

# Mineral Industry Surveys

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## TUNGSTEN IN DECEMBER 2006

On the basis of preliminary data, U.S. net production of intermediate tungsten products, including metal powder and tungsten carbide powder, in 2006 was 3% higher than that produced in 2005, according to the U.S. Geological Survey. U.S. net production of intermediate tungsten products during the quarter ending December 31, 2006, was slightly higher than net production during the quarter ending September 30, 2006.

Total U.S. reported consumption of ferrotungsten, tungsten metal powder, tungsten carbide powder, tungsten scrap, and other tungsten materials in 2006 was 4% higher than reported consumption in 2005. U.S. reported consumption of these materials during the quarter ending December 31, 2006, was 6% higher than that consumed during the quarter ending September 30, 2006. These materials were used to make alloys, cemented carbides, mill products, catalysts, and pigments.

Data for U.S. imports and exports for January through November 2006 are published in this issue.

### 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 January 1-31, 2007, are as follows:

Low—\$160/metric ton unit WO<sub>3</sub> (\$145/short ton unit WO<sub>3</sub>)  
High—\$170/metric ton unit WO<sub>3</sub> (\$154/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>
2005:									
December	W	249	W	26,100	295	561	872	800	282
January-December	W	2,080	XX	XX	4,560	7,810	10,900	XX	XX
2006:									
January	W	187	W	26,000	441	647	960	767	266
February	W	197	W	25,900	317	604	906	653	266
March	W	173	W	25,700	399	764	956	721	266
April	W	133	W	25,000	405	717	985	741	266
May	W	161	W	24,500	492	685	1,000	794	266
June	W	185	W	24,100	338	714	923	772	266
July	W	230	W	24,100	247	554	804	761	266
August	W	91	W	24,100	(7)	671	963	772	266
September	W	180	W	23,300	(7)	696	949	760	266
October	W	212	W	23,100	265	665 <sup>r</sup>	973	770 <sup>r</sup>	266
November	W	256	W	22,900	342	647 <sup>r</sup>	958	765	266
December	W	289	W	22,900	354	644	951	832	266
Total	W	2,290	XX	XX	4,440	8,010	11,300	XX	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>Reported by consumers.

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

<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 "Total."

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>
2005:			
December	W	(3)	W
January-December	W	9,530	XX
2006:			
January	W	991	W
February	W	783	W
March	W	1,000	W
April	W	930	177
May	W	1,190	114
June	W	1,010	60
July	W	753	56
August	W	830	78
September	W	949	29
October	W	1,010	67
November	W	900	67
December	W	866	W
Total	W	11,200	XX

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 "Total."

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		
	2006			Year to date	2006		
	2005	November	December		2005	November	December
Metal powder	3,150	320	275	3,300	395	403	417
Tungsten carbide powder	4,660	327 <sup>r</sup>	368	4,710	405	363	415
Total	7,810	647 <sup>r</sup>	644	8,010	800	765	832

<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	2006		
	November	December	Year to date
Steels	22	23	282
Superalloys	W	W	W
Other alloys (excludes steels and superalloys) <sup>4</sup>	W	W	W
Cemented carbides <sup>5</sup>	496	482	5,880
Mill products made from metal powder	W	W	W
Chemical uses	W	W	W
Miscellaneous and unspecified	440	446	5,170
Total	958	951	11,300

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- tungsten	Tungsten metal powder	Tungsten carbide powder	Tungsten scrap	Other tungsten materials <sup>2</sup>	Total
<b>Consumption:</b>						
2005:						
December	19	W	494	W	6	872
January-December	231	W	5,930	W	73	10,800
2006:						
January	19	W	500	W	6	960
February	19	W	480	W	6	906
March	18	W	486	W	6	956
April	19	W	477	W	6	985
May	19	W	495	W	6	1,000
June	19	W	481	W	6	923
July	20	W	479	W	6	804
August	21	W	478	W	6	963
September	20	W	478	W	6	949
October	27	W	480	W	6	973
November	20	W	489	W	6	958
December	21	W	475	W	6	951
Total	242	W	5,800	W	72	11,300
<b>Stocks:</b>						
2005:						
December	21	26	394	32	9	481
2006:						
January	20	26	368	35	9	458
February	24	26	373	40	9	472
March	24	26	369	37	9	464
April	23	26	368	34	9	460
May	22	25	370	43	9	469
June	24	25	374	48	9	480
July	23	29	374	40	9	475
August	21	27	354	45	9	456
September	20	25	358	39	9	451
October	19	26	359	37	9	450
November	20	26	356	34	9	445
December	19	26	356	38	9	447

