

Table 1. Summary of trace element concentrations of topaz measured by LA-ICP-MS

Location	Tectonic Environment ^a	Number of analyses ^b	Descriptive statistics	³¹ P (ppmw)	⁴⁵ Sc (ppmw)
USA, Texas	Orogen	180	Median	14.05	3.36
			MAD	7.36	0.32
			Min	bdl	1.45
			Max	589.30	4.37
Australia	Orogen	15	Median	25.68	3.00
			MAD ^d	15.40	0.37
			Min	bdl	2.11
			Max	152.82	3.53
Brazil	Shield	200	Median	18.73	2.48
			MAD	9.56	1.00
			Min	bdl	1.31
			Max	690.14	7.69
Columbia	Shield	98	Median	34.09	2.30
			MAD	33.48	0.36
			Min	bdl	1.56
			Max	316.02	2.77
Guyana	Shield	165	Median	411.16	8.06
			MAD	420.91	6.95
			Min	bdl	1.53
			Max	3377.66	129.98
Germany	Extended Crust	6	Median	60.42	3.27
			MAD	62.68	0.07
			Min	12.25	2.80
			Max	265.19	3.33
Japan	Orogen	2	Median	50.11	3.12
			MAD	5.61	0.16
			Min	46.32	3.01
			Max	53.89	3.23
Mexico	Orogen	80	Median	17.41	5.81
			MAD	4.79	1.03
			Min	bdl	2.87
			Max	146.41	35.26
Nigeria	Shield	10	Median	32.94	3.29
			MAD	25.80	0.36
			Min	bdl	2.61
			Max	106.38	5.09
Namibia	Shield	6	Median	14.29	2.66
			MAD	3.40	0.16
			Min	11.75	2.36
			Max	93.07	2.99

Pakistan	Orogen	10	Median	11.04	2.76
			MAD	10.01	0.27
			Min	bdl	2.27
			Max	23.73	2.96
Russia	Orogen	18	Median	23.16	3.00
			MAD	10.41	0.18
			Min	10.89	2.18
			Max	954.23	3.66
Sri Lanka	Shield	8	Median	bdl	2.40
			MAD	-	0.51
			Min	bdl	1.86
			Max	74.45	2.92
USA, California	Orogen	5	Median	12.86	2.70
			MAD	12.86	2.70
			Min	9.95	2.53
			Max	30.11	2.90
USA, Colorado	Orogen	2	Median	-	-
			MAD	-	-
			Min	48.44	1.80
			Max	71.93	2.04
USA, Utah	Orogen	50	Median	16.74	4.06
			MAD	7.12	0.75
			Min	bdl	1.85
			Max	142.27	23.87
USA, Indiana	Shield	2	Median	-	-
			MAD	-	-
			Min	192.09	2.42
			Max	216.08	2.64
Zimbabwe	Shield	58	Median	97.78	2.35
			MAD	107.10	0.17
			Min	bdl	1.33
			Max	321.91	2.65
Detection limits				8.51	0.13

^aclasses derived from Simmons et al. (2012), ^bincludes replicate analyses. ^cbdl = below detection limit, ^dMAD = median absolute deviation.

