

Mineral Industry Surveys

For information, contact:

James F. Carlin, Jr., Acting Bismuth Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4985, Fax: (703) 648-7757
E-mail: jcarlin@usgs.gov

Robin C. Kaiser (Data)
Telephone: (703) 648-7948
Fax: (703) 648-7792
E-mail: rkaiser@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

BISMUTH IN THE FOURTH QUARTER 2006

Bismuth consumption in the United States for the fourth quarter of 2006 was estimated to be 355 metric tons (t), which was about 28% below that of the third quarter of 2006 and about 32% below that of the fourth quarter 2005. The estimated consumption breakdown for bismuth in the fourth quarter was about 43% for metallurgical additives; about 32% for fusible alloys, solders, and ammunition; about 24% for chemical and pharmaceutical uses; and 1% for other uses (table 2). Bismuth imports for the first 11 months of 2006 were about 5% below those in the third quarter 2006.

The New York dealer price for bismuth, as published in Platts Metals Week, started the fourth quarter at \$4.60 to \$4.80 per pound and rose steadily during the quarter to finish the quarter at \$7.30 to \$7.80 per pound.

China remained the world's leading bismuth producer from mine sources. Reportedly, the two leading European bismuth refiners have secured much of the mined bismuth output from China. Those two refiners are Mining and Chemical Products Group Ltd. (MCP) (Wellingborough, United Kingdom) and Sidech SA (Tilly, Belgium). As a result, relatively little bismuth was available through other sources, causing market price rises. The higher prices have encouraged MCP to consider restarting the Aramayo bismuth mine in Bolivia. MCP was originally established specifically to exploit this mine in the 1860s. MCP operated the mine until nationalization in 1952, and it became slowly dormant as Chinese bismuth sources became dominant in the 1960s and the 1970s. However, MCP maintains a share of the mining rights and is now in discussions with the Bolivian Government about a possible mine reopening. However, such a move could face difficulties, as the Bolivian Government's new

mining policy could again lead to wide-scale re-nationalization of the country's mining resources (Mining Journal, 2007).

Fortune Minerals Ltd. (London, Ontario, Canada) announced positive results from its full, bankable feasibility study assessing the company's 90% owned NICO gold-cobalt-bismuth project in the Northwest Territories of Canada. As a comprehensive analysis of a project's economics, a bankable feasibility study would be used by financial institutions to assess the credit worthiness of the project for financing. Fortune plans to proceed with an environmental assessment and permitting for the mine. The NICO study was led by Micron International Ltd. and Met-Chem Canada Inc. with a number of additional engineering companies that were retained to work on specific parts of the project. The study was based on the assessment of a combined open pit and underground mine processing 4,000 metric tons of ore per day (1.46 million metric tons per year) in a plant constructed at the site to produce gold doré, cobalt cathode, and high-grade bismuth concentrate. The NICO property consists of more than 5,140 hectares of contiguous mining leases, located 160 kilometers northwest of the city of Yellowknife, Northwest Territories, Canada. Fortune plans to start production at the NICO deposit in 2010 (Fortune Minerals Ltd., 2007).

References Cited

- Fortune Minerals Ltd., 2007, Fortune Minerals announces positive NICO bankable feasibility study: London, Ontario, Canada, Fortune Materials Ltd. press release, January 16, 7 p.
Mining Journal, 2007, Seasonal cheer for minor metals: Mining Journal, January 5, p. 4.

TABLE 1
SALIENT BISMUTH STATISTICS¹

(Kilograms unless otherwise specified)

	2005	2006				
		First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Consumption	2,280,000	521,000	598,000	496,000	355,000	1,970,000
Exports ²	142,000	37,400	35,600	106,000	91,500	270,000
Imports for consumption	2,530,000	483,000	600,000	515,000	488,000	2,090,000
Price per pound, dealer, average of period	\$3.91	\$4.70	\$4.50	\$4.50	\$6.43	\$5.03
Stocks, end of period, consumer	134,000	129,200	118,000	129,000	129,000	XX

XX Not applicable.