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
2005	2,080	1,920	385	1,530	1,690	1,480	9,090	XX
2006:								
September:	180	222	15	196	129	211	952	8,090
October:	212	124	15	139	111	174	776	8,870
November:								
Australia	--	--	--	--	--	(3)	(3)	24
Austria	--	--	--	--	--	2	2	20
Belgium	--	--	--	--	(3)	1	1	12
Bolivia	145	--	--	--	--	--	145	730
Canada	7	--	--	9	37	--	53	689
China	--	105	23	16	45	123	312	5,050
Congo (Kinshasa)	--	--	--	--	--	--	--	34
Czech Republic	--	--	--	--	3	(3)	3	27
France	--	--	--	--	--	(3)	(3)	8
Germany	--	34	--	70	11	9	123	920
Hong Kong	--	--	--	--	--	(3)	(3)	8
Hungary	--	--	--	--	--	(3)	(3)	5
India	--	--	--	--	1	2	3	12
Israel	--	--	--	12	44	3	59	601
Japan	--	--	--	1	(3)	1	2	34
Korea, Republic of	--	--	--	14	--	(3)	14	212
Mexico	--	--	--	--	--	--	--	35
Mongolia	12	--	--	--	--	--	12	25
Netherlands	--	--	--	--	--	(3)	(3)	10
Peru	9	--	--	--	--	--	9	9
Portugal	62	--	--	--	--	--	62	640
Russia	--	--	--	--	--	1	1	97
Rwanda	21	--	--	--	--	--	21	208
Singapore	--	--	--	--	--	(3)	(3)	19
South Africa	--	--	--	--	--	--	--	20
Spain	--	--	--	--	--	--	--	4
Sweden	--	--	--	--	--	(3)	(3)	17
Thailand	--	--	--	--	--	(3)	(3)	88
Uganda	--	--	--	--	--	--	--	24
Ukraine	--	--	--	--	--	--	--	1
United Kingdom	--	--	--	--	--	(3)	(3)	25
Uzbekistan	--	--	--	--	--	17	17	85
Vietnam	--	--	--	--	--	--	--	16
Other	--	--	--	--	--	(3)	(3)	3
Total	256	139	23	121	140	161	840	9,710
Total, year to date	2,000	2,770	257	1,640	1,490	1,550	9,710	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>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 2006 totaled 50 metric tons, tungsten content, to give a year-to-date total of 1,280 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
2005	52	774	750	1,560	1,950	5,080	XX
2006:							
September:	--	45	53	64	183	346	4,150
October:	(4)	17	126	64	72	279	4,430
November:							
Argentina	--	--	1	--	(4)	1	2
Australia	--	--	4	1	3	7	29
Austria	--	--	3	--	(4)	3	7
Belgium	--	--	--	(4)	(4)	(4)	20
Brazil	--	--	1	(4)	(4)	1	38
Canada	(4)	--	4	5	21	30	317
Chile	--	--	(4)	--	--	(4)	2
China	(4)	--	2	(4)	6	8	349
Colombia	--	--	--	--	1	1	4
Czech Republic	--	--	--	--	3	3	84
Denmark	--	--	--	1	1	3	10
France	--	--	1	(4)	(4)	2	137
Germany	--	37	6	32	3	78	959
Hungary	--	--	(4)	--	(4)	(4)	18
India	--	--	(4)	4	(4)	4	36
Indonesia	--	--	(4)	--	(4)	(4)	3
Ireland	--	--	--	(4)	1	1	12
Israel	--	--	5	--	--	5	48
Italy	--	--	1	(4)	(4)	1	36
Japan	--	--	1	14	5	20	144
Korea, Republic of	--	--	--	(4)	1	1	14
Luxembourg	--	--	--	(4)	--	(4)	2
Malaysia	--	--	--	--	(4)	(4)	20
Mexico	--	--	7	--	3	10	183
Morocco	--	--	--	--	--	--	4
Namibia	--	--	--	--	3	3	3
Netherlands	--	--	--	--	(4)	(4)	943
New Zealand	--	--	--	--	(4)	(4)	7
Norway	--	--	--	--	--	--	3
Peru	--	--	(4)	--	--	(4)	6
Philippines	--	--	--	--	8	8	52
Saudi Arabia	--	--	--	--	(4)	(4)	4
Singapore	(4)	--	1	(4)	3	4	74
South Africa	--	--	(4)	--	--	(4)	31
Spain	--	--	(4)	--	--	(4)	11
Sweden	--	--	--	--	5	5	73
Switzerland	--	--	3	--	(4)	3	5
Taiwan	--	--	9	3	26	38	213
Thailand	--	--	--	--	--	--	1
Turkey	--	--	--	--	--	--	2
United Kingdom	--	--	11	3	19	33	735
Venezuela	--	--	1	5	--	6	63
Other	--	--	(4)	(4)	(4)	1	10
Total	1	37	61	70	114	283	4,720
Total, year to date	130	267	863	904	2,550	4,720	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 November 2006 totaled 32 metric tons, tungsten content, to give a year-to-date total of 1,260 metric tons, tungsten content.

Source: U.S. Census Bureau.