

# Mineral Industry Surveys

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## TUNGSTEN IN DECEMBER 2010

The following comparisons are based on preliminary data. U.S. net production of intermediate tungsten products, including metal powder and tungsten carbide powder, in 2010 was 57% higher than that produced in 2009, according to the U.S. Geological Survey. U.S. net production of intermediate tungsten products during the quarter ending December 31, 2010, was 5% lower than net production during the quarter ending September 30, 2010.

Total U.S. reported consumption of ferrotungsten, tungsten metal powder, tungsten carbide powder, tungsten scrap, and other tungsten materials in 2010 was 41% higher than reported consumption in 2009. U.S. reported consumption of these materials during the quarter ending December 31, 2010, was 7% lower than that consumed during the quarter ending September 30, 2010. The 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 January through November 2010 and full year 2009 totals by material are published in this issue.

### Prices

Selected prices from Metal Bulletin for December 2010 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—\$268/metric ton unit WO<sub>3</sub> (\$243/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 scrap consumption	Intermediate products			
	Reported consump- tion	Imports for consumption	Stocks, end of period Industry <sup>2</sup>	U.S. Gov- ernment <sup>3</sup>		Net production <sup>4</sup>	Reported consump- tion <sup>5</sup>	Stocks, end of period Industry <sup>6</sup>	U.S. Gov- ernment <sup>3</sup>
2009:									
December	W	306	W	19,000	356	589	703	682	171
January-December	W	3,590	XX	XX	3,460	5,300	7,180	XX	XX
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 <sup>r</sup>	872	689 <sup>r</sup>	169
August	W	366	W	17,000	(7)	788 <sup>r</sup>	879	704 <sup>r</sup>	169
September	W	172	W	17,000	498	752 <sup>r</sup>	842	762 <sup>r</sup>	171
October	W	246	W	17,000	360	728 <sup>r</sup>	798	828 <sup>r</sup>	171
November	W	236	W	17,000	(7)	700	809	804	171
December	W	NA	W	17,000	(7)	667	807	669	171
January-December	W	2,530	XX	XX	5,740	8,300	10,100	XX	XX

<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, end of period <sup>2</sup>
2009:			
December	W	(3)	100
January-December	W	6,860	XX
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 <sup>r</sup>
August	W	(3)	W
September	W	1,010	122 <sup>r</sup>
October	W	848 <sup>r</sup>	112 <sup>r</sup>
November	W	(3)	W
December	W	(3)	62
January-December	W	10,300	XX

<sup>r</sup>Revised. 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		
	2010				2010		
	2009	November	December	Year to date <sup>4</sup>	2009	November	December
Metal powder	2,880	301	320	4,090	379	481	341
Tungsten carbide powder	2,420	399	347	4,210	304	323	328
Total	5,300	700	667	8,300	682	804	669

<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."

<sup>4</sup>May include revisions to prior months.

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

(Metric tons, tungsten content)

End use	2010		
	November	December	Year to date <sup>4</sup>
Steels	20	21	247
Superalloys	W	W	W
Other alloys (excludes steels and superalloys) <sup>5</sup>	W	W	W
Cemented carbides <sup>6</sup>	450	447	5,370
Mill products made from metal powder	W	W	W
Chemical uses	W	W	W
Miscellaneous and unspecified	339	339	4,490
Total	809	807	10,100

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>May include revisions to prior months.

<sup>5</sup>Includes welding and hard-facing rods and materials, wear- and corrosion-resistant alloys, and nonferrous alloys.

<sup>6</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- tungsten	Tungsten metal powder	Tungsten carbide powder	Tungsten scrap	Other tungsten materials <sup>2</sup>	Total
Consumption:						
2009:						
December	20	W	331	W	6	703
January-December	238	W	3,980	W	74	7,180
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
Total	242	W	5,270	W	98	10,100
Stocks:						
2009, December	15	24	387	47	10	484
2010:						
January	15	24	387	46	10	482
February	15	24	387	50	10	485
<b>March</b>	15	23	387	49	10	484
April	15	25	387	57	10	494
May	15	24	387	53	21	500
June	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

