USGS
science for a changing world

# Mineral Industry Surveys

For information, contact:
James F. Carlin, Jr., Tin 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

Elsie D. Isaac (Data)
Telephone: (703) 648-7950
Fax: (703) 648-7975
E-mail: eisaac@usgs.gov
MINES FaxBack: (703) 648-4999
Internet: http://minerals.usgs.gov/minerals

## TIN IN APRIL 2000

Domestic consumption of primary tin in April was estimated by the U.S. Geological Survey to be 2% lower than that in March and 7% lower than that in April 1999.

The *Platt's Metals Week* average composite price for tin in April was $3.68 per pound, down by 1% from March and up by 1% from April 1999.

During May 7-9, Metal Bulletin's 6th International Tin Conference was held in San Diego, CA. The focus of the conference was on tin consumption. The International Tin Research Institute (ITRI), the major UK-based tin research laboratory, co-sponsored the conference. Some information highlights of the conference are as follows:

a) In 2000, world tin consumption is expected to slightly exceed supply, with 201,000 metric tons (t) of consumption and 199,000 t of supply. Asian tin consumption this year has been very strong thus far.

b) Officials from MINSUR, in Peru, described successful operations at the San Raphael tin mine and FUNSUR tin smelter. The mine produces a 40% tin concentrate. In 1985, the mine produced 4,000 t of tin-in-concentrate and now produces about 35,000 t annually. It now ranks as the world's largest tin mine. Sixty percent of the mine's output is smelted at FUNSUR, located near Pisco on the coast. The FUNSUR smelter was designed and built in 1994; until then, Peru had no tin smelter. Despite considerable industry doubts at the time, the new technology installed in 1994 has worked well. Tin concentrates are shipped to the smelter via a 36-hour haul by truck. Smelter production was 18,000 t of tin in 1999; 22,000 t is estimated for 2000. The excess tin concentrate, beyond what FUNSUR can handle, is shipped abroad to the Malaysia Smelting Corp.

c) An executive with Malaysia Smelting Corp. provided an overview of tin in East Asia. East Asia is the world's largest tin producing area, accounting for 65% of world mine production and 73% of world refined tin. China supplies 82,000 t of tin-in-concentrate and Indonesia provides 48,000 t annually. In 1999, East Asia consumed 102,000 t of tin or 41% of total world consumption. China is estimated to consume 38,000 t of tin annually; Japan, 23,000 t; Republic of Korea, 12,000 t; and Taiwan, 11,000 t. In East Asia, solder accounts for the largest use of tin at 44,000 t; tinplating, 31,000 t; and other uses, 27,000 t.

d) An executive with Murchison-United Corp. (Australia) gave details on Australia's largest tin mine, the Renison Bell tin mine on the island of Tasmania. Over the past hundred years, Tasmania has produced a total of about 300,000 t of tin-in-concentrate. Renison currently produces about 10,000 t of tin annually. The concentrate is shipped to Malaysia and Thailand for smelting. Murchison-United purchased Renison from Consolidated Goldfields Corp. in 1998 for $14 million. Since then, Murchison has aggressively been lowering production costs by trimming employment and investing in new equipment.

e) A researcher speaking for the ITRI focused on the potential market for tin usage in flame retardants. The speaker stated that among the current types of flame retardants, tin's best opportunity for market penetration are in fields currently served by antimony trioxide. In the late 1980's, ITRI developed a zinc stannate compound as a fire retardant. This compound shows excellent smoke repressant characteristics compared to antimony trioxide, but it is much more costly. The ITRI speaker indicated that the potential world replacement market for antimony trioxide is 36,000 t, of which 5,000 t may be a realistic target for tin over the next 10 years.

The board of directors of USX Corp., parent company of the U.S. Steel Group, has approved a plan to purchase operations and steel-related assets of VSZ a.s. (Kosice, Slovakia), the largest integrated flat-rolled steel producer in central Europe. U.S. Steel is purchasing the company for relatively little cash. The financial package included an initial cash payment of $60 million. The new organization at Kosice will issue $325 million of debt to VSZ's creditor banks. During the 2000-03 period, U.S. Steel operations at Kosice will make payments to VSZ of not less than

$25 million and up to $75 million, depending upon the performance of the new company. The payment is earmarked for distribution to shareholders. The deal must still be approved by VSZ shareholders. The transaction essentially represents a capital improvement plan that could eventually total more than $700 million. The plant has a rated raw steel capacity of 4 million tons, which would represent roughly 25% of U.S. Steel's total capacity when the purchase is completed. VSZ is currently beset with financial difficulties largely tied to its involvement with businesses not related to steel. Burdened by those other activities, the steel firm defaulted on a $35-million loan payment late last year. U.S. Steel has been involved in a 50-50 joint venture tinplating operation with VSZ for the past 2 years, and has crafted this new agreement so as to assume the steel and steel-related operations but leave the nonsteel business to VSZ (American Metal Market, 2000).

