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Mineral Industry Surveys

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MAGNESIUM IN THE SECOND QUARTER 2010

Magnesium exports for the first half of 2010 were 8% higher than exports in the first 6 months of 2009. Magnesium imports for consumption in the first half of 2010 were slightly lower than those in the same period of 2009. Israel (88%) was the principal source of imported magnesium metal. Taiwan (23%), Israel (21%), and Mexico (11%) were the main sources of alloy imports. Imports of magnesium alloys through June 2010 were more than the total alloy imports for 2009.

Quoted magnesium prices are shown in the table below. U.S. and world prices did not change appreciably during the second quarter of 2010. U.S magnesium demand remained slow through the second quarter, and the summer is generally a time of reduced consumption because of plant closures. General Motors Corp., however, announced that it would keep 9 of its 11 automobile assembly plants operating during the traditional shutdown period from June 28 to July 9 because of increased demand for automobiles. The decision to keep the plants operating through the summer was expected to increase production by 56,000 vehicles (Metal-Pages, 2010a). This could increase magnesium consumption for automotive diecasting applications and lead to an increase in prices.

In June, the U.S. Department of Commerce, International Trade Administration (ITA), made a preliminary determination of antidumping duties for imports of pure magnesium from China into the United States for May 1, 2008, through April 30, 2009. The ITA preliminarily determined a duty of 15.23% ad valorem for Tianjin Magnesium International Co. Ltd. (TMI) and a China-wide duty of 111.73% ad valorem, the same as the China-wide rate had been. The final determination was scheduled to be completed by mid-October 2010 (U.S. Department of Commerce, International Trade Administration, 2010b).

The ITA also completed an expedited 5-year sunset review of magnesium alloy imports from China and pure and alloy magnesium imports from Russia into the United States. Because no party in the original determination notified the ITA that it intended to participate in the reviews, the ITA determined that revocation of the antidumping orders would likely lead to a continuation of dumping. As a result, the ITA maintained the antidumping duty orders. For alloy magnesium from China, TMI and Beijing Guangling Jinghua Science & Technology Co. Ltd. had a duty of 49.66% ad valorem, and the China-wide duty was 141.49% ad valorem. For pure and alloy magnesium from Russia, PSC VSMPO-Avisma Corp. had a duty of 21.71% ad valorem, Solikamsk Magnesium Works had a duty of 18.65% ad valorem, and the Russia-wide rate was 21.01% ad valorem (U.S. Department of Commerce, International Trade Administration, 2010a).

On June 28, 2010, the U.S. Environmental Protection Agency (EPA) issued a final rule that requires annual greenhouse gas (GHG) emissions reporting from four source categories—magnesium production, underground coal mines, industrial waste landfills and industrial wastewater treatment. For magnesium, each facility must report total annual emissions for each of the following cover or carrier gases—sulfur hexafluoride, hydroflurocarbon HFC-134a, the fluorinated ketone FK 5-1-12, carbon dioxide, and any other fluorinated GHG as defined in the rule. Collection of the data was scheduled to begin on January 1, 2011, with the first report due on March 31, 2012 (U.S. Environmental Protection Agency, 2010).

In a ruling by the 10th Circuit Court of Appeals, a 2007

	Units	Beginning of quarter	End of quarter
Platts Metals Week U.S. spot Western	Dollars per pound	$2.55-$2.80	$2.55-$2.70
Platts Metals Week U.S. spot dealer import	do.	2.30-2.50	2.30-2.50
Platts Metals Week European free market	Dollars per metric ton	2,800-2,900	2,800-2,925
Platts Metals Week China	do.	2,730-2,750	2,720-2,750

do. Ditto.

decision exempting U.S. Magnesium LLC's waste streams from regulation by the EPA under the Resource Conservation and Recovery Act (RCRA) was thrown out. In the lawsuit originally begun in 2001, U.S. Magnesium argued that the EPA exempted five wastes from regulation under subtitle C of RCRA. U.S. Magnesium claimed that the EPA could not change that interpretation, at least not without first complying with the notice and comment procedures of the Administrative Procedure Act. The district court had agreed with U.S. Magnesium, but, according to the new appellate court ruling, because the EPA never previously adopted a definitive interpretation, it remained free to change its mind and issue a new interpretation of its own regulations. The appellate court remanded the decision to the district court (Leagle.com, 2010).

