

**BORON STATISTICS<sup>1</sup>**  
**U.S. GEOLOGICAL SURVEY**  
[All values are in metric tons (t) boron oxide unless otherwise noted]  
Last modification: October 17, 2007

Year	Production	Imports	Exports	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)	World production (gross weight)
1900	9,250	178		9,430	111	2170	46,900
1901	8,420	297		8,720	123	2390	42,900
1902	7,590	362		7,950	327	6140	41,300
1903	12,300	219		12,500	56.6	1020	54,700
1904	16,300	225		16,500	45.1	815	65,200
1905	16,500	205		16,700	62.9	1140	65,800
1906	20,700	395		21,100	58.9	1070	87,400
1907	18,800	514		19,300	63.2	1100	95,300
1908	8,910	204		9,110	111	2010	74,800
1909	14,800	73.3		14,900	104	1880	86,800
1910	15,100	87.2		15,200	80	1390	67,100
1911	19,000	125		19,100	83.2	1450	99,000
1912	15,100	64.3		15,200	75.2	1270	86,000
1913	20,700	110		20,800	72.6	1190	55,100
1914	34,600	110		34,700	42.8	698	
1915	36,300	114		36,400	46.6	752	
1916	49,900	90.8		50,000	48.6	727	
1917	52,000	87.2		52,100	69.8	888	
1918	44,000	66.2		44,100	51.9	560	
1919	36,800	70.8		36,900	38	358	
1920	60,200	0.634	2,740	56,600	36.7	299	
1921	18,900	47.0		17,900	89.9	818	
1922	33,000	0.161		30,600	88.5	859	
1923	54,000	0.195		49,100	81.4	776	
1924	47,300			41,800	76.2	726	
1925	47,200			41,000	75.3	701	
1926	47,900			41,800	74.8	689	
1927	41,500			41,500	83.8	785	
1928	52,300	2,120	26,000	28,400	76.1	726	
1929	68,200	2,110	30,600	39,700	66.7	636	
1930	71,300	2.76	31,700	39,600	75.1	733	
1931	68,400	236	33,300	35,300	72.1	774	
1932	69,600	0.101	34,300	35,300	43.4	517	
1933	72,000	0.176	33,600	38,400	47.7	599	
1934	92,800	0.055	39,700	53,100	51.9	632	
1935	105,000	0.124	53,000	52,000	51.5	613	
1936	120,000	0.312	47,200	72,800	51.3	601	
1937	137,000	0.120	71,300	65,700	52.6	596	
1938	82,600	0.104	35,900	46,700	57.4	664	
1939	74,200	0.128	34,900	39,300	76.7	899	
1940	73,400	0.125	24,600	48,800	76.9	895	
1941	86,400	0.335	16,000	70,400	78.6	871	
1942	70,400		14,000	56,400	81.5	815	
1943	79,500	0.086	10,400	69,100	80.6	759	
1944	83,200		12,500	70,700	79.1	732	
1945	94,900	0.223	16,600	78,300	80.5	729	
1946	118,000	16.6	20,400	97,600	81.4	680	
1947	132,000	0.312	32,800	99,200	89.6	655	
1948	122,000	0.506	27,200	94,900	91.3	617	
1949	126,000	0.147	41,900	84,100	91.2	624	
1950	173,000	0.203	54,600	118,000	91.2	617	

