

# Mineral Industry Surveys

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## COBALT IN APRIL 2004

On the basis of preliminary data, U.S. cobalt consumption during January through April 2004 was 3% higher than consumption during the same period in 2003, according to the U.S. Geological Survey. The amount of cobalt contained in U.S. imports of cobalt metals and chemicals was 27% higher during the first quarter of 2004 than that of imports during the first quarter of 2003. The amount of cobalt contained in U.S. exports of unwrought cobalt and chemicals was 54% higher during the first quarter of 2004 than that of exports during the first quarter of 2003. Trade data for April 2004 will be available in a subsequent issue.

**Price**

Prices for electrolytic cobalt, in dollars per pound from Platts Metals Week, are listed below.

<u>Date</u>	<u>Price range</u>
June 3	25.50-26.00
June 10	25.00-26.00
June 17	25.00-26.00

TABLE 1  
U.S. REPORTED CONSUMPTION OF COBALT MATERIALS<sup>1</sup>

(Metric tons, contained cobalt)

Period	Metal <sup>2</sup>	Oxide and other chemical compounds <sup>3</sup>	Scrap	Total
2003:				
April	254	164	167	585
May	266	166	167	599
June	254	169	167	590
July	250	157	167	574
August	254	164	167	585
September	259	168	167	594
October	252	165	167	584
November	265	155	167	588
December	241	156	167	565
January-April	1,020	649	669	2,330
January-December <sup>4</sup>	3,060	1,950	2,010	7,010
2004:				
January	263 <sup>r</sup>	224	167 <sup>r</sup>	654 <sup>r</sup>
February	258 <sup>r</sup>	183	167 <sup>r</sup>	609 <sup>r</sup>
March	233 <sup>r</sup>	170	167 <sup>r</sup>	571 <sup>r</sup>
April	238	174	167	580
January-April	993	751	670	2,410

<sup>r</sup>Revised.

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

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

<sup>3</sup>Data may include other cobalt materials.

<sup>4</sup>Data based on monthly reports.

TABLE 2  
U.S. REPORTED CONSUMPTION OF COBALT, BY END USE<sup>1</sup>

(Metric tons, contained cobalt)

End use	2003		2004	
	January- April <sup>r</sup>	January- December <sup>2</sup>	April	January- April <sup>3</sup>
Steel	128	366	36	142
Superalloys	1,050	3,170	245	1,020
Magnetic alloys	128	385	28	114
Other alloys <sup>4</sup>	W	W	W	W
Cemented carbides <sup>5</sup>	226	679	58	236
Chemical and ceramic uses <sup>6</sup>	714	2,140	191	817
Miscellaneous and unspecified	91	273	23	90
Total	2,330	7,010	580	2,410

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

<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 monthly reports.

<sup>3</sup>May include revisions to prior months.

<sup>4</sup>Includes nonferrous alloys, welding materials, and wear-resistant alloys.

<sup>5</sup>Includes diamond tool matrices, cemented and sintered carbides, and cast carbide dies or parts.

<sup>6</sup>Includes catalysts, driers in paints or related usages, feed or nutritive additives, glass decolorizer, ground coat frit, pigments, and other uses.

TABLE 3  
U.S. REPORTED STOCKS OF COBALT MATERIALS<sup>1</sup>

(Metric tons, contained cobalt)

Period	Industry <sup>2</sup>			Total	U.S. Government, metal <sup>5</sup>
	Metal <sup>3</sup>	Oxide and other chemical compounds <sup>4</sup>	Scrap		
2003:					
April	359	200	188	747	5,750
May	366	206	188	760	5,450
June	366	200	188	754	5,240
July	369	216	188	773	5,040
August	387	206	188	781	4,990
September	402	206	188	795	4,930
October	396	203	188	787	4,750
November	368	203	188	759	4,640
December <sup>6</sup>	387	204	188	779	4,290
2004:					
January	358 <sup>r</sup>	204	104 <sup>r</sup>	666 <sup>r</sup>	3,900
February	325 <sup>r</sup>	193	104 <sup>r</sup>	622 <sup>r</sup>	3,410
March	363 <sup>r</sup>	218	104 <sup>r</sup>	685 <sup>r</sup>	3,120
April	338	207	104	650	2,980

<sup>r</sup>Revised.

