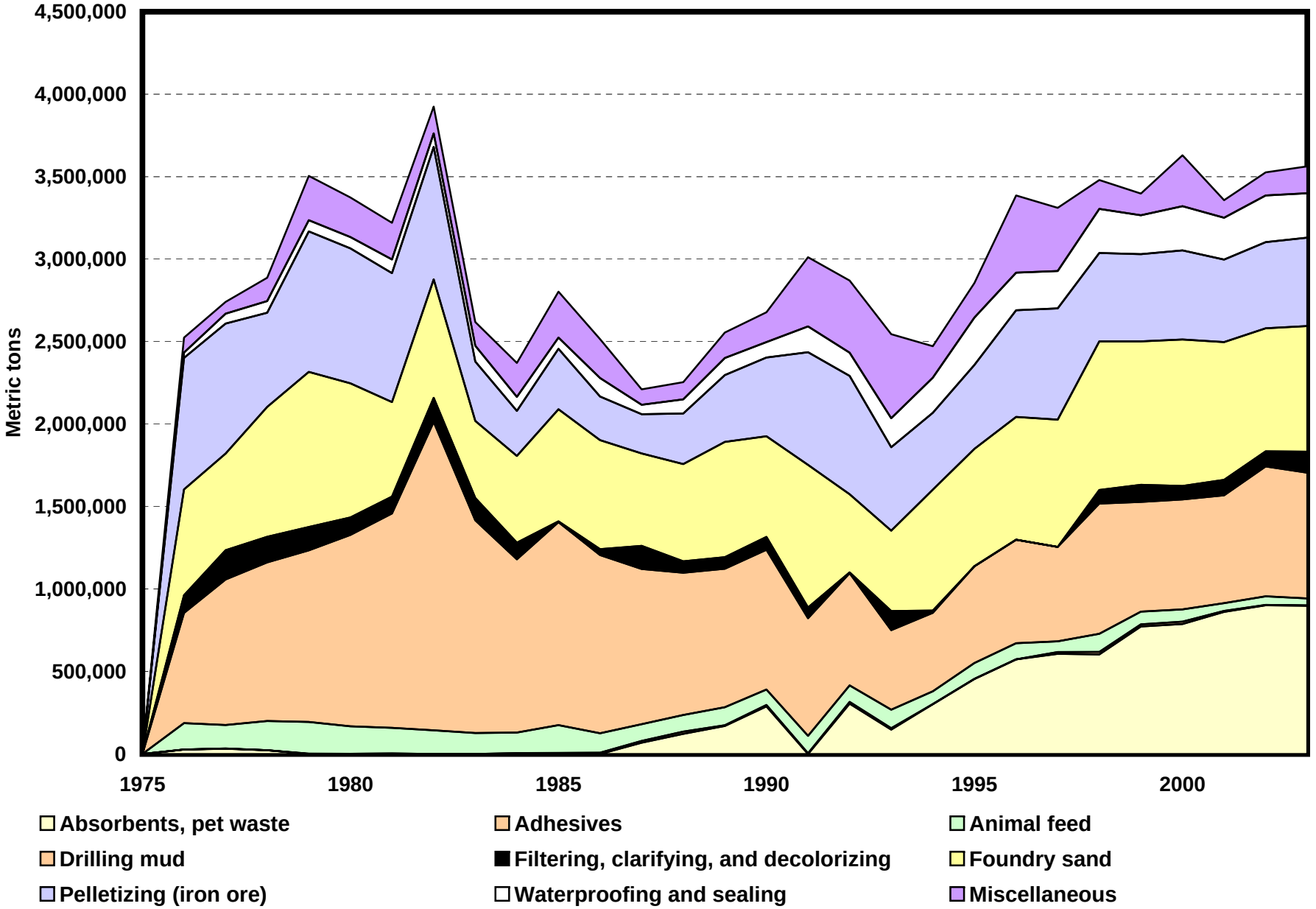
BENTONITE END-USE STATISTICS[1]
U.S. GEOLOGICAL SURVEY
[Metric tons]
Last modification: September 15, 2005

