

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

<b>TOTAL MANUFACTURED ABRASIVES</b>						
<b>Year</b>	<b>Production</b>	<b>Imports</b>	<b>Exports</b>	<b>Apparent consumption</b>	<b>Unit value (\$/t)</b>	<b>Unit value (98\$/t)</b>
1916	35,200				83	1,240
1917	52,500				155	1,970
1918	46,200				166	1,800
1919	45,800				163	1,540
1920	38,500				195	1,590
1921	12,000				167	1,520
1922	48,900				116	1,130
1923	73,300				120	1,140
1924	54,500				114	1,090
1925	80,300				100	926
1926	66,800				101	927
1927	82,200				97	907
1928	90,500				98	933
1929	115,000				94	895
1930	77,000				92	902
1931	40,200				97	1,040
1932	35,300				82	979
1933	49,200				92	1,160
1934	67,900				88	1,070
1935	80,600				83	986
1936	112,000				65	765
1937	131,000				64	726
1938	94,700				66	764
1939	106,000				61	716
1940	165,000				62	721
1941	253,000				65	720
1942	319,000				73	731
1943	374,000				70	660
1944	351,000				71	657
1945	315,000				69	627
1946	279,000				73	608
1947	343,000	153,000			82	599
1948	331,000	158,000			95	642
1949	270,000	118,000	32,900		88	603
1950	317,000	144,000			98	662
1951	437,000	213,000			117	736
1952	389,000	168,000	23,600		122	748
1953	424,000	261,000	20,600		118	720
1954	367,000	204,000	23,700		121	733
1955	388,000	201,000	27,700		131	799
1956	391,000	212,000	28,000		142	850
1957	440,000	257,000	26,600		149	861
1958	303,000	144,000	26,400		161	910
1959	379,000	207,000	24,900		166	927
1960	401,000	229,000	27,200		161	885
1961	338,000	182,000	32,700		163	886
1962	384,000	196,000	32,400		156	839
1963	366,000	197,000	30,900		155	824
1964	416,000	202,000	39,200		152	800
1965	475,000	230,000	47,900		154	794
1966	552,000	275,000	48,800		150	754

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

TOTAL MANUFACTURED ABRASIVES						
Year	Production	Imports	Exports	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1967	502,000	232,000	48,400		160	780
1968	514,000	244,000	50,800		168	789
1969	552,000	259,000	54,400		168	747
1970	509,000	252,000	27,700		169	709
1971	428,000	211,000	25,300		185	745
1972	531,000	260,000	25,300		175	682
1973	586,000	285,000	38,600		186	682
1974	662,000	288,000	47,300		265	876
1975	479,000	199,000	40,700		296	897
1976	562,000	245,000	33,000		313	896
1977	581,000	256,000	32,400		321	864
1978	500,000	287,000	64,800		345	862
1979	647,000	295,000	72,100		356	800
1980	558,000	247,000	67,000		389	770
1981	533,000	257,000	64,600		423	758
1982	379,000	175,000	62,500		442	746
1983	379,000	206,000	42,900		442	723
1984	482,000	249,000	46,100		422	662
1985	434,000	223,000	39,800		396	600
1986	438,000	226,000	38,400		397	590
1987	462,000	231,000	49,500		363	521
1988	545,000	259,000	59,200		385	531
1989	536,000	203,000	53,900		425	559
1990	509,000	216,000	62,100		429	535
1991	455,000	219,000	60,100		430	515
1992	465,000	238,000	67,700		438	509
1993	442,000	299,000	72,000		421	475
1994	481,000	284,000	60,900		427	470
1995	467,000	403,000	62,000		432	462
1996	469,000	332,000	51,000		466	484
1997	426,000	401,000	53,000		481	488
1998	436,000	474,000	46,300		483	483
1999	430,000	365,000	44,200		474	464
2000	404,000	451,000	47,900		447	423
2001	314,000	354,000	42,000		449	413
2002	268,000	356,000	42,800		456	413
2003	248,000	351,000	47,000		463	410
2004	249,000	456,000	54,300		481	415
2005	254,000	462,000	56,400		490	409
2006	245,000	415,000	57,900		521	421

<sup>1</sup>Compiled by T.D. Kelly (retired) and D.W. Olson.

