

# Mineral Industry Surveys

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## TUNGSTEN IN JANUARY 2011

The following comparisons are based on preliminary data. January 2011 U.S. net production of intermediate tungsten products, including metal powder and tungsten carbide powder, was 5% less than that of December 2010, 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 2011 was 7% higher than reported consumption in December 2010 and slightly higher than that of January 2010. These materials were used to make alloys, cemented carbides, mill products, and other products, such as catalysts and pigments.

Data for U.S. imports and exports of tungsten for October through December 2010 and full year 2010 totals by material and country are published in this issue.

### Prices

Selected prices from Metal Bulletin for January 2011 are listed below. U.S. ammonium paratungstate prices in dollars per

metric ton unit were converted from short-ton-unit prices and rounded to the nearest dollar. Prices for tungsten ore concentrates represent combined prices for wolframite and scheelite concentrates with a minimum tungsten trioxide (WO<sub>3</sub>) content of 65%. Concentrate prices in dollars per short ton unit were converted from metric-ton-unit prices and rounded to the nearest dollar.

Ammonium paratungstate, U.S. free market:

Low—\$261/metric ton unit WO<sub>3</sub> (\$237/short ton unit WO<sub>3</sub>)  
High—\$341/metric ton unit WO<sub>3</sub> (\$309/short ton unit WO<sub>3</sub>)

Concentrates:

Low—\$140/metric ton unit WO<sub>3</sub> (\$127/short ton unit WO<sub>3</sub>)  
High—\$160/metric ton unit WO<sub>3</sub> (\$145/short ton unit WO<sub>3</sub>)

TABLE 1  
U.S. SALIENT TUNGSTEN STATISTICS<sup>1</sup>

(Metric tons, tungsten content)

| Period           | Concentrate                  |                               |                       |                                   | Reported<br>scrap<br>consumption | Intermediate products          |   |                                   |     |
|------------------|------------------------------|-------------------------------|-----------------------|-----------------------------------|----------------------------------|--------------------------------|---|-----------------------------------|-----|
|                  | Reported<br>consump-<br>tion | Imports<br>for<br>consumption | Stocks, end of period |                                   |                                  | Net<br>production <sup>4</sup> | Reported<br>consump-<br>tion <sup>5</sup> | Stocks, end of period             |     |
|                  |                              |                               | Industry <sup>2</sup> | U.S. Gov-<br>ernment <sup>3</sup> |                                  |                                | Industry <sup>6</sup>                     | U.S. Gov-<br>ernment <sup>3</sup> |     |
| 2010:            |                              |                               |                       |                                   |                                  |                                |   |                                   |     |
| January          | W                            | 173                           | W                     | 18,800                            | 418                              | 584                            | 856                                       | 674                               | 171 |
| February         | W                            | 249                           | W                     | 18,600                            | 303                              | 588                            | 786                                       | 749                               | 171 |
| March            | W                            | 181                           | W                     | 18,300                            | 455                              | 689                            | 838                                       | 739                               | 171 |
| April            | W                            | 279                           | W                     | 17,700                            | 369                              | 638                            | 865                                       | 676                               | 169 |
| May              | W                            | 160                           | W                     | 17,700                            | 426                              | 743                            | 847                                       | 745                               | 169 |
| June             | W                            | 246                           | W                     | 17,700                            | 410                              | 756                            | 902                                       | 708                               | 169 |
| July             | W                            | 221                           | W                     | 17,000                            | (7)                              | 667                            | 872                                       | 689                               | 169 |
| August           | W                            | 366                           | W                     | 17,000                            | (7)                              | 788                            | 879                                       | 704                               | 169 |
| September        | W                            | 172                           | W                     | 17,000                            | 498                              | 752                            | 842                                       | 762                               | 171 |
| October          | W                            | 246                           | W                     | 17,000                            | 360                              | 728                            | 798                                       | 828                               | 171 |
| November         | W                            | 236                           | W                     | 17,000                            | (7)                              | 700                            | 809                                       | 804                               | 171 |
| December         | W                            | 214                           | W                     | 17,000                            | (7)                              | 680 <sup>r</sup>               | 807                                       | 669                               | 171 |
| January-December | W                            | 2,740 <sup>r</sup>            | XX                    | XX                                | 5,740                            | 8,310 <sup>r</sup>             | 10,100                                    | XX                                | XX  |
| 2011, January    | W                            | NA                            | W                     | 17,000                            | W                                | 646                            | 861                                       | 761                               | 171 |

<sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

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

<sup>2</sup>Reported by consumers.

