

Mineral Industry Surveys

For information, contact:

Kim B. Shedd, Cobalt Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4974, Fax: (703) 648-7757
E-mail: ksheddd@usgs.gov

Jo-Ann S. Sterling (Data)
Telephone: (703) 648-7953
Fax: (703) 648-7975
E-mail: jsterlin@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

COBALT IN NOVEMBER 2005

U.S. cobalt consumption during January through November 2005 was slightly higher than that consumed during the first 11 months of 2004, according to the U.S. Geological Survey.

The amount of cobalt contained in U.S. imports of cobalt metals and chemicals was 34% higher in January through October 2005 than that during the same period in 2004. The amount of cobalt contained in U.S. exports of unwrought cobalt and chemicals was 5% lower in January through October 2005 than that during the same period in 2004.

Price

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

| <u>Date</u> | <u>Price range</u> |
|-------------|--------------------|
| December 8 | 16.00-17.50 |
| December 15 | 16.00-17.00 |
| December 22 | 15.25-16.50 |
| December 29 | 15.25-16.25 |
| January 5 | 14.75-15.75 |
| January 12 | 14.25-15.25 |

| <u>Month</u> | <u>Average price</u> |
|--------------|----------------------|
| December | 16.18 |

TABLE 1
U.S. REPORTED CONSUMPTION OF COBALT MATERIALS¹

(Metric tons, contained cobalt)

| Period | Metal ² | Oxide and other chemical compounds ³ | Scrap | Total |
|-------------------------------|--------------------|---|-------|------------------|
| 2004: | | | | |
| November | 277 | 161 | 187 | 625 |
| December | 268 | 166 | 198 | 633 |
| January-November ^r | 2,820 | 1,880 | 1,980 | 6,670 |
| January-December ⁴ | 3,090 | 2,040 | 2,180 | 7,310 |
| Year ⁵ | 4,110 | 2,040 | 2,300 | 8,450 |
| 2005: | | | | |
| January | 278 | 150 | 197 | 624 |
| February | 292 | 153 | 197 | 641 |
| March | 253 | 175 | 187 | 615 |
| April | 268 | 151 | 187 | 605 |
| May | 256 | 154 | 198 | 608 |
| June | 254 | 176 | 194 | 624 |
| July | 261 | 147 | 177 | 585 |
| August | 276 | 151 | 201 | 628 |
| September | 269 ^r | 159 | 201 | 629 ^r |
| October | 272 ^r | 154 | 201 | 627 ^r |
| November | 258 | 148 | 201 | 607 |
| January-November | 2,940 | 1,720 | 2,140 | 6,790 |

^rRevised.

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

²Includes metal powder.

³Data may include other cobalt materials.

⁴Data based on monthly reports.

⁵Includes annual reports.

TABLE 2
U.S. REPORTED CONSUMPTION OF COBALT, BY END USE¹

(Metric tons, contained cobalt)

| End use | 2004 | | | 2005 | |
|--|-----------------------------------|-----------------------------------|-------------------|----------|-----------------------------------|
| | January- November ^r | January- December ² | Year ³ | November | January- November ⁴ |
| Steel | 543 | 591 | 722 | 49 | 548 |
| Superalloys | 2,830 | 3,100 | 3,650 | 275 | 3,040 |
| Magnetic alloys | 322 | 351 | 396 | 20 | 216 |
| Other alloys ⁵ | W | W | 627 | W | W |
| Cemented carbides ⁶ | 701 | 764 | 765 | 64 | 700 |
| Chemical and ceramic uses ⁷ | 2,030 | 2,220 | 2,230 | 177 | 2,040 |
| Miscellaneous and unspecified | 248 | 270 | 63 | 23 | 248 |
| Total | 6,670 | 7,310 | 8,450 | 607 | 6,790 |

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

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

²Data based on monthly reports.

³Includes annual reports.

⁴Includes revisions to prior months' data.

