

# Magnesium

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1998 metal production: \$400 million<sup>e</sup>  
 World rank: Second  
 Exports: \$249 million  
 Imports: \$127 million

Canada	1996 <sup>e</sup>	1997 <sup>e</sup>	1998 <sup>e</sup>	1999 <sup>f</sup>
(tonnes)				
Production <sup>1</sup>	54 000	57 700	77 100	77 000
Consumption	27 600	34 000	32 600	33 000
Exports	40 853	49 135	51 305	52 000
Imports	22 733	34 976	32 311	35 000

<sup>e</sup> Estimated; <sup>f</sup> Forecast.

<sup>1</sup> Canadian magnesium production data are confidential due to the limited number of companies reporting. This U.S. Geological Survey estimate, provided to the International Consultative Group on Nonferrous Metal Statistics, includes secondary magnesium.

**M**agnesium's main application is as an alloying agent for aluminum, which accounted for close to 43% of consumption in 1998. The next most important use for magnesium metal is for die-cast products. Increased interest in magnesium die-cast products by the automotive industry is largely due to weight savings of about 33% compared to aluminum. The third largest market for magnesium is as a deoxidizing and desulphurizing agent in the ferrous industry. Chemical applications include pharmaceutical products, perfumes and pyrotechnics.

## ANNUAL AVERAGE PRICES, METALS WEEK (U.S. SPOT WESTERN MEAN)

1993	1994	1995	1996	1997	1998	1999 <sup>e</sup>
(US\$/lb)						
1.45	1.45	1.92	1.87	1.65	1.59	1.56

<sup>e</sup> Estimated.

## CANADIAN OVERVIEW

- Construction of Magnola Metallurgy Inc.'s 63 000-t/y magnesium metal plant at Danville, Quebec, is proceeding on schedule. Buildings and support structures are in place and the installation of mechanical and electrical equipment is progressing. The \$733 million plant is expected to start production in July 2000, creating 320 jobs. Further information on the project can be found on Magnola's web site at <http://www.magnola.com>.
- Norsk Hydro Canada's magnesium direct-chill casting unit was damaged in an explosion on January 19, 1999. The company announced in August that it would not rebuild the unit and that it had developed a new product to replace T-bar for use in alloying aluminum. Further information on Norsk Hydro can be obtained on its web site at <http://www.hydro.com/>.
- Cassiar Mines and Metals Inc., formerly Minroc Mines Inc., signed a Memorandum of Understanding with Aluminium of Korea Ltd. (Hyundai Group) for the development of its magnesium metal project in northern British Columbia. Aluminium of Korea may acquire an interest in the project. A US\$25 million feasibility study is expected to be completed in 2000. Further information on the project can be found on the company's web site at <http://www.minroc.com/press.htm>.

## WORLD OVERVIEW

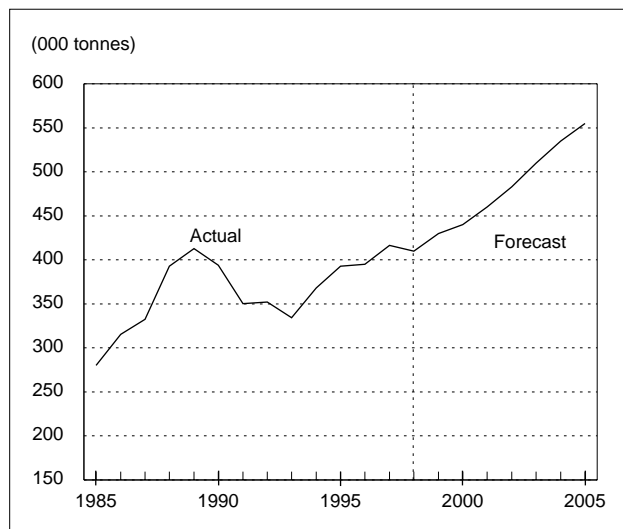
- Australian Magnesium Corporation reported on August 31, 1999, that it had produced its first batch of magnesium metal ingots in a pilot plant near Gladstone, Queensland. The company will complete a feasibility study in early 2000 for a 90 000-t/y metal plant. Additional information can be obtained at Normandy Mining's web site at <http://www.normandyusa.com/>.
- The European Commission has again started to review magnesium imports from China. For further information, refer to the following web site: <http://europa.eu.int>.
- Magnesium Alloy Corp. is working on a full feasibility study of its Kouilou project in the Republic of the Congo (Brazzaville). Russian National Aluminum and Magnesium Institute and Ukrainian Titanium Institute technology would be used to extract magnesium from salt deposits. The company is currently seeking a joint-venture partner. Additional information can be obtained on the internet at <http://www.magnesiumalloy.ca/>.
- Samag Ltd. has purchased technology and hired employees from Dow Chemical for its metal project in South Australia.

