

MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

[All values in metric tons (t) gross weight unless otherwise noted]

Last modification: November 9, 2012

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

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U.S. GEOLOGICAL SURVEY

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TOTAL MANUFACTURED ABRASIVES						
Year	Production	Imports	Exports	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1966	552,000	275,000	48,800	NA	150	754
1967	502,000	232,000	48,400	NA	160	780
1968	514,000	244,000	50,800	NA	168	789
1969	552,000	259,000	54,400	NA	168	747
1970	509,000	252,000	27,700	NA	169	709
1971	428,000	211,000	25,300	NA	185	745
1972	531,000	260,000	25,300	NA	175	682
1973	586,000	285,000	38,600	NA	186	682
1974	662,000	288,000	47,300	NA	265	876
1975	479,000	199,000	40,700	NA	296	897
1976	562,000	245,000	33,000	NA	313	896
1977	581,000	256,000	32,400	NA	321	864
1978	500,000	287,000	64,800	NA	345	862
1979	647,000	295,000	72,100	NA	356	800
1980	558,000	247,000	67,000	NA	389	770
1981	533,000	257,000	64,600	NA	423	758
1982	379,000	175,000	62,500	NA	442	746
1983	379,000	206,000	42,900	NA	442	723
1984	482,000	249,000	46,100	NA	422	662
1985	434,000	223,000	39,800	NA	396	600
1986	438,000	226,000	38,400	NA	397	590
1987	462,000	231,000	49,500	NA	363	521
1988	545,000	259,000	59,200	NA	385	531
1989	536,000	203,000	53,900	NA	425	559
1990	509,000	216,000	62,100	NA	429	535
1991	455,000	219,000	60,100	NA	430	515
1992	465,000	238,000	67,700	NA	438	509
1993	442,000	299,000	72,000	NA	421	475
1994	481,000	284,000	60,900	NA	427	470
1995	467,000	403,000	62,000	NA	432	462
1996	469,000	332,000	51,000	NA	466	484
1997	426,000	401,000	53,000	NA	481	488
1998	436,000	474,000	46,300	NA	483	483
1999	430,000	365,000	44,200	NA	474	464
2000	404,000	451,000	47,900	NA	447	423
2001	314,000	354,000	42,000	NA	449	413
2002	268,000	356,000	42,800	NA	456	413
2003	248,000	351,000	47,000	NA	463	410
2004	249,000	456,000	54,300	NA	481	415
2005	254,000	462,000	56,400	NA	490	409
2006	245,000	415,000	57,900	NA	521	421
2007	248,000	423,000	64,300	NA	504	396
2008	257,000	449,000	73,300	NA	538	407
2009	183,000	158,000	58,900	NA	533	405
2010	214,000	371,000	73,900	NA	546	408
2011	247,000	402,000	87,200	NA	559	405

NA Not available.

¹Compiled by T.D. Kelly (retired) and D.W. Olson.

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

MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

[All values in metric tons (t) gross weight unless otherwise noted]

