



# Mineral Industry Surveys

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## ZINC IN APRIL 2003

Domestic mine production in April, at 56,300 metric tons (t), was about 14% lower than in March and was about 2% lower than in April 2002. Smelter production, at 23,000 t, was about 6% higher than the previous month's production, and about 31% higher than a year before. Apparent consumption in April, at 78,700 t, declined by about 6% compared with the previous month's consumption, and was nearly 19% lower compared with consumption in April 2002.

The Platts Metals Week composite price for North American Special High Grade zinc in April declined by about 4% to 37.23 cents per pound of zinc metal. Compared with April 2002, the decline was nearly 7%.

While zinc prices hovered near historic low levels, European zinc smelters witnessed the continued appreciation of the euro against the dollar. The euro is at \$1.17, worth nearly 40% more than when the currency was at its weakest in July 2001. The once weak euro provided a significant cushion to European smelters because their revenues derived from realized dollar-denominated treatment charges. Fortunately for the smelters, their dependence on exports is declining as European demand for zinc gains strength on favorable trade advantages of steel mills producing galvanized steel (CRU International Ltd., 2003b).

The Montana Tunnels Mine, owned by Apollo Gold Corp., resumed full commercial zinc production on April 3. Prior to Apollo's acquisition in April 2002, the mine was scheduled to close due to depletion of the main deposit. Soon after acquisition, Apollo began waste-stripping, and by yearend 2002, nearly 20 million metric tons (Mt) of waste had been removed at a cost of about \$17 million. The mill was restarted in October 2002 to process overburden, in which traces of precious metals were found. The unexpected profit from development ore will help offset the cost of mine development. The company expects to mine 4.6 Mt of ore this year, which should yield about 20,000 t of zinc in concentrate. Montana Tunnels had proven and probable reserves totaling 17.3 Mt at yearend 2002 grading 0.6% zinc (CRU International Ltd., 2003a). Phase 2 of the redevelopment program, which will remove 10 Mt of waste rock from the southwest pit wall, is continuing and is scheduled to be completed by December 2003. In addition to the capital spent

on the waste stripping, Apollo spent \$5.6 million for mining equipment, a tailings impoundment lift, and mill improvements (Apollo Gold Corp., 2003§<sup>1</sup>).

Pasminco Ltd. of Australia announced that the Gordonsville Mine in Tennessee was closed in May. The mine closure was expected as the part of the restructuring strategy for Pasminco. The mine had supplied zinc concentrates to the Clarksville, TN, refinery, but low ore grades and low zinc prices resulted in the closure decision. Pasminco's Clinch Valley Mine, TN, is expected to continue operating for one more year, while the remaining ore is mined out. Domestic ore for the Clarksville refinery is being replaced by imported zinc concentrate, mostly from the Atacocha Mine in Peru (Pasminco Ltd., 2003§). Ivernia West Inc. of Canada may sell its 50% interest in the Lisheen zinc mine in Ireland to its partner, Anglo American plc, for \$1.8 million plus the assumption by Anglo of Ivernia's debt totaling \$73 million. Ivernia is considering the sale because of the high debt levels and low profits generated by the Lisheen operation, owing to low zinc prices. However, the sale would require the approval of regulatory authorities and Ivernia's shareholders (Mining Journal, 2003).

KCM-SA completed the renovation and expansion of its lead and zinc smelter in Plovdiv, Bulgaria, in March 2003. In addition to pollution reduction, the \$60 million investment increased zinc smelting capacity by 17%, to 73,000 metric tons per year (t/yr). The production of lead is to remain the same as in 2002. Zinc production in 2003 at the Lead-Zinc Complex Co. Ltd. in Kardjali, the second largest zinc smelter in Bulgaria, is expected to increase compared with the previous year when the company had to cut output and 20% of its workforce due to low zinc prices (Metal-Pages, 2003).

