

# Mineral Industry Surveys

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## TIN IN NOVEMBER 2005

Domestic consumption of primary tin in November was estimated by the U.S. Geological Survey to be the same as that in October and 6% below that in November 2004. Estimated domestic consumption of primary tin in the first 11 months of 2005 was about 2% below that in the comparable period of 2004. Imports of unwrought tin totaled 32,600 metric tons (t) during the first 10 months of 2005 compared with a total of 39,100 t during the comparable period of 2004. Peru remained the leading supplier of unwrought tin to the United States, followed by Bolivia, Indonesia, China, and Brazil.

The Platts Metals Week average composite price for tin in November was \$4.14 per pound, about 4% below the price in October 2005 and about 29% below the price in November 2004. The November price was the lowest price recorded during 2005.

The Association of European Producers of Steel for Packaging (APEAL), based in Brussels, Belgium, announced that 2.2 million metric tons (Mt) of postconsumer steel packaging was recycled in Europe in 2004. This represents a recycling rate in the enlarged European Union (EU) of 60% and an estimated 63% in the EU15, up from 61% in 2003. APEAL represents 92% of the total production of steel for packaging in Europe. Its members are Arcelor Packaging International, Corus Group Plc, Rasselstein GmbH, and U.S. Steel Kosice s.r.o. Among the leading recyclers were Belgium (93%) and the Netherlands (86%) (APEAL, 2005).

In China, Yunnan Tin Company Group Ltd. (YTL) announced that Yufeng Mining Co. would soon launch a tin mining and concentrating project at the Wuchangping Tin Mine in Chenzhou City, Hunan Province. According to a geologic report prepared by the Hunan Province Xiangnan Bureau of Geology and Mineral Exploration, Wuchangping was estimated to hold 7.6 Mt of tin ore, containing about 47,700 t of metal at a grade of 0.63% tin. In March 2005, YTL purchased 65% of the stock of Shenzhen Juhui Mining Investment Co. Ltd. that controls most of Yufeng Mining Co., so YTL indirectly obtained a 5-year mining right over the Wuchangping Tin Mine (China Metal Market, 2006b).

YTL announced that its tin output was expected to reach 60,000 t in 2006, representing 20% of estimated world output in 2006. In 2005, YTL set up joint ventures for a crude tin smelter expected to come on line in June 2006, and a refined tin plant in Singapore was expected to be commissioned in early 2006 (China Metal Market, 2006a).

In Peru, the month-long strike at the Minsur SA tin refinery ended in early December after a compromise labor agreement was reached. Minsur had planned to process 70,000 t of tin-in-concentrates in 2005 at the refinery, giving it a refined tin output target of 42,000 t for 2005. The strike concerned the workers' demand for a pay rise of \$1.50 per day (CRU Week in the News, 2006§<sup>1</sup>).

In Australia, Bluestone Tin Ltd. began commissioning the 3,500-metric-ton-per-year (t/yr) Collingwood tin mine in Queensland and expected to make its first shipment of concentrates to Malaysia Smelting Corp. in mid-January 2006 (CRU Week in the News, 2005§).

The long decline of Thailand's tin mining industry continued in 2004, with production of about 700 t, compared with about 1,000 t in 2003 and 1,700 t in 2002. Tongkah Harbour was the main producer, using contractors to operate dredges in offshore operations. The number of dredges dropped from three in 2002 to one in 2003. Production ceased altogether in April 2005, and this was attributed to the Government's 20% royalty on tin sales. The royalty was being negotiated, and if it is revised downwards, Tongkah expected to proceed with exploration of a new offshore area that was expected to contain around 50,000 t of tin.

Also in Thailand, the Thailand Smelting and Refining Co. Ltd. tin smelter in Phuket, which began operations in 1965 and became part of Billiton Ltd. in 1972, more recently became part of the Amalgamated Metal Corp. Group. The smelter has a production capacity of 36,000 t/yr of tin, but output has been low in recent years primarily as a result of a shortage of concentrates from Indonesia and Peru, as production in those countries has become more fully integrated. In 2004, however,

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

production increased to 20,800 t from 15,400 t in 2003 (Mining Journal, 2005).