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

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

ALUMINUM OXIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1916	27,900						77	1,150
1917	44,000						159	2,020
1918	32,400						177	1,920
1919	17,900						213	2,010
1920	29,800						200	1,630
1921	6,650						198	1,800
1922	28,900						112	1,090
1923	46,600						115	1,100
1924	30,600						114	1,090
1925	48,300						98	907
1926	39,900						103	945
1927	46,200						98	916
1928	53,600						105	1,000
1929	65,900						98	933
1930	42,200						97	951
1931	22,700						103	1,100
1932	17,100						82	979
1933	27,900						87	1,090
1934	42,200						87	1,060
1935	45,400				20,804		84	998
1936	63,300				12,792		62	729
1937	78,400				16,298		61	692
1938	48,300				29,140		64	741
1939	45,800				19,530		67	786
1940	89,400				16,667		61	709
1941	134,000				17,732		68	753
1942	167,000				18,785		76	761
1943	197,000				25,728		67	632
1944	168,000				29,395		69	639
1945	133,000				28,969		69	627
1946	120,000				24,559		70	583
1947	145,000		112,000		29,916		70	511
1948	141,000		112,000		31,005		73	493
1949	114,000		81,400	27,200	44,910		75	514
1950	127,000		106,000		19,981		94	635
1951	196,000		151,000		29,418		109	686
1952	164,000		121,000	9,060	54,752		109	669
1953	221,000		217,000	8,590	22,829		108	659
1954	199,000		167,000	10,300	27,125		113	685
1955	178,000		138,000	12,000	36,197		125	762
1956	177,000		142,000	11,300	35,017		127	760
1957	207,000		175,000	9,800	33,294		136	786
1958	111,000		73,700	8,350	33,022		151	853
1959	144,000		125,000	8,290	26,490		154	860
1960	178,000		146,000	9,960	22,770		153	841
1961	124,000		113,000	10,700	21,047		151	821
1962	165,000		136,000	12,300	30,663		142	763
1963	145,000		123,000	11,900	18,688		144	766
1964	155,000		127,000	17,000	13,154		139	732
1965	177,000		144,000	15,700	9,888		141	727
1966	221,000		175,000	16,600	16,874		135	678

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

ALUMINUM OXIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1967	188,000		143,000	17,700	27,397		150	732
1968	174,000		142,000	14,300	23,133		159	746
1969	197,000	363	158,000	15,400	30,119		159	707
1970	177,000		152,000	16,300	416,664		155	651
1971	135,000		119,000	14,400	457,430		181	729
1972	167,000		163,000	16,500	399,773		171	666
1973	178,000	55,400	177,000	26,800	347,122		154	565
1974	219,000	41,200	193,000	29,500	307,052		187	618
1975	128,000	980	119,000	24,200	287,475		222	673
1976	173,000		162,000	19,900	282,905		250	716
1977	168,000		166,000	17,900	285,684		291	783
1978	129,000		181,000	14,600	17,737		362	905
1979	204,000		199,000	18,100	286,646		331	743
1980	175,000		171,000	17,200	286,003		365	722
1981	184,000		179,000	14,700	287,857		400	717
1982	120,000		113,000	26,600	292,211		384	649
1983	124,000		130,000	10,700	284,336		407	666
1984	161,000		178,000	11,300	283,155		397	623
1985	153,000		154,000	11,200	290,083		353	535
1986	137,000		144,000	9,920	291,816		369	549
1987	151,000		144,000	12,800	278,029		373	535
1988	205,000		144,000	15,600	282,771		348	480
1989	195,000		98,000	19,000	280,310		419	551
1990	185,000		134,000	14,300	282,702		420	524
1991	163,000		140,000	11,100	282,610		417	499
1992	167,000		136,000	12,000	280,843		424	493
1993	154,000	5,750	158,000	11,000	283,173		401	453
1994	162,000	33,900	145,000	13,000	267,671		396	435
1995	146,000	14,100	213,000	11,000	232,037		374	400
1996	147,000	43,500	131,000	11,900	186,294		387	402
1997	93,500	19,100	138,000	10,700	146,492		370	376
1998	99,600	45,500	180,000	8,910	153,962		361	361
1999	85,000	52,300	166,000	9,020	95,804		341	333
2000	90,000	1,300	227,000	9,020	54,100		327	310
2001	50,000		203,000	8,950	16,300		302	278
2002	20,000		179,000	10,300	16,156		265	240
2003	20,000	2,359	164,000	11,800	13,800		279	247
2004	20,000	1,810	232,000	13,900	8,290		323	279
2005	10,000	2,064	244,000	13,900	6,226		144	120
2006	10,000	2,150	209,000	15,300	4,076		152	123

<sup>1</sup>Compiled by T.D. Kelly (retired) and D.W. Olson.

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

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

<b>ALUMINUM-ZIRCONIUM OXIDE</b>					
<b>Year</b>	<b>Production</b>	<b>Stocks</b>	<b>Apparent consumption</b>	<b>Unit value (\$/t)</b>	<b>Unit value (98\$/t)</b>
1973	20,000	635		312	1,140
1974	22,700	635		434	1,430
1975	15,400			552	1,670
1976	18,100	1,140		627	1,800
1977	18,100	192		622	1,670
1978	20,900	1,300		703	1,760
1979	25,400	3,890		586	1,320
1980	17,200	924		490	969
1981				562	1,010
1982	7,260			634	1,070
1983					
1984					
1985					
1986					
1987					
1988					
1989					
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2003					
2004					
2005					
2006					

<sup>1</sup>Compiled by T.D. Kelly (retired) and D.W. Olson.

