

# Mineral Industry Surveys

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## TUNGSTEN IN JANUARY 2001

January 2001 U.S. net production of intermediate tungsten products, including metal powder and tungsten carbide powder produced from hydrogen-reduced metal powder, was approximately the same as that of December 2000, 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 2001 was 5% higher than that of December 2000. These materials were used to make alloys, cemented carbides, mill products, catalysts, and pigments.

Data for U.S. imports and exports for January 2001 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

On March 19, North American Tungsten Corp. Ltd. announced that it had entered into a letter of intent with Osram Sylvania Products Inc., of Towanda, PA, and Sandvik AB, of Sandviken, Sweden. Under the terms of the letter, Osram and Sandvik would jointly advance \$3 million towards the startup costs for the CanTung Mine in Northwest Territories, Canada, and purchase all of the tungsten concentrates produced from the mine. In addition, Osram and Sandvik would have an exclusive

option for future participation in the development of North American Tungsten's MacTung deposit in Northwest Territories, Canada, and the Himalaya tungsten-tin deposit in Murillo and Sadyumyai Provinces in Bolivia. North American Tungsten estimates that the CanTung Mine could be brought into production during the fourth quarter of 2001, with concentrate production estimated at 900,000 mtu (approximately 7,100 tons of contained tungsten) over a 3-year period (North American Tungsten Corp. Ltd., 2001a,b).

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 ( $WO_3$ ) content of 65%. The prices for February 1 to 28, 2001, are as follows:

Low—\$66/metric ton unit  $WO_3$  (\$60/short ton unit  $WO_3$ )  
High—\$74/metric ton unit  $WO_3$  (\$67/short ton unit  $WO_3$ )

### References Cited

- North American Tungsten Corp. Ltd., 2001a, Company enters into a letter of intent for a strategic alliance with guaranteed sales, pricing and tungsten properties development arrangement: Vancouver, British Columbia, Canada, North American Tungsten Corp. Ltd. press release, March 19, 2 p.
- 2001b, North American Tungsten acquires Bolivian interests: Vancouver, British Columbia, Canada, North American Tungsten Corp. Ltd. press release, March 1, 3 p.

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<br>Industry 2/<br>U.S. Gov-<br>ernment 3/ | Reported scrap consumption | Net production 4/     | Reported consumption 5/ | Stocks, end of period<br>Industry 6/<br>U.S. Gov-<br>ernment 3/ |       |  |
| 2000:            |                      |                         |   |                            |                       |                         |   |       |  |
| January          | W                    | 267                     | W 34,600  | 482                        | 767                   | 749                     | 959   | 2,700 |  |
| February         | W                    | 56                      | W 34,600  | 452                        | 777                   | 690                     | 984   | 2,650 |  |
| March            | W                    | 209                     | W 34,600  | 473                        | 906                   | 753 r/                  | 997   | 2,600 |  |
| April            | W                    | 277                     | W 34,600  | 396                        | 849                   | 746                     | 1,090   | 2,480 |  |
| May              | W                    | 336                     | W 33,900  | 361                        | 836                   | 728                     | 1,200   | 2,320 |  |
| June             | W                    | 169                     | W 33,900  | 418                        | 824                   | 701                     | 1,240   | 2,320 |  |
| July             | W                    | 196                     | W 33,900  | 426                        | 779                   | 745                     | 1,160   | 2,290 |  |
| August           | W                    | 136                     | W 33,900  | 446 r/                     | 688                   | 665                     | 1,150   | 2,280 |  |
| September        | W                    | 97                      | W 33,500  | 394                        | 784                   | 746                     | 1,120   | 2,250 |  |
| October          | W                    | 342                     | W 33,500  | 436                        | 735                   | 720                     | 1,100   | 2,180 |  |
| November         | W                    | 97                      | W 33,500  | 432                        | 782                   | 684                     | 1,190   | 2,180 |  |
| December         | W                    | 190                     | W 33,400  | 402                        | 723                   | 666 r/                  | 1,220   | 2,110 |  |
| January-December | W                    | 2,370                   | XX XX   | 5,120                      | 9,450                 | 8,590 r/                | XX  | XX    |  |
| 2001:            |                      |                         |   |                            |                       |                         |   |       |  |
| January          | W                    | NA                      | W 33,400  | 389                        | 730                   | 700                     | 1,220   | 2,050 |  |

