

# Mineral Industry Surveys

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## TUNGSTEN IN AUGUST 2002

U.S. net production of intermediate tungsten products, including metal powder and tungsten carbide powder produced from metal powder, was 6% higher during January through August 2002 than net production during the same period in 2001, according to the U.S. Geological Survey.

Total U.S. reported consumption of ferrotungsten, tungsten metal powder, tungsten carbide powder, tungsten scrap, and other tungsten materials in January through August 2002 was 14% higher than consumption during the first 7 months of 2001. These materials were used to make alloys, cemented carbides, mill products, catalysts, and pigments.

Data for U.S. imports and exports for August 2002 will be published in a subsequent issue.

**Note**

All data in this report have been rounded to no more than

three significant digits. Totals and percentages were calculated by using unrounded data.

**Update**

Prices for tungsten ore concentrates in dollars per metric ton unit from Metal Bulletin are listed below. Prices in dollars per short ton unit were converted from metric ton unit prices and rounded to the nearest dollar. These prices represent combined prices for wolframite and scheelite ore concentrates with a minimum tungsten trioxide (WO<sub>3</sub>) content of 65%. The prices for September 1-30, 2002, are as follows:

Low—\$32/metric ton unit WO<sub>3</sub> (\$29/short ton unit WO<sub>3</sub>)  
High—\$45/metric ton unit WO<sub>3</sub> (\$41/short ton unit WO<sub>3</sub>)

TABLE 1  
U.S. SALIENT TUNGSTEN STATISTICS 1/

(Metric tons, tungsten content)

| Period           | Concentrate          |                         |                       |                    | Intermediate products      |                   |                         |                       |                    |
|------------------|----------------------|-------------------------|-----------------------|--------------------|----------------------------|-------------------|-------------------------|-----------------------|--------------------|
|                  | Reported consumption | Imports for consumption | Stocks, end of period |                    | Reported scrap consumption | Net production 4/ | Reported consumption 5/ | Stocks, end of period |                    |
|                  |                      |                         | Industry 2/           | U.S. Government 3/ |                            |                   |                         | Industry 6/           | U.S. Government 3/ |
| 2001:            |                      |                         |                       |                    |                            |                   |                         |                       |                    |
| August           | W                    | 247                     | W                     | 32,100             | 510                        | 781               | 712                     | 851                   | 1,440              |
| September        | W                    | 246                     | W                     | 32,100             | 402                        | 788               | 732                     | 813                   | 1,410              |
| October          | W                    | 389                     | W                     | NA                 | 449                        | 584               | 769                     | 693                   | NA                 |
| November         | W                    | 149                     | W                     | NA                 | 372                        | 696               | 742                     | 676                   | NA                 |
| December         | W                    | 253                     | W                     | 31,200 e/          | 350                        | 573               | 672                     | 699                   | 1,120 e/           |
| January-December | W                    | 2,680                   | XX                    | XX                 | 5,660                      | 9,520             | 8,960                   | XX                    | XX                 |
| 2002:            |                      |                         |                       |                    |                            |                   |                         |                       |                    |
| January          | W                    | 207                     | W                     | NA                 | 342                        | 759               | 781                     | 686                   | NA                 |
| February         | W                    | 79                      | W                     | NA                 | 341                        | 811               | 788                     | 693                   | NA                 |
| March            | W                    | 212                     | W                     | NA                 | 270                        | 750               | 772                     | 640                   | NA                 |
| April            | W                    | 292                     | W                     | NA                 | 421                        | 743               | 776                     | 667                   | NA                 |
| May              | W                    | 292                     | W                     | NA                 | 393 r/                     | 1,040 r/          | 949 r/                  | 650 r/                | NA                 |
| June             | W                    | 439                     | W                     | 31,200             | 351 r/                     | 1,080 r/          | 924 r/                  | 662 r/                | 1,100              |
| July             | W                    | 362                     | W                     | 30,400 r/          | 346 r/                     | 960 r/            | 949 r/                  | 603 r/                | 1,020 r/           |
| August           | W                    | NA                      | W                     | 30,500             | 229                        | 1,120             | 958                     | 631                   | 987                |
| Total            | W                    | NA                      | XX                    | XX                 | 2,690                      | 7,270             | 6,900                   | XX                    | XX                 |

e/ Estimated. r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

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

2/ Reported by consumers.

