ZIRCONIUM MINERAL CONCENTRATES STATISTICS[1]
U.S. GEOLOGICAL SURVEY
[All values in metric tons (t) gross weight unless otherwise noted]
Last modification: October 26, 2012

Year	Production	Imports	Exports	Government stocks	Government shipments	Stocks	Apparent consumption	Unit value ($/t)	Unit value (98$/t)	World production
1902	0.907	NA	0	NA	NA	NA	0.91	NA	NA	NA
1903	1.36	NA	0	NA	NA	NA	1.4	NA	NA	NA
1904	0.454	NA	0	NA	NA	NA	0.45	NA	NA	NA
1905	3.63	NA	0	NA	NA	NA	3.6	NA	NA	NA
1906	0.454	NA	0	NA	NA	NA	0.45	NA	NA	NA
1907	0.0925	0	0	NA	NA	NA	0.093	NA	NA	NA
1908	NA	0	0	NA	NA	NA	0.50	NA	NA	NA
1909	0.907	NA	0	NA	NA	NA	0.91	NA	NA	NA
1910	0	NA	0	NA	NA	NA	1.2	NA	NA	NA
1911	1.46	NA	0	NA	NA	NA	1.5	NA	NA	NA
1912	0	NA	0	NA	NA	NA	NA	NA	NA	NA
1913	0	NA	0	NA	NA	NA	NA	NA	NA	NA
1914	0	NA	0	NA	NA	NA	NA	NA	NA	NA
1915	0	NA	0	NA	NA	NA	NA	NA	NA	NA
1916	0	NA	0	NA	NA	NA	NA	NA	NA	NA
1917	0	NA	0	NA	NA	NA	NA	NA	NA	NA
1918	0	1,460	0	NA	NA	NA	1,500	43.5	470	NA
1919	0	5	0	NA	NA	NA	5	59.9	565	NA
1920	0	NA	0	NA	NA	NA	32	59	480	NA
1921	0	59	0	NA	NA	NA	59	58	530	NA
1922	9.07	30	0	NA	NA	NA	39	57	550	NA
1923	139	NA	0	NA	NA	NA	140	56	530	NA
1924	255	280	0	NA	NA	NA	540	55	520	NA
1925	566	NA	0	NA	NA	NA	570	54	500	NA
1926	1,170	NA	0	NA	NA	NA	1,200	53	490	NA
1927	3,310	2	0	NA	NA	NA	3,300	52	490	NA
1928	NA	392	0	NA	NA	NA	390	51	490	NA
1929	0	1,220	0	NA	NA	NA	1,200	50	480	NA
1930	0	1,380	0	NA	NA	NA	1,400	49	480	NA
1931	0	510	0	NA	NA	NA	510	48	510	NA
1932	0	12	0	NA	NA	NA	12	46.8	557	NA
1933	0	258	0	NA	NA	NA	260	46.8	586	NA
1934	0	774	0	NA	NA	NA	770	60.6	737	NA
1935	0	2,610	0	NA	NA	NA	2,600	46.8	557	NA
1936	0	5,250	0	NA	NA	NA	5,300	46.8	549	NA
1937	0	8,100	0	NA	NA	NA	8,100	50.7	574	NA
1938	0	1,900	0	NA	NA	NA	1,900	60.6	701	NA
1939	0	3,110	0	NA	NA	NA	3,100	60.6	710	NA
1940	NA	15,300	0	NA	NA	NA	15,000	77.2	899	NA
1941	NA	25,100	0	NA	NA	NA	25,000	71.6	794	NA
1942	NA	30,800	27	4,500	NA	6,080	31,000	71.6	716	NA
1943	1,940	25,800	85	5,040	NA	7,440	25,800	77.2	728	NA
1944	NA	21,800	73	4,840	NA	4,420	25,000	77.2	715	17,300
1945	NA	24,000	98	2,580	NA	5,730	25,000	74.4	676	19,700
1946	NA	15,300	235	2,250	NA	4,590	17,000	56.8	473	24,700
1947	NA	27,800	299	NA	NA	8,700	23,000	47.4	346	25,900
1948	NA	16,500	283	NA	NA	5,900	22,700	50.7	343	26,600
1949	NA	18,900	277	NA	NA	7,890	18,100	51.3	351	24,100
1950	NA	15,300		NA	NA	7,350	26,000	51.5	348	25,200
1951	NA	24,800	336	NA	NA	6,820	25,000	57.9	362	46,200
1952	NA	21,700	549	NA	NA	8,160	22,700	47.7	293	33,900