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1951	219,000	0.236	81,700	137,000	91.6	574	
1952	153,000	0.142	39,500	114,000	92	566	
1953	194,000	0.103	53,300	141,000	91.3	557	
1954	209,000		78,700	130,000	128	774	
1955	223,000	3.65	85,200	138,000	138	837	
1956	243,000	10.0	93,300	150,000	135	807	
1957	244,000	2,320	82,100	164,000	155	899	
1958	241,000	7.840	90,200	151,000	160	902	
1959	285,000		97,100	188,000	163	911	
1960	294,000		115,000	179,000	163	897	
1961	284,000		103,000	181,000	165	901	
1962	308,000		112,000	196,000	160	862	
1963	335,000		130,000	205,000	164	875	
1964	386,000	16.0	147,000	239,000	158	830	172,000
1965	386,000	2,280	81,500	307,000	166	858	189,000
1966	419,000	4,350	97,300	326,000	164	824	209,000
1967	429,000	9,820	87,400	351,000	160	781	221,000
1968	471,000	6,880	97,500	380,000	161	754	232,000
1969	500,000	8,820	110,000	399,000	161	714	251,000
1970	510,000	9,920	110,000	410,000	168	707	257,000
1971	515,000	2,670	95,400	422,000	174	700	284,000
1972	551,000	7,340	89,100	469,000	173	674	314,000
1973	602,000	6,620	99,300	509,000	187	688	342,000
1974	562,000	7,940	117,000	453,000	227	750	328,000
1975	547,000	10,100	115,000	442,000	287	870	354,000
1976	572,000	11,000	116,000	467,000	320	917	2,340,000
1977	667,000	25,800	141,000	552,000	355	954	2,730,000
1978	706,000	46,100	164,000	588,000	397	991	2,660,000
1979	725,000	36,200	175,000	586,000	427	960	2,520,000
1980	710,000	32,300	173,000	476,000	509	1010	2,610,000
1981	671,000	15,100	152,000	534,000	622	1120	2,560,000
1982	551,000	8,030	123,000	436,000	690	1170	2,270,000
1983	578,000	13,800	124,000	468,000	755	1240	2,240,000
1984	667,000	28,300	289,000	344,000	743	1170	2,510,000
1985	577,000	28,500	314,000	292,000	773	1170	2,510,000
1986	571,000	24,300	310,000	285,000	789	1170	2,510,000
1987	625,000	24,400	316,000	333,000	783	1120	2,690,000
1988	578,000	23,700	310,000	570,000	750	1030	2,990,000
1989	562,000	21,100	353,000	230,000	758	996	2,990,000
1990	608,000	21,400	320,000	309,000	720	898	2,910,000
1991	626,000	20,000	309,000	337,000	712	852	2,960,000
1992	554,000	38,300	294,000	298,000	658	765	2,670,000
1993	574,000	120,000	287,000	407,000	710	801	2,640,000
1994	550,000	73,100	303,000	320,000	779	857	3,810,000
1995	728,000	91,500	342,000	478,000	745	797	4,020,000
1996	581,000	90,100	218,000	453,000	836	869	4,330,000
1997	604,000	115,000	293,000	426,000	874	888	4,580,000
1998	587,000	105,000	291,000	401,000	775	775	4,570,000
1999	618,000	108,000	249,000	477,000	927	907	4,460,000
2000	546,000	84,000	278,000	352,000	941	891	4,600,000
2001	536,000	90,000	161,000	482,000	879	809	4,740,000

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<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>	<b>World production (gross weight)</b>
2002	543,000	124,000	124,000	492,000	826	748	4,580,000
2003	605,000	68,000	104,000	532,000	934	827	4,720,000
2004	637,000	80,000	102,000	509,000	934	806	5,070,000
2005	612,000	83,000	256,000		935	780	5,090,000
2006		126,000	306,000		935	756	4,260,000

<sup>1</sup>Compiled by D.A. Buckingham, P.A. Lyday (retired), and D.S. Kostick.

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

## Boron Worksheet Notes

### Data Sources

Sources for the boron worksheet are the mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey—Minerals Yearbooks (MYB) and its predecessor, Mineral Resources of the United States (MR); and Mineral Facts and Problems (MFP) publications. Years of publication and corresponding years of data coverage are listed in the References section below. Zeros are used where data are reported as a “small unreported amount.” Blank cells in the worksheet indicate that data are not available or are withheld to protect individual company proprietary data.

