

MAGNESIUM COMPOUNDS¹

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

Domestic Production and Use: Seawater and natural brines accounted for about 74% of U.S. magnesium compounds production. Magnesium oxide and other compounds were recovered from seawater by four companies in California, Delaware, Florida, and Texas; 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 64% 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:	1993	1994	1995	1996	1997^e
Production	386	345	360	389	400
Imports for consumption	256	287	328	240	250
Exports	52	46	54	66	55
Consumption, apparent	590	586	634	563	595
Stocks, producer, yearend	NA	NA	NA	NA	NA
Employment, plant, number ^e	650	650	600	600	600
Net import reliance ² as a percent of apparent consumption	35	41	43	31	33

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

Import Sources (1993-96): China, 70%; Canada, 9%; Austria, 4%; Greece, 3%; and other, 14%.

Tariff:³ Item	Number	Most favored nation (MFN) 12/31/97	Canada 12/31/97	Non-MFN⁴ 12/31/97
Crude magnesite	2519.10.0000	Free	Free	\$10.33/ton.
Dead-burned and fused magnesia	2519.90.1000	0.2¢/kg	Free	1.7¢/kg.
Caustic-calcined magnesia	2519.90.2000	83¢/ton	Free	\$20.70/ton.

Depletion Allowance: Brucite, 10% (Domestic and Foreign); dolomite and magnesium carbonate, 14% (Domestic and Foreign); magnesium chloride, 5% (Domestic and Foreign); and olivine, 22% (Domestic) and 14% (Foreign).

Government Stockpile: None.

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Events, Trends, and Issues: The export licensing system instituted in China in 1994 has had a significant continuing effect on the U.S. market. Imports of magnesite from China have decreased in 1996 and 1997, while the average Customs value has increased significantly—from \$79 per ton in 1994 to \$156 per ton in 1996. This increase in value is a result of the licensing fees being passed on to the customers and the exporting of higher grade magnesite to U.S. markets.

In North America, water treatment applications for magnesite continue to grow. Some companies have shifted from traditional neutralization reagents such as caustic soda and lime to magnesium hydroxide for water treatment applications. Magnesium hydroxide, although more costly than the traditional reagents has several advantages including reduced sludge generation, removal of more dissolved heavy metals from the wastewater stream, and magnesium hydroxide's buffering ability.

Around the world, several countries completed new magnesite production plants. In India, a 50,000-ton-per-year seawater magnesite plant was commissioned in May. This is India's first magnesite plant to use seawater as a raw material, and most of the plant's production was targeted for domestic consumption. In Turkey, a \$3 million crude magnesite processing plant, with an annual capacity of 120,000 tons, was completed in the beginning of the year. This plant will feed one firm's magnesite calcining plants and will serve as a central facility for processing crude magnesite from all of the company's mines.

World Mine Production, Reserves, and Reserve Base:

	Magnesite production		Magnesite reserves and reserve base ⁵	
	1996	1997 ^e	Reserves	Reserve base
United States	W	W	10,000	15,000
Australia	84	90	NA	NA
Austria	202	200	15,000	20,000
Brazil	92	90	45,000	65,000
China ^e	288	290	750,000	1,000,000
Greece	144	130	30,000	30,000
India	97	100	30,000	45,000
Korea, North ^e	461	460	450,000	750,000
Russia ^e	173	170	650,000	730,000
Serbia and Montenegro	22	20	5,000	10,000
Slovakia ^e	288	290	20,000	30,000
Spain	115	120	10,000	30,000
Turkey	576	580	65,000	160,000
Other countries	101	100	420,000	480,000
World total (may be rounded)	⁶ 2,640	⁶ 2,640	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 magnesite-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 magnesite 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 B.

⁵See Appendix D for definitions.

⁶Excludes the United States.