ore produced had experienced the highest jump in production since 1971 with production of 934,982 tonnes. In 2010, production amounted to 3,557,813 tonnes, an increase more than one fold from 1,470,186 tonnes in the previous year. During the year, a total of RM292.1 million worth of iron ores were exported compared to RM75.9 million in 2009.

Iron ore requirements by the local iron and steel industries are met wholly by imports. The steel industries imported their iron ore requirements in the form of lumps and pellets as feed materials. One of the main player in iron and steel industries is the Perwaja Holding Bhd. It was reported that Perwaja Holding Bhd is planning to build the first iron ore palletising processing plant in Southeast Asia that will be located in Kemaman, Terengganu. Iron ore pellet is the basic material for the iron plant to produce primary steel

products like sponge iron, beam-blanks and roll coils. It was estimated that Perwaja's pellets plant will requires two million tonnes of iron ores a year to produce 1.2 million tonnes of pellets during its first year of operation. The pellet production is expected to double to 2.4 million tonnes a year after the planned second phase is completed in 2013. The iron ore will be sourced from iron ore mines in the located in Bukit Besi and Kemaman, Terengganu.

Currently, all iron ore pellets required by the local steel mills are imported from Brazil, Chile and Bahrain. The total value of iron ore (include pellets) imported was RM1.3 billion, iron waste and scrap (RM2.9 billion), ferro-alloys (RM421 million) and pig iron (RM6.7 million). ■

## MANGANESE

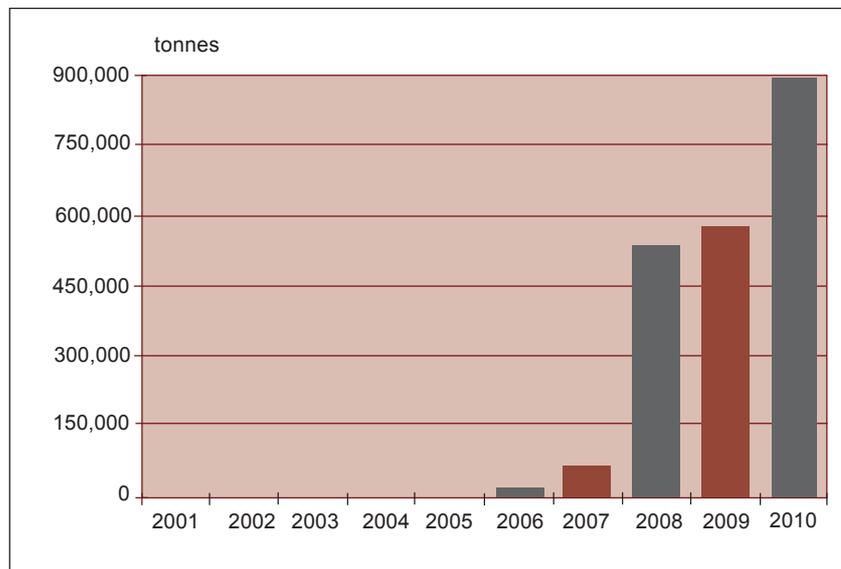
### Malaysia's Production of Manganese Ore

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Kelantan	56,500	2	511,177	4	468,963	6	899,703	9
Pahang	-	-	25,498	1	99,000	-	-	-
<b>Total</b>	<b>56,500</b>	<b>2</b>	<b>536,675</b>	<b>5</b>	<b>567,963</b>	<b>6</b>	<b>899,703</b>	<b>9</b>

### Malaysia's Historic Production of Manganese Ore

Year	tonnes
2001	-
2002	-
2003	-
2004	-
2005	-
2006	6,500
2007	56,500
2008	536,675
2009	567,963
2010	899,703

### Malaysia's Production of Manganese Ore (2001 - 2010)



## External Trade

### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2602.00	Ores & concentrates	175,765	450,286	632,803	65,286	82,834	104,534
2820.10	Manganese dioxide	253	-	15	171	-	52
2820.90	Other manganese dioxide	435	5	206	742	29	1,351

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2602.00	Ores & concentrates	108	1,113	761	215	3,041	3,504
2820.10	Manganese dioxide	3,718	2,350	1,412	15,578	14,165	12,660
2820.90	Other manganese dioxide	373	930	781	3,438	1,309	2,696

Source: Department of Statistics

## Malaysia's exports of manganese ore, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Manganese ore (HS: 2602.00)</i>						
China	182,943	63,948,000	450,151	82,703,000	628,089	103,812,000
Taiwan	–	–	–	–	3,000	461,000
Indonesia	–	–	–	–	100	154,000
Hong Kong	–	–	110	116,000	713	106,000
India	6,543	1,338,000	–	–	–	–
Others	–	–	25	15,000	901	1,000
<b>Total</b>	<b>189,486</b>	<b>65,286,000</b>	<b>450,286</b>	<b>82,834,000</b>	<b>632,803</b>	<b>104,534</b>

## Malaysia's imports of manganese ore, by country

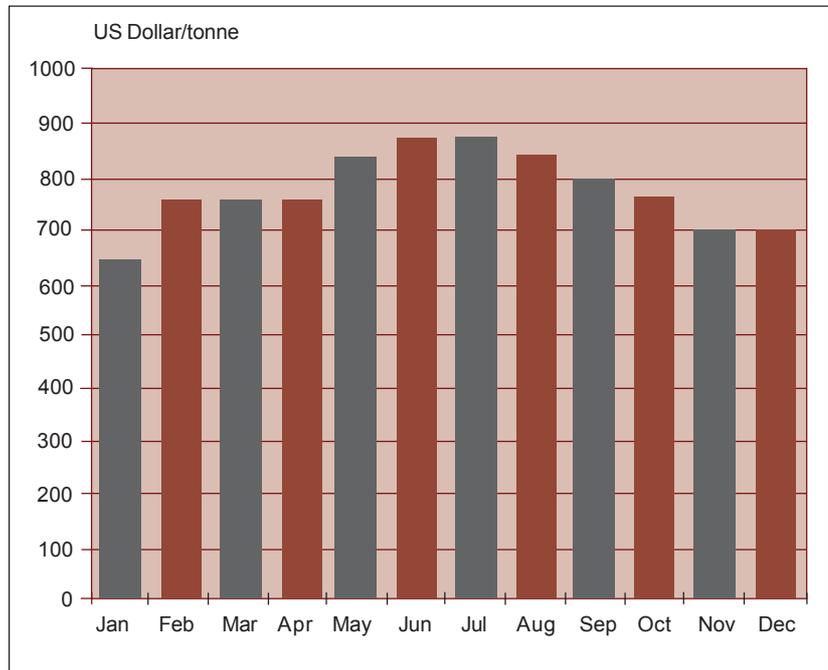
Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Manganese ore (HS: 2602.00)</i>						
China	3	20,000	262	323,000	538	2,418,000
Ukraine	–	–	–	–	216	1,014,000
Japan	–	–	–	–	6	51,000
Hong Kong	–	–	–	–	1	21,000
Singapore	–	–	50	112,000	–	–
Others	123	195,000	801	2,606,000	–	–
<b>Total</b>	<b>126</b>	<b>215,000</b>	<b>1,113</b>	<b>3,041,000</b>	<b>761</b>	<b>3,504,000</b>

**Price**

**Average Monthly Price in 2010**

2010	US\$/tonne
January	645.00
February	750.00
March	750.00
April	750.00
May	834.00
June	862.00
July	862.00
August	831.00
September	800.00
October	775.00
November	700.00
December	700.00
<b>Annual Avg</b>	<b>771.58</b>

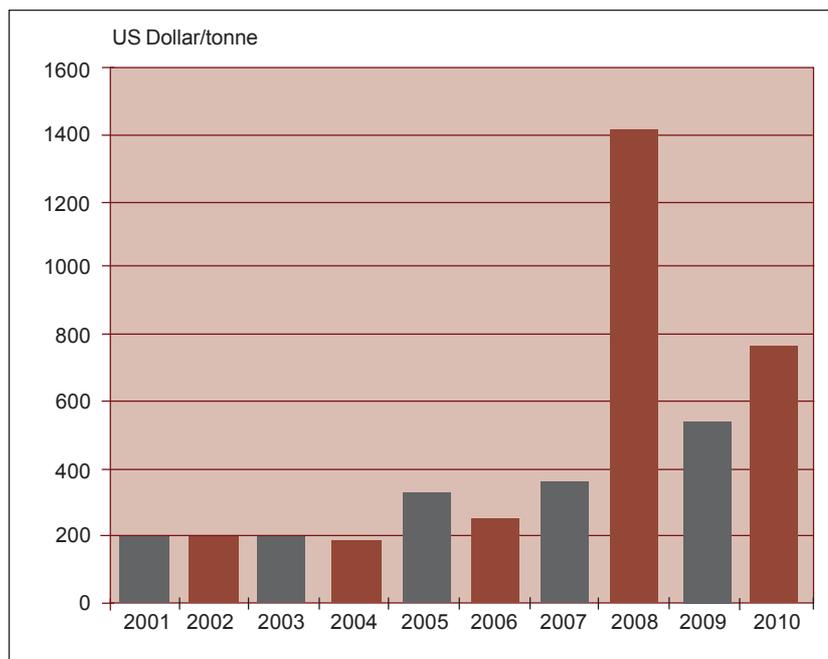
**Average Monthly Manganese Ore Price in 2010**



**Average Annual Manganese Ore Price (2001 - 2010)**

Year	US\$/tonne
2001	198.50
2002	198.50
2003	198.50
2004	198.50
2005	327.06
2006	259.79
2007	356.94
2008	1,410.49
2009	546.36
2010	771.58

**Average Annual Manganese Ore Price (2001 - 2010)**



Note: 48/50% Mn maximum  
0.1% P, metallurgical FOB

Source: UNCTAD

## World Mine Production of Manganese Ore

Country	tonnes			% of 2010
	2008	2009	2010p	
China	2,200,000	2,400,000	2,800,000	21.5
Australia	2,320,000	2,140,000	2,400,000	18.5
South Africa	2,900,000	1,900,000	2,200,000	16.9
Gabon	1,600,000	881,000	1,400,000	10.8
India	960,000	980,000	1,100,000	8.5
Brazil	1,380,000	730,000	830,000	6.4
Ukraine	490,000	375,000	580,000	4.5
Mexico	170,000	169,000	210,000	1.6
Other countries	1,310,000	1,240,000	1,400,000	10.8
<b>World total (rounded)</b>	<b>13,300,000</b>	<b>10,800,000</b>	<b>13,000,000</b>	

Source: United States Geological Survey

## Review

Manganese ore is an important raw material in iron and steel production. It is essential by virtue of its sulphur-fixing, deoxidizing and alloying properties. Among a variety of other uses, manganese is a key component of certain widely used aluminium alloys and is used in oxide form in dry cell batteries.

In Malaysia, a compilation from various reports indicated that there were estimated manganese resources of 3.7 million tonnes. These resources were located in Kelantan, Terengganu, Pahang and Johor. However, most of these resources are with grade less than 50 per cent of Mn.

After a long period of no manganese production, the manganese mining activities were revived in 1978 with Kelantan producing 78,329 tonnes of manganese ores for a period of three years operation. For the period 1980 to 1995, no manganese mining activities were recorded until 1996 when a total of 13,000 tonnes of manganese was produced from Bukit Penchuri, Kelantan. However, with the increase in manganese price since 2005 due to the higher demand of the ore in the world market the mining activities resumed in 2006.

Malaysia production of manganese ore in 2010 rose by almost 91 per cent compared with that in 2009. During the year, a total of 899,703 tonnes was produced

increased from 567,963 tonnes produced in 2009. Most of the manganese produced came from nine operating mines in Sg. Aring, Gua Musang, Kelantan.

The manganese produced were mainly exported to China. In 2010, Malaysia exported a total of RM103 million of manganese ore to China. Exports to China accounted for 99 per cent followed by Taiwan at 0.5 per cent.

Malaysia also imported small amount of manganese ore. In 2010, the imports of manganese ore increased compared with 2009. A total of RM2.4 million of manganese was imported where RM1.0 million worth of manganese imported from China, RM51,000 from Japan and RM21,000 from Hong Kong.

It was reported that Asia Mineral Limited (AML) is in the midst of developing a manganese processing plant in Samalaju in Bintulu, Sarawak in 2011 and anticipated the first production in 2012. AML was founded in 1993 as a privately owned company registered in Hong Kong. AML is specialized in all manganese related business from ores to alloys, metals and chemicals. It is the aspiration of this company to source the material locally. If this come on stream it is expected that the production for manganese ore in Malaysia will increase from the current level. ■

## RARE EARTH MINERALS

### Malaysia's Production of rare earth minerals

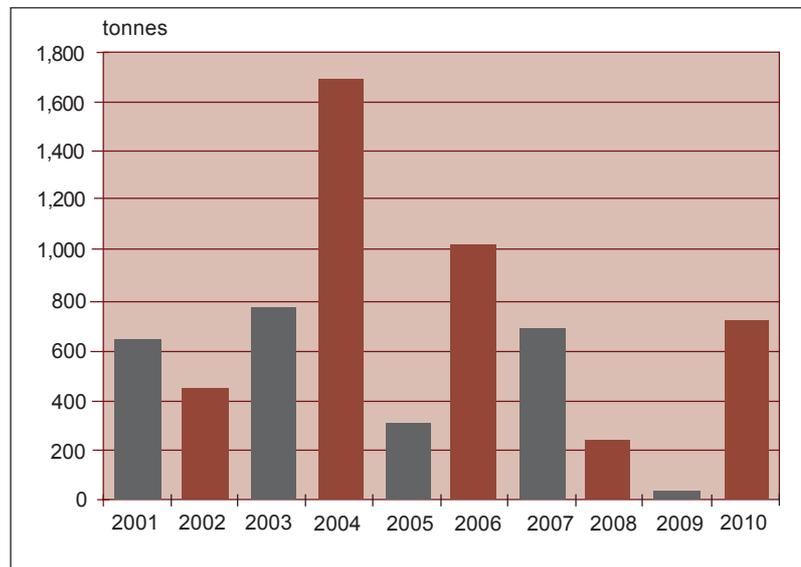
Minerals	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Monazite	682	–	233	–	25	–	622	–
Xenotime	–	–	–	–	–	–	110	–
<b>Total</b>	<b>682</b>	<b>–</b>	<b>233</b>	<b>–</b>	<b>25</b>	<b>–</b>	<b>732</b>	<b>–</b>

Both monazite and xenotime are by-products of tin mining

### Malaysia's Historic Production of Rare Earth Minerals

Year	tonnes
2001	643
2002	441
2003	795
2004	1,683
2005	320
2006	1,111
2007	682
2008	233
2009	25
2010	732

### Malaysia's Production of Rare Earth Minerals (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2530.90.100	Xenotime	48	–	306	354	–	1,667
2612.20.100	Monazite	69	105	630	696	385	2,675
2805.30.000	Rare earth metals	–	–	–	–	–	–
2846	Cerium and other compounds*	49	58	41	865	841	5,308
3606.90	Ferro-cerium	–	–	–	–	–	–

\* - sold in units other than tonnes

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2530.90.100	Xenotime	453	3	80	198	141	163
2612.20.100	Monazite	–	–	–	–	–	–
2805.30.000	Rare earth metals	1	–	–	6	–	–
2846	Cerium and other compounds*	1,533	1,088	1,457	31,941	39,709	40,815
3606.90	Ferro-cerium	–	–	–	–	–	–

\* - sold in units other than tonnes

## Malaysia's exports of monazite, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Monazite (HS: 2612.20.100)</i>						
China	113	695,000	105	385,000	630	2,675,000
Others	–	–	–	–	–	–
<b>Total</b>	<b>113</b>	<b>695,000</b>	<b>105</b>	<b>385,000</b>	<b>630</b>	<b>2,675,000</b>

Source: Department of Statistics

## World Mine Production of Rare-Earth Minerals

Country	tonnes			% of 2010
	2008	2009	2010p	
China	120,000	129,000	130,000	97.3
India	2,700	2,700	2,700	2.0
Brazil	650	550	550	0.4
Malaysia*	233	25	732	0.5
Other countries	–	–	–	–
<b>World total (rounded)</b>	<b>124,000</b>	<b>133,000</b>	<b>130,000</b>	

Source: United States Geological Survey  
\*Minerals and Geoscience Department Malaysia

## Review

Rare earth minerals (REM) are used in a wide range of applications in metals, glasses, ceramics and electronics. It has become a dispensable part of modern life and is found in items such as computers, camera lenses, high efficiency light bulbs, flat screen television and hybrid cars. The main economic minerals exploited for their rare earth content are bastnasite, monazite and xenotime.

In Malaysia only monazite and xenotime are produced. The production of REM came from various among retreatment plants located in Perak and Selangor. In 2010, its production increased to 732 tonnes from 25 tonnes recorded in 2009. This increase was due to worldwide economic growth. During the year, a total of 936 tonnes of monazite and xenotime was exported mainly to China. However, Malaysia also imported a total of 141 tonnes of xenotime during the same period.

Lynas Corp. Ltd of Australia is constructing the Lynas Advanced Materials Plant (LAMP) a rare earth processing plant in Gebeng Industrial Park in Kuantan,

Pahang which will process the rare earth concentrate that will be brought from Australia. Once in operation, it will account for about 39 per cent of the world supply outside China. China currently supplies approximately 95 per cent of the global rare earth market.

