

Mineral Industry Surveys

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COBALT IN FEBRUARY 2000

U.S. consumption of cobalt in January through February 2000 was 6% lower than that during the first 2 months of 1999, according to the U.S. Geological Survey. The cobalt content of U.S. imports of cobalt metal and chemicals was 30% higher in January 2000 than that of imports during December 1999. The cobalt content of U.S. exports of unwrought cobalt and chemicals was 11% higher in January 2000 than that of December 1999. Trade data for February 2000 will be available in a subsequent issue.

Note

With the exception of prices, all data in this report have been rounded to no more than three significant digits. Totals and

percentages were calculated by using unrounded data.

Price

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

| <u>Date</u> | <u>Price range</u> |
|-------------|--------------------|
| March 30 | 15.75-16.50 |
| April 6 | 15.75-16.50 |
| April 13 | 16.25-17.00 |

| <u>Month</u> | <u>Average price</u> |
|--------------|----------------------|
| March | 15.30 |

TABLE 1
U.S. REPORTED CONSUMPTION OF COBALT MATERIALS 1/

(Metric tons, contained cobalt)

| Period | Metal 2/ | Oxide and other chemical compounds 3/ | Scrap | Total |
|---------------------|----------|---|--------|--------|
| 1999: | | | | |
| February | 326 | 156 | 250 | 733 |
| March | 330 | 180 | 255 | 765 |
| April | 303 | 182 | 249 | 734 |
| May | 324 | 153 | 254 | 732 |
| June | 323 | 194 | 248 | 765 |
| July | 306 | 141 | 257 | 704 |
| August | 312 | 153 | 257 | 722 |
| September | 298 | 164 | 249 | 711 |
| October | 312 | 135 | 250 | 697 |
| November | 313 | 121 | 251 | 685 |
| December | 313 | 168 | 248 | 729 |
| January-February | 635 | 348 | 498 | 1,480 |
| January-December 4/ | 3,770 | 1,940 | 3,020 | 8,720 |
| 2000: | | | | |
| January | 309 | 176 r/ | 225 r/ | 710 r/ |
| February | 304 | 152 | 224 | 680 |
| January-February | 614 | 328 | 449 | 1,390 |

r/ Revised.

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

2/ Includes metal powder.

3/ Data may include other cobalt materials.

4/ Data based on monthly reports.

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

(Metric tons, contained cobalt)

| End use | 1999 | | 2000 | |
|-------------------------------|----------------------|-------------------------|----------|-------------------------|
| | January- February | January- December 2/ | February | January- February 3/ |
| Steel | 26 | 155 | 14 | 28 |
| Superalloys | 653 | 3,990 | 328 | 657 |
| Magnetic alloys | 121 | 736 | 59 | 116 |
| Other alloys 4/ | W | W | W | W |
| Cemented carbides 5/ | 128 | 674 | 48 | 102 |
| Chemical and ceramic uses 6/ | 488 | 2,780 | 199 | 422 |
| Miscellaneous and unspecified | 65 | 389 | 32 | 65 |
| Total | 1,480 | 8,720 | 680 | 1,390 |

W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."

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

2/ Data based on monthly reports.

3/ May include revisions to prior month's data.

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

5/ Includes diamond bit matrices, cemented and sintered carbides, and cast carbide dies or parts.

6/ Includes catalysts, driers in paints or related usage, feed or nutritive additive, glass decolorizer, ground coat frit, pigments and other uses.

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

(Metric tons, contained cobalt)

| Period | Industry 2/ Oxide and other chemical compounds 4/ | | | | U.S. Government, metal 5/ |
|-------------|--|--------|-------|--------|---------------------------------|
| | Metal 3/ | | Scrap | Total | |
| 1999: | | | | | |
| February | 330 | 203 | 128 | 661 | 14,600 |
| March | 318 | 195 | 129 | 641 | 14,400 |
| April | 316 | 195 | 127 | 638 | 14,200 |
| May | 335 | 226 | 129 | 691 | 14,100 |
| June | 303 | 213 | 138 | 654 | 13,800 |
| July | 344 | 215 | 132 | 690 | 13,600 |
| August | 325 | 203 | 131 | 659 | 13,400 |
| September | 332 | 211 | 126 | 668 | 13,300 |
| October | 342 | 246 | 128 | 715 | 13,300 |
| November | 333 | 246 | 122 | 701 | 13,200 |
| December 6/ | 309 | 230 | 125 | 664 | 13,200 |
| 2000: | | | | | |
| January | 297 | 229 r/ | 127 | 653 r/ | 13,100 |
| February | 315 | 212 | 130 | 658 | 12,700 |

r/ Revised.