Year	Absorbents, pet waste	Adhesives	Animal feed	Drilling mud	Filtering, clarifying, and decolorizing of animal, vegetable, and mineral oils and greases	Foundry sand	Pelletizing (iron ore)	Waterproofing and sealing	Miscellaneous	Trade adjustments	Apparent consumption
1975	27,300	3	160,000	668,000	107,000	642,000	797,000	32,200	90,900	-225,000	2,300,000
1976	32,100	1,440	142,000	883,000	177,000	586,000	788,000	59,700	71,300	-262,000	2,480,000
1977	23,100	0	177,000	962,000	155,000	787,000	571,000	71,100	141,000	-203,000	2,680,000
1978	W	2,490	192,000	1,040,000	142,000	940,000	852,000	67,500	269,000	-105,000	3,400,000
1979	W	1,110	167,000	1,160,000	106,000	813,000	818,000	68,700	240,000	-133,000	3,240,000
1980	W	3,350	155,000	1,300,000	102,000	573,000	782,000	83,100	222,000	-240,000	2,980,000
1981	W	347	143,000	1,870,000	146,000	718,000	803,000	82,400	162,000	-211,000	3,710,000
1982	W	162	127,000	1,290,000	135,000	467,000	360,000	95,700	144,000	-280,000	2,340,000
1983	W	6,070	124,000	1,050,000	101,000	526,000	273,000	84,900	206,000	-253,000	2,120,000
1984	W	6,130	169,000	1,230,000	5,620	679,000	367,000	67,500	279,000	-194,000	2,610,000
1985	W	8,110	118,000	1,080,000	35,900	661,000	264,000	112,000	236,000	-187,000	2,330,000
1986	68,700	10,300	102,000	941,000	140,000	560,000	238,000	57,400	93,000	-181,000	2,030,000
1987	122,000	13,800	101,000	862,000	69,100	590,000	306,000	86,400	104,000	-197,000	2,060,000
1988	170,000	4,450	109,000	840,000	69,500	699,000	405,000	104,000	154,000	-240,000	2,310,000
1989	289,000	8,070	93,900	847,000	78,500	610,000	477,000	93,500	181,000	-234,000	2,440,000
1990	W	4,000	106,000	713,000	65,000	865,000	683,000	156,000	420,000	-235,000	2,780,000
1991	305,000	11,000	100,000	680,000	5,000	474,000	717,000	141,000	437,000	-220,000	2,650,000
1992	148,000	8,800	112,000	482,000	116,000	487,000	506,000	176,000	509,000	-170,000	2,370,000
1993	302,000	W	78,300	476,000	13,000	733,000	466,000	213,000	191,000	-199,000	2,270,000
1994	455,000	W	96,900	586,000	W	712,000	509,000	287,000	209,000	-330,000	2,520,000
1995	574,000	W	97,800	627,000	W	745,000	646,000	228,000	468,000	-299,000	3,090,000
1996	607,000	11,200	65,200	572,000	W	772,000	674,000	227,000	383,000	-312,000	3,000,000
1997	604,000	15,100	110,000	789,000	82,400	901,000	536,000	267,000	175,000	-298,000	3,180,000
1998	773,000	12,900	77,400	665,000	104,000	869,000	529,000	236,000	131,000	-384,000	3,010,000
1999	788,000	14,200	74,200	667,000	81,400	888,000	540,000	268,000	309,000	-270,000	3,360,000
2000	862,000	5,680	46,800	654,000	93,800	835,000	500,000	254,000	106,000	-349,000	3,010,000
2001	902,000	2,170	52,200	787,000	91,600	746,000	522,000	283,000	140,000	-178,000	3,350,000
2002	899,000	2,100	42,400	762,000	127,000	762,000	536,000	269,000	163,000	-285,000	3,280,000
2003	987,000	5,610	52,400	790,000	W	763,000	530,000	W	419,000	-316,000	3,230,000

W Withheld to avoid disclosing company proprietary data; data included in the miscellaneous category.

[1]Compiled by G.R. Matos and R.L. Virta.

End Uses of Bentonite



Bentonite End-Use Worksheet Notes

Data Source
The source of data for the bentonite end-use worksheet is the Minerals Yearbook, an annual collection, compilation, and analysis of mineral industry data, published by 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. For bentonite sold or used by producers, end-use categories are:

- Absorbents, pet waste (kitty litter)
- Adhesives
- Animal feed
- Drilling mud
- Filtering, clarifying, decolorizing: Animal, mineral, and vegetable oils and greases
- Foundry sand
- Pelletizing (iron ore)
- Waterproofing and sealing
- Micellaneous uses which includes miscellaneous absorbents, ceramics, refractory sales, and filler and extender applications for which the end uses are unknown.
- Trade adjustments, which include imports for which bentonite clay applications are unknown and discrepancies of exports reported by producers and exports reported by the U.S. Census Bureau.

Bentonite markets were affected by 1981–82 and 1990–91 recessions. During recessions, the industrial sector did relatively poorly and metal-casting industries had reduced sales and therefore less demand for foundry sands. Sales for pelletizing iron ore follow the trends of the steel industry. During recessions, fewer shipments of iron ore were made and sales to that market declined. Over the past few years, low-cost imported steel affected domestic producers, ultimately resulting in less demand for bentonite for pelletizing. The use of bentonite for water proofing and sealing increased with interest in sealing landfills to prevent fluid leakage.

In 1991, sales of bentonite for pet waste absorbents (clumping kitty litter) gained popularity resulting in a large increase in sales through about 2000 when sales leveled off. Sales for adhesives face competition from other minerals so they are extremely variable from year to year. Sales of animal feed declined over the 27-year period due to competition from other minerals and changes in feed formulations. Drilling mud sales followed closely the use of rotary drilling rigs in the United States, which in turn followed consumer demand for petroleum products. Sales of bentonite for filtering, clarifying, and decolorizing oils and greases have been variable from year to year. Bentonite competes with fuller's earth and other clarifying agents and the market is competitive so sales fluctuate over time, following no set pattern.

W in the spreadsheet indicates information withheld to avoid disclosing company proprietary data; data are included in the miscellaneous category. A negative number in the trade adjustments category indicates net exports of bentonite. Data are rounded to no more than three significant digits; data may not add to totals shown.

References
U.S. Bureau of Mines, 1977–96, Minerals Yearbook, v. I, 1975–94.
U.S. Geological Survey, 1997–2005, Minerals Yearbook, v. I, 1995–2003.

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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