

MAGNESIUM METAL¹

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: At the beginning of 2001, two companies in Utah and Washington produced primary magnesium, but by yearend, only the company in Utah remained in production. An electrolytic process was used at the plant in Utah to recover magnesium from lake brines, and a thermic process was used to recover magnesium from dolomite in Washington. The largest use for magnesium, which accounted for 53% of total domestic consumption, was as a constituent of aluminum-base alloys that were used for packaging, transportation, and other applications. Structural uses of magnesium (castings and wrought products) accounted for 30% of domestic primary metal use. Desulfurization of iron and steel accounted for 12% of U.S. consumption of primary metal; reducing agent in nonferrous metals production, 1%; and other uses, 4%.

Salient Statistics—United States:	1997	1998	1999	2000	2001^e
U.S. primary production capacity, yearend	145	145	80	83	43
Production:					
Primary	125	106	W	W	W
Secondary (new and old scrap)	80	77	86	82	80
Imports for consumption	65	83	91	91	70
Exports	41	35	29	24	20
Consumption:					
Reported, primary	100	107	131	104	100
Apparent	185	185	179	² 160	² 120
Price, yearend:					
Metals Week, U.S. spot Western, dollars per pound, average	1.65	1.57	1.48	1.27	1.25
Metal Bulletin, free market, dollars per metric ton, average	2,525	1,975	2,500	2,000	1,750
Stocks, producer and consumer, yearend	21	22	W	W	W
Employment, number ^e	1,300	700	700	700	375
Net import reliance ³ as a percentage of apparent consumption	16	25	38	43	44

Recycling: In 2001, about 30,000 tons of the secondary production was recovered from old scrap.

Import Sources (1997-2000): Canada, 44%; China, 19%; Russia, 17%; Israel, 10%; and other, 10%.

Tariff:	Item	Number	Normal Trade Relations
			12/31/01
	Unwrought metal	8104.11.0000	8.0% ad val.
	Unwrought alloys	8104.19.0000	6.5% ad val.
	Wrought metal	8104.90.0000	14.8¢/kg on Mg content + 3.5% ad val.

Depletion Allowance: Dolomite, 14% (Domestic and foreign); magnesium chloride (from brine wells), 5% (Domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: After an investigation that began in 2000, the U.S. International Trade Commission (ITC) established duties on imports of magnesium from China, Israel, and Russia in November. Antidumping duties for pure magnesium were set as follows: China, from 24.67% to 305.56% ad valorem, depending on the exporter; Israel, 0%; and Russia, 0%. Although antidumping duties for magnesium imported from China existed, this determination covered granular magnesium that had been excluded from the previous determinations. The ITC determined that imports of granular magnesium from Israel constituted less than 3% of the total imported in the previous 12-month period so, in addition to the 0% antidumping duty rate, a 0% countervailing duty rate also was set.

In June, the magnesium producer in Washington announced that it would close its 45,000-ton-per-year plant on October 1. High production costs and unfavorable market conditions were cited as the reasons for the closure. The parent company of the Utah magnesium producer filed for chapter 11 bankruptcy in August reporting that the price pressures from imports have prevented the company from generating enough profits to service its long-term debt. The company had begun installing new, larger electrolytic cells that it claimed could reduce thermal emissions by 30% and

MAGNESIUM METAL

capture 99.9% of chlorine emissions. The company also reported that its operating costs with the new cells were 20% lower.

A new magnesium producer in Canada began operating a 63,000-ton-per-year plant in February and expected to produce 30,000 tons of magnesium in 2001. In Europe, the Norwegian producer announced that it would close its 42,000-ton-per-year plant by April 2002, and the closure of the 17,000-ton-per-year plant in France was announced in October. Competition from low-priced imports of Chinese magnesium were cited as the reason for the closure of both of these plants. Closure of these two plants leaves Western Europe with no primary magnesium production capacity.

In Australia, two potential magnesium producers suffered setbacks. An initial public offering of stock in June to finance the proposed 60,000-ton-per-year magnesium plant in Queensland did not generate enough support. After the company obtained loan guarantees from the Federal and State governments and additional capital from one of its partners, it issued a smaller public offering in October. The company that had proposed a 95,000-ton-per-year magnesium plant in Tasmania chose to put the project on hold because of its inability to obtain financing. Conversely, magnesium plants planned for South Australia (65,000 tons per year) and Northern Territory (50,000 tons per year) were proceeding on schedule, with completion of both plants set for 2003.

A presidential decree was signed in June appointing a steering committee to assist in the implementation of a proposed 60,000-ton-per-year magnesium plant in Congo (Brazzaville). The steering committee will report directly to the presidency and was expected to fast-track development of the project. In Ukraine, a new company was established to run a 17,000-ton-per-year magnesium plant that had been closed since January 1999. The company was expected to reopen the plant in 2002.

With the introduction of the new 2002 model cars, industry executives estimated that the average magnesium content in the car will increase to 4.1 kilograms (9 pounds) compared with 3.9 kilograms (8.5 pounds) for the 2001 model year. Magnesium producers and auto manufacturers were developing new families of creep-resistant magnesium alloys that may have the potential to replace aluminum and iron in some large powertrain components such as engine blocks and transmission cases; this could increase the use of magnesium in automotive applications.

World Primary Production, Reserves, and Reserve Base:

	Primary production		Reserves and reserve base ⁴
	2000	2001 ^e	
United States	W	W	Domestic magnesium metal production is derived from natural brines and dolomite, and the reserves and reserve base for this metal are sufficient to supply current and future requirements. To a limited degree, the existing natural brines may be considered to be a renewable resource wherein any magnesium removed by humans may be renewed by nature in a short span of time.
Brazil	9	9	
Canada	80	100	
China	^e 140	195	
France	14	7	
Israel	34	30	
Kazakhstan	^e 10	10	
Norway	35	30	
Russia	^e 45	50	
Yugoslavia	<u>1</u>	<u>1</u>	
World total ⁵	368	432	

World Resources: Resources from which magnesium may be recovered range from large to virtually unlimited and are globally widespread. Resources of dolomite and magnesium-bearing evaporite minerals are enormous. Magnesium-bearing brines are estimated to constitute a resource in the billions of tons, and magnesium can be recovered from seawater at places along world coastlines where salinity is high.

Substitutes: Aluminum and zinc may substitute for magnesium castings and wrought products. For iron and steel desulfurization, calcium carbide may be used instead of magnesium.

^eEstimated. W Withheld to avoid disclosing company proprietary data.

¹See also Magnesium Compounds.

²Rounded to two significant digits to protect proprietary data.

³Defined as imports - exports + adjustments for Government and industry stock changes.

⁴See Appendix C for definitions.

⁵Excludes U.S. production.