

# Magnesium

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1999 metal production: \$360 million<sup>e</sup>

World rank: Third

Exports: \$226 million

Canada	1999 <sup>e</sup>	2000 <sup>e</sup>	2001 <sup>f</sup>
	(tonnes)		
Production	71 000(1)	70 000	100 000
Consumption	42 600	45 000	55 000
Exports	49 708	51 000	70 000

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

(1) Canadian magnesium production data are confidential due to the limited number of companies reporting. This is a U.S. Geological Survey estimate, which includes secondary magnesium production, provided to the International Consultative Group on Nonferrous Metals Statistics.

**M**agnesium's main application is as an alloying agent for aluminum, which accounted for close to 43% of magnesium shipments in 1999. 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)

1996	1997	1998	1999	2000 <sup>e</sup>
(US\$/lb)				
1.87	1.65	1.59	1.55	1.40

<sup>e</sup> Estimated.

## CANADIAN OVERVIEW

- Construction of Magnola Metallurgy Inc.'s 63 000-t/y magnesium metal plant at Danville, Quebec, is complete and commissioning of the electrolytic cells is under way. The \$750 million plant started production of magnesium metal in October 2000, creating 320 jobs. It is expected to reach commercial production levels in early 2001. Further information on the project can be found on Magnola's web site at <http://www.magnola.com>.
- Canada's two largest magnesium producers have developed new magnesium alloys for use in higher temperature applications. With the continued involvement of metal producers in alloy development, increased uses will be found for magnesium on a longer-term basis. Further information can be obtained from Magnola's web site at <http://www.magnola.com> and from Norsk Hydro's web site at <http://www.hydro.com>.
- Cassiar Mines and Metals Inc. continues planning for a US\$600 million magnesium metal project based on a serpentine resource in northern British Columbia. A banking report on financing the next stage of the project is due in early 2001. Further information on the project is available on the Internet at <http://www.minroc.com>.

## WORLD OVERVIEW

- The major factor in magnesium markets remains the increased production and export of magnesium from China. Production and export levels in 2000 are expected to be similar to those in 1999. Pressure on markets from this production has resulted in a general decrease in the price of magnesium and has caused the United States and the European Union to reconsider import duties on Chinese magnesium.
- After an investigation, the European Commission imposed a revised definitive anti-dumping ad valorem duty of 63.4% on imports of unwrought, unalloyed magnesium originating in China by related parties. Further information is available on the Internet at <http://europa.eu.int>.
- The Australian Magnesium Corporation (AMC) completed its feasibility study and received government approvals to construct a 90 000-t/y plant at Stanwell, Queensland. Metal production is expected to start in late 2003 and to reach full capacity in 2005. AMC is currently seeking financing for the A\$900 million project and expects to make a formal decision on the project in early 2001. For further information, see the company's web sites at <http://www.austmg.com>, <http://www.normandy.com.au/site.htm> and <http://www.amc-magnesium.com.au>, or Australian government sites at <http://www.minister.industry.gov.au> and <http://www.qld.gov.au>.
- Pima Mining NL is investing A\$580 million to build the 52 000-t/y Samag project in Port Pirie, South Australia. Once financing arrangements have been completed, the company will start construction on a plant to process magnesite in South Australia. Construction will take about two years with full production in 2004. Further information is available on the Internet at <http://www.pima.com.au>.
- Work continued on a feasibility study for a magnesium complex at Delfzijl in the Netherlands by a consortium of companies, including Nedmag Industries Mining and Manufacturing, Corus Aluminium, Noordelijke Ontwikkelings Maatschappij, and the Netherlands Ministry of Economic Affairs. A feasibility study for a 75 000- to 80 000-t/y smelter (with an associated casting and recycling operation) will be completed in early 2001. A decision on construction is expected in late 2001. The plant would start production in 2004 and could be built to accommodate a doubling of the production rate. Additional information is available on the Internet at <http://www.antheus.nl>, <http://www.nedmag.nl/home.htm> and <http://www.nom.nl/uk/index.htm>.
- Magnesium Alloy Corp. continued to work on its Kouilou project in the Republic of the Congo

(Brazzaville). Russian National Aluminium and Magnesium Institute and Ukrainian Titanium Institute technology would be used to extract magnesium from solution-mined salt deposits. Magnesium Alloy Corp. is continuing discussions with potential partners and entered into an agreement with AES Sirocco Ltd. on energy generation and supply. For further information, see the company's web site at <http://www.magnesiumalloy.ca>.

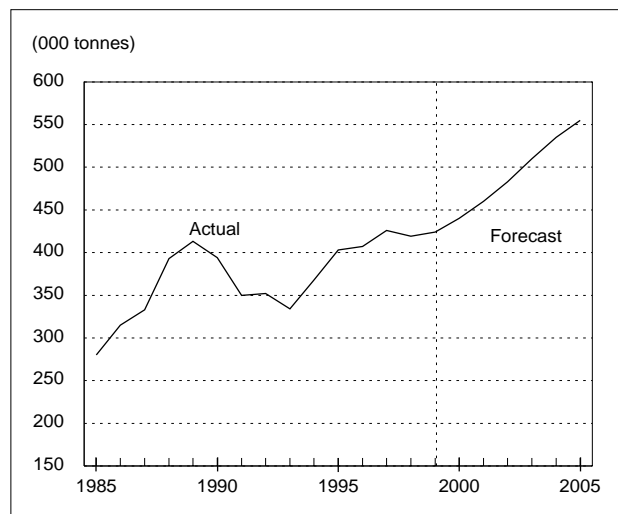
## CONSUMPTION OUTLOOK

The International Consultative Group on Nonferrous Metals Statistics reported that consumption of primary magnesium increased to over 332 000 t in 1999 from about 328 000 t in 1998. Total secondary magnesium total consumption increased to 424 000 t in 1999 from 419 000 t in 1998.