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	Ferrotungsten	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:								
September	172	401	11	112	189	316	1,200	8,180
October	246	206	8	130	149	244	983	9,160
November:								
Australia	--	--	--	--	--	--	--	7
Austria	--	--	--	--	--	6	6	72
Belgium	--	--	--	--	4	1	5	48
Bolivia	78	--	--	--	--	--	78	874
Canada	--	--	--	7	14	(3)	20	156
China	--	168	40	26	105	93	432	5,410
Czech Republic	--	--	--	--	9	(3)	9	54
France	--	--	(3)	--	1	(3)	1	8
Germany	(3)	4	--	17	10	1	32	398
Hong Kong	--	--	--	--	--	(3)	(3)	55
Hungary	--	--	--	--	--	1	1	8
India	--	--	--	--	--	(3)	(3)	9
Ireland	--	--	--	--	--	--	--	62
Israel	--	--	--	27	20	(3)	47	503
Japan	--	--	--	9	(3)	1	11	64
Korea, Republic of	--	--	--	17	2	(3)	19	356
Luxembourg	--	--	--	--	--	(3)	(3)	5
Mexico	--	--	--	--	--	(3)	(3)	14
Mongolia	--	--	--	--	--	--	--	19
Netherlands	--	--	--	--	--	1	1	17
Peru	24	--	--	--	--	--	24	465
Portugal	52	--	--	--	--	--	52	593
Russia	--	--	--	--	--	--	--	8
Rwanda	13	--	--	--	--	--	13	79
Singapore	--	--	--	--	--	2	2	21
South Africa	--	--	--	--	--	--	--	43
Spain	29	--	--	--	--	(3)	30	189
Sweden	--	--	--	--	--	1	1	46
Taiwan	--	--	--	--	--	(3)	(3)	16
Thailand	13	--	--	--	--	--	13	91
Uganda	--	--	--	--	--	--	--	84
United Kingdom	--	--	--	--	(3)	(3)	(3)	41
Vietnam	26	15	15	--	--	32	88	231
Other	--	--	--	--	--	(3)	(3)	1
Total	236	187	56	103	164	141	886	10,100
Total, year to date	2,530	2,340	235	1,220	1,480	2,250	10,100	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 November 2010 totaled 53 metric tons, tungsten content, to give a year-to-date total of 1,330 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:							
September	9	69	48	102	87	315	2,800
October	2	48	66	176	61	353	3,150
November:							
Argentina	--	--	--	--	(4)	(4)	4
Australia	--	--	1	--	--	1	35
Austria	--	--	16	22	--	39	120
Belgium	--	--	--	(4)	1	1	113
Brazil	--	--	1	--	3	4	53
Canada	(4)	--	11	12	28	52	399
Chile	--	--	(4)	(4)	(4)	(4)	6
China	--	--	2	1	(4)	4	61
Colombia	--	--	--	--	(4)	(4)	9
Costa Rica	--	--	--	--	1	1	4
Czech Republic	--	--	16	--	2	18	59
France	--	--	--	--	(4)	(4)	39
Germany	--	--	7	24	5	36	1,480
Hong Kong	--	--	--	1	--	1	15
Hungary	--	--	--	--	1	1	60
India	5	1	(4)	--	(4)	7	49
Indonesia	--	--	--	--	(4)	(4)	27
Ireland	--	--	--	--	(4)	(4)	31
Israel	--	--	(4)	--	1	1	6
Italy	--	--	--	(4)	(4)	1	5
Japan	--	--	4	1	4	9	55
Korea, Republic of	--	--	(4)	(4)	(4)	(4)	12
Malaysia	1	--	--	(4)	(4)	1	8
Mexico	--	--	1	(4)	16	17	81
Netherlands	--	--	--	--	(4)	(4)	51
Peru	--	--	2	3	--	4	12
Saudi Arabia	--	--	--	(4)	--	(4)	53
Singapore	--	--	1	1	3	5	35
South Africa	--	--	1	2	--	3	83
Spain	--	--	--	--	--	--	6
Sweden	--	--	--	--	(4)	(4)	24
Switzerland	--	--	--	--	--	--	34
Taiwan	--	--	1	1	--	2	70
Thailand	--	--	--	(4)	--	(4)	4
United Arab Emirates	--	--	1	--	(4)	1	4
United Kingdom	--	--	(4)	47	(4)	48	255
Venezuela	--	--	(4)	(4)	--	(4)	27
Vietnam	--	--	--	--	--	--	8
Other	--	--	--	(4)	1	1	16
Total	7	1	65	116	68	257	3,410
Total, year to date	276	479	755	1,110	788	3,410	XX

See footnotes at end of table.

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

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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 November 2010 totaled 169 metric tons, tungsten content, to give a year-to-date total of 741 metric tons, tungsten content.

Source: U.S. Census Bureau.