Kazakhstan's Kazakhmys Corp. intends to commission its 100,000-t/yr zinc smelter in October of this year. Construction began in January 2000 in Balkhash, central Karagande, and will cost about \$100 million. About three-fourths of the smelter's zinc concentrate requirement will come from the company's

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

own Vostokkamed and Zhezkent Mines; together, they produced 72,300 t of zinc in concentrate in 2002 (CRU International Ltd., 2003c).

Vietnam National Minerals Corp. (Vimico) plans to start building the first zinc smelter in Vietnam. China's Yunnan Nonferrous Corp. was chosen to design the smelter, which is to have a capacity of 10,500 t/yr. If the design is accepted by Vimico, construction would start early next year and be ready for production within 2 years. The smelter is to be located in Thai Nguyen Province and would be operated by The Nonferrous Company of Thai Nguyen (a subsidiary of Vimico). Currently, Vietnam sells all its zinc to China and Thailand (Platts Metals Week, 2003c).

### Update

OntZinc Corp. would like to reopen the Balmat Mine this July and reach 55,000 t/yr production, if zinc prices rise. The mine has been on care and maintenance since May 2001 when Zinc Corp. of America (ZCA) (a subsidiary of Horsehead Industries Inc.) decided to convert from primary to secondary zinc production. The mine, located in northern New York State, is costing Horsehead about \$200,000 per month for care and maintenance of the property. In November 2002, OntZinc signed a letter of intent to buy Balmat for about \$20 million, payable from operating profit once the mine reopens. The income from the sale would allow Horsehead to emerge from Chapter 11 bankruptcy status that began in August 2002. The mine is to be operated by OntZinc's Delaware-registered subsidiary, St. Lawrence Zinc (Platts Metals Week, 2003b). Because of Chapter 11, a hearing was held at the U.S. Bankruptcy Court for the Southern District of New York on May 15. At the meeting, the committee of unsecured creditors objected to several terms in the sale proposal, such as the \$750,000 fee ZCA would award to St. Lawrence if another bidder buys the property, and the requirement that other bidders must deposit \$850,000 as a down payment while St. Lawrence was not required to make any down payment. The committee also wanted the date of the proposed sale to be moved from May 29 to June 12 or later, to give other bidders a better chance to prepare their bids (Platts Metals Week, 2003a).

St. Modwen Developments Ltd. of the United Kingdom has contracted to buy the site of MIM's now closed zinc smelter at Avonmouth, UK. The smelter, operated by Britannia Zinc Ltd. (subsidiary of MIM Holdings Ltd.), was closed in February 2003. The sale will save MIM about \$41 million as compared with the cost of closure, because St. Modwen will assume environmental responsibility for the site. The transaction is expected to be completed around the end of July following final regulatory approvals. The sale of the Avonmouth plant would complete the exit of MIM from zinc smelting in Europe following the company's sale of its German zinc smelter at Duisburg last year (MIM, 2003§).

Peru has sold the last state-owned Morococha base metal mine and concentrator to locally owned Sociedad Minera Corona. In addition to the \$1 million sale price, the new owner (controlled by the Gubbins Group) must also invest \$240,000 yearly for environmental cleanup and provide a minimum of \$3 million over the next 5 years to improve, expand, and develop Morococha's operations and installations. Corona also agreed to retain 350 workers for a minimum of 18 months. The mine, located in the central department of Junin, has proven and probable reserves of about 400,000 t grading 0.5% copper, 2.1% lead, 6.7% zinc, and 182 grams per ton silver. The site has an additional estimated 1 Mt of reserves (Metal Bulletin, 2003).

Anglo American plc has produced the first zinc metal at its Skorpion zinc mine and refinery in Namibia. The mine, under development since 2001, is expected to produce 150,000 t/yr of refined zinc when it reaches full production. Skorpion's ore consists mainly of zinc oxide rather than the more usual sulfide ore. Anglo American built a dedicated processing plant to extract zinc metal through direct acid leaching, solid-liquid separation, solvent extraction, and electrowinning. Open pit mining is to produce 1.5 Mt/yr from a deposit that measures 21.4 Mt at a grade of 10.6% zinc (CRU International Ltd., 2003§).

