

MAGNESIUM COMPOUNDS¹

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

Domestic Production and Use: Seawater and natural brines accounted for about 51% of U.S. magnesium compounds production in 2005. Magnesium oxide and other compounds were recovered from seawater by three companies in California, Delaware, and Florida; from well brines by two 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 58% of the magnesium compounds consumed in the United States was used for refractories. The remaining 42% was used in agricultural, chemical, construction, environmental, and industrial applications.

Salient Statistics—United States:	2001	2002	2003	2004	2005^e
Production	388	312	329	292	290
Imports for consumption	307	337	332	356	410
Exports	62	66	53	35	30
Consumption, apparent	634	583	608	613	670
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, plant, number ^e	450	450	370	370	370
Net import reliance ² as a percentage of apparent consumption	39	46	46	52	56

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

Import Sources (2001-04): China, 70%; Canada, 9%; Australia, 7%; Austria, 3%; and other, 11%.

Tariff:³ Item	Number	Normal Trade Relations 12-31-05
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: One of the two U.S. producers of magnesium chloride in Utah announced that it planned to increase its liquid magnesium chloride capacity by 70% and double its capacity to produce solid magnesium chloride by mid-2006. The company planned to invest \$12 million during the next 2 years to expand its magnesium chloride evaporation ponds at the Great Salt Lake, upgrade its production facility, and add rail infrastructure.

The caustic-calcined magnesia producer in Canada mothballed one of its production plants because of high energy costs and increasing maintenance for the aging plant. The 100,000-ton-per-year natural-gas-fired rotary kiln was installed in 1982. The company's other 50,000-ton-per-year vertical shaft kiln, installed in 1997, was running nearly at full capacity. The 60,000-ton-per-year magnesia plant that was opened in Jordan in December 2003 was closed in December 2004 for scheduled maintenance. During the maintenance, other technical problems with the plant's equipment were discovered, and the plant remained closed throughout 2005. After nearly 70 years of production, the sole magnesia producer in the United Kingdom closed in June. It had the capacity to produce 7,000 tons per year of caustic-calcined magnesia and 20,000 tons per year of magnesium hydroxide from dolomite.

A new olivine plant opened in Turkey in 2005 with the capacity to produce 400,000 tons per year of finished product. The new plant brings the total number of olivine producers in Turkey to three, with a total capacity of 700,000 tons per year. A mining license was granted for the olivine deposit in Greenland, and construction of plant infrastructure began in mid-2005. The owner planned to produce 1 million to 2 million tons of olivine per year for the iron- and steelmaking industries.

World Mine Production, Reserves, and Reserve Base:

	Magnesite production		Magnesite reserves and reserve base ⁴	
	2004	2005 ^e	Reserves	Reserve base
United States	W	W	10,000	15,000
Australia	94	95	100,000	120,000
Austria	202	200	15,000	20,000
Brazil	78	80	45,000	65,000
China	1,340	1,350	380,000	860,000
Greece	144	150	30,000	30,000
India	107	110	14,000	55,000
Korea, North	288	290	450,000	750,000
Russia	346	350	650,000	730,000
Slovakia	287	285	45,000	324,000
Spain	151	150	10,000	30,000
Turkey	1,100	1,100	65,000	160,000
Other countries	140	140	390,000	440,000
World total (rounded)	⁵ 4,270	⁵ 4,300	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, magnesium-bearing evaporite minerals, and magnesia-bearing brines are estimated to constitute a resource in billions of tons. Magnesium hydroxide can be recovered from seawater.

Substitutes: Alumina, chromite, and silica 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.