<sup>3</sup>Data from the Defense Logistics Agency, DLA Strategic Materials (formerly Defense National Stockpile Center). Data are uncommitted material only

<sup>4</sup>Net production of tungsten metal powder and tungsten carbide powder.

<sup>5</sup>Includes estimates and scrap.

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

<sup>7</sup>Withheld to avoid disclosing company proprietary data; included in "January-December."

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

(Metric tons, tungsten content)

| Period           | Production | Consumption | Stocks,<br>end of<br>period <sup>2</sup> |
|------------------|------------|-------------|--|
| 2010:            |            |             |  |
| January          | W          | 829         | 185                                      |
| February         | W          | 761         | 173                                      |
| March            | W          | 822         | 124                                      |
| April            | W          | 929         | W  |
| May              | W          | 777         | W  |
| June             | W          | 952         | 147                                      |
| July             | W          | (3)         | 130                                      |
| August           | W          | (3)         | W  |
| September        | W          | 1,010       | 122                                      |
| October          | W          | 848         | 112                                      |
| November         | W          | (3)         | W  |
| December         | W          | (3)         | 62                                       |
| January-December | W          | 10,300      | XX                                       |
| 2011, January    | W          | W           | W  |

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

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

<sup>2</sup>Producers and consumers.

<sup>3</sup>Withheld to avoid disclosing company proprietary data; included in "January-December."

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

(Metric tons, tungsten content)

| Product <sup>3</sup>    | Net production <sup>2</sup> |         | Stocks at end of period |         |
|-------------------------|-----------------------------|---------|-------------------------|---------|
|                         | 2011                        |         | 2011                    |         |
|                         | 2010                        | January | 2010                    | January |
| Metal powder            | 4,100 <sup>r</sup>          | 307     | 341                     | 414     |
| Tungsten carbide powder | 4,210                       | 338     | 328                     | 347     |
| Total                   | 8,310 <sup>r</sup>          | 646     | 669                     | 761     |

<sup>r</sup>Revised.

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

<sup>2</sup>Receipts plus gross production less quantity used to make other products in table.

<sup>3</sup>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<sup>1, 2, 3</sup>

(Metric tons, tungsten content)

| End use   | 2010     |              | 2011    |
|---|----------|--------------|---------|
|   | December | Year to date | January |
| Steels  | 21       | 247          | 21      |
| Superalloys   | W        | W            | W       |
| Other alloys (excludes steels and superalloys) <sup>4</sup> | W        | W            | W       |
| Cemented carbides <sup>5</sup>                              | 447      | 5,370        | 450     |
| Mill products made from metal powder                        | W        | W            | W       |
| Chemical uses   | W        | W            | W       |
| Miscellaneous and unspecified                               | 339      | 4,490        | 390     |
| Total   | 807      | 10,100       | 861     |

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

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

<sup>2</sup>Does not include materials used in making primary tungsten products.

<sup>3</sup>Includes estimates.