The construction of this processing plant received protests from local residents and non-government organisations to stop Lynas from operating the plant because of concern over radiation. However, an independent panel of international experts which also include representatives from the International Atomic Agency (IAEA) had conducted a review of the health, safety and environment aspects of the LAMP and confirmed that the plant once completed in 2011 is safe and fully compliant with international standards. Hence, the Malaysian Government had issued a pre-operational licence which remains subject to regulatory approval. Lynas needs to implement all the recommendations in order to be issued an operating licence. ■

## SILVER

### Malaysia's Production of Silver

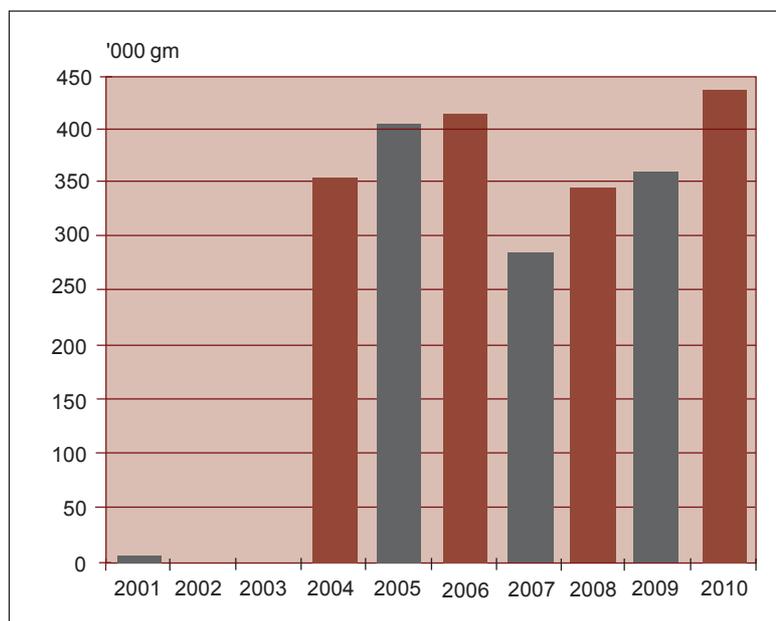
State	2007		2008		2009		2010	
	grams	mines	grams	mines	grams	mines	grams	mines
Pahang (a)	295,632	–	349,183	–	366,971	–	435,862	–
<b>Total</b>	<b>295,632</b>	<b>–</b>	<b>349,183</b>	<b>–</b>	<b>366,971</b>	<b>–</b>	<b>435,862</b>	<b>–</b>

(a) By-product of gold mining

### Malaysia's Historic Production of Silver

Year	'000 gm
2001	3.1
2002	–
2003	–
2004	363.7
2005	401.5
2006	410.6
2007	295.6
2008	349.2
2009	367.0
2010	436.0

### Malaysia's Production of Silver (2001 - 2010)



## External Trade

### Exports

H.S.	Commodity	kg			RM '000		
		2008	2009	2010p	2008	2009	2010p
2616.10	Ores & concentrates	15	–	54	18	–	328
7106.10	Powder	30	240	3	9	89	143
7106.91	Unwrought	–	–	–	–	–	–
7106.92	Semi-manufactures	2,731	739	597	3,537	427	429

### Imports

H.S.	Commodity	kg			RM '000		
		2008	2009	2010p	2008	2009	2010p
2616.10	Ores & concentrates	3,159	25	91	4,832	1,431	946
7106.10	Powder	148,117,671	3,000	4,914	12,054	7,146	16,649
7106.91	Unwrought	266,053	9,322	68,112	37,605	53,868	7,216
7106.92	Semi-manufactures	46,166,277	244,621	288,432	74,176	51,947	112,085

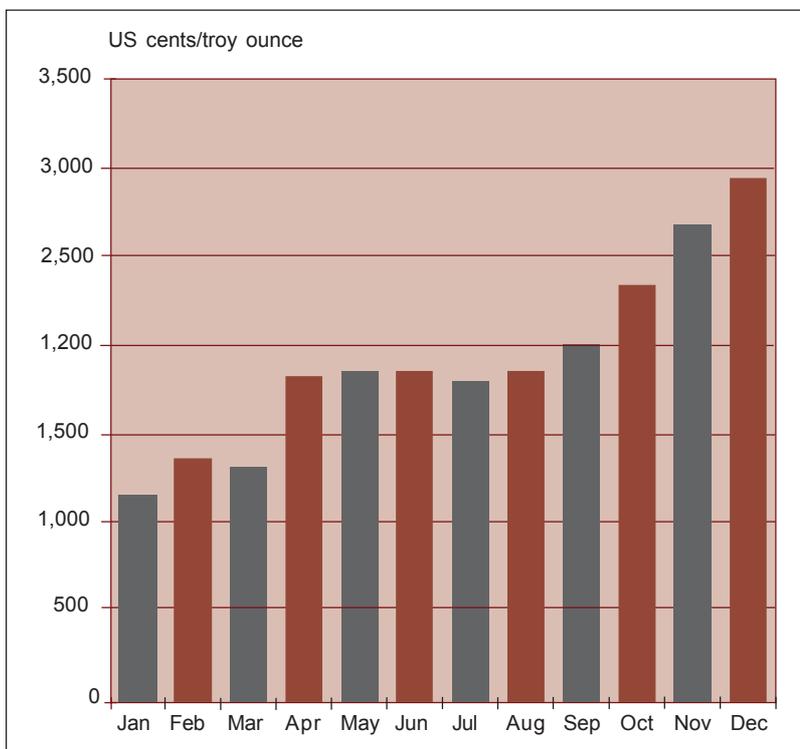
Source: Department of Statistics

**Price**

**Average Monthly Silver Price in 2010**

2010	US cents/ troy ounce
January	1,139.88
February	1,354.75
March	1,311.50
April	1,816.83
May	1,840.96
June	1,853.32
July	1,794.07
August	1,849.30
September	2,061.19
October	2,347.02
November	2,661.55
December	2,937.35
<b>Annual Avg</b>	<b>1,913.98</b>

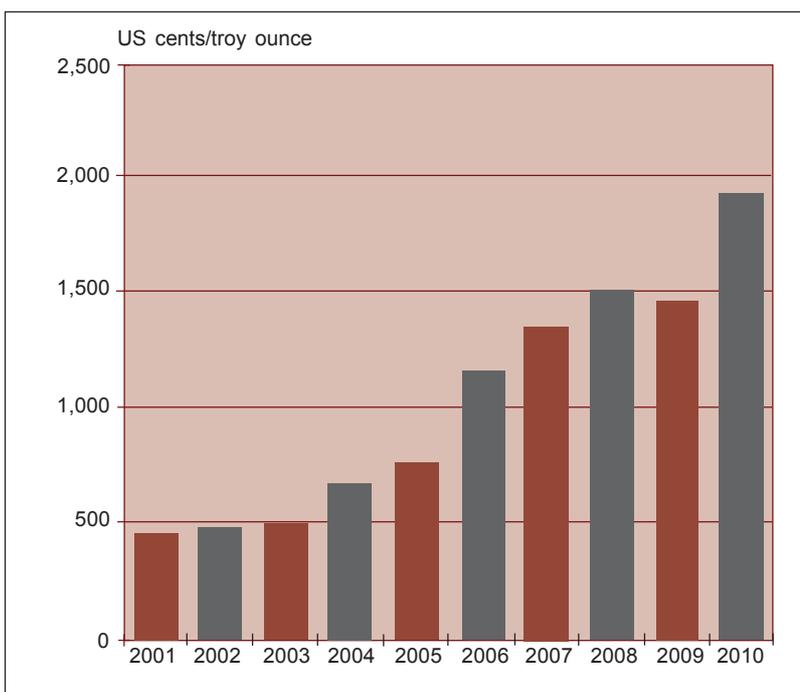
**Average Monthly Silver Price in 2010**



**Average Annual Silver Price (2001 - 2010)**

Year	US cents/ troy ounce
2001	438.67
2002	463.78
2003	491.08
2004	666.55
2005	733.96
2006	1,156.97
2007	1,341.47
2008	1,500.34
2009	1,469.57
2010	1,913.98

**Average Annual Silver Price (2001 - 2010)**



UNCTAD (Handy & Harman  
99.9% Grade Refined, New York)

## World Mine Production of Silver

Country	kilograms (metal content)			% of 2010
	2008	2009	2010p	
Peru	3,690,000	3,850,000	4,000,000	18.0
Mexico	3,240,000	3,550,000	3,500,000	15.7
China	2,800,000	2,900,000	3,000,000	11.4
Chile	1,400,000	1,300,000	1,500,000	6.7
Australia	1,930,000	1,630,000	1,700,000	7.6
United States of America	1,230,000	1,250,000	1,280,000	5.8
Poland	1,190,000	1,200,000	1,200,000	5.4
Canada	730,000	600,000	700,000	3.1
Russia	1,300,000	1,400,000	1,400,000	6.3
Other countries	3,790,000	4,120,000	3,960,000	18.9
<b>World total (rounded)</b>	<b>20,900,000</b>	<b>21,800,000</b>	<b>22,200,000</b>	

Source: United States Geological Survey

## Review

In Malaysia, silver was produced as by-product from gold mining activities and since 2004 it was only produced in Pahang. During 2010, a total of 436 kg silver was produced compared with 367 kg produced in 2009.

In 2010, a total of 54 kg silver ores and concentrates was exported and in 2009 no export of silver was recorded. Exports of silver semi-manufactures products dropped to 597 kg compared with 739 kg in 2009.

On the other hand, a total of 91 kg of silver ores and concentrates was imported in 2010 compared with 25 kg of silver ores and concentrates was imported in 2009. Imports of silver semi-manufactures increased to 288,432 kg from 244,038 kg recorded in 2009.

During the year, the average monthly silver prices was US cent 1,913.98 per troy ounce and peaked at US cent 2,937.35 per troy ounce in December.

In Malaysia, silver also was reported to occur in minor quantities within the silicified volcanic rocks at Gunung Pock and Gunung Wullersdorf in Semporna, Sabah. ■

## TANTALUM/NIOBIUM MINERALS

### Malaysia's Production of Tantalum/Niobium Minerals

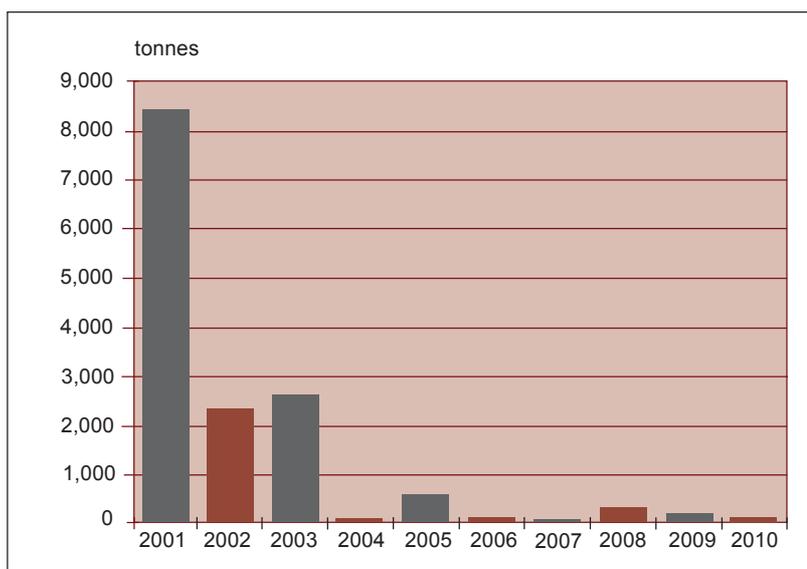
Mineral	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Struverite	52	–	216	–	176	–	84	–

Struverite is a by-product of tin mining

### Malaysia's Historic Production of Struverite

Year	tonnes
2001	8,430
2002	2,298
2003	2,619
2004	121
2005	552
2006	93
2007	52
2008	216
2009	176
2010	84

### Malaysia's Production of Struverite (2001 - 2010)



## External Trade

### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2615.90.11	Columbite concentrates	8	–	–	329	–	–
2615.90.19	Other niobium & tantalum concs.	20	20	80	271	336	1,942
2620.90.10	Ashes & residues	–	–	–	–	–	–
8103.90.00	Other tantalum & arts. thereof	–	1	2	–	17	104

### Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2615.90.11	Columbite concentrates	–	–	–	–	–	–
2615.90.19	Other niobium & tantalum concs.	15	51	143	93	105	105
2620.90.10	Ashes & residues	–	–	–	–	–	–
8103.90.00	Other tantalum & arts. thereof	605	2,033	86	18,487	51,199	4,265

### Malaysia's exports of tantalum/niobium minerals, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Columbite concentrates</i> (HS: 2615.90.11)						
China	8	–	329,000	–	–	–
<b>Total</b>	8	–	329,000	–	–	–

Source: Department of Statistics

## World Mine Production of Tantalum and Niobium Minerals

Country	tonnes			% of 2010
	2008	2009	2010p	
<b>Niobium</b>				
Brazil	58,000	58,000	58,000	92
Canada	4,380	4,330	4,400	7
Other countries	483	530	400	1
<b>World total (rounded)</b>	<b>62,900</b>	<b>62,900</b>	<b>63,000</b>	
<b>Tantalum</b>				
Australia	557	81	80	12
Brazil	180	180	180	27
Rwanda	100	104	100	15
Mozambique	0	113	110	17
Canada	40	25	25	4
Other countries*	188	162	170	26
<b>World total (rounded)</b>	<b>1,170</b>	<b>665</b>	<b>665</b>	

\* Bolivia, China, Russia, and Zambia

Source: United States Geological Survey

## Review

Currently, no tantalum-niobium mine in Malaysia. However, tantalum-niobium mined was in the form of struverite is produced as a by-product of alluvial tin mining through the processing of 'amang'.

Amang was processed at several amang processing plants located in Perak and Selangor. In 2010, a total of 25 amang plants compared to 22 in the previous year. Most of the amang plants were located in Perak (22) and two in Selangor.

With the decreasing of alluvial tin mining activities, the supply of amang was unstable this resulted the lower production of struverite since 2003. In 2010, struverite production dropped to 84 tonnes from 176 tonnes produced in the previous year.

During the year, the export value for tantalum-niobium concentrates increased more than fivefold to RM2.04 million compared with RM0.35 million in 2009, while the import value dropped to RM4.37 million from RM51.30 million recorded in 2009. ■

## TIN

## Malaysia's Production of Tin-in-concentrate

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Perak	1,976	8	2,290	7	2,141	4	2,395	5
Selangor	12*	–	14	1	10**	–	9**	–
Terengganu	–	–	29	1	6	1	5	2
Johor	71	2	76	2	80	1	50	1
K. Lumpur	22**	–	33**	–	6*	–	8*	–
Pahang	174	4	163	3	167	3	201	3
Kedah	8	1	–	–	–	–	–	1
<b>Total</b>	<b>2,263</b>	<b>15</b>	<b>2,605</b>	<b>14</b>	<b>2,410</b>	<b>9</b>	<b>2,668</b>	<b>12</b>

mines = indicates highest number of mines operating in a month during the year

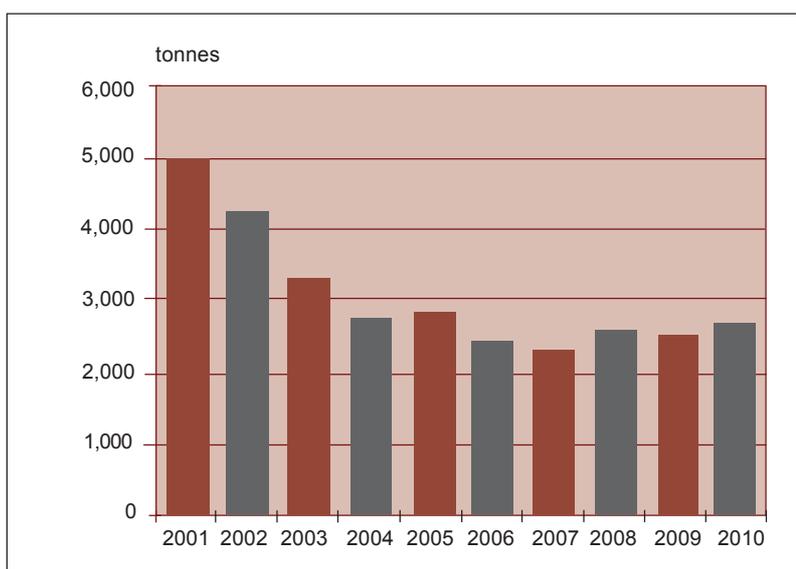
\* = production from panning activity

.. = production from amang

## Malaysia's Historic Production of Tin-in-concentrates

Year	tonnes
2001	4,972
2002	4,215
2003	3,359
2004	2,745
2005	2,858
2006	2,398
2007	2,263
2008	2,605
2009	2,410
2010	2,668

## Malaysia's Production of Tin-in-concentrates (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2609.00	Ores & concentrates	10	37	18	135	1,287	697
8001.10	Unwrought, not alloyed	27,528	22,769	33,697	1,697,768	1,047,422	2,083,523
8001.20	Unwrought, alloyed	5,568	2,402	2,790	250,191	102,255	121,364
8002.00	Waste & scrap	2,098	3,005	3,106	6,134	2,242	4,302
8003.00	Bars, rods, profile & wire	653	2,844	2,342	52	93,655	60,169
8004.00	Plates, Sheet & strip	1,197	55	–	2,021	97	–
8005.00	Foil, powders & flakes	40	–	–	3,822	–	–
8006.00	Tubes, pipes & fitting	–	–	–	252	–	–

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2609.00	Ores & concentrates	10,930	22,900	30,589	290,431	569,146	1,050,605
8001.10	Unwrought, not alloyed	7,790	13,840	11,007	439,697	633,653	690,213
8001.20	Unwrought, alloyed	271	382	563	18,921	21,073	32,312
8002.00	Waste & scrap	1,104	2,298	1,240	34,510	22,197	35,272
8003.00	Bars, rods, profile & wire	3,672	11,420	12,402	101,176	542,687	747,804
8004.00	Plates, sheet & strip	1,200	–	–	2,839	–	–
8005.00	Foil, powders & flakes	4	–	–	147	–	–
8006.00	Tubes, pipes & fitting	7	–	–	218	–	–

## Malaysia's exports of tin metal, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Unwrought tin (HS: 8001.10.000)</i>						
South Korea	4,811	449,934,000	8,802	410,932,000	9,646	595,231,000
Japan	3,188	267,257,000	1,537	76,388,000	4,261	260,670,000
United States of America	348	22,189,000	122	5,599,000	3,454	212,418,000
Italy	1,130	95,252,000	1,209	58,724,000	2,850	182,803,000
Taiwan	2,223	174,773,000	1,815	83,697,000	2,410	149,997,000
Others	9,308	688,363,000	9,283	412,082,000	11,075	682,404,000
<b>Total</b>	<b>21,008</b>	<b>1,697,768,000</b>	<b>22,769</b>	<b>1,047,422,000</b>	<b>33,697</b>	<b>2,083,523,000</b>

Source: Department of Statistics

## Malaysia's imports of tin ore and concentrates, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Tin ore &amp; concentrates (HS: 2609.00.000)</i>						
South Africa	2,221	82,532,000	6,745	184,721,000	9,285	326,928,000
Australia	2,133	44,695,000	6,673	126,590,000	8,053	243,164,000
Congo	1,141	57,367,000	2,784	78,055,000	7,135	245,226,000
Indonesia	1,668	36,512,000	1,942	49,928,000	1,327	44,411,000
Rwanda	267	28,046,000	21	755,000	1,226	56,577,000
Others	3,500	69,962,000	4,735	129,097,000	3,562	134,299,000
<b>Total</b>	<b>10,930</b>	<b>319,114,000</b>	<b>22,900</b>	<b>569,146,000</b>	<b>30,589</b>	<b>1,050,605,000</b>

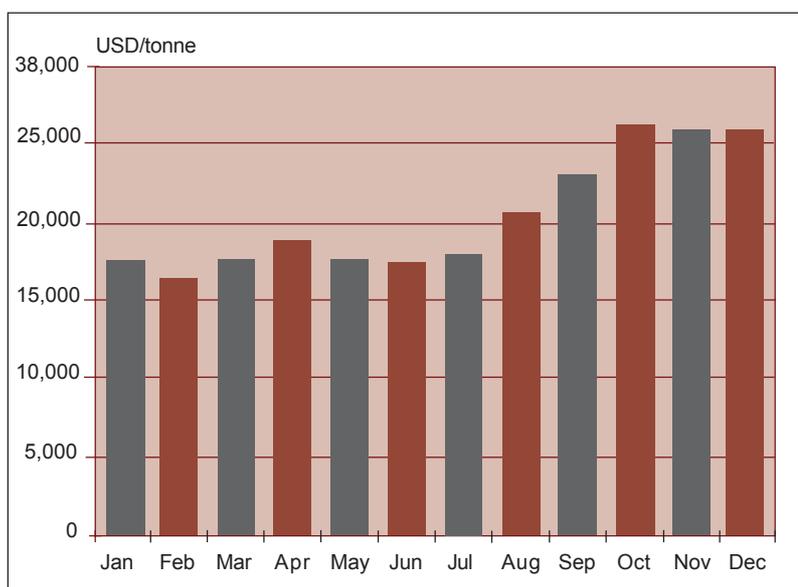
Source: Department of Statistics

## Price

## Average Monthly Tin Price in 2010

2010	USD/tonne
January	17,758
February	16,376
March	17,459
April	18,666
May	17,702
June	17,341
July	18,118
August	20,499
September	22,673
October	26,195
November	25,642
December	25,909
<b>Annual Avg</b>	<b>20,361</b>

## Average Monthly Tin Price in 2010



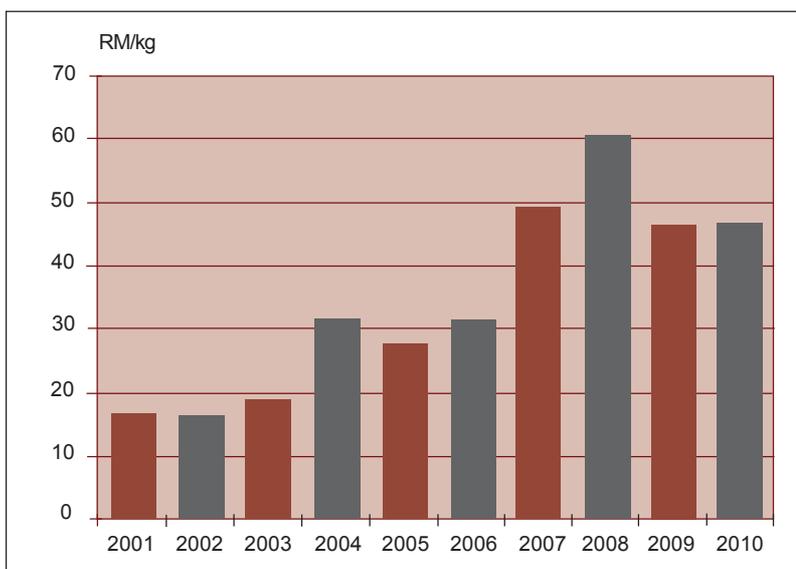
\*\* As from 1 Feb. 2001, KLTM price is quoted in U.S. Dollar.