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1953	14,800	22,400	1,010	NA	NA	9,980	36,300	41.8	255	53,300
1954	14,800	16,800	628	NA	NA	8,710	40,800	50.4	305	63,200
1955	25,500	26,400	707	NA	NA	7,980	38,100	54.3	331	78,200
1956	39,900	28,300	951	NA	NA	14,000	61,000	54.3	325	118,000
1957	51,500	37,800	2,870	NA	NA	17,000	77,100	60.6	352	146,000
1958	27,600	17,400	1,810	NA	NA	10,200	49,000	45.2	255	105,000
1959	W	49,800	1,370	NA	NA	45,600	73,900	52.1	291	103,000
1960	W	31,100	1,250	NA	NA	18,200	80,700	52.1	286	129,000
1961	W	30,700	1,160	NA	NA	16,100	83,600	52.1	285	159,000
1962	W	28,000	1,510	NA	6,360	21,500	80,700	52.1	282	149,000
1963	W	47,700	1,290	NA	4,470	19,700	34,000	52.1	277	195,000
1964	W	40,300	2,270	NA	210	35,800	26,800	52.1	274	191,000
1965	W	53,400	1,600	NA	181	38,900	32,200	52.1	270	235,000
1966	W	52,600	2,100	NA	NA	34,500	120,000	52.1	262	244,000
1967	W	53,800	2,480	NA	NA	43,500	122,000	52.1	254	293,000
1968	W	54,300	1,840	NA	NA	41,700	130,000	62.3	292	309,000
1969	W	86,600	4,890	NA	NA	48,100	145,000	62.3	277	386,000
1970	W	86,000	3,930	NA	NA	47,200	132,000	62.3	262	399,000
1971	W	87,400	8,550	NA	NA	38,600	151,000	60.1	242	432,000
1972	W	61,300	15,700	NA	NA	40,400	152,000	60.1	234	369,000
1973	W	88,900	26,200	NA	NA	46,700	159,000	66.1	243	379,000
1974	W	56,700	19,500	NA	NA	38,000	152,000	276	912	397,000
1975	W	36,500	17,000	NA	NA	33,600	111,000	173	524	418,000
1976	W	58,600	8,550	NA	NA	35,000	141,000	165	473	448,000
1977	W	59,200	13,000	NA	NA	23,600	147,000	165	444	505,000
1978	W	82,600	6,960	NA	NA	34,800	149,000	165	413	525,000
1979	W	101,000	8,030	NA	NA	34,000	152,000	165	370	629,000
1980	W	103,000	7,010	NA	NA	63,000	127,000	182	360	680,000
1981	W	82,700	10,600	NA	NA	30,300	136,000	182	326	645,000
1982	W	62,100	9,990	NA	NA	44,100	84,400	182	307	710,000
1983	W	40,400	12,000	NA	NA	33,100	90,700	182	298	666,000
1984	W	60,300	8,640	NA	NA	29,800	118,000	182	286	736,000
1985	W	39,700	15,300	NA	NA	26,600	118,000	193	292	815,000
1986	W	68,800	15,900	NA	NA	28,100	143,000	209	311	741,000
1987	W	67,900	20,100	NA	NA	39,200	133,000	223	320	753,000
1988	118,000	76,300	21,800	NA	NA	34,400	177,000	267	368	929,000
1989	118,000	73,100	48,100	NA	NA	32,100	146,000	353	464	979,000
1990	102,000	26,800	30,200	NA	NA	28,100	103,000	406	506	852,000
1991	103,000	35,700	31,300	NA	NA	24,400	111,000	365	437	795,000
1992	108,000	37,400	27,900	NA	NA	21,600	121,000	292	339	856,000
1993	W	70,000	35,900	NA	NA	26,000	150,000	292	329	796,000
1994	W	82,000	32,000	NA	NA	30,100	150,000	306	337	897,000
1995	W	93,600	40,300	NA	NA	33,400	160,000	352	376	918,000
1996	W	92,500	35,000	NA	1,480	34,300	160,000	462	480	894,000
1997	W	62,400	44,300	NA	NA	29,300	160,000	462	469	830,000
1998	W	89,500	41,000	NA	NA	32,000	160,000	353	353	732,000
1999	W	57,600	69,500	NA	NA	24,700	160,000	331	324	673,000
2000	W	65,200	72,900	NA	NA	25,100	170,000	375	355	731,000
2001	W	60,600	66,900	NA	NA	37,700	170,000	375	345	750,000
2002	W	36,000	47,100	NA	NA	21,600	170,000	386	350	973,000
2003	W	37,400	70,600	NA	NA	NA	170,000	408	361	1,040,000

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2004	W	35,200	68,800	NA	NA	NA	NA	502	433	1,070,000
2005	W	38,200	101,000	NA	NA	NA	NA	570	476	1,060,000
2006	W	36,200	76,300	NA	NA	NA	NA	785	635	1,240,000
2007	W	20,000	66,200	NA	NA	NA	NA	763	600	1,420,000
2008	W	34,400	42,100	NA	NA	NA	NA	788	597	1,360,000
2009	W	14,400	39,600	NA	NA	NA	NA	830	631	1,190,000
2010	W	22,900	47,400	NA	NA	NA	NA	860	643	1,250,000
2011	W	26,500	24,300	NA	NA	NA	NA	2,650	1,920	1,620,000

NA Not available. W Withheld to avoid disclosing company proprietary data.