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

2/ Stocks reported by cobalt processors and consumers.

3/ Includes metal powder.

4/ Data may include other cobalt materials.

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

6/ Data based on monthly reports.

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

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

| Period and country of origin | Metals 2/ | | Oxides and hydroxides | | Salts and compounds 3/ | | Total cobalt content for the month 5/ | Cobalt content, year to date 5/ 6/ |
|---------------------------------|------------|---------------|-----------------------|-------------|------------------------|------------|---|---|
| | Quantity | Value 4/ | Quantity | Value 4/ | Quantity | Value 4/ | | |
| 1999: | | | | | | | | |
| January | 605,000 | \$16,200,000 | 160,000 | \$3,810,000 | 70,800 | \$529,000 | 739,000 | 739,000 |
| February | 528,000 7/ | 12,800,000 7/ | 81,100 | 1,570,000 | 55,900 | 430,000 | 601,000 | 1,340,000 |
| March | 736,000 | 25,200,000 | 97,400 | 2,650,000 | 33,000 | 217,000 | 815,000 | 2,160,000 |
| April | 735,000 | 23,000,000 | 129,000 | 3,720,000 | 72,200 | 599,000 | 847,000 | 3,000,000 |
| May | 514,000 | 16,200,000 | 88,500 | 2,330,000 | 126,000 | 931,000 | 611,000 | 3,610,000 |
| June | 798,000 | 26,200,000 | 128,000 | 3,370,000 | 153,000 7/ | 950,000 7/ | 940,000 | 4,550,000 |
| July | 535,000 | 21,300,000 | 81,000 | 2,230,000 | 147,000 | 1,330,000 | 633,000 | 5,190,000 |
| August | 278,000 | 11,100,000 | 76,200 | 2,290,000 | 166,000 | 1,350,000 | 378,000 | 5,560,000 |
| September | 578,000 | 22,500,000 | 81,300 | 2,460,000 | 225,000 | 1,850,000 | 696,000 | 6,260,000 |
| October | 386,000 | 14,500,000 | 117,000 | 3,130,000 | 207,000 | 1,580,000 | 525,000 | 6,790,000 |
| November | 468,000 7/ | 15,500,000 7/ | 137,000 | 3,710,000 | 170,000 | 1,310,000 | 612,000 | 7,400,000 |
| December | 406,000 7/ | 13,400,000 7/ | 87,100 | 2,410,000 | 182,000 | 1,270,000 | 517,000 | 7,910,000 |
| January-December | 6,570,000 | 218,000,000 | 1,260,000 | 33,700,000 | 1,610,000 | 12,400,000 | 7,910,000 | XX |
| 2000: | | | | | | | | |
| January: | | | | | | | | |
| Australia | 4,040 7/ | 66,600 7/ | -- | -- | -- | -- | 4,040 | 4,040 |
| Belgium | 3,180 | 137,000 | 9,000 | 244,000 | -- | -- | 9,660 | 9,660 |
| Canada | 112,000 | 3,520,000 | -- | -- | 679 | 12,300 | 112,000 | 112,000 |
| Finland | 43,700 | 1,380,000 | 126,000 | 2,950,000 | 383,000 | 2,470,000 | 237,000 | 237,000 |
| France | 749 | 57,600 | 2,500 | 143,000 | -- | -- | 2,550 | 2,550 |
| Germany | 3,720 | 158,000 | -- | -- | -- | -- | 3,720 | 3,720 |
| Japan | 1,460 | 91,200 | -- | -- | -- | -- | 1,460 | 1,460 |
| Morocco | 16,600 | 399,000 | -- | -- | -- | -- | 16,600 | 16,600 |
| Norway | 213,000 | 6,000,000 | -- | -- | -- | -- | 213,000 | 213,000 |
| Russia | 16,100 | 462,000 | -- | -- | -- | -- | 16,100 | 16,100 |
| Sweden | 180 | 4,020 | -- | -- | -- | -- | 180 | 180 |
| United Kingdom | -- | -- | 35,100 | 758,000 | -- | -- | 25,300 | 25,300 |
| Zambia | 28,000 7/ | 390,000 7/ | -- | -- | -- | -- | 28,000 | 28,000 |
| Total | 443,000 | 12,700,000 | 173,000 | 4,100,000 | 384,000 | 2,490,000 | 670,000 | 670,000 |

XX Not applicable. -- Zero.