Last modification: November 9, 2012

ALUMINUM OXIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1916	27,900	NA	NA	NA	NA	NA	77	1,150
1917	44,000	NA	NA	NA	NA	NA	159	2,020
1918	32,400	NA	NA	NA	NA	NA	177	1,920
1919	17,900	NA	NA	NA	NA	NA	213	2,010
1920	29,800	NA	NA	NA	NA	NA	200	1,630
1921	6,650	NA	NA	NA	NA	NA	198	1,800
1922	28,900	NA	NA	NA	NA	NA	112	1,090
1923	46,600	NA	NA	NA	NA	NA	115	1,100
1924	30,600	NA	NA	NA	NA	NA	114	1,090
1925	48,300	NA	NA	NA	NA	NA	98	907
1926	39,900	NA	NA	NA	NA	NA	103	945
1927	46,200	NA	NA	NA	NA	NA	98	916
1928	53,600	NA	NA	NA	NA	NA	105	1,000
1929	65,900	NA	NA	NA	NA	NA	98	933
1930	42,200	NA	NA	NA	NA	NA	97	951
1931	22,700	NA	NA	NA	NA	NA	103	1,100
1932	17,100	NA	NA	NA	NA	NA	82	979
1933	27,900	NA	NA	NA	NA	NA	87	1,090
1934	42,200	NA	NA	NA	NA	NA	87	1,060
1935	45,400	NA	NA	NA	20,800	NA	84	998
1936	63,300	NA	NA	NA	12,800	NA	62	729
1937	78,400	NA	NA	NA	16,300	NA	61	692
1938	48,300	NA	NA	NA	29,100	NA	64	741
1939	45,800	NA	NA	NA	19,500	NA	67	786
1940	89,400	NA	NA	NA	16,700	NA	61	709
1941	134,000	NA	NA	NA	17,700	NA	68	753
1942	167,000	NA	NA	NA	18,800	NA	76	761
1943	197,000	NA	NA	NA	25,700	NA	67	632
1944	168,000	NA	NA	NA	29,400	NA	69	639
1945	133,000	NA	NA	NA	29,000	NA	69	627
1946	120,000	NA	NA	NA	24,600	NA	70	583
1947	145,000	NA	112,000	NA	29,900	NA	70	511
1948	141,000	NA	112,000	NA	31,000	NA	73	493
1949	114,000	NA	81,400	27,200	44,900	NA	75	514
1950	127,000	NA	106,000	NA	20,000	NA	94	635
1951	196,000	NA	151,000	NA	29,400	NA	109	686
1952	164,000	NA	121,000	9,060	54,800	NA	109	669
1953	221,000	NA	217,000	8,590	22,800	NA	108	659
1954	199,000	NA	167,000	10,300	27,100	NA	113	685
1955	178,000	NA	138,000	12,000	36,200	NA	125	762
1956	177,000	NA	142,000	11,300	35,000	NA	127	760
1957	207,000	NA	175,000	9,800	33,300	NA	136	786
1958	111,000	NA	73,700	8,350	33,000	NA	151	853
1959	144,000	NA	125,000	8,290	26,500	NA	154	860
1960	178,000	NA	146,000	9,960	22,800	NA	153	841
1961	124,000	NA	113,000	10,700	21,000	NA	151	821
1962	165,000	NA	136,000	12,300	30,700	NA	142	763
1963	145,000	NA	123,000	11,900	18,700	NA	144	766
1964	155,000	NA	127,000	17,000	13,200	NA	139	732
1965	177,000	NA	144,000	15,700	9,890	NA	141	727

MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

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ALUMINUM OXIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1966	221,000	NA	175,000	16,600	16,900	NA	135	678
1967	188,000	NA	143,000	17,700	27,400	NA	150	732
1968	174,000	NA	142,000	14,300	23,100	NA	159	746
1969	197,000	363	158,000	15,400	30,100	NA	159	707
1970	177,000	NA	152,000	16,300	417,000	NA	155	651
1971	135,000	NA	119,000	14,400	457,000	NA	181	729
1972	167,000	NA	163,000	16,500	400,000	NA	171	666
1973	178,000	55,400	177,000	26,800	347,000	NA	154	565
1974	219,000	41,200	193,000	29,500	307,000	NA	187	618
1975	128,000	980	119,000	24,200	287,000	NA	222	673
1976	173,000	NA	162,000	19,900	283,000	NA	250	716
1977	168,000	NA	166,000	17,900	286,000	NA	291	783
1978	129,000	NA	181,000	14,600	17,700	NA	362	905
1979	204,000	NA	199,000	18,100	287,000	NA	331	743
1980	175,000	NA	171,000	17,200	286,000	NA	365	722
1981	184,000	NA	179,000	14,700	288,000	NA	400	717
1982	120,000	NA	113,000	26,600	292,000	NA	384	649
1983	124,000	NA	130,000	10,700	284,000	NA	407	666
1984	161,000	NA	178,000	11,300	283,000	NA	397	623
1985	153,000	NA	154,000	11,200	290,000	NA	353	535
1986	137,000	NA	144,000	9,920	292,000	NA	369	549
1987	151,000	NA	144,000	12,800	278,000	NA	373	535
1988	205,000	NA	144,000	15,600	283,000	NA	348	480
1989	195,000	NA	98,000	19,000	280,000	NA	419	551
1990	185,000	NA	134,000	14,300	283,000	NA	420	524
1991	163,000	NA	140,000	11,100	283,000	NA	417	499
1992	167,000	NA	136,000	12,000	281,000	NA	424	493
1993	154,000	5,750	158,000	11,000	283,000	NA	401	453
1994	162,000	33,900	145,000	13,000	268,000	NA	396	435
1995	146,000	14,100	213,000	11,000	232,000	NA	374	400
1996	147,000	43,500	131,000	11,900	186,000	NA	387	402
1997	93,500	19,100	138,000	10,700	146,000	NA	370	376
1998	99,600	45,500	180,000	8,910	154,000	NA	361	361
1999	85,000	52,300	166,000	9,020	95,800	NA	341	333
2000	90,000	1,300	227,000	9,020	54,100	NA	327	310
2001	50,000	NA	203,000	8,950	16,300	NA	302	278
2002	20,000	NA	179,000	10,300	16,200	NA	265	240
2003	20,000	2,360	164,000	11,800	13,800	NA	279	247
2004	20,000	1,810	232,000	13,900	8,290	NA	323	279
2005	10,000	2,060	244,000	13,900	6,230	NA	144	120
2006	10,000	2,150	209,000	15,300	4,080	NA	152	123
2007	10,000	4,080	237,000	18,200	0	NA	165	130
2008	10,000	0	285,000	21,900	0	NA	165	125
2009	10,000	0	64,200	12,300	0	NA	165	10,000
2010	10,000	0	185,000	20,000	546	NA	165	10,000
2011	10,000	0	223,000	19,900	559	NA	165	10,000

NA Not available.

¹Compiled by T.D. Kelly (retired) and D.W. Olson.

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MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

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Last modification: November 9, 2012

ALUMINUM-ZIRCONIUM OXIDE

Year	Production	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1973	20,000	635	NA	312	1,140
1974	22,700	635	NA	434	1,430
1975	15,400	NA	NA	552	1,670
1976	18,100	1,140	NA	627	1,800
1977	18,100	192	NA	622	1,670
1978	20,900	1,300	NA	703	1,760
1979	25,400	3,890	NA	586	1,320
1980	17,200	924	NA	490	969
1981	W	NA	NA	562	1,010
1982	7,260	NA	NA	634	1,070
1983	W	NA	NA	NA	NA
1984	W	NA	NA	NA	NA
1985	W	NA	NA	NA	NA
1986	W	NA	NA	NA	NA
1987	W	NA	NA	NA	NA
1988	W	NA	NA	NA	NA
1989	W	NA	NA	NA	NA
1990	W	NA	NA	NA	NA
1991	W	NA	NA	NA	NA
1992	W	NA	NA	NA	NA
1993	W	NA	NA	NA	NA
1994	W	NA	NA	NA	NA
1995	W	NA	NA	NA	NA
1996	W	NA	NA	NA	NA
1997	W	NA	NA	NA	NA
1998	W	NA	NA	NA	NA
1999	W	NA	NA	NA	NA
2000	W	NA	NA	NA	NA
2001	W	NA	NA	NA	NA
2002	W	NA	NA	NA	NA
2003	W	NA	NA	NA	NA
2004	W	NA	NA	NA	NA
2005	W	NA	NA	NA	NA
2006	W	NA	NA	NA	NA
2007	W	NA	NA	NA	NA
2008	W	NA	NA	NA	NA
2009	W	NA	NA	NA	NA
2010	W	NA	NA	NA	NA
2011	W	NA	NA	NA	NA

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

¹Compiled by T.D. Kelly (retired) and D.W. Olson.