¹Data are rounded to no more than three significant digits.

²Comprises bismuth metal and the bismuth content of alloys and waste and scrap.

TABLE 2
ESTIMATED BISMUTH METAL CONSUMED IN THE UNITED STATES, BY USE¹

(Kilograms)

Use	2005	2006				
		First quarter	Second quarter	Third quarter	Fourth quarter	Year to date
Chemicals ²	500,000	83,500	95,700	95,700	85,100	360,000
Bismuth alloys	669,000	159,000	223,000	168,000	112,000	662,000
Metallurgical additives	1,090,000	270,000	270,000	230,000	154,000	925,000
Other	15,700	8,240	10,200	2,170	2,690	23,300
Total	2,280,000	521,000	598,000	496,000	355,000	1,970,000

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

²Includes industrial and laboratory chemicals, cosmetics, and pharmaceuticals.

TABLE 3
U.S. EXPORTS OF BISMUTH METAL, ALLOYS AND WASTE AND SCRAP, BY COUNTRY¹

(Kilograms, metal content)

Country	2005	2006					Year to date
		First quarter	Second quarter	Third quarter	October	November	
Argentina	240	15	--	9,380	--	--	9,400
Belgium	17,000	--	--	--	--	--	--
Brazil	4,260	20	--	--	--	--	20
Canada	70,100	19,800	17,600	17,700	4,390	2,320	61,800
Chile	1,560	916	--	--	--	--	916
China	35	--	--	--	--	--	--
Colombia	39	--	--	--	--	--	--
Dominican Republic	5,420	12,500	15,400	11,500	1,660	526	41,600
France	10,100	--	--	--	14,400	--	14,400
Germany	--	--	112	--	--	98	210
Hong Kong	234	--	--	5,710	--	27	5,740
India	2,000	22	--	142	--	--	164
Ireland	618	--	--	--	--	--	--
Israel	50	--	--	--	--	--	--
Japan	2,100	2,020	--	3,030	--	3,630	8,670
Korea, Republic of	293	159	100	--	--	--	259
Malaysia	11	--	--	--	--	--	--
Mexico	17,400	1,180	1,750	4,230	962	1,070	9,190
Saudi Arabia	--	50	--	--	--	--	50
Singapore	160	--	479	98	10,900	12,800	24,300
South Africa	98	--	--	--	--	--	--
Spain	1,000	--	115	--	--	--	115
Taiwan	49	--	--	--	1,740	--	1,740
Thailand	--	--	--	2,690	--	--	2,690
United Kingdom	8,840	728	--	--	--	5,320	6,050
Vietnam	--	--	--	51,200	15,700	15,900	82,800
Total	142,000	37,400	35,600	106,000	49,800	41,700	270,000

-- Zero.

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

Source: U.S. Census Bureau.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF BISMUTH METAL, BY COUNTRY¹

(Kilograms)

Country	2005	2006					Year to date
		First quarter	Second quarter	Third quarter	October	November	
Bahamas, The	2,620	527	553	--	--	--	1,080
Belgium	1,050,000	177,000	330,000	151,000	91,400	91,000	841,000
Canada	7,370	778	2,090	797	--	3,010	6,670
China	667,000	28,700	47,700	147,000	20,500	26,000	270,000
France	--	3	--	--	--	--	3
Germany	18,500	20	--	--	--	45	65
Hong Kong	--	36,500	--	38,100	--	--	74,600
Italy	106	300	--	--	80	--	380
Mexico	480,000	148,000	125,000	119,000	40,000	60,000	492,000
Netherlands	4	6	--	1,050	10	13	1,080
Peru	--	--	--	--	--	17,600	17,600
Spain	700	600	600	--	--	--	1,200
United Kingdom	304,000	90,600	94,000	56,700	118,000	20,300	379,000
Total	2,530,000	483,000	600,000	515,000	270,000	218,000	2,090,000

-- Zero.

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

Source: U.S. Census Bureau.