

Mineral Industry Surveys

For information, contact:

Micheal W. George, Bismuth Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4962, Fax: (703) 648-7757
E-mail: mgeorge@usgs.gov

Carolyn Crews (Data)
Telephone: (703) 648-7949
Fax: (703) 648-7975
E-mail: ccrews@usgs.gov

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

BISMUTH IN THE SECOND QUARTER 2004

Total bismuth consumption in the United States for the second quarter of 2004 was 610 metric tons (t), which was a slight increase compared with first quarter consumption, according to estimates compiled by the U.S. Geological Survey (USGS). As a result of an ongoing USGS analysis of the bismuth market that was begun during the second quarter of 2003, quarterly end use patterns for the second half of 2003 and first half of 2004 contain different assumptions from those of previous quarters. Estimated consumer stocks at the end of the second quarter of 2004 increased by 117% compared with consumer stocks at the end of the first quarter (table 1). The consumption distribution for bismuth in the second quarter of 2004 was 46% for metallurgical additives and galvanizing; 30% for fusible alloys, solders, and ammunition; 24% for chemical and pharmaceutical uses; and 1% for research and other miscellaneous uses (table 2).

The New York dealer price for bismuth, as published in Platts Metals Week, ended the first quarter of 2004 at a range of \$2.95 to \$3.25 per pound. In mid-April, the price range increased to \$3.10 to \$3.40 per pound and by the end of May the price range had risen to \$3.25 to \$3.55 per pound. The price range peaked at \$3.65 to \$4.00 per pound in mid-June, before it declined to \$3.60 to \$3.95 per pound at monthend.

Reserves.—Tiberon Minerals Ltd. (Canada) estimated that the Nui Phoa project in Vietnam would start production by 2006 and would reach a production rate of about 363 metric tons per year (t/yr) of bismuth by 2007 (Magnowski, 2004). The preliminary pre-feasibility study was released and it estimated that the bismuth recovery rate would be 25%, up from the original 10% estimate. Officials at Tiberon also announced that the recovery potential could be as high as 50% (Metal-Pages, 2004d§¹).

Fortune Minerals Limited (Canada) announced new estimates for the NICO gold-cobalt-bismuth deposit in the Northwest Territories, Canada. The new estimated bismuth resource was about 12,000 t of contained bismuth (Fortune Minerals Limited, 2004).

Research and Uses.—Maxell Corporation of America announced a breakthrough in high-speed rewritable optical recording devices. The new digital video device random access memory (DVD-RAM) uses a bismuth coupling material (BCM) recording layer that improves the quality of high-speed recording and is four times faster than current technology. The new DVD-RAM disc also increases the storage capacity to 4.7 gigabytes, which is about 6 hours of video. The BCM recording layer also increases the shelf life for the DVD-RAM disc (PC World, 2004§).

Production.—At the start of the second quarter, production of bismuth in China increased in response to higher prices and stronger demand. In April, Xinhui Bismuth announced that it planned to increase its 200-t/yr production rate by 600 t/yr by building a new plant (Metal-Pages, 2004e§). Given prevailing market conditions, however, implementation of this plan appeared unlikely. At the end of the quarter, foreign demand for Chinese bismuth metal declined. Because much of the bismuth production was exported, the decline in demand and the increased cost of electricity caused some smelters to cut back or to close temporarily. One 300-t/yr smelter reportedly was operating at only 20% of capacity (Metals-Pages, 2004c§). Also, Chinese tin producer Yunnan Tin Group announced that it would halt its production of bismuth owing to raw material supply shortages. Other major bismuth producers in Xiangtan City, with a total capacity of 500 t/yr, had been producing very little bismuth because they were producing other more profitable metals such as indium, and a smelter in Jiangxi, with a 100-t/yr capacity, announced that it would halt production in late July for summer maintenance that may last longer than usual (Metal-Pages, 2004a§; b§).

Industrias Peñoles, S.A. de C.V. (Mexico), the largest producer of bismuth in the world, produced 228 t of bismuth in the second quarter. This was a 16% drop compared with 2003 second quarter production and a 9% drop compared with the first quarter of 2004 (Industrias Peñoles, S.A. de C.V., 2004§).

Japanese production of bismuth for 2003 was 505 t, which was up 11% from the previous year's production. Stocks at the end

¹References that include a section mark (§) are found in the Internet References Cited section.

of December 2003 were 49.7 t, up 79% from those held at yearend 2002 (Roskill's Letter from Japan, 2004).

Consumption.—Bismuth consumption increased in Japan as the replacement of lead in solders and other lead products continued. Also, the Japanese steel sector increased the consumption of bismuth at the expense of lead as an additive to improve machinability (Metal Bulletin, 2004).

References Cited

- Fortune Minerals Limited, 2004, Fortune Minerals expands NICO resources: London, Ontario, Canada, Fortune Minerals Limited news release, May 27, 4 p.
- Magnowski, Daniel, 2004, Tiberon aims to produce 6,000 tpy tungsten by 2004: Metal Bulletin, no. 8847, June 21, p. 17.
- Metal Bulletin, 2004, [untitled]: Metal Bulletin, no. 8840, May 3, p. 16.
- Roskill's Letter from Japan, 2004, Non-ferrous metals—Japanese production and inventories in 2003: Roskill's Letter from Japan, no. 331, May, p. 2-4.