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TABLE 1  
SALIENT ZINC STATISTICS<sup>1</sup>

(Metric tons, unless otherwise specified)

	2002	2003			
	January- December	February	March	April	January- April
<b>Production:</b>					
Mine, zinc content of concentrate	784,000	62,500	65,300 <sup>r</sup>	56,300	252,000
Mine, recoverable zinc	754,000	60,200	62,700 <sup>r</sup>	54,000	242,000
Smelter, refined zinc	259,000	22,800	21,700	23,000	92,400
<b>Consumption:</b>					
Refined zinc, reported	421,000	33,100	34,400	34,600	135,000
Ores <sup>e</sup> (zinc content)	727	61	61	61	182
Zinc-base scrap <sup>e</sup> (zinc content)	189,000	15,900	15,900	15,900	47,600
Copper-base scrap <sup>e</sup> (zinc content)	176,000	14,700	14,700	14,700	44,000
Aluminum-and magnesium-base scrap <sup>e</sup> (zinc content)	1,430	120	120	120	359
Total <sup>e</sup>	789,000	63,900	65,100	65,300	227,000
Apparent consumption, metal <sup>2</sup>	1,150,000	114,000	83,500	78,700	366,000 <sup>3</sup>
<b>Stocks of refined (slab) zinc, end of period:</b>					
Producer <sup>4</sup>	XX	8,930	6,110	8,340	XX
Consumer <sup>5</sup>	XX	57,100	55,200	56,700	XX
Merchant	XX	10,100	11,300	11,300	XX
Total	XX	76,100	72,600	76,400	XX
Shipments of zinc metal from Government stockpile	5,040	--	--	200	716
<b>Imports for consumption:</b>					
Refined (slab) zinc	874,000	58,400	59,400	NA	203,000 <sup>6</sup>
Oxide (gross weight)	69,700	6,570	6,900	NA	20,100 <sup>6</sup>
Ore and concentrate (zinc content)	122,000	6,160	2,480	NA	12,700 <sup>6</sup>
<b>Exports:</b>					
Refined (slab) zinc	1,160	97	128	NA	300 <sup>6</sup>
Oxide (gross weight)	10,800	967	1,080	NA	2,960 <sup>6</sup>
Ore and concentrate (zinc content)	822,000	12,900	14,300	NA	47,100 <sup>6</sup>
Waste and scrap (gross weight)	47,700	3,610	3,790	NA	10,300 <sup>6</sup>
<b>Price:</b>					
London Metal Exchange, average, dollars per metric ton	\$778.38	\$784.80	\$790.60	\$754.30	\$777.68
Platts Metals Week North American Special High Grade, average, cents per pound	38.64	38.68	38.88	37.23	38.38

<sup>e</sup>Estimated. <sup>r</sup>Revised. NA Not available. XX Not applicable. -- Zero.

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

<sup>2</sup>Smelter production plus imports minus exports plus shipments from Government stockpile plus stock change.

<sup>3</sup>Data based on reported consumption, stocks, and estimated trade data.

<sup>4</sup>Data from U.S. Geological Survey and American Bureau of Metal Statistics.

<sup>5</sup>Includes an estimate for companies that report annually.

<sup>6</sup>Includes data through March only.

TABLE 2  
REFINED ZINC PRODUCED IN THE UNITED STATES<sup>1</sup>

(Metric tons)

Month	Beginning stocks <sup>2</sup>	Production	Shipments	Ending stocks <sup>2</sup>
2002:				
April	9,760	23,400	23,800	9,420
May	9,420	23,900	25,800	7,470
June	7,470	23,700	24,500	6,670
July	6,670	19,100	18,900	6,830
August	6,830	16,200	16,000	7,010
September	7,010	17,900	17,400	7,470
October	7,470	16,100	16,600	7,020
November	7,020	21,800	20,800	7,970
December	7,970	23,500	22,900	8,550
Year	XX	259,000	257,000	XX
2003:				
January	8,550	24,900	21,500	11,900
February	11,900	22,800	25,800	8,930
March	8,930	21,700	24,500	6,110
April	6,110	23,000	20,700	8,340
January-April	XX	92,400	92,600	XX

XX Not applicable.

