

THE MINERAL INDUSTRY OF ISRAEL

By Thomas R. Yager

Israel was the world's second leading producer of bromine, the fifth leading producer of potash, and the eighth leading producer of phosphate rock in 2004. The country also produced such industrial minerals as flint clay, gypsum, kaolin, magnesia, silica sand, and sulfur and such metals and metal products as lead, magnesium, and steel. Building materials produced in Israel included cement, crushed stone, marble, and sand. Israel also cut imported diamond and other gemstones and produced natural gas, petroleum, and petroleum products (Jasinski, 2005; Lyday, 2005; Searls, 2005).

In 2004, Israel's gross domestic product (GDP) at purchasing power parity amounted to \$145 billion. The GDP increased by 4.3% in 2004 compared with 1.3% in 2003. Production in the mining and quarrying sector fell by 3% in 2003, and in the nonmetallic mineral products sector, by 5.2% (Israel Central Bureau of Statistics, 2004, p. 20.13, 20.15; International Monetary Fund, 2005, p. 202; 2005¹).

The subsidiaries of Israel Chemicals Ltd. (ICL) produced bromine, fertilizers, magnesia, magnesium metal, phosphate rock, potash, and salt. In 2004, Dead Sea Bromine Group (DSBG) produced 202,000 metric tons (t) of bromine compared with 176,000 t in 2003. The company consumed 80% of its bromine in the manufacture of bromine compounds. DSBG planned to increase its capacity to 280,000 metric tons per year (t/yr) in 2006 from 240,000 t/yr in 2004 (Israel Chemicals Ltd., 2005, p. 38, 45; Sharbel Shehadeh, Ministry of National Infrastructures, written commun., October 17, 2005).

Mining of phosphate rock by Rotem Amfert Negev Ltd. declined for the fifth consecutive year in 2004. Dead Sea Works (DSW) increased its potash production to 2.06 million metric tons (Mt) in 2004 from 1.75 Mt in 2000. DSW also produced salt; national salt production was an estimated 398,000 t in 2004 compared with 376,000 t in 2003. Dead Sea Periclase Ltd. produced high-purity caustic calcined magnesia; the company's output of dead-burned magnesia fell because of competition from China. In 2004, Dead Sea Magnesium Ltd. produced 28,000 t of magnesium metal compared with 26,000 t in 2003 (O'Driscoll, 2004; Sharbel Shehadeh, Ministry of National Infrastructures, written commun., October 17, 2005).

Negev Industrial Minerals Ltd. (NIM) produced flint clay, gypsum, lime, limestone, quartz, and silica sand. In 2004, ICL sold NIM to Doraz D.R. for \$21.2 million. In 2004, national production of gypsum rose to 75,930 t from 64,845 t; lime production fell to 690,659 t from 702,373 t; and silica sand production fell to 196,330 t from 210,815 t (Industrial Minerals, 2004; Sharbel Shehadeh, Ministry of National Infrastructures, written commun., October 17, 2005).

Nesher Israel Cement Enterprises Ltd. was Israel's only cement producer. In 2004, the company produced 4.49 Mt of

cement compared with 4.63 Mt in 2003 and 4.58 Mt in 2002. Israel also produced an estimated 41 Mt of crushed stone and 6 Mt of sand (Sharbel Shehadeh, Ministry of National Infrastructures, written commun., October 17, 2005).

In 2004, production of natural gas rose to 1.19 billion cubic meters from 8 million cubic meters in 2003 because of the opening of the Mari-B gasfield in the Mediterranean Sea. In 2005, Noble Energy Inc. and its partners planned to start supplying Israel Electric Corporation Ltd. with 1.76 billion cubic meters of natural gas per year from Mari-B for 10 years. The companies also planned to sell 114 million cubic meters per year to the petroleum refinery in Ashdod. Noble also announced plans to increase the capacity of onshore receiving facilities to 6.2 billion cubic meters per year to match that of the Mari-B offshore facilities because of expected increases in natural gas demand in 2006 and 2007 (Noble Energy Inc., 2005, p. 9).

Outlook

The outlook for Israel's bromine, lead, magnesium, phosphate, potash, and salt industries depends heavily upon world market conditions for these commodities; the cement, crushed stone, gypsum, lime, marble, and natural gas industries, however, depend mainly upon the strength of the Israeli economy. The International Monetary Fund (2005, p. 202) predicted that Israel's GDP would grow by 3.7% in 2005 and 3.6% in 2006.

References Cited

- Industrial Minerals, 2004, ICL sells Negev Industrial Minerals: Industrial Minerals, no. 442, July, p. 12.
- International Monetary Fund, 2005, World economic outlook—Globalization and external imbalances: Washington, DC, International Monetary Fund, April, 289 p.
- Israel Central Bureau of Statistics, 2004, Statistical abstract of Israel 2004: Jerusalem, Israel, Israel Central Bureau of Statistics, 899 p.
- Israel Chemicals Ltd., 2005, Description of corporate activity for period ending December 31, 2004: Tel-Aviv, Israel, Israel Chemicals Ltd., 97 p.
- Jasinski, S.M., 2005, Phosphate rock: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 122-123.
- Lyday, P.A., 2005, Bromine: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 38-39.
- Noble Energy Inc., 2005, 2004 annual report: Houston, Texas, Noble Energy Inc., 117 p.
- O'Driscoll, Mike, 2004, Magnesia in a squeeze: Industrial Minerals, no. 443, August, p. 35-43.
- Searls, J.P., 2005, Potash: U.S. Geological Survey Mineral Commodity Summaries 2005, p. 126-127.

Internet Reference Cited

- International Monetary Fund, 2005 (April), Israel, World Economic Outlook Database, accessed July 15, 2005, via URL <http://www.imf.org/external/pubs/ft/weo/2005/01/data/index.htm>.

