U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

Gordon P. Eaton, Director — Reston, VA 20192

For information, contact:
James F. Carlin, Jr., Tin Specialist
Telephone: (703) 648-4985, Fax: (703) 648-7757
Elsie Isaac (Data), (703) 648-7950

MINES-DATA: (703) 648-7799
MINES FaxBack: (703) 648-4999
Internet: http://minerals.er.usgs.gov/minerals

TIN IN MAY 1997

Domestic consumption of primary tin in May was estimated by the U.S. Geological Survey (USGS) to be about the same as that in April 1997 and May 1996.

The Platt's Metals Week composite price for tin was $3.87 per pound; about the same as in April 1997 and 9% lower than in May 1996.

A report from Wheeling, WV, indicated that the long-running strike of the United Steelworkers Union against Wheeling-Pittsburgh Steel Corp. continued. The strike began on October 1, 1996, against eight Wheeling steel plants in Ohio, Pennsylvania, and West Virginia in a dispute mainly over pension issues. The strike is now becoming one of the longest in domestic steel industry history. Wheeling is a domestic tinplate producer and ranks as a major tin user (American Metal Market, 1997).

The Can Manufacturer's Institute (Washington, D.C.) reported that in 1996 tinplated steel and tin-free steel accounted for 24% of the 135 billion metal cans shipped domestically; aluminum accounted for 76%. These percentages were identical to those for 1995, when 134 billion metal cans were shipped. Aluminum held virtually 100% of the carbonated beverage can market, while steel dominated in the food can and the "general-line" can markets (Can Shipments Report, 1996).

A recent wide-ranging report on the status of the domestic tinplate industry offered numerous insights:

- Unlike the growing markets for the other major coated steel product, galvanized steel, the U.S. market for tinplate has been rather flat over the past decade.
- About 60% of steel cans today are 3-piece cans: the can's body is a single piece of steel welded together to make a cylinder and the ends are composed of two disks.
- The remaining 40% of steel cans today are 2-piece cans: the can's bottom and body are made of a single piece of steel that has been drawn and ironed; a second piece of steel (or aluminum) is used for the can's top.
- Steel has maintained its dominance in food and general-line cans mostly due to aluminum's physical limitations. Light-gage aluminum is not rigid enough for noncarbonated cans. One key factor that allowed aluminum to be lightweighted for the beverage can is that there is carbonation and internal pressure which keeps the can fairly rigid; but without that internal pressure, a packed, aluminum food can would easily bend and dent.
- Steel's share of the European beverage can market dipped to about 35% in the early 1990's, but European tin mills fought back by reducing their costs and improving their products; by the mid-1990's, they had a 50% market share in the beverage can sector.
- In the United States, steel makers have not been able to break back into their lost markets in the beverage can sector. The domestic tinplate industry has found can-makers to be slow in their willingness to commit the large investment that would be needed to convert to a steel coil feedstock from an aluminum coil feedstock. (New Steel, 1997).

Soldering Bits (1997b) reported that a tin-zinc alloy with a melting temperature of 190° C is favored above all other candidates among lead-free solders in Japan. Mitsui Mining and Smelting Co., along with Harima Chemicals Inc., began shipping samples of tin-zinc alloys in 1996, mass produced in the form of a paste containing a mixture of powdered alloy and flux. Recently, Matsushita Electric Industrial Co. and Senju Metal Industry Co. developed a special type of flux that enables tin-zinc to be used in open air. Previously, because of zinc's high activity, zinc solder could only be used in a nitrogen atmosphere. Both products are said to have bonding, tensile strength, and electrical conductivity matching the levels in eutectic (67% tin-33% lead) solder, the standard formulation.

In Canada, it was announced that Northern Telecom Corp. (Nortel) developed interconnection technology for making

Prepared by the Metals Section and the Data Collection and Coordination Section, August 1, 1997.

PRINTED ON RECYCLED PAPER

printed circuit boards without using lead and is making a test group of office telephones for market trial using the lead-free boards. Test results are said to be encouraging. The solder used is 99.3% tin-0.7 copper (Soldering Bits, 1997a).

In a paper entitled "The Present Status of the Tin Industry in China" presented at the ITRI World Tin Conference, in May, in Brussels, Belgium, an official of Yunnan Tin Corp. (China) provided numbers which put a rare focus on usage patterns in that country. Translated to tonnage terms, China's use of tin for solder was 3,100 tons in 1984, 9,000 tons in 1996, and a predicted 13,000 tons in 2000 (Market Monitor, 1997).

Update

On July 11, 1997, the Platt's Metals Week composite price for tin was $3.73 per pound.

References Cited

American Metal Market, 1997, Strike wounds strain labor: American Metal Market, v. 105, no. 117, June 18, p. 1.

Can Manufacturers Institute, 1996, Metal can shipments by material/technology, in Can shipments report 1996: Can Manufacturers Institute, p. 7.

Market Monitor, 1997, Solder consumption in China: Market Monitor,no. 2, June, p. 10.

New Steel, 1997, Winning back the beverage-can market: New Steel, v. 13, no. 6, June, p. 76-82.

Soldering Bits, 1997a, Circuit boards without lead: Soldering Bits, no. 9, May, p. 22.

