

Mineral Industry Surveys

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MAGNESIUM IN THE SECOND QUARTER 2003

Exports of magnesium through May 2003 were about 16% higher than those in the same period of 2002. Magnesium imports through May 2003 were about 4% less than those in the corresponding period of 2002. Russia (70%) and Israel (18%) were the principal sources of imported metal. Canada (50%) and China (35%) were the principal sources of imported alloys.

Quoted magnesium prices are shown in the table at the bottom of the page. U.S. prices remained at the same levels as those in the previous quarter, but the free market and China prices rose.

After the NAFTA Secretariat remanded the antidumping duty determination for pure magnesium from Canada back to the International Trade Administration (ITA) a second time, the government of Quebec and Norsk Hydro Canada Inc. filed Rule 73(2)(b) challenges to the second redetermination on February 27, 2003, and ITA filed a responsive brief on March 19, 2003. Both the government of Quebec and Norsk Hydro challenged each of the conclusions in the second redetermination and requested that the panel again remand ITA's decision with instructions to remove the antidumping duty order. After considering ITA's arguments, the panel ordered ITA to remove the antidumping duty order, which ITA did in July (Organization of American States, 2003¹; U.S. Department of Commerce, International Trade Administration, 2003a). The antidumping duty had been set at 0% ad valorem since August 1994.

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

In the countervailing duty investigation of pure and alloy magnesium from Canada, the panel concluded that, in this case, ITA's reporting of an "all others" subsidy rate was neither supported by substantial evidence nor in accordance with law and required that it amend its determination to exclude an "all others" subsidy rate. The panel also agreed with ITA that there was no good cause to investigate alleged subsidies received by Magnola Metallurgy Inc. because there was no indication that the company had produced magnesium. As a result of the panel's conclusion, ITA removed the "all others" rate (Organization of American States, 2002§; U.S. Department of Commerce, International Trade Administration, 2003b).

Australian Magnesium Corp. Ltd. (AMC) mothballed plans for its proposed 97,000-metric-ton-per-year (t/yr) magnesium plant in June when it could not secure additional funding for construction. AMC said all activities had now been halted at Stanwell and the majority of its staff, approximately 100 employees, was laid off in mid-July 2003. The company also said its demonstration plant at Gladstone would be completely dormant by the end of September 2003 (Nordic Magnesium Cluster, 2003a§). In addition, Ford Motor Co. dissolved its 45,000-t/yr, 10-year supply deal with AMC, worth an estimated \$1.3 billion. Ford accepted a \$20 million loss with its withdrawal; AMC's principal shareholder, Newmont Mining Corp., will return \$10 million of Ford's original \$30 million deposit (Clarke, 2003a). Newmont also has written down its \$95.8 million investment in AMC. The company replaced a \$50 million line of credit with a \$6.7 million contingency fund that can be used by AMC as working capital while it tries to develop a new business plan for the magnesium project (Clarke, 2003b).

	Unit	Beginning of quarter	End of quarter
Metals Week U.S. spot Western	Dollars per pound	\$1.05-\$1.12	\$1.05-\$1.12
Metals Week U.S. spot dealer import	do.	1.01-1.08	1.01-1.08
Metals Week European free market	Dollars per metric ton	1,650-1,800	1,750-1,850
Metal Bulletin European free market	do.	1,950-2,000	2,000-2,050
Metal Bulletin China free market	do.	1,550-1,600	1,620-1,650

Because of the financial difficulties with AMC's proposed magnesium plant, the South Australian government began a review of Magnesium International Ltd.'s proposed SAMAG magnesium plant in June. The review was completed at the end of July and the government reaffirmed its commitment to provide A\$25 million in infrastructure support (MineBox, 2003§). In June, Magnesium International and Thiess Pty. Ltd. signed a memorandum of understanding (MOU) involving the funding of SAMAG. The MOU commits Thiess to contribute equity to the project on the award of an exclusive engineering, procurement, and construction contract for the first module of the plant with a capacity of 41,000 t/yr to be completed by 3 years from the date of financial closure of the project. Thiess will contribute up to \$13.4 million of equity to the project, with the final amount being dependent on the terms of the final contract, which is expected to have a value of \$336 million (Magnesium International Ltd., 2003a§).