### Production

Production data are essentially shipments and include crude ore, and boron minerals and compounds sold or used by producers, including actual boron oxide and marketable products. USGS boron data predate 1900; however, for these statistics, data are reported only for the years 1900–2006. Data for the years 1919–24 are reported as “shipped by producers.” Production data for 2006 is withheld. All data are in terms of boron oxide (B<sub>2</sub>O<sub>3</sub>) content. If the B<sub>2</sub>O<sub>3</sub> content was not reported, it was calculated using the theoretical percentage of B<sub>2</sub>O<sub>3</sub> in each borate mineral or compound sold or used. Data are reported in the MR and the MYB.

### Imports

Import data are not reported for the years 1924–27, 1942, 1944, and 1959–60. Their B<sub>2</sub>O<sub>3</sub> content was calculated using the theoretical percentage of B<sub>2</sub>O<sub>3</sub> in each borate compound imported. For the “other borates” category, contained B<sub>2</sub>O<sub>3</sub> was calculated using the average (mean) B<sub>2</sub>O<sub>3</sub> content of the sodium boron compounds. Data were totaled on an annual basis. Data are reported in the MR and the MYB.

### Exports

Export data were not reported prior to 1928, with the exception of the year 1920. Data are boron compound exports, totaled on an annual basis. Their B<sub>2</sub>O<sub>3</sub> content was calculated using the theoretical percentage of B<sub>2</sub>O<sub>3</sub> in each borate compound exported. Data for the years 2001–06 were provided by the Commodity Specialist. Data are reported in the MR and the MYB.

### Consumption

Consumption data are in terms of B<sub>2</sub>O<sub>3</sub> content. Data were not available for the 1970–72, 1995, and 1998. Consumption data are reported in the MR and the MYB.

### Apparent Consumption

Apparent consumption data are in terms of B<sub>2</sub>O<sub>3</sub> content. For the years 1900–19, apparent consumption was equal to production, as defined above, plus imports. Export data are not available and therefore assumed to be zero. For the years 1921–27, apparent consumption was interpolated. Apparent consumption was estimated for the years 1920 and 1928–2006 using the following formula:

$$\text{APPARENT CONSUMPTION} = (\text{PRODUCTION} + \text{IMPORTS}) - \text{EXPORTS}.$$

Data for this equation are reported in the MR and the MYB. Data for 2005-06 are withheld.

### Unit Value (\$/t)

Unit value is defined as the estimated value of apparent consumption in U.S. dollars of 1 metric ton (t) of B<sub>2</sub>O<sub>3</sub> content. For the years 1900–2006, unit value is based on the following formula:

$$\text{UNIT VALUE} = (\text{PRODUCTION (Sold or Used) VALUE} - \text{EXPORT VALUE} + \text{IMPORT VALUE}) / (\text{PRODUCTION (Sold or Used)} - \text{EXPORTS} + \text{IMPORTS}).$$

For the years where import and export value data are not available, they are assumed zero, and the reported boron production, as defined above, unit value is used. Data are reported in the MR and the MYB. Fluctuations in the unit value in certain years or over a span of years may result from a combination of unavailable data and changes in the mix of boron-containing products used in the calculation. This calculated unit value is not the same as the reported price or unit value of reported quantities for the MYB.

### 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.

### World Production

Data are world mine production. For most years, world mine production data are reported in gross weight. Data could not be converted to contained B<sub>2</sub>O<sub>3</sub>, because various boron units are used when reporting the minerals and compounds of boron. World production data are not reported for the years 1914–64. Data reported in the MR and MYB cover the years 1900–13 and 1976–2006 and are all gross weight data. Data for the years 1964–75 are the calculated B<sub>2</sub>O<sub>3</sub> content and are reported in the 1975 and 1980 MFP.

**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, available online at <http://pubs.usgs.gov/ds/2005/140/>. (Accessed [date].)

**For more information, please contact:**

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