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MANUFACTURED ABRASIVES STATISTICS¹
U.S. GEOLOGICAL SURVEY
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BORON CARBIDE						
Year	Production	Imports	Exports	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1996	W	196	6.8	NA	24,000	24,900
1997	W	232	58.0	NA	25,000	25,400
1998	W	349	25.0	NA	18,100	18,100
1999	W	342	16.7	NA	22,200	21,700
2000	W	277	28.6	NA	25,200	23,900
2001	W	282	32.4	NA	24,400	22,400
2002	W	NA	NA	NA	NA	NA
2003	W	NA	NA	NA	NA	NA
2004	W	NA	NA	NA	NA	NA
2005	W	NA	NA	NA	NA	NA
2006	W	NA	NA	NA	NA	NA
2007	W	NA	NA	NA	NA	NA
2008	W	NA	NA	NA	NA	NA
2009	W	NA	NA	NA	NA	NA
2010	W	NA	NA	NA	NA	NA
2011	W	NA	NA	NA	NA	NA

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

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MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

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Last modification: November 9, 2012

METALLIC ABRASIVES								
Year	Production	Shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1916	973	973	NA	NA	NA	973	92	1,380
1917	1,020	1,020	NA	NA	NA	1,020	92	1,170
1918	4,670	4,670	NA	NA	NA	4,670	91	982
1919	2,140	2,140	NA	NA	NA	2,140	128	1,210
1920	2,410	2,410	NA	NA	NA	2,410	94	766
1921	2,870	2,870	NA	NA	NA	2,870	70	637
1922	5,270	5,270	NA	NA	NA	5,270	80	776
1923	7,470	7,470	NA	NA	NA	7,470	82	782
1924	7,800	7,800	NA	NA	NA	7,800	73	696
1925	10,100	10,100	NA	NA	NA	10,100	77	717
1926	11,400	11,400	NA	NA	NA	11,400	82	755
1927	12,100	12,100	NA	NA	NA	12,100	69	646
1928	16,800	16,800	NA	NA	NA	16,800	54	515
1929	21,600	21,600	NA	NA	NA	21,600	60	572
1930	14,900	14,900	NA	NA	NA	14,900	66	644
1931	10,100	10,100	NA	NA	NA	10,100	61	654
1932	7,700	7,700	NA	NA	NA	7,700	53	631
1933	6,210	6,210	NA	NA	NA	6,210	61	765
1934	9,360	9,360	NA	NA	NA	9,360	59	718
1935	13,200	13,200	NA	NA	2,170	13,200	56	666
1936	22,400	22,400	NA	NA	1,990	22,400	55	645
1937	25,400	25,400	NA	NA	2,730	25,400	55	623
1938	23,400	23,400	NA	NA	4,490	23,400	53	613
1939	38,100	38,100	NA	NA	3,980	38,100	46	539
1940	45,400	45,400	NA	NA	4,570	45,400	51	594
1941	78,300	78,300	NA	NA	3,360	78,300	52	577
1942	96,600	96,600	NA	NA	3,880	96,600	58	580
1943	113,000	113,000	NA	NA	2,290	113,000	63	594
1944	131,000	131,000	NA	NA	3,070	131,000	64	593
1945	133,000	133,000	NA	NA	9,470	133,000	64	580
1946	101,000	101,000	NA	NA	5,920	101,000	63	527
1947	140,000	140,000	NA	NA	9,060	140,000	89	651
1948	134,000	134,000	NA	NA	8,990	134,000	114	771
1949	95,100	95,100	NA	NA	9,200	95,100	98	671
1950	131,000	131,000	NA	NA	6,610	131,000	89	602
1951	150,000	150,000	NA	NA	8,930	150,000	120	752
1952	142,000	142,000	NA	4,190	8,890	138,000	123	757
1953	146,000	146,000	NA	4,070	10,800	142,000	124	757
1954	107,000	107,000	NA	3,720	13,100	103,000	124	751
1955	143,000	143,000	NA	5,180	13,200	138,000	125	760
1956	127,000	127,000	NA	5,250	15,000	122,000	143	857
1957	119,000	119,000	NA	5,630	15,000	113,000	153	888
1958	91,800	91,800	NA	5,300	16,200	86,500	156	880
1959	115,000	115,000	NA	5,890	14,700	109,000	164	919
1960	102,000	102,000	NA	5,930	14,200	96,100	165	909
1961	99,400	99,400	NA	7,020	16,900	92,400	162	883
1962	114,000	114,000	NA	7,180	19,200	107,000	163	880
1963	122,000	121,000	NA	6,590	17,400	114,000	165	879
1964	142,000	141,000	NA	7,840	21,000	133,000	166	873
1965	173,000	173,000	NA	14,800	16,200	158,200	163	843