r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in total. 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/ |
|-----------|------------|-------------|--------------------------|
| 2000:     |            |             |                          |
| January   | 552        | 641         | 402                      |
| February  | 575        | 695         | 237                      |
| March     | 740        | 729         | W                        |
| April     | W          | 797 r/      | 192 r/                   |
| May       | W          | 671         | W                        |
| June      | W          | W           | 82 r/                    |
| July      | W          | W           | W                        |
| August    | W          | 944         | 212                      |
| September | 508        | 696 r/      | W                        |
| October   | W          | 871         | 146                      |
| November  | W          | 861 r/      | 121 r/                   |
| December  | W          | 788 r/      | W                        |
| Total 3/  | 2,380      | 7,690 r/    | XX                       |
| 2001:     |            |             |                          |
| January   | W          | 863         | W                        |

r/ Revised. W Withheld to avoid disclosing company proprietary data; not included in "Total." 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              |         |              | 2000                    | 2001    |
|   | 2000              | January | Year to date | 2000                    | January |
| Metal powder  | 4,990 t/          | 347     | 347          | 609 t/                  | 629     |
| Tungsten carbide powder<br>(made from metal powder) | 4,460 t/          | 383     | 383          | 606 t/                  | 588     |
| Total   | 9,450 t/          | 730     | 730          | 1,220 t/                | 1,220   |

t/ 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   | 2000     |              | 2001    |
|---|----------|--------------|---------|
|   | December | Year to date | January |
| Steels  | 40       | 492 t/       | 47      |
| Superalloys                                       | 23       | 347          | 28      |
| Other alloys (excludes steels and superalloys) 4/ | W        | W            | W       |
| Cemented carbides 5/                              | 480 t/   | 5,840 t/     | 499     |
| Mill products made from metal powder              | W        | 1,680        | 108     |
| Chemical uses                                     | W        | W            | W       |
| Miscellaneous and unspecified                     | 123      | 233          | 18      |
| Total   | 666 t/   | 8,590 t/     | 700     |

t/ 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 bit matrices, cemented and sintered carbides, and cast carbide dies or parts.

TABLE 5  
U.S. REPORTED CONSUMPTION AND CONSUMER STOCKS OF TUNGSTEN MATERIALS 1/ 2/ 3/

(Metric tons, tungsten content)