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

<sup>5</sup>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<sup>1</sup>

(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 <sup>2</sup> | Total  |
|------------------|--------------------|-----------------------------|-------------------------------|-------------------|---|--------|
| Consumption:     |                    |                             |                               |                   |   |        |
| 2010:            |                    |                             |                               |                   |   |        |
| January          | 20                 | W                           | 438                           | W                 | 6   | 856    |
| February         | 20                 | W                           | 437                           | W                 | 6   | 786    |
| March            | 20                 | W                           | 438                           | W                 | 6   | 838    |
| April            | 20                 | W                           | 440                           | W                 | 6   | 865    |
| May              | 21                 | W                           | 437                           | W                 | 8   | 847    |
| June             | 20                 | W                           | 441                           | W                 | 9   | 902    |
| July             | 20                 | W                           | 439                           | W                 | 9   | 872    |
| August           | 20                 | W                           | 440                           | W                 | 8   | 879    |
| September        | 20                 | W                           | 440                           | W                 | 11  | 842    |
| October          | 20                 | W                           | 441                           | W                 | 9   | 798    |
| November         | 20                 | W                           | 442                           | W                 | 9   | 809    |
| December         | 20                 | W                           | 439                           | W                 | 10  | 807    |
| January-December | 242                | W                           | 5,270                         | W                 | 98  | 10,100 |
| 2011, January    | 20                 | W                           | 442                           | W                 | 13  | 861    |
| Stocks:          |                    |                             |                               |                   |   |        |
| 2010:            |                    |                             |                               |                   |   |        |
| January          | 15                 | 24                          | 387                           | 46                | 10  | 482    |
| February         | 15                 | 24                          | 387                           | 50                | 10  | 485    |
| March            | 15                 | 23                          | 387                           | 49                | 10  | 484    |
| April            | 15                 | 25                          | 387                           | 57                | 10  | 494    |
| May              | 15                 | 24                          | 387                           | 53                | 21  | 500    |
| <b>June</b>      | 15                 | 28                          | 387                           | 49                | 18  | 498    |
| July             | 15                 | 29                          | 386                           | 51                | 15  | 495    |
| August           | 16                 | 28                          | 386                           | 54                | 13  | 496    |
| September        | 16                 | 26                          | 386                           | 46                | 10  | 484    |
| October          | 17                 | 26                          | 386                           | 45                | 11  | 484    |
| November         | 16                 | 25                          | 386                           | 48                | 12  | 487    |
| December         | 16                 | 26                          | 386                           | 49                | 13  | 489    |
| 2011, January    | 16                 | 25                          | 386                           | 50                | 17  | 493    |

W Withheld to avoid disclosing company proprietary data; included in "Total."

<sup>1</sup>Includes estimates.

<sup>2</sup>Includes tungsten chemicals.

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

(Metric tons, tungsten content)