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

2/ Unwrought cobalt, excluding alloys; includes cobalt cathode and cobalt metal powder.

3/ Includes cobalt acetates, cobalt carbonates, cobalt chlorides, and cobalt sulfates.

4/ Customs value.

5/ Estimated from gross weights.

6/ Year to date may include revisions to prior months.

7/ All or part of these data have been referred to the Bureau of the Census for verification.

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

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

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

| Period and country of origin | Unwrought cobalt alloys | | Other cobalt: matte, waste and scrap 2/ | | Wrought cobalt and cobalt articles | |
|---------------------------------|----------------------------|--------------|--|--------------|---------------------------------------|-----------|
| | Quantity | Value 3/ | Quantity | Value 3/ | Quantity | Value 3/ |
| 1999: | | | | | | |
| January | 23,100 | \$1,300,000 | 9,610 4/ | \$535,000 4/ | 18,100 | \$946,000 |
| February | 29,400 | 1,330,000 | 28,900 4/ | 826,000 4/ | 13,000 | 765,000 |
| March | 10,600 | 740,000 | 54,500 4/ | 991,000 4/ | 29,200 | 1,020,000 |
| April | 50,400 | 1,670,000 | 74,100 4/ | 1,150,000 4/ | 16,100 | 651,000 |
| May | 40,000 | 493,000 | 27,900 4/ | 539,000 4/ | 11,200 | 723,000 |
| June | 2,290 | 129,000 | 40,600 4/ | 855,000 4/ | 16,200 | 710,000 |
| July | 3,450 | 126,000 | 94,800 4/ | 1,650,000 4/ | 17,800 | 772,000 |
| August | 4,720 | 165,000 | 34,200 4/ | 1,430,000 4/ | 6,710 | 591,000 |
| September | 100,000 | 3,280,000 | 26,500 4/ | 565,000 4/ | 12,700 | 686,000 |
| October | 9,890 | 285,000 | 47,500 4/ | 1,500,000 4/ | 9,560 | 841,000 |
| November | 11,800 | 457,000 | 73,400 4/ | 1,660,000 4/ | 11,400 | 786,000 |
| December | 36,900 4/ | 1,080,000 4/ | 44,200 4/ | 1,400,000 4/ | 10,800 | 643,000 |
| January-December | 323,000 | 11,100,000 | 556,000 | 13,100,000 | 173,000 | 9,130,000 |
| 2000: | | | | | | |
| January: | | | | | | |
| Australia | 1,690 | 27,400 | -- | -- | -- | -- |
| Belgium | 4,230 | 110,000 | 5,000 4/ | 137,000 4/ | -- | -- |
| Canada | 48 | 17,500 | 833 | 8,780 | 1,130 | 205,000 |
| Finland | -- | -- | 23,600 4/ | 679,000 4/ | 5,100 | 200,000 |
| France | -- | -- | 5,090 4/ | 290,000 4/ | -- | -- |
| Germany | -- | -- | 25,900 | 357,000 | 902 | 50,800 |
| Japan | 1,500 | 92,300 | 16,500 4/ | 679,000 4/ | 423 | 44,300 |
| Sweden | 2,640 | 57,700 | -- | -- | -- | -- |
| United Kingdom | 1,230 | 43,900 | 895 4/ | 40,900 4/ | 8,230 | 469,000 |
| Total | 11,300 | 349,000 | 77,700 | 2,190,000 | 15,800 | 969,000 |

-- Zero.

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

2/ Includes other intermediate products of cobalt metallurgy; may include other cobalt-bearing materials from which cobalt is extracted, or from which cobalt-containing chemical compounds are manufactured.

3/ Customs value.

4/ All or part of these data have been referred to the Bureau of the Census for verification.