| Period              | Ferro-tungsten | Tungsten metal powder | Tungsten carbide powder | Tungsten scrap | Other tungsten materials 4/ | Total    |
|---------------------|----------------|-----------------------|-------------------------|----------------|-----------------------------|----------|
| <b>Consumption:</b> |                |                       |                         |                |                             |          |
| 2000:               |                |                       |                         |                |                             |          |
| January             | 41             | 182                   | 486                     | 31             | 8                           | 749      |
| February            | 42             | 120                   | 489                     | 31             | 9                           | 690      |
| March               | 52             | 152                   | 507                     | 34             | 8                           | 753 r/   |
| April               | 41             | 178                   | 481                     | 35             | 11                          | 746      |
| May                 | 41             | 145                   | 495                     | 38             | 9                           | 728      |
| June                | 37             | 126                   | 496                     | 32             | 10                          | 701      |
| July                | 36             | W                     | 483                     | 28             | W                           | 745      |
| August              | 37             | 106                   | 485                     | 29             | 8                           | 665      |
| September           | 36             | W                     | 498                     | 32             | W                           | 746      |
| October             | 36             | 164                   | 476                     | 36             | 8                           | 720      |
| November            | 36             | 129                   | 476                     | 34             | 8                           | 684      |
| December            | 40             | 109                   | 479 r/                  | 30             | 8                           | 666 r/   |
| January-December    | 476            | 1,770                 | 5,850                   | 389 r/         | 105                         | 8,590 r/ |
| 2001:               |                |                       |                         |                |                             |          |
| January             | 45             | 115                   | 500                     | 32             | 8                           | 700      |
| <b>Stocks:</b>      |                |                       |                         |                |                             |          |
| 2000:               |                |                       |                         |                |                             |          |
| January             | 33             | 18                    | 413                     | 22 r/          | 12                          | 498 r/   |
| February            | 27             | 14                    | 415                     | 27 r/          | 11                          | 495 r/   |
| March               | 38             | 16                    | 413                     | 31 r/          | 14                          | 512 r/   |
| April               | 37             | 16                    | 418                     | 33 r/          | 11                          | 515 r/   |
| May                 | 29             | 17                    | 418                     | 29 r/          | 13                          | 506 r/   |
| June                | 52             | 17                    | 415                     | 25 r/          | 16                          | 524 r/   |
| July                | 48             | 13                    | 409                     | 26 r/          | 11                          | 508 r/   |
| August              | 44             | 14                    | 420                     | 29 r/          | 11                          | 518 r/   |
| September           | 41             | 14                    | 412                     | 38 r/          | 11                          | 516 r/   |
| October             | 49             | 16                    | 414                     | 37 r/          | 11                          | 528 r/   |
| November            | 44             | 23                    | 405                     | 40 r/          | 11                          | 522 r/   |
| December            | 39             | 18                    | 406                     | 40 r/          | 11                          | 515 r/   |
| 2001:               |                |                       |                         |                |                             |          |
| January             | 34             | 16                    | 404                     | 34             | 11                          | 500      |

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in total.

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 tungsten chemicals.

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

(Metric tons, tungsten content)

