



2006 Minerals Yearbook

ISRAEL

THE MINERAL INDUSTRY OF ISRAEL

By Thomas R. Yager

In 2006, Israel played a significant role in the world's production of bromine, magnesium metal, phosphate rock, and potash. The country's share of the world's bromine production amounted to 38%; potash, 7%; magnesium metal, 4%; and phosphate rock, 2% (Jasinski, 2007; Kostick, 2007; Kramer, 2007; Lyday, 2007). Other domestically significant mining and mineral processing operations included aggregates, cement, diamond cutting and polishing, natural gas, and petroleum products. Israel was not a globally significant consumer of minerals.

Minerals in the National Economy

In 2006, the mining and quarrying and nonmetallic mineral products sectors each accounted for about 0.7% of the gross domestic product (GDP), and the manufacture of iron, steel, and other metals, about 0.2%. The remainder of the manufacturing sector (which included diamond cutting and polishing, fertilizer production, and petroleum refining) accounted for 12.9% of the GDP. The nonmetallic minerals sector employed about 9,300 workers, and the mining and quarrying sector, about 3,300. Israel's total exports amounted to \$39.7 billion in 2005, of which diamond accounted for 15.5%; mining and quarrying, 1.3%; and nonmetallic mineral products, 0.7% (Central Bureau of Statistics, 2007, p. 606, 669, 698, 754, 759, 761).

Production

In 2006, the production of bromine declined by nearly 14%; magnesium, 12%; and phosphate rock, 9%. Natural gas output increased by 40%. From 2002 to 2006, steel production increased by an estimated 167%; potash, 14%; and cement, 11%. In the same period, cut diamond production declined by 46%; phosphate rock, 28%; and crushed stone, 11%.

Structure of the Mineral Industry

Most of Israel's mining and mineral processing operations were privately owned, including the producers of aggregates, bromine, cement, lime, magnesium, natural gas, phosphate rock, potash, and salt. The petroleum refineries were state-owned.

Commodity Review

Metals

Copper.—Altos Hornos de México S.A. de C.V. (AHMSA) planned to reopen the Timna copper mines, which had been shut down for more than 20 years. The cost of the project was estimated to be nearly \$200 million; AHMSA spent about \$25 million in 2006. The company planned to produce and export 45,000 metric tons per year (t/yr) of refined copper starting in 2009 (Global Mining News, 2005; Embassy of Israel in Mexico, 2007).

Magnesium.—Dead Sea Magnesium Ltd. (DSM) [Israel Chemicals Ltd. (ICL), 65%, and Volkswagen AG of Germany, 35%] produced about 24,500 metric tons (t) of magnesium metal in 2006 compared with 27,853 t in 2005. Magnesium alloys accounted for about 52% of DSM's sales, and magnesium metal, 48% (Israel Chemicals Ltd., 2007, p. 79, 82).

Industrial Minerals

Bromine.—In 2006, Dead Sea Bromine Group (DSBG) (a subsidiary of ICL) produced about 179,000 t of bromine compared with 207,048 t in 2005. The company consumed about 80% of its bromine for the manufacture of bromine compounds. DSBG planned to increase its capacity to 280,000 t/yr in 2008 from 240,000 t/yr (Israel Chemicals Ltd., 2007, p. 50, 57).

Phosphate Rock.—Mining of phosphate rock by Rotem Amfert Negev Ltd. (a subsidiary of ICL) declined to about 2.94 million metric tons (Mt) in 2006 from 3.24 Mt in 2005. Rotem consumed about 90% of its output for the manufacture of phosphate fertilizers and phosphoric acid; fertilizer production declined to about 1.61 Mt in 2006 from 1.64 Mt in 2005 (Israel Chemicals Ltd., 2007, p. 31, 35).

Potash.—Dead Sea Works (DSW) (a subsidiary of ICL) experienced a decline in its domestic potash production to 2.22 Mt in 2006 from 2.26 Mt in 2005. By 2008, DSW planned to increase its potash production capacity by 250,000 t/yr by using fewer of its brine ponds for salt precipitation and more for carnallite precipitation (Israel Chemicals Ltd., 2007, p. 35).

Mineral Fuels

Natural Gas.—In 2006, natural gas output increased to 2.31 billion cubic meters from nearly 1.66 billion cubic meters in 2005 because of higher output from the Mari-B gasfield in the Mediterranean Sea. Noble Energy, Inc. of the United States expected its production to increase in 2007 as more power stations are converted to natural gas (Noble Energy, Inc., 2007, p. 12, 33).

Outlook

Bromine, natural gas, and potash production is likely to increase by 2009, and copper production is expected to be restarted. The production trends for the cement, crushed stone, and sand industries will depend on the strength of the domestic economy.