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

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

⁷Includes 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 MATERIALS¹

(Metric tons, contained cobalt)

| Period | Industry ² | | | Total | U.S. Government, metal ⁵ |
|-----------------------|-----------------------|---|-------|------------------|---|
| | Metal ³ | Oxide and other chemical compounds ⁴ | Scrap | | |
| 2004: | | | | | |
| November | 350 | 208 | 103 | 661 | 2,700 |
| December ⁶ | 352 | 203 | 115 | 670 | 2,660 |
| Year end ⁷ | 379 | 223 | 117 | 719 | 2,660 |
| 2005: | | | | | |
| January | 347 | 200 | 107 | 654 | 2,590 |
| February | 349 | 210 | 108 | 667 | 2,540 |
| March | 344 | 195 | 105 | 643 | 2,340 |
| April | 341 | 208 | 110 | 659 | 2,220 |
| May | 351 | 199 | 108 | 658 | 2,180 |
| June | 347 | 186 | 101 | 634 | 2,070 |
| July | 370 | 201 | 114 | 684 | 1,930 |
| August | 341 | 191 | 132 | 664 | 1,870 |
| September | 348 | 187 | 132 | 667 | 1,810 |
| October | 342 | 180 | 132 | 654 ^r | 1,670 |
| November | 328 | 183 | 132 | 643 | 1,560 |

^rRevised.

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

²Stocks reported by cobalt processors and consumers.

³Includes metal powder.

⁴Data may include other cobalt materials.

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

⁶Data based on monthly reports.

⁷Includes annual reports.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF COBALT, BY COUNTRY¹

(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 | | |
| 2004: | | | | | | | | |
| October | 598,000 | \$27,500,000 | 124,000 | \$4,550,000 | 146,000 | \$2,090,000 | 731,000 | 7,010,000 |
| November | 578,000 | 25,300,000 | 98,200 | 3,540,000 | 97,200 | 1,400,000 | 678,000 | 7,690,000 |
| December: | 907,000 | 35,300,000 | 90,400 | 3,020,000 | 175,000 | 2,290,000 | 1,030,000 | 8,720,000 |
| January-October | 5,760,000 | 250,000,000 | 1,110,000 | 38,600,000 | 1,440,000 | 18,400,000 | 7,010,000 | XX |
| January-December | 7,250,000 | 311,000,000 | 1,300,000 | 45,100,000 | 1,720,000 | 22,100,000 | 8,720,000 | XX |
| 2005: | | | | | | | | |
| January | 727,000 | 27,000,000 | 128,000 | 4,010,000 | 230,000 | 2,860,000 | 897,000 | 897,000 |
| February | 892,000 | 35,600,000 | 95,400 | 2,660,000 | 191,000 | 2,730,000 | 1,030,000 | 1,930,000 |
| March | 544,000 | 21,000,000 | 183,000 | 5,640,000 | 215,000 | 2,690,000 | 747,000 | 2,680,000 |
| April | 818,000 | 29,800,000 | 75,100 | 1,950,000 | 98,600 | 1,230,000 | 907,000 | 3,590,000 |
| May | 885,000 | 29,900,000 | 87,600 | 2,570,000 | 173,000 | 1,660,000 | 1,000,000 | 4,580,000 |
| June | 904,000 | 30,100,000 | 91,600 | 2,620,000 | 187,000 | 2,050,000 | 1,030,000 | 5,620,000 |
| July | 712,000 | 22,600,000 | 119,000 | 2,920,000 | 120,000 | 1,130,000 | 835,000 | 6,450,000 |
| August | 829,000 | 23,900,000 | 82,500 | 2,210,000 | 150,000 | 1,690,000 | 946,000 | 7,400,000 |
| September | 846,000 | 26,800,000 | 113,000 | 2,770,000 | 167,000 | 1,400,000 | 980,000 | 8,380,000 |
| October: | | | | | | | | |
| Australia | -- | -- | -- | -- | -- | -- | -- | 246,000 |
| Belgium | 37,500 | 1,240,000 | 33,000 | 879,000 | -- | -- | 61,300 | 665,000 |
| Brazil | -- | -- | -- | -- | -- | -- | -- | 260,000 |
| Canada | 61,200 | 2,150,000 | -- | -- | -- | -- | 61,200 | 718,000 |
| China | 58,800 | 2,040,000 | 10,000 | 213,000 | 36,300 | 484,000 | 82,700 | 868,000 |
| Colombia | -- | -- | -- | -- | -- | -- | -- | 527 |
| Congo (Kinshasa) | -- | -- | -- | -- | -- | -- | -- | 19,900 |
| Finland | 62,100 | 2,170,000 | 42,900 | 916,000 | 141,000 | 1,750,000 | 149,000 | 988,000 |
| France | 1,730 | 114,000 | -- | -- | -- | -- | 1,730 | 42,300 |
| Germany | -- | -- | -- | -- | -- | -- | -- | 8,590 |
| Hong Kong | -- | -- | -- | -- | -- | -- | -- | 5,280 |
| India | -- | -- | -- | -- | 16,200 | 110,000 | 4,370 | 83,100 |
| Japan | 12,700 | 539,000 | -- | -- | -- | -- | 12,700 | 190,000 |
| Korea, Republic of | 180 | 8,780 | -- | -- | -- | -- | 180 | 23,800 |
| Morocco | 40,000 | 1,170,000 | -- | -- | -- | -- | 40,000 | 282,000 |
| Norway | 309,000 | 9,340,000 | -- | -- | -- | -- | 309,000 | 2,340,000 |
| Philippines | -- | -- | -- | -- | 3,990 | 89,800 | 1,840 | 24,600 |
| Russia | 162,000 | 4,690,000 | -- | -- | -- | -- | 162,000 | 1,330,000 |
| South Africa | 500 | 14,600 | -- | -- | 39,100 | 200,000 | 9,870 | 217,000 |
| Sweden | -- | -- | -- | -- | -- | -- | -- | 7,310 |
| Switzerland | -- | -- | -- | -- | -- | -- | -- | 3 |
| Taiwan | -- | -- | -- | -- | -- | -- | -- | 1,740 |
| Uganda | -- | -- | -- | -- | -- | -- | -- | 60,300 |
| United Kingdom | 760 | 36,600 | 25,100 | 606,000 | 287 | 6,450 | 18,900 | 194,000 |
| Zambia | 100,000 | 2,970,000 | -- | -- | -- | -- | 100,000 | 820,000 |
| Total | 846,000 | 26,500,000 | 111,000 | 2,610,000 | 237,000 | 2,640,000 | 1,010,000 | 9,390,000 |
| January-October | 8,000,000 | 273,000,000 | 1,090,000 | 30,000,000 | 1,770,000 | 20,100,000 | 9,390,000 | XX |