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

4/ Net production of tungsten metal powder and tungsten carbide powder.

5/ Includes estimates and scrap.

6/ Data for tungsten metal powder and tungsten carbide powder reported by producers.

TABLE 2  
U.S. PRODUCTION, CONSUMPTION, AND STOCKS OF  
AMMONIUM PARATUNGSTATE, BY MONTH 1/

(Metric tons, tungsten content)

| Period              | Production | Consumption | Stocks, end of period 2/ |
|---------------------|------------|-------------|--------------------------|
| 2001:               |            |             |                          |
| August              | W          | 835         | 140                      |
| September           | W          | W           | 97                       |
| October             | W          | 721         | 179                      |
| November            | W          | 619         | W                        |
| December            | W          | 481         | W                        |
| January-December 3/ | W          | 7,020       | XX                       |
| 2002:               |            |             |                          |
| January             | W          | 621         | W                        |
| February            | W          | 814         | 118                      |
| March               | W          | 653         | W                        |
| April               | W          | 830         | W                        |
| May                 | W          | 798 r/      | W r/                     |
| June                | W          | 893 r/      | 103                      |
| July                | W          | 798 r/      | 161 r/                   |
| August              | W          | 834         | W                        |
| Total               | W          | 6,240       | XX                       |

r/ Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

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

2/ Producers and consumers.

3/ Does not include withheld data.

TABLE 3  
U.S. PRODUCTION AND STOCKS OF TUNGSTEN PRODUCTS 1/

(Metric tons, tungsten content)

| Product 3/  | Net production 2/ |         |        |              | Stocks at end of period |         |        |
|---|-------------------|---------|--------|--------------|-------------------------|---------|--------|
|   | 2001              | 2002    |        | Year to date | 2001                    | 2002    |        |
|   |                   | July r/ | August |              |                         | July r/ | August |
| Metal powder  | 5,190             | 685     | 778    | 4,620        | 367                     | 312     | 330    |
| Tungsten carbide powder<br>(made from metal powder) | 4,330             | 275     | 346    | 2,650        | 332                     | 291     | 301    |
| Total   | 9,520             | 960     | 1,120  | 7,270        | 699                     | 603     | 631    |

r/ Revised.

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

2/ Gross production less quantity used to make other products in table.

3/ Data for cast and crystalline tungsten carbide powder and tungsten chemicals are withheld to avoid disclosing company proprietary data; not included in "Total."

TABLE 4  
U.S. REPORTED CONSUMPTION OF TUNGSTEN, BY END USE 1/ 2/ 3/

(Metric tons, tungsten content)

| End use   | July   | August | Year to date |
|---|--------|--------|--------------|
| Steels  | 36     | 34     | 295          |
| Superalloys                                       | 36     | 32     | 296          |
| Other alloys (excludes steels and superalloys) 4/ | W      | W      | W            |
| Cemented carbides 5/                              | 467    | 470    | 3,730        |
| Mill products made from metal powder              | W      | W      | W            |
| Chemical uses                                     | W      | W      | W            |
| Miscellaneous and unspecified                     | 410 r/ | 422    | 2,530        |
| Total   | 949 r/ | 958    | 6,900        |

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/ Does not include materials used in making primary tungsten products.

3/ Includes estimates.

4/ Includes welding and hard-facing rods and materials, wear- and corrosion-resistant alloys, and nonferrous alloys.

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

TABLE 5  
U.S. REPORTED CONSUMPTION AND CONSUMER STOCKS OF TUNGSTEN MATERIALS 1/

(Metric tons, tungsten content)