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

<sup>2</sup>Stocks reported by cobalt processors and consumers.

<sup>3</sup>Includes metal powder.

<sup>4</sup>Data may include other cobalt materials.

<sup>5</sup>Data from Defense National Stockpile Center. Includes material committed for sale pending shipment.

<sup>6</sup>Data based on monthly reports.

TABLE 4  
U.S. IMPORTS FOR CONSUMPTION OF COBALT, BY COUNTRY<sup>1</sup>

(Kilograms, gross weight of material, except as noted)

Period and country of origin	Metals <sup>2</sup>		Oxides and hydroxides		Salts and compounds <sup>3</sup>		Total cobalt content for the month <sup>5</sup>	Cobalt content, year to date <sup>5,6</sup>
	Quantity	Value <sup>4</sup>	Quantity	Value <sup>4</sup>	Quantity	Value <sup>4</sup>		
2003:								
March	794,000	\$13,700,000	124,000	\$2,050,000	68,100	\$424,000	903,000	1,970,000
April	556,000	10,500,000	119,000	2,000,000	144,000	739,000	681,000	2,660,000
May	546,000	10,700,000	237,000	4,210,000	127,000	764,000	755,000	3,410,000
June	454,000	9,210,000	108,000	1,960,000	133,000	797,000	568,000	3,980,000
July	641,000	13,000,000	104,000	1,690,000	130,000	824,000	752,000	4,730,000
August	390,000 <sup>7</sup>	8,440,000 <sup>7</sup>	59,100	963,000	70,700	480,000	452,000	5,180,000
September	712,000	14,000,000	92,800	1,560,000	166,000	1,160,000	831,000	6,010,000
October	526,000	11,100,000	100,000	1,660,000	152,000	1,060,000	644,000	6,660,000
November	553,000	12,300,000	104,000	1,720,000	77,900	488,000	651,000	7,310,000
December	632,000	16,300,000	131,000	2,540,000	121,000	996,000	770,000	8,080,000
January-March	1,690,000	29,200,000	310,000	4,700,000	225,000	1,040,000	1,970,000	XX
January-December	6,700,000	135,000,000	1,370,000	23,000,000	1,350,000	8,350,000	8,080,000	XX
2004:								
January	525,000	17,100,000	131,000	2,710,000	172,000	1,620,000	677,000	677,000
February	862,000	25,400,000	139,000	3,940,000	178,000	2,380,000	1,020,000	1,700,000
March:								
Australia	20,000	1,140,000	--	--	--	--	20,000	84,000
Belgium	118,000	3,480,000	41,800	1,730,000	--	--	148,000	277,000
Brazil	262	5,040	--	--	--	--	262	359
Canada	106,000	3,570,000	--	--	--	--	106,000	537,000
China	14,200	703,000	40,700	1,320,000	64,300	577,000	61,700	173,000
Colombia	--	--	--	--	1,300	4,980	350	518
Finland	30,400	1,730,000	28,100	848,000	16,000	166,000	54,900	263,000
France	7,880	646,000	1,500	67,800	--	--	8,960	17,800
India	--	--	--	--	20,200	108,000	5,450	16,000
Japan	9,860	491,000	--	--	12,800	149,000	13,100	44,800
Korea, Republic of	2,000	114,000	--	--	--	--	2,000	4,330
Norway	176,000	7,810,000	--	--	--	--	176,000	482,000
Philippines	--	--	--	--	4,210	24,000	1,140	3,000
Russia	161,000	8,640,000	--	--	--	--	161,000	421,000
South Africa	--	--	--	--	--	--	--	18,500
Spain	--	--	1,550	43,200	--	--	1,120	1,120
Sweden	1,360	64,300	--	--	--	--	1,360	3,370
Switzerland	3,790	110,000	--	--	--	--	3,790	4,550
Taiwan	--	--	--	--	--	--	--	750
United Kingdom	3,990	89,300	12,600	280,000	--	--	13,100	23,500
Zambia	25,000	1,340,000	--	--	--	--	25,000	125,000
Total	680,000	29,900,000	126,000	4,290,000	119,000	1,030,000	804,000	2,500,000
January-March	2,070,000	72,400,000	396,000	10,900,000	469,000	5,030,000	2,500,000	XX

XX Not applicable. -- Zero.