In its newsletter, New World Alloys Ltd. announced that it would look at locations in South Africa, rather than Malaysia as originally planned, to install a magnesium production plant. (The company had originally planned to purchase Alcoa Inc.'s magnesium plant in Addy, WA, and move it to Malaysia.) Less expensive power costs in South Africa were cited as the reason for the change in proposed location. According to the company, "[w]e intend to keep this inertia rolling until we either launch the Mg project in S Africa or until we are advised by Alcoa that the Addy Mg plant has been sold to an alternative buyer." (New World Alloys Ltd., 2003§).

In April, the Brazilian Government began an investigation into the dumping of magnesium ingot from China into the Brazilian market. The investigation was initiated by the sole magnesium producer in the country, Rima Industrial, which produces about 12,000 t/yr of magnesium ingot and alloy. The Government expected that the investigation would be completed within 1 year (Platts Metals Week, 2003b).

Hatch Associates Ltd. completed its feasibility study for Leader Mining International Inc.'s proposed magnesium plant in British Columbia, Canada. Total plant capacity was projected to be 131,000 t/yr of magnesium metal and alloys, and production technology would be sourced through a technology transfer agreement with Ukraine's State Research and Design Titanium Institute and Russia's JSC VAMI. Hatch determined that construction costs for the proposed plant would be \$1.24 billion, and the operating cost would be \$0.70 per pound of magnesium, providing an internal rate of return in the range of 6.5% to 18.1% (Leader Mining International Inc., 2003§).

According to an official from the state nonferrous metals information division, China's magnesium ingot production capacity was expected to increase to 700,000 t/yr by the end of 2003; 2002 yearend capacity was estimated to be 480,000 t/yr. Twelve plants that have more than 10,000 t/yr of magnesium ingot capacity each combine to have a total capacity of about 250,000 t/yr. With expansions, the capacity of these plants was projected to increase to 400,000 t/yr, although the timeframe for these expansions has not been set. The total number of plants in China was estimated to be between 150 and 200, although the smaller plants often close because of poor market conditions (Platts Metals Week, 2003a).

Meridian Technologies Inc. signed a joint venture agreement with a subsidiary of Shanghai Automotive Industry Corp. to construct a new plant to manufacture automotive die-castings in

China, beginning in late 2003. The total investment will be \$20 million with Meridian owning 60% of the joint venture. The new plant will be in the Shanghai Anting Automotive Supplier Industrial Park (Meridian Technologies Inc., 2003§).

In June, Magnesium Alloy Corp. (MagAlloy) signed a preliminary long-term offtake agreement with Stinnes Metall GmbH, a wholly owned subsidiary of Stinnes AG. Under the agreement, Stinnes will purchase and market 100% of the magnesium and magnesium alloys that will be produced by MagAlloy's proposed magnesium plant in Congo (Brazzaville). The output of the proposed plant is 60,000 t/yr with initial production scheduled to start in 2007 (Brooks, 2003).

A report from the European Commission recommended banning sulfur hexafluoride (SF₆) used as a cover gas for magnesium melting operations in production, die-casting, and remelting. The report proposed banning SF₆, which contributes to greenhouse gas emissions, by 2006 except in operations that produce less than 500 metric tons of magnesium parts or use less than 500 kilograms (kg) of SF₆. The report recommended replacing SF₆ with SO₂, which is difficult to handle and can be toxic (Metal Bulletin, 2003). Magnesium producers and consumers are investigating alternative materials to be used as cover gas that are more environmentally friendly.