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

<sup>2</sup>Includes stocks held at locations other than smelters.

Sources: U.S. Geological Survey and American Bureau of Metal Statistics.

TABLE 3  
APPARENT CONSUMPTION OF REFINED ZINC ACCORDING TO INDUSTRY USE AND PRODUCT

(Metric tons)

Industry and product	2002	2003			January-April
	January-December	February	March	April <sup>2</sup>	
Galvanizing:					
Sheet and strip	477,000	47,600	35,500	33,700	154,000
Other	175,000	18,300	11,500	10,700	53,500
Total	652,000	65,900	47,000	44,500	208,000
Brass and bronze	189,000	18,000	13,900	12,800	59,100
Zinc-base alloy	233,000	24,100	18,000	17,000	78,500
Other uses <sup>3</sup>	71,700	6,200	4,700	4,400	20,100
Grand total	1,150,000	114,000	83,500	78,700	366,000

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

<sup>2</sup>Data based on reported consumption, stocks and estimated trade data.

<sup>3</sup>Includes zinc used in making zinc dust, desilvering lead, powder, alloys, anodes, chemicals, castings, light metal alloys, rolled zinc, and miscellaneous uses not elsewhere specified.

TABLE 4  
AVERAGE MONTHLY ZINC PRICES<sup>1</sup>

Period	North	LME cash	
	American ¢/lb	¢/lb	\$/t
2002:			
April	39.89	36.64	807.80
May	38.16	34.89	769.19
June	38.04	34.78	766.75
July	39.30	36.04	794.45
August	37.27	33.89	747.24
September	37.81	34.29	755.88
October	37.71	34.21	754.30
November	38.09	34.70	764.91
December	39.69	36.17	797.36
Year	38.64	35.31	778.38
2003:			
January	38.72	35.43	781.01
February	38.68	35.60	784.80
March	38.88	35.86	790.60
April	37.23	34.21	754.30
January-April	38.38	35.27	777.68

<sup>1</sup>Special High Grade.

Source: Platts Metals Week.

TABLE 5  
U.S. EXPORTS OF ZINC<sup>1</sup>

Material	2002		2003 <sup>2</sup>			
	Quantity (metric tons)	Value (thousands)	March		Year to date	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Refined (slab) zinc	1,160	\$1,210	128	\$119	300	\$263
Ore and concentrate (zinc content)	822,000	322,000	14,300	3,570	47,100	10,700
Waste and scrap (gross weight)	47,700	23,000	3,790	2,070	10,300	5,440
Powders, flakes, dust (zinc content)	5,660	8,120	684	797	1,660	2,040
Oxide (gross weight)	10,800	14,600	1,080	1,460	2,960	4,090
Chloride (gross weight)	1,950	1,930	103	115	331	364
Sulfate (gross weight)	2,900	1,760	280	177	642	386
Compounds, other (gross weight)	217	600	12	65	25	101

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

<sup>2</sup>Data for April 2003 were not available at time of publication.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF ZINC<sup>1</sup>

Material	2002		2003 <sup>2</sup>			
	Quantity (metric tons)	Value (thousands)	March		Year to date	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Refined (slab) zinc	874,000	\$716,000	59,400	\$49,700	203,000	\$167,000
Ore and concentrate (zinc content)	122,000	44,600	2,480	1,090	12,700	5,480
Waste and scrap (gross weight)	31,200	9,530	1,040	520	3,060	1,430
Powders, flakes, dust (zinc content)	30,900	47,800	2,660	3,880	6,930	10,400
Oxide (gross weight)	69,700	57,600	6,900	5,450	20,100	15,900
Chloride (gross weight)	716	775	53	54	180	184
Sulfate (gross weight)	20,100	10,300	3,260	1,430	8,080	3,730
Compounds, other (gross weight)	1,030	1,180	46	35	120	116

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

<sup>2</sup>Data for April 2003 were not available at time of publication.

