

MAGNESIUM COMPOUNDS¹

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

Domestic Production and Use: Seawater and natural brines accounted for about 70% 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, and olivine was mined by two companies in North Carolina and Washington. About 57% of the magnesium compounds consumed in the United States was used for refractories. The remainder was consumed in agricultural, chemical, construction, environmental, and industrial applications.

Salient Statistics—United States:	1995	1996	1997	1998	1999^e
Production	360	389	402	366	370
Imports for consumption	328	240	259	344	300
Exports	54	66	56	49	50
Consumption, apparent	634	563	605	661	620
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, plant, number ^e	600	600	600	600	550
Net import reliance ² as a percent of apparent consumption	43	31	34	45	40

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

Import Sources (1995-98): China, 67%; Canada, 8%; Austria, 4%; Greece, 3%; and other, 18%.

Tariff:³ Item	Number	Normal Trade Relations 12/31/99
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); magnesite, dolomite, and magnesium carbonate, 15% (Domestic and foreign); magnesium chloride (from brine wells), 5% (Domestic and foreign); and olivine, 23% (Domestic) and 15% (Foreign).

Government Stockpile: None.

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Events, Trends, and Issues: China remained the principal source for U.S. caustic-calcined and dead-burned magnesia imports. In spite of the export licensing requirements imposed by the Chinese Government, magnesia exports from China to the United States continued to rise.

The year was marked by consolidation of the U.S. magnesium compounds industry. In May, the U.S. magnesite mining firm, which also operated refractories manufacturing facilities, was purchased by a United Kingdom-based industrial minerals producer. The merger of the 2 companies will result in a firm with manufacturing sites in 70 countries and annual sales estimated at \$1.2 billion. One of the largest U.S. refractories manufacturers, with a magnesium compounds plant in Michigan, was acquired in August by a multinational refractories firm that has an estimated 10% share of the total world refractories market and has more than 30 locations on 5 continents. A separate U.S. magnesium compounds and salt producer in Michigan was acquired by a multinational specialty chemicals firm; the acquisition creates a firm with about \$6.5 billion in annual sales.

Citing competition from cheap imports of fused magnesia from China, the sole Indian seawater magnesia producer suspended operations at its 50,000-ton-per-year plant in February. This plant had come on-stream in 1998. Work continued on several magnesite mining projects in Australia. Most of the magnesite is expected to be used to produce magnesium metal, but these properties could represent additional sources of magnesite for traditional applications. Most of the Australian operations are not scheduled to come on-stream until at least 2003.

World Mine Production, Reserves, and Reserve Base:

	Magnesite production		Magnesite reserves and reserve base ⁴	
	1998	1999 ^e	Reserves	Reserve base
United States	W	W	10,000	15,000
Australia	103	100	NA	NA
Austria	187	190	15,000	20,000
Brazil	86	90	45,000	65,000
China ^e	690	700	750,000	1,000,000
Greece	187	190	30,000	30,000
India	107	100	30,000	45,000
Korea, North ^e	460	460	450,000	750,000
Russia ^e	245	250	650,000	730,000
Serbia and Montenegro	29	10	5,000	10,000
Slovakia ^e	288	290	20,000	30,000
Spain	144	130	10,000	30,000
Turkey	461	300	65,000	160,000
Other countries	100	100	420,000	480,000
World total (may be rounded)	⁵ 3,090	⁵ 2,910	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.

^eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

¹See also Magnesium Metal.

²Defined as imports - exports + adjustments for Government and industry stock changes.

³Tariffs are based on gross weight.

⁴See Appendix C for definitions.

⁵Excludes the United States.