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

TABLE 6
U.S. EXPORTS OF COBALT MATERIALS 1/

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

| Period | Unwrought cobalt, powders, matte, waste and scrap 2/ | | Oxides and hydroxides | | Salts and compounds 3/ | | Total cobalt content for the month 5/ | Cobalt content, year to date 5/ 6/ |
|------------------|--|-------------|-----------------------|--------------|------------------------|------------|---------------------------------------|------------------------------------|
| | Quantity | Value 4/ | Quantity | Value 4/ | Quantity | Value 4/ | | |
| 1999: | | | | | | | | |
| January | 25,600 | \$1,090,000 | 35,100 7/ | \$420,000 7/ | 11,800 | \$96,500 | 53,700 | 53,700 |
| February | 56,000 | 2,320,000 | 37,200 | 465,000 | 9,500 | 93,500 | 85,100 | 139,000 |
| March | 78,900 | 3,210,000 | 46,200 | 853,000 | 47,300 | 338,000 | 123,000 | 262,000 |
| April | 105,000 | 3,840,000 | 36,600 | 521,000 | 38,500 | 377,000 | 141,000 | 403,000 |
| May | 240,000 | 7,040,000 | 30,600 | 545,000 | 11,900 7/ | 150,000 7/ | 265,000 | 667,000 |
| June | 109,000 | 3,530,000 | 24,100 7/ | 231,000 7/ | 7,320 | 88,300 | 128,000 | 796,000 |
| July | 64,700 | 3,120,000 | 20,000 | 277,000 | 25,200 | 184,000 | 85,100 | 881,000 |
| August | 59,500 | 1,990,000 | 35,900 | 554,000 | 23,200 | 240,000 | 90,900 | 972,000 |
| September | 82,300 | 2,450,000 | 21,100 7/ | 394,000 7/ | 14,700 | 165,000 | 101,000 | 1,070,000 |
| October | 60,400 | 2,980,000 | 92,600 | 1,930,000 | 20,200 | 196,000 | 132,000 | 1,200,000 |
| November | 91,900 | 2,950,000 | 75,900 | 1,400,000 | 53,100 | 874,000 | 160,000 | 1,360,000 |
| December | 63,500 | 2,290,000 | 90,900 7/ | 707,000 7/ | 43,800 | 298,000 | 139,000 | 1,500,000 |
| January-December | 1,040,000 | 36,800,000 | 546,000 | 8,300,000 | 307,000 | 3,100,000 | 1,500,000 | XX |
| 2000: | | | | | | | | |
| January | 79,000 | 3,180,000 | 92,400 | 1,070,000 | 39,300 | 343,000 | 155,000 | 155,000 |

XX Not applicable.

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

2/ May include other intermediate products of cobalt metallurgy, and unwrought cobalt alloys.

3/ Cobalt acetates and cobalt chlorides.

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

5/ Estimated from gross weights.

6/ Year to date may include revisions to prior months.

7/ All or part of these data have been referred to the Bureau of the Census for verification.

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

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

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

| Period | Wrought cobalt and cobalt articles | | Cobalt ore and concentrates | |
|------------------|------------------------------------|-------------|-----------------------------|--------------|
| | Quantity | Value 2/ | Quantity | Value 2/ |
| 1999: | | | | |
| January | 24,200 | \$1,480,000 | 31,400 3/ | \$457,000 3/ |
| February | 45,000 | 2,460,000 | 14,500 3/ | 29,500 3/ |
| March | 80,000 | 2,050,000 | 76,200 3/ | 94,300 3/ |
| April | 54,300 | 2,410,000 | 434 3/ | 3,900 3/ |
| May | 40,600 | 2,170,000 | 21,900 3/ | 254,000 3/ |
| June | 61,300 | 3,130,000 | 10,300 3/ | 333,000 3/ |
| July | 31,900 | 2,200,000 | 63,000 3/ | 768,000 3/ |
| August | 37,400 | 1,820,000 | 13,600 3/ | 438,000 3/ |
| September | 25,000 | 1,730,000 | -- | -- |
| October | 71,200 | 3,270,000 | 11,000 3/ | 328,000 3/ |
| November | 46,000 | 2,010,000 | 643 3/ | 12,100 3/ |
| December | 29,300 | 1,690,000 | 170 3/ | 8,990 3/ |
| January-December | 546,000 | 26,400,000 | 243,000 | 2,730,000 |
| 2000: | | | | |
| January | 64,300 | 2,220,000 | -- | -- |

-- Zero.

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

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

3/ All or part of these data have been referred to the Bureau of the Census for verification.

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