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**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>****U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

<b>BORON CARBIDE</b>						
<b>Year</b>	<b>Production</b>	<b>Imports</b>	<b>Exports</b>	<b>Apparent consumption</b>	<b>Unit value (\$/t)</b>	<b>Unit value (98\$/t)</b>
1996		196	6.8		24,000	24,900
1997		232	58.0		25,000	25,400
1998		349	25.0		18,100	18,100
1999		342	16.7		22,200	21,700
2000		277	28.6		25,200	23,900
2001		282	32.4		24,400	22,400
2002						
2003						
2004						
2005						
2006						

<sup>1</sup>Compiled by T. Kelly and D.W. Olson.

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**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

METALLIC ABRASIVES								
Year	Production	Shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1916	973	973				973	92	1,380
1917	1,020	1,020				1,020	92	1,170
1918	4,670	4,670				4,670	91	982
1919	2,140	2,140				2,140	128	1,210
1920	2,410	2,410				2,410	94	766
1921	2,870	2,870				2,870	70	637
1922	5,270	5,270				5,270	80	776
1923	7,470	7,470				7,470	82	782
1924	7,800	7,800				7,800	73	696
1925	10,100	10,100				10,100	77	717
1926	11,400	11,400				11,400	82	755
1927	12,100	12,100				12,100	69	646
1928	16,800	16,800				16,800	54	515
1929	21,600	21,600				21,600	60	572
1930	14,900	14,900				14,900	66	644
1931	10,100	10,100				10,100	61	654
1932	7,700	7,700				7,700	53	631
1933	6,210	6,210				6,210	61	765
1934	9,360	9,360				9,360	59	718
1935	13,200	13,200			2,168	13,200	56	666
1936	22,400	22,400			1,994	22,400	55	645
1937	25,400	25,400			2,732	25,400	55	623
1938	23,400	23,400			4,485	23,400	53	613
1939	38,100	38,100			3,982	38,100	46	539
1940	45,400	45,400			4,574	45,400	51	594
1941	78,300	78,300			3,364	78,300	52	577
1942	96,600	96,600			3,881	96,600	58	580
1943	113,000	113,000			2,290	113,000	63	594
1944	131,000	131,000			3,074	131,000	64	593
1945	133,000	133,000			9,465	133,000	64	580
1946	101,000	101,000			5,918	101,000	63	527
1947	140,000	140,000			9,060	140,000	89	651
1948	134,000	134,000			8,987	134,000	114	771
1949	95,100	95,100			9,202	95,100	98	671
1950	131,000	131,000			6,614	131,000	89	602
1951	150,000	150,000			8,929	150,000	120	752
1952	142,000	142,000		4,190	8,891	137,810	123	757
1953	146,000	146,000		4,070	10,807	141,930	124	757
1954	107,000	107,000		3,720	13,063	103,280	124	751
1955	143,000	143,000		5,180	13,245	137,820	125	760
1956	127,000	127,000		5,250	14,969	121,750	143	857
1957	119,000	119,000		5,630	14,969	113,370	153	888
1958	91,800	91,800		5,300	16,239	86,500	156	880
1959	115,000	115,000		5,890	14,696	109,110	164	919
1960	102,000	102,000		5,930	14,152	96,070	165	909
1961	99,400	99,400		7,020	16,874	92,380	162	883
1962	114,000	114,000		7,180	19,232	106,820	163	880
1963	122,000	121,000		6,590	17,418	114,410	165	879
1964	142,000	141,000		7,840	20,956	133,160	166	873
1965	173,000	173,000		14,800	16,239	158,200	163	843
1966	186,000	186,000		19,000	11,521	167,000	167	840

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**U.S. GEOLOGICAL SURVEY**

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Last modification: November 6, 2007

