



2007 Minerals Yearbook

ISRAEL [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF ISRAEL

By Thomas R. Yager

In 2007, 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 36%; potash, 6%; magnesium metal, 4%; and phosphate rock, 2%. Israel also accounted for 12% of the value of the world's polished diamond production (Even-Zohar, 2008; Jasinski, 2008a, b; Kramer, 2008; Ober, 2008). Other domestically significant mining and mineral processing operations included aggregates, cement, natural gas, and petroleum products. Israel was not a globally significant consumer of minerals.

Minerals in the National Economy

In 2007, the mining and quarrying and nonmetallic mineral products sectors each accounted for about 0.5% of the gross domestic product (GDP), and the manufacture of iron, steel, and other metals, about 0.3%. The remainder of the manufacturing sector (which included diamond cutting and polishing, fertilizer production, and petroleum refining) accounted for 15.9% 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 \$45.9 billion in 2007, of which diamond accounted for 23.9%; mining and quarrying, 1.8%; and nonmetallic mineral products, 0.7% (Central Bureau of Statistics, 2008, p. 614, 675, 704, 760, 765, 767).

Production

In 2007, the production of lime increased by 78%; magnesium, 20%; natural gas, 19%; silica sand, 8%, and phosphate rock, 4%. Gypsum output declined by 25%; cut diamond, 18%; sand, 14%; bromine, 11%; marble, 10%; salt, 8%; crushed stone, 3%; and potash, 2% (Oren Gofin, Mines Department, Ministry of National Infrastructures, written commun., September 2, 2008).

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 state-owned petroleum refineries at Ashdod and Haifa were privatized in 2006 and 2007, respectively.

Commodity Review

Metals

Copper.—In September 2007, Altos Hornos de México S.A. de C.V. (AHMSA) started a pilot mining project at the Timna copper mines. AHMSA planned to reopen the mines, which had been shut down for more than 20 years, and to build a new

solvent extraction and electrowinning plant. The company planned to produce and export 22,000 metric tons per year (t/yr) of refined copper; full production was expected by 2010. The cost of the project was estimated to be nearly \$200 million (Kliger, 2008).

Magnesium.—Dead Sea Magnesium Ltd. (DSM) [Israel Chemicals Ltd. (ICL), 65%, and Volkswagen AG of Germany, 35%] produced 29,618 metric tons (t) of magnesium metal in 2007 compared with 24,581 t in 2006. In 2007, DSM had a capacity of 35,000 t/yr; the company had the ability to increase capacity by between 2,000 and 3,000 t/yr by removing bottlenecks. At yearend, DSM had not made a commitment to increase capacity (McDonell, 2007).

Industrial Minerals

Bromine.—In 2007, Dead Sea Bromine Group (DSBG) (a subsidiary of ICL) produced 159,400 t of bromine compared with 179,493 t in 2006. 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., 2008, p. 70, 78).

Diamond.—Israel did not produce rough diamond, but the country was one of the world's leading diamond cutting and trading centers. The value of diamond cut and polished in Israel amounted to \$2.41 billion in 2007 compared with about \$2.9 billion in 2003. Israel's share of the world's polished diamond production declined to 12% in 2007 from nearly 20% in 2003. Exports of polished diamond increased by 7% in 2007; higher prices more than offset the lower volume. The United States accounted for about 40% of Israel's polished diamond exports (Even-Zohar, 2004, 2008; Krawitz, 2008).

Phosphate Rock.—Mining of phosphate rock by Rotem Amfert Negev Ltd. (a subsidiary of ICL) increased to about 3.07 million metric tons (Mt) in 2007 from 2.95 Mt in 2006. Rotem consumed about 90% of its output for the manufacture of phosphate fertilizers and phosphoric acid; fertilizer output was about 1.77 Mt in 2007 compared with 1.61 Mt in 2006. In 2008, the company planned to increase phosphate rock production by about 500,000 t. Rotem also planned to increase phosphate rock capacity by 600,000 t/yr by 2010 and fertilizer capacity by 250,000 t/yr by 2011 (Israel Chemicals Ltd., 2008, p. 39, 46, 52).

Potash.—Dead Sea Works (DSW) (a subsidiary of ICL) experienced a slight decline in its domestic potash output to 2.15 Mt in 2007 from 2.19 Mt in 2006. By the end of 2008, DSW planned to increase its production capacity by 250,000 t/yr by using fewer of its brine ponds for salt precipitation and more for carnallite precipitation. The company planned to increase capacity by an additional 250,000 t/yr by 2011; higher capacity would be attributable to removing bottlenecks and improving technology at existing plants (Israel Chemicals Ltd., 2008, p. 52).

Mineral Fuels

Natural Gas.—In 2007, Noble Energy Inc. of the United States tripled production capacity at the Mari-B gasfield in the Mediterranean Sea to 6.2 billion cubic meters from nearly 2.1 billion cubic meters. Output increased to 2.76 billion cubic meters from 2.31 billion cubic meters. Demand for natural gas increased because of higher consumption by gas-fired powerplants, paper mills, and desalination plants (Noble Energy, Inc., 2008, p. 9-10).