XX Not applicable. -- Zero.

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

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

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

⁴Customs value.

⁵Estimated from gross weights.

⁶May include revisions to prior months.

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 | | Cobalt waste and scrap | | Wrought cobalt and cobalt articles | |
|---------------------------------|----------------------------|--------------------|------------------------|--------------------|---------------------------------------|--------------------|
| | Quantity | Value ² | Quantity | Value ² | Quantity | Value ² |
| 2004: | | | | | | |
| October | 5,710 | \$318,000 | 55,400 | \$579,000 | 11,300 | \$856,000 |
| November | 6,500 | 366,000 | 38,200 | 366,000 | 38,900 | 2,570,000 |
| December | 1,650 | 76,700 | 93,600 | 815,000 | 27,500 | 1,990,000 |
| January-October | 67,300 | 2,760,000 | 885,000 | 9,680,000 | 164,000 | 10,900,000 |
| January-December | 75,500 | 3,210,000 | 1,020,000 | 10,900,000 | 230,000 | 15,400,000 |
| 2005: | | | | | | |
| January | 5,110 | 190,000 | 72,000 | 463,000 | 12,400 | 938,000 |
| February | 89 | 16,700 | 24,100 | 380,000 | 18,800 | 1,360,000 |
| March | 1,100 | 52,200 | 82,000 | 887,000 | 15,800 | 1,100,000 |
| April | 1,080 | 65,100 | 47,400 | 571,000 | 31,700 | 2,030,000 |
| May | 11,100 | 348,000 | 75,400 | 845,000 | 21,300 | 1,550,000 |
| June | 500 | 33,000 | 120,000 | 1,060,000 | 20,500 | 1,540,000 |
| July | 1,990 | 95,700 | 17,100 | 276,000 | 27,300 | 1,730,000 |
| August | 675 | 42,800 | 91,800 | 856,000 | 12,400 | 1,060,000 |
| September | 23,500 | 711,000 | 42,700 | 495,000 | 18,300 | 1,150,000 |
| October: | | | | | | |
| Belgium | -- | -- | -- | -- | 200 | 13,900 |
| Canada | -- | -- | 19,900 | 75,600 | 2,600 | 438,000 |
| France | -- | -- | -- | -- | 5,700 | 370,000 |
| Germany | -- | -- | 37,200 | 182,000 | 1,700 | 232,000 |
| Ireland | -- | -- | 10,000 | 158,000 | -- | -- |
| Japan | 400 | 26,000 | 3,220 | 56,200 | 2,500 | 120,000 |
| Norway | 10,300 | 346,000 | -- | -- | -- | -- |
| Taiwan | -- | -- | -- | -- | 4 | 2,160 |
| Tunisia | -- | -- | 3,730 | 59,300 | -- | -- |
| United Kingdom | -- | -- | 14,100 | 63,100 | 6,000 | 343,000 |
| Total | 10,700 | 372,000 | 88,200 | 594,000 | 18,700 | 1,520,000 |
| January-October | 55,800 | 1,930,000 | 661,000 | 6,430,000 | 197,000 | 14,000,000 |

-- Zero.