Magnesium consumption is expected to increase to over 500 000 t/y by 2005. Growth will result from demand for magnesium in aluminum alloys and die-cast automotive parts, although the rate of 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 increased from 32 600 t in 1998 to 42 600 t in 1999, due in part to an increased number of companies reporting the consumption of magnesium for the production of castings and wrought products.

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

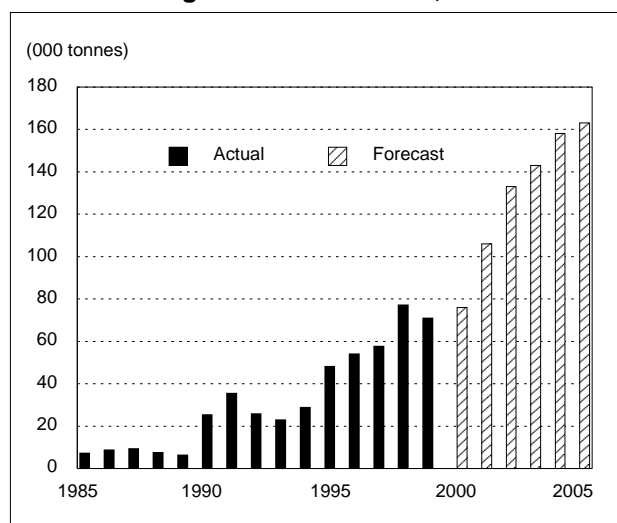


Source: Natural Resources Canada.

## CANADIAN AND WORLD PRODUCTION OUTLOOK<sup>1</sup>

Canada is the third largest producer of primary magnesium in the world after China and the United States. Canadian primary magnesium production increased dramatically with the opening of Norsk Hydro's 40 000-t/y primary magnesium plant at Bécancour in 1990. Installed primary nameplate capacity has since remained stable, but is now set to increase due to the start-up of Magnola Metallurgy's 63 000-t/y plant at Danville, Quebec, and a possible future expansion of Norsk Hydro's Bécancour plant. Canadian primary magnesium production capacity will rise to over 100 000 t/y in 2001.

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



Source: Natural Resources Canada.

A number of projects around the world, primarily focused in Australia, could, if all constructed, significantly increase magnesium production to more than double today's production rate. World primary magnesium production is expected to rise from an estimated 430 000 t/y in 2000 to more than 550 000 t/y by 2005 and higher if Australian projects achieve their goals.

## PRICE OUTLOOK

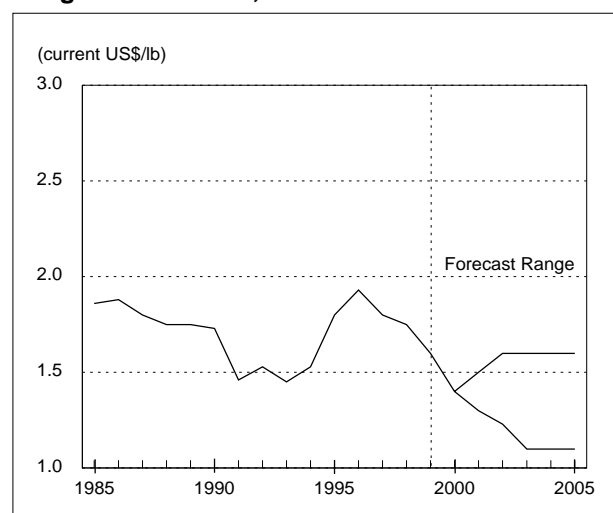
Prices for primary magnesium remained relatively weak for most of the year as markets and governments continued to react to increased production and magnesium exports from China. Prices as published

<sup>1</sup> It should be noted that magnesium statistics vary between sources.

by *Metals Week* for magnesium trended downward through the year. The U.S. Spot Western Mean started the year at around US\$1.54/lb, decreasing to below \$1.40/lb late in the year, while mean U.S. dealer import prices decreased from US\$1.31/lb to below \$1.14/lb. Norsk Hydro's European producer price for pure magnesium started the year at 2.61 euros/kg (US\$1.30/lb), but fell to 2.33 euros/kg in April. Late in 2000, prices for magnesium produced in China were reported to have declined to US\$1300-\$1400/t, f.o.b. China.

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 or re-opening of existing capacity or the opening of new plants in Canada, the Middle East and Australia. The availability of newer, possibly lower-cost, supply may eventually cause prices to decline. Prices are expected to remain in the US\$1.10-\$1.60/lb range over the medium term until consumption catches up with current production rates.

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



Source: Natural Resources Canada.

*Note: Information in this article was current as of December 1, 2000.*

## NOTE TO READERS

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