METALLIC ABRASIVES								
Year	Production	Shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1967	185,000	185,000		20,000	14,152	165,000	176	859
1968	196,000	196,000		24,200	14,787	171,800	177	829
1969	209,000	209,000		28,200	17,237	180,800	179	795
1970	181,000	181,000			24,403	181,000	190	798
1971	175,000	175,000			24,675	175,000	191	769
1972	213,000	213,000				213,000	186	725
1973	241,000	241,000				241,000	206	756
1974	273,000	273,000				273,000	333	1,100
1975	214,000	214,000				214,000	340	1,030
1976	227,000	227,000				227,000	332	951
1977	220,000	220,000				220,000	330	888
1978	185,000	185,000		15,300		169,700	324	810
1979	239,000	240,000		20,100		219,900	355	797
1980	211,000	211,000		14,500		196,500	380	752
1981	207,000	207,000		12,500		194,500	401	719
1982	151,000	151,000		10,500		140,500	414	699
1983	156,000	156,000		6,450		149,550	416	681
1984	197,000	198,000		8,310		189,690	418	656
1985	179,000	179,000		7,340		171,660	421	638
1986	189,000	189,000		6,330		182,670	398	592
1987	198,000	197,000		7,240		189,760	315	452
1988	222,000	233,000	3,530	11,900		224,630	397	547
1989	224,000	219,000	4,170	8,650		214,520	400	526
1990	219,000	220,000	7,350	25,600		201,750	407	508
1991	213,000	213,000	9,210	25,900		196,310	414	495
1992	214,000	218,000	12,800	26,900		203,900	419	487
1993	213,000	219,000	26,100	29,300		215,800	397	448
1994	234,000	212,000	28,900	31,900		209,000	423	465
1995	246,000	227,000	25,600	31,100		221,500	447	478
1996	248,000	226,000	20,200	24,900		221,300	488	507
1997	264,000	266,000	23,400	26,200		263,200	485	493
1998	267,000	279,000	25,600	25,800		278,800	476	476
1999	280,000	284,000	30,100	26,600		287,500	461	451
2000	269,000	228,000	33,500	28,900		232,600	465	440
2001	224,000	229,000	18,700	22,600		225,100	455	419
2002	218,000	222,000	12,400	18,800		215,600	463	419
2003	193,000	211,000	16,500	22,000		205,500	470	416
2004	194,000	201,000	15,900	26,500		190,400	474	409
2005	209,000	226,000	16,500	26,900		215,600	488	407
2006	200,000	218,000	19,600	22,300		215,300	510	412

<sup>1</sup>Compiled by T.D. Kelly (retired) and D.W. Olson.

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**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

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Last modification: November 6, 2007

SILICON CARBIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1916	6,370						111	1,660
1917	7,550						142	1,808
1918	9,110						167	1,803
1919	25,800						131	1,234
1920	6,250						210	1,712
1921	2,460						194	1,767
1922	14,700						137	1,329
1923	19,200						145	1,382
1924	16,100						134	1,277
1925	21,900						114	1,062
1926	15,400						110	1,013
1927	23,800						109	1,021
1928	20,100						114	1,087
1929	27,500						111	1,058
1930	20,000						103	1,005
1931	7,430						130	1,394
1932	10,500						101	1,202
1933	15,100						114	1,429
1934	16,400						107	1,302
1935	22,000				7,290		98	1,166
1936	26,600				6,000		80	938
1937	27,500				5,510		80	906
1938	23,000				11,400		83	960
1939	22,000				6,780		78	915
1940	30,000				3,290		79	920
1941	40,800				2,400		82	909
1942	56,000				4,360		88	880
1943	63,200				8,510		94	886
1944	51,100				8,090		92	852
1945	48,800				3,940		87	788
1946	57,900				4,840		94	786
1947	57,800		40,900		3,200		98	716
1948	57,200		45,900		4,890		103	697
1949	61,300		36,100		19,900		99	678
1950	59,000		36,200		7,950		124	839
1951	91,200		59,900		10,700		129	809
1952	83,000		46,000	6,966	23,000		145	892
1953	56,500		42,000	4,779	16,900		145	885
1954	60,800		35,300	6,042	25,300		145	879
1955	67,900		61,400	6,445	9,980		162	985
1956	86,900		65,900	7,113	9,340		172	1,031
1957	113,000		76,200	6,940	12,700		169	980
1958	100,000		66,300	9,658	9,440		176	993
1959	120,000		76,100	7,465	9,620		183	1,025
1960	121,000		80,300	7,433	14,500		171	942
1961	114,000		66,900	11,096	13,300		176	959
1962	104,000		52,400	9,276	17,400		170	918
1963	98,900		62,000	8,902	10,200		157	836
1964	120,000		72,700	10,174	13,600		154	810
1965	125,000	51	82,600	11,575	8,260		159	823
1966	144,000		95,300	8,120	15,900		150	755