In Indonesia, major tin producer PT Tambang Timah announced a likelihood of lower tin metal output in 2000, possibly 35,000 t, due to theft of tin-in-concentrates from its mines. Theft at Timah's mines began in the last half of 1999 but has been increasing this year. Trucks delivering tin concentrate to the smelter also have been hijacked. PT Koba Tin, the country's other tin producer, has suffered a decline in output of 50% this year also due to rampant theft at its mines on Bangka Island. PT Timah owns 25% of Koba Tin, while Iluka Resources (Australia) owns 75% (Platt's Metals Week, 2000c).

In Malaysia, the Chamber of Mines announced that there were 45 active tin mines in the country in October 1999, 15% more than the 39 mines active in January 1999. Despite this, tin mine output has remained about the same (Platt's Metals Week, 2000b).

In London, the London Metal Exchange (LME) announced that it was considering the storage of tin in Singapore. In the past, Singapore had been ruled out for such tin storage because it is near sizable production facilities and the LME's policy has been to site delivery points in areas of net consumption. However, the LME has acknowledged the difficulty in defining such areas (Platt's Metals Week, 2000a).

**Update**

On June 9, 2000, the *Platt's Metals Week* composite price for tin was $3.65 per pound.

**References Cited**

American Metal Market, 2000, USX board approves VSZ takeover: American Metal Market, v. 108, no. 22, April 28, p. 3.

Platt's Metals Week, 2000a, LME to consider warehousing tin in Singapore: Platt's Metals Week, v. 71, no. 21, May 22, p. 15.

———2000b, Malaysian tin mine numbers see-saw, output on target: Platt's Metals Week, v. 71, no. 18, May 1, p. 11.

———2000c, Theft cuts PT Timah's tin metal output projection: Platt's Metals Week, v. 71, no. 22, May 29, p. 1.

TABLE 1
SALIENT TIN STATISTICS 1/

(Metric tons, unless otherwise noted)

| | | 2000 | | |
|---|---|---|---|---|
| | 1999 p/ | March | April | January-April |
| Production, secondary e/ 2/ | 10,800 | 900 | 900 | 3,600 |
| Consumption: | | | | |
| Primary | 42,800 r/ | 3,560 r/ | 3,490 | 14,100 |
| Secondary | 12,300 r/ | 870 | 887 | 3,580 |
| Imports for consumption, metal | 47,500 | 3,770 | NA | NA |
| Exports, metal | 6,770 | 532 | NA | NA |
| Stocks at end of period | XX | 7,580 r/ | 7,520 | XX |
| Prices (average cents per pound): 3/ | | | | |
| Metals Week composite 4/ | 365.98 | 373.01 | 368.16 | XX |
| Metals Week New York dealer | 254.54 | 256.78 | 253.38 | XX |
| London, standard grade, cash | 245.00 | 247.00 | 244.00 | XX |
| Kuala Lumpur | 240.70 | 247.43 | 243.21 | XX |

e/ Estimated. p/ Preliminary. r/ Revised. NA Not available. XX Not applicable.
1/ Data are rounded to no more than three significant digits, except prices.
2/ Includes tin recovered from alloys and tinplate. The detinning of tinplate (coated steel) yields only a small part of the total.
3/ From Platt's Metals Week.
4/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges, and a risk factor. It normally is substantially higher than other tin prices.

TABLE 2
METALS WEEK COMPOSITE PRICE 1/

(Cents per pound)

| Period | High | Low | Average |
|---|---|---|---|
| 1999: | | | |
| April | 377.31 | 357.08 | 365.05 |
| May | 384.76 | 373.61 | 380.66 |
| June | 368.44 | 354.81 | 360.01 |
| July | 362.56 | 356.00 | 357.87 |
| August | 362.04 | 355.27 | 358.10 |
| September | 372.30 | 357.68 | 364.61 |
| October | 383.67 | 363.53 | 369.61 |
| November | 397.54 | 385.56 | 391.55 |
| December | 403.52 | 381.53 | 386.61 |
| Year | 403.52 | 343.72 | 365.98 |
| 2000: | | | |
| January | 405.27 | 390.75 | 397.72 |
| February | 391.72 | 377.25 | 382.84 |
| March | 383.26 | 364.68 | 373.01 |
| April | 371.49 | 365.85 | 368.16 |

1/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges, and a risk factor. It normally is substantially higher than other tin prices.

Source: Platt's Metals Week.

