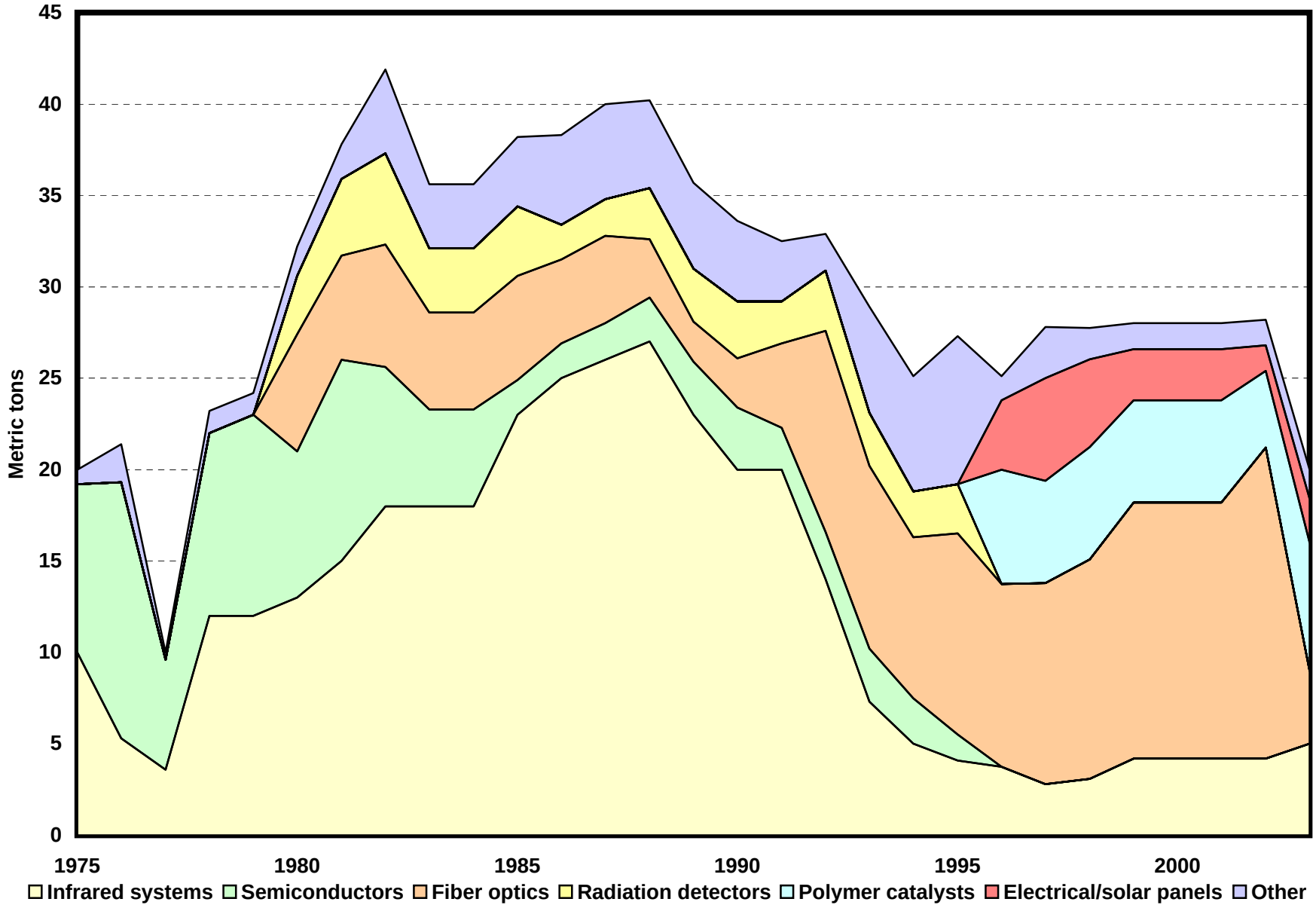
GERMANIUM END-USE STATISTICS[1]
U.S. GEOLOGICAL SURVEY
[Metric tons]
Last modification: September 1, 2005

Year	Infrared systems	Semiconductors	Fiber optics	Radiation detectors	Polymer catalysts	Electrical/solar panels	Other	Apparent consumption
1975	10	9.2					0.8	20
1976	5.3	14					2.1	21
1977	3.6	6.0					0.4	22
1978	12	10					1.2	23
1979	12	11					1.2	24
1980	13	8.0	6.4	3.2			1.6	32
1981	15	11	5.7	4.2			1.9	38
1982	18	7.6	6.7	5.0			4.6	42
1983	18	5.3	5.3	3.5			3.5	35
1984	18	5.3	5.3	3.5			3.5	35
1985	23	1.9	5.7	3.8			3.8	38
1986	25	1.9	4.6	1.9			4.9	38
1987	26	2.0	4.8	2.0			5.2	40
1988	27	2.4	3.2	2.8			4.8	40
1989	23	2.9	2.2	2.9			4.7	36
1990	20	3.4	2.7	3.1			4.4	34
1991	20	2.3	4.6	2.3			3.3	33
1992	14	2.6	11	3.3			2.0	30
1993	7.3	2.9	10	2.9			5.8	29
1994	5.0	2.5	8.8	2.5			6.3	25
1995	4.1	1.4	11	2.7			8.1	27
1996	3.8		10		6.3	3.8	1.3	25
1997	2.8		11		5.6	5.6	2.8	28
1998	3.1		12		6.2	4.8	1.7	28
1999	4.2		14		5.6	2.8	1.4	28
2000	4.2		14		5.6	2.8	1.4	28
2001	4.2		14		5.6	2.8	1.4	28
2002	4.2		17		4.2	1.4	1.4	28
2003	5.0		4.0		7.0	2.4	1.6	20

[1]Compiled by G.R. Matos, J.D. Jorgenson, M.W. George, and P. Gabby.

End Uses of Germanium



Germanium End-Use Worksheet Notes

Data Sources
The sources of data for the germanium end-use worksheet are the Commodity Data Summaries and the Mineral Commodity Summaries, annual mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey.

End Use
End use is defined as the use of the mineral commodity in a particular industrial sector or product. End-use estimates are derived by applying the reported percentages of end-use consumption to the calculated U.S. apparent consumption; actual consumption may be greater. For germanium, end-use categories are infrared systems, semiconductors, fiber optics, radiation detectors, electrical/solar panels, and other industrial uses.

From 1975 to 1979, the infrared systems category included instruments and optics. The ability to "see" in the dark, or through fog or smoke, led to their widespread use by the military for guidance and weapon sighting.

In 1996, the use of germanium in semiconductor electronics and some of the radiation detectors were moved to the electrical and solar panels category. Concurrently, the use on polymer catalysts was moved from the other uses category.

Data are rounded to no more than two significant digits; data may not add to totals shown.

References
U.S. Bureau of Mines, 1975–77, Commodity Data Summaries, 1975–77.
U.S. Bureau of Mines, 1978–95, Mineral Commodity Summaries, 1978–95.
U.S. Geological Survey, 1997–2004, Mineral Commodity Summaries, 1997–2004.
U.S. Geological Survey and U.S. Bureau of Mines, 1996, Mineral Commodity Summaries, 1996.

Recommended Citation Format:
(1) If taken from CD version:
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, one CD-ROM. (Also available online at http://pubs.usgs.gov/ds/2005/140/.)

(2) If taken from online version:
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, available online at http://pubs.usgs.gov/ds/2005/140/. (Accessed [date].)

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