| Period              | Ferro-<br>tungsten | Tungsten<br>metal<br>powder | Tungsten<br>carbide<br>powder | Tungsten<br>scrap | Other<br>tungsten<br>materials 2/ | Total  |
|---------------------|--------------------|-----------------------------|-------------------------------|-------------------|-----------------------------------|--------|
| <b>Consumption:</b> |                    |                             |                               |                   |                                   |        |
| 2001:               |                    |                             |                               |                   |                                   |        |
| August              | 36                 | 154                         | 474                           | 39                | 6                                 | 710    |
| September           | 28                 | 196                         | 474                           | 40                | 6                                 | 745    |
| October             | 22                 | 218                         | 471                           | 50                | 6                                 | 767    |
| November            | 23                 | 204                         | 474                           | 48                | 6                                 | 755    |
| December            | 22                 | 145                         | 473                           | 39                | 6                                 | 684    |
| January-December    | 334                | 2,350                       | 5,680                         | 524               | 73                                | 8,960  |
| 2002:               |                    |                             |                               |                   |                                   |        |
| January             | 37                 | 222                         | 466                           | 50                | 6                                 | 781    |
| February            | 38                 | 230                         | 473                           | 37                | 9                                 | 788    |
| March               | 38                 | 223                         | 465                           | 40                | 6                                 | 772    |
| April               | 34                 | 220                         | 479                           | 36                | 6                                 | 776    |
| May                 | 33                 | W                           | 465                           | W                 | 6                                 | 949 r/ |
| June                | 33                 | W                           | 471                           | W                 | 6                                 | 924 r/ |
| July                | 35                 | W                           | 467                           | W                 | 6                                 | 949 r/ |
| August              | 32                 | W                           | 472                           | W                 | 6                                 | 958    |
| Total               | 281                | W                           | 3,760                         | W                 | 51                                | 6,900  |
| <b>Stocks:</b>      |                    |                             |                               |                   |                                   |        |
| 2001:               |                    |                             |                               |                   |                                   |        |
| August              | 29                 | 29                          | 509                           | 45                | 9                                 | 621    |
| September           | 36                 | 30                          | 536                           | 38                | 9                                 | 648    |
| October             | 41                 | 33                          | 553                           | 40                | 9                                 | 677    |
| November            | 40                 | 32                          | 539                           | 45                | 9                                 | 665    |
| December            | 37                 | 33                          | 596                           | 43                | 9                                 | 717    |
| 2002:               |                    |                             |                               |                   |                                   |        |
| January             | 42                 | 32                          | 548                           | 36                | 9                                 | 666    |
| February            | 36                 | 29                          | 540                           | 41                | 9                                 | 655    |
| March               | 33                 | 32                          | 547                           | 40                | 9                                 | 661    |
| April               | 32                 | 36                          | 540                           | 45                | 9                                 | 663    |
| May                 | 28                 | 34                          | 544                           | 43                | 9                                 | 657    |
| June                | 34                 | 40                          | 552                           | 42                | 9                                 | 677    |
| July                | 29                 | 39                          | 546                           | 36                | 9                                 | 658    |
| August              | 27                 | 36                          | 547                           | 40                | 9                                 | 660    |

r/ Revised.

1/ Includes estimates.

2/ Includes tungsten chemicals.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF TUNGSTEN, BY COUNTRY 1/

(Metric tons, tungsten content)