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METALLIC ABRASIVES								
Year	Production	Shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1966	186,000	186,000	NA	19,000	11,500	167,000	167	840
1967	185,000	185,000	NA	20,000	14,200	165,000	176	859
1968	196,000	196,000	NA	24,200	14,800	171,800	177	829
1969	209,000	209,000	NA	28,200	17,200	180,800	179	795
1970	181,000	181,000	NA	NA	24,400	181,000	190	798
1971	175,000	175,000	NA	NA	24,700	175,000	191	769
1972	213,000	213,000	NA	NA	NA	213,000	186	725
1973	241,000	241,000	NA	NA	NA	241,000	206	756
1974	273,000	273,000	NA	NA	NA	273,000	333	1,100
1975	214,000	214,000	NA	NA	NA	214,000	340	1,030
1976	227,000	227,000	NA	NA	NA	227,000	332	951
1977	220,000	220,000	NA	NA	NA	220,000	330	888
1978	185,000	185,000	NA	15,300	NA	170,000	324	810
1979	239,000	240,000	NA	20,100	NA	220,000	355	797
1980	211,000	211,000	NA	14,500	NA	197,000	380	752
1981	207,000	207,000	NA	12,500	NA	195,000	401	719
1982	151,000	151,000	NA	10,500	NA	141,000	414	699
1983	156,000	156,000	NA	6,450	NA	150,000	416	681
1984	197,000	198,000	NA	8,310	NA	190,000	418	656
1985	179,000	179,000	NA	7,340	NA	172,000	421	638
1986	189,000	189,000	NA	6,330	NA	183,000	398	592
1987	198,000	197,000	NA	7,240	NA	190,000	315	452
1988	222,000	233,000	3,530	11,900	NA	225,000	397	547
1989	224,000	219,000	4,170	8,650	NA	215,000	400	526
1990	219,000	220,000	7,350	25,600	NA	202,000	407	508
1991	213,000	213,000	9,210	25,900	NA	196,000	414	495
1992	214,000	218,000	12,800	26,900	NA	204,000	419	487
1993	213,000	219,000	26,100	29,300	NA	216,000	397	448
1994	234,000	212,000	28,900	31,900	NA	209,000	423	465
1995	246,000	227,000	25,600	31,100	NA	222,000	447	478
1996	248,000	226,000	20,200	24,900	NA	221,000	488	507
1997	264,000	266,000	23,400	26,200	NA	263,000	485	493
1998	267,000	279,000	25,600	25,800	NA	279,000	476	476
1999	280,000	284,000	30,100	26,600	NA	288,000	461	451
2000	269,000	228,000	33,500	28,900	NA	233,000	465	440
2001	224,000	229,000	18,700	22,600	NA	225,000	455	419
2002	218,000	222,000	12,400	18,800	NA	216,000	463	419
2003	193,000	211,000	16,500	22,000	NA	206,000	470	416
2004	194,000	201,000	15,900	26,500	NA	190,000	474	409
2005	209,000	226,000	16,500	26,900	NA	216,000	488	407
2006	200,000	218,000	19,600	22,300	NA	215,000	508	411
2007	203,000	220,000	22,400	26,800	NA	216,000	479	377
2008	212,000	203,000	36,600	34,400	NA	205,000	498	377
2009	138,000	152,000	15,800	25,900	NA	142,000	508	386
2010	169,000	187,000	43,400	30,800	NA	200,000	529	395
2011	202,000	206,000	49,600	39,500	NA	216,000	547	396

NA Not available.

