

Mineral Industry Surveys

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COBALT IN NOVEMBER 2000

U.S. consumption of cobalt in January through November 2000 was approximately the same as that during the first 11 months of 1999, according to the U.S. Geological Survey. The cobalt content of U.S. imports of cobalt metal and chemicals was approximately the same during January through October 2000 as that during the first 10 months of 1999. The cobalt content of U.S. exports of unwrought cobalt and chemicals during January through October 2000 was 80% higher than that during the first 10 months of 1999. Trade data for November 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> |
|-------------|--------------------|
| December 14 | 13.00-14.00 |
| December 21 | 13.00-13.75 |
| December 28 | 13.00-13.75 |
| January 4 | 12.50-13.00 |
| January 11 | 12.50-13.00 |
| January 18 | 13.00-14.00 |

| <u>Month</u> | <u>Average price</u> |
|--------------|----------------------|
| December | 13.56 |

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: | | | | |
| November | 283 | 121 | 224 | 628 |
| December | 285 | 167 | 220 | 672 |
| January-November r/ | 3,110 | 1,740 | 2,490 | 7,340 |
| January-December 4/ | 3,390 | 1,910 | 2,710 | 8,010 |
| Year 5/ | 3,780 | 1,910 | 2,720 | 8,420 |
| 2000: | | | | |
| January | 288 | 173 | 225 | 687 |
| February | 272 | 149 | 220 | 641 |
| March | 283 | 158 | 233 | 674 |
| April | 304 r/ | 161 | 226 | 691 r/ |
| May | 299 | 166 | 225 r/ | 689 r/ |
| June | 272 | 157 | 226 r/ | 655 r/ |
| July | 290 | 149 | 216 r/ | 654 r/ |
| August | 280 | 137 | 221 r/ | 638 r/ |
| September | 285 | 147 | 217 r/ | 649 r/ |
| October | 288 | 153 r/ | 224 r/ | 666 r/ |
| November | 306 | 151 | 223 | 680 |
| January-November | 3,170 | 1,700 | 2,460 | 7,320 |

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.

5/ Includes annual reports.

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

(Metric tons, contained cobalt)

| End use | 1999 | | | 2000 | |
|-------------------------------|-------------------------|-------------------------|---------|----------|-------------------------|
| | January- November r/ | January- December 2/ | Year 3/ | November | January- November 4/ |
| Steel | 143 | 154 | 154 | 9 | 129 |
| Superalloys | 3,210 | 3,510 | 3,830 | 317 | 3,280 |
| Magnetic alloys | 705 | 765 | 794 | 63 | 690 |
| Other alloys 5/ | W | W | 291 | W | W |
| Cemented carbides 6/ | 691 | 754 | 755 | 65 | 705 |
| Chemical and ceramic uses 7/ | 2,300 | 2,510 | 2,530 | 201 | 2,250 |
| Miscellaneous and unspecified | 291 | 317 | 64 | 24 | 266 |
| Total | 7,340 | 8,010 | 8,420 | 680 | 7,320 |

r/ Revised. 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/ Includes annual reports.

4/ May include revisions to prior months.

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

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

7/ 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/ | | | | U.S. Government, metal 5/ |
|-------------|-------------|---|--------|--------|---------------------------------|
| | Metal 3/ | Oxide and other chemical compounds 4/ | Scrap | Total | |
| 1999: | | | | | |
| November | 325 | 247 | 156 | 729 | 13,200 |
| December 6/ | 314 | 231 | 150 | 695 | 13,200 |
| Yearend 7/ | 322 | 251 | 165 | 739 | 13,200 |
| 2000: | | | | | |
| January | 296 | 225 | 167 | 688 | 13,100 |
| February | 332 | 207 | 172 | 712 | 12,700 |
| March | 381 | 204 | 160 | 745 | 12,100 |
| April | 346 | 207 | 150 | 703 | 12,100 |
| May | 339 | 209 | 156 r/ | 704 r/ | 12,100 |
| June | 335 | 212 | 150 r/ | 697 r/ | 11,700 |
| July | 388 | 220 | 155 r/ | 762 r/ | 11,700 |
| August | 348 | 190 | 157 r/ | 695 r/ | 11,600 |
| September | 372 | 224 | 159 r/ | 755 r/ | 11,100 |
| October | 363 r/ | 206 | 171 r/ | 740 r/ | 11,100 |
| November | 368 | 207 | 168 | 742 | 10,200 |

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.