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

SILICON CARBIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1967	129,000		83,500	5,860	11,700		152	742
1968	144,000		98,000	6,430	16,100		165	773
1969	146,000		101,000	5,700	8,260		164	728
1970	152,000		98,900	5,840	195,000		159	668
1971	118,000		91,600	6,170	191,000		179	720
1972	151,000		97,100	4,540	183,000		164	640
1973	147,000	0	106,000	7,010	183,000		173	635
1974	148,000	70,400	91,600	12,400	112,000		229	757
1975	122,000	34,700	78,000	11,800	73,100		262	794
1976	144,000		81,600	9,170	83,400		319	914
1977	174,000		87,100	10,200	81,200		309	831
1978	165,000		103,000	11,000	6,580		311	778
1979	178,000		93,400	9,260	78,400		353	793
1980	154,000		75,300	12,400	90,400		417	825
1981	142,000		77,100	10,400	86,400		486	871
1982	102,000		60,800	6,330	86,800		536	905
1983	98,900		76,200	5,070	84,100		526	861
1984	124,000		64,400	5,460	87,500		460	722
1985	102,000		56,200	4,700	85,200		417	632
1986	112,000		75,300	3,860	89,500		429	638
1987	113,000		84,400	4,770	78,600		432	620
1988	118,000	1,260	101,000	4,280	68,800		428	590
1989	117,000	12,200	92,000	8,540	59,200		482	634
1990	105,000	9,250	75,100	8,200	54,500		489	610
1991	79,000	6,330	70,000	10,200	44,900		500	598
1992	84,300	6,330	89,000	13,500	45,500		516	599
1993	74,900	5,800	115,000	16,800	36,000		533	601
1994	84,700	2,520	110,000	16,000	35,300		501	551
1995	75,400	4,000	172,000	19,900	30,700		496	530
1996	73,600	4,000	181,000	14,200	21,200		489	508
1997	68,200	5,770	239,000	16,100	17,400		535	543
1998	69,800	9,970	269,000	11,600	1,240		568	568
1999	65,000	1,243	169,000	8,560			600	587
2000	45,000		190,000	10,000			584	553
2001	40,000		133,000	10,500			600	552
2002	30,000		165,000	13,700		181,000	532	482
2003	35,000		169,000	13,200		189,000	529	469
2004	35,000		209,000	13,900		230,000	614	530
2005	35,000		201,000	15,600		220,000	603	503
2006	35,000		186,000	20,300		201,000	693	560

<sup>1</sup>Compiled by T.D. Kelly (retired) and D.W. Olson.

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

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

<b>OTHER MANUFACTURED ABRASIVES</b>		
<b>Year</b>	<b>Imports</b>	<b>Exports</b>
1947	124	
1948	348	
1949	466	5,730
1950	1,370	
1951	1,640	
1952	1,280	10,400
1953	1,670	7,900
1954	1,390	9,620
1955	2,390	10,500
1956	3,250	11,500
1957	5,750	11,200
1958	3,890	12,700
1959	6,160	10,700
1960	2,990	11,300
1961	2,160	14,900
1962	7,840	12,900
1963	11,200	12,400
1964	2,510	14,300
1965	3,630	17,500
1966	4,540	5,110
1967	5,440	4,810
1968	3,630	5,900
1969		5,080
1970	907	5,560
1971	907	4,750
1972		4,270
1973	1,810	4,770
1974	3,630	5,390
1975	1,810	4,710
1976	907	4,010
1977	2,720	4,340
1978	1,810	23,900
1979	2,720	24,500
1980	907	23,000
1981	907	27,000
1982	907	19,100
1983		20,700
1984	7,260	21,000
1985	12,700	16,600
1986	6,350	18,300
1987	2,720	24,700
1988	10,000	27,500
1989	9,000	17,700
1990		13,900
1991		12,900
1992		15,200
1993		14,900
1994		
1995		
1996		
1997		
1998		

**MANUFACTURED ABRASIVES STATISTICS<sup>1</sup>**

**U.S. GEOLOGICAL SURVEY**

[All values in metric tons (t) manufactured abrasives unless otherwise noted]

Last modification: November 6, 2007

<b>OTHER MANUFACTURED ABRASIVES</b>		
1999		
2000		
2001		
2002		
2003		
2004		
2005		
2006		

<sup>1</sup>Compiled by T.D. Kelly (retired) and D.W. Olson.

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

## Manufactured Abrasives Worksheet Notes

### Data Sources

Sources of data for the manufactured abrasives 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). The years of publication and corresponding years of data coverage are listed in the References section below. Blank cells in the worksheet indicate that data either were not available or were withheld from publication because they are proprietary.

## Total Manufactured Abrasives

### Production

Total manufactured abrasives production data for the years 1916–2006 were recorded from the MR and the MYB. Production data for the years 1916–2006 include the total summed quantities of aluminum oxide, aluminum-zirconium oxide, and silicon carbide produced in the United States and Canada and the total quantity of metallic abrasives produced within the United States. Production data for the United States and Canada were combined to prevent the release of proprietary data. Boron carbide production data for the years 1996–2006 were not included in the total because they were proprietary.