Source: U.S. Census Bureau.

TABLE 7  
SHIPMENTS OF ZINC METAL FROM THE NATIONAL DEFENSE  
STOCKPILE<sup>1</sup>

(Metric tons)

Period	Beginning inventory	Shipments	Ending inventory
2002:			
April	113,000	197	113,000
May	113,000	1,220	112,000
June	112,000	741	111,000
July	111,000	890	110,000
August	110,000	445	110,000
September	110,000	--	110,000
October	110,000	1,130	109,000
November	109,000	--	109,000
December	109,000	--	109,000
Year	XX	5,040	XX
2003:			
January	109,000	516	108,000
February	108,000	--	108,000
March	108,000	--	108,000
April	108,000	200	108,000
January-April	XX	716	XX

XX Not applicable. -- Zero.

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

Source: Defense Logistics Agency.

TABLE 8  
U.S. IMPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY<sup>1,2</sup>

(Metric tons)

Material and country	General imports			Imports for consumption		
	2002	2003		2002	2003	
		March	Year to date		March	Year to date
<b>Ore and concentrate (zinc content):</b>						
Australia	41,800	--	--	41,800	--	--
Ireland	6,570	--	10,200	6,570	--	10,200
Mexico	12,700	--	--	12,700	--	--
Peru	61,100	2,480	2,480	61,100	2,480	2,480
Other	118	--	--	118	--	--
<b>Total</b>	<b>122,000</b>	<b>2,480</b>	<b>12,700</b>	<b>122,000</b>	<b>2,480</b>	<b>12,700</b>
<b>Blocks, pigs, or slab:</b>						
Australia	35,000	--	14,000	21,000	--	14,000
Brazil	30,200	3,340	6,010	30,200	1,340	4,010
Canada	523,000	40,300	131,000	523,000	40,300	131,000
China	39,700	9,980	15,900	1,040	--	22
Japan	10,500	--	--	--	--	--
Kazakhstan	93,200	--	5,720	93,200	--	5,720
Korea, Republic of	76,200	--	4,000	2,480	--	--
Mexico	136,000	12,000	34,300	136,000	12,000	34,300
Peru	36,000	4,590	12,600	34,300	4,590	12,600
Poland	9,340	1,200	1,600	9,340	1,200	1,600
Russia	10,700	--	--	10,700	--	--
Other	25,200	--	--	13,100	--	--
<b>Total</b>	<b>1,020,000</b>	<b>71,400</b>	<b>225,000</b>	<b>874,000</b>	<b>59,400</b>	<b>203,000</b>
<b>Dross, ashes, fume (zinc content)</b>	<b>15,500</b>	<b>1,420</b>	<b>3,520</b>	<b>15,500</b>	<b>1,420</b>	<b>3,520</b>
<b>Grand total</b>	<b>1,160,000</b>	<b>75,300</b>	<b>241,000</b>	<b>1,010,000</b>	<b>63,300</b>	<b>219,000</b>
<b>Oxide (gross weight):</b>						
Canada	44,800	4,130	12,000	44,800	4,130	12,000
China	838	7	99	838	7	99
Japan	869	92	249	869	92	249
Mexico	19,900	2,260	6,620	19,900	2,260	6,620
Netherlands	2,640	399	1,090	2,640	399	1,090
Other	760	23	75	760	23	75
<b>Total</b>	<b>69,700</b>	<b>6,900</b>	<b>20,100</b>	<b>69,700</b>	<b>6,900</b>	<b>20,100</b>
<b>Other (gross weight):</b>						
Waste and scrap	31,200	1,040	3,060	31,200	1,040	3,060
Sheets	1,640	145	532	1,640	145	532
<b>Powders, flakes, dust (zinc content)</b>	<b>30,900</b>	<b>2,660</b>	<b>6,930</b>	<b>30,900</b>	<b>2,660</b>	<b>6,930</b>

-- Zero.

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

<sup>2</sup>Data for April 2003 were not available at time of publication.

Source: U.S. Census Bureau.