7/ Includes annual 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: | | | | | | | | |
| October | 405,000 | \$15,300,000 | 117,000 | \$3,130,000 | 207,000 | \$1,580,000 | 544,000 | 6,960,000 |
| November | 489,000 | 16,700,000 | 137,000 | 3,710,000 | 170,000 | 1,310,000 | 633,000 | 7,590,000 |
| December | 447,000 | 14,900,000 | 87,100 | 2,410,000 | 182,000 | 1,270,000 | 558,000 | 8,150,000 |
| January-December | 6,800,000 | 229,000,000 | 1,260,000 | 33,700,000 | 1,610,000 | 12,400,000 | 8,150,000 | XX |
| 2000: | | | | | | | | |
| January | 467,000 | 13,400,000 | 178,000 | 4,240,000 | 384,000 | 2,490,000 | 697,000 | 697,000 |
| February | 592,000 | 17,200,000 | 109,000 | 2,700,000 | 213,000 | 1,380,000 | 728,000 | 1,420,000 |
| March | 450,000 7/ | 12,400,000 7/ | 206,000 | 4,960,000 | 90,100 | 605,000 | 622,000 | 2,050,000 |
| April | 571,000 8/ | 16,500,000 8/ | 61,500 | 1,560,000 | 21,000 | 128,000 | 621,000 r/ | 2,670,000 r/ |
| May | 656,000 7/ | 20,700,000 7/ | 122,000 | 3,010,000 | 18,100 | 145,000 | 749,000 | 3,420,000 r/ |
| June | 624,000 7/ | 18,100,000 7/ | 136,000 | 3,610,000 | 164,000 | 1,140,000 | 766,000 | 4,180,000 r/ |
| July | 390,000 7/ | 11,400,000 7/ | 121,000 | 2,990,000 | 102,000 | 675,000 | 505,000 | 4,690,000 r/ |
| August | 476,000 7/ | 13,800,000 7/ | 111,000 | 2,450,000 | 179,000 | 1,160,000 | 603,000 | 5,290,000 r/ |
| September | 892,000 | 25,800,000 | 105,000 | 2,500,000 | 77,400 | 459,000 | 987,000 | 6,280,000 r/ |
| October: | | | | | | | | |
| Australia | 60,000 7/ | 990,000 7/ | -- | -- | -- | -- | 60,000 | 246,000 |
| Belgium | 5,840 | 288,000 | 19,800 | 491,000 | -- | -- | 20,100 | 292,000 |
| Brazil | 30,000 | 860,000 | -- | -- | -- | -- | 30,000 | 300,000 |
| Canada | 70,800 | 2,240,000 | -- | -- | -- | -- | 70,800 | 699,000 |
| China | 1,010 | 108,000 | -- | -- | -- | -- | 1,010 | 32,900 |
| Congo (Kinshasa) | 134,000 | 3,600,000 | -- | -- | -- | -- | 134,000 | 769,000 |
| Finland | 124,000 | 4,090,000 | 71,300 | 1,430,000 | 159,000 | 913,000 | 217,000 | 1,760,000 |
| France | 705 | 56,700 | 1,680 | 88,600 | -- | -- | 1,920 | 37,900 |
| Germany | 4,040 | 193,000 | 1,040 | 20,400 | -- | -- | 4,790 | 76,500 |
| Italy | -- | -- | -- | -- | -- | -- | -- | 138 |
| Japan | 6,710 | 329,000 | 50 | 2,690 | -- | -- | 6,740 | 38,200 |
| Korea, Republic of | 85 | 7,090 | -- | -- | -- | -- | 85 | 710 |
| Morocco | -- | -- | -- | -- | -- | -- | -- | 61,700 |
| Norway | 87,500 | 2,610,000 | -- | -- | -- | -- | 87,500 | 1,340,000 |
| Russia | 143,000 | 4,190,000 | -- | -- | -- | -- | 143,000 | 891,000 |
| South Africa | -- | -- | -- | -- | -- | -- | -- | 48,600 |
| Sweden | -- | -- | -- | -- | -- | -- | -- | 8,280 |
| Uganda | 5,100 | 152,000 | -- | -- | -- | -- | 5,100 | 15,200 |
| United Kingdom | 4,220 7/ | 131,000 7/ | 4,320 | 132,000 | 9,590 | 74,800 | 9,650 | 162,000 |
| Uzbekistan | -- | -- | -- | -- | -- | -- | -- | 1,470 |
| Zambia | -- | -- | -- | -- | -- | -- | -- | 282,000 |
| Total | 677,000 | 19,800,000 | 98,100 | 2,170,000 | 168,000 | 988,000 | 792,000 | 7,070,000 |