Source: KLTM

### Average Annual Tin Price 2001 - 2010

Year	RM/kg
2001	16.49
2002	15.33
2003	18.83
2004	32.27
2005	27.87
2006	32.10
2007	49.85
2008	60.42
2009	47.64
2010	47.64

### Average Annual Tin Price (2001 - 2010)



\* From 1995 to 2000, KLTM average price is based on turnover. From 2001, average price is weighted average against total tonnage.

Source: UNCTAD, KLTM, ex-smelter

### World Mine Production of Tin 2008 - 2010p

Country	tonnes (metal content)			% of 2010
	2008	2009	2010p	
China	110,000	115,000	115,000	44.0
Indonesia	96,000	55,000	60,000	23.0
Peru	39,000	37,500	38,000	15.5
Bolivia	17,000	19,000	16,000	6.1
Brazil	12,000	13,000	12,000	4.6
Congo (Kinshasa)	12,000	9,400	9,000	3.4
Vietnam	3,500	3,500	3,500	1.1
<b>Malaysia</b>	<b>2,605</b>	<b>2,410</b>	<b>2,668</b>	<b>1.0</b>
Russia	1,500	1,200	1,000	0.4
Australia	1,800	1,400	2,000	0.8
Other countries	4,200	2,150	2,200	0.8
<b>World total (rounded)</b>	<b>299,000</b>	<b>260,000</b>	<b>261,000</b>	

Source: United States Geological Survey  
Minerals and Geoscience Department Malaysia

## Review

In 2010, the total tin-in-concentrates production registered a slight increase of 11 per cent to 2,696 tonnes compared with 2,410 tonnes produced in 2009. As in the previous years, Perak is the highest producers of tin and in 2010 a total of 2,398 tonnes was produced from the state.

During the year, there were 12 active tin mines and 25 among retreatment plants in Malaysia. These mines consisting of 9 open cast mines, one gravel pump and two dredge. These operating mines are 5 in Perak, 3 in Pahang and two in Terengganu and one in Johor. While the among retreatment plants, 23 in Perak and 2 in Selangor.

In 2010, open cast mines contributed the highest production at 2,052 tonnes, followed by panning (283 tonnes), among retreatment plants (274 tonnes), dredging (54 tonnes) and gravel pump mines (6 tonnes).

The produced and imported tin ore and concentrates were process by the Malaysia Smelting Corporation Bhd (MSC) located in Pulau Pinang.

The production of refined tin by MSC in 2010 increased by 6 per cent to 38,771 tonnes from 36,445 tonnes produced in 2009. Malaysia exported a total of 33,697 tonnes of refined tin metal in 2010, increase from 22,769 tonnes recorded in the previous year. Exports were mainly to South Korea, Japan, USA, Italy and Taiwan. Whereas, imports of tin ores and concentrates in 2010 was 30,589 tonnes valued at RM1,050 million compared with 22,900 tonnes valued at RM569 million in 2009. The imported tin ores were mainly from South Africa, Australia, Congo, Indonesia and Rwanda.

The average of tin price in 2010 was US\$20,361 per tonne increased by 52 per cent compared with US\$13,396 per tonne in 2009. The tin prices showed an increasing trend after dropping to its lowest level at US\$16,376 per tonne in February and remained at more than US\$25,000 by the end of the year. The highest average monthly tin prices were US\$26,195 per tonne in October.

During the year, the total domestic consumption of tin metal by the tin based industries was 2,942 tonnes decreased marginally from 2,944 tonnes recorded in 2009. The consumption of tin by uses in Malaysia was the solder (67 per cent), tin plate (23 per cent), pewter (6 per cent) and other manufacturing tin-based industries (4 per cent).

The tin consumption by the solder industry increased to 1,981 tonnes from 1,537 tonnes, tin plate industry increased marginally to 683 tonnes from 681 tonnes and pewter industry increased significantly to 169 tonnes from 100 tonnes recorded in 2009. Whereas, tin metal consumption in other domestic manufacturing industry dropped to 109 tonnes compared with 626 tonnes in 2009. ■

## TITANIUM

### Malaysia's Production of Titanium Minerals

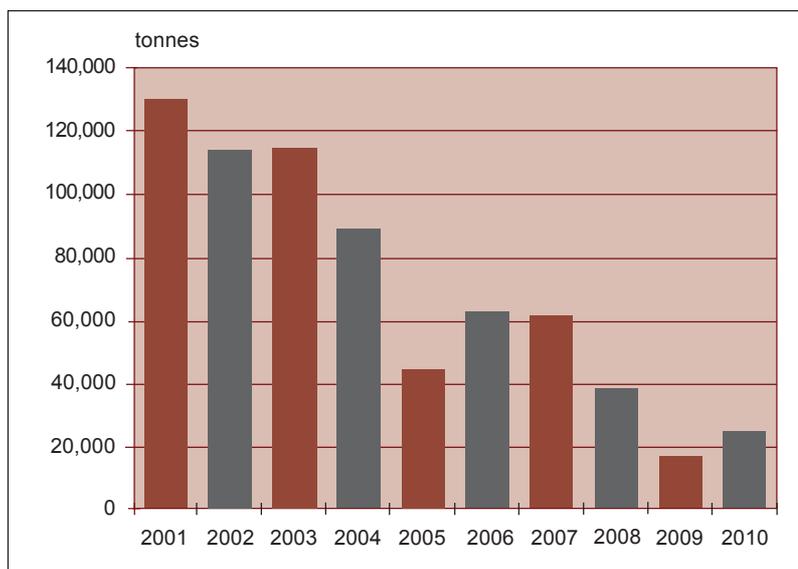
Mineral	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Ilmenite	59,310	–	36,779	–	15,983	–	19,036	–
Rutile	1,450	–	1,834	–	1,502	–	7,567	–
<b>Total</b>	<b>60,760</b>	<b>–</b>	<b>38,613</b>	<b>–</b>	<b>17,485</b>	<b>–</b>	<b>26,603</b>	<b>–</b>

Both ilmenite and rutile are by-product of tin mining

### Malaysia's Historic Production of Ilmenite & Rutile

Year	tonnes
2001	129,750
2002	113,257
2003	113,620
2004	88,779
2005	43,704
2006	62,570
2007	60,760
2008	38,613
2009	17,485
2010	26,603

### Malaysia's Production of Ilmenite and Rutile (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2614.00.100	Ilmenite concentrates	38,494	12,893	24,830	12,288	6,220	7,116
2614.00.900	Other titanium concentrates	929	986	6,785	1,641	3,089	4,354
2823.00.000	Oxides	9,109,054	9,645	8,424	49,800	39,931	3,402
3206.10.000	Pigments	–	–	–	–	–	–
8108.90.000	Other articles of titanium (a)	8	14	13	240	1,126	1,264

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2614.00.100	Ilmenite concentrates	76,118	131,144	149,047	72,618	63,902	46,894
2614.00.900	Other titanium concentrates	3,106	1,525	3,386	8,368	5,022	8,674
2823.00.000	Oxides	613,624	9,307	9,752	58,320	63,495	66,441
3206.10.000	Pigments	–	–	–	–	–	–
7202.91.000	Ferro-titanium	118	200	349	2,073	2,615	3,776
8108.90.000	Other articles of titanium (a)	17,976	763	430	22,284	18,693	25,414

(a) = including waste and scrap

## Malaysia's exports of ilmenite, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Ilmenite</i> (HS: 2614.00.100)						
China	10,786	4,956,000	100	140,000	15,978	3,886,000
South Korea	16,072	7,332,000	12,700	5,920,000	5,500	2,030,000
India	–	–	49	54,000	3,168	1,129,000
Hong Kong	–	–	–	–	144	47,000
Egypt	–	–	–	–	40	24,000
Others	–	–	44	106,000	–	–
<b>Total</b>	<b>16,858</b>	<b>12,288,000</b>	<b>12,893</b>	<b>6,220,000</b>	<b>24,830</b>	<b>7,116,000</b>

Source: Department of Statistics

## Malaysia's imports of ilmenite, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Ilmenite (HS: 2614.00.100)</i>						
United State of America	1,202	5,251,726	78,937	47,369,000	137,043	42,882,000
Australia	13,181	27,824,000	–	–	11,500	3,749,000
Ukraine	–	–	–	–	504	263,000
France	–	–	12,057	6,474,000	–	–
India	35,557	39,518,000	–	–	–	–
Others	–	–	–	–	–	–
<b>Total</b>	<b>49,940</b>	<b>72,593,726</b>	<b>90,994</b>	<b>53,843,000</b>	<b>149,047</b>	<b>46,894,000</b>

Source: Department of Statistics

## Price

Titanium	2007	2008	2009	2010
<b>Ilmenite Grade</b> <b>Australian, min 54% TiO<sub>2</sub>, FOB</b>				
Bulk concentrates	US\$75 - 85	US\$84 - 136.5	US\$60 - 85	US\$65 - 85
Spot prices	US\$85 - 105	US\$110 - 126	US\$100	US\$110 - 130
<b>Rutile Grade</b> <b>Australian concentrate, min 95% TiO<sub>2</sub>, FOB</b>				
Bulk (large volume, pigment grade)	US\$475 - 500	US\$500 - 550	US\$525 - 540	US\$530 - 550
Bagged (small parcel, welding grade)	US\$650 - 700	US\$675 - 725	US\$700 - 800	US\$760 - 805

Source: Industrial Minerals

## World Production of Titanium Minerals

**Ilmenite**

Country	tonnes			% of 2010
	2008	2009	2010p	
Australia	1,320,000	1,020,000	1,210,000	20.5
South Africa (a)	1,050,000	1,050,000	1,120,000	19.0
Canada (a)	850,000	650,000	700,000	11.9
China	600,000	500,000	600,000	10.2
India	432,000	420,000	420,000	7.1
Norway (a)	410,000	302,000	320,000	5.4
Ukraine	300,000	300,000	300,000	5.1
United States (b)	200,000	200,000	200,000	3.4
Brazil	54,000	43,000	43,000	0.7
<b>Malaysia</b>	<b>36,779</b>	<b>15,983</b>	<b>19,064</b>	<b>0.3</b>
Other countries	545,221	790,017	965,936	16.4
<b>World total (rounded)</b>	<b>5,800,000</b>	<b>5,300,000</b>	<b>5,800,000</b>	

**Rutile**

Country	tonnes			% of 2010
	2008	2009	2010p	
Australia	309,000	266,000	280,000	48.5
South Africa	121,000	127,000	130,000	22.5
Sierra Leone	75,000	61,000	67,000	11.6
Ukraine	57,000	57,000	57,000	9.9
India	20,000	20,000	20,000	3.5
Brazil	2,000	3,000	3,000	0.5
<b>Malaysia</b>	<b>1,834</b>	<b>1,502</b>	<b>7,567</b>	<b>1.3</b>
United States	–	–	–	–
Other countries	4,166	13,499	12,433	2.2
<b>World total (rounded) (d)</b>	<b>590,000</b>	<b>550,000</b>	<b>580,000</b>	

<b>World total (ilmenite and rutile, rounded)</b>	<b>5,800,000</b>	<b>5,850,000</b>	<b>6,380,000</b>
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- (a) Mine production is primarily used to produce titaniferous slag.  
 (b) Includes rutile.  
 (c) Included with ilmenite to avoid disclosing company proprietary data  
 (d) Excludes U.S production

Source: United States Geological Survey  
 Minerals and Geoscience Department Malaysia

## Review

The commercial sources for titanium are ilmenite, leucoxene, rutile, titaniferous slag, and synthetic rutile. The consumption of titanium mineral concentrates is tied to consumption of  $TiO_2$  pigments primarily used in making of industrial paint, paper, and plastics. It is also used in welding rod coatings and for manufacturing carbides, chemicals, and metal.

Currently, ilmenite and rutile were produced only as by-products of alluvial tin mining through the processing of 'amang'.

The ilmenite production started to drop since 2003 after the sole ilmenite mine in Ajil, Terengganu ceased its operation. Since then, the production of titanium minerals in Malaysia were from amang retreatment plants which located in Perak and Selangor.

The total titanium minerals production in 2010 increased to 26,603 tonnes from 17,485 tonnes produced in 2009. The titanium minerals which constitute ilmenite and rutile were from amang retreatment plants located in Perak and Selangor.

The produced titanium minerals were consumed locally and also for exports. In 2010, Malaysia exported a total of 24,830 tonnes of ilmenite and other titanium concentrates increased from 12,893 tonnes in 2009.

The main export destinations were China and Korea. Whilst, Malaysia also imported ilmenite and other titanium concentrates. In 2010, a total of 149,047 tonnes of ilmenite and other titanium concentrates was imported, increased from 131,144 tonnes recorded in 2009. The main source of imported ilmenite and other titanium concentrates were from USA, Australia and Ukraine.

In Malaysia, the main downstream titanium industry is the beneficiation of synthetic rutile and manufacture of titanium dioxide ( $TiO_2$ ) pigments. Synthetic rutile, the raw material used in titanium dioxide pigments is being produced by TOR Minerals Malaysia Sdn Bhd located in Ipoh, in which the raw ilmenite feedstock is obtained locally. Tioxide (Malaysia) Sdn Bhd, is a company which manufactures titanium dioxide and the biggest consumer of ilmenite in Malaysia. The total volume of ilmenite ore consumed by Tioxide (Malaysia) Sdn Bhd is about 130,000 tonnes annually. ■

## ZIRCON

### Malaysia's Production of zircon

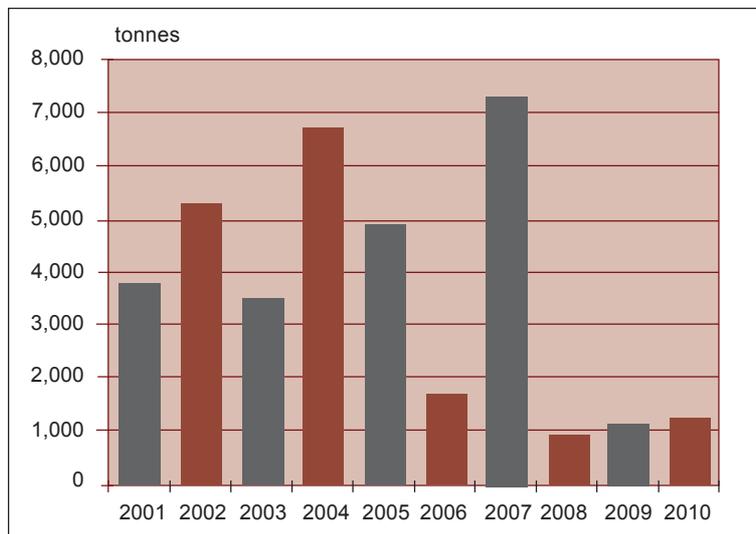
Mineral	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Zircon	7,393	–	984	–	1,145	–	1,261	–

Zircon is by-product of tin mining

### Malaysia's Historic Production of Zircon

Year	tonnes
2001	3,768
2002	5,292
2003	3,456
2004	6,686
2005	4,953
2006	1,690
2007	7,393
2008	984
2009	1,145
2010	1,261

### Malaysia's Production of Zircon (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2615.10.100	Zirconium ore & concs.	1,553	1,575	3,010	26,018	3,970	2,522
2615.10.900	Other zirconium ore & concentrates	1,992	2,150	919	9,894	8,393	3,623
8109.10.100	Unwrought zirconium	–	–	–	–	–	–

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2615.10.100	Zircon & concentrate	641	3,210	17,019	3,326	10,652	55,980
2615.10.900	Other zirconium ore & concentrate	20,119	6,656	1,500	59,363	25,012	5,867
8109.10.100	Unwrought zirconium	–	–	–	–	–	–

Source: Department of Statistics

## Malaysia's exports of zircon, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Zircon &amp; concentrate (HS: 2615.10.100)</i>						
India	299	757,000	436	1,135,000	934	708,000
China	557	3,338,000	715	2,064,000	765	1,270,000
Taiwan	100	461,000	108	268,000	236	544,000
Hong Kong	–	–	310	480,000	–	–
Bangladesh	–	–	6	23,000	–	–
Others						
<b>Total</b>	<b>976</b>	<b>4,613,000</b>	<b>1,575</b>	<b>3,970,000</b>	<b>1,934</b>	<b>2,522,000</b>

Source: Department of Statistics

## Malaysia's imports of zircon, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Zircon &amp; concentrate (HS: 2615.10.100)</i>						
Australia	300	1,160,000	2,753	8,766,000	16,157	52,452,000
Taiwan	189	768,000	37	199,000	485	2,013,000
South Africa	40	131,000	52	214,000	182	712,000
China	118	423,000	121	376,000	123	432,000
Japan	31	214,000	133	506,000	35	170,000
Others	33	630,000	115	591,000	36	201,000
<b>Total</b>	<b>712</b>	<b>3,326,000</b>	<b>3,210</b>	<b>10,652,000</b>	<b>17,019</b>	<b>55,980,000</b>

Source: Department of Statistics

## Price

Zircon	2007	2008	2009	2010
<b>FOB Australian, bulk shipment, per tonne</b>				
Ceramic applications	–	–	–	–
Refractory applications	–	–	–	–
Foundry applications	–	–	–	–
Premium	US\$775-800	US\$830-860	US\$900-950	US\$1000-1050
Standard	US\$725-800	US\$725-820	US\$880-900	US\$850-890
<b>FOB USA, bulk shipment, per tonne</b>				
Ceramic applications	–	US\$750-775	–	–
Refractory applications	–	–	–	–
Foundry sand applications	–	–	–	–
Premium	US\$725-800	US\$775-800	US\$880-900	US\$880-900
Standard	–	US\$725-800	–	US\$830-890

Source: Industrial Minerals

## World Mine Production of Zirconium Minerals

tonnes	tonnes			% of 2010
	2008	2008	2010p	
Australia	550,000	476,000	481,000	40.6
South Africa	400,000	392,000	390,000	32.9
China	140,000	130,000	130,000	11.8
Ukraine	35,000	35,000	35,000	3.0
India	30,000	31,000	31,000	2.6
Brazil	27,000	18,000	18,000	1.5
<b>Malaysia</b>	<b>984</b>	<b>1,145</b>	<b>1,261</b>	<b>0.1</b>
United States	W	W	W	
Other countries	99,016	17,855	28,855	2.4
<b>World total (rounded)</b>	<b>1,280,000</b>	<b>1,160,000</b>	<b>1,190,000</b>	

(w) Withheld to avoid disclosing company proprietary data.

Source: United States Geological Survey  
Minerals and Geoscience Department Malaysia

## Review

Zircon is widely used locally in ceramics, refractories and foundry applications. In Malaysia, zircon recovered as a by-product from tin mining and processing of 'amang' in Perak and Selangor.

During 2010, the production of zircon and concentrates increased to 1,261 tonnes compared with 1,145 tonnes in 2009. Malaysia's zircon production constitutes about 0.1 per cent of the world's total production, which ranked the country at seventh place as the world's zircon producer.

Most of the produced zircon was for exports mainly to India, China and Taiwan. In 2010, a total of 1,934 tonnes of zircon and concentrates was exported compared to 1,575 tonnes in 2009. Malaysia also imported zircon and concentrates and its imports have increased since 2008. During 2010, a total of 17,019 tonnes was imported from Australia, Taiwan, South Africa and Japan.

