HAFNIUM STATISTICS[1]
U.S. GEOLOGICAL SURVEY
[All values in metric tons (t) hafnium content unless otherwise noted]
Last modification: November 1, 2012

Year	Production	Imports	Stocks	Government shipments	Apparent consumption	Unit value ($/t)	Unit value (98$/t)
1959	15.4	NA	NA	NA	15	88,200	493,000
1960	31.8	NA	NA	NA	32	88,200	485,000
1961	NA	NA	NA	NA	35	88,200	482,000
1962	NA	NA	NA	NA	38	88,200	477,000
1963	NA	0.0594	NA	NA	41	165,000	878,000
1964	29.0	0.00318	3.6	15	44	165,000	868,000
1965	14.5	0.151	0.9	3	20.4	165,000	855,000
1966	14.5	NA	0.9	0	14.5	165,000	829,000
1967	12.7	0.0236	0.0	1	14.6	165,000	805,000
1968	22.7	0.0767	4.5	1	19.3	160,000	751,000
1969	25.4	0.203	4.5	0	25.4	165,000	732,700
1970	31.8	0.120	10.0	0	26.3	165,000	693,300
1971	29.0	0.0771	9.1	0	29.9	165,000	664,000
1972	36.3	0.128	13.6	0	31.8	165,000	643,500
1973	37.2	1.10	19.1	0	29.0	165,000	605,700
1974	38.1	3.37	28.1	0	27.2	165,000	545,500
1975	33.6	0.0336	34.5	NA	27.2	165,000	499,800
1976	27.2	1.48	36.3	NA	25.4	165,000	472,600
1977	31.8	1.51	36.3	NA	27.2	165,000	443,800
1978	36.3	0	36.3	NA	36.3	182,000	455,000
1979	40.8	0.0526	36.3	NA	40.8	182,000	408,600
1980	45.4	0.279	36.3	NA	40.8	182,000	360,000
1981	45.4	2.41	36.3	NA	40.8	215,000	385,500
1982	49.9	0	33.6	NA	40.8	215,000	363,200
1983	49.9	0.217	33.6	NA	45.4	215,000	351,900
1984	45.4	0.907	27.2	NA	45.4	231,000	362,400
1985	45.4	0.907	27.2	NA	45.4	231,000	349,900
1986	45.4	0	22.7	NA	45.4	231,000	343,500
1987	45.4	1.00	27.0	NA	42	187,000	268,300
1988	NA	4.00	27.0	NA	47	231,000	318,300
1989	NA	4.00	27.0	NA	48	231,000	303,700
1990	NA	9.00	NA	NA	49	187,000	233,200
1991	NA	3.00	NA	NA	50	187,000	223,800
1992	NA	2.00	NA	NA	51	187,000	217,300
1993	NA	3.00	NA	NA	52	187,000	210,900
1994	NA	5.00	NA	NA	53	187,000	205,700
1995	NA	5.00	NA	NA	54	187,000	200,000
1996	NA	8.00	NA	NA	55	187,000	194,300
1997	NA	7.00	NA	NA	57	187,000	189,900
1998	NA	11.0	NA	NA	58	187,000	187,000
1999	NA	9.36	NA	NA	59	187,000	183,000
2000	NA	11.1	NA	NA	60	187,000	177,000
2001	NA	5.09	35	NA	61	138,000	127,000
2002	NA	4.87	NA	NA	62	199,000	180,000
2003	NA	4.67	NA	NA	62	226,000	200,000
2004	NA	4.02	NA	NA	NA	223,000	252,000
2005	NA	3.95	NA	NA	NA	235,000	196,000
2006	NA	3.62	NA	NA	NA	194,000	157,000
2007	NA	3.81	NA	NA	NA	246,000	193,000
2008	NA	11.9	NA	NA	NA	225,000	170,000
2009	NA	4.93	NA	NA	NA	472,000	359,000
2010	NA	7.62	NA	NA	NA	453,000	339,000
2011	NA	10.3	NA	NA	NA	544,000	394,000

NA Not available.

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

Hafnium Worksheet Notes

Data Sources
The sources of data for the hafnium worksheet were the mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey—Minerals Yearbook (MYB); Mineral Commodity Summaries (MCS) and its predecessor, Commodity Data Summaries (CDS); Metal Prices in the United States through 1998 (MP98); and Mineral Facts and Problems (MFP). The years of publication and corresponding years of data coverage are listed in the References section below.

Production
U.S. hafnium commercial production started in 1952, with the former U.S. Bureau of Mines' pilot plant utilizing new technology to separate hafnium from zirconium. Data were from the MYB for 1959–60, the MFP for 1964–83, and the MCS for 1984–87. Data were for hafnium crystal bar and/or hafnium sponge. Data for 1970–87 were for hafnium crystal bar. Data for hafnium sponge for 1970–87 were not included because they are proprietary. Data were not available for 1961–63 and 1988 to the most recent year.

Imports
Import data were for hafnium in unwrought and waste and scrap imported into the United States. Data were from the MYB. Data were not available for 1959–62 and 1966. Datum for 1986 was reported as less than one-half unit and rounds to zero.

Stocks
Stock data were for hafnium sponge and crystal bar and were for yearend stocks. Data were from the MFP for 1964–83 and from the MYB for 1984–89. Data were not available for 1959–63 and 1990 to the most recent year.

Government Shipments
Government shipment data were for hafnium oxide, sponge and shapes, crystal bar, and scrap. Data were from the MFP. Data were not available for 1959–63 and 1975 to the most recent year.

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

- Apparent consumption figures were limited to two significant figures based on broad assumptions that had to be made throughout the period covered for 1959–64, 1966, and 1987 to the most recent year.
- Apparent consumption was estimated for 1959–60, 1964–68, and 1987 by using the formula:

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

- Imports, which were not available for 1959–62 and 1966, were assumed to be zero, owing to the low values for most of the other imports in the series.
- No import, stock, or government shipment data were available for 1959–60 and were assumed to be zero when apparent consumption was calculated.
- Apparent consumption figures for 1961–63 were estimated by regression.
- The change of the amount of stocks in 1964 was assumed to be zero since stock datum for 1963 was not available.
- Apparent consumption was taken from the CDS and the MCS for 1969–86.
- No government shipment datum was available for 1987 and was assumed to be zero to calculate apparent consumption.
- Production data for hafnium sponge for 1970–87 were not included because they were proprietary and therefore underestimate actual apparent consumption. The estimation of apparent consumption for 1988 to the most recent year by using regression for 1964–87, also underestimates apparent consumption.

Unit Value ($/t)
Unit value is the value in current dollars of 1 metric ton (t) of hafnium sponge apparent consumption. Datum was estimated for 1959 by regression. Data were from the MP98 for 1960–98 and the MYB for 1999 to the most recent year.

Unit Value (98$/t)
The Consumer Price Index conversion factor, with 1998 as the base year, was used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

References
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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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