

## MAGNESIUM COMPOUNDS<sup>1</sup>

(Data in thousand metric tons of magnesium content, unless otherwise noted)

**Domestic Production and Use:** Seawater and natural brines accounted for about 63% of U.S. magnesium compounds production. Magnesium oxide and other compounds were recovered from seawater by four companies in California, Delaware, and Florida; from well brines by three companies in Michigan; and from lake brines by two companies in Utah. Magnesite was mined by one company in Nevada, brucite was mined by one company in Texas, and olivine was mined by two companies in North Carolina and Washington. About 65% of the magnesium compounds consumed in the United States was used for refractories. The remaining 35% was consumed in agricultural, chemical, construction, environmental, and industrial applications.

<b>Salient Statistics—United States:</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000<sup>e</sup></b>
Production	389	402	374	395	400
Imports for consumption	240	259	344	321	380
Exports	66	56	49	52	50
Consumption, apparent	563	605	669	664	730
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, plant, number <sup>e</sup>	600	600	600	550	550
Net import reliance <sup>2</sup> as a percent of apparent consumption	31	34	44	41	45

**Recycling:** Some magnesia-base refractories are recycled, either for reuse as refractory material or for use as construction aggregate.

**Import Sources (1996-99):** China, 64%; Canada, 9%; Australia, 7%; Austria, 4%; and other, 16%.

<b>Tariff:<sup>3</sup> Item</b>	<b>Number</b>	<b>Normal Trade Relations 12/31/00</b>
Crude magnesite	2519.10.0000	Free.
Dead-burned and fused magnesia	2519.90.1000	Free.
Caustic-calcined magnesia	2519.90.2000	Free.
Kieserite	2530.20.1000	Free.
Epsom salts	2530.20.2000	Free.
Magnesium hydroxide	2816.10.0000	3.1% ad val.
Magnesium chloride	2827.31.0000	1.5% ad val.
Magnesium sulfate (synthetic)	2833.21.0000	3.7% ad val.

**Depletion Allowance:** Brucite, 10% (Domestic and foreign); dolomite, magnesite, and magnesium carbonate, 14% (Domestic and foreign); magnesium chloride (from brine wells), 5% (Domestic and foreign); and olivine, 22% (Domestic) and 14% (Foreign).

**Government Stockpile:** None.

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**Events, Trends, and Issues:** China continued to be the principal source for U.S. caustic-calcined and dead-burned magnesia imports. Despite the export licensing requirements imposed by the Chinese Government, magnesia exports from China to the United States continued to rise. For 2000, the Chinese export quota for magnesite was 1.6 million tons and the license fee was about \$43 per ton. Because of falling magnesite prices, many of the Chinese producers gathered to form two separate export syndicates. The producers expect to be able to control prices and export volumes more easily through these syndicates.

The U.S. magnesite producer increased its annual caustic-calcined magnesia capacity by 20,000 tons to 140,000 tons in August. The capacity increase was in response to growing demand in the wastewater treatment market. The State of Utah was investigating a proposal to modify the salinity levels in the Great Salt Lake. A railroad causeway in the lake has been acting as a dam and creating essentially two separate bodies of water with different salinity levels. The proposal to deepen a breach in the causeway, allowing for greater water flow between the two bodies, thereby equalizing the salinity levels could adversely affect companies that recover magnesium chloride from the higher salinity portion of the Great Salt Lake.

### **World Mine Production, Reserves, and Reserve Base:**

	Magnesite production		Magnesite reserves and reserve base <sup>4</sup>	
	1999	2000 <sup>e</sup>	Reserves	Reserve base
United States	W	W	10,000	15,000
Australia	56	60	NA	NA
Austria	187	190	15,000	20,000
Brazil	89	90	45,000	65,000
China <sup>e</sup>	706	700	750,000	1,000,000
Greece	187	190	30,000	30,000
India	104	100	30,000	45,000
Korea, North <sup>e</sup>	288	300	450,000	750,000
Russia <sup>e</sup>	259	250	650,000	730,000
Slovakia <sup>e</sup>	245	250	20,000	30,000
Spain	144	150	10,000	30,000
Turkey	721	700	65,000	160,000
Other countries	102	100	430,000	490,000
World total (may be rounded)	<sup>5</sup> 3,090	<sup>5</sup> 3,100	2,500,000	3,400,000

In addition to magnesite, there are vast reserves of well and lake brines and seawater from which magnesium compounds can be recovered.

**World Resources:** Resources from which magnesium compounds can be recovered range from large to virtually unlimited and are globally widespread. Identified world resources of magnesite total 12 billion tons, and of brucite, several million tons. Resources of dolomite, forsterite, and magnesium-bearing evaporite minerals are enormous, and magnesia-bearing brines are estimated to constitute a resource in billions of tons. Magnesium hydroxide can be recovered from seawater.

**Substitutes:** Alumina, silica, and chromite substitute for magnesia in some refractory applications.

<sup>e</sup>Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

<sup>1</sup>See also Magnesium Metal.

<sup>2</sup>Defined as imports - exports + adjustments for Government and industry stock changes.

<sup>3</sup>Tariffs are based on gross weight.

<sup>4</sup>See Appendix C for definitions.

<sup>5</sup>Excludes the United States.