———1997b, Lead-free solder: Soldering Bits, no. 9, May, p. 25.

TABLE 1
SALIENT TIN STATISTICS 1/

(Metric tons, unless otherwise noted)

		1997		
	1996 p/	April	May	January-May
Production, secondary e/ 2/	10,800	900	900	4,500
Consumption:				
Primary	37,700	3,180	3,100	15,800
Secondary	11,100	887	899	4,480
Imports for consumption, metal	33,200	3,540	NA	NA
Exports, metal	2,790	442	NA	NA
Stocks at end of period	4,670	5,070 r/	5,270	XX
Prices (average cents per pound): 3/				
Metals Week composite 4/	412.43	386.55	386.59	XX
Metals Week New York dealer	288.10	265.81	267.06	XX
London, standard grade, cash	279.00	259.00	259.00	XX
Kuala Lumpur	275.19	256.98	257.00	XX

e/ Estimated. p/ Preliminary. r/ Revised. NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits, except prices.

2/ Comprises 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 charges, 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
1996 (annual)	436.25	388.49	412.43
1996:			
May	436.25	415.30	426.88
June	418.01	410.83	413.65
July	423.04	408.27	417.03
August	411.84	407.75	409.11
September	413.10	402.69	408.04
October	404.38	396.12	400.25
November	409.57	392.40	401.00
December	405.37	388.49	394.76
1997:			
January	404.19	387.89	396.17
February	403.46	390.40	395.64
March	401.81	389.32	395.64
April	393.82	380.00	386.55
May	393.67	378.72	386.59

1/ The Metals Week composite price is a calculated formula, not a market price, that includes fixed charges, 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/
1996 p/	181,000	1,550,000	9,620	6.2	2,750,000
1997:					
January	15,900	140,000	853	6.1	204,000
February	13,600	138,000	775	5.6	183,000
March	12,700	144,000	676	4.7	205,000
April	13,800	147,000	776	5.3	210,000
May	13,600	147,000	704	4.8	NA

p/ Preliminary. NA Not available.
1/ Data are rounded to three significant digits.
2/ Shipments data from American Iron and Steel Institute monthly publication AIS10.

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

(Metric tons)

Country or product	1996 p/	1997 March	April	January-April
Imports:				
Metal (unwrought tin):				
Bolivia	6,290	79	741	1,510
Brazil	9,460	500	741	3,180
Chile	407	--	--	261
China	2,760	410	208	1,220
India	898	120	300	918
Indonesia	7,550	520	721	2,440
Malaysia	965	--	5	445
Peru	481	939	522	2,500
Russia	435	67	231	398
Other	922	155	69	375
Total	30,200	2,790	3,540	13,200
Other (gross weight):				
Alloys	11,800	465	519	2,610
Bars and rods	695	65	52	239
Foil, tubes, and pipes	(2/)	--	(2/)	(2/)
Plates, sheets, and strip	641	--	6	35
Waste and scrap	6,740	136	64	855
Miscellaneous	1,360	121	92	413
Total	21,300	787	733	4,150
Exports (metal)	4,780	326	442	1,580

p/ Preliminary.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Less than 1/2 unit.

Source: Bureau of the Census.

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

(Metric tons of contained tin)

		1997						
		April			May			January-May
Product	1996 p/	Primary	Secondary	Total	Primary	Secondary	Total	total
Alloys (miscellaneous) 2/	418	35	--	35	34	--	34	171
Babbitt	201	19	W	19	20	W	20	95
Bar tin and anodes	100	8	--	8	8	--	8	W
Bronze and brass	1,890	61	97	158	54	104	158	787
Chemicals	6,950	624	W	624	624	W	624	3,240
Collapsible tubes and foil	255	21	--	21	21	W	21	126
Solder	8,920	522 r/	W	522 r/	514	W	514	2,560
Tinning	1,640	134	--	134	136	--	136	675
Tinplate 3/	9,620	776	--	776	704	--	704	3,790
Tin powder	573	48	--	48	W	W	W	192
White metal 4/	W	W	--	W	W	W	W	W
Other	1,370	35	290	325	82	295	377	1,690
Total reported	31,900	2,280 r/	387	2,670 r/	2,200	399	2,600	13,300
Estimated undistributed consumption 5/	16,800	900	500	1,400	900	500	1,400	7,000
Total	48,800	3,180 r/	887	4,070 r/	3,100	899	4,000	20,300

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other."
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes terne metal.
3/ Includes secondary pig tin and tin acquired in chemicals.
4/ Includes pewter, britannia metal, and jewelers' metal.
5/ Estimated consumption of plants reporting on an annual basis.

TABLE 6
DEFENSE LOGISTICS AGENCY
TIN STOCKPILE DISPOSALS 1/

(Metric tons)

Period	Monthly disposals 2/
1996:	
May	10
June	330
July	1,180
August	1,370
September	2,300
October	--
November	210
December	200
Year total	6,670
1997:	
January	215
February	200
March	115
April	60
May	200
Total	790

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ These disposals represent only the daily, spot sales program. They do not include the long-term dealer contract sales program.

Source: Defense Logistics Agency.