MAGNESIUM METAL[1]

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2008, magnesium was produced by one company in Utah by an electrolytic process that recovered magnesium from brines from the Great Salt Lake. Magnesium used as a constituent of aluminum-based alloys that were used for packaging, transportation, and other applications was the leading use for primary magnesium, accounting for 41% of primary metal use. Structural uses of magnesium (castings and wrought products) accounted for 32% of apparent consumption. Desulfurization of iron and steel accounted for 13% of U.S. consumption of primary metal, and other uses were 14%.

Salient Statistics—United States:	2004	2005	2006	2007	2008[e]
Production:					
Primary	W	W	W	W	W
Secondary (new and old scrap)	72	73	82	84	85
Imports for consumption	99	85	76	72	82
Exports	12	10	12	15	13
Consumption:					
Reported, primary	101	82	75	72	75
Apparent[2]	140	130	120	130	140
Price, yearend:					
Metals Week, U.S. spot Western, dollars per pound, average	1.58	1.23	1.40	2.25	3.50
Metal Bulletin, European free market, dollars per metric ton, average	1,875	1,595	2,100	4,300	4,400
Stocks, producer and consumer, yearend	W	W	W	W	W
Employment, numbere	400	400	400	400	400
Net import reliance[3] as a percentage of apparent consumption	61	60	53	47	50

Recycling: In 2008, about 23,000 tons of secondary production was recovered from old scrap.

Import Sources (2004-07): Canada, 43%; Russia, 17%; Israel, 17%; China, 8%; and other, 15%.

Tariff: Item	Number	Normal Trade Relations 12-31-08
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: From yearend of 2007 to the end of the first quarter of 2008, the average U.S. spot Western price increased by nearly $1.00 per pound. Prices in China and Europe also increased significantly. Several factors contributed to these price escalations. In the United States, a decline in imports from Russia and Canada, two of the leading import sources, caused a supply shortage on the spot market. In China, increased prices for ferrosilicon, power, and transportation were cited as causes for the rapid price increase. In addition, enforcement of environmental regulations by the Government may have led to shutdowns at some smaller plants, but the larger plants in Shanxi Province were still operating. The magnesium price range reached a high of $5,950 to $6,250 per metric ton at the end of May, but began falling rapidly after that. Consumption in China and in Europe had fallen, and consumers were working off some of their stocks rather than purchasing magnesium on the spot market at the high prices.

Softness in the North American auto industry coupled with high magnesium prices has affected several magnesium diecasting companies. Two firms with diecasting operations in Missouri filed for bankruptcy, and one firm with diecasting operations in Ohio closed in 2008.

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MAGNESIUM METAL

A Malaysian firm announced that it was constructing a 15,000-ton-per-year magnesium plant in Taiping, Perak State, Malaysia, at a cost of about $54.4 million. A groundbreaking ceremony was held on February 26, and the plant was expected to be completed by the first half of 2009. A Bahrain-based firm announced that it would establish a $1 billion company to construct magnesium smelters in the Middle East and North Africa region. Bankable feasibility studies have already been completed to construct and operate a magnesium plant in the region with an initial production capacity of 30,000 to 60,000 tons per year. Preliminary discussions also were underway with international partners that have been identified to subsidize the equipment for the plant. The company eventually planned to build multiple magnesium smelters in several locations in the region. A new company, formed by former employees of the Norwegian magnesium producer, announced that it would restart production at the shuttered magnesium plant in Porsgrunn. The firm planned to produce primary and recycled magnesium, using locally produced olivine as a raw material, and to refurbish the recycling facilities by late 2008 or early 2009, the latter with a capacity of 15,000 tons per year. The primary magnesium plant was expected to take about 2 years to complete, and was projected to be completed by 2011, with a capacity of 35,000 t/yr, slightly less than the capacity at the plant when it closed.

In China, companies continued to implement expansion plans for magnesium metal and alloy production. More than 50 projects were announced to add magnesium metal, alloy, and/or diecasting capacities in China. Some were upgrades of existing capacity that had been shut down, but most were new projects that could increase production capacity significantly. Additional proposed primary production capacity totaled more than 3 million metric tons, although many of these plants most likely will not be constructed.

In June, the remaining Canadian magnesium producer announced that it would close its manufacturing facility in Haley, Ontario. The Haley facility supplied the cast magnesium billet used in the company's magnesium extrusion operations in Aurora, CO. All of these supplies will be provided by outsource partners. The Haley plant also produced specialty magnesium granules and turnings, which will be produced at the firm's facility in Nuevo Laredo, Mexico.

In September, the U.S. Environmental Protection Agency (EPA) announced that it planned to include the Rowley, UT, magnesium plant on its Superfund list. According to EPA, hazards at the site included heavy metals, acidic wastewater, polychlorinated biphenyls, dioxins and furans, hexachlorobenzene, and polycyclic aromatic hydrocarbons. The public had until November 3 to provide comments on the inclusion of the site on the Superfund list.

World Primary Production, Reserves, and Reserve Base:

	Primary production	
	2007	2008[e]
United States	W	W
Brazil	18	18
Canada	16	—
China	627	700
Israel	25	30
Kazakhstan	21	20
Russia	37	35
Serbia	2	2
Ukraine	3	3
World total[5] (rounded)	749	808

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. — Zero.
[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.