| Period and country of origin | Ores and concentrates | Ammonium tungstates | Ferro-tungsten | Metal powder | Tungsten carbide powder | Other <sup>2</sup> | Total  | Total, year to date |
|------------------------------|-----------------------|---------------------|----------------|--------------|-------------------------|--------------------|--------|---------------------|
| 2009                         | 3,590                 | 2,540               | 46             | 837          | 753                     | 1,360              | 9,120  | XX                  |
| 2010:                        |                       |                     |                |              |                         |                    |        |                     |
| October                      | 246                   | 206                 | 8              | 130          | 149                     | 244                | 983    | 9,160               |
| November                     | 236                   | 187                 | 56             | 103          | 164                     | 141                | 886    | 10,100              |
| December:                    |                       |                     |                |              |                         |                    |        |                     |
| Australia                    | --                    | --                  | --             | --           | --                      | (3)                | (3)    | 7                   |
| Austria                      | --                    | --                  | --             | --           | --                      | 6                  | 6      | 78                  |
| Belgium                      | --                    | --                  | --             | --           | 3                       | (3)                | 3      | 51                  |
| Bolivia                      | 66                    | --                  | --             | --           | --                      | --                 | 66     | 939                 |
| Canada                       | 13                    | --                  | --             | 8            | 16                      | (3)                | 37     | 193                 |
| China                        | --                    | 161                 | 107            | 34           | 89                      | 128                | 519    | 5,930               |
| Czech Republic               | --                    | --                  | --             | --           | --                      | 12                 | 12     | 67                  |
| France                       | --                    | --                  | --             | --           | --                      | 1                  | 1      | 8                   |
| Germany                      | (3)                   | 3                   | --             | 6            | 7                       | 2                  | 18     | 416                 |
| Hong Kong                    | --                    | --                  | --             | --           | --                      | 1                  | 1      | 55                  |
| Hungary                      | --                    | --                  | --             | --           | --                      | 1                  | 1      | 8                   |
| India                        | --                    | --                  | --             | --           | --                      | 4                  | 4      | 13                  |
| Ireland                      | --                    | --                  | --             | --           | --                      | --                 | --     | 62                  |
| Israel                       | --                    | --                  | --             | 34           | 14                      | (3)                | 49     | 552                 |
| Japan                        | --                    | --                  | --             | 10           | --                      | 2                  | 12     | 75                  |
| Korea, Republic of           | --                    | --                  | --             | 34           | 2                       | (3)                | 36     | 392                 |
| Luxembourg                   | --                    | --                  | 15             | --           | --                      | --                 | 15     | 20                  |
| Mexico                       | --                    | --                  | --             | --           | --                      | (3)                | (3)    | 15                  |
| Mongolia                     | --                    | --                  | --             | --           | --                      | --                 | --     | 19                  |
| Netherlands                  | --                    | --                  | --             | --           | --                      | (3)                | (3)    | 17                  |
| Peru                         | 54                    | --                  | --             | --           | --                      | --                 | 54     | 519                 |
| Portugal                     | 42                    | --                  | --             | --           | --                      | --                 | 42     | 635                 |
| Russia                       | --                    | --                  | --             | --           | --                      | 2                  | 2      | 10                  |
| Rwanda                       | --                    | --                  | --             | --           | --                      | --                 | --     | 79                  |
| Singapore                    | --                    | --                  | --             | --           | --                      | 2                  | 2      | 23                  |
| South Africa                 | --                    | --                  | --             | --           | --                      | --                 | --     | 43                  |
| Spain                        | 29                    | --                  | --             | --           | --                      | --                 | 29     | 218                 |
| Sweden                       | --                    | --                  | --             | --           | --                      | (3)                | (3)    | 46                  |
| Taiwan                       | --                    | --                  | --             | --           | --                      | (3)                | (3)    | 17                  |
| Thailand                     | --                    | --                  | --             | --           | --                      | --                 | --     | 91                  |
| Uganda                       | 10                    | --                  | --             | --           | --                      | --                 | 10     | 94                  |
| United Kingdom               | --                    | --                  | --             | --           | --                      | 1                  | 1      | 43                  |
| Vietnam                      | --                    | --                  | --             | --           | --                      | 16                 | 16     | 247                 |
| Other                        | --                    | --                  | --             | (3)          | --                      | (3)                | (3)    | 1                   |
| Total                        | 214                   | 164                 | 122            | 126          | 131                     | 179                | 936    | 11,000              |
| Total, year to date          | 2,740                 | 2,510               | 357            | 1,340        | 1,610                   | 2,430              | 11,000 | XX                  |

XX Not applicable. -- Zero.

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

<sup>2</sup>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.

<sup>3</sup>Less than ½ unit.

Note: Imports of waste and scrap in December 2010 totaled 118 metric tons, tungsten content, to give a year-to-date total of 1,450 metric tons, tungsten content.

Source: U.S. Census Bureau.

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

(Metric tons, tungsten content)

