MAGNESIUM METAL[1]

(Data in thousand metric tons, unless otherwise noted)

Domestic Production and Use: In 2002, magnesium was produced by one company in Utah by an electrolytic process that recovered magnesium from brines from the Great Salt Lake. The largest use for magnesium, which accounted for 46% of apparent 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 32% of domestic metal use. Desulfurization of iron and steel accounted for 13% of U.S. consumption of primary metal; use as a reducing agent in nonferrous metals production, 2%; and other uses, 7%.

Salient Statistics—United States:	1998	1999	2000	2001	2002[e]
U.S. primary production capacity, yearend	145	80	83	45	45
Production:					
Primary	106	W	W	W	W
Secondary (new and old scrap)	77	86	82	66	65
Imports for consumption	83	91	91	69	90
Exports	35	29	24	20	27
Consumption:					
Reported, primary	107	131	104	96	100
Apparent	185	179	[2]160	[2]120	[2]120
Price, yearend:					
Metals Week, U.S. spot Western, dollars per pound, average	1.57	1.48	1.27	1.25	1.20
Metal Bulletin, European free market, dollars per metric ton, average	1,975	2,500	2,000	1,825	1,875
Stocks, producer and consumer, yearend	22	W	W	W	W
Employment, number[e]	700	700	700	375	375
Net import reliance[3] as a percentage of apparent consumption	25	38	43	44	54

Recycling: In 2002, about 27,000 tons of the secondary production was recovered from old scrap.

Import Sources (1998-2001): Canada, 42%; China, 20%; Russia, 16%; Israel, 11%; and other, 11%.

Tariff: Item	Number	Normal Trade Relations 12/31/02
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: On June 4, a U.S. bankruptcy court gave final approval for the sale of the U.S. magnesium producer for $24 million. The company was purchased by the principal individual owner of the holding company that had owned the plant previously. The new owner planned to continue installing new electrolytic cells that are larger, more energy efficient, and generate fewer emissions and would increase the plant's capacity to 60,000 tons per year from its current level of 45,000 tons per year.

Two primary magnesium plants were closed in Europe during 2002—a 42,000-ton-per-year plant in Norway was closed in April and a 17,000-ton-per-year plant in France was closed in July. The plant in Norway continued to operate its casthouse. The casthouse has a capacity of 20,000 tons per year and was operating on imported pure metal from China and returned scrap from customers in Europe. The plant in France was expected to be converted into a 5,000-ton-per-year magnesium recycling operation, which would produce niche products including turnings and granules from scrap feedstock from France, Italy, and Spain. The antidumping duty on Chinese magnesium imported into the European Union was expected to be removed in 2003 because after the plant in France was closed, there was no domestic industry to protect.

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MAGNESIUM METAL

In Australia, owners of a proposed 97,000-ton-per-year primary magnesium plant in Queensland signed an engineering, procurement, and construction contract for an estimated $1 billion. Site clearing began in June, and initial magnesium production was scheduled for the end of 2004 with production at full capacity by the end of 2005. A feasability study was completed for a proposed plant in South Australia. The feasibility study recommended a 71,000-ton-per-year plant, with a capital cost of A$761 million and an operating cost of A$1.06 per pound (US$0.59 per pound). Construction of the proposed plant, based on Dow magnesium technology, would be completed in 28 months. Based on the result of the feasibility study, the company plans project financing in the range of A$250 to A$300 million. Another feasibility study for a 100,000-ton-per-year plant to recover magnesium from coal fly ash was completed. Capital cost of the plant was estimated to be A$857 million, and the direct operating cost would be A$0.705 per pound.

China continued to plan additional magnesium capacity at many of its existing plants and propose new magnesium plants. The expansions and new capacity were expected to add about 60,000 tons per year of production capacity for magnesium ingot and about 20,000 tons per year of alloy capacity by yearend. In Congo (Brazzaville), a memorandum of understanding was signed for a long-term power contract for a planned 60,000-ton-per-year primary magnesium project. The owners also signed an off-take agreement with a German firm whereby the company will market up to 100% of the magnesium and magnesium alloys produced at the plant. Because investors have shown no interest in financing the project, a proposal to construct a 50,000-ton-per-year plant to recover magnesium from asbestos tailings in Russia has been indefinitely postponed. Magnesium production is expected to restart by the end of 2002 at the Kalush plant in Ukraine. The plant's holding company plans to produce 500 tons of magnesium in December and 10,000 tons in 2003. The plant has been closed since 1999.

Production at a new 10,000-ton-per-year magnesium recycling plant in the Czech Republic began in May, and a 10,000-ton-per-year recycling plant began operating in China at the beginning of 2002. Construction of a 10,000-ton-per-year magnesium recycling plant in the Netherlands is scheduled to begin in the fourth quarter of 2002, with production to start about October 2003. Raw material for the plants will be mainly from European die casters.

New magnesium alloy components continued to be specified for applications in new North American-produced vehicles, including large components such as dashboard panels and instrument support panels. The automotive industry and the magnesium industry are working together to develop new magnesium alloys for higher wear applications.

World Primary Production, Reserves, and Reserve Base:

	Primary production	
	2001	2002[e]
United States	W	W
Brazil	6	7
Canada	83	88
China	[e]200	210
France	4	—
Israel	32	35
Kazakhstan	16	19
Norway	36	10
Russia	[e]48	52
Yugoslavia	1	1
World total[5]	426	422

Reserves and reserve base[4]

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.

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.

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.

[e]Estimated. W Withheld to avoid disclosing company proprietary data. — Zero.

[1]See also Magnesium Compounds.

[2]Rounded to two significant digits to protect proprietary data.

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

[4]See Appendix C for definitions.

[5]Excludes the United States.