References Cited

- Central Bureau of Statistics, 2007, Statistical abstract of Israel 2007: Jerusalem, Israel, Central Bureau of Statistics, 903 p.
Embassy of Israel in Mexico, 2007, AHMSA will invest \$200 million in Israel in Newsletter: Mexico City, Mexico, Embassy of Israel in Mexico, March, p. 3

Global Mining News, 2005, Mexican Co to invest \$160M in Timna copper mines (Israel): Global Mining News, no. 61, September 6, p. 7.
 Israel Chemicals Ltd., 2007, Description of corporate activity for period ending December 31, 2006: Tel-Aviv, Israel, Israel Chemicals Ltd., 104 p.
 Jasinski, S.M., 2007, Phosphate rock: U.S. Geological Survey Mineral Commodity Summaries 2007, p. 120-121.
 Kostick, D.S., 2007, Potash: U.S. Geological Survey Mineral Commodity Summaries 2007, p. 124-125.

Kramer, D.A., 2007, Magnesium metal: U.S. Geological Survey Mineral Commodity Summaries 2007, p. 100-101.
 Lyday, P.A., 2007, Bromine: U.S. Geological Survey Mineral Commodity Summaries 2007, p. 36-37.
 Noble Energy, Inc., 2007, 2006 annual report: Houston, Texas, Noble Energy, Inc., 128 p.

TABLE 1
 ISRAEL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2002	2003	2004	2005	2006
METALS					
Iron and steel, steel, crude ^c	180,000 ^r	180,000 ^r	370,000 ^r	480,000 ^r	480,000
Lead, refined secondary	22,000	25,000	27,000	27,000 ^e	27,000 ^e
Magnesium metal	26,000	26,000	28,000	27,853	24,581
INDUSTRIAL MINERALS					
Bromine, elemental	185,000	176,000	202,000	207,048	179,493
Caustic soda	NA ^r	NA ^r	NA ^r	NA ^r	NA
Cement, hydraulic	4,584	4,632	4,494	5,093	5,089
Clays:					
Brick clay	35,672	36,256	65,732	54,586	54,925
Common clay	998,193	892,658	850,000	1,072,491	1,003,169
Flint clay	--	--	--	2,200	6,761
Fuller's earth	-- ^r	-- ^r	-- ^r	-- ^r	--
Diamond ³	1,188	771	800 ^{r,e}	807 ^r	641
Gypsum	123,119	141,000	124,678	106,798	110,754
Lime	751,857	702,373	113,102	165,894	158,264
Magnesia, Mg content	NA ^r	NA ^r	NA ^r	NA ^r	NA
Magnesium chloride	126,000	130,000	137,000	134,370	114,333
Phosphate:					
Phosphate rock, mine output:					
Beneficiated	4,091 ^r	3,708 ^r	3,290 ^r	3,236 ^r	2,949
P ₂ O ₅ content	1,100 ^r	1,000 ^r	900 ^r	890 ^r	810
Phosphatic fertilizers, P₂O₅ equivalent:					
Monoammonium phosphate	13,000	12,000	12,000	12,000 ^e	12,000 ^e
Triple superphosphate	108,000	202,000	170,000	160,000 ^e	150,000 ^e
Phosphoric acid, P ₂ O ₅ equivalent	567,000	580,000	543,000	520,000 ^e	510,000 ^e
Potash, K ₂ O equivalent	1,950	1,990	2,170	2,260	2,220
Salt, marketed	392 ^e	376 ^e	385	406	434
Sand:					
Silica sand	209,347	210,815	196,330	196,254	204,190
Other ^c	6,000	6,000	6,000	7,000	7,000
Stone:					
Crushed ^c	49,000	44,000	41,000	38,000	43,500
Dimension, marble	106,302	68,605	30,935 ^r	70,000 ^{r,e}	83,000 ^e
Sulfur:					
Byproduct from petroleum	36	45	42	44	45 ^e
Sulfuric acid:					
Gross weight	1,956	1,894	1,789	1,700 ^e	1,700 ^e
S content	639	619	581	550 ^e	550 ^e

See footnotes at end of table.