Internet References Cited

- Industrias Peñoles, S.A. de C.V., 2004, Sales volumes 2004, accessed August 5, 2004, via URL <http://www.penoles.com.mx>.
- Metal-Pages, 2004a (April 22), Bi buzz not enough for China, accessed April 22, 2004, via URL <http://www.metal-pages.com>.
- Metal-Pages, 2004b (July 30), Bismuth takes a break, accessed August 3, 2004, via URL <http://www.metal-pages.com>.
- Metal-Pages, 2004c (July 14), Chinese bismuth in the doldrums, accessed July 19, 2004, via URL <http://www.metal-pages.com>.
- Metal-Pages, 2004d (July 8), Good mining Vietnam for Tiberon, accessed July 12, 2004, via URL <http://www.metal-pages.com>.
- Metal-Pages, 2004e (April 14), Xinhui Bismuth plans to hike output, accessed April 22, 2004, via URL <http://www.metal-pages.com>.
- PC World, 2004 (June 8), DVD-RAM hits surprising speeds, accessed June 9, 2004, at URL <http://www.pcworld/resource/printable/article/0,aid,11438,00.asp>.

TABLE 1
SALIENT BISMUTH STATISTICS¹

(Kilograms unless otherwise specified)

| | 2003 | 2004 | |
|--|-----------|---------------|----------------------|
| | | First quarter | Second quarter |
| Consumption ^c | 2,120,000 | 607,000 | 610,000 |
| Exports ² | 108,000 | 39,000 | 11,100 ³ |
| Imports for consumption | 2,320,000 | 502,000 | 276,000 ³ |
| Price per pound, dealer, average of period | \$2.87 | \$2.94 | \$3.42 |
| Stocks, end of period, consumer | 278,000 | 134,000 | 290,000 |

^cEstimated.

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

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

³Includes data for April and May only. June data were not available at time of publication.

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

(Kilograms)

| Use | 2003 | 2004 | |
|-------------------------|-----------|----------------------|----------------|
| | | First quarter | Second quarter |
| Chemicals ² | 616,000 | 147,000 | 146,000 |
| Bismuth alloys | 646,000 | 177,000 | 181,000 |
| Metallurgical additives | 831,000 | 279,000 [†] | 278,000 |
| Other | 25,000 | 4,830 [†] | 5,640 |
| Total | 2,120,000 | 607,000 | 610,000 |

[†]Revised.

¹Data are rounded to no more than three significant digits, may not add to 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)

| Country | 2003 | 2004 | | | | Year to date |
|--------------------|---------|--------|---------------|-------|-------|--------------|
| | | March | First quarter | April | May | |
| Belgium | 10,500 | -- | -- | 2,720 | -- | 2,720 |
| Brazil | 1,800 | -- | 300 | -- | -- | 300 |
| Canada | 23,500 | 2,230 | 10,700 | 552 | 3,360 | 14,600 |
| China | 992 | -- | -- | -- | -- | -- |
| Costa Rica | 492 | -- | -- | -- | -- | -- |
| Dominica | -- | -- | -- | -- | 53 | 53 |
| Dominican Republic | 2,320 | 416 | 961 | 646 | 60 | 1,670 |
| Egypt | 448 | -- | -- | -- | -- | -- |
| Germany | 4 | -- | -- | -- | 1 | 1 |
| Guatemala | 143 | -- | 229 | -- | -- | 229 |
| Hong Kong | 155 | 24 | 95 | 84 | 60 | 239 |
| Hungary | 136 | -- | -- | -- | -- | -- |
| Israel | 7 | -- | -- | -- | -- | -- |
| Japan | 30,200 | 5,050 | 5,200 | -- | -- | 5,200 |
| Korea, Republic of | 496 | -- | -- | 75 | -- | 75 |
| Mexico | 33,300 | 4,700 | 11,500 | 1,580 | 1,750 | 14,900 |
| Russia | 1,510 | 1,040 | 1,040 | -- | -- | 1,040 |
| Thailand | 250 | -- | -- | -- | -- | -- |
| United Kingdom | 1,840 | -- | 8,910 | 148 | -- | 9,050 |
| Total | 108,000 | 13,500 | 39,000 | 5,800 | 5,290 | 50,100 |

-- 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, metal content)

| Country | 2003 | 2004 | | | | Year to date |
|----------------|-----------|---------|---------------|---------|--------|--------------|
| | | March | First quarter | April | May | |
| Bahamas, The | 1,330 | -- | -- | 206 | -- | 206 |
| Belgium | 778,000 | 119,000 | 250,000 | 47,700 | 19,400 | 317,000 |
| Canada | 22,500 | -- | 2,330 | 911 | 191 | 3,430 |
| China | 573,000 | 37,000 | 37,000 | 20,100 | 4,240 | 61,400 |
| Germany | 67,100 | -- | 41,100 | 20,100 | -- | 61,200 |
| Hong Kong | 105,000 | -- | -- | -- | -- | -- |
| Italy | 500 | -- | -- | -- | -- | -- |
| Mexico | 532,000 | 38,200 | 136,000 | 39,200 | 40,000 | 216,000 |
| Netherlands | 57,900 | 10 | 31 | -- | -- | 31 |
| Peru | 135 | -- | 93 | 39,700 | -- | 39,800 |
| Spain | 756 | -- | -- | -- | -- | -- |
| United Kingdom | 178,000 | 14,200 | 35,300 | 16,000 | 27,900 | 79,200 |
| Total | 2,320,000 | 209,000 | 502,000 | 184,000 | 91,700 | 778,000 |

-- Zero.

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

Source: U.S. Census Bureau.