

MAGNESIUM COMPOUNDS¹

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

Domestic Production and Use: Seawater and natural brines accounted for about 60% of U.S. magnesium compounds production in 2007. 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 Texas, and olivine was mined by one company in 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:	2003	2004	2005	2006	2007^e
Production	329	292	301	262	266
Imports for consumption	332	356	391	371	380
Exports	53	35	31	28	27
Consumption, apparent	608	613	661	605	619
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, plant, number ^e	370	370	370	370	370
Net import reliance ² as a percentage of apparent consumption	46	52	54	57	57

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

Import Sources (2003-06): China, 76%; Canada, 7%; Austria, 4%; Australia, 3%; and other, 10%.

Tariff:³ Item	Number	Normal Trade Relations 12-31-07
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 magnesium chloride producers in Utah planned to spend \$25 million to upgrade its processing plant and modify its solar evaporation ponds near the Great Salt Lake. The 3-year expansion, which would begin in 2008, was expected to increase the company's sulfate of potash production by 20%, and the company's magnesium chloride brine production likely would increase as well. The State of Utah also agreed to lease 23,000 additional acres to the firm to build new solar evaporation ponds. The company also must get construction permits from the U.S. Army Corps of Engineers before it can build additional solar evaporation ponds.

A company that began producing magnesium chloride from bischofite in Russia at the end of 2006 announced that it would construct a plant to produce high-purity magnesium oxide and magnesium hydroxide. The new production, which was scheduled to start in 2009, would come from thermal decomposition of bischofite. When completed, the new plant would be capable of producing 15,000 tons per year of magnesium oxide and 20,000 tons per year of magnesium hydroxide.

One of the olivine producers in Turkey announced that it had begun producing magnesite from the same region from which the olivine was produced. Production capacity at the magnesite mine was reported to be 5,000 metric tons per month.

A private equity group purchased the leading magnesite producer in Brazil. The company's magnesia plant has the capacity to produce 345,000 tons per year of dead-burned magnesia and 70,000 tons per year of caustic-calcined magnesia. From 2003 through 2006, the company had invested \$100 million to increase production, improve quality, and introduce new refractory products for the steel industry. The equity firm planned to expand the business further, although no specific details were available.

World Mine Production, Reserves, and Reserve Base:

	Magnesite production		Magnesite reserves and reserve base ⁴	
	2006	2007 ^e	Reserves	Reserve base
United States	W	W	10,000	15,000
Australia	137	140	100,000	120,000
Austria	202	200	15,000	20,000
Brazil	111	110	45,000	65,000
China	1,370	1,870	380,000	860,000
Greece	144	150	30,000	30,000
India	107	105	14,000	55,000
Korea, North	345	350	450,000	750,000
Russia	346	350	650,000	730,000
Slovakia	115	115	45,000	320,000
Spain	144	150	10,000	30,000
Turkey	922	930	65,000	160,000
Other countries	117	120	390,000	440,000
World total (rounded)	⁵ 4,060	⁵ 4,600	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.