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

<sup>2</sup>Unwrought cobalt, excluding alloys; includes cobalt cathode and cobalt metal powder; may include intermediate products of cobalt metallurgy.

<sup>3</sup>Includes cobalt acetates, cobalt carbonates, cobalt chlorides, and cobalt sulfates.

<sup>4</sup>Customs value.

<sup>5</sup>Estimated from gross weights.

<sup>6</sup>May include revisions to prior months.

<sup>7</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau, with adjustments by the U.S. Geological Survey.

TABLE 5  
U.S. IMPORTS FOR CONSUMPTION OF ADDITIONAL COBALT MATERIALS, BY COUNTRY <sup>1</sup>

(Kilograms, gross weight of material, except as noted)

Period and country of origin	Unwrought cobalt alloys		Cobalt waste and scrap		Wrought cobalt and cobalt articles	
	Quantity	Value <sup>2</sup>	Quantity	Value <sup>2</sup>	Quantity	Value <sup>2</sup>
2003:						
March	1,910	\$68,700	79,300	\$536,000	12,200	\$953,000
April	5,170	152,000	20,500	253,000	15,500	933,000
May	1,510	46,000	55,100	558,000	20,400	1,220,000
June	3,010	33,900	15,100	256,000	13,700	1,050,000
July	230	14,600	30,600	175,000	18,400	1,280,000
August	440	23,500	86,200	618,000	14,400	787,000
September	475	13,000	10,700	126,000	9,410	646,000
October	8,170	84,200	47,900	324,000	11,300	810,000
November	2,870	83,200	68,700	479,000	11,300	646,000
December	2,140	66,400	53,400	432,000	13,100	1,010,000
January-March	5,020	200,000	94,000	747,000	39,600	2,330,000
January-December	29,000	717,000	482,000	3,970,000	167,000	10,700,000
2004:						
January	2,250	100,000	48,900	614,000	11,400	807,000
February	4,450	118,000	152,000	1,500,000	20,000	856,000
March:						
Austria	250	15,300	--	--	--	--
Belgium	--	--	7,340	157,000	2,580	75,200
Canada	--	--	868	17,600	2,190	379,000
China	438	20,700	--	--	--	--
France	--	--	--	--	1,100	66,400
Germany	897	48,700	25,300	301,000	--	--
India	--	--	8,670	25,900	--	--
Ireland	--	--	8,540	115,000	20	11,500
Japan	784	48,400	1,720	27,100	2,120	97,700
Liechtenstein	--	--	11,200	138,000	--	--
Mexico	--	--	2,650	26,900	--	--
Saudi Arabia	--	--	1,050	12,800	--	--
Taiwan	--	--	2,540	37,300	--	--
United Kingdom	4,260	230,000	32,500	173,000	12,500	658,000
Total	6,630	363,000	102,000	1,030,000	20,500	1,290,000
January-March	13,300	581,000	304,000	3,150,000	52,000	2,950,000

-- Zero.

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

<sup>2</sup>Customs value.

Source: U.S. Census Bureau, with adjustments by the U.S. Geological Survey.