| Period and country<br>of origin | Ores and<br>concen-<br>trates | Ammonium<br>tungstates | Ferro-<br>tungsten | Metal<br>powder | Tungsten<br>carbide<br>powder | Other 2/ | Total | Total<br>year to<br>date |
|---------------------------------|-------------------------------|------------------------|--------------------|-----------------|-------------------------------|----------|-------|--------------------------|
| 2001                            | 2,680                         | 2,720                  | 352                | 947             | 932                           | 2,120    | 9,750 | XX                       |
| 2002:                           |                               |                        |                    |                 |                               |          |       |                          |
| May                             | 292                           | 400                    | 45                 | 46              | 65                            | 20       | 870   | 3,460                    |
| June                            | 439                           | 287                    | 30                 | 60              | 65                            | 35       | 916   | 4,380                    |
| July:                           |                               |                        |                    |                 |                               |          |       |                          |
| Australia                       | --                            | --                     | --                 | --              | --                            | --       | --    | (3/)                     |
| Austria                         | --                            | --                     | --                 | --              | 12                            | 1        | 13    | 35                       |
| Belgium                         | --                            | --                     | --                 | (3/)            | --                            | (3/)     | (3/)  | 2                        |
| Bolivia                         | 40                            | --                     | --                 | --              | --                            | --       | 40    | 308                      |
| Canada                          | 245                           | --                     | --                 | (3/)            | 37                            | --       | 282   | 1,280                    |
| China                           | --                            | 154                    | 30                 | 1               | 22                            | 139      | 345   | 2,510                    |
| Czech Republic                  | --                            | --                     | --                 | --              | --                            | --       | --    | (3/)                     |
| France                          | --                            | --                     | --                 | --              | (3/)                          | (3/)     | 1     | 9                        |
| Germany                         | --                            | 17                     | --                 | 14              | 17                            | 3        | 50    | 251                      |
| Hong Kong                       | --                            | --                     | --                 | --              | --                            | 1        | 1     | 66                       |
| Hungary                         | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | 1                        |
| India                           | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | 23                       |
| Ireland                         | --                            | --                     | --                 | --              | --                            | --       | --    | (3/)                     |
| Israel                          | --                            | --                     | --                 | --              | 7                             | 1        | 8     | 133                      |
| Italy                           | --                            | --                     | --                 | --              | --                            | --       | --    | 1                        |
| Japan                           | --                            | --                     | --                 | 1               | --                            | 16       | 17    | 67                       |
| Korea, Republic of              | --                            | --                     | --                 | (3/)            | 3                             | --       | 3     | 60                       |
| Luxembourg                      | --                            | --                     | --                 | --              | --                            | --       | --    | 3                        |
| Malaysia                        | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | (3/)                     |
| Mexico                          | --                            | --                     | --                 | --              | --                            | --       | --    | (3/)                     |
| Mongolia                        | 12                            | --                     | --                 | --              | --                            | --       | 12    | 12                       |
| Netherlands                     | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | (3/)                     |
| Pakistan                        | --                            | --                     | --                 | --              | --                            | 15       | 15    | 25                       |
| Peru                            | 9                             | --                     | --                 | --              | --                            | --       | 9     | 23                       |
| Portugal                        | 48                            | --                     | --                 | --              | --                            | --       | 48    | 309                      |
| Russia                          | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | 43                       |
| Singapore                       | --                            | --                     | --                 | --              | --                            | 7        | 7     | 17                       |
| South Africa                    | --                            | --                     | --                 | --              | --                            | 4        | 4     | 4                        |
| Spain                           | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | (3/)                     |
| Sweden                          | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | 11                       |
| Switzerland                     | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | (3/)                     |
| Taiwan                          | --                            | --                     | --                 | --              | --                            | (3/)     | (3/)  | (3/)                     |
| Uganda                          | 8                             | --                     | --                 | --              | --                            | --       | 8     | 15                       |
| United Kingdom                  | --                            | --                     | --                 | 20              | --                            | (3/)     | 20    | 61                       |
| Vietnam                         | --                            | 18                     | --                 | --              | --                            | --       | 18    | 18                       |
| Total                           | 362                           | 189                    | 30                 | 37              | 96                            | 190      | 903   | 5,280                    |
| Total, year to date             | 1,880                         | 1,670                  | 333                | 378             | 510                           | 507      | 5,280 | XX                       |

-- Zero.

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

2/ Includes other unwrought tungsten, wrought tungsten, calcium and other tungstates, tungsten oxides, tungsten chlorides, other tungsten compounds, ash and residues containing mainly tungsten, and other mixtures of inorganic compounds containing tungsten. Tungsten content estimated in part.

3/ Less than 1/2 unit.

Note: Imports of waste and scrap in July 2002 totaled 80 metric tons, tungsten content, to give a year-to-date total of 526 metric tons, tungsten content.

Source: U.S. Census Bureau.

TABLE 7  
U.S. EXPORTS OF TUNGSTEN, BY COUNTRY 1/

(Metric tons, tungsten content)

