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Mineral Industry Surveys

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MAGNESIUM IN THE SECOND QUARTER 2004

Exports of magnesium through May 2004 were about 43% lower than those in the same period of 2003. Magnesium imports through May 2004 were about 8% higher than those in the corresponding period of 2003. Primary metal represented about 32% of U.S. magnesium imports through May 2004. Russia (64%) and Israel (26%) were the principal sources of imported metal. Alloys were about 51% of the magnesium imports through May. Canada (48%) and China (37%) were the principal sources of imported alloys.

Quoted magnesium prices are shown in the table at the bottom of the page. Magnesium prices in China rose sharply through mid-June mainly because of high raw materials, power, and freight costs. As ferrosilicon prices began to fall, magnesium metal prices in China fell as well.

After the initial downturn at the end of the second quarter, magnesium prices in China increased, and by the end of July, the average China free market price was $1,845 per metric ton. In addition, the Platts Metals Week U.S. diecasting alloy AZ91D transaction price range rose significantly by mid-July to $1.10–$1.60 per pound from $1.10–$1.15 per pound. One reason given for the increase was because some Chinese producers reneged on their contracts when prices had begun rising earlier in the year. Consumers had to purchase metal on the spot market rather than at the original contract price. Diecasters were delaying negotiating contracts for 2005 until a determination on antidumping duties was made for magnesium alloy from China and Russia (Platts Metals Week, 2004a).

The U.S. Department of Commerce, International Trade Administration (ITA), received no comments on its preliminary determination of antidumping duties for pure magnesium from Canada that it published on April 16. ITA established a de minimis duty of 0.01% ad valorem for the August 1, 2002, to July 31, 2003, period for Norsk Hydro Canada Inc. (U.S. Department of Commerce, International Trade Administration, 2004b). ITA also postponed its preliminary determination of antidumping duties for magnesium from China and Russia until no later than September 24; the decision had been scheduled to be completed by August 5 (U.S. Department of Commerce, International Trade Administration, 2004a).

In Australia, Magnesium International Ltd. decided to relocate its proposed magnesium plant project away from South Australia and was investigating five new sites—Callide and Stanwell in Queensland; Sokhna, Egypt; Mesaieed, Qatar; and Fujirah, United Arab Emirates. Magnesium International planned to begin feasibility studies on each of the sites and intended to make a final selection from this group by the end of the third quarter of 2004 (Magnesium International Ltd., 2004§[1]). The proposed plant would produce 84,000 metric tons per year (t/yr) of magnesium using Dow Chemical Co. extraction technology.

Latrobe Magnesium is reviewing its technology options for its proposed magnesium-from-fly-ash plant. Originally, Latrobe planned to use a technology developed by Alcan Aluminium Ltd., but because of the funding required for a pilot plant, Latrobe is considering using proven Russian technology instead. Although part of Alcan's technology is proven, the drying processes for the feedstock would need to be demonstrated in a

[1]References that include a section mark (§) are found in the Internet References Cited section.

	Unit	Beginning of quarter	End of quarter
Metals Week U.S. spot Western	Dollars per pound	$1.25-$1.35	$1.50-$1.70
Metals Week U.S. spot dealer import	do.	1.30-1.50	1.50-1.60
Metals Week European free market	Dollars per metric ton	1,850-1,950	1,950-2,100
Metal Bulletin free market	do.	2,100-2,200	1,950-2,100
Metal Bulletin China free market	do.	1,760-1,780	1,720-1,750

pilot plant. The Alcan technology uses less energy than the Russian technology; but capital costs for the Russian technology would be lower. Latrobe said it was also considering building its plant at Yallourn power station rather than at Hazelwood in Victoria, Australia; the final decision will be made on the costs of transporting ash to both sites. Hazelwood and the Victorian Government reportedly were in a dispute about greenhouse emission levels at the plant, which could force the powerplant to close after 2009 if no agreement is reached (Magnesium.com, 2004a§).

In June, Magnesium Alloy Corp. (MagAlloy) signed a technology access agreement with the Russian National Aluminum and Magnesium Institute (VAMI), State Titanium Research and Design Institute (STI), and Aluminum Alloys and Metallurgical Process LLC, which gives MagAlloy regionally exclusive rights for the application of a number of patented magnesium extraction technologies. Dehydration and electrolysis technologies that are covered under the agreement would be used in the MagAlloy's proposed 60,000-t/yr magnesium extraction plant in Congo (Brazzaville), scheduled for completion in 2007 (Magnesium Alloy Corp., 2004§).

A new Australian-owned company, Quay Magnesium Ltd., announced that it planned to raise $31.4 million to construct a 30,000-t/yr magnesium alloy plant in China. Instead of having an integrated ingot and alloy production plant, the company planned to purchase magnesium ingot from the Chinese producers and convert it to magnesium alloy. If sufficient capital is raised, the company planned to begin production in 2006 (Magnesium.com, 2004b§).

Minhe Magnesium Co. in Qinghai, China, announced that it would increase its magnesium alloy production capacity to 20,000 t/yr by the end of 2004. Current alloy production capacity at the plant is 4,000 t/yr (Platts Metals Week, 2004b).

A team of undergraduate aerospace engineering students at the University of Michigan conducted research to help astronauts make fuel once they get to Mars. At the National Aeronautics and Space Administration's Johnson Space Center in Houston, the students conducted zero-gravity experiments using iodine as a catalyst to burn magnesium. Magnesium is found on Mars and can be extracted for fuel—fossil fuels do not burn on Mars because of the planet's carbon dioxide (CO_2) atmosphere; metals, however, do burn in a CO_2 atmosphere. Preliminary results from the student experiments showed that using iodine as a catalyst helped make the magnesium burn better. The experiments also showed that the iodine-magnesium-CO_2 system worked even better in a microgravity environment, which is significant because the gravity on Mars is about one-third that of Earth (University of Michigan, 2004§).

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

(Metric tons)

		2004				
	2003	January-February	March	April	May	January-May
Imports:						
Metal	27,300	4,630	2,080	3,060	2,440	12,200
Waste and scrap	16,200	1,960	1,340	1,250	1,060	5,600
Alloys (magnesium content)	38,800	7,530	5,010	3,080	3,690	19,300
Sheet, tubing, ribbons, wire, powder, and other (magnesium content)	1,160	191	93	87	106	477
Total	83,400	14,300	8,520	7,470	7,290	37,600
Exports:						
Metal	8,770	302	247	257	179	986
Waste and scrap	5,040	794	428	433	426	2,080
Alloys (gross weight)	2,320	429	89	448	198	1,160
Sheet, tubing, ribbons, wire, powder, and other (gross weight)	4,260	778	340	460	289	1,870
Total	20,400	2,300	1,100	1,600	1,090	6,100

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

Source: U.S. Census Bureau.