

# Mineral Industry Surveys

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**For information, contact:**

Deborah A. Kramer, Magnesium Commodity Specialist  
U.S. Geological Survey  
989 National Center  
Reston, VA 20192  
Telephone: (703) 648-7719, Fax: (703) 648-7757  
E-mail: dkramer@usgs.gov

Paula R. Neely (Data)  
Telephone: (703) 648-7949  
Fax: (703) 648-7975  
E-mail: pneely@usgs.gov

**Internet:** <http://minerals.usgs.gov/minerals>

## MAGNESIUM IN THE SECOND QUARTER 2012

U.S. magnesium exports in the first half of 2012 were 51% more than exports in the first 6 months of 2011. Canada (34%), Mexico (25%), and Singapore (24%) were the principal destinations. Magnesium imports for consumption in the first half of 2012 were 8% higher than those in the same period of 2011. Israel (88%) was the principal source of imported magnesium metal. China (38%) and Israel (23%) were the main sources of alloy imports. Magnesium scrap has become a substantial portion of total imports in the past several years. In the first half of 2012, scrap represented 43% of the total imports, more than one-half of which came from Canada.

Quoted magnesium prices for the second quarter of 2012 are shown in table 2. Prices did not change appreciably in the second quarter. Press reports indicated that the consumption of magnesium in the aluminum and automotive markets remained strong. As a result, these customers were taking deliveries of their full quantities of magnesium, rather than delaying deliveries until later in the year (Waite, 2012).

The U.S. Department of Commerce, International Trade Administration (ITA), completed a preliminary review of antidumping duties on imports of granular magnesium from China for November 1, 2010, through October 31, 2011, for China Minmetals Non-Ferrous Metals Co. Ltd. (CMN). CMN reported that it had not shipped this material to the United States, but the deadline to report this to ITA had passed. As a result, ITA determined that CMN was not entitled to a separate rate that it had had in earlier reviews (24.67% ad valorem) and would be assessed duties at the China-wide rate of 305.56% ad valorem (U.S. Department of Commerce, International Trade Administration, 2012).

The U.S. Court of International Trade (CIT) denied an appeal from U.S. Magnesium LLC that contested a 2011 decision by the U.S. International Trade Commission (ITC) to revoke antidumping duties on pure magnesium from Russia. In a 5-year sunset review of imports of magnesium from China and Russia, the ITC had determined that the duties on magnesium from China should be maintained, but the duties on magnesium from Russia should be discontinued. U.S. Magnesium challenged the ITC's decision not to cumulate imports from China and Russia. U.S. Magnesium said that they were used interchangeably; even

though imports from Russia were mostly pure magnesium and imports from China were alloy magnesium. The CIT determined that although there was some overlap in uses for the two different types of imports, the interchangeability was limited (U.S. Court of International Trade, 2012).

In Australia, Latrobe Magnesium Ltd. announced that it would reduce the size of its proposed primary magnesium plant to 5,000 metric tons per year (t/yr) from 10,000 t/yr. This reduction would also reduce the capital cost to \$37 to \$42 million from \$106 million. Latrobe Magnesium planned to extract magnesium metal from industrial fly ash, which is a waste stream from brown coal power generation. Construction of the plant was scheduled to begin in Victoria in July 2013, with production to begin a year later (Latrobe Magnesium Ltd., 2012).

According to the China Non-Ferrous Metals Industry Association, China's reported magnesium production was 322,000 metric tons (t) in the first half of 2012, 8.5% lower than that in the first half of 2011. Forty-nine percent of the output was from Shaanxi Province, 33% from Shanxi Province, and 5% from Ningxia Province (Chao, 2012). Production has shifted from Shanxi Province to Shaanxi Province because of lower energy costs; in Shaanxi Province, magnesium production plants use residual gas from coking operations as a fuel source. Analysts at CM Group estimated that the cost of magnesium production in Shaanxi Province was \$1,973 per metric ton compared with \$2,614 per metric ton in Shanxi Province (McBeth, 2012).

A legal dispute about the construction of a powerplant associated with POSCO Inc.'s nearly completed 10,000-t/yr primary magnesium plant in Gangneung City, Republic of Korea, halted work on the plant. City authorities refused to allow the construction of power transmission towers and above-ground transmission lines claiming that they would mar the landscape. The city wants the power lines to be underground, but the state-run utility company said that would be too expensive. Construction on the 97%-completed magnesium plant would not be finished until the dispute is settled, which may take 2 to 3 months (Lee, 2012).

In Malaysia, CVM Minerals Ltd. planned to produce 5,000 t of magnesium at its new Perak plant in 2012. The company restarted in the plant in February after it had been shut since 2011 for efficiency improvements (Yee, 2012).

Considerable research and development work is taking place to adapt magnesium and its alloys for new applications. United Kingdom-based Magnesium Elektron (a subsidiary of Luxfer Group) developed a new family of alloys—Synermag®—that shows potential as a bioabsorbable material. Because it has properties close to those of bone, magnesium alloys show promise as medical orthopedic implants, and they could be used as vascular stents (Magnesium Elektron, 2012).

General Motors LLC (GM), along with its partners Meridian Lightweight Technologies Inc. and The Ohio State University, received \$2.7 million from the U.S. Department of Energy to develop a diecasting process to produce thin-walled magnesium alloy vehicle doors. This project was expected to develop an integrated supervacuum diecasting process using a new magnesium alloy to achieve a 50% energy savings compared to the multipiece, multistep, stamping and joining process currently used to manufacture car doors. By substituting magnesium for steel inner panels, car doors could weigh 60% less, resulting in fuel economy improvements and carbon emission savings (U.S. Department of Energy, 2012).

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TABLE 1  
U.S. IMPORTS FOR CONSUMPTION AND EXPORTS OF MAGNESIUM<sup>1</sup>

(Metric tons)

	2011	2012				
		January– March	April	May	June	January– June
<b>Imports for consumption:</b>						
Metal	14,300	3,980	1,390	1,420	1,420	8,210
Waste and scrap	22,000	5,610	2,020	2,190	1,730	11,500
Alloys (magnesium content)	11,200	2,750	1,540	931	1,290	6,510
Sheet, tubing, ribbons, wire, powder, and other (magnesium content)	973	195	86	115	114	509
<b>Total</b>	<b>48,400</b>	<b>12,500</b>	<b>5,040</b>	<b>4,650</b>	<b>4,550</b>	<b>26,800</b>
<b>Exports:</b>						
Metal	5,520	2,170	436	578	674	3,860
Waste and scrap	1,680	817	263	207	312	1,600
Alloys (gross weight)	3,500	931	560	692	422	2,610
Sheet, tubing, ribbons, wire, powder, and other (gross weight)	1,620	472	178	170	171	991
<b>Total</b>	<b>12,300</b>	<b>4,390</b>	<b>1,440</b>	<b>1,650</b>	<b>1,580</b>	<b>9,050</b>

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 2  
MAGNESIUM PRICES, SECOND QUARTER 2012

		Beginning of quarter	End of quarter
U.S. spot dealer import	dollars per pound	2.00–2.10	2.00–2.02
U.S. spot Western	do.	2.15–2.30	2.15–2.30
China	dollars per metric ton	2,980–3,010	3,100–3,140
European free market	do.	3,070–3,200	3,150–3,250
do. Ditto.			

Source: Platts Metals Week.