TABLE 3
TINPLATE PRODUCTION AND SHIPMENTS IN THE UNITED STATES 1/

(Metric tons, unless otherwise noted)

| Period | Tinplate waste (waste, strips, cobbles, etc.) (gross weight) | Tinplate (all forms) Gross weight | Tin content | Tin per metric ton of plate (kilograms) | Shipments 2/ |
|---|---|---|---|---|---|
| 1999 p/ | W | 1,750,000 | 9,080 | 5.2 | 2,370,000 |
| 2000: | | | | | |
| January | W | 141,000 | 718 | 5.1 | 184,000 |
| February | W | 144,000 | 785 | 5.5 | 175,000 |
| March | W | 155,000 | 810 | 5.2 | 203,000 |
| April | W | 149,000 | 736 | 4.9 | 170,000 |

p/ Preliminary. W Withheld to avoid disclosing company proprietary data.
1/ Data are rounded to no more than three significant digits.
2/ Source: American Iron and Steel Institute monthly publication.

TABLE 4
U.S. TIN IMPORTS FOR CONSUMPTION AND EXPORTS 1/

(Metric tons)

| Country or product | 1999 p/ | 2000 February | 2000 March | 2000 January-March |
|---|---|---|---|---|
| Imports: | | | | |
| Metal (unwrought tin): | | | | |
| Bolivia | 3,850 | 295 | 683 | 1,790 |
| Brazil | 4,700 | 260 | 280 | 1,060 |
| Chile | 3,980 | 490 | 236 | 1,220 |
| China | 13,900 | 1,170 | 1,070 | 3,510 |
| Hong Kong | 261 | 100 | 20 | 236 |
| Indonesia | 7,930 | 440 | 446 | 1,390 |
| Japan | 282 | -- | -- | -- |
| Malaysia | 944 | -- | -- | 20 |
| Peru | 11,000 | 1,680 | 920 | 3,110 |
| Singapore | 60 | 20 | -- | 20 |
| Thailand | 20 | -- | -- | -- |
| United Kingdom | 60 | 108 | 100 | 208 |
| Other | 533 | 28 | 22 | 71 |
| Total | 47,500 | 4,590 | 3,770 | 12,600 |
| Other (gross weight): | | | | |
| Alloys | 3,090 | 379 | 452 | 1,100 |
| Bars and rods | 872 | 53 | 83 | 237 |
| Foil, tubes, and pipes | 1 | -- | -- | -- |
| Plates, sheets, and strip | 122 | -- | 2 | 2 |
| Waste and scrap | 2,730 | 151 | 181 | 430 |
| Miscellaneous | 2,290 | 220 | 177 | 629 |
| Total | 9,100 | 803 | 895 | 2,400 |
| Exports (metal) | 6,770 | 578 | 532 | 1,570 |

p/ Preliminary. -- Zero.
1/ Data are rounded to no more than three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 5
CONSUMPTION OF TIN IN THE UNITED STATES, BY FINISHED PRODUCT 1/

(Metric tons of contained tin)

| | | 2000 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | March | | | April | | | January-April |
| Product | 1999 p/ | Primary | Secondary | Total | Primary | Secondary | Total | total |
| Alloys (miscellaneous) 2/ | W | 122 | -- | 122 | 126 | -- | 126 | 498 |
| Babbitt | 22 | 36 | W | 36 | 37 | W | 37 | 142 |
| Bar tin and anodes | 244 | 25 | W | 25 | 26 | W | 26 | 101 |
| Bronze and brass | 3,170 | 121 r/ | 144 | 266 r/ | 99 | 127 | 226 | 1,020 |
| Chemicals | 8,140 | 682 | W | 682 | 682 | W | 682 | 2,700 |
| Collapsible tubes and foil | W | W | W | W | W | W | W | W |
| Solder | 14,000 | 1,030 | 412 | 1,450 | 1,050 | 423 | 1,470 | 5,870 |
| Tinning | 508 | 59 | -- | 59 | 53 | -- | 53 | 249 |
| Tinplate 3/ | 9,080 | 810 | -- | 810 | 736 | -- | 736 | 3,050 |
| Tin powder | W | W | -- | W | W | -- | W | 97 |
| White metal 4/ | W | 5 | -- | 5 | W | -- | W | 10 |
| Other | 6,120 | 69 | 14 | 83 | 85 | 37 | 122 | 311 |
| Total reported | 41,300 | 2,960 r/ | 570 | 3,530 r/ | 2,890 | 587 | 3,480 | 14,000 |
| Estimated undistributed consumption 5/ | 13,800 | 600 | 300 | 900 | 600 | 300 | 900 | 3,600 |
| Grand total | 55,100 | 3,560 r/ | 870 | 4,430 r/ | 3,490 | 887 | 4,380 | 17,600 |

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other." -- Zero.

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

2/ Includes terne metal.

3/ Includes secondary pig tin and tin components of tinplating chemical solutions.

4/ Includes pewter, britannia metal, and jewelers' metal.

5/ Estimated consumption of plants reporting on an annual basis.