■

# **Non-Metallic Minerals**

## AGGREGATES

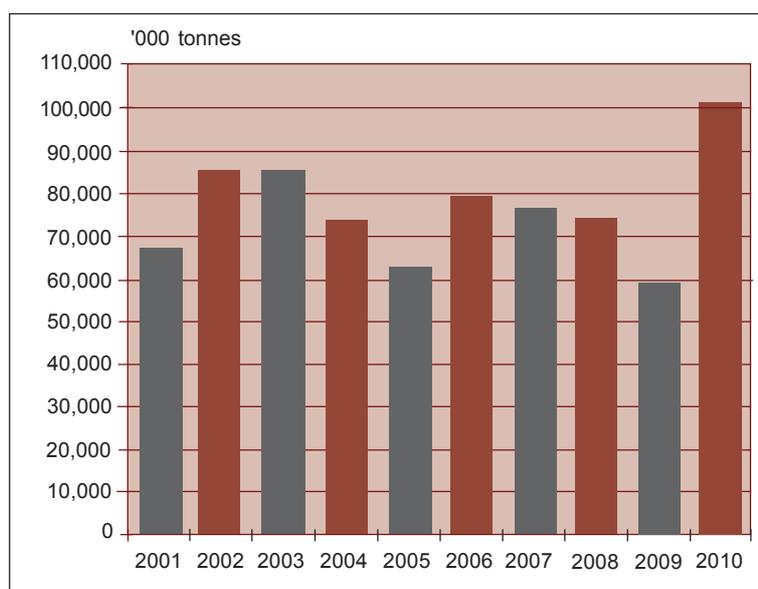
### Malaysia's Production of Aggregates (includes limestone but excludes dimension stone)

State	2007		2008		2009		2010	
	'000 tonnes	quarries	'000 tonnes	quarries	'000 tonnes	quarries	'000 tonnes	quarries
Selangor & KL	25,283	35	10,998	16	19,643	33	21,612	32
Johor	5,009	31	11,666	34	15,501	35	26,704	43
Perak	14,126	55	17,717	56	13,612	58	13,691	57
Sarawak	6,275	42	8,149	36	8,029	40	9,478	39
Pulau Pinang	3,220	15	4,086	15	4,994	14	5,098	14
Kedah	2,813	18	3,418	18	4,009	18	4,165	18
Terengganu	5,767	15	5,020	16	4,007	17	3,988	16
Pahang	3,067	24	3,476	25	3,790	25	3,889	25
Melaka	1,446	7	1,935	10	3,353	10	4,139	8
Negeri Sembilan	3,979	16	3,002	14	3,324	16	3,783	16
Sabah	3,193	40	2,787	16	2,813	17	1,934	17
Kelantan	2,592	12	2,834	11	2,571	11	2,544	11
Perlis	904	2	792	2	852	2	784	2
<b>Total</b>	<b>77,674</b>	<b>312</b>	<b>75,883</b>	<b>289</b>	<b>86,497</b>	<b>296</b>	<b>101,809</b>	<b>298</b>

### Malaysia's Historic Production of Aggregates

Year	'000 tonnes
2001	66,996
2002	84,934
2003	85,142
2004	73,006
2005	62,762
2006	79,913
2007	77,674
2008	75,883
2009	86,497
2010	101,809

### Malaysia's Production of Aggregates (2001 - 2010)



## External Trade

### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2517	Aggregates	3,452,453	4,500,598	5,974,723	98,742	159,557	227,620

### Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2517	Aggregates	30,981	94,181	67,336	18,295	23,038	24,778

### Malaysia's exports of aggregates, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Aggregates (HS: 2517)</i>						
Singapore	3,042,520	90,537,000	3,871,988	149,335,000	5,353,092	214,394,000
Brunei Darussalam	455,430	914,000	560,334	1,536,000	361,150	6,523,000
Indonesia	39,569	6,944,000	64,450	8,317,000	213,781	5,791,000
Thailand	–	–	2,362	71,000	46,359	742,000
United States of America	–	–	3	5,000	54	48,000
Others	4,935	347,000	1,461	293,000	287	122,000
<b>Total</b>	<b>3,542,453</b>	<b>98,742,000</b>	<b>4,500,598</b>	<b>159,557,000</b>	<b>5,974,723</b>	<b>227,620,000</b>

Source: Department of Statistics

## Malaysia's imports of aggregates, by country

Mineral	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Aggregates (HS: 2517)</i>						
China	5,397	3,575,000	63,041	5,377,000	17,334	7,459,000
Vietnam	8,099	2,951,000	8,898	3,178,000	10,983	3,336,000
Hong Kong	123	82,000	37	73,000	16,900	2,352,000
Indonesia	1,972	961,000	2,686	1,304,000	1,003,745	2,140,000
Philippines	10,820	5,171,000	15,204	8,276,000	12,159	5,847,000
Others	4,572	5,519,000	4,315	4,830,000	7,820	4,781,000
<b>Total</b>	<b>30,981</b>	<b>18,259,000</b>	<b>94,181</b>	<b>23,038,000</b>	<b>1,068,941</b>	<b>25,915,000</b>

Source: Department of Statistics

## Review

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Aggregates refer to crushed rocks materials which are processed to produce crushed stone in various sizes. Rock aggregates is a major basic raw material mostly for the construction industry, as well as agriculture, and other industries such as chemical and metallurgical.

In 2010, there were 298 quarries producing various types of rock aggregates in Malaysia compared to 296 in the previous year. Out of this total, 191 quarries produced granite; 67 limestones; 21 sandstone; and 19 of other rock types. The state with the most number of quarries is Perak (57), followed by Johor (43), Sarawak (39) and Selangor/Kuala Lumpur (32).

The total aggregates production for 2010 was 101,809 million tonnes an increase of about 17 per cent compared with 86.5 million tonnes produced in 2009. Most of the country's aggregates was produced by quarries in Selangor and Kuala Lumpur which accounted for over 30 per cent of the country's total rock production.

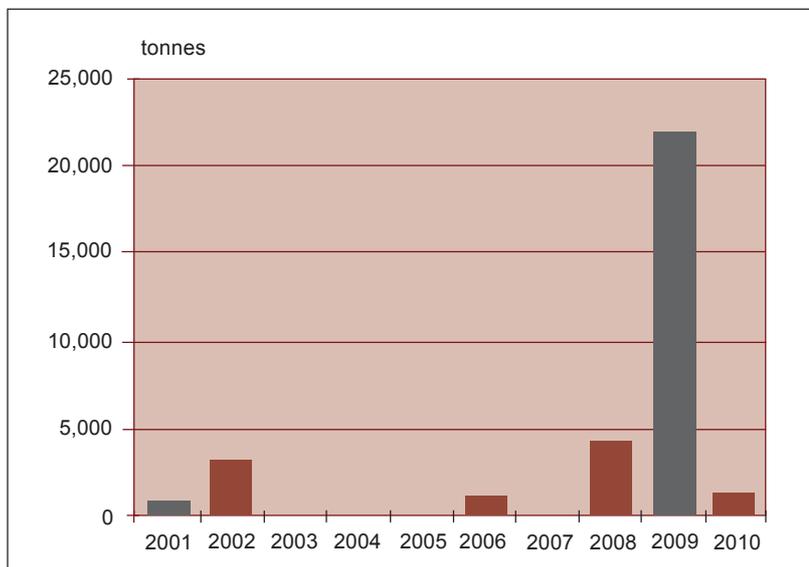
The bulk of the production was for domestic use and some for exports. In 2010, a total of 5.97 million tonnes or six per cent of the total country's aggregates production was exported to neighbouring countries, mainly to Singapore and Brunei. ■

**BARYTES****Malaysia's Production of Barytes, by State, 2007 - 2010**

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Terengganu	–	–	–	–	–	–	–	–
Pahang	–	–	–	–	16,010	1	1,000	3
Kelantan	–	–	4,372	2	6,380	2	–	–
<b>Total</b>	<b>–</b>	<b>–</b>	<b>4,372</b>	<b>2</b>	<b>22,390</b>	<b>3</b>	<b>1,000</b>	<b>3</b>

**Malaysia's Historic Production of Barytes**

Year	tonnes
2001	649
2002	3,082
2003	–
2004	–
2005	–
2006	910
2007	–
2008	4,372
2009	22,390
2010	1,000

**Malaysia's Production of Barytes (2001 - 2010)**

Source: Minerals and Geoscience Department Malaysia

## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2511.10	Barytes	824	2,275	12,518	847	1,879	7,227
2511.20	Witherite	–	–	–	–	–	–

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2511.10	Barytes	69,394	65,042	92,924	35,167	25,831	29,009
2511.20	Witherite	270	377	125	1,198	809	37

Source: Department of Statistics

## Malaysia's imports of barytes, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Barytes</i> (HS: 2511.10 & 2511.20)						
India	7,940	2,961,000	1,890	433,000	12,381	3,737,000
China	15,118	20,623,000	20,806	8,552,000	33,222	10,667,000
Singapore	249	409,000	–	–	1	5,000
Indonesia	4	8,000	375	66,000	125	32,000
Belgium	–	–	1	6,000	1	5,000
Others	17,789	12,364,000	42,347	17,583,000	47,320	14,710,000
<b>Total</b>	<b>41,100</b>	<b>36,365,000</b>	<b>65,419</b>	<b>26,640,000</b>	<b>93,049</b>	<b>29,156,000</b>

Source: Department of Statistics

## Price (per tonne)

Grade	2007	2008	2009	2010
Paint grade, Ground, white, 96-98% BaSO <sub>4</sub> , 350 mesh, del. UK, per tonnes	£140-150	£195-220	£195-220	£195-220
Paint grade, Micronised, off white, <20 microns del UK, min 99%, per tonne ex-works USA, min. 95%, per short ton	£140-150 \$275-325	£140-150 \$275-325	N.A N.A	N.A N.A
Drilling grade, Unground lump, OCMA/API bulk, SG 4.2 FOB Chennai	\$53	\$72-75	\$67-70	\$72-74
Drilling grade, Ground, OCMA/API big bags (1.5 tonnes) FOB Morocco SG 4.22 FOB S.Turkey OCMA bulk, del. Aberdeen OCMA bulk, del. Gt Yarmouth	\$95 \$95 £60-65 £79-80	\$110-112 \$150 £77-78 £99-100	\$120-128 \$135 £77-78 £99-100	\$135-147 \$125-135 £88-98 £111-114
Drilling grade, API lump, CIF US Gulf Coast, Chinese Indian Moroccan	\$105-125 \$143 N.A	\$95-110 \$106-130 N.A	\$94-108 \$97-99 N.A	\$100-108 \$107-112 N.A

Source: Industrial Minerals

## World Mine Production of Barytes

Country	tonnes			% of 2010
	2008	2009	2010p	
China	4,600,000	3,000,000	3,600,000	52.1
India	1,100,000	1,200,000	1,000,000	14.5
United States	648,000	383,000	670,000	9.7
Morocco	500,000	430,000	460,000	6.7
Iran	240,000	200,000	250,000	3.6
Mexico	140,000	152,000	140,000	2.0
Turkey	150,000	150,000	150,000	2.2
Kazakhstan	95,000	95,000	100,000	1.4
Vietnam	80,000	70,000	90,000	1.3
Other countries	733,000	450,000	455,000	6.6
<b>World total (rounded)</b>	<b>7,050,000</b>	<b>6,130,000</b>	<b>6,900,000</b>	

Source: United States Geological Survey

## Review

The principal ores of barium are barytes ( $\text{BaSO}_4$ ) and witherite ( $\text{BaCO}_3$ ). However, only barytes is mined in Malaysia. Barytes is a soft and inert mineral with a high density. Its physical character is suitable as a weighting agent in oil drilling mud to help confine high oil and gas pressures.

In 2010, the total barytes production decreased significantly to 1,000 tonnes compared with 22,390 tonnes in 2009. The barytes was produced by three barytes mines located in Pahang.

Due to lower production and to meet the domestic consumption, a total of 93,049 tonnes of barytes was imported in 2010 compared with 65,419 tonnes in the previous year. Most of the imported barytes was from China, Thailand, India and Indonesia.

About 105,000 tonnes barytes resources have been identified in Malaysia. These resources are located at Bukit PENCHURI, Sungai Perdah, Ulu Sokor, and Sungai Mangkok in Kelantan; Tasik Chini, Sungai Mentiga and Bukit Ibam in Pahang; and in Gerik, Perak. ■

**BENTONITE/FULLER'S EARTH****External Trade****Exports**

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2508.10	Bentonite	76,735	10,838	27,985	7,399	10,790	12,473
2508.20	Fuller's earth	1,522	–	–	181	–	–

**Imports**

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2508.10	Bentonite	110,441	74,876	73,269	32,712	31,644	61,203
2508.20	Fuller's earth	23,139	–	–	6,604	–	–

**Malaysia's exports of bentonite, by country**

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Bentonite (HS: 2508.10.000)</i>						
Indonesia	3,689	4,154,000	7,221	6,413,000	26,460	10,847,000
Philippines	692	620,000	1,024	1,279,000	623	775,000
Thailand	129	243,000	932	787,000	406	274,000
Nigeria	195	218,000	396	433,000	220	268,000
Turkey	–	–	–	–	60	81,000
Others	10,995	2,262,000	1,265	1,878,000	216	228,000
<b>Total</b>	<b>15,700</b>	<b>7,497,000</b>	<b>10,838</b>	<b>10,790,000</b>	<b>27,985</b>	<b>12,473,000</b>

**Malaysia's imports of bentonite, by country**

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Bentonite (HS: 2508.10.000)</i>						
India	13,998	8,262,000	58,668	11,186,000	53,588	35,397,000
China	8,254	8,159,000	7,218	7,536,000	10,090	11,503,000
United States of America	3,699	8,475,000	3,233	5,825,000	3,567	6,357,000
Australia	2,147	2,373,000	2,054	1,745,000	2,924	3,007,000
Germany	283	817,000	1,758	2,002,000	1,294	1,454,000
Others	3,313	4,609,000	1,945	3,350,000	1,807	3,485,000
<b>Total</b>	<b>31,694</b>	<b>32,695,000</b>	<b>74,876</b>	<b>31,644,000</b>	<b>73,269</b>	<b>61,203,000</b>

Source: Department of Statistics

## Malaysia's exports of Fuller's earth, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Fuller's earth</i> (HS: 2508.20.100)						
Thailand	1,500	162,000	–	–	–	–
Philippines	22	19,000	–	–	–	–
<b>Total</b>	<b>1,522</b>	<b>181,000</b>	–	–	–	–

## Malaysia's imports of Fuller's earth, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Fuller's earth</i> (HS: 2508.20.100)						
India	12,270	1,973,000	–	–	–	–
China	3,346	1,155,000	–	–	–	–
Others	–	–	–	–	–	–
<b>Total</b>	<b>15,616</b>	<b>3,128,000</b>	–	–	–	–

Source: Department of Statistics

**Price (per tonne unless indicated)**

Grade	2007	2008	2009	2010
<b><u>Bentonite</u></b>				
Foundry grade, bagged (100 lb)	\$55 - 80	\$55 - 80	\$70 - 90	\$90 - 115
API grade, bagged (100 lb)	\$55 - 80	\$55 - 80	\$70 - 100	\$70 - 100
Cat litter, grade 1-5 mm bulk, FOB main European port	EUR32 - 55	NA	EUR47 - 65	EUR42 - 60
Indian, Cat litter grade, crushed & dried, loose in bulk, FOB Kandla	\$32 - 40	\$32 - 40	\$34 - 38	\$34 - 38
OCMA/Foundry grade, crude & dried bulk, FOB Milos	\$43 - 53	\$43 - 53	EUR50 - 75	EUR50 - 75

Source: Industrial Minerals

**World Mine Production of Bentonite**

Country	tonnes			% of 2010
	2008	2009	2010p	
United States (sales)	4,900,000	3,650,000	4,000,000	39.2
Greece (crude)	950,000	845,000	860,000	8.4
Turkey	900,000	1,000,000	1,050,000	10.3
Italy	599,000	146,000	150,000	1.5
Mexico	375,000	511,000	520,000	5.1
Germany (sales)	414,000	350,000	380,000	3.7
Brazil (beneficiated)	32,000	239,000	245,000	2.4
Czech Republic (crude)	174,000	116,000	120,000	1.2
Spain	150,000	150,000	165,000	1.6
Other countries	2,490,000	2,900,000	2,400,000	24
<b>World total (rounded)</b>	<b>11,700,000</b>	<b>9,660,000</b>	<b>10,000,000</b>	

Source: United States Geological Survey

**World Mine Production of Fuller's Earth**

Country	tonnes			% of 2010
	2008	2009	2010p	
United States (sales)	2,510,000	2,010,000	2,300,000	65.2
Spain	820,000	820,000	830,000	23.7
Mexico	66,000	108,000	110,000	3.1
Italy (kaolinitic earth)	3,000	3,000	3,000	0.1
Other countries	280,000	259,000	285,000	8.1
<b>World total (rounded)</b>	<b>3,680,000</b>	<b>3,500,000</b>	<b>3,528,000</b>	

Source: United States Geological Survey

## Review

Bentonite has many uses, which depend upon its mineralogical composition and technological properties. It is mostly used in the foundry industry, for pelletizing of iron ores, as adsorbents, in drilling mud, as a filler, a suspension, in the building industry, in agriculture, pet waste absorbents and as food binder.

Fuller's earth is a collective term for clay and fine-grained earthy material characterised mainly by their adsorbent properties. The principal clay minerals are attapulgite and sepiolite. It is used for decolourising and purifying mineral, vegetable and animal oils.

Currently, there is no production of bentonite and fuller's earth in Malaysia. Hence, to cater for the local demand mainly for drilling, oil bleaching and palm oil refining industries, Malaysia imports both bentonite and fuller's earth.

In 2010, Malaysia imported a total of 73,269 tonnes of bentonite but no fuller's earth was imported. The imports of bentonite decreased slightly from 74,876 tonnes recorded in 2009. Most of the imported bentonite were from India, China, USA, Australia and Germany.

The imported bentonite were processed to produce activated clay by three processing plants located one each in Perak, Johor and Selangor. Although no bentonite and fuller's earth produced in Malaysia, however a total of 27,985 tonnes of bentonite was exported to Thailand and Philippines. ■

## CLAYS

### Malaysia's Production of Clays and Earth Materials

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Terengganu	9,481,749	354	4,965,143	201	5,713,341	160	2,542,808	305
Perak	6,001,264	198	6,591,500	206	4,817,393	137	6,361,050	192
Johor	4,324,725	174	3,337,547	178	2,998,167	174	5,444,958	188
Kedah	484,815	34	2,100,678	93	2,114,706	161	3,996,551	171
Perlis	323,284	7	662,034	7	1,574,618	16	2,418,384	21
Pahang	925,731	97	841,924	97	1,522,884	134	949,311*	96
Sarawak	3,979,441	158	3,053,252	135	1,133,849	139	1,321,500	115
Negeri Sembilan	985,331	89	779,875	80	1,059,959	76	1,612,947	130
Selangor / KL	1,246,559	63	1,109,592	76	870,135	59	1,726,846	93
Melaka	207,799	33	383,899	83	670,954	159	623,493	150
Kelantan	141,725	69	195,924*	71	237,670	104	187,732	66
Sabah	190,000*	N.A	307,850*	13	202,891*	10	298,158*	N.A
Pulau Pinang	–	–	736,000	16	23,893	2	65,584	5
<b>Total</b>	<b>28,292,423</b>	<b>1,276</b>	<b>25,065,218</b>	<b>1,256</b>	<b>22,966,036</b>	<b>1,330</b>	<b>27,543,322</b>	<b>1,532</b>

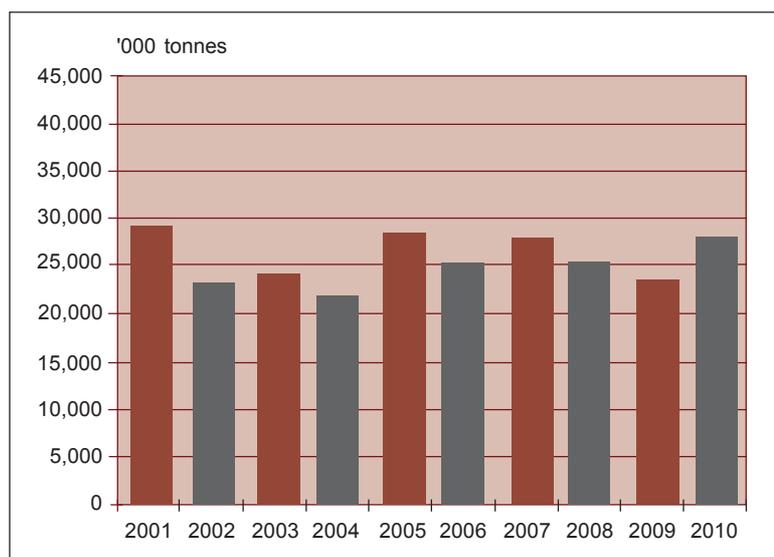
Source: Minerals and Geoscience Department Malaysia

\* Estimated

### Malaysia's Historic Production of Clays and Earth Materials

Year'000	tonnes
2001	29,596
2002	23,092
2003	23,909
2004	22,109
2005	28,758
2006	25,081
2007	28,292
2008	25,065
2009	22,966
2010	27,543

### Malaysia's Production of Clays and Earth Materials (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2508.30	Fire-clay	2	160	18	9	45	18
2508.40	Other clays	9,817	–	–	1,952	–	–

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2508.30	Fire-clay	76	70	173	157	205	228
2508.40	Other clays	14,894	–	–	5,100	–	–

## Malaysia's exports of clay, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Other clays (HS: 2508.40)</i>						
Indonesia	9,393	1,847,000	–	–	–	–
Thailand	36	35,000	–	–	–	–
South Korea	108	19,000	–	–	–	–
Vietnam	–	–	–	–	–	–
Sri Langka	–	–	–	–	–	–
Others	–	–	–	–	–	–
<b>Total</b>	<b>9,537</b>	<b>1,901,000</b>	–	–	–	–

## Malaysia's imports of clay, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Other clays (HS: 2508.40)</i>						
China	1,644	1,856,000	–	–	–	–
Vietnam	3,645	759,000	–	–	–	–
United Kingdom	684	687,000	–	–	–	–
United States of America	323	464,000	–	–	–	–
Indonesia	1,286	453,000	–	–	–	–
Others	1,224	850,000	–	–	–	–
<b>Total</b>	<b>8,806</b>	<b>5,609,000</b>	–	–	–	–

Source: Department of Statistics

**Price (per tonne)**

Grade	2007	2008	2009	2010
<b>Refractory Clays/Mullite</b>				
Chinese flintclay, 45% Al <sub>2</sub> O <sub>3</sub> , per tonne FOB China	\$80 - 88	\$80 - 88	N.A	N.A
European calcined kaolinitic clay, 47% Al <sub>2</sub> O <sub>3</sub> , FOB, per tonne	\$130 - 150	\$130 - 150	N.A	N.A
Mulcoa products, 47% (sized in bulk bags) for coarse sizing, FOB USA, short tonne	\$92.75	\$147	\$130	\$198

Source: Industrial Minerals

**Review**

The term 'clays' is used in a variety of ways. In this review, clays include common clay, ball clay, fire clay, shale, and earth materials such as laterite, earth and red earth. Most products made from them are fired such as structural and face bricks, pavers, vitrified clay pipes, tiles and various other building related products. Shale and common clay are used in the making of Portland cement clinker. Fire clay is used in refractory products such as firebrick and block, high alumina brick and others.