| Period and country of destination | Ores and concentrates <sup>2</sup> | Ammonium tungstates | Metal powder <sup>2</sup> | Tungsten carbide powder | Other <sup>3</sup> | Total | Total, year to date |
|-----------------------------------|------------------------------------|---------------------|---------------------------|-------------------------|--------------------|-------|---------------------|
| 2009                              | 38                                 | 375                 | 360                       | 469                     | 543                | 1,790 | XX                  |
| 2010:                             |                                    |                     |                           |                         |                    |       |                     |
| October                           | 2                                  | 48                  | 66                        | 176                     | 61                 | 353   | 3,150               |
| November                          | 7                                  | 1                   | 65                        | 116                     | 68                 | 257   | 3,410               |
| December:                         |                                    |                     |                           |                         |                    |       |                     |
| Argentina                         | --                                 | --                  | (4)                       | --                      | --                 | (4)   | 4                   |
| Australia                         | --                                 | --                  | (4)                       | 1                       | (4)                | 1     | 36                  |
| Austria                           | --                                 | --                  | 2                         | 22                      | (4)                | 24    | 144                 |
| Belgium                           | --                                 | --                  | 6                         | --                      | 36                 | 42    | 155                 |
| Brazil                            | --                                 | --                  | 1                         | (4)                     | 1                  | 2     | 55                  |
| Canada                            | --                                 | --                  | 9                         | 14                      | 11                 | 34    | 433                 |
| Chile                             | --                                 | --                  | 1                         | --                      | --                 | 1     | 6                   |
| China                             | --                                 | --                  | 2                         | 3                       | 2                  | 7     | 68                  |
| Colombia                          | --                                 | --                  | --                        | --                      | (4)                | (4)   | 9                   |
| Costa Rica                        | --                                 | --                  | --                        | --                      | 1                  | 1     | 5                   |
| Czech Republic                    | --                                 | --                  | --                        | (4)                     | 2                  | 2     | 61                  |
| France                            | --                                 | --                  | --                        | (4)                     | --                 | (4)   | 39                  |
| Germany                           | --                                 | 57                  | 18                        | 13                      | 7                  | 94    | 1,570               |
| Hong Kong                         | --                                 | --                  | (4)                       | 1                       | --                 | 1     | 16                  |
| Hungary                           | --                                 | --                  | 4                         | --                      | 4                  | 8     | 68                  |
| India                             | --                                 | 2                   | --                        | 1                       | 1                  | 4     | 53                  |
| Indonesia                         | --                                 | --                  | --                        | (4)                     | (4)                | (4)   | 27                  |
| Ireland                           | --                                 | --                  | --                        | --                      | --                 | --    | 31                  |
| Israel                            | --                                 | --                  | (4)                       | --                      | 1                  | 1     | 7                   |
| Italy                             | --                                 | --                  | --                        | (4)                     | --                 | (4)   | 5                   |
| Japan                             | --                                 | --                  | 1                         | (4)                     | 4                  | 5     | 60                  |
| Korea, Republic of                | --                                 | --                  | (4)                       | (4)                     | (4)                | 1     | 12                  |
| Malaysia                          | (4)                                | --                  | --                        | (4)                     | 1                  | 1     | 10                  |
| Mexico                            | (4)                                | --                  | (4)                       | (4)                     | 15                 | 16    | 96                  |
| Netherlands                       | --                                 | --                  | --                        | --                      | (4)                | (4)   | 51                  |
| Peru                              | --                                 | --                  | --                        | (4)                     | --                 | (4)   | 12                  |
| Saudi Arabia                      | --                                 | --                  | --                        | (4)                     | --                 | (4)   | 53                  |
| Singapore                         | --                                 | --                  | 1                         | 1                       | 1                  | 3     | 38                  |
| South Africa                      | --                                 | --                  | (4)                       | --                      | (4)                | (4)   | 83                  |
| Spain                             | --                                 | --                  | --                        | --                      | --                 | --    | 6                   |
| Sweden                            | --                                 | --                  | --                        | --                      | 1                  | 1     | 24                  |
| Switzerland                       | --                                 | --                  | --                        | --                      | (4)                | (4)   | 34                  |
| Taiwan                            | --                                 | --                  | 2                         | 6                       | (4)                | 8     | 78                  |
| Thailand                          | --                                 | --                  | --                        | (4)                     | (4)                | (4)   | 4                   |
| United Arab Emirates              | --                                 | --                  | --                        | --                      | --                 | --    | 4                   |
| United Kingdom                    | --                                 | --                  | (4)                       | 36                      | 1                  | 36    | 292                 |
| Venezuela                         | --                                 | --                  | 1                         | 3                       | (4)                | 4     | 32                  |
| Vietnam                           | --                                 | --                  | --                        | --                      | (4)                | (4)   | 8                   |
| Other                             | --                                 | --                  | 1                         | (4)                     | (4)                | 2     | 18                  |
| Total                             | 1                                  | 59                  | 49                        | 103                     | 87                 | 298   | 3,710               |
| Total, year to date               | 276                                | 538                 | 803                       | 1,220                   | 875                | 3,710 | XX                  |

XX Not applicable. -- Zero.

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

<sup>2</sup>Tungsten content estimated from reported gross weight.

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

<sup>4</sup>Less than ½ unit.

Note: Estimated exports of waste and scrap in December 2010 totaled 174 metric tons, tungsten content, to give a year-to-date total of 915 metric tons, tungsten content.

Source: U.S. Census Bureau.