

MAGNESIUM COMPOUNDS¹

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

Domestic Production and Use: Seawater and natural brines accounted for about 55% of U.S. magnesium compounds production. Magnesium oxide and other compounds were recovered from seawater by two companies in 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 Nevada and one company in Texas, and olivine was mined by two companies in North Carolina and Washington. About 60% of the magnesium compounds consumed in the United States was used for refractories. The remaining 40% was used in agricultural, chemical, construction, environmental, and industrial applications.

Salient Statistics—United States:	1999	2000	2001	2002	2003^e
Production	395	370	388	312	285
Imports for consumption	321	395	307	337	350
Exports	52	56	62	66	50
Consumption, apparent	664	709	634	583	585
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, plant, number ^e	550	450	450	450	370
Net import reliance ² as a percentage of apparent consumption	41	48	39	46	51

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

Import Sources (1999-2002): China, 66%; Australia, 10%; Canada, 9%; Austria, 3%; and other, 12%.

Tariff:³ Item	Number	Normal Trade Relations 12/31/03
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: At the beginning of 2003, the Ludington, MI, brine producer announced that it would close its magnesium hydroxide production facility and instead would produce only calcium chloride from brine purchased from another brine producer in Manistee, MI. A 43-kilometer pipeline was installed to feed the brine from Manistee to Ludington. The change, however, had a significant impact on the nearby dead-burned magnesia plant that relies on the Ludington plant to supply its magnesium hydroxide slurry feed material. Because of a lack of feed material, the dead-burned magnesia producer was forced to close its plant in September. This closure leaves the United States with only one dead-burned magnesia producer.

During the first half of 2003, U.S. steel production had increased slightly from than in the corresponding period of 2002, but because of consolidation in the steel industry, there were fewer furnace relinings than would have been expected. As a result, consumption of dead-burned magnesia fell slightly; this was offset by an increase in consumption of caustic-calcined magnesia. Most of the dead-burned magnesia used in the United States was supplied by imports, mainly from China; this country continued to be the largest import source of magnesia.

World Mine Production, Reserves, and Reserve Base:

	Magnesite production		Magnesite reserves and reserve base ⁴	
	2002	2003 ^e	Reserves	Reserve base
United States	W	W	10,000	15,000
Australia	140	140	100,000	120,000
Austria	202	200	15,000	20,000
Brazil	78	80	45,000	65,000
China	^e 1,070	1,100	380,000	860,000
Greece	^e 144	140	30,000	30,000
India	110	110	14,000	55,000
Korea, North	^e 288	290	450,000	750,000
Russia	^e 288	300	650,000	730,000
Slovakia	144	140	41,000	319,000
Spain	151	150	10,000	30,000
Turkey	576	580	65,000	160,000
Other countries	126	130	390,000	440,000
World total (rounded)	⁵ 3,320	⁵ 3,360	2,200,000	3,600,000

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.