### Imports

Total manufactured abrasives import data for the years 1947–2006 were calculated from data in the MYB. Import data for the years 1947–2006 represent the total summed quantities of aluminum oxide, boron carbide, metallic abrasives, silicon carbide, and other manufactured abrasives that were imported into the United States for consumption purposes. Prior to the year 1947, import data were not available for any manufactured abrasive. For the years since 1947, there are gaps in the import data for some abrasives because the data were not available. These gaps are noted in the imports section for each abrasive.

### Exports

Export data for the years 1949–2006 were recorded from the MYB. Export data for the years 1949–2006 represent the total summed quantities of aluminum oxide, boron carbide, metallic abrasives, silicon carbide, and other manufactured abrasives that were exported from the United States. Export data for 1950–51 were not available. Prior to the year 1949, export data were not available for any manufactured abrasive. For the years since 1947, there are gaps in the export data for some abrasives because the data was not available. These gaps are noted in the exports section for each abrasive.

### Apparent Consumption

Total manufactured abrasives apparent consumption is not calculated because of the combined reporting of United States and Canadian production data for aluminum oxide, aluminum zirconium oxide, and silicon carbide and the withholding of U.S. production data for boron carbide. For aluminum oxide, aluminum-zirconium oxide, and silicon carbide, the United States and Canadian production is combined to prevent the disclosure of proprietary data. For boron carbide, only one U.S. plant produces the abrasive and its production is withheld because the data are proprietary.

### Unit Value (\$/t)

Unit value is defined as the value of 1 metric ton (t) of total manufactured abrasives apparent consumption. Unit value data for the years 1916–2006 were estimated as the weight-averaged production value of manufactured abrasives.

### Unit Value (98\$/t)

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

## Aluminum Oxide

### Production

Aluminum oxide production data for the years 1916–2006 represent the total quantity of aluminum oxide that was produced annually in the United States and Canada. A combination of United States and Canadian production data is used to prevent the disclosure of proprietary data.

### Government Shipments

Government shipment data for the years 1969, 1973–75, and 1993–2006 represent the total domestic sales of aluminum oxide from the National Defense Stockpile (NDS). Data were not available for other years.

### Imports

Aluminum oxide import data for the years 1947–2006 represent the total quantity of crude and refined aluminum oxide imported annually into the United States for consumption purposes. Data were not available for the years 1916–46.

## **Exports**

Aluminum oxide export data for the years 1949 and 1952–2006 represent the total quantity of aluminum oxide exported from the United States to foreign recipients. Data were not available for the years 1916–48 and 1950–51.

## **Stocks**

Stock data for the years 1935–2006 were recorded from the MYB. Stock data for the years 1970–2006 represent the total summed quantities of aluminum oxide that were held within the National Defense Stockpile (NDS), and United States and Canadian producer stockpiles. For the years 1935–69, stock data are for United States and Canadian producer stocks only.

## **Apparent Consumption**

Apparent consumption for aluminum oxide cannot be accurately estimated because production is reported as the combined production of plants in the United States and Canada.

## **Unit Value**

Unit value is defined as the value of 1 t of aluminum oxide apparent consumption. Unit value data for aluminum oxide for the years 1916–2006 were estimated with production weight and value data.

## **Unit Value (98\$/t)**

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

## **Aluminum-zirconium Oxide**

### **Production**

Aluminum-zirconium oxide was first produced in 1973 by four firms in the United States and Canada. Production data for the years 1969–80 and 1982 represent the total quantity of aluminum-zirconium oxide that was produced annually in the United States and Canada. Aluminum-zirconium oxide data for the years 1981 and 1983–2006 were withheld because they were proprietary. For the years 1969–80 and 1982, the combination of United States and Canadian production was used to prevent the disclosure of proprietary data.

### **Stocks**

Aluminum-zirconium oxide stock data for the years 1969–80 represent the total quantity of aluminum-zirconium oxide within United States and Canadian producer stockpiles. Data were not available for all other years.

### **Apparent Consumption**

Apparent consumption data for aluminum-zirconium oxide cannot be calculated because production data were either withheld or reported as combined United States and Canadian production data.

### **Unit Value (\$/t)**

Unit value is defined as the value of 1 t of aluminum-zirconium oxide apparent consumption. Unit value data for aluminum-zirconium oxide for the years 1969–82 were estimated by dividing the total value of production by the total annual production quantity. For the year 1981, production data were withheld because they were proprietary. The unit value datum for the year 1981 was interpolated. Unit value data were not available for the years 1983–2006 because production data were withheld to avoid disclosing proprietary information.

### **Unit Value (98\$/t)**

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars. Unit value in 1998 U.S. constant dollars could not be determined since unit value data are not available.