¹A reference that includes a section mark (§) is found in the Internet Reference Cited section.

TABLE 1
ISRAEL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2000	2001	2002	2003	2004	
METALS						
Iron and steel, steel, crude ^c	270,000	220,000	150,000	150,000	280,000	
Lead, refined secondary	13,000	20,000	22,000	25,000	27,000	
Magnesium metal	31,700	34,000	26,000 ^r	26,000 ^r	28,000	
INDUSTRIAL MINERALS						
Bromine, elemental	210,000	200,000 ^{r,c}	185,000 ^r	176,000 ^r	202,000	
Caustic soda ^c	44,000 ^r	47,000 ^r	54,000 ^r	57,000 ^r	64,000	
Cement, hydraulic	thousand metric tons	5,703	4,700	4,584 ^r	4,632 ^r	4,494
Clays:						
Brick clay	35,000	36,000 ^{r,c}	35,672 ^r	36,256 ^r	65,732	
Fuller's clay	NA	NA	998,193	892,658	850,000	
Kaolin	13,000	--	--	--	--	
Diamond ⁴	thousand carats	1,672	1,367	1,188	771	770 ^e
Gypsum	130,000	70,000 ^{r,c}	14,175 ^r	64,845 ^r	75,930	
Lime	350,000	550,000 ^{r,c}	751,857 ^r	702,373 ^r	690,659	
Magnesia, Mg content ^c	57,000	55,000	50,000	45,000	40,000	
Phosphate:						
Phosphate rock, mine output:						
Beneficiated	thousand metric tons	4,110	3,511	3,468	3,208	2,947
P ₂ O ₅ content	do.	1,305	1,115	1,100	1,020	940
Phosphatic fertilizers, P ₂ O ₅ equivalent:						
Monoammonium phosphate	11,000	13,000	13,000	12,000	12,000	
Triple superphosphate	115,000	94,000	108,000	202,000	170,000	
Phosphoric acid, P ₂ O ₅ equivalent	520,000	561,000	567,000	580,000	543,000	
Potash, K ₂ O equivalent	thousand metric tons	1,750	1,770	1,920	1,960	2,060
Salt, marketed (mainly marine) ^c	do.	526 ³	460 ^r	392 ^r	376 ^r	398
Sand:						
Silica sand	300,000	250,000 ^{r,c}	209,347 ^r	210,815 ^r	196,330	
Other ^c	thousand metric tons	10,500 ³	8,000 ^r	6,000 ^r	6,000 ^r	6,000
Stone:						
Crushed ^c	do.	29,000 ³	40,000 ^r	49,000 ^r	44,000 ^r	41,000
Dimension, marble	128,000 ^r	120,000 ^{r,c}	106,302 ^r	68,605 ^r	30,936	
Sulfur:						
Byproduct from petroleum	thousand metric tons	38	35	36	45	42 ^p
Sulfuric acid:						
Gross weight	do.	1,875	1,900	1,956	1,894	1,789 ^p
S content	do.	613	621	639	619	581 ^p
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural, dry	million cubic meters	10 ^r	10 ^{r,c}	9 ^r	8 ^r	1,193
Petroleum:						
Oil shales	390,000	415,000	457,900	436,500	439,200	
Crude	42-gallon barrels	31,300	29,800	34,300	22,400	14,000
Refinery products:						
Liquefied petroleum gas	thousand 42-gallon barrels	5,414	6,045	5,591	5,500	6,170
Gasoline	do.	14,676	16,911	18,863	19,034	21,046
Naptha	do.	7,915	7,089	3,798	4,376	3,722
Kerosene	do.	9,428	8,195	7,886	8,639	8,555
Distillate fuel oil	do.	21,649	23,424	21,169	22,208	20,516
Residual fuel oil	do.	26,039	23,787	22,432	22,910	11,880
Other	do.	1,855 ^r	1,959 ^r	2,007 ^r	2,151 ^r	1,835
Total	do.	86,976 ^r	87,410 ^r	81,746 ^r	84,818 ^r	73,724

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

¹Table includes data available through October 18, 2005.

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.

³Reported figure.

⁴Imported diamond cut in Israel.

TABLE 2
ISRAEL: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Bromine		Dead Sea Bromine Group (DSBG) (Israel Chemicals Ltd. (ICL), 100%)	Sdom	240.
Cement		Nesher Israel Cement Enterprises Ltd.	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. (NIM) (Doraz D.R.)	Mactesh Ramon	25.
Lead, refined secondary		Harkunas Lead Works	Ashdod	25.
Lime		Negev Industrial Minerals Ltd. (NIM)	Mishor Rotem	90.
Magnesium:				
Magnesia		Dead Sea Periclase Ltd. (DSP) [Israel Chemicals Ltd. (ICL), 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. [Israel Chemicals Ltd. (ICL), 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. (ICL), 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.
Potassium:				
Potash		Dead Sea Works (DSW) [Israel Chemicals Ltd. (ICL), 100%]	Sdom	2,800.
Potassium nitrate		Haifa Chemicals Ltd.	Haifa	300.
Do.		do.	Mishor Rotem	200.
Salt		Dead Sea Works (DSW)		700.
Do.		Israel Salt Industries Ltd. (subsidiary of Danker Group)	Atlit, Eilat, and Kalia	NA.
Sand		Negev Industrial Minerals Ltd. (NIM)	Mactesh Htira	300.
Steel:				
Crude		Hod Metals	Akko	200.
Do.		Yehuda Steel Ltd.	Ashdod	150.
Rebar		do.	Gedera	230.
Do.		do.	Ashdod	120.
Do.		do.	Akko	220.
Do.		Hod Metals	Kiryat Gat	100.
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.

NA Not available.

¹P₂O₅ equivalent.