¹Compiled by T.D. Kelly (retired) and D.W. Olson.

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

MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

[All values in metric tons (t) gross weight unless otherwise noted]

Last modification: November 9, 2012

SILICON CARBIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1916	6,370	NA	NA	NA	NA	NA	111	1,660
1917	7,550	NA	NA	NA	NA	NA	142	1,808
1918	9,110	NA	NA	NA	NA	NA	167	1,803
1919	25,800	NA	NA	NA	NA	NA	131	1,234
1920	6,250	NA	NA	NA	NA	NA	210	1,712
1921	2,460	NA	NA	NA	NA	NA	194	1,767
1922	14,700	NA	NA	NA	NA	NA	137	1,329
1923	19,200	NA	NA	NA	NA	NA	145	1,382
1924	16,100	NA	NA	NA	NA	NA	134	1,277
1925	21,900	NA	NA	NA	NA	NA	114	1,062
1926	15,400	NA	NA	NA	NA	NA	110	1,013
1927	23,800	NA	NA	NA	NA	NA	109	1,021
1928	20,100	NA	NA	NA	NA	NA	114	1,087
1929	27,500	NA	NA	NA	NA	NA	111	1,058
1930	20,000	NA	NA	NA	NA	NA	103	1,005
1931	7,430	NA	NA	NA	NA	NA	130	1,394
1932	10,500	NA	NA	NA	NA	NA	101	1,202
1933	15,100	NA	NA	NA	NA	NA	114	1,429
1934	16,400	NA	NA	NA	NA	NA	107	1,302
1935	22,000	NA	NA	NA	7,290	NA	98	1,166
1936	26,600	NA	NA	NA	6,000	NA	80	938
1937	27,500	NA	NA	NA	5,510	NA	80	906
1938	23,000	NA	NA	NA	11,400	NA	83	960
1939	22,000	NA	NA	NA	6,780	NA	78	915
1940	30,000	NA	NA	NA	3,290	NA	79	920
1941	40,800	NA	NA	NA	2,400	NA	82	909
1942	56,000	NA	NA	NA	4,360	NA	88	880
1943	63,200	NA	NA	NA	8,510	NA	94	886
1944	51,100	NA	NA	NA	8,090	NA	92	852
1945	48,800	NA	NA	NA	3,940	NA	87	788
1946	57,900	NA	NA	NA	4,840	NA	94	786
1947	57,800	NA	40,900	NA	3,200	NA	98	716
1948	57,200	NA	45,900	NA	4,890	NA	103	697
1949	61,300	NA	36,100	NA	19,900	NA	99	678
1950	59,000	NA	36,200	NA	7,950	NA	124	839
1951	91,200	NA	59,900	NA	10,700	NA	129	809
1952	83,000	NA	46,000	6,970	23,000	NA	145	892
1953	56,500	NA	42,000	4,780	16,900	NA	145	885
1954	60,800	NA	35,300	6,040	25,300	NA	145	879
1955	67,900	NA	61,400	6,450	9,980	NA	162	985
1956	86,900	NA	65,900	7,110	9,340	NA	172	1,031
1957	113,000	NA	76,200	6,940	12,700	NA	169	980
1958	100,000	NA	66,300	9,660	9,440	NA	176	993
1959	120,000	NA	76,100	7,470	9,620	NA	183	1,025
1960	121,000	NA	80,300	7,430	14,500	NA	171	942
1961	114,000	NA	66,900	11,100	13,300	NA	176	959
1962	104,000	NA	52,400	9,280	17,400	NA	170	918
1963	98,900	NA	62,000	8,900	10,200	NA	157	836
1964	120,000	NA	72,700	10,200	13,600	NA	154	810
1965	125,000	51	82,600	11,600	8,260	NA	159	823

MANUFACTURED ABRASIVES STATISTICS¹

U.S. GEOLOGICAL SURVEY

[All values in metric tons (t) gross weight unless otherwise noted]