| Period and country of destination | Ores and concentrates 2/ | Ammonium tungstates | Metal powder 2/ | Tungsten carbide powder | Other 3/ | Total | Total year to date |
|-----------------------------------|--------------------------|---------------------|-----------------|-------------------------|----------|-------|--------------------|
| 2001                              | 220                      | 257                 | 569             | 1,950                   | 1,120    | 4,110 | XX                 |
| 2002:                             |                          |                     |                 |                         |          |       |                    |
| May                               | 11                       | --                  | 26              | 110                     | 62       | 208   | 1,320              |
| June                              | 5                        | --                  | 45              | 89                      | 77       | 216   | 1,530              |
| July:                             |                          |                     |                 |                         |          |       |                    |
| Australia                         | --                       | --                  | 3               | (4/)                    | --       | 3     | 12                 |
| Austria                           | --                       | --                  | --              | --                      | --       | --    | 3                  |
| Belgium                           | --                       | --                  | --              | (4/)                    | (4/)     | (4/)  | 24                 |
| Brazil                            | --                       | --                  | 2               | --                      | (4/)     | 2     | 30                 |
| Canada                            | --                       | --                  | 3               | 6                       | 4        | 12    | 176                |
| China 5/                          | --                       | --                  | --              | --                      | 2        | 2     | 24                 |
| Colombia                          | --                       | --                  | --              | (4/)                    | (4/)     | (4/)  | 4                  |
| Czech Republic                    | --                       | --                  | --              | --                      | --       | --    | 11                 |
| France                            | --                       | --                  | 2               | 1                       | (4/)     | 3     | 52                 |
| Germany                           | --                       | --                  | 35              | 24                      | (4/)     | 59    | 464                |
| Hong Kong                         | --                       | --                  | --              | --                      | --       | --    | 8                  |
| Hungary                           | --                       | --                  | --              | --                      | (4/)     | (4/)  | 5                  |
| India                             | --                       | --                  | (4/)            | (4/)                    | 1        | 2     | 12                 |
| Indonesia                         | --                       | --                  | --              | --                      | (4/)     | (4/)  | 2                  |
| Ireland                           | --                       | --                  | --              | (4/)                    | (4/)     | (4/)  | 5                  |
| Israel                            | --                       | --                  | (4/)            | --                      | 1        | 2     | 11                 |
| Italy                             | --                       | --                  | 1               | --                      | 1        | 2     | 21                 |
| Japan                             | --                       | --                  | (4/)            | 1                       | 7        | 9     | 76                 |
| Korea, Republic of                | --                       | --                  | --              | 3                       | (4/)     | 3     | 27                 |
| Luxembourg                        | --                       | --                  | --              | --                      | --       | --    | 1                  |
| Malaysia                          | --                       | --                  | --              | --                      | --       | --    | (4/)               |
| Mexico                            | (4/)                     | --                  | (4/)            | --                      | 4        | 4     | 131                |
| Netherlands                       | --                       | 8                   | (4/)            | --                      | (4/)     | 9     | 92                 |
| New Zealand                       | --                       | --                  | --              | --                      | (4/)     | (4/)  | 3                  |
| Peru                              | --                       | --                  | --              | --                      | --       | --    | 1                  |
| Philippines                       | --                       | --                  | --              | --                      | 5        | 5     | 13                 |
| Singapore                         | --                       | --                  | 1               | 1                       | (4/)     | 2     | 11                 |
| South Africa                      | --                       | --                  | --              | --                      | --       | --    | 2                  |
| Spain                             | --                       | --                  | (4/)            | (4/)                    | 1        | 1     | 8                  |
| Sweden                            | --                       | --                  | --              | 22                      | (4/)     | 22    | 125                |
| Switzerland                       | --                       | --                  | (4/)            | --                      | (4/)     | (4/)  | 4                  |
| Taiwan                            | --                       | --                  | 1               | (4/)                    | 4        | 5     | 62                 |
| Thailand                          | --                       | --                  | (4/)            | --                      | --       | (4/)  | 3                  |
| Turkey                            | --                       | --                  | --              | --                      | --       | --    | 1                  |
| Ukraine                           | --                       | --                  | --              | --                      | --       | --    | 1                  |
| United Kingdom                    | 6                        | --                  | 3               | 58                      | 22       | 88    | 341                |
| Other                             | --                       | --                  | (4/)            | (4/)                    | (4/)     | 2     | 3                  |
| Total                             | 6                        | 8                   | 53              | 116                     | 54       | 237   | 1,770              |
| Total, year to date               | 59                       | 52                  | 281             | 763                     | 614      | 1,770 | XX                 |

XX Not applicable. -- Zero.

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

2/ Tungsten content estimated from reported gross weight.

3/ Includes unwrought tungsten, including bars and rods obtained simply by sintering, wrought tungsten, ferrotungsten, and other tungstates. Tungsten content estimated in part.

4/ Less than 1/2 unit.

5/ Includes Macau.

Note: Estimated exports of waste and scrap in July 2002 totaled 6 metric tons, tungsten content, to give a year-to-date total of 236 metric tons, tungsten content.

Source: U.S. Census Bureau.