MAGNESIUM METAL[1]

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2005, magnesium was produced by one company in Utah by an electrolytic process that recovered magnesium from brines from the Great Salt Lake. Structural uses of magnesium (castings and wrought products) were the leading use for primary magnesium, accounting for 59% of apparent consumption. Magnesium used as a constituent of aluminum-base alloys that were used for packaging, transportation, and other applications accounted for 28% of primary metal use. Desulfurization of iron and steel accounted for 7% of U.S. consumption of primary metal, and other uses were 6%.

Salient Statistics—United States:	2001	2002	2003	2004	2005[e]
Production:					
Primary	W	W	W	W	W
Secondary (new and old scrap)	66	74	70	72	70
Imports for consumption	69	88	83	99	90
Exports	20	25	20	12	10
Consumption:					
Reported, primary	96	102	102	122	105
Apparent[2]	120	110	120	140	130
Price, yearend:					
Metals Week, U.S. spot Western, dollars per pound, average	1.25	1.16	1.14	1.58	1.35
Metal Bulletin, European free market, dollars per metric ton, average	1,825	1,930	1,900	1,875	1,650
Stocks, producer and consumer, yearend	W	W	W	W	W
Employment, number[e]	400	400	400	400	400
Net import reliance[3] as a percentage of apparent consumption	44	55	53	61	61

Recycling: In 2005, about 20,000 tons of the secondary production was recovered from old scrap.

Import Sources (2001-04): Canada, 42%; Russia, 22%; China, 16%; Israel, 10%; and other, 10%.

Tariff: Item	Number	Normal Trade Relations 12-31-05
Unwrought metal	8104.11.0000	8.0% ad val.
Unwrought alloys	8104.19.0000	6.5% ad val.
Wrought metal	8104.90.0000	14.8¢/kg on Mg content + 3.5% ad val.

Depletion Allowance: Dolomite, 14% (Domestic and foreign); magnesium chloride (from brine wells), 5% (Domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: Final antidumping duty orders on magnesium from China and Russia were published in April. For China, the final duties for magnesium alloy were 49.66% ad valorem for two specific companies and 141.49% ad valorem as the China-wide rate. Magnesium covered under this order is classified under Harmonized Tariff Schedule (HTS) codes 8104.19.0000 and 8104.30.0000. An antidumping duty order was established on magnesium ingot from China in 1995 (108.26% ad valorem), and a separate antidumping duty order was established on granular magnesium from China in 2001 (24.67% and 305.56% ad valorem). For Russia, the antidumping duties were 21.71% ad valorem for one of the two Russian magnesium producers, 18.65% ad valorem for the other Russian producer, and 21.01% for all others. The material covered under this order is classifiable under HTS codes 8104.11.0000, 8104.19.0000, 8104.30.0000, and 8104.90.0000. In May, one of the Russian magnesium producers and a U.S. aluminum producer filed appeals with the U.S. Court of International Trade regarding the antidumping duty rulings. In August, the U.S. magnesium producer filed a scope ruling request with the U.S. Department of Commerce alleging that a magnesium producer in Canada and a recycler in France were remelting magnesium from China and exporting it to the United States as magnesium originating in Canada and France.

The U.S. primary magnesium producer delayed the startup of its previous announced expansion that would have increased production capacity by 11,000 tons per year to 54,000 tons per year. The company cited unfavorable market conditions that did not exist when the expansion was announced as the reason for the delay and that the startup date for the new capacity was indefinite.

Prepared by **Deborah A. Kramer [(703) 648-7719, dkramer@usgs.gov, fax: (703) 648-7975]**

MAGNESIUM METAL

In May, the U.S. Department of Justice, acting at the request of the U.S. Environmental Protection Agency, filed a suit alleging that waste and dust from the U.S. magnesium producer's plant had elevated levels of polychlorinated biphenyls (PCBs). The PCB levels were estimated to be as high as 600 parts per million (ppm). PCB wastes are generally regulated for disposal under the Toxic Substances Control Act at concentrations greater than 50 ppm. The company already was involved in a lawsuit that was brought in 2001 regarding dioxin releases at the plant.

The leading Canadian magnesium producer announced that it would increase production capacity at its magnesium plant in Becancour, Quebec, Canada, with construction beginning in the first quarter of 2005. The company will improve its dehydration process and add four electrolytic cells to bring the total capacity to 58,000 tons per year by the third quarter of 2006.

In China, 40 small magnesium plants closed in the second quarter because of falling prices and environmental concerns. Each of the closed plants was estimated to have a capacity less than 1,000 tons per year of magnesium ingot. The China Magnesium Association expected that an additional 40 plants would be closed by the end of 2005. In addition, some of the larger firms have delayed expansion plans because of low magnesium prices, although two new magnesium plants were planned for Inner Mongolia—one with a capacity of 20,000 tons per year was scheduled to be completed by the beginning of 2006, and the other, with a capacity of 30,000 tons per year, was scheduled for completion in 2007.

In Congo (Brazzaville), construction of a 60,000-ton-per-year magnesium recovery plant in Pointe-Noire was expected to begin by 2007. The magnesium plant would cost $500 million, with an additional investment of $189 million in an associated potash plant and $100 million on turbine rehabilitation by the company's energy subsidiary.

An Australian company planned to begin construction of a new primary magnesium plant in Egypt by early 2006. During the second quarter of 2005, the firm decided to base the bankable feasibility study on magnesite feedstock from Myrtle Springs, South Australia, but it has been evaluating four additional magnesite deposits as potential feed material—two in Saudi Arabia and two in Egypt.

A new Australian company agreed to acquire the Lyons River and Arthur River, Tasmania, magnesite deposits that were owned by a firm which had canceled plans to construct a 95,000-ton-per-year magnesium plant in 2001. The new company was investigating the possibility of a 500,000-ton-per-year magnesia plant using the magnesite resources as a raw material. This would generate cash to develop a magnesium metal project.

World Primary Production, Reserves, and Reserve Base:

	Primary production	
	2004	2005[e]
United States	W	W
Brazil	6	6
Canada	54	50
China	426	450
Israel	28	28
Kazakhstan	18	20
Russia	50	50
Serbia and Montenegro	2	2
World total[5] (rounded)	584	610

Reserves and reserve base[4]

Magnesium metal is derived from seawater, natural brines, dolomite, and other minerals. The reserves and reserve base for this metal are sufficient to supply current and future requirements. To a limited degree, the existing natural brines may be considered to be a renewable resource wherein any magnesium removed by humans may be renewed by nature in a short span of time.

World Resources: Resources from which magnesium may be recovered range from large to virtually unlimited and are globally widespread. Resources of dolomite and magnesium-bearing evaporite minerals are enormous. Magnesium-bearing brines are estimated to constitute a resource in the billions of tons, and magnesium can be recovered from seawater at places along world coastlines.

Substitutes: Aluminum and zinc may substitute for magnesium in castings and wrought products. For iron and steel desulfurization, calcium carbide may be used instead of magnesium.

[e]Estimated. W Withheld to avoid disclosing company proprietary data.
[1]See also Magnesium Compounds.
[2]Rounded to two significant digits to protect proprietary data.
[3]Defined as imports – exports + adjustments for Government and industry stock changes.
[4]See Appendix C for definitions.
[5]Excludes the United States.