Aguila Technologies Inc. (San Marcos, CA) reportedly developed a lead-free solder that may provide manufacturers with a more cost-effective and easier-to-use option. The major hurdle in moving to lead free solders has been that alternatives melt at higher temperatures, forcing other nearby materials to have to withstand higher temperatures. Traditional lead-based solder is an alloy of tin and lead, melting at around 183° C to 190° C. The most common lead-free solders are alloys of tin and silver (and sometimes copper) which melt between 217° C and 229° C. The new solder reportedly does not require any flux or cleaning and leaves no residue (Advanced Materials & Processes, 2006).

### **Update**

On January 20, 2006, The Platts Metals Week composite price for tin was \$4.69 per pound.

### **References Cited**

- Advanced Materials & Processes, 2006, Lead free solder melts at low temperatures: Advanced Materials & Processes, v. 164, no. 1, January, p. 25.
- APEAL, 2005, Steel packaging essential for achievement of EU metal packaging recycling targets: Brussels, Belgium, APEAL press release, October 10, 1 p.
- China Metal Market, 2006a, YTL to launch a tin project in Chenzhou: Antaika, no. 111, February, p. 5.
- China Metal Market, 2006b, Yunnan Tin to become world's leading producing base of tin: Antaika, no. 110, January, p. 8.
- Mining Journal, 2005, Thailand—a significant mineral player: Mining Journal, December 22, p. 23.

### **Internet References Cited**

- CRU Week in the News, 2005 (December 22), TIN, accessed December 22, 2005, via URL <http://www.crumonitor.com>.
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TABLE 1  
SALIENT TIN STATISTICS<sup>1</sup>

(Metric tons, unless otherwise noted)

	2005			
	2004 <sup>P</sup>	October	November	January- November
Production, secondary <sup>2</sup>	10,800	900	900	9,900
Consumption:				
Primary	38,500	3,060	3,060	34,300
Secondary	8,200	773	779	8,460
Imports for consumption, metal	47,600	2,810	NA	NA
Exports, metal	3,650	397	NA	NA
Stocks at end of period	6,140	5,330	5,400	XX
Prices (average cents per pound): <sup>3</sup>				
Metals Week composite <sup>4</sup>	547.30	429.86	414.32	XX
Metals Week New York dealer	409.38	317.38	305.00	XX
London, standard grade, cash	385.00	291.00	279.00	XX
Kuala Lumpur	385.11	292.79	280.64	XX

<sup>2</sup>Estimated. <sup>P</sup>Preliminary. NA Not available. XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits, except prices.

<sup>2</sup>Includes tin recovered from alloys and tinplate. The detinning of tinplate (coated steel) yields only a small part of the total.

<sup>3</sup>Source: Platts Metals Week.

<sup>4</sup>The Metals Week composite price is a calculated formula, not a market price, that includes fixed and finance charges and a risk factor. It is normally substantially higher than other tin prices.

TABLE 2  
METALS WEEK COMPOSITE PRICE<sup>1</sup>

(Cents per pound)

Period	High	Low	Average
2004:			
November	584.93	570.24	580.02
December	569.06	505.64	555.57
Year	624.98	424.94	547.30
2005:			
January	521.70	492.15	503.78
February	544.11	511.92	523.08
March	555.16	521.08	543.81
April	534.61	521.86	527.02
May	529.88	521.36	524.53
June	514.23	476.28	497.35
July	483.46	462.98	470.82
August	482.15	458.34	469.43
September	465.96	433.15	449.50
October	441.09	414.42	429.86
November	423.21	405.80	414.32

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

Source: Platts Metals Week.