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Data are calculated, estimated, or reported. See notes for more information.

Zirconium Mineral Concentrates Worksheet Notes

Data Sources
The sources of data for the zirconium worksheet are the mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey—Minerals Yearbook (MYB) and its predecessor, Mineral Resources of the United States (MR). Data are for zirconium ores and concentrates, which contain zircon ($ZrSiO_4$) as the main source for zirconium (Zr). The years of publication and corresponding years of data coverage are listed in the References section below.

Production
U.S. production data report the amount of zircon concentrates. Data are from the MR and the MYB. Data were withheld for 1959–87 and 1993 to the most recent year in order to avoid disclosing proprietary data. Data were not available for 1908, 1928, 1940–42, and 1944–52.

Imports
Import data report the amount of zirconium ores and concentrates imported into the United States. Data are from the MR and the MYB. Datum for 1918 was for ½ year of production as zirconium ores and concentrates were not classified separately before this time. Ores and concentrates from Brazil contained some baddeleyite (an oxide of zirconium), as do some present day concentrates. Australian zirconium ores contained some rutile and ilmenite. Data were not available for 1902–06, 1909–17, 1920, 1923, and 1925–26.

Exports
Export data report the amount of zirconium ores and concentrates exported from the United States. Data are from the MR and the MYB. Datum was not available for 1950.

Government Stocks
Government stock data were for zirconium ores and concentrates and were from the MYB. Data were not available for 1902–41 and 1947 to the most recent year.

Government Shipments
Government shipment data were for shipments from the government stockpile of zirconium ores and concentrates. Data are from the MYB. Data were not available for 1902–61, 1966–95, and 1997 to the most recent year.

Stocks
Stock data were for zirconium ores and concentrates. Data are from the MR and the MYB. Data were not available for 1902–41.

Apparent Consumption
Apparent consumption values were developed based on the following considerations:

- Data were unavailable for 1912–17.
- Apparent consumption values were limited to two significant figures based on broad assumptions that had to be made throughout the period covered for 1902–11, 1918–47, 1950, 1956, and 1993 to the most recent year.
- Apparent consumption was estimated for 1902–07, 1909, 1911, 1918–19, 1921–47, and 1956 by using the formula:

APPARENT CONSUMPTION = PRODUCTION + IMPORTS – EXPORTS ± GOVERNMENT SHIPMENTS ± STOCK CHANGES.

- Values for the components of apparent consumption were not available and were assumed to equal zero for the following years:
  - Production: 1928, 1940–42, and 1944–47.
  - Imports: 1902–06, 1909, 1911, 1923, and 1925–26.
  - Government stocks: 1902–07, 1909, 1911, 1918–19, 1921–41, 1947, and 1956.
  - Government shipments: 1902–07, 1909, 1911, 1918–19, 1921–47, and 1956.
  - Stocks: 1902–07, 1909, 1911, 1918–19, and 1921–41.
- Apparent consumption was interpolated for 1908, 1910, 1920, and 1950.
- No changes of the amount of government and industry stocks (since government and industry stock data for 1941 were not available) data were available for 1942 and were assumed equal to zero.
- Apparent consumption was taken from the MYB for the years, 1948–49, 1951–55, and 1957–92.
- Apparent consumption was estimated by regression analysis for 1993–2004.

Unit Value ($/t)
Unit value is the value in dollars of 1 metric ton (t) of zirconium ores and concentrates apparent consumption. Data were from the MYB. Data were not available for 1902–17. Unit value was interpolated to two significant figures for 1920–31.

Unit Value (98$/t)
The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust current U.S. dollars to the unit value in constant 1998 U.S. dollars. Data were not available for 1902–17.

World Production
World production data were for zirconium mineral concentrates. Data are from the MYB and the MR. Data were not available for 1902–43. Production data for the United States were not included for 1944–52, 1959–87, and 1993 to the most recent year.

References
U.S. Bureau of Mines, 1927–34, Mineral Resources of the United States, 1924–31.
U.S. Bureau of Mines, 1933–96, Minerals Yearbook, 1932–94.
U.S. Geological Survey, 1901–27, Mineral Resources of the United States, 1900–23.
U.S. Geological Survey, 1995–present, Minerals Yearbook, v. I. (Available via http://minerals.usgs.gov/minerals.)

Recommended Citation Format:
U.S. Geological Survey, [year of last update, e.g., 2005], [Mineral commodity, e.g., Gold] statistics, *in* Kelly, T.D., and Matos, G.R., comps., Historical statistics for mineral and material commodities in the United States: U.S. Geological Survey Data Series 140, accessed [date], at http://pubs.usgs.gov/ds/2005/140/.

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