Rossborough-Remacor LLC, a large desulfurization reagent producer, filed for Chapter 11 bankruptcy in June. Much of the company's production is sold to steel producers, and the recent bankruptcy filings of many U.S. steel producers cost Rossborough-Remacor more than \$5.5 million over the past 3 years. Rossborough-Remacor planned to sell its Walkerton, IN, desulfurization reagent plant to an investor-owned firm called Magnesium Technologies Corp. The sale would also include Rossborough-Remacor's 44% interest in a plant near Liege, Belgium. The company's Avon Lake, OH, and West Pittsburg, PA, plants were not included in the sale (Platts Metals Week, 2003c).

Magnesium Elektron North America offered \$3 million for the remaining business of Spectrulite Consortium Inc., one of the largest U.S. producers of magnesium wrought products. Spectrulite filed for Chapter 11 bankruptcy protection on January 29. Under terms of the offer, Magnesium Elektron will lease the magnesium foundry in Madison, IL, and purchase a plant in Findlay, OH. Union employees at the Madison plant had been on strike since August 2002 after failing to agree on a new contract (Nordic Magnesium Cluster, 2003b§).

As part of its efforts to develop and evaluate engine component applications for creep-resistant, high-temperature magnesium alloys, the U.S. Automotive Materials Partnership, Southfield, MI, planned to compare an experimental magnesium cylinder block for a Ford 2.5-liter Duratec V-6 engine with the aluminum block used in the Ford engines. The partnership's Magnesium Powertrain Cast Components task force also will try to determine by 2006 whether magnesium can be used for engine front covers, bedplates, and oil pans (American Metal Market, 2003).

Ford chose magnesium alloy AM50 as the material for the front-end-support assemblies for its light-duty trucks. The first model to use the new front-end-support assembly will be the 2004 model for the F-150 pickup truck. The 5.9-kg (13-pound) die-castings will be produced by Meridian Technologies Inc., and this application is expected to consume about 5,000 t/yr of AM50. This represents the first use of magnesium in structural

parts to support radiators and other front-end components (Wrigley, 2003).

Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Magnesium International announced that they have signed a conditional Term Sheet to enter into a venture to manufacture magnesium sheet metal using CSIRO-developed Twin Roll Casting Technology. The Twin Roll Casting Technology has the potential to produce high-quality thin magnesium sheet using less energy than traditional rolling processes. The proposal is for Magnesium International to initially hold 40% of the venture with an option to purchase a further 10% from CSIRO. Magnesium International would also have first right of refusal should CSIRO decide to sell their interest. Magnesium sheet is used in the electronics industry in a range of applications including computer casings, minidisc covers, digital cameras, and mobile phones (Magnesium International Ltd., 2003b§).

The torch for the 2004 Olympic Games was manufactured from magnesium and olive wood. This will be the first torch to carry the flame through all five continents in a relay beginning in Greece in spring 2003. The torch is 68 centimeters tall and weighs 700 grams (Light Metal Age, 2003).

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TABLE 1
U.S. IMPORTS FOR CONSUMPTION AND EXPORTS OF MAGNESIUM¹

(Metric tons)

	2002	2003				
		January-February	March	April	May	January-May
Imports:						
Metal	29,900	3,970	2,180	1,820	1,950	9,920
Waste and scrap	14,100	2,210	1,830	1,640	1,550	7,230
Alloys (magnesium content)	41,900	7,390	4,060	3,260	2,480	17,200
Sheet, tubing, ribbons, wire, powder, and other (magnesium content)	2,090	239	108	102	120	569
Total	88,000	13,800	8,190	6,820	6,100	34,900
Exports:						
Metal	11,300	1,780	1,510	1,320	916	5,520
Waste and scrap	5,850	1,080	415	448	430	2,370
Alloys (gross weight)	4,210	555	73	139	103	870
Sheet, tubing, ribbons, wire, powder, and other (gross weight)	4,010	817	378	378	396	1,970
Total	25,400	4,230	2,370	2,280	1,850	10,700

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

Source: U.S. Census Bureau.