Outlook

Production of bromine, phosphate rock, and potash is likely to increase in 2008, and production of copper is expected to be restarted. Further increases in phosphate rock and potash output were expected by 2011. The production trends for the cement, crushed stone, and sand industries will depend on the strength of the domestic economy.

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TABLE 1
ISRAEL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2003	2004	2005	2006	2007 ^c
METALS					
Iron and steel, steel, crude ^c	180,000	370,000	480,000	480,000	480,000
Lead, refined secondary	25,000	27,000	28,000 ^r	25,000 ^r	25,000 ³
Magnesium metal	26,000	28,000	27,853	24,581	29,618 ³
INDUSTRIAL MINERALS					
Bromine, elemental	176,000	202,000	207,048	179,493	159,395 ³
Cement, hydraulic thousand metric tons	4,632	4,494	5,093	5,089	5,000 ³
Clays:					
Brick clay	36,256	65,732	54,586	54,925	29,474 ³
Common clay	892,658	850,000	1,072,491	1,003,169	982,000 ³
Flint clay	--	--	2,200	6,761	-- ³
Diamond ³ thousand carats	771	800 ^e	807	642 ^r	526 ³
Gypsum	141,000	124,678	106,798	110,754	82,974 ³
Lime	702,373	113,102	165,894	158,264	282,000 ³
Magnesium chloride	130,000	137,000	134,370	114,333	103,023 ³
Phosphate:					
Phosphate rock, mine output:					
Beneficiated thousand metric tons	3,708	3,290	3,236	2,949	3,069 ³
P ₂ O ₅ content do.	1,000	900	890	810	840
Phosphatic fertilizers, P ₂ O ₅ equivalent:					
Monoammonium phosphate	12,000	12,000	12,000 ^e	12,000 ^e	12,000
Triple superphosphate	202,000	170,000	160,000 ^e	150,000 ^e	150,000
Phosphoric acid, P ₂ O ₅ equivalent	580,000	543,000	520,000 ^e	510,000 ^e	510,000
Potash, K ₂ O equivalent thousand metric tons	1,990	2,170	2,224 ^r	2,190 ^r	2,150
Salt, marketed do.	376 ^e	385	406	434	400 ³
Sand:					
Silica sand	210,815	196,330	196,254	204,190	220,000 ³
Other ^c thousand metric tons	6,000	6,000	7,000	7,000	6,000
Stone:					
Crushed ^c do.	44,000	41,000	38,000	43,500	42,000
Dimension, marble	68,605	30,935	70,000 ^e	83,000 ^e	75,000
Sulfur:					
Byproduct from petroleum thousand metric tons	45	42	44	42 ^r	42
Sulfuric acid:					
Gross weight do.	1,894	1,789	1,700 ^e	1,700 ^e	1,700
S content do.	619	581	550 ^e	550 ^e	550
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross million cubic meters	8	1,193	1,655	2,313	2,758 ³
Dry do.	3 ^e	498	686	960	1,145 ³
Petroleum:					
Oil shale	436,500	439,200	428,900	452,000	450,000
Crude 42-gallon barrels	27,396	23,135	21,798	24,510	8,200 ³
Refinery products:					
Liquefied petroleum gas thousand 42-gallon barrels	5,500	6,170	5,650	5,461	5,500
Gasoline do.	19,034	21,046	21,114	22,108	22,000
Naphtha do.	4,376	3,722	4,066	3,430	3,400
Kerosene do.	8,639	8,555	9,549	9,041	9,000
Distillate fuel oil do.	22,208	20,516	22,185	24,104	24,000
Residual fuel oil do.	22,910	21,098	21,827	21,463	21,000
Other do.	2,151	1,835	1,696	1,700 ^e	1,700
Total do.	84,818	82,942	86,087	87,300 ^e	86,600

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

¹Table includes data available through October 17, 2008.

²In addition to the commodities listed, caustic soda, magnesia, secondary refined zinc, semimanufactured steel, such fertilizers as potassium nitrate, and a variety of crude construction materials are produced, but available information is inadequate to make reliable estimates of output.

³Reported figure.

⁴Imported diamond cut in Israel.

TABLE 2
ISRAEL: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(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%)	Modiim	6,000 ^c
Do.		do.	9 other quarries	5,000 ^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%)	Plants at Haifa, Har Tuv, and Ramla	6,000
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.	Shefeya	100
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. (DSP, 50%, and Tateho Chemical Industries Co., 50%)	do.	13
Magnesium, refined		Dead Sea Magnesium Ltd. (Israel Chemicals Ltd., 65%, and Volkswagen AG, 35%)	Sdom	35
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. (Israel Corp., 45.1%)	Haifa	65,700
Do.	do.	Paz Oil Company Ltd.	Ashdod	32,900
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		Dead Sea Works (DSW)	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. Do., do. Ditto. NA Not available.

¹P₂O₅ equivalent.