The first production of magnesium from CVM Minerals Ltd.'s (Kuala Lumpur, Malaysia) plant in Malaysia began in June, although the plant had not ramped up to commercial-scale production. The facility in Taiping in the state of Perak used locally mined dolomite feedstock for a Pidgeon-process plant using natural gas to fuel the process. The initial production capacity was 15,000 metric tons per year (t/yr). CVM planned to double the capacity to 30,000 t/yr in the future and to begin producing magnesium alloys (CVM Minerals Ltd., 2010, p. 8).

A technology to produce magnesium sheet has been developed by nanoMAG [a subsidiary of Thixomat Inc. (Ann Arbor, MI)]. The patent-pending process is related to the thixomolding injection molding process, which converts magnesium alloys into complex parts. nanoMAG claimed that the fine-grain sheet material forms easily, allowing fabrication of net-shape finished components currently not available. The new sheet is said to provide 200% higher strength and improved toughness compared to conventional magnesium sheet, while also providing the strength of carbon steel sheet at one-fourth the weight. The company planned to target the new sheet product to applications in military vehicle armor, resorbable biomedical implants, and structural aerospace applications (Smock, 2010).

European steelmaker Corus (a subsidiary of India's Tata Steel Group) reportedly developed improved anticorrosion steel coatings dedicated to the car industry. One new coating, which has a small amount of magnesium and aluminum and less zinc than usual, was at the commercialization phase and undergoing tests. Its claimed improved corrosion performance enables Corus to produce steel sheet with a thinner coating layer, which could reduce the weight of individual structural car body components by up to 35% compared to conventional steels without sacrificing safety requirements (Metal-Pages, 2010b).

McPhy Energy, a French company founded in January 2008 to industrialize and commercialize a new technology for the solid storage of hydrogen in the form of magnesium hydride, raised €13.7 million ($16.9 million) in a second round of financing to scale up its hydrogen storage technology. Following a €1.6 million ($1.9 million) first round of financing in January 2009, the company established a production line and created a reservoir of magnesium hydride that was delivered to the French Laboratory of Innovation for New Energy Technologies and Nanomaterials (CEA-Liten) in March 2010 for testing on an industrial scale. In April, McPhy Energy signed a research contract with CEA-Liten to manufacture two full-size magnesium hydride storage prototypes and to test them at industrial scale. During the test campaign, they will be coupled to an electrolyzer and a fuel cell simulating a real-world renewable energy storage application. The company began developing a second large-capacity reservoir that was expected to be operational during the second half of 2010 (EETimes, 2010).

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TABLE 1

U.S. IMPORTS FOR CONSUMPTION AND EXPORTS OF MAGNESIUM[1]

(Metric tons)

		2010				
	2009	January-March	April	May	June	January-June
Imports:						
Metal	21,400	4,290	1,440	1,740	1,350	8,830
Waste and scrap	20,900	4,870	1,890	1,650	2,160	10,600
Alloys (magnesium content)	4,790	1,840	1,000	1,100	944	4,890
Sheet, tubing, ribbons, wire, powder, and other (magnesium content)	204	103	15	61	68	247
Total	47,300	11,100	4,350	4,560	4,520	24,500
Exports:						
Metal	6,120	1,710	578	556	431	3,270
Waste and scrap	2,280	62	--	40	30	132
Alloys (gross weight)	9,190	2,750	790	379	478	4,400
Sheet, tubing, ribbons, wire, powder, and other (gross weight)	2,050	500	174	241	181	1,100
Total	19,600	5,020	1,540	1,220	1,120	8,900

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.