## CONSUMPTION OUTLOOK

World primary magnesium consumption was 323 900 t in 1997, and is expected to increase to 375 000 t in 2000 and to over 500 000 t/y by 2005. Growth will result from demand for magnesium in aluminum alloys and die-cast automotive parts; however, growth will be dependent on prices and price stability as magnesium continues to face stiff competition from other materials, including aluminum, steel and plastics, in the all-important automotive parts sector. New applications and increased awareness of the advantages of magnesium in certain applications are growing, particularly in the North American automotive industry.

In Canada, reported consumption of magnesium decreased from 34 000 t in 1997 to 32 600 t in 1998. Small decreases in reported use in castings and alloys were responsible for this reduction. In the past, growth in Canada's demand for magnesium has come from increases in use in aluminum alloys and in castings and wrought products.

**Figure 1**  
World Magnesium Consumption, 1985-2005



Source: Natural Resources Canada.

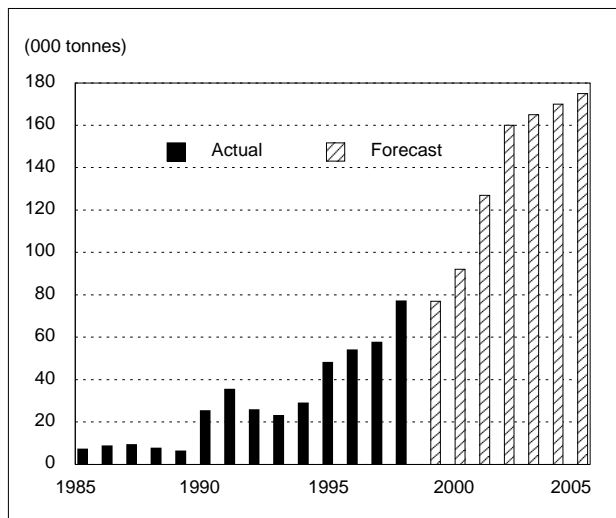
## CANADIAN AND WORLD PRODUCTION OUTLOOK

Canadian primary magnesium production increased dramatically with the opening of Norsk Hydro's 40 000-t/y plant at Bécancour in 1990. Installed primary nameplate capacity has since remained stable, but it is set to rise again with the addition of Magnola Metallurgy's 63 000-t/y plant at Danville, Quebec, and the future expansion of Norsk Hydro's Bécancour plant. Once completed, Canadian primary magnesium production capacity will rise to about 150 000 t/y. Canada was the second largest producer of primary magnesium in the world in 1997 after the United States.

A number of proposed projects around the world could, if all constructed, significantly increase magnesium production to more than double today's production rate. Some of these projects have licensed existing technology from past and current producers and thus a significant production increase is possible.

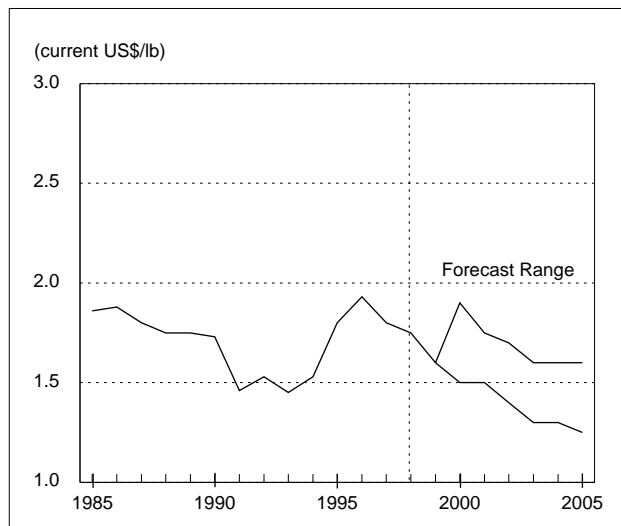
Even without any of these new project proposals, world primary magnesium production is expected to rise from an estimated 420 000 t in 1998 to 440 000 t in 2000 and to more than 500 000 t/y by 2005.

**Figure 2**  
Canadian Magnesium Production, 1985-2005



Source: Natural Resources Canada.

**Figure 3**  
Magnesium Prices, 1985-2005



Source: Natural Resources Canada.

## PRICE OUTLOOK

The markets balanced lost production from Dow Chemical's Texas plant, which closed in 1998, with magnesium exports from China, sales from inventory, and capacity creep from existing plants. Prices published by *Metals Week* for magnesium remained relatively steady throughout the year. The U.S. Spot Western Mean remained at around US\$1.55/lb, while mean U.S. dealer import prices ranged between US\$1.30 and \$1.40/lb. Norsk Hydro's European producer price for pure magnesium started the year at 2.94 euros/kg. In October, Norsk Hydro cut this price to 2.61 euros/kg, or about US\$1.30/lb, from the 2.76 euros/kg price posted in August 1999.

A major factor that will influence magnesium prices in the longer term will be the change in supply over the next decade as the result of expansions/re-openings of existing capacity or the opening of new plants in Canada, the Middle East, Australia and China. The availability of newer, possibly lower-cost supply may eventually cause prices to decline. Prices are expected to remain in the \$1.30-\$1.60/lb range over the medium term.

*Note: Information in this article was current as of November 19, 1999.*

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