| Period and country of origin | Ores and concentrates | Ammonium tungstates | Ferro-tungsten | Metal powder | Tungsten carbide powder | Other 2/ | Total | Total year to date |
|------------------------------|-----------------------|---------------------|----------------|--------------|-------------------------|----------|-------|--------------------|
| 1999                         | 2,870                 | 1,920               | 669            | 310          | 790                     | 3,100    | 9,670 | XX                 |
| 2000:                        |                       |                     |                |              |                         |          |       |                    |
| October                      | 342                   | 236                 | 15             | 79           | 109                     | 161      | 942   | 7,590              |
| November                     | 97                    | 119                 | 13             | 43           | 88                      | 272      | 631   | 8,230              |
| December:                    |                       |                     |                |              |                         |          |       |                    |
| Australia                    | --                    | --                  | --             | --           | --                      | --       | --    | 36                 |
| Austria                      | --                    | 18                  | --             | --           | 2                       | 2        | 22    | 80                 |
| Belgium                      | --                    | --                  | --             | (3/)         | --                      | (3/)     | (3/)  | 4                  |
| Bolivia                      | 49                    | --                  | --             | --           | --                      | --       | 49    | 449                |
| Brazil                       | --                    | --                  | --             | --           | --                      | --       | --    | (3/)               |
| Canada                       | --                    | --                  | --             | 3            | 50                      | 16       | 69    | 566                |
| China                        | 46                    | 302                 | --             | 67           | 14                      | 107      | 536   | 4,660              |
| Estonia                      | --                    | --                  | --             | --           | --                      | --       | --    | 8                  |
| France                       | --                    | --                  | --             | --           | (3/)                    | (3/)     | 1     | 10                 |
| Germany                      | --                    | 4                   | --             | 4            | 18                      | 9        | 36    | 419                |
| Hong Kong                    | --                    | 32                  | --             | --           | --                      | (3/)     | 32    | 104                |
| Hungary                      | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | 6                  |
| India                        | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | 1                  |
| Ireland                      | --                    | --                  | --             | 1            | --                      | --       | 1     | 1                  |
| Israel                       | --                    | --                  | --             | --           | 2                       | 1        | 4     | 149                |
| Italy                        | --                    | --                  | --             | --           | --                      | --       | --    | 1                  |
| Japan                        | --                    | --                  | --             | 1            | --                      | 2        | 3     | 48                 |
| Kazakhstan                   | --                    | --                  | --             | --           | --                      | --       | --    | 31                 |
| Korea, Republic of           | --                    | --                  | --             | --           | 1                       | (3/)     | 2     | 23                 |
| Liechtenstein                | --                    | --                  | --             | --           | --                      | --       | --    | (3/)               |
| Luxembourg                   | --                    | --                  | --             | --           | --                      | --       | --    | 13                 |
| Mexico                       | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | (3/)               |
| Mongolia                     | 38                    | --                  | --             | --           | --                      | --       | 38    | 67                 |
| Netherlands                  | --                    | --                  | --             | (3/)         | --                      | (3/)     | (3/)  | 10                 |
| Netherlands Antilles         | --                    | --                  | --             | --           | --                      | --       | --    | (3/)               |
| New Zealand                  | --                    | --                  | --             | --           | --                      | --       | --    | 7                  |
| Peru                         | --                    | --                  | --             | --           | --                      | --       | --    | 107                |
| Poland                       | --                    | --                  | --             | --           | --                      | --       | --    | (3/)               |
| Portugal                     | 37                    | --                  | --             | --           | --                      | --       | 37    | 499                |
| Russia                       | --                    | 71                  | --             | --           | --                      | 39       | 110   | 1,560              |
| Rwanda                       | 14                    | --                  | --             | --           | --                      | --       | 14    | 100                |
| Singapore                    | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | 1                  |
| South Africa                 | --                    | --                  | --             | --           | --                      | --       | --    | 1                  |
| Spain                        | --                    | --                  | --             | --           | --                      | --       | --    | (3/)               |
| Sweden                       | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | (3/)               |
| Switzerland                  | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | 3                  |
| Taiwan                       | --                    | --                  | --             | --           | --                      | --       | --    | (3/)               |
| Thailand                     | --                    | --                  | --             | --           | --                      | (3/)     | (3/)  | 12                 |
| Uganda                       | 7                     | --                  | --             | --           | --                      | --       | 7     | 12                 |
| United Kingdom               | --                    | --                  | --             | --           | (3/)                    | 1        | 1     | 191                |
| Total                        | 190                   | 427                 | --             | 77           | 88                      | 179      | 962   | 9,190              |
| Total, year to date          | 2,370                 | 2,270               | 470            | 593          | 1,000                   | 2,480    | 9,190 | XX                 |