## **Boron Carbide**

### **Production**

Boron carbide production data for the years 1996–2006 are not available, because they were proprietary.

### **Imports**

Boron carbide import data for the years 1996–2001 represent the total quantity of boron carbide imported into the United States for consumption purposes. For the years 2002–06, boron carbide import data were not available.

### **Exports**

Boron carbide export data for the years 1996–2001 represent the total quantity of boron carbide exported from the United States to foreign recipients. For the years 2002–06, boron carbide export data were not available.

### **Apparent Consumption**

Apparent consumption data for boron carbide cannot be calculated because production data were withheld.

### **Unit Value (\$/t)**

Unit value is defined as the value of 1 t of boron carbide apparent consumption. Unit value data for boron carbide for the years 1996–2001 were estimated by dividing the total value of imports by the total import quantity. Data for the years 2002–06 are no longer available.

### **Unit Value (98\$/t)**

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars. Unit value in 1998 U.S. constant dollars could not be determined since unit value data are not available.

## **Metallic Abrasives**

### **Production**

Metallic abrasives production data for the years 1916–2006 represent the total quantity of metallic abrasives that were produced annually within the United States. Metallic abrasives production for the years 1916–62 were equal to domestic shipments.

### **Shipments**

Metallic abrasives shipment data for the years 1916–2006 represent the total domestic sales of metallic abrasives from the NDS and U.S. producer stockpiles. Metallic abrasives shipments for the years 1916–62 were equal to domestic production.

### **Imports**

Metallic abrasives import data for the years 1988–2006 represent the total quantity of metallic abrasives imported annually into the United States for consumption purposes. Data were not available for the years 1916–87.

### **Exports**

Metallic abrasives export data for the years 1952–69 and 1978–2006 represent the total quantity of metallic abrasives exported from the United States to foreign recipients. Data were not available for the years 1916–51 and 1970–77.

### **Stocks**

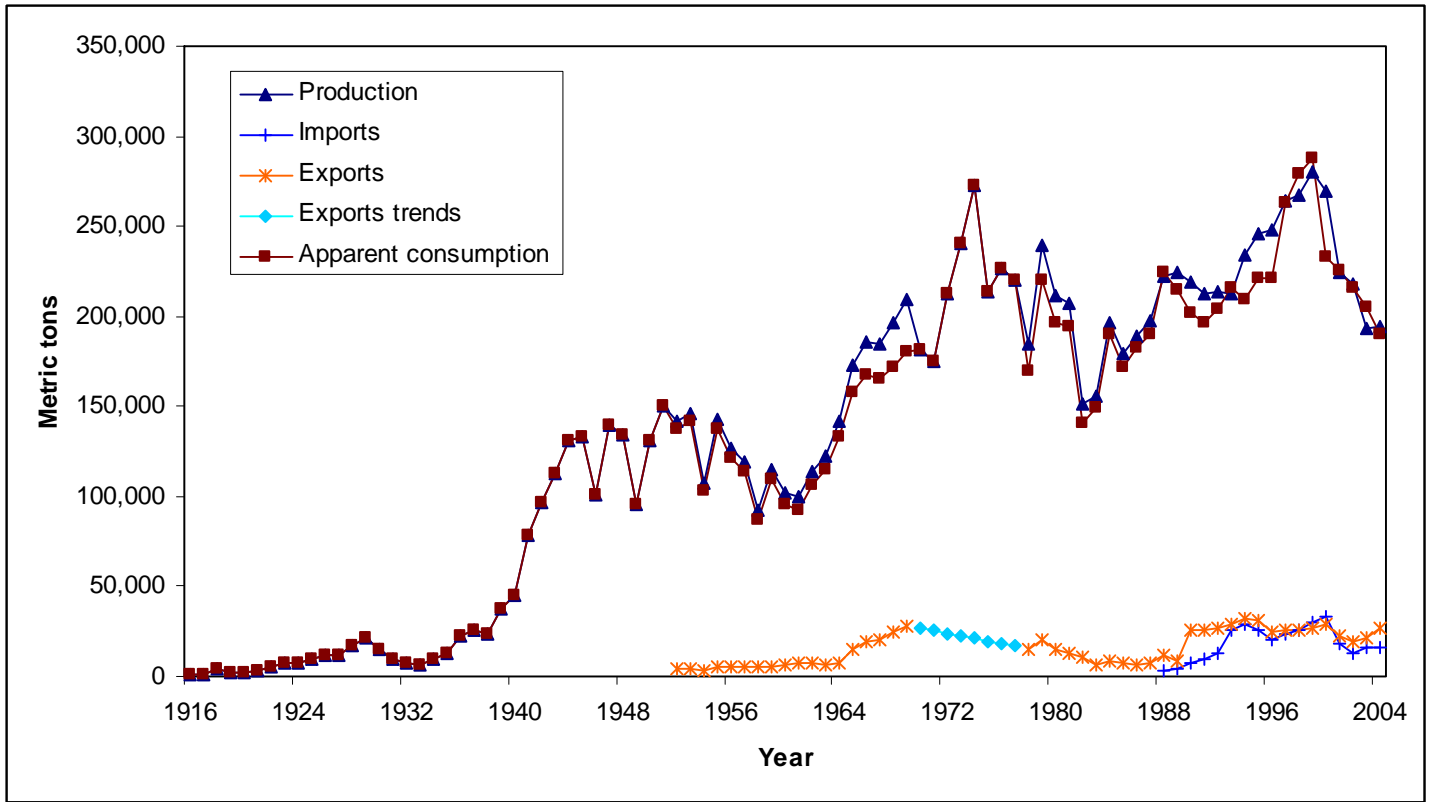
Metallic abrasives stock data for the years 1935–71 represent the total quantity of metallic abrasives within U.S. producer stockpiles. Data were not available for the years 1916–34 and 1972–2006.