Malaysia has abundant clay resources estimated at 685 million tonnes (Mt) with ball clay about 583 Mt and the rest being mottled or structural clay. Deposits of ball clay are found in many states such as Terengganu (151 Mt), Johor (128 Mt), Kelantan (103 Mt), Pahang (94 Mt), Selangor (72 Mt), Sarawak (36 Mt), Pulau Pinang (10 Mt), Negeri Sembilan (8.5 Mt), Kedah (6.5 Mt), and Perak (3.6 Mt).

In 2010, the total clays and earth materials production was 27 Mt, increase by 18 per cent from 23 Mt produced in 2009. The highest production came from Perak with 6.3 Mt, followed by Johor with 5.4 Mt; Kedah, 4.0 Mt; Terengganu with 2.5 Mt; Perlis; 2.4 Mt; and Selangor, 1.7 Mt.

In addition, the clay production in 2010 experienced a drop of 29 per cent to 5.3 Mt from 4.1 Mt recorded in 2009. Similarly, the production value decreased to RM42.6 million in 2010 compared with RM51.1 million in 2009. Johor contributed about 38 per cent of the total clay production, amounting to 1.9 Mt, followed by Kedah with 0.66 Mt; Selangor with 0.65 Mt; and Pahang with 0.42 Mt.

The extraction of earth materials during 2010 also experienced a decrease of 15 per cent to 22.2 Mt valued at RM152 million, from 19 Mt in the previous year. Perak was the largest producer of earth materials with a total production of 6.2 Mt. Other states with high earth materials output were Johor (3.5 Mt), Kedah (3.3 Mt), Terengganu (2.3 Mt) and Perlis (2.2 Mt). ■

## FELDSPAR

### Malaysia's Production of Feldspar

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Kelantan	317,785	3	430,497	3	354,853	3	379,657	3
N. Sembilan	40,800	4	26,880	2	55,200	6	75,840	6
Perak	–	0	–	–	–	–	–	–
<b>Total</b>	<b>358,585</b>	<b>7</b>	<b>457,377</b>	<b>5</b>	<b>410,053</b>	<b>9</b>	<b>455,497</b>	<b>9</b>

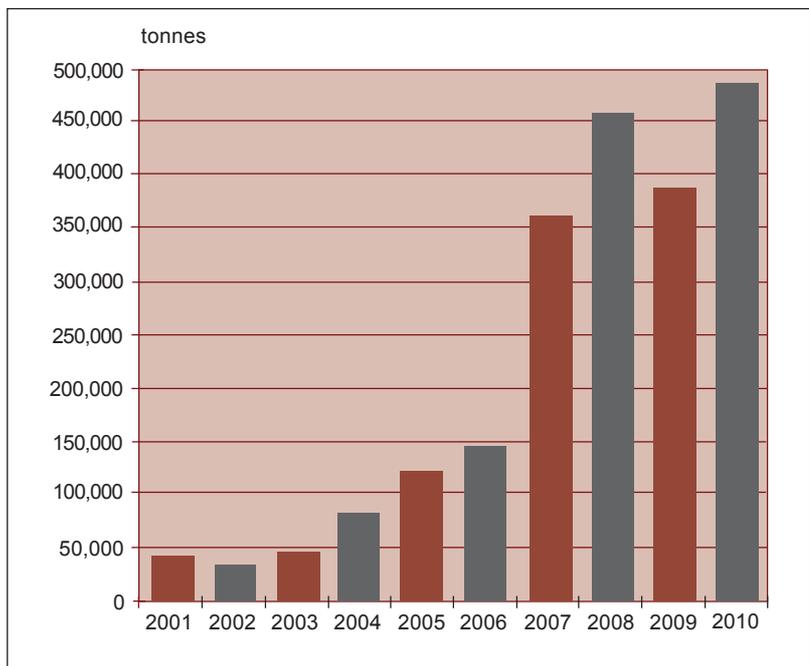
Source: Minerals and Geoscience Department Malaysia

### Malaysia's Historic Production (Feldspar)

Year	tonnes
2001	40,509
2002	30,819
2003	42,662
2004	79,220
2005	117,180
2006	142,358
2007	358,585
2008	457,377
2009	410,053
2010	455,497

Source: Minerals and Geoscience Department Malaysia

### Malaysia's Production of Feldspar (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2529.10.100	Potash feldspar, Soda feldspar	3,916	4,794	21,121	15,681	8,880	7,939
2529.10.900	Other feldspar	1,352	738	110	4,211	1,282	46
2529.30.000	Leucite; Nepheline & Nepheline syenite	3,633	2,121	810	2,097	1,969	1,032

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2529.10.100	Potash feldspar, Soda feldspar	62,743	36,420	110,884	27,772	12,887	28,888
2529.10.900	Other feldspar	18,627	11,120	17,400	7,368	4,144	6,102
2529.30.000	Leucite: Nepheline & Nepheline syenite	12,969	7,896	3,832	7,134	5,004	16,666

## Malaysia's exports of feldspar, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Feldspar (HS: 2529)</i>						
Japan	2,170	5,380,000	3,933	7,046,000	3,260	4,745,000
China	2,317	1,908,000	18	5,000	–	–
Indonesia	1,210	552,000	–	–	–	–
Taiwan	115	131,000	264	107,000	143	82,000
Thailand	535	311,000	–	–	–	–
Others	6,105	1,412,000	10,493	3,015,000	17,829	3,158,000
<b>Total</b>	<b>12,453</b>	<b>9,694,000</b>	<b>14,708</b>	<b>10,173,000</b>	<b>21,232</b>	<b>7,985,000</b>

Source: Department of Statistics

## Malaysia's imports of feldspar, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Feldspar (HS: 2529)</i>						
India	32,683	13,175,000	26,806	9,171,000	31,132	9,259,000
China	8,573	4,660,000	15,567	5,273,000	84,625	14,992,000
Norway	5,233	2,651,000	7,168	3,976,000	3,131	15,650,000
Turkey	5,415	2,848,000	3,815	1,434,000	4,560	1,441,000
Belgium	3	1,598,000	5	40,000	49	88,000
Others	12,483	6,935,000	2,074	2,141,000	33,471	10,226,000
<b>Total</b>	<b>64,391</b>	<b>31,867,000</b>	<b>55,435</b>	<b>22,035,000</b>	<b>156,967</b>	<b>51,656,000</b>

Source: Department of Statistics

## Price (per tonne unless indicated)

Grade	2007	2008	2009	2010
Ceramic grade, powder, 300 mesh bagged, ex-store UK.	N.A	N.A	N.A	N.A
Sand, 28 mesh, glass grade, ex-store UK	N.A	N.A	N.A	N.A
Ceramic grade, sand, ex-works Italy	N.A	N.A	N.A	N.A
<b>Ex-works, USA, per s/ton, bulk</b>				
Ceramic grade				
170-200 mesh, (Na)	\$60 - 75	\$60 - 75	N.A	N.A
325 mesh, bagged (Na)	N.A	N.A	N.A	N.A
200 mesh (K)	\$125	\$125	N.A	N.A
Glass grade				
30 mesh (Na)	\$40 - 52	\$40 - 52	N.A	N.A
80 mesh (K)	\$85 - 90	\$85 - 90	N.A	N.A
Turkish, Na feldspar, Crude				
- 10 mm size bulk, FOB Gulluk,	\$22 - 23	\$22 - 23	\$22 - 23	\$22 - 23
Ground, -63 microns, bagged	\$75 - 80	\$75 - 80	N.A	N.A
Turkish, Na feldspar, Glass grade,				
- 500 microns, bagged, FOB Gulluk,	\$54 - 56	\$70	\$70	\$70
<b>South Africa, FOB Durban, bagged</b>				
Ceramic grade	\$125 - 165	\$125 - 165	N.A	N.A
Micronised (2, 5, 10 microns)	\$205	\$205	N.A	N.A
<b>Indian, FOB India</b>				
Ceramic grade (K), bulk	\$25 - 27	\$25 - 27	N.A	N.A
Powder grade, 200 mesh	\$70	\$70	N.A	N.A

Source: Industrial Minerals

## World Mine Production of Feldspar

Country	tonnes			% of 2010
	2008	2009	2010p	
Turkey	6,500,000	4,210,000	4,500,000	22.3
Italy	4,700,000	4,700,000	4,700,000	23.3
China	2,000,000	2,000,000	2,000,000	9.9
Japan	700,000	700,000	600,000	3.0
Thailand	678,000	600,000	620,000	3.1
Spain	675,000	550,000	570,000	2.8
France	650,000	650,000	650,000	3.2
United States	680,000	550,000	570,000	2.8
Czech Republic	510,000	410,000	440,000	2.2
<b>Malaysia</b>	<b>457,377</b>	<b>410,053</b>	<b>455,497</b>	<b>2.2</b>
Other countries	4,405,415	5,122,154	5,081,154	25.2
<b>World total (rounded)</b>	<b>21,900,000</b>	<b>20,000,000</b>	<b>20,000,000</b>	

Source: United States Geological Survey  
Department of Mineral & Geoscience Malaysia

## Review

Feldspar is the most abundant component mineral in igneous rocks, comprising of a group of aluminosilicate minerals combined in variable proportion with lime, soda, or potash. There are four types of feldspar, however only potassium and sodium feldspar have economic interest and being used in the glass and ceramic industry or as a mild abrasive. Feldspar is also used in plastics, paints, and rubber industries. In ceramics, feldspar is used as flux, to reduce the vitrifying temperature of a ceramic body during firing and forming a glassy phase. In glass making, feldspar provides alumina for improving hardness, durability, and resistance to chemical corrosion.

Malaysia has limited feldspar resources. The Minerals and Geoscience Department has identified sodium rich feldspar deposit in Gua Musang, Kelantan and Merapoh, Pahang; and high potassium feldspar volcanic rock in Gerik, Perak.

Another local source of feldspar are quartz-sericite rock locally known as the pottery stone, which is being quarried in Gemencheh, Negeri Sembilan and

feldspathic sand from granite quarry dust produced in Perak. The pegmatite and graphic granite of Bukit Mor in Johor, Tanjung Jaga in Kedah, a leucogranite in Gunung Pulai, Johor are possible new sources for feldspar. Pottery stone is used by the ceramic industry whilst feldspathic sand by the glass industry.

In 2010, there were nine feldspar mines located in Kelantan and Negeri Sembilan. The total feldspar production was 455,497 tonnes, increased by 11 per cent from 410,053 tonnes produced in 2009.

Local demand for feldspar is largely met by import as local production is low and not suitable for certain products. In Malaysia, feldspar consumption is dominated by the glass and ceramic industries.

In 2010, imports of feldspar amounted to 132,116 tonnes valued at RM51.6 million. The imported feldspar mainly came from China and India. During the year, Malaysia also exported a total of 21,232 tonnes of feldspar worth RM7.9 million. The main export destinations were Japan and Taiwan. ■

## GYPSUM & ANHYDRITE

### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2520.10.000	Gypsum: Anhydrite	1,149	1,404	682	1,863	1,350	248
2520.20.100	Plasters of dentistry	90	68	68	52	40	60
2520.20.900	Other plaster	3,495	5,690	4,791	2,394	3,162	3,470

### Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2520.10.000	Gypsum: Anhydrite	911,342	859,676	1,029,553	89,870	77,331	82,060
2520.20.100	Plasters of dentistry	3,431	31,000	63	274	62	70
2520.20.900	Other plaster	12,991,763	1,538	193,362	77,484	1,419	43,063

### Malaysia's exports of gypsum, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Gypsum (HS: 2520.10.000)</i>						
Indonesia	–	–	–	–	530	162,000
Brunei Darussalam	214	737,000	63	137,000	98	23,000
Botswana	267	21,000	62	42,000	24	23,000
India	16	554,000	16	140,000	17	16,000
Vietnam	20	21,000	–	–	11	12,000
Others	631	530,000	1,262	1,031,000	3	12,000
<b>Total</b>	<b>1,148</b>	<b>1,863,000</b>	<b>1,403</b>	<b>1,350,000</b>	<b>683</b>	<b>248,000</b>

Source: Department of Statistics

## Malaysia's imports of gypsum, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Gypsum (HS: 2520.10.000)</i>						
Thailand	800,588	63,837,000	764,975	70,122,000	189,905	74,572,000
Singapore	37,146	1,642,000	68,637	2,754,000	18,044	3,194,000
Iran	1,549	405,000	9,344	2,238,000	5,903	994,000
Germany	308	367,000	858	903,000	906	948,000
Taiwan	–	–	–	–	600	828,000
Others	71,751	23,619,000	15,862	1,314,000	1,182	1,524,000
<b>Total</b>	<b>911,342</b>	<b>89,870,000</b>	<b>859,676</b>	<b>77,331,000</b>	<b>216,540</b>	<b>82,060,000</b>

Source: Department of Statistics

## Price (per tonne)

Grade	2007	2008	2009	2010
Crude, ex-mine UK	N.A	N.A	N.A	N.A

Source: Industrial Minerals

## World Production of Gypsum

Country	tonnes			% of 2010
	2008	2009	2010p	
China	46,000,000	45,000,000	45,000,000	30.8
Iran	12,000,000	13,000,000	13,000,000	6.2
Spain	11,500,000	11,500,000	11,500,000	7.9
United States	14,400,000	45,000,000	9,000,000	6.2
Thailand	8,000,000	8,500,000	8,500,000	5.8
Canada	5,740,000	3,540,000	3,500,000	2.4
France	4,800,000	2,300,000	2,300,000	1.6
Mexico	5,140,000	5,760,000	5,800,000	4.0
Australia	4,000,000	3,500,000	3,500,000	2.4
Other countries	41,400,000	38,748,000	38,200,000	26.1
<b>World total (rounded)</b>	<b>159,000,000</b>	<b>148,000,000</b>	<b>146,000,000</b>	

Source: United States Geological Survey

## Review

Gypsum and anhydrite are two naturally occurring forms of calcium sulphate compound. Gypsum is in the hydrated form ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) and anhydrite, as its name implies, is in an anhydrous form ( $\text{CaSO}_4$ ). Beside the natural product, synthetic chemical or by-product gypsum is increasingly available. The main uses of gypsum are as plaster of paris, as an additive in cement and glass manufacturing, soil conditioner, filler and extender and also for concrete and blocks.

Ground gypsum is used extensively in agriculture as fertilizer to make good calcium and sulphur deficiencies in the soil, and as a conditioner to reduce soil salinity. Anhydrite is used in the manufacture of sulphuric acid and cement clinker. In Malaysia, gypsum is used for manufacturing of portland cement, wallboard and plaster products and also in the ceramics industry. A large quantity of by-product gypsum (known as titanogypsum) in Malaysia is produced by Tioxide Malaysia, a titanium dioxide plant in Terengganu and also through the production of activated clay. However, it has not been used commercially.

At present, there is no report on the occurrences of natural gypsum in Malaysia. Therefore, the country's requirement was fully met through imports. In 2010, imports of gypsum and anhydrite amounted to 216,540 tonnes worth at RM82.1 million which is an increase of 20 per cent from the previous year imports. The source of the imported gypsum was mostly from Thailand, Singapore and Iran. However, some of the bulk imported gypsum have been processed and re-exported. During the year, Malaysia exported a total of 683 tonnes of gypsum worth RM248,000 mainly to Indonesia, Brunei and Botswana. ■

## KAOLIN

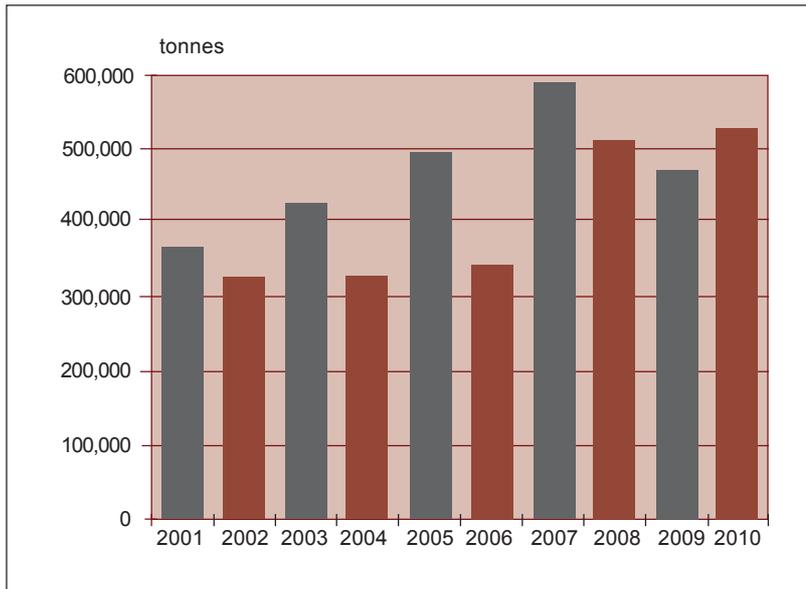
### Malaysia's Production of Kaolin

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Perak	259,699	15	269,702	16	225,734	16	273,153	17
Johor	73,020	13	80,962	8	44,769	8	62,878	7
Pahang	253,000	1	154,000	1	212,000	1	194,300	1
Selangor	1,789	1	1,798	1	5,129	1	–	–
<b>Total</b>	<b>587,508</b>	<b>30</b>	<b>506,462</b>	<b>26</b>	<b>487,632</b>	<b>26</b>	<b>530,331</b>	<b>25</b>

### Malaysia's Historic Production (Kaolin)

Year	tonnes
2001	364,458
2002	323,916
2003	425,942
2004	326,928
2005	494,511
2006	341,223
2007	587,508
2008	506,462
2009	487,632
2010	530,331

### Malaysia's Production of Kaolin (2001 - 2010)



## External Trade

### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2507	Kaolin & kaolinic clays	55,674	53,925	55,150	20,455	22,699	25,454

### Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2507	Kaolin & kaolinic clays	137,647	124,698	94,151	67,599	53,655	59,592