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

²Customs value.

Source: U.S. Census Bureau.

TABLE 6
U.S. EXPORTS OF COBALT MATERIALS¹

(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 | | |
| 2004: | | | | | | | | |
| October | 127,000 | \$4,700,000 | 20,100 | \$671,000 | 12,700 | \$136,000 | 145,000 | 2,190,000 |
| November | 119,000 | 5,750,000 | 20,700 | 693,000 | 125,000 | 360,000 | 164,000 | 2,360,000 |
| December | 130,000 | 4,350,000 | 7,690 | 180,000 | 56,000 | 381,000 | 149,000 | 2,500,000 |
| January-October | 1,860,000 | 69,300,000 | 295,000 | 13,000,000 | 485,000 | 4,740,000 | 2,190,000 | XX |
| January-December | 2,110,000 | 79,400,000 | 324,000 | 13,800,000 | 666,000 | 5,490,000 | 2,500,000 | XX |
| 2005: | | | | | | | | |
| January | 122,000 | 5,590,000 | 27,300 | 596,000 | 59,600 | 398,000 | 156,000 | 156,000 |
| February | 120,000 | 3,990,000 | 52,200 | 1,610,000 | 118,000 | 363,000 | 186,000 | 342,000 |
| March | 107,000 | 4,650,000 | 57,500 | 1,260,000 | 145,000 | 489,000 | 183,000 | 525,000 |
| April | 154,000 | 6,380,000 | 36,900 | 862,000 | 36,500 | 380,000 | 189,000 | 714,000 |
| May | 207,000 | 5,980,000 | 93,500 | 2,250,000 | 36,600 | 205,000 | 283,000 | 998,000 |
| June | 170,000 | 5,710,000 | 107,000 | 1,860,000 | 26,300 | 217,000 | 254,000 | 1,250,000 |
| July | 174,000 | 5,280,000 | 39,700 | 818,000 | 75,200 | 621,000 | 221,000 | 1,470,000 |
| August | 170,000 | 5,560,000 | 25,500 | 581,000 | 18,900 | 137,000 | 193,000 | 1,660,000 |
| September | 108,000 | 4,050,000 | 154,000 | 1,780,000 | 30,400 | 229,000 | 226,000 | 1,890,000 |
| October | 147,000 | 6,240,000 | 68,000 | 1,610,000 | 18,400 | 119,000 | 201,000 | 2,090,000 |
| January-October | 1,480,000 | 53,400,000 | 662,000 | 13,200,000 | 566,000 | 3,160,000 | 2,090,000 | XX |

XX Not applicable.

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

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

³Cobalt acetates and cobalt chlorides.

⁴Free alongside ship (f.a.s.) value.

⁵Estimated from gross weights.

⁶Year 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 CONCENTRATES¹

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

| Period | Wrought cobalt and cobalt articles | | Cobalt ore and concentrates | |
|------------------|------------------------------------|--------------------|-----------------------------|--------------------|
| | Quantity | Value ² | Quantity | Value ² |
| 2004: | | | | |
| October | 107,000 | \$5,210,000 | 12,700 | \$134,000 |
| November | 119,000 | 5,090,000 | 34,800 | 213,000 |
| December | 85,300 | 4,620,000 | 25,300 | 60,100 |
| January-October | 942,000 | 38,700,000 | 857,000 | 20,300,000 |
| January-December | 1,150,000 | 48,400,000 | 917,000 | 20,600,000 |
| 2005: | | | | |
| January | 184,000 | 6,490,000 | 69,000 | 2,800,000 |
| February | 235,000 | 8,710,000 | 8,390 | 254,000 |
| March | 147,000 | 6,540,000 | 40,700 | 556,000 |
| April | 184,000 | 6,530,000 | 33,000 | 818,000 |
| May | 129,000 | 6,080,000 | 49,200 | 1,300,000 |
| June | 230,000 | 9,230,000 | 36,200 | 1,200,000 |
| July | 224,000 | 8,410,000 | -- | -- |
| August | 213,000 | 7,950,000 | 242,000 | 1,870,000 |
| September | 147,000 | 6,370,000 | 139,000 | 1,720,000 |
| October | 222,000 | 8,360,000 | 41,800 | 1,050,000 |
| January-October | 1,920,000 | 74,700,000 | 660,000 | 11,600,000 |

-- Zero.

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

²Free alongside ship (f.a.s.) value.

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