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

(Metric tons, unless otherwise noted)

Period	Tinplate waste (waste, strips, cobble, etc.) (gross weight)	Tinplate (all forms)			Shipments <sup>2</sup>
		Gross weight	Tin content	Tin per metric ton of plate (kilograms)	
2004 <sup>P</sup>	W	2,550,000	7,700	3.0	2,190,000
2005:					
January	W	207,000	676	3.3	144,000
February	W	202,000	684	3.4	164,000
March	W	209,000	684	3.3	166,000
April	W	199,000	662	3.3	136,000
May	W	174,000	595	3.4	186,000
June	W	186,000	706	3.8	169,000
July	W	168,000	612	3.8	136,000
August	W	166,000	606	3.7	167,000
September	W	171,000	615	3.6	150,000
October	W	175,000	612	3.5	150,000
November	W	179,000	618	3.5	NA

<sup>P</sup>Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data.

<sup>1</sup>Data are rounded to no more than three significant digits.

<sup>2</sup>Source: American Iron and Steel Institute monthly publication.

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

(Metric tons)

Country or product	2005			
	2004	September	October	January- October <sup>2</sup>
<b>Imports:</b>				
<b>Metal (unwrought tin):</b>				
Bolivia	5,060	929	170	5,380
Brazil	4,330	150	75	1,900
Chile	281	-- <sup>r</sup>	--	20
China	5,310	192	207	3,700
Indonesia	4,660	362	1,040	3,910
Japan	540	--	--	--
Malaysia	6,600	100	80	1,280
Peru	19,600	1,670	1,230	16,200
Switzerland	178	--	--	--
Thailand	500	-- <sup>r</sup>	--	45
United Kingdom	97	18 <sup>r</sup>	--	44
Other	472	2 <sup>r</sup>	--	161
<b>Total</b>	<b>47,600</b>	<b>3,420</b>	<b>2,810</b>	<b>32,600</b>
<b>Other (gross weight):</b>				
Alloys	5,180	523	469	6,600
Bars and rods	625	109	99	862
Foil, tubes, pipes	6	8	( <sup>3</sup> )	8
Plates, sheets, strip	509	27	36	290
Waste and scrap	1,950	529	52	2,640
Miscellaneous	3,330	460	268	2,800
<b>Total</b>	<b>11,600</b>	<b>1,660</b>	<b>924</b>	<b>13,200</b>
Exports (metal)	3,650	538	397	3,680

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Includes revisions to previous months' data.

<sup>3</sup>Less than 1/2 unit.

Source: U.S. Census Bureau.

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

(Metric tons of contained tin)

Product	2005							
	2004 <sup>P</sup>	October			November			January- November
		Primary	Secondary	Total	Primary	Secondary	Total	
Alloys (miscellaneous) <sup>2</sup>	2,800	105 <sup>r</sup>	--	105 <sup>r</sup>	101	--	101	1,140
Babbitt	264	16	W	16	19	W	19	256
Bar tin and anodes	182	23	W	23	23	W	23	251
Bronze and brass	2,490	177	139	316	177	143	320	3,380
Chemicals	8,490	719	W	719	719	W	719	7,910
Collapsible tubes and foil	W	W	W	W	W	W	W	W
Solder	12,500	672	325	997	661	325	986	11,200
Tinning	451	63	--	63	61	--	61	675
Tinplate <sup>3</sup>	7,700	612	--	612	618	--	618	7,070
Tin powder	W	W	--	W	W	--	W	W
White metal <sup>4</sup>	W	W	--	W	W	--	W	W
Other	1,000	77	9	86	79	11	90	981
Total reported	35,900	2,460	473	2,940	2,460	479	2,940	32,900
Estimated undistributed consumption <sup>5</sup>	10,800	600	300	900	600	300	900	9,900
Grand total	46,700	3,060	773	3,840	3,060	779	3,840	42,800

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

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

<sup>2</sup>Includes terne metal.

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

<sup>4</sup>Includes pewter, britannia metal, and jewelers' metal.

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