Source: Department of Statistics

### Malaysia's exports of kaolin, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Kaolin (HS: 2507.00.000)</i>						
Thailand	13,350	3,379,000	21,899	5,543,000	17,703	5,497,000
Taiwan	6,071	3,250,000	4,355	2,331,000	7,406	3,266,000
Vietnam	3,568	2,151,000	4,830	2,912,000	5,891	3,176,000
Singapore	2,797	1,511,000	4,950	2,674,000	5,529	2,785,000
Bangladesh	13,155	2,739,000	9,140	1,903,000	4,306	2,662,000
Others	8,866	7,432,000	8,751	7,336,000	14,315	8,068,000
<b>Total</b>	<b>47,807</b>	<b>20,462,000</b>	<b>53,925</b>	<b>22,699,000</b>	<b>55,150</b>	<b>25,454,000</b>

Source: Department of Statistics

## Malaysia's imports of kaolin, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Kaolin (HS: 2507.00.000)</i>						
China	45,038	29,569,000	35,003	20,685,000	42,023	27,705,595
U.S.A.	14,827	3,941,636	6,533	5,785,000	18,328	12,389,811
United Kingdom	3,648	3,941,636	3,345	3,900,000	4,060	4,170,692
India	980	2,237,000	1,975	2,220,000	3,320	2,791,299
Thailand	6,827	5,818,000	8,397	5,006,000	6,658	3,506,937
Others	66,324	17,295,000	69,443	16,059,000	19,759	8,926,923
<b>Total</b>	<b>137,644</b>	<b>67,598,472</b>	<b>124,699</b>	<b>53,655,000</b>	<b>94,148</b>	<b>59,491,257</b>

Source: Department of Statistics

## Price (per tonne unless indicated)

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Kaolin	2007	2008	2009	2010
<b>Ex-Georgia plant, s/ton</b>				
Filler, bulk	\$80 - 100	\$80 - 100	N.A	N.A
Paper coating grade	\$85 - 185	\$85 - 185	\$95 - 147	\$95 - 147
Sanitaryware grade, bagged	\$65 - 75	\$65 - 75	N.A	N.A
Tableware grade, bagged	\$125	\$125	N.A	N.A
Calcined, bulk	\$320 - 375	\$320 - 375	N.A	N.A
<b>Ceramic grade, bulk</b>				
Refined, ex-works France	EUR65 - 168	EUR65 - 168	N.A	N.A
Refined, FOB Rotterdam	£60 - 100	£60 - 100	N.A	N.A

Source: Industrial Minerals

## World Mine Production of Kaolin

Country	tonnes			% of 2010
	2008	2009	2010p	
United States <sup>(a)</sup>	6,280,000	5,290,000	5,700,000	16.8
CIS <sup>(c)</sup>	7,900,000	–	–	0
Czech Republic <sup>(c)</sup>	3,830,000	2,890,000	2,950,000	8.7
Germany <sup>(a)</sup>	3,610,000	3,200,000	3,250,000	9.6
Brazil <sup>(b)</sup>	2,500,000	2,680,000	2,750,000	8.1
United Kingdom <sup>(a)</sup>	1,800,000	1,800,000	1,850,000	5.4
Korea, Republic of <sup>(c)</sup>	955,000	–	–	0
<b>Malaysia*</b>	<b>506,462</b>	<b>487,632</b>	<b>530,331</b>	<b>1.6</b>
Turkey	620,000	800,000	850,000	2.5
Mexico	85,000	78,000	80,000	0.2
Other countries	7,754,000	15,807,000	16,040,000	21.5
<b>World total (rounded)</b>	<b>39,000,000</b>	<b>33,000,000</b>	<b>34,000,000</b>	

<sup>(a)</sup> sales<sup>(b)</sup> beneficiated<sup>(c)</sup> crude

(CIS) Commonwealth of Independent States

Source: United States Geological Survey Minerals  
\*Geoscience Department Malaysia

## Review

Kaolin is white inert clay with a broad pH and low conductivity. It has an excellent coating properties and suitable for most of the important applications such as in the ceramics, paper, rubber, plastics and aluminium industries.

In Malaysia, about 112 million tonnes (Mt) of kaolin reserves have been identified. The major deposits are located mainly in Perak, 59 Mt; Johor, 25 Mt; Sarawak, 23 Mt; Terengganu, 5.3 Mt; Pahang, 4.5 Mt; Sabah, 0.6 Mt; Pulau Pinang, 0.4 Mt; and Kelantan, 0.2 Mt.

During 2010, there were 25 active kaolin mines and most of these mines are small-scale mines that operate by relying on demand. Perak had the most number of producers with 17 mines, Johor, 7 mines and Pahang, one mine.

The total kaolin production in 2010 increased to 530,331 tonnes from 487,632 tonnes recorded in the previous year. About 52 per cent of the produced kaolin came

from Perak and it continued to be the major kaolin producing state in Malaysia. In 2010, the total kaolin production from Perak was 273,153 tonnes. The largest country's kaolin producers also located in Perak namely, Greatpac Mineral Sdn Bhd, Kaolin (M) Sdn Bhd and Tinex Corporation Sdn Bhd. These producers produced various grades of processed kaolin for local as well as for the export markets. The main uses of kaolin in Malaysia are for paper filler and for manufacturing ceramics, cement, paint, rubber and chemical products.

In 2010, Malaysia exported a total of 55,150 tonnes of kaolin worth RM25.5 million mainly to Thailand, Singapore, Taiwan, Vietnam and Bangladesh. Malaysia also imported a total of 94,151 tonnes of premium grade kaolin worth RM59,592 million for the manufacturing of high quality ceramic products, in particular the porcelain figurines. The major sources for imported kaolin were China, USA, United Kingdom, India and Thailand. ■

## LIMESTONE

### Malaysia's Production of Limestone

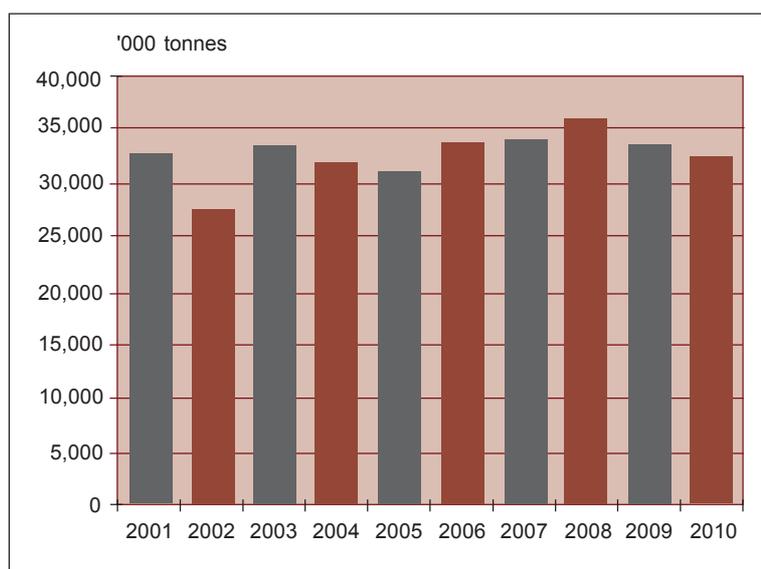
(includes for cement, aggregates and agriculture, excludes dimension stone)

State	2008		2009		2010	
	tonnes	quarries	tonnes	quarries	tonnes	quarries
Perak	15,188,752	39	14,175,255	39	14,418,174	39
Kedah	5,777,498	6	4,565,370	4	4,180,973	4
Sarawak	5,033,347	22	5,034,939	21	5,314,639	19
Perlis	2,609,361	3	2,485,504	5	2,614,740	6
Selangor	2,265,834	2	2,262,189	1	1,409,508	1
N.Sembilan	1,964,270	2	1,993,100	2	2,088,049	1
Pahang	1,772,851	7	1,723,509	7	1,990,776	7
Sabah	518,365	3	425,433	3	154,953	1
Kelantan	97,411	2	143,208	2	226,771	3
<b>Total</b>	<b>35,227,689</b>	<b>86</b>	<b>32,808,507</b>	<b>84</b>	<b>32,398,583</b>	<b>81</b>

### Malaysia's Historic Production (Limestone)

Year	'000 tonnes
2001	32,503
2002	27,450
2003	33,397
2004	31,598
2005	30,868
2006	33,472
2007	33,689
2008	35,227
2009	32,808
2010	32,399

### Malaysia's Production of Limestone (2001-2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2518	Dolomite	431,968	607,412	665,797	83,979	81,998	85,849
2521	Limestone flux	–	–	–	–	–	–
2522	Lime	266,184	260,886	343,306	97,825	101,076	126,834
2523	Cement	3,777,010	1,591,742	13,833,672	566,179	852,178	602,554

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2518	Dolomite	2,221	24,339	4,765	1,803	4,766	2,475
2521	Limestone flux	173	223	77	209	382	80
2522	Lime	14,026	11,179	2,542	7,771	6,486	3,174
2523	Cement	957,465	437,368	1,530,311	208,797	256,648	293,507

Source: Department of Statistics

## Malaysia's exports of limestone, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Limestone Flux (HS: 2521.00.000)</i>						
India	53,076	16,295,000	200,387	30,853,000	230,144	35,653,000
Japan	101,815	20,466,000	55,075	10,350,000	68,500	15,648,000
Taiwan	38,613	3,736,000	39,500	3,225,000	40,350	3,535,000
Singapore	67,050	11,481,000	150,259	14,689,000	150,376	17,044,000
Indonesia	115,421	10,170,000	130,120	10,585,000	143,580	10,122,000
Others	55,993	21,831,000	32,070	12,296,000	32,848	3,847,000
<b>Total</b>	<b>431,968</b>	<b>83,979,000</b>	<b>607,412</b>	<b>81,998,000</b>	<b>665,797</b>	<b>85,849,000</b>

## Malaysia's imports of limestone, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Limestone Flux (HS: 2521.00.000)</i>						
Australia	112	101,000	102	91,000	76	72,000
Singapore	–	–	–	–	1	8,000
China	1	9,000	20	152,000	–	–
Singapore	–	–	50	8,000	–	–
Germany	43	61,000	24	34,000	–	–
Others	17	38,000	27	97,000	–	–
<b>Total</b>	<b>173</b>	<b>209,000</b>	<b>223</b>	<b>382,000</b>	<b>77</b>	<b>80,000</b>

## Review

Limestone is the most widely used of all industrial minerals and has the broadest range of applications related to its properties. In this chapter only limestone that is used for cement, aggregates and agricultural products are covered.

Malaysia's limestone reserves is about 13.6 million tonnes that are suitable for various uses such as cement manufacturing, marble dimension stone and other limestone-based products. These resources are located in Sabah (4,754 Mt), Perak (2,599 Mt), Kelantan (1,308 Mt), Pahang (1,720 Mt), Kedah (1,220 Mt), Negeri Sembilan (600 Mt), Perlis (540 Mt), Selangor (530 Mt), Sarawak (200 Mt), Terengganu (70 Mt), and Johor (40 Mt). Some of these resources are presently being quarried.

In 2010, about 32.4 million tonnes of limestone was produced from 81 quarries. The production decreased by 10 per cent from 35.8 million tonnes recorded in 2009. Most of the limestone produced came from the state of Perak and it continued to be the major limestone producer in the country with the production of 14.4 million tonnes, which accounts for 44 per cent of the total country's production. The other states that recorded high limestone production in 2010 were Sarawak, Kedah, Perlis, Negeri Sembilan, Pahang and Selangor.

The limestone produced was largely consumed in cement making industries (66 per cent), 33 per cent for rock aggregates and the rest is for agriculture and other purposes. Currently, there were 9 quarries producing limestone solely for cement making industries, 68 quarries for aggregates, and 4 quarries for agriculture and other uses.

In 2010, there were 16 cement plants including a white cement plant operating in the country. Nine of them are integrated cement plants, while the others are cement grinding plants. There is also one plant in Sarawak that solely produced and supplied clinker to other cement plant. The major groups of cement producers in Malaysia are CMS Group, CIMA Group, YTL Group, Lafarge Malayan Cement Berhad, Tasek Corporation Berhad, Cement Industries (Sabah) Sdn Bhd, Holcim (M) Sdn Bhd and Aalborg White Asia Sdn Bhd. ■

## MICA

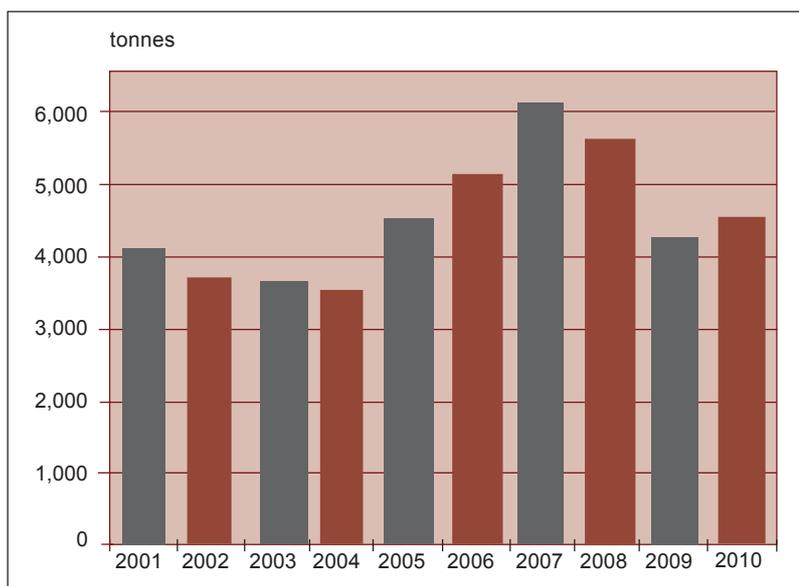
### Malaysia's Production of Mica

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Perak	6,118	3	5,593	3	4,324	3	4,515	3
<b>Total</b>	<b>6,118</b>	<b>3</b>	<b>5,593</b>	<b>3</b>	<b>4,324</b>	<b>3</b>	<b>4,515</b>	<b>3</b>

### Malaysia's Historic Production (Mica)

Year	tonnes
2001	4,107
2002	3,669
2003	3,609
2004	3,544
2005	4,544
2006	5,152
2007	6,118
2008	5,593
2009	4,324
2010	4,515

### Malaysia's Production of Mica (2001 - 2010)



### External Trade

#### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2525.10	Crude mica and mica rifted into sheet or splitting	3	–	–	242	–	–
2525.20	Mica powder	6,080	3,702	5,057	5,817	5,012	6,585
2525.30	Mica waste	–	–	–	–	–	–

## Imports

H.S.	Country	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2525.10	Crude mica and mica rifted into sheet or splitting	126	90	100	187	122	97
2525.20	Mica powder	923	599	708	3,267	2,212	6,219
2525.30	Mica waste	–	3	5	–	23	19

## Malaysia's exports of mica, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Mica (HS: 2525.20.000)</i>						
Japan	1,054	1,791,000	774	1,497,000	860	2,243,000
South Korea	1,000	957,000	550	615,000	948	644,000
United States of America	318	419,000	427	515,000	78	601,000
Thailand	846	765,000	966	774,000	1,274	968,000
Indonesia	519	539,000	636	530,000	796	661,000
Others	329	1,385,000	349	1,081,000	1,099	1,468,000
<b>Total</b>	<b>4,064</b>	<b>5,856,000</b>	<b>3,702</b>	<b>5,012,000</b>	<b>5,056</b>	<b>6,585,000</b>

Source: Department of Statistics

## Price (per tonne unless indicated)

Mica	2007	2008	2009	2010
CIF Europe Mironised, 325 mesh	\$300 - 545	\$300 - 545	\$600 - 900	\$600 - 900
Wet ground	\$500 - 1,000	\$500 - 1,000	€ 600 - 900	N.A
<b>FOB India</b>				
Dry ground	\$200 - 430	\$200 - 430	\$200 - 430	\$300 - 400
<b>FOB plant, USA</b>				
Dry ground	\$210 - 400	\$300 - 400	N.A	N.A
Wet ground	\$535 - 1,300	\$700 - 1,300	\$700 - 1,300	\$700 - 1,300
Micronised	\$700 - 1,000	\$700 - 1,000	\$700 - 1,000	\$700 - 1,000
Flake	\$350 - 500	\$350 - 500	\$350 - 500	\$350 - 500

Source: Industrial Minerals

## Review

Mica is a group of silicate minerals composed of varying amounts of aluminum, potassium, magnesium, iron and water. Two mica minerals which are have commercially important are muscovite (potassium mica) and phlogopite (magnesium mica). However, the term 'mica' is used to signify sericite or muscovite only.

In Malaysia, mica is being mined in the state of Perak. The produced mica are in crude form and is mainly of flake mica. The fine muscovite flakes are recovered from schistose rocks through screening process. There are two common screening processes that are used to produce mica flakes according to the required grain size namely: dry and wet process.

Scrap and flake mica are processed to various sizes of ground mica powder. It is commonly utilized as filler that is prized for its physically smooth properties for industrial applications such as paints. It is also being used in cosmetic applications, mould lubricant in the rubber industry, fluxing agent in welding electrodes and reinforcement in plastics.

In 2010, domestic mica production has increased slightly to 4,515 tonnes from 4,324 tonnes recorded in 2009. There were three mica producers operating on the ex-tin mining land in Bidor, Perak namely: Bidor Mineral Sdn Bhd, Tasik Mahir Sdn Bhd and Techcera (M) Sdn Bhd.

Almost all the mica produced is exported mainly to Thailand. In 2010, a total of 5,056 tonnes of mica powder valued at RM6.6 million was exported to Thailand, Republic of Korea, Japan, Indonesia and USA. At the same time, Malaysia also imported a total of 708 tonnes of mica powder valued at RM6.2 million compared with 599 tonnes in the previous year. ■

## PHOSPHATE ROCK

### External Trade

#### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
3101.00	Guano	2,619	2,143	2,559	2,272	2,542	2,344
2510.10	Natural calcium phosphates unground	–	–	–	–	–	–
2510.20	Natural calcium phosphates ground	–	–	–	–	–	–

#### Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
3101.00	Guano	2,745	4,007	5,611	3,157	2,780	3,809
2510.10	Natural calcium phosphates unground	2,000	1,530	91	31	556	67
2510.20	Natural calcium phosphates ground	317,481	178,722	362,392	378,489	79,340	137,394

Source: Department of Statistics

#### Price (per tonne)

Phosphates	2007	2008	2009	2010
<b>Moroccan,</b>				
75-77%, BPL, FAS, Casablanca	N.A	N.A	N.A	N.A
70-72%, BPL, FAS, Casablanca	\$46.00	\$46.00	N.A	N.A
<b>Tunisia,</b>				
65-68% BPL, FAS Sfax	\$30 - 33	\$30 - 33	N.A	N.A

Source: Industrial Minerals

## World Production of Phosphate Rock

Country	tonnes			% of 2010
	2008	20098	2010p	
China	50,700,000	60,200,000	65,000,000	36.9
United States	30,200,000	26,400,000	26,100,000	14.8
Morocco and Western Sahara	25,000,000	23,000,000	26,000,000	14.8
Russia	10,400,000	10,000,000	10,000,000	5.7
Tunisia	8,000,000	7,400,000	7,600,000	4.3
Brazil	6,200,000	6,350,000	5,500,000	3.2
Jordan	6,270,000	5,280,000	6,000,000	3.4
Egypt	3,000,000	5,000,000	5,000,000	2.8
Syria	3,220,000	2,470,000	2,800,000	1.6
Israel	3,090,000	2,700,000	3,000,000	1.7
Other countries	14,980,000	17,660,000	18,750,000	10.7
<b>World total (rounded)</b>	<b>161,000,000</b>	<b>166,000,000</b>	<b>176,000,000</b>	

Source: United States Geological Survey

## Review

Phosphate rock is the major source for phosphorus and a general term used to describe mineral assemblages. It is naturally contain one or more phosphatic minerals of high purity and quantity to permit its commercial use as a source of phosphatic compounds or phosphorous element.

Accumulated deposits of bat droppings that are found in caves and worked for phosphate or nitrate are known as guano. While, decomposed guano is made up of calcium phosphate. Phosphate rocks and guano are mainly used as fertilizer, which is of vital importance to the agricultural sector.

The domestic requirement for phosphate is fully met through imports. During 2010, about 368,094 tonnes of phosphate rock and guano valued at RM141.3 million were imported whilst, a total of 2,559 tonnes valued at RM2.3 million was exported.

