

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

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** In 2009, magnesium was produced by one company at a plant 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 primary metal consumption. Desulfurization of iron and steel accounted for 13% of U.S. consumption of primary metal, and other uses were 14%.

<b>Salient Statistics—United States:</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009<sup>e</sup></b>
Production:					
Primary	W	W	W	W	W
Secondary (new and old scrap)	73	82	83	76	75
Imports for consumption	85	75	72	83	50
Exports	10	12	15	14	16
Consumption:					
Reported, primary	82	78	72	58	55
Apparent <sup>2</sup>	130	120	130	140	100
Price, yearend:					
Metals Week, U.S. spot Western, dollars per pound, average	1.23	1.40	2.25	3.15	2.40
Metal Bulletin, China free market, dollars per metric ton, average	1,510	2,050	4,550	2,800	2,650
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	60	53	47	50	35

**Recycling:** In 2009, about 22,000 tons of secondary production was recovered from old scrap.

**Import Sources (2005-08):** Canada, 40%; Israel, 22%; Russia, 11%; China, 8%; and other, 19%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12-31-09</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:** The U.S. primary magnesium producer announced that it would reduce production and delay expansion at its 52,000-ton-per-year plant in Rowley, UT. The company cited weak demand as the reason for the announcement. The company also delayed its planned increase in production capacity to 70,000 tons per year until demand improves.

Slumping demand for magnesium in automotive applications led to additional closures of magnesium diecasting capacity; vehicle production in North America for the first three quarters of 2009 was more than 40% lower than production in the comparable period of 2008. Companies based in Canada, Illinois, and Michigan either filed for bankruptcy protection or closed their operations because of the reduced demand by the auto industry. One of the leading U.S. aluminum sheet producers (a significant magnesium consumer) filed for bankruptcy protection in mid-February citing a decrease in demand from the auto industry as the principal reason for the filing.

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Quoted magnesium prices continued the decline begun in the fourth quarter of 2008, and press reports indicated that most of the drop in prices in the United States resulted from renegotiations of contracts, not spot sales. In addition, consumers were delaying deliveries because of the slowdown in the magnesium end-use markets and a cutback in consumption in secondary aluminum products. Contracts for 2010 were expected to be negotiated at prices significantly lower than those in 2009. Many companies, however, did not negotiate contracts during the typical period of the second week of October because of the uncertainty in the market for 2010.

The U.S. Department of Commerce, International Trade Administration (ITA), rescinded the antidumping duty order for one of two Russian magnesium producers because it had not shipped magnesium to the United States during the review period. The other Russian magnesium producer chose not to participate in the administrative review, so the ITA set its antidumping duty for pure magnesium at 43.58% ad valorem.

The National Statistics Bureau of China reported that magnesium production in the country in the first half of 2009 was 215,000 tons, 47% lower than production in the first half of 2008. Although production has declined in China, some companies still were announcing capacity increases.

A Malaysia-based company expected to complete construction of its primary magnesium plant in Perak, Malaysia, by September 2009. The company would mine dolomite from nearby Dolomite Hills and was constructing the first of two production lines for magnesium with a 15,000-ton-per-year capacity. When the second line is completed, the plant's total capacity would be 30,000 tons per year.

The remaining magnesium producer in Canada completed the divestiture of its magnesium business in July. The company merged its remaining extrusion businesses with the magnesium operations of a China-based firm. The merged company had processing facilities in China, Mexico, and the United States. Also in July, the magnesium producer in Israel purchased the 35% share of its plant from a German auto manufacturer that had held the stake since the 35,000-ton-per-year primary magnesium plant was built in 1996. This gave the Israeli firm 100% ownership of the plant.

The joint venture between Norwegian and Dutch companies postponed secondary magnesium alloy production, which was originally scheduled to start in 2009 in Porsgrunn, Norway. The company cited the drop in magnesium consumption and price since autumn 2008 and difficulty in magnesium scrap collection. The company still planned to start primary magnesium metal production from olivine as originally scheduled in 2011.

### World Primary Production and Reserves:

	Primary production		Reserves <sup>4</sup>
	2008	2009 <sup>e</sup>	
United States	W	W	Magnesium metal is derived from seawater, natural brines, dolomite, and other minerals. The reserves 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	15	15	
China	559	470	
Israel	35	30	
Kazakhstan	21	20	
Russia	37	30	
Serbia	2	2	
Ukraine	3	3	
World total <sup>5</sup> (rounded)	671	570	

**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](#). Reserve base estimates were discontinued in 2009; see [Introduction](#).

<sup>5</sup>Excludes U.S. production.