

## MAGNESIUM METAL<sup>1</sup>

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** In 2006, 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 55% of apparent consumption. Magnesium used as a constituent of aluminum-base alloys that were used for packaging, transportation, and other applications accounted for 30% of primary metal use. Desulfurization of iron and steel accounted for 7% of U.S. consumption of primary metal, and other uses were 8%.

<b>Salient Statistics—United States:</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006<sup>e</sup></b>
Production:					
Primary	W	W	W	W	W
Secondary (new and old scrap)	74	70	72	73	75
Imports for consumption	88	83	99	85	80
Exports	25	20	12	10	13
Consumption:					
Reported, primary	102	102	101	100	100
Apparent <sup>2</sup>	110	120	140	130	120
Price, yearend:					
Metals Week, U.S. spot Western, dollars per pound, average	1.16	1.14	1.58	1.23	1.15
Metal Bulletin, European free market, dollars per metric ton, average	1,930	1,900	1,875	1,595	2,000
Stocks, producer and consumer, yearend	W	W	W	W	W
Employment, number <sup>e</sup>	400	400	400	400	400
Net import reliance <sup>3</sup> as a percentage of apparent consumption	55	53	61	60	54

**Recycling:** In 2006, about 20,000 tons of the secondary production was recovered from old scrap.

**Import Sources (2002-05):** Canada, 43%; Russia, 21%; China, 12%; Israel, 12%; and other, 12%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations</b>
			<b>12-31-06</b>
	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:** In 2005, the U.S. International Trade Commission (ITC) instituted reviews of countervailing duties on pure and alloy magnesium from Canada and the antidumping duty on pure magnesium from China. As a result of these reviews, which were completed in 2006, the ITC determined that revocation of the countervailing duties on pure and alloy magnesium from Canada would be unlikely to lead to continuation or recurrence of material injury to an industry in the United States, but that revocation of the antidumping duty on pure magnesium from China would be likely to lead to a recurrence of material injury. As a result of these determinations, the countervailing duty on magnesium from Canada was revoked as of August 2005.

The United States magnesium producer had filed a scope ruling request with the Department of Commerce, International Trade Administration (ITA) in 2005, alleging that magnesium from one producer in Canada and a recycler in France evaded U.S. antidumping duties by remelting ingots or pure magnesium pieces from China and Russia and exporting them to the United States as Canadian- or French-origin magnesium. In September 2006, the ITA made a preliminary determination that pure magnesium ingot and butt ends from China that are remelted in France do not undergo a substantial transformation and are therefore subject to antidumping duties. The ITA also determined that magnesium from China and Russia that was transformed into billet in Canada before it was shipped to the United States was not subject to antidumping duties.

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Magnesium prices in China increased steadily in 2006 after the export rebate on all magnesium products was reduced to 5% from 13% at the end of 2005. By September 2006, the export rebate was removed entirely.

In July, the Norwegian magnesium producer announced that it planned to exit the magnesium business and would try to sell its magnesium plants in Canada, China, and Germany. The company operated a 51,000-ton-per-year primary magnesium plant in Becancour, Quebec, Canada (the largest capacity operating facility in the world); a 15,000-ton-per-year recycling plant in Xi'an, China; and a 15,000-ton-per-year recycling facility in Bottrop, Germany. The company also said that it would close these facilities if it could not find a buyer for the plants. Competition from magnesium from China, weak prices, and a rise in energy prices in Canada were cited as some of the reasons for the decision. The company had closed its magnesium casthouse operation in Porsgrunn, Norway, in June. (A primary magnesium plant in Porsgrunn was closed in 2002, but continued to operate as a 20,000-ton-per-year recycling and remelting facility at the site.) If the magnesium plant in Canada is closed instead of sold, U.S. supplies of magnesium could be tight, particularly those of magnesium alloy. In 2005, Canada supplied 46% of the total U.S. magnesium imports and 61% of the U.S. magnesium alloy imports, most of which came from the plant in Becancour. Through August 2006, Canada supplied more than one-half of the imports of all forms of magnesium. Imports of magnesium from China have been nearly eliminated because of the antidumping duties established for pure, alloy, and granule magnesium. Russia and Israel, both of which are significant United States magnesium suppliers, may need to become even more important sources, although material imported from these countries is mainly pure magnesium; however, some alloy has been imported from Israel.

Burgeoning demand for titanium metal may increase the use of magnesium in the titanium production process. Titanium producers in Japan, Russia, and the United States have proposed substantial increases in capacity within the next few years. The Russian titanium producers, however, are associated with magnesium production plants. If additional magnesium is used to produce titanium, there may be less material available for export.

Work continued on proposed primary magnesium plants in Congo (Brazzaville) and Egypt, but both continued to seek additional financing, so it is unlikely that these plants will be completed.

### World Primary Production, Reserves, and Reserve Base:

	Primary production		Reserves and reserve base <sup>4</sup>
	2005	2006 <sup>e</sup>	
United States	W	W	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.
Brazil	6	6	
Canada	54	50	
China	470	490	
Israel	28	28	
Kazakhstan	20	20	
Russia	45	50	
Serbia and Montenegro	2	2	
Ukraine	2	1	
World total <sup>5</sup> (rounded)	626	650	

**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.

<sup>e</sup>Estimated. W Withheld to avoid disclosing company proprietary data.

<sup>1</sup>See also Magnesium Compounds.

<sup>2</sup>Rounded to two significant digits to protect proprietary data.

<sup>3</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>4</sup>See Appendix C for definitions.

<sup>5</sup>Excludes the United States.