Last modification: November 9, 2012

SILICON CARBIDE								
Year	Production	Government shipments	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)
1966	144,000	NA	95,300	8,120	15,900	NA	150	755
1967	129,000	NA	83,500	5,860	11,700	NA	152	742
1968	144,000	NA	98,000	6,430	16,100	NA	165	773
1969	146,000	NA	101,000	5,700	8,260	NA	164	728
1970	152,000	NA	98,900	5,840	195,000	NA	159	668
1971	118,000	NA	91,600	6,170	191,000	NA	179	720
1972	151,000	NA	97,100	4,540	183,000	NA	164	640
1973	147,000	0	106,000	7,010	183,000	NA	173	635
1974	148,000	70,400	91,600	12,400	112,000	NA	229	757
1975	122,000	34,700	78,000	11,800	73,100	NA	262	794
1976	144,000	NA	81,600	9,170	83,400	NA	319	914
1977	174,000	NA	87,100	10,200	81,200	NA	309	831
1978	165,000	NA	103,000	11,000	6,580	NA	311	778
1979	178,000	NA	93,400	9,260	78,400	NA	353	793
1980	154,000	NA	75,300	12,400	90,400	NA	417	825
1981	142,000	NA	77,100	10,400	86,400	NA	486	871
1982	102,000	NA	60,800	6,330	86,800	NA	536	905
1983	98,900	NA	76,200	5,070	84,100	NA	526	861
1984	124,000	NA	64,400	5,460	87,500	NA	460	722
1985	102,000	NA	56,200	4,700	85,200	NA	417	632
1986	112,000	NA	75,300	3,860	89,500	NA	429	638
1987	113,000	NA	84,400	4,770	78,600	NA	432	620
1988	118,000	1,260	101,000	4,280	68,800	NA	428	590
1989	117,000	12,200	92,000	8,540	59,200	NA	482	634
1990	105,000	9,250	75,100	8,200	54,500	NA	489	610
1991	79,000	6,330	70,000	10,200	44,900	NA	500	598
1992	84,300	6,330	89,000	13,500	45,500	NA	516	599
1993	74,900	5,800	115,000	16,800	36,000	NA	533	601
1994	84,700	2,520	110,000	16,000	35,300	NA	501	551
1995	75,400	4,000	172,000	19,900	30,700	NA	496	530
1996	73,600	4,000	181,000	14,200	21,200	NA	489	508
1997	68,200	5,770	239,000	16,100	17,400	NA	535	543
1998	69,800	9,970	269,000	11,600	1,240	NA	568	568
1999	65,000	1,240	169,000	8,560	0	NA	600	587
2000	45,000	0	190,000	10,000	0	NA	584	553
2001	40,000	0	133,000	10,500	0	NA	600	552
2002	30,000	0	165,000	13,700	0	181,000	532	482
2003	35,000	0	169,000	13,200	0	189,000	529	469
2004	35,000	0	209,000	13,900	0	230,000	614	530
2005	35,000	0	201,000	15,600	0	220,000	603	503
2006	35,000	0	186,000	20,300	0	201,000	693	560
2007	35,000	0	164,000	19,300	0	180,000	744	585
2008	35,000	0	127,000	17,000	0	145,000	740	560
2009	35,000	0	78,000	20,700	0	92,300	739	561
2010	35,000	0	143,000	23,100	0	155,000	739	552
2011	35,000	0	129,000	27,800	0	136,000	739	536

NA Not available.

¹Compiled by T.D. Kelly (retired) and D.W. Olson.