XX Not applicable. -- 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 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 December 2000 totaled 171 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 |
|-----------------------------------|--------------------------|---------------------|-----------------|-------------------------|----------|-------|---------------------|
| 1999                              | 26                       | 103                 | 711             | 701                     | 498      | 2,040 | XX                  |
| 2000:                             |                          |                     |                 |                         |          |       |                     |
| October                           | 15                       | 20                  | 30              | 155                     | 46       | 265   | 1,590               |
| November                          | 5                        | (4/)                | 63              | 100                     | 44       | 213   | 1,800               |
| December:                         |                          |                     |                 |                         |          |       |                     |
| Australia                         | --                       | --                  | 1               | 2                       | --       | 3     | 11                  |
| Austria                           | --                       | --                  | (4/)            | --                      | --       | (4/)  | 7                   |
| Barbados                          | --                       | --                  | --              | --                      | --       | --    | (4/)                |
| Belgium                           | --                       | 2                   | --              | --                      | 1        | 3     | 18                  |
| Bolivia                           | --                       | --                  | --              | --                      | --       | --    | (4/)                |
| Brazil                            | --                       | --                  | 2               | 1                       | 1        | 3     | 27                  |
| Canada                            | --                       | --                  | 3               | 15                      | 3        | 22    | 295                 |
| Chile                             | --                       | --                  | (4/)            | --                      | --       | (4/)  | 1                   |
| China                             | --                       | --                  | --              | --                      | (4/)     | (4/)  | 9                   |
| Czech Republic                    | --                       | --                  | --              | --                      | --       | --    | 25                  |
| Denmark                           | --                       | --                  | --              | (4/)                    | --       | (4/)  | 14                  |
| Egypt                             | --                       | --                  | --              | --                      | --       | --    | 6                   |
| France                            | --                       | --                  | (4/)            | 1                       | 5        | 5     | 38                  |
| Germany                           | --                       | --                  | 17              | 18                      | 19       | 54    | 554                 |
| Hong Kong                         | --                       | --                  | 2               | --                      | (4/)     | 2     | 5                   |
| Hungary                           | --                       | --                  | --              | --                      | (4/)     | (4/)  | 27                  |
| India                             | --                       | --                  | --              | (4/)                    | 2        | 2     | 22                  |
| Indonesia                         | --                       | --                  | --              | --                      | 2        | 2     | 10                  |
| Ireland                           | --                       | --                  | --              | (4/)                    | (4/)     | (4/)  | 2                   |
| Israel                            | --                       | --                  | --              | --                      | (4/)     | (4/)  | 26                  |
| Italy                             | --                       | --                  | (4/)            | 4                       | 2        | 7     | 86                  |
| Japan                             | --                       | --                  | 1               | 6                       | 4        | 10    | 70                  |
| Korea, Republic of                | 2                        | --                  | --              | 1                       | 1        | 4     | 15                  |
| Luxembourg                        | --                       | --                  | --              | --                      | --       | --    | 1                   |
| Malaysia                          | --                       | --                  | --              | --                      | --       | --    | 3                   |
| Mexico                            | --                       | --                  | --              | 2                       | 2        | 4     | 60                  |
| Netherlands                       | 2                        | --                  | --              | (4/)                    | 1        | 3     | 55                  |
| New Zealand                       | --                       | --                  | --              | --                      | --       | --    | (4/)                |
| Philippines                       | --                       | --                  | --              | --                      | --       | --    | 1                   |
| Russia                            | --                       | --                  | --              | --                      | --       | --    | 8                   |
| Saudi Arabia                      | --                       | --                  | --              | --                      | --       | --    | 5                   |
| Singapore                         | --                       | --                  | (4/)            | (4/)                    | (4/)     | 1     | 9                   |
| South Africa                      | --                       | --                  | (4/)            | --                      | --       | (4/)  | 19                  |
| Spain                             | --                       | --                  | (4/)            | --                      | 5        | 5     | 20                  |
| Sri Lanka                         | --                       | --                  | --              | --                      | --       | --    | (4/)                |
| Sweden                            | --                       | --                  | --              | 25                      | 2        | 28    | 161                 |
| Switzerland                       | --                       | --                  | (4/)            | --                      | --       | (4/)  | 1                   |
| Taiwan                            | --                       | --                  | 2               | --                      | 1        | 3     | 31                  |
| Turkey                            | --                       | --                  | --              | --                      | --       | --    | 3                   |
| United Arab Emirates              | --                       | --                  | --              | --                      | (4/)     | (4/)  | 1                   |
| United Kingdom                    | 2                        | --                  | 2               | 70                      | 1        | 75    | 387                 |
| Venezuela                         | --                       | --                  | --              | (4/)                    | --       | (4/)  | 3                   |
| Other                             | --                       | --                  | (4/)            | (4/)                    | 2        | 28    | 5                   |
| Total                             | 6                        | 2                   | 32              | 146                     | 52       | 238   | 2,040               |
| Total, year to date               | 70                       | 53                  | 467             | 969                     | 483      | 2,040 | 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 wrought tungsten, ferrotungsten, and other tungstates. Tungsten content estimated in part.

4/ Less than 1/2 unit.

Note: Estimated exports of waste and scrap in December 2000 totaled 64 metric tons, tungsten content.

Source: U.S. Census Bureau.