TABLE 6  
U.S. EXPORTS OF COBALT MATERIALS<sup>1</sup>

(Kilograms, gross weight of material, except as noted)

Period	Unwrought cobalt, powders, matte, waste and scrap <sup>2</sup>		Oxides and hydroxides		Salts and compounds <sup>3</sup>		Total cobalt content for the month <sup>5</sup>	Cobalt content, year to date <sup>5, 6</sup>
	Quantity	Value <sup>4</sup>	Quantity	Value <sup>4</sup>	Quantity	Value <sup>4</sup>		
2003:								
March	110,000	\$3,110,000	44,800	\$459,000	17,000	\$102,000	146,000	503,000
April	205,000	3,330,000	66,000	936,000	146,000	672,000	288,000	791,000
May	220,000	3,600,000	14,200	340,000	27,800	158,000	237,000	1,030,000
June	232,000	4,770,000	18,600	238,000	9,710	54,600	248,000	1,280,000
July	191,000	6,570,000	43,000	845,000	41,800	294,000	232,000	1,510,000
August	187,000	4,270,000	17,400	338,000	56,600	324,000	213,000	1,720,000
September	227,000	3,980,000	15,200	191,000	10,000	57,100	240,000	1,960,000
October	184,000	2,890,000	9,310	166,000	118,000	603,000	219,000	2,180,000
November	137,000	3,650,000	54,500	1,010,000	70,600	447,000	193,000	2,370,000
December	306,000	6,820,000	29,500	778,000	46,200	259,000	338,000	2,710,000
January-March	404,000	8,740,000	108,000	1,270,000	88,200	499,000	503,000	XX
January-December	2,290,000	48,600,000	375,000	6,110,000	615,000	3,370,000	2,710,000	XX
2004:								
January	183,000	4,730,000	36,600	1,430,000	75,500	458,000	228,000	228,000
February	214,000	9,000,000	80,500	3,750,000	65,800	761,000	288,000	516,000
March	232,000	9,740,000	11,400	359,000	78,700	708,000	260,000	776,000
January-March	630,000	23,500,000	129,000	5,530,000	220,000	1,930,000	776,000	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>May include other intermediate products of cobalt metallurgy and unwrought cobalt alloys.

<sup>3</sup>Cobalt acetates and cobalt chlorides.

<sup>4</sup>Free alongside ship (f.a.s.) value.

<sup>5</sup>Estimated from gross weights.

<sup>6</sup>Year to date may include revisions to prior months.

Source: U.S. Census Bureau, with adjustments by the U.S. Geological Survey.

TABLE 7  
U.S. EXPORTS OF WROUGHT COBALT, COBALT ORE, AND CONCENTRATES<sup>1</sup>

(Kilograms, gross weight of material, except as noted)

Period	Wrought cobalt and cobalt articles		Cobalt ore and concentrates	
	Quantity	Value <sup>2</sup>	Quantity	Value <sup>2</sup>
2003:				
March	124,000	\$3,740,000	100 <sup>3</sup>	\$3,850 <sup>3</sup>
April	71,900	2,210,000	2,680 <sup>3</sup>	24,100 <sup>3</sup>
May	56,100	2,060,000	53,000 <sup>3</sup>	705,000 <sup>3</sup>
June	100,000	2,940,000	238,000 <sup>3</sup>	257,000 <sup>3</sup>
July	69,200	2,240,000	33,100 <sup>3</sup>	372,000 <sup>3</sup>
August	65,500	2,720,000	73,700 <sup>3</sup>	473,000 <sup>3</sup>
September	89,600	3,090,000	32,100 <sup>3</sup>	149,000 <sup>3</sup>
October	116,000	3,150,000	74,400 <sup>3</sup>	979,000 <sup>3</sup>
November	97,000	2,440,000	29,000 <sup>3</sup>	559,000 <sup>3</sup>
December	83,300	2,470,000	76,000 <sup>3</sup>	1,990,000 <sup>3</sup>
January-March	256,000	7,980,000	4,940	56,500
January-December	1,010,000	31,300,000	617,000	5,560,000
2004:				
January	50,900	2,400,000	126,000	4,320,000
February	94,600	3,680,000	295,000	3,290,000
March	77,000	3,840,000	123,000	6,140,000
January-March	222,000	9,920,000	545,000	13,800,000

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

<sup>2</sup>Free alongside ship (f.a.s.) value.

<sup>3</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau, with adjustments by the U.S. Geological Survey.