r/ Revised. 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/ May include revisions to prior months.

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

8/ Data revised by the U.S. Census Bureau.

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 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: | | | | | | |
| October | 24,500 | \$840,000 | 13,800 | \$96,400 | 9,560 | \$841,000 |
| November | 11,800 | 457,000 | 52,300 | 521,000 | 11,400 | 786,000 |
| December | 7,260 | 237,000 | 32,600 | 685,000 | 10,800 | 643,000 |
| January-December | 255,000 | 9,360,000 | 391,000 | 4,060,000 | 173,000 | 9,130,000 |
| 2000: | | | | | | |
| January | 11,300 | 349,000 | 28,200 | 386,000 | 36,800 | 1,960,000 |
| February | 26,900 | 640,000 | 52,300 4/ | 1,500,000 4/ | 24,100 | 1,030,000 |
| March | 9,010 | 399,000 | 87,100 4/ | 1,710,000 4/ | 22,500 | 1,200,000 |
| April | 4,010 | 132,000 | 148,000 r/ 4/ | 2,390,000 r/ 4/ | 22,300 | 1,320,000 |
| May | 22,900 | 562,000 | 57,900 4/ | 1,260,000 4/ | 17,900 | 1,120,000 |
| June | 66,300 | 1,700,000 | 71,600 4/ | 1,770,000 4/ | 19,200 | 1,430,000 |
| July | 5,290 | 137,000 | 55,000 4/ | 1,620,000 4/ | 29,500 | 1,160,000 |
| August | 2,600 | 85,700 | 52,200 4/ | 1,090,000 4/ | 16,600 | 1,030,000 |
| September | 12,000 | 359,000 | 83,000 4/ | 1,660,000 4/ | 17,500 | 1,390,000 |
| October: | | | | | | |
| Austria | -- | -- | -- | -- | 3,840 | 100,000 |
| Belgium | 2,400 | 69,500 | 5,230 | 63,900 | 942 | 52,000 |
| Canada | 356 | 13,800 | 5,690 4/ | 126,000 4/ | 1,270 | 241,000 |
| Chile | -- | -- | -- | -- | 2,530 | 166,000 |
| Finland | -- | -- | 28,400 4/ | 691,000 4/ | -- | -- |
| France | -- | -- | 2,860 4/ | 236,000 4/ | 1,240 | 77,400 |
| Germany | -- | -- | 1,930 4/ | 68,300 4/ | 1,860 | 85,400 |
| India | -- | -- | -- | -- | 2,970 | 136,000 |
| Italy | -- | -- | 371 4/ | 12,800 4/ | -- | -- |
| Japan | -- | -- | 12,700 4/ | 636,000 4/ | 1,760 | 133,000 |
| Netherlands | -- | -- | -- | -- | 18,900 | 41,100 |
| Russia | -- | -- | -- | -- | -- | -- |
| Sweden | 3,450 | 82,700 | 625 | 8,750 | -- | -- |
| Switzerland | -- | -- | -- | -- | 1 | 2,830 |
| United Kingdom | 1,290 | 45,000 | 38,600 4/ | 336,000 4/ | 8,080 | 402,000 |
| Total | 7,490 | 211,000 | 96,300 | 2,180,000 | 43,400 | 1,440,000 |

r/ Revised. -- 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 U.S. Census Bureau for verification.