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

MANUFACTURED ABRASIVES STATISTICS¹
U.S. GEOLOGICAL SURVEY
[All values in metric tons (t) gross weight unless otherwise noted]
Last modification: November 9, 2012

OTHER MANUFACTURED ABRASIVES		
Year	Imports	Exports
1947	124	NA
1948	348	NA
1949	466	5,730
1950	1,370	NA
1951	1,640	NA
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	NA	5,080
1970	907	5,560
1971	907	4,750
1972	NA	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	NA	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	NA	13,900
1991	NA	12,900
1992	NA	15,200
1993	NA	14,900
1994	NA	NA
1995	NA	NA
1996	NA	NA
1997	NA	NA

MANUFACTURED ABRASIVES STATISTICS¹
U.S. GEOLOGICAL SURVEY
 [All values in metric tons (t) gross weight unless otherwise noted]
 Last modification: November 9, 2012

OTHER MANUFACTURED ABRASIVES		
1998	NA	NA
1999	NA	NA
2000	NA	NA
2001	NA	NA
2002	NA	NA
2003	NA	NA
2004	NA	NA
2005	NA	NA
2006	NA	NA
2007	NA	NA
2008	NA	NA
2009	NA	NA
2010	NA	NA
2011	NA	NA

NA Not available.

¹Compiled 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.

Total Manufactured Abrasives

Production

Total manufactured abrasives production data for 1916 to the most recent year were from the MR and the MYB. Production data for 1916 to the most recent year 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 1996 to the most recent year were not included in the total because they were proprietary.

Imports

Total manufactured abrasives import data for 1947 to the most recent year were calculated from data in the MYB. Import data for 1947 to the most recent year 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 1947, import data were not available for any manufactured abrasive. 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 1949 to the most recent year were from the MYB. Export data for 1949 to the most recent year 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 1949, export data were not available for any manufactured abrasive. Since 1947, there are gaps in the export data for some abrasives because the data were 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 1916 to the most recent year 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 1916 to the most recent year 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 1969, 1973–75, and 1993 to the most recent year 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 1947 to the most recent year represent the total quantity of crude and refined aluminum oxide imported annually into the United States for consumption purposes. Data were not available for 1916–46.

Exports

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

Stocks

Stock data for 1935 to the most recent year were from the MYB. Stock data for 1970 to the most recent year 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 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 1916 to the most recent year 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 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 1981 and 1983 to the most recent year were withheld because they were proprietary. For 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 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 1969–82 were estimated by dividing the total value of production by the total annual production quantity. For 1981, production data were withheld because they were proprietary. The unit value datum for 1981 was interpolated. Unit value data were not available for 1983 to the most recent year 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 1996 to the most recent year are not available, because they were proprietary.

Imports

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

Exports

Boron carbide export data for 1996–2001 represent the total quantity of boron carbide exported from the United States to foreign recipients. For 2002 to the most recent year, 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 1996–2001 were estimated by dividing the total value of imports by the total import quantity. Data for 2002 to the most recent year 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 1916 to the most recent year represent the total quantity of metallic abrasives that were produced annually within the United States. Metallic abrasives production for 1916–62 was equal to domestic shipments.

Shipments

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

Imports

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

Exports

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

Stocks

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

Apparent Consumption

Apparent consumption data for metallic abrasives for 1916 to the most recent year 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 1970–77 where interpolation was used to estimate an export trend.

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 1916 to the most recent year 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.

Silicon Carbide

Production

Silicon carbide production data for 1916 to the most recent year represent the total quantity of silicon carbide that was produced annually within the United States and Canada.

Government Shipments

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

Imports

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

Exports

Silicon carbide export data for 1966 to the most recent year represent the total quantity of silicon carbide exported from the United States to foreign recipients. For 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 1916–51.

Stocks

Silicon carbide stock data for 1935–69 represent the total quantity of silicon carbide within United States and Canadian producer stockpiles. Silicon carbide stock data for 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 1999 to the most recent year were withheld because they were proprietary. Data were not available for 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 1916 to the most recent year were estimated by dividing the total value of production by the total annual production quantity. For 1998, production data were withheld because they were proprietary. The unit value datum for 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.

Other Manufactured Abrasives**Imports**

Import data for other manufactured abrasives for 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 1969, 1972, 1983, and 1990 to the most recent year, data were not available.

Exports

Export data for other manufactured abrasives for 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 1947–48, 1950–51, and 1994 to the most recent year, data were not available.

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