### **Apparent Consumption**

Apparent consumption data for metallic abrasives for the years 1916–2006 were estimated by using the following formula:

$$\text{APPARENT CONSUMPTION} = \text{PRODUCTION} + \text{IMPORTS} - \text{EXPORTS} \pm \text{STOCK CHANGES.}$$

For those years in which export, import, or stock data were not available, they were assumed to equal zero with the exception of exports in the years 1970–77 where interpolation was used to estimate an export trend. A graph, “METALLIC ABRASIVES STATISTICS” shown below illustrates the lesser effect that imports and exports have on apparent consumption compared to production, which validates the assumption that production is approximately equal to apparent consumption in the years before 1952.



Metallic Abrasives Statistics

**Unit Value (\$/t)**

Unit value is defined as the value of 1 t of metallic abrasives apparent consumption. Unit value data for metallic abrasives for the years 1916–2006 were estimated by dividing the total value of production by the total annual production quantity.

**Unit Value (98\$/t)**

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

**Other Manufactured Abrasives**

**Imports**

Import data for other manufactured abrasives for the years 1947–89 represent the total quantity of manufactured grains, wheels, files, and other crude and refined manufactured abrasives imported into the United States for consumption purposes. For the years 1969, 1972, 1983, and 1990–2006, data were not available.

**Exports**

Export data for other manufactured abrasives for the years 1949 and 1952–93 represent the total quantity of cakes, carbide abrasives, cloth, compounds, hones, manufactured pulpstones, oilstones, paper, pastes, stones, unfused alumina, wheels, and whetstones exported from the United States to foreign recipients. For the years 1947–48, 1950–51, and 1994–2006, data were not available.

**Silicon Carbide**

**Production**

Silicon carbide production data for the years 1916–2006 represent the total quantity of silicon carbide that was produced annually within the United States and Canada. The silicon carbide production datum for the year 1998 was withheld because it was proprietary.

**Government Shipments**

Silicon carbide shipment data for the years 1965, 1973–75, and 1988–2006 represent the total domestic sales of silicon carbide from the NDS. Data were not available for the years 1916–64, 1966–72, and 1976–87. In the year 1999, the NDS sold the last portion of its stockpiled silicon carbide.



**Imports**

Silicon carbide import data for the years 1947–2006 represent the total quantity of crude and refined silicon carbide imported annually into the United States for consumption purposes. Data were not available for the years 1916–46.

**Exports**

Silicon carbide export data for the years 1966–2006 represent the total quantity of silicon carbide exported from the United States to foreign recipients. For the years 1952–65, data are the sum of silicon carbide and small amounts of other carbides such as carbolon, carborundum, crystalon, and electroon. Data were not available for the years 1916–51.

**Stocks**

Silicon carbide stock data for the years 1935–69 represent the total quantity of silicon carbide within United States and Canadian producer stockpiles. Silicon carbide stock data for the years 1970–98 represent the total quantity of silicon carbide within the NDS and United States and Canadian producer stockpiles. Silicon carbide producer stock data for the years 1999–2006 were withheld because they were proprietary. Data were not available for the years 1916–34.

**Apparent Consumption**

Apparent consumption for silicon carbide cannot be calculated because of the combined reporting of United States and Canadian production data.

**Unit Value (\$/t)**

Unit value is defined as the value of 1 t of silicon carbide apparent consumption. Unit value data for silicon carbide for the years 1916–2006 were estimated by dividing the total value of production by the total annual production quantity. For the year 1998, production data were withheld because they were proprietary. The unit value datum for the year 1998 was interpolated.

**Unit Value (98\$/t)**

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

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