The world's supply of phosphate came from around 38 countries with China is the major producer that contributed for more than 37 per cent or 65 million tonnes of the total world production. The other three major phosphate rock producers are United States of America, Morocco and Western Sahara that account about 35 per cent of the global phosphate rock production in 2010. ■

## SAND AND GRAVEL

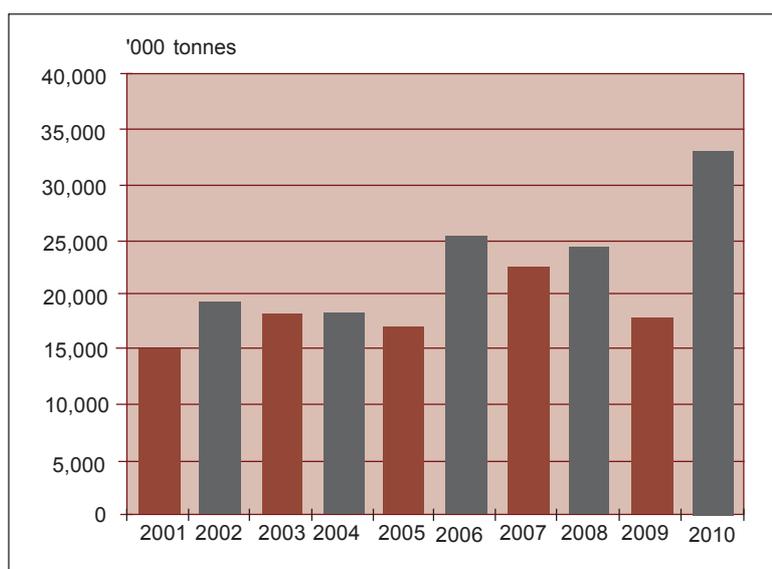
### Malaysia's Production of Sand and Gravel

State	2007		2008		2009		2010	
	'000 tonnes	permit holders						
Perak	10,307	258	10,063	276	3,965	121	7,270	207
Selangor / KL	1,513	46	4,042	25	2,366	30	4,933	33
Sarawak	2,114	23	2,549	22	2,265	24	2,821	27
Terengganu	2,489	121	2,536	116	2,009	106	1,245	113
Johor	2,789	117	1,752	104	1,750	107	6,273	111
Pahang	1,039	90	856	68	1,627	81	2,198	131
Kedah	528	56	1,097	123	1,187	136	2,248	161
Sabah	673	48	678	41	810	47	923	45
Kelantan	236	73	240	N.A	623	118	323	125
Melaka	354	9	150	11	425	17	459	17
Negeri Sembilan	328	46	508	30	356	47	1,706	79
Perlis	–	–	–	–	–	–	–	–
Pulau Pinang	–	–	–	–	–	–	–	–
<b>Total</b>	<b>22,370</b>	<b>887</b>	<b>24,471</b>	<b>816</b>	<b>17,382</b>	<b>834</b>	<b>30,698</b>	<b>1,049</b>

### Malaysia's Historic Production (Sand and Gravel)

Year	'000 tonnes
2001	15,020
2002	19,574
2003	17,955
2004	18,371
2005	17,071
2006	25,226
2007	22,370
2008	24,471
2009	17,382
2010	30,698

### Malaysia's Production of Sand and Gravel (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2505.90	Other natural sand	2,484	1,037	7,633	1,009	822	866

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2505.90	Other natural sand	13,334	12,627	17,553	7,932	7,668	9,174

Source: Department of Statistics

## Malaysia's exports of Sand &amp; Gravel, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Sand &amp; Gravel (HS: 2505.90.000)</i>						
Singapore	1,831	722,000	799	666,000	801	502,000
Thailand	24	19,000	96	60,000	264	145,000
Philippines	24	17,000	51	37,000	5	15,000
Yemen	–	–	–	–	5,000	107,000
Australia	–	–	–	–	1,500	36,000
Others	51	307,000	91	60,000	63	61,000
<b>Total</b>	<b>1,930</b>	<b>1,065,000</b>	<b>1,037</b>	<b>823,000</b>	<b>7,633</b>	<b>866,000</b>

## Malaysia's imports of sand &amp; gravel, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Sand &amp; Gravel (HS: 2505.90.000)</i>						
India	1,385	1,316,000	6,186	2,188,000	10,856	3,636,000
China	5,582	3,784,000	4,069	1,904,000	3,566	1,435,000
Germany	710	996,000	490	832,000	1,076	1,245,000
Australia	35	110,000	521	248,000	766	412,000
Taiwan	90	119,000	203	248,000	399	475,000
Others	867	1,607,000	1,158	2,248,000	890	1,971,000
<b>Total</b>	<b>8,669</b>	<b>7,932,000</b>	<b>12,627</b>	<b>7,668,000</b>	<b>17,553</b>	<b>9,174,000</b>

Source: Department of Statistics

## Review

Sand and gravel are important raw materials used in the construction and infrastructure industries. The most important commercial sources of sand and gravel deposits are from rivers, alluvium, offshore areas and mine tailings.

Sand is used mainly as fine aggregates in concrete, mortar, cement bricks, filling and packing applications. Gravel is used mainly as coarse aggregate in concrete but it is also commonly used for road base. Offshore sand and gravel are often used for land reclamation. Demands for sand and gravel are closely link with demand from the construction industry, which in turn is an indicator of economic performance.

In 2010, the total sand and gravel production was 30.7 million tonnes with 1,049 operators compared with 17.4 million tonnes in 2009. The production has increased significantly by 76 per cent due to high demand in the construction industry and export to neighbouring countries which lead to the increase in the number of sand and gravels operator in 2010.

The increase in production was observed in almost every states except for Terengganu and Kelantan recorded a decrease in production. The highest sand and gravel producing states were Perak, Johor, Selangor, Sarawak, Negeri Sembilan, Kedah, Pahang, Terengganu, Sabah, Melaka and Kelantan.

Malaysia also exported sand and gravel. In 2010, the total exports of sand and gravel registered a huge jump to 7,633 tonnes compared with 1,037 tonnes recorded in 2009. The main exports destination were Yemen and Australia. Similarly, the import volume of sand and gravel during the year increased by 41 per cent to 17,553 tonnes compared with 12,627 tonnes recorded in 2009. The main source of imported sand and gravel were from India and China. ■

## SILICA

### Malaysia's Production of Silica

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Johor	196,140	8	242,655	8	361,551	8	608,967	11
Sarawak	185,838	2	345,447	2	161,115	2	210,139	2
Perak	322,000*	13	862,500*	19	94,500*	10	94,500*	14
Selangor	15,243	1	16,302	1	13,228	1	18,553	1
<b>Total</b>	<b>719,221</b>	<b>24</b>	<b>1,466,904</b>	<b>30</b>	<b>630,394</b>	<b>21</b>	<b>932,159</b>	<b>28</b>

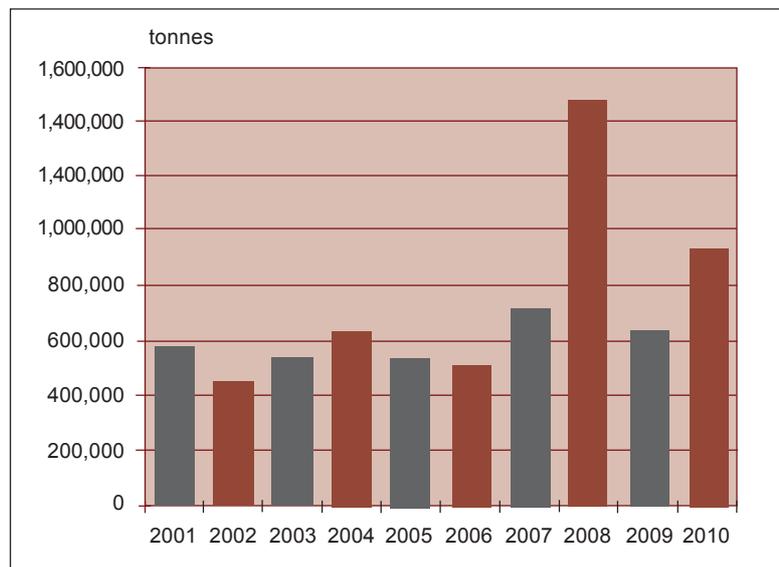
\* - Included by-product from amang plants and tin mines

### Malaysia's Historic Production (Silica)

Year	tonnes
2001	575,105
2002	447,398
2003	533,617
2004	631,402
2005	542,297
2006	512,277
2007	719,221
2008	1,466,904
2009	630,394
2010	932,159

Note: Production includes silica sand and silica powder

### Malaysia's Production of Silica (2001 - 2010)



## External Trade

## Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2505.10	Silica & quartz sands	503,219	346,642	311,847	52,216	23,841	26,418

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2505.10	Silica & quartz sands	24,728	4,825	5,536	10,794	4,760	5,526

## Malaysia's exports of silica sand, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Silica sand</i> (HS: 2505.10.000)						
Singapore	322,166	39,921,000	207,077	15,223,000	196,722	17,858,000
Japan	58,415	6,483,000	40,840	2,817,000	49,219	4,240,000
South Korea	30,615	2,505,000	39,162	2,233,000	25,330	1,572,000
Indonesia	29,623	2,260,000	27,252	1,909,00	20,000	1,025,000
Philippines	11,055	641,000	21,892	1,411,000	20,117	1,398,000
Others	637	308,000	421	248,000	458	325,000
<b>Total</b>	<b>453,011</b>	<b>52,118,000</b>	<b>346,644</b>	<b>23,841,000</b>	<b>311,847</b>	<b>26,418,000</b>

## Malaysia's imports of silica sand, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Silica sand</i> (HS: 2505.10.000)						
China	2,223	2,448,000	2,590	911,000	2,805	1,544,000
Saudi Arabia	5	6,000	253	346,000	725	169,000
Belgium	330	1,036,000	161	219,000	329	523,000
India	63	63,000	214	96,000	283	121,000
United States of America	349	987,000	59	170,000	258	705,000
Others	4,317	5,145,000	1,511	3,018,000	1,135	2,464,000
<b>Total</b>	<b>7,285</b>	<b>9,685,000</b>	<b>4,789</b>	<b>4,760,000</b>	<b>5,536</b>	<b>5,526,000</b>

Source: Department of Statistics

**Price (per tonne)**

Silica Sand	2007	2008	2009	2010
<b>Ex-works, UK</b>				
Foundry sand, dry bulk	£15.5 -16.5	£15.5 -16.5	N.A	N.A
Glass sand, flint, container	£15 - 17	£15 - 17	N.A	N.A
<b>Ex-works, USA</b>				
Glass sand, container	\$14 - 40	\$14 - 40	\$14 - 26	\$20 - 26

Source: Industrial Minerals

**Review**

Malaysia's production of silica is mainly from natural sand deposits, tin mine tailings sand and small amount from amang retreatment plants.

Malaysia has a large amount of silica sand resources. The Minerals and Geoscience Department has estimated about 141.8 million tonnes (Mt) of silica sand resources throughout the country. The largest of these are in Sarawak, 45.7 Mt; Terengganu, 45.6 Mt; and Sabah, 29.9 Mt. Other states with silica resources are Perak (10.9 Mt), Selangor (8.41 Mt), Johor (1.0 Mt) and Kelantan (0.27 Mt).

At present, silica was produced from silica sand mining and retreatment of amang. In 2010, silica sand mining was carried out in the states of Johor, Sarawak, Perak and Selangor. Amang retreatment plants in Perak also contributed to the overall silica production. There were 28 active producers in the country, with 14 of them in Perak, 11 in Johor, two in Sarawak and one in Selangor.

The total production of silica increased by 48 per cent to 932,159 tonnes from 630,394 tonnes produced in 2009. These was contributed from the huge jump in production from Johor and Sarawak. Johor produced a total of 608,967 tonnes, compared with 361,551 tonnes in 2009. This was 65 per cent of Malaysia total production of silica, while Sarawak produced 210,139 tonnes, Perak and Selangor produced only 94,500 tonnes and 18,553 tonnes respectively.

The bulk of the domestic silica produced goes towards the manufacturing of glass products. It is also consumed in minor quantity by ceramics, foundries, glass wool production industry and for water treatment.

Export of silica sand in 2010 decreased slightly to 311,847 tonnes compared with 346,642 tonnes recorded in the previous year. The main export destination were to Singapore, Japan, Republic of Korea, Indonesia and Philippines.

Conversely, Malaysia imported a total of 5,536 tonnes of silica sand, increased from 4,789 tonnes registered in 2009. Half of the imported silica sand was from China and the rest were from Saudi Arabia, Belgium, India and USA. ■

# **Energy Minerals**

## COAL

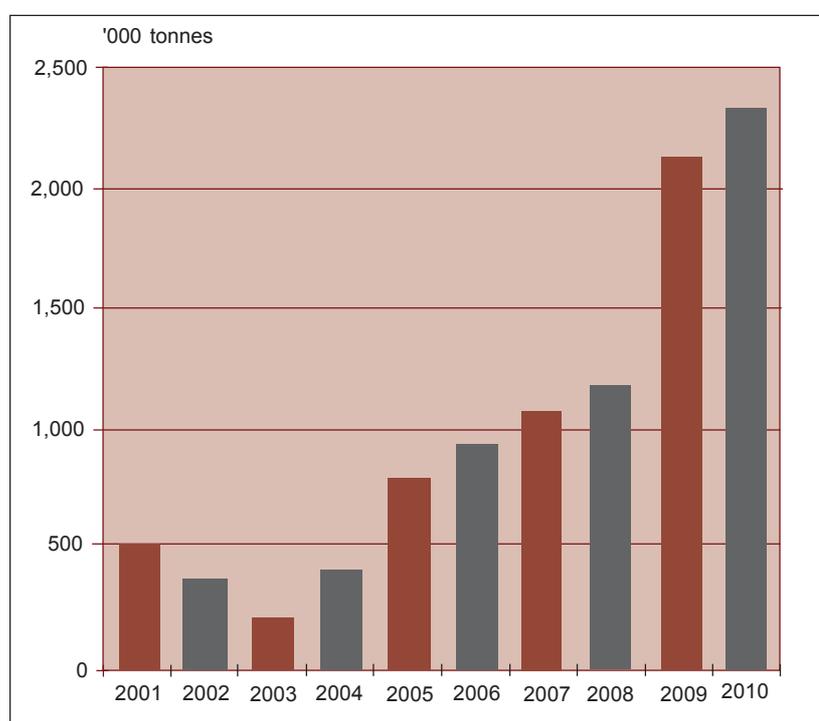
### Malaysia's Production of Coal

State	2007		2008		2009		2010	
	tonnes	mines	tonnes	mines	tonnes	mines	tonnes	mines
Sarawak	1,063,078	5	1,166,525	6	2,138,390	8	2,397,340	10

### Malaysia's Historic production (Coal)

Year	tonnes
2001	497,733
2002	352,513
2003	174,800
2004	389,176
2005	789,356
2006	901,801
2007	1,063,078
2008	1,166,525
2009	2,138,390
2010	2,397,340

### Malaysia's Production of Coal (2001 - 2010)



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### External Trade

#### Exports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2701.11	Anthracite coal	1,187	2,794	2,400	1,618	2,953	2,443
2701.12	Bituminous coal	50	–	25,630	54	–	4,142
2701.19	Other coal	52,023	62,000	297,328	37,462	23,275	54,634
2701.20	Briquettes	24,345	73	43	71	67	78
2702.10	Lignite	–	–	–	–	–	–
2704.00.1	Coke and semi coke of coal	1,785	5,589	11,376	1,449	6,141	11,894
2704.00.2	Coke and semi coke of lignite or peat	8	60	71	8	153	152

## Imports

H.S.	Commodity	tonnes			RM '000		
		2008	2009	2010p	2008	2009	2010p
2701.11	Anthracite coal	242,517	274,588	150,339	161,556	141,176	93,992
2701.12	Bituminous coal	70,465	449	335	15,853	721	527
2701.19	Other coal	3,750,562	9,224,264	19,769,765	5,146,561	3,649,805	5,114,159
2701.20	Briquettes	9,550	1,794	1,592	7,774	1,568	1,364
2702.10	Lignite	–	8	6	–	59	49
2704.00.1	Coke and semi coke of coal	15,100	17,368	76,086	26,465	27,877	113,003
2704.00.2	Coke and semi coke of lignite or peat	787	558	1,780	311	529	1,539

## Malaysia's exports of coal, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Coal (HS: 2701.1)</i>						
China	46,012	31,546,064	62,000	23,275,000	322,867	58,721,000
Indonesia	1,187	1,618,000	2,600	2,627,000	2,400	2,443,000
United States of America	–	–	–	–	85	44,000
Thailand	–	–	186	313,000	–	–
Singapore	–	–	5	8,000	–	–
Others	6,061	5,970,000	3	5,000	7	11,000
<b>Total</b>	<b>53,260</b>	<b>39,134,000</b>	<b>64,794</b>	<b>26,228,000</b>	<b>325,359</b>	<b>61,219,000</b>

## Malaysia's imports of coal, by country

Country	2008		2009		2010p	
	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)	Quantity (tonnes)	Value (RM)
<i>Coal (HS: 2701.1)</i>						
Indonesia	4,530,285	649,971,000	7,758,238	278,618,000	14,256,135	348,635,000
Australia	224,925	1,127,102,000	929,048	467,786,000	2,688,740	808,244,000
South Africa	384,965	741,487,000	317,215	309,061,000	2,438,144	695,842,000
Vietnam	122,430	117,335,000	225,577	107,405,000	111,143	64,199,000
Singapore	8,989	1,554,000	75,776	20,058,000	–	–
Others	131,249	104,650,000	193,447	81,885,000	426,259	153,998,000
<b>Total</b>	<b>5,402,843</b>	<b>2,742,099,000</b>	<b>9,499,300</b>	<b>1,264,813,000</b>	<b>19,920,421</b>	<b>2,070,918,000</b>

## World Production of Coal

Country	tonnes			% of 2009
	2007	2008	2009	
China	2,536,000,000	2,621,832,300	3,050,000,000	44.0
USA	1,039,260,000	1,065,519,000	975,153,000	14.1
India	490,188,000	526,584,000	566,157,000	8.1
Australia	389,613,000	399,033,000	415,252,000	6.0
South Africa	247,600,236	252,213,358	250,581,674	3.6
Indonesia	174,794,000	225,000,000	245,000,000	3.5
Kazakhstan	94,370,100	111,072,300	91,493,082	1.3
Colombia	69,902,000	73,502,075	72,807,412	1.0
Canada	69,213,000	68,106,000	62,837,000	1.0
Czech Republic	62,391,000	62,033,000	60,069,000	0.9
Vietnam	43,190,000	39,777,000	43,754,200	0.6
Korea, Dem. P.R. of	24,100,000	24,100,000	25,100,000	0.4
Mexico	11,886,757	15,894,060	23,051,869	0.3
Thailand	18,239,176	18,095,335	16,360,261	0.2
Mongolia	9,237,600	10,071,900	13,163,900	0.2
Brazil	5,998,354	10,202,175	10,202,175	0.1
Philippines	3,401,136	3,609,316	4,687,277	0.1
New Zealand	4,835,408	4,906,421	4,563,333	0.1
<b>Malaysia</b>	<b>1,166,525</b>	<b>2,138,390</b>	<b>2,397,340</b>	<b>0.03</b>
Other countries	1,184,027,934	1,152,806,155	1,064,129,681	15.3
<b>World Total (rounded)</b>	<b>6,419,000,000</b>	<b>6,625,000,000</b>	<b>6,938,000,000</b>	

Source: BGS World Mineral Statistics 2005-2009

## Review

In Malaysia, the coal resources are found mostly in East Malaysia, in the states of Sarawak and Sabah. At present, fourteen coal deposits have been identified in the country. These Malaysia's coal deposits range from lignite to anthracite with sub-bituminous and bituminous coal being more common. To date it is estimated that the total coal reserves is about 1,938 million tonnes, of which 281 million tonnes are classified as measured resources, 378 million tonnes as indicated and another 1,279 million tonnes as inferred. About 80 per cent of the reserves are in Sarawak, 19 per cent in Sabah and less than one per cent in Peninsular Malaysia. The largest measured reserves of coal are located in the Merit Pila coalfield where 170 million tonnes of coal had been identified. The coal in Maliau and Malibau, Sabah has been found to be suitable for power generation.