TABLE 1--Continued
ISRAEL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2002	2003	2004	2005	2006
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross million cubic meters	9	8	1,193	1,655	2,313
Dry do.	4 ^e	3 ^e	498	686	960
Petroleum:					
Oil shale	457,900	436,500	439,200	428,900	452,000
Crude 42-gallon barrels	33,438	27,396	23,135	21,798 ^r	24,510
Refinery products:					
Liquefied petroleum gas thousand 42-gallon barrels	5,591	5,500	6,170	5,650	5,461
Gasoline do.	18,863	19,034	21,046	21,114	22,108
Naphtha do.	3,798	4,376	3,722	4,066	3,430
Kerosene do.	7,886	8,639	8,555	9,549	9,041
Distillate fuel oil do.	21,169	22,208	20,516	22,185 ^r	24,104
Residual fuel oil do.	22,432	22,910	21,098 ^r	21,827 ^r	21,463
Other do.	2,007	2,151	1,835	1,696	1,700 ^e
Total do.	81,746	84,818	82,942 ^r	86,087 ^r	87,300 ^e

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. NA Not available. -- Zero.

¹Table includes data available through September 17, 2007.

²In addition to the commodities listed, imported gemstones are cut; and potassium nitrate, secondary refined zinc, such fertilizers as monopotassium phosphate, and a variety of crude construction materials are produced, but available information is inadequate to make estimates of output.

³Imported diamond cut in Israel.

TABLE 2
ISRAEL: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Aggregates		Lime & Stone Production Company Ltd. [Housing & Construction Holding Company Ltd., 50%, and Readymix (Israel) Ltd., 50%]	15 quarries	15,000. ^c
Bromine		Dead Sea Bromine Group (DSBG) [Israel Chemicals Ltd. (ICL), 100%]	Sdom	240.
Cement		Nesher Israel Cement Enterprises Ltd. (Clal Industries and Investments Ltd., 75%)	Ramla	5,000 clinker; 3,600 cement.
Do.		do.	Haifa	2,000 clinker; 450 cement.
Do.		do.	Har Tuv	1,000 clinker; 700 cement.
Flint clay and quartz		Negev Industrial Minerals Ltd. (subsidiary of Doraz D.R.)	Mactesh Ramon	25.
Lead, refined, secondary		Harkunas Lead Works	Ashdod	25.
Lime		Lime & Stone Production Co. Ltd.	NA	170.
Do.		Negev Industrial Minerals Ltd.	Mishor Rotem	90.
Magnesium:				
Magnesia		Dead Sea Periclase Ltd. (DSP) (Israel Chemicals Ltd., 100%)	do.	95.
Do.		Tateho Dead Sea Fused Magnesia Co. [Dead Sea Periclase Ltd. (DSP), 50%, and Tateho Chemical Industries Co. of Japan, 50%]	do.	13.
Magnesium, refined		Dead Sea Magnesium Ltd. (DSM) (Israel Chemicals Ltd., 65%, and Volkswagen AG of Germany, 35%)	Sdom	34.
Natural gas	million cubic meters	Samedan, Mediterranean Sea Inc. (Noble Energy, Inc., 100%)	Mari-B gasfield	6,200.
Petroleum:				
Crude	thousand 42-gallon barrels	Lapidoth Israel Oil Prospectors Corp.	Heletz-Brur	22.
Do.	do.	do.	Kochav	9.
Refined	do.	Oil Refineries Ltd. (Government, 100%)	Haifa	58,400.
Do.	do.	do.	Ashdod	36,500.
Phosphate:				
Phosphate rock		Rotem Amfert Negev Ltd. (Israel Chemicals Ltd., 100%)	Arad, Oron, and Zin	4,500.
Phosphatic fertilizers		do.	Rotem	1,700.
Do.		Haifa Chemicals Ltd.	Haifa	NA.
Phosphoric acid ¹		Rotem Amfert Negev Ltd.	Rotem	640.
Do.		Haifa Chemicals Ltd.	Haifa	NA.
Potash		Dead Sea Works (DSW) (Israel Chemicals Ltd., 100%)	Sdom	2,800.
Salt		do.	do.	700.
Do.		Israel Salt Industries Ltd. (subsidiary of Danker Group)	Eliat	150.
Do.		do.	Kalia	60.
Do.		do.	Atlit	16.
Sand		Negev Industrial Minerals Ltd.	Mactesh Htira	300.
Steel:				
Crude		Hod Metals	Akko	300.
Do.		Yehuda Steel Ltd.	Ashdod	180.
Billet		do.	Bene Ayish	200.
Do.		do.	Ashdod	180.
Rebar		do.	Bene Ayish	200.
Do.		do.	Ashdod	120.
Do.		Hod Metals	Kiryat Gat	300.
Sulfur		Oil Refineries Ltd.	Ashdod	40.
Do.		do.	Haifa	33.
Sulfuric acid		Rotem Amfert Negev Ltd.	Rotem	NA.
Zinc		Numinor Chemical Industries Ltd.	Maalot	NA.

^cEstimated; estimated data are rounded to no more than three significant digits. NA Not available.

¹P₂O₅ equivalent.