Source: U.S. Census Bureau, 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: | | | | | | | | |
| October | 71,400 | \$3,310,000 | 92,600 | \$1,930,000 | 20,200 | \$196,000 | 143,000 | 1,250,000 |
| November | 92,100 | 2,960,000 | 75,900 | 1,400,000 | 53,100 | 874,000 | 160,000 | 1,410,000 |
| December | 63,600 | 2,300,000 | 90,900 | 707,000 | 43,800 | 298,000 | 140,000 | 1,550,000 |
| January-December | 1,100,000 | 38,400,000 | 521,000 | 8,140,000 | 307,000 | 3,100,000 | 1,550,000 | XX |
| 2000: | | | | | | | | |
| January | 79,000 | 3,180,000 | 92,400 | 1,070,000 | 39,300 | 343,000 | 155,000 | 155,000 |
| February | 93,700 | 3,650,000 | 23,600 | 484,000 | 35,100 | 326,000 | 119,000 | 274,000 |
| March | 71,900 | 2,440,000 | 143,000 | 1,340,000 | 136,000 | 430,000 | 208,000 | 482,000 |
| April | 123,000 | 5,410,000 | 143,000 7/ | 1,060,000 7/ | 177,000 | 525,000 | 269,000 | 751,000 |
| May | 132,000 | 5,020,000 | 78,600 7/ | 577,000 7/ | 29,500 | 289,000 | 195,000 | 946,000 |
| June | 66,000 | 2,770,000 | 111,000 7/ | 837,000 7/ | 18,000 | 168,000 | 150,000 | 1,100,000 |
| July | 152,000 | 6,580,000 | 138,000 7/ | 1,230,000 7/ | 23,100 | 219,000 | 257,000 | 1,350,000 |
| August | 191,000 | 5,130,000 | 176,000 7/ | 1,370,000 7/ | 18,400 | 169,000 | 322,000 | 1,680,000 |
| September | 275,000 | 8,090,000 | 201,000 7/ | 1,780,000 7/ | 58,500 | 242,000 | 434,000 | 2,110,000 |
| October | 65,900 | 2,430,000 | 96,900 7/ | 978,000 7/ | 46,900 | 451,000 | 147,000 | 2,260,000 |

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/ May include revisions to prior months.

7/ 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 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: | | | | |
| October | 71,200 | \$3,270,000 | -- | -- |
| November | 46,000 | 2,010,000 | 468 | \$3,150 |
| December | 29,300 | 1,690,000 | -- | -- |
| January-December | 546,000 | 26,400,000 | 175,000 | 1,090,000 |
| 2000: | | | | |
| January | 64,300 | 2,220,000 | -- | -- |
| February | 104,000 | 2,520,000 | -- | -- |
| March | 72,900 | 3,090,000 | -- | -- |
| April | 116,000 | 2,790,000 | 132,000 3/ | 323,000 3/ |
| May | 49,900 | 2,200,000 | 300,000 3/ | 189,000 3/ |
| June | 65,300 | 2,940,000 | 34,800 3/ | 516,000 3/ |
| July | 59,700 | 2,560,000 | 47,800 3/ | 1,410,000 3/ |
| August | 147,000 | 5,550,000 | 31,100 3/ | 618,000 3/ |
| September | 40,300 | 2,630,000 | -- | -- |
| October | 127,000 | 5,910,000 | 91,400 3/ | 303,000 3/ |

-- Zero.

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

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

3/ 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.