Annual production of coal in Malaysia increased each year since 2003. In 2010, the coal production increased further by 14 per cent to 2.4 million tonnes, compared with 2.1 million tonnes recorded in 2009. This was due to the increase in mine output and high demand during the year. Currently, coal are being produced in the Sarawak State where ten coal were mines in operation in 2010 compared to eight mines in 2009.

Most of the coal produced is consumed by the power generation plants besides cement manufacturing and iron and steel manufacturing industries. At present, there are five coal-fired power generation plants in operation namely Sultan Salahuddin Abdul Aziz Power Plant in Kapar, Selangor; Janamanjung Power Plant in Manjung, Perak; Sejingkat Power Plant in Kuching, Sarawak; SKS Tanjung Bin in Johor and Jimah Power Plant in Port Dickson, Negeri Sembilan. Most of the power plants imports coal for their requirement. Each year since 2002, imports of coal has been on the increasing trend.

In 2010, a total of 19.9 million tonnes of coal was imported, increased from 9.5 million tonnes recorded in 2009. The major sources of imported coal were from Indonesia, Australia and South Africa. Malaysia also exported some of its coal to China, Indonesia and USA. In 2010, a total of 325,359 tonnes of coal was exported an increase from 64,841 tonnes in 2009.

The development of local coal resources were not aggressively pursued because most of the deposits were located in the interior areas, which lack infrastructures, and therefore uneconomical to be fully exploited. In Sabah, more than 72 per cent of the resources are located in Maliau Basin Conservation Area, which was designated by the Sabah State Government as a Protection Forest Reserve (Class One). Currently, mining and exploration for coal is actively being carried out only in the state of Sarawak. ■

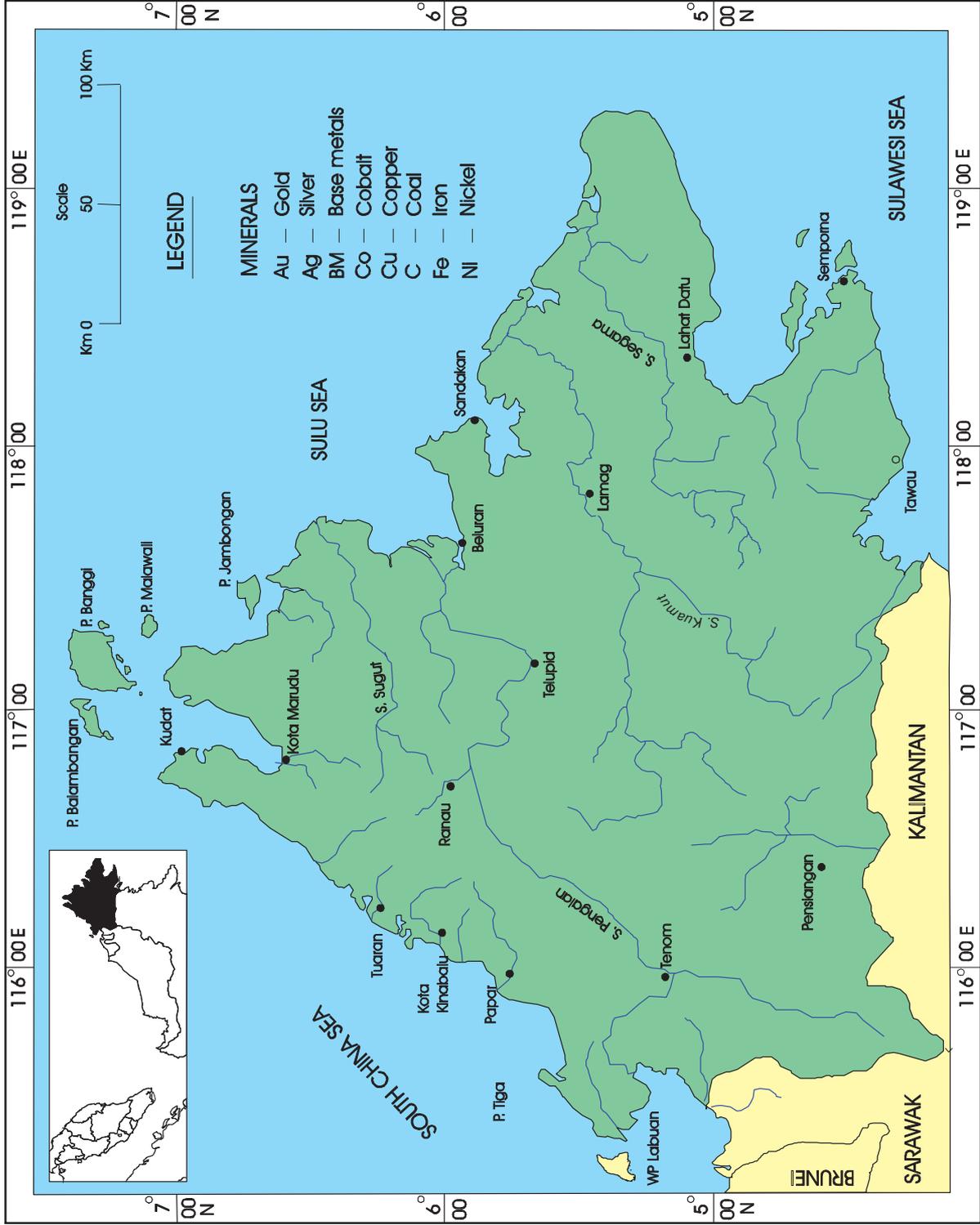
# **MINES IN 2010**



# LOCATION OF MINES IN SARAWAK



**LOCATION OF MINES IN SABAH**



**LIST OF OPERATING MINES IN MALAYSIA FOR 2010\***

<u>Name</u>	<u>Location</u>	<u>Mineral mined</u>
<b>STATE : PAHANG</b>		
1 Gema Impak Sdn Bhd	Bentong	Iron ore
2 Ibam Mining Sdn Bhd	Bkt. Ibam, Rompin	Iron ore
3 Ibam Mining Sdn Bhd	Seledang, Rompin	Iron ore
4 ZCM Resources Sdn Bhd	Rompin	Iron ore
5 Pacific Megalink Sdn Bhd	Rompin	Iron ore
6 Esperance Mining Sdn Bhd	Rompin	Iron ore
7 Danau Suria Mining Sdn Bhd	Rompin	Iron ore
8 Danau Suria Mining Sdn Bhd (No. 2)	Rompin	Iron ore
9 Aras Kuasa Sdn Bhd	Pekan	Iron ore
10 Danau Suria Trading Sdn Bhd	Pekan	Iron ore
11 MZ II Trading Sdn Bhd	Pekan	Iron ore
12 Mohd. Rojis Bin Daud	Pekan	Iron ore
13 Gainhill Agency & Consultancy Services S/B	Pekan	Iron ore
14 Forest Mining Sdn Bhd	Pekan	Iron ore
15 Forest Mining Sdn Bhd	Pekan	Iron ore
16 MK Ria Sdn Bhd	Sg. Leboh, Bt Yon, Lipis	Iron ore
17 Semantan Resources Sdn Bhd	Cheka, Kuala Lipis	Iron ore
18 Sg. Temau Mining Sdn Bhd	Kuala Lipis	Iron ore
19 Jelam Resources Sdn Bhd	Kuala Lipis	Iron ore
20 Edubest Mining Sdn Bhd	Kuala Lipis	Iron ore
21 Aras Kuasa Sdn Bhd	Maran	Iron ore
22 Tajau Makmur Sdn Bhd	Maran	Iron ore
23 Mekar Unggul Sdn Bhd	Maran	Iron ore
24 Lanchang Mining Sdn Bhd	Maran	Iron ore
25 Tanjung Gebeng Sdn Bhd	Ulu Lepar, Kuantan	Iron ore
26 Alam etika Sdn Bhd	Kuala kuantan	Iron ore
27 Sinar Tani Sdn Bhd	Kuantan	Iron ore
28 Edubest Mining Sdn Bhd	Kg. Baru, Jerantut	Iron ore
29 ZCM Resources Sdn Bhd	Sg. Piol, Jerantut	Iron ore
30 Jalur Galian Sdn Bhd	Jerantut	Iron ore
31 Lanchang Mining Sdn Bhd	Temerloh	Iron ore
32 MZ II Trading & Mining Sdn Bhd	Temerloh	Iron ore
33 CKB Trading Sdn Bhd	Raub	Iron ore
34 Mega Well Mining Sdn Bhd	Bera	Iron ore
35 Penjom Gold Mine	Penjom, Kuala Lipis	Gold
36 Selinsing Mining Sdn Bhd	Sg. Kermoi, Lipis	Gold
37 Lombong Tg. Abdullah	Ulu Jelai, Lipis	Gold
38 Kinta Tiasa Sdn Bhd	Kuala Lipis	Gold
39 Gali Gold Mining Sdn Bhd	Kuala Lipis	Gold

Exploration & Mining Activities

<u>Name</u>	<u>Location</u>	<u>Mineral mined</u>
40 Yan Chan Kee Kim Mining	Kuala Lipis	Gold
41 Lombong Yaacob bin Sahak	Kuala Lipis	Gold
42 Raub Australian Gold Mining Sdn Bhd	Bkt Koman, Raub	Gold
43 HDL Global Sdn Bhd	Bukit Ibam	Gold
44 Agenda Jitu Sdn Bhd	Bentong	Tin ore
45 Rich Marvellous Sdn Bhd	Sg. Semantut, Bentong	Tin ore
46 Metro Emerald Sdn Bhd	Sg. Lembing, Kuantan	Tin ore
47 Pekan Mining Sdn Bhd	Chini	Manganese
48 L&C Mining Sdn Bhd	Penyor, Pekan	Barytes/ Silica sand/ Manganese
49 Sri Hisham Holding Sdn Bhd	Selendang, Rompin	Kaolin
50 Cemat Aman Sdn Bhd	Ulu Lepar, Kuantan	Copper
<b>STATE : PERAK</b>		
1 Asia Ceramics & Chemical Ind. Sdn Bhd	Bidor	Kaolin
2 Foo Hoo Kaolin (M) Sdn Bhd	Tanah Mas, Bidor	Kaolin
3 Forming kaolin (M) Sdn Bhd	Tanah Mas, Bidor	Kaolin
4 PTH Minerals (M) Sdn Bhd	Tanah Mas, Bidor	Kaolin
5 Tinex Kaolin Corp. Sdn Bhd	Bidor Station, Bidor	Kaolin
6 Solid Kaolin Sdn Bhd	Tanah Mas, Bidor	Kaolin
7 Poh Fatt Tin Mine No. 4	Bidor Station, Bidor	Kaolin
8 GO NGV Sdn Bhd	Tanah Mas, Bidor	Kaolin
9 Ehsan Delima Sdn Bhd	Bidor Station, Bidor	Kaolin
10 Poh Fatt Tin Mine No. 1	Tanah Mas, Tapah	Kaolin
11 Poh Fatt Tin Mine No. 3	Tanah Mas, Tapah	Kaolin
12 Associated Kaolin Industries Bhd	Changkat Rembian, Tapah	Kaolin
13 United Clay Product Sdn Bhd	Sg. Jangka, Tapah	Kaolin
14 Seen Mee Clay (M) Factory Sdn Bhd	Sg. Jangka, Tapah	Kaolin
15 Kaolin (M) Sdn Bhd	Sg. Jangka, Tapah	Kaolin
16 Semarak Cerah Sdn Bhd	Sg. Jangka, Tapah	Kaolin
17 P.L. Lee Trading Sdn Bhd	Tanah Mas, Tapah	Kaolin
18 Rahman Hydraulic Tin Sdn Bhd	Klian Intan, Pangkalan Hulu	Tin ore
19 Johan Bersatu Sdn Bhd	Klian Intan, Pangkalan Hulu	Tin ore
20 Kesuma Global Sdn Bhd (West Ocean Ent.)	Pantai Remis, Manjung	Tin ore
21 Kesuma Global Sdn Bhd (Golden Pacific 8)	Pantai Remis, Manjung	Tin ore
22 Dollar Valley Sdn Bhd	Tg. Tualang	Tin ore
23 Bidor Mineral Sdn Bhd	Kg. Coldstream, Bidor	Mica
24 Tasik Mahir Sdn Bhd	Bidor Station, Bidor	Mica
25 Techcera (M) Sdn Bhd	Bidor Station, Bidor	Mica

<u>Name</u>	<u>Location</u>	<u>Mineral mined</u>
26 Rapat Tiara Sdn Bhd	Sungkai	Iron ore
27 Datar Ribu Sdn Bhd	Sungai Lam, Ulu Kinta	Iron ore
28 Lean Loong Ent. Sdn Bhd	Gunung Rapat, Ipoh	Iron ore
<b>STATE : KELANTAN</b>		
1 YAKIN/ Takrif Baru Sdn Bhd	Sg. Aring, Gua Musang	Manganese
2 YAKIN/ Takrif Baru Sdn Bhd	Sg. Aring, Gua Musang	Manganese
3 YAKIN/ Takrif Baru Sdn Bhd	Sg. Aring, Gua Musang	Manganese
4 YAKIN/ Takrif Baru Sdn Bhd	Sg. Aring, Gua Musang	Manganese
5 YAKIN/ Centamin Const. Sdn Bhd	Sg. Aring, Gua Musang	Manganese
6 YAKIN/ Centamin Const. Sdn Bhd	Sg. Aring, Gua Musang	Manganese
7 YAKIN/ Centamin Const. Sdn Bhd	Sg. Aring, Gua Musang	Manganese
8 YAKIN/ Ratusan Ardi Sdn Bhd	Sg. Aring, Gua Musang	Manganese
9 YAKIN/ Jangka Bakat Sdn Bhd	Sg. Aring, Gua Musang	Manganese
10 Peak Venture Sdn Bhd	Sg. Kapas, Tanah Merah	Gold
11 WZH Enterprise	Sokor, Tanah Merah	Gold
12 PKINK/CMNM Mining Group Sdn Bhd	Sokor, Tanah Merah	Gold
13 Ruzman b. Mohd. Aladin	Jeli	Gold
14 Perlombongan Sg. Degong Sdn Bhd	Jeli	Gold
15 Wan Zulkifli b. Ibrahim	Sg. Jentiang, Kandek	Gold
16 Berkat Usaha Insan Sdn Bhd	Kg. Tanah Putih, Gua Musang	Feldspar
17 Yayasan Kraftangan Kelantan	Kg. Tanah Putih, Gua Musang	Feldspar
18 PKINK/Pulai Mining Sdn Bhd	Kg. Tanah Putih, Gua Musang	Feldspar
19 PKINK/Kijang Baryte Sdn Bhd	Sg. Aring, Gua Musang	Barytes
20 Triangle Range Sdn Bhd	Bkt Penchuri, Tanah Merah	Barytes
21 Interbumi Mining Sdn Bhd	Bkt Kuang, Rantau Panjang	Iron ore
22 Perlombongan Gua Musang Sdn Bhd	Bkt Tambun, Gua Musang	Iron ore
23 Tekun Istimewa	Chiku, Gua Musang	Iron ore
24 Opil Mining	Machang	Iron ore
25 Batik Mahsuri Sdn Bhd	Machang	Iron ore
26 Ladang Ibu	Kuala Krai	Iron ore
27 Sungei Hijau	Sg. Hau, Temangan	Iron ore
<b>STATE : TERENGGANU</b>		
1 TBM Mineral Sdn Bhd	Mukim Jerangau, Dungun	Iron ore
2 Bumidunia Property Sdn Bhd	Hulu Paka, Dungun	Iron ore
3 Harum Merdeka Sdn Bhd	Hulu Paka, Dungun	Iron ore
4 Wahaba Wangin Sdn Bhd	Bukit Besi, Dungun	Iron ore
5 Cahaya Ikhtiar Sdn Bhd	Bukit Besi, Dungun	Iron ore
6 Koperasi Polis Terengganu Berhad	Tebak, Kemaman	Iron ore
7 Koperasi Polis Terengganu Berhad	Tebak, Kemaman	Iron ore
8 Telok Kalung Construction Sdn Bhd	Tebak, Kemaman	Iron ore

\*Mining Lease

<u>Name</u>	<u>Location</u>	<u>Mineral mined</u>
9 Lombong MKD Makmur Sdn Bhd	Mukim Bandi, Kemaman	Iron ore
10 Lombong Permint Mineral Sdn Bhd	Mukim Bandi, Kemaman	Iron ore
11 Reezan Plantation Sdn Bhd	Mukim Tebak, Kemaman	Iron ore
12 PERMINT Gold Mine Lubuk Mandi	Lubuk Mandi, Marang	Gold
13 PERMINT Gold Mine Sg. Kerak	Sg. Kerak, Marang	Gold
14 PERMINT Gold Mine Sg. Tarom	Sg. Tarom, Setiu	Gold
15 Lombong Timah Induk Timur Sdn Bhd	Sg. Dadong, Tebak, Kemaman	Tin ore
16 Lombong Punchong Emas Sdn Bhd	Bkt. Tulis, Jarangau, Dungun	Tin ore
17 Lbg Tbg. Amanah Warisan Negeri Terengganu Sdn Bhd	Bkt. Chetai, Hulu Terengganu	Dimension stone
<b>STATE : JOHOR</b>		
1 Kota Tinggi Mining Sdn Bhd	Sg. Pelepah Kiri, Kota Tinggi	Iron ore
2 Limemax Sdn Bhd	Sg. Pelepah Kanan, Kota Tinggi	Iron ore
3 DYAM Tengku Mahkota	Cha'ah, Batu Pahat	Iron ore
4 Waja Jati Sdn Bhd	Pagoh, Muar	Iron ore
5 Hj. Mesiran Alias	Pagoh, Muar	Iron ore
6 Usaha Padu Enterprise	Bkt. Kepong, Muar	Iron ore
7 Korporat Awal Sdn Bhd	Jemaluang, Mersing	Iron ore
8 DYAM Tunku Ismail Ibrahim	Mersing	Iron ore
9 Sokongan Semulajadi Sdn Bhd	Jemaluang, Mersing	Iron ore
10 Sokongan Semulajadi Sdn Bhd (Nitar)	Jemaluang, Mersing	Iron ore
11 KEJORA Sdn Bhd No. 3	Sg. Linggiu, Kota Tinggi	Tin
12 JOMIS Sdn Bhd	Sg. Rengit, Pengerang	Bauxite
13 Sykt. Generasi Karisma Sdn Bhd	Pagoh, Muar	Bauxite
14 Yusof bin Mohd Salleh Sdn Bhd	Mukim Lenggor, Mersing	Kaolin
15 Giant Distinction Sdn Bhd	Sg. Tengkil, Kota Tinggi	Silica sand
<b>STATE : SARAWAK</b>		
1 Luckyhill Coal Mining Sdn Bhd	Sg. Apong, Abok, Sri Aman	Coal
2 Lucky Power Strategies Sdn Bhd	Silantek, Sri Aman	Coal
3 Genesis Force Sdn Bhd	Balingan, Mukah	Coal
4 Sarawak Coal Resources Sdn Bhd	Bukit Dinding, Mukah	Coal
5 Sarawak Coal Resources Sdn Bhd	Bergih, Mukah	Coal
6 Sarawak Coal Resources Sdn Bhd	Penipah, Mukah	Coal
7 Sarawak Coal Resources Sdn Bhd	Sg. Belian Mati, Mukah	Coal
8 Sarawak Coal Resources Sdn Bhd	Hulu Sg. Penipah, Mukah	Coal
9 Global Mineral (S) Sdn Bhd	Tebulan, Kapit	Coal
10 Global Mineral Exploration Corporation Sdn Bhd	Nanga Merit, Kapit	Coal
11 Syarikat Sebangun Sdn Bhd	Bakong, Miri	Silica sand
12 Syarikat Sebangun Sdn Bhd	Sg. Sebatang, Bintulu	Silica sand

Exploration & Mining Activities

Name	Location	Mineral mined
13 Syarikat Sebangun Sdn Bhd	Sg. Sebemban, Bintulu	Silica sand
14 Luckyhill Quarry Sdn Bhd	Krian, Bau, Kuching	Calcium
<b>STATE : KEDAH</b>		
1 LGK Resources Sdn Bhd	Sungai Petani	Iron ore
2 Bestagold Resources Sdn Bhd	Merbok, Kuala Muda	Iron ore
3 Wan Yee Ming Sdn Bhd	Mahang, Kulim	Tin ore

\*Mining Lease



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