⁴⁷ Ti (ppmw)	⁵¹ V (ppmw)	⁵³ Cr (ppmw)	⁵⁷ Fe (ppmw)	⁷¹ Ga (ppmw)	⁷² Ge (ppmw)	⁹³ Nb (ppmw)	¹¹⁸ Sn (ppmw)	¹⁸¹ Ta (ppmw)	¹⁸² W (ppmw)
7.64	bdl	bdl	35.26	5.57	68.35	0.03	bdl	0.010	bdl
3.87	-	-	23.56	1.64	23.42	0.03	-	0.010	-
bdl	bdl	bdl	bdl ^c	1.02	12.33	bdl	bdl	bdl	bdl
208.88	40.21	99.58	193.27	17.50	223.65	4.36	2.35	4.100	0.98
10.41	bdl	bdl	67.73	5.46	32.44	0.01	bdl	0.010	bdl
4.70	-	-	33.24	1.18	8.62	0.01	-	0.010	-
1.61	bdl	bdl	9.69	1.89	12.33	bdl	bdl	bdl	bdl
44.44	18.76	4.05	132.36	9.31	336.27	0.60	1.43	0.050	2.90
13.56	9.30	54.70	33.65	4.25	31.27	bdl	bdl	bdl	bdl
10.90	13.78	81.09	22.87	4.20	28.01	-	-	-	-
1.78	bdl	bdl	bdl	0.40	3.71	bdl	bdl	bdl	bdl
194.99	133.65	565.44	4032.37	25.72	976.24	4.58	19.38	4.240	13.83
9.87	bdl	bdl	43.91	4.28	99.95	0.04	bdl	0.020	bdl
5.06	-	-	9.87	1.49	13.88	0.03	-	0.015	-
3.14	bdl	bdl	bdl	1.74	47.24	bdl	bdl	bdl	bdl
44.54	0.70	2.08	104.90	12.16	239.63	4.08	3.55	15.060	0.72
88.64	0.28	bdl	31.87	7.21	33.94	0.93	0.18	0.310	0.37
84.45	0.42	-	18.55	2.88	13.03	1.32	0.27	0.460	0.49
10.71	bdl	bdl	bdl	1.90	6.56	bdl	bdl	bdl	bdl
19767.35	108.00	217.34	1708.68	52.25	201.98	72.60	32.20	10.320	83.18
35.21	12.28	61.48	24.51	1.92	62.89	bdl	bdl	bdl	bdl
28.22	7.17	29.22	9.36	0.96	59.30	-	-	-	-
8.04	5.36	4.67	17.92	0.72	8.07	bdl	bdl	bdl	bdl
90.06	20.96	103.38	91.71	14.48	129.90	0.51	0.38	0.120	0.32
4.49	bdl	0.40	12.38	5.39	46.04	0.03	0.48	0.015	0.03
3.42	-	0.01	3.58	0.57	39.82	0.01	0.13	0.007	0.04
2.18	bdl	0.39	9.96	5.00	19.18	0.02	0.39	0.010	bdl
6.80	bdl	0.40	14.79	5.77	72.89	0.03	0.56	0.020	0.06
104.42	0.16	bdl	250.45	8.75	26.05	2.76	0.22	0.680	1.05
35.27	0.08	-	76.30	2.41	3.48	1.56	0.22	0.520	0.56
24.04	bdl	bdl	65.28	2.71	13.42	0.41	bdl	0.050	0.26
372.22	0.69	27.53	2024.23	41.34	38.10	199.00	3.96	24.330	26.84
3.94	bdl	bdl	47.03	2.00	34.61	0.02	bdl	0.005	bdl
2.49	-	-	29.84	0.47	12.61	0.02	-	0.007	-
1.96	bdl	bdl	20.52	1.41	18.53	bdl	bdl	bdl	bdl
198.06	0.50	6.37	226.81	9.10	268.96	3.55	bdl	0.470	3.03
8.55	bdl	bdl	22.88	3.27	89.83	bdl	bdl	0.010	bdl
9.12	-	-	4.37	0.60	63.43	-	-	-	-
1.41	bdl	bdl	bdl	2.59	44.86	bdl	bdl	bdl	bdl
16.18	0.15	bdl	26.24	8.67	160.89	0.06	bdl	0.010	0.07

42.59	22.44	62.41	bdl	1.62	18.09	bdl	bdl	bdl	bdl
39.73	14.15	53.28	-	0.60	8.08	-	-	-	-
8.45	bdl	0.39	bdl	1.17	12.15	bdl	bdl	bdl	bdl
149.70	44.13	108.18	12.65	3.61	184.07	0.05	0.95	0.010	0.14
13.65	115.95	257.57	bdl	1.17	5.38	bdl	bdl	bdl	bdl
9.61	123.00	277.54	-	0.97	4.91	-	-	-	-
6.41	bdl	bdl	bdl	0.24	0.41	bdl	bdl	bdl	bdl
120.88	688.05	1326.77	55.77	7.06	18.84	0.03	bdl	0.010	0.10
9.98	bdl	bdl	35.15	7.41	83.79	0.05	bdl	bdl	0.04
4.20	-	-	31.90	3.13	52.76	0.05	-	-	-
3.34	bdl	bdl	bdl	1.68	8.16	bdl	bdl	bdl	bdl
17.04	24.78	71.98	138.40	10.19	123.89	0.15	bdl	0.050	0.08
2.88	bdl	bdl	bdl	3.44	373.72	bdl	bdl	0.020	bdl
2.88	-	-	-	3.44	46.67	-	-	0.020	-
2.16	bdl	bdl	bdl	1.13	243.68	bdl	bdl	bdl	bdl
20.39	bdl	bdl	bdl	7.13	420.39	0.08	bdl	0.320	bdl
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
3.39	bdl	bdl	35.32	1.35	71.63	bdl	bdl	bdl	bdl
3.42	0.08	bdl	35.63	1.83	77.02	bdl	bdl	bdl	bdl
140.17	0.14	bdl	226.38	4.88	19.49	1.76	bdl	0.250	0.46
43.42	0.05	-	91.45	2.23	2.82	1.33	-	0.210	0.45
10.42	bdl	bdl	35.37	1.39	8.85	bdl	bdl	bdl	bdl
996.16	26.88	191.40	1630.63	18.52	47.87	96.15	4.45	16.910	40.06
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
11.98	0.09	bdl	89.46	11.33	76.49	0.06	bdl	0.030	0.22
16.31	0.11	bdl	105.98	12.86	81.15	0.08	0.25	0.040	0.23
3.96	bdl	bdl	bdl	2.86	723.97	0.02	bdl	0.035	bdl
2.77	-	-	-	1.02	484.06	0.03	-	0.037	-
bdl	bdl	bdl	bdl	0.26	138.59	bdl	bdl	bdl	bdl
41.87	0.81	59.21	331.34	4.62	1307.97	0.68	8.70	1.230	0.19
<i>1.18</i>	<i>0.06</i>	<i>0.34</i>	<i>7.28</i>	<i>0.02</i>	<i>0.36</i>	<i>0.01</i>	<i>0.17</i>	<i>0.004</i>	<i>0.03</i>