

	SiO2	Al2O3	TiO2	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	Ba	Cr	S	Sc	Sr	Zn
	(wt%)	(wt%)	(wt%)	(wt%)	(wt%)	(wt%)	(wt%)	(wt%)	(wt%)	(wt%)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
SiO2 (wt %)	1															
Al2O3 (wt%)	0.88	1														
TiO2 (wt %)	0.91	0.97	1													
Fe2O3 (wt%)	0.27	0.35	0.28	1												
MnO (wt %)	-0.5	-0.39	-0.5	0.125	1											
MgO (wt %)	-0.5	-0.47	-0.5	0.093	0.5	1										
CaO (wt %)	-0.9	-0.9	-0.9	-0.44	0.45	0.32	1									
Na2O (wt %)	0.69	0.62	0.71	0.016	-0.3	-0.3	-0.6	1								
K2O (wt %)	0.81	0.89	0.91	0.166	-0.6	-0.5	-0.8	0.62	1							
P2O5 (wt %)	-0.3	-0.28	-0.3	-0.28	-0.2	-0.1	0.3	-0.21	-0.2	1						
Ba (ppm)	0.01	0.07	0.02	0.513	0.04	-0.1	-0.14	0	-0		1					
Cr (ppm)	0.34	0.17	0.11	0.107	-0.3	-0.3	-0.3	-0.1	0.19	0.15	0.04	1				
S (ppm)	0.05	0.11	0.02	0.488	0.32	-0	-0.1	-0.14	-0.2	-0.1	0.37	0.2	1			
Sc (ppm)	0.81	0.95	0.9	0.422	-0.3	-0.4	-0.8	0.49	0.79	-0.3	0.1	0.24	0.27	1		
Sr (ppm)	-0.6	-0.49	-0.6	-0.15	0.2	0.12	0.58	-0.5	-0.5	0.48	0.5	-0.03	0.22	-0.43	1	
Zn (ppm)	-0.1	-0.05	-0.1	-0.22	-0.3	-0.2	0.07	-0.09	0.12	0.25	-0.1	0.3	-0.17	-0.06	0.08	1
Zr (ppm)	0.69	0.53	0.67	-0.08	-0.5	-0.2	-0.6	0.79	0.64	-0.1	-0.1	-0.06	-0.36	0.36	-0.5	-0
Be (ppm)	0.71	0.82	0.79	0.21	-0.5	-0.4	-0.8	0.51	0.86	-0.1	-0	0.37	0.01	0.77	-0.4	0.23
V (ppm)	-0.2	-0.12	-0.1	-0.27	-0.3	-0.1	0.14	-0.16	0.08	0.12	-0.1	0.25	-0.26	-0.13	0.07	0.74
Co (ppm)	0.76	0.85	0.84	0.255	-0.3	-0.4	-0.8	0.52	0.79	-0.3	-0.1	0.05	0.04	0.8	-0.5	-0.1
Ni (ppm)	0.08	0.16	0.17	-0.28	-0.5	-0.3	-0.1	0.03	0.38	0.23	-0.2	0.34	-0.31	0.13	-0	0.69
Cu (ppm)	0.64	0.7	0.71	0.009	-0.5	-0.4	-0.7	0.36	0.78	-0	-0.1	0.27	-0.12	0.67	-0.3	0.21
Ga (ppm)	0.85	0.98	0.96	0.335	-0.4	-0.5	-0.9	0.63	0.89	-0.3	0.04	0.2	0.08	0.94	-0.5	-0
Rb (ppm)	0.8	0.96	0.91	0.389	-0.3	-0.5	-0.8	0.44	0.82	-0.3	0.09	0.25	0.22	0.96	-0.4	-0
Y (ppm)	0.04	-0.01	0.01	-0.2	-0.3	-0.2	-0	0.06	0.1	0.81	-0.1	0.17	-0.17	-0.03	0.24	0.2
Nb (ppm)	0.89	0.95	0.98	0.304	-0.4	-0.4	-0.9	0.74	0.86	-0.3	0.02	0.1	0.07	0.89	-0.6	-0.1
Mo (ppm)	-0	-0.02	0.03	-0.21	-0.3	-0.1	-0	0.1	0.25	0	-0.1	-0.02	-0.43	-0.1	-0.1	0.33
Sn (ppm)	0.61	0.64	0.68	0.16	-0.2	-0.3	-0.6	0.62	0.56	-0.2	-0	0.01	-0.01	0.6	-0.4	-0.1
Cs (ppm)	0.64	0.83	0.74	0.449	-0.2	-0.4	-0.7	0.11	0.65	-0.2	0.17	0.31	0.33	0.88	-0.3	0
La (ppm)	0.46	0.35	0.34	0.063	-0.3	-0.3	-0.4	0.23	0.35	0.5	-0	0.45	0.01	0.35	-0.1	-0
Ce (ppm)	0.64	0.55	0.54	0.205	-0.2	-0.3	-0.6	0.41	0.49	0.1	-0	0.34	0.08	0.54	-0.3	-0.2
Pr (ppm)	0.46	0.33	0.33	0.064	-0.3	-0.3	-0.4	0.28	0.33	0.36	-0	0.38	0.01	0.33	-0.1	-0.1
Nd (ppm)	0.4	0.28	0.29	0.033	-0.3	-0.3	-0.3	0.26	0.3	0.37	-0	0.32	-0.01	0.27	-0.1	-0.1
Sm (ppm)	0.35	0.26	0.27	0.022	-0.2	-0.2	-0.3	0.26	0.29	0.34	-0	0.23	-0.03	0.24	-0	-0.1
Eu (ppm)	0.26	0.2	0.2	0.026	-0.2	-0.2	-0.2	0.18	0.23	0.38	0.17	0.18	0.03	0.19	0.18	-0.1
Gd (ppm)	0.32	0.24	0.25	0.012	-0.2	-0.2	-0.3	0.22	0.26	0.44	-0	0.22	-0	0.23	0.01	-0.1
Tb (ppm)	0.35	0.29	0.3	0.017	-0.3	-0.2	-0.3	0.28	0.3	0.44	-0	0.18	-0.02	0.27	-0	-0
Dy (ppm)	0.35	0.29	0.31	-0.01	-0.3	-0.2	-0.3	0.3	0.33	0.49	-0	0.15	-0.07	0.26	-0	0.01
Ho (ppm)	0.33	0.27	0.3	-0.06	-0.3	-0.2	-0.3	0.29	0.33	0.57	-0.1	0.16	-0.14	0.24	0	0.06
Er (ppm)	0.38	0.32	0.36	-0.05	-0.4	-0.3	-0.3	0.33	0.39	0.58	-0.1	0.16	-0.14	0.29	-0	0.09
Tm (ppm)	0.51	0.46	0.51	-0.01	-0.5	-0.3	-0.5	0.43	0.51	0.5	-0.1	0.18	-0.14	0.42	-0.1	0.1
Yb (ppm)	0.6	0.54	0.6	-0.02	-0.5	-0.3	-0.6	0.53	0.61	0.41	-0.1	0.18	-0.2	0.48	-0.2	0.13
Lu (ppm)	0.62	0.57	0.64	-0.02	-0.6	-0.4	-0.6	0.56	0.66	0.37	-0.1	0.17	-0.24	0.5	-0.2	0.15
Hf (ppm)	0.7	0.54	0.68	-0.07	-0.5	-0.2	-0.7	0.81	0.66	-0.1	-0.1	-0.08	-0.38	0.38	-0.5	-0
Ta (ppm)	0.87	0.93	0.94	0.373	-0.3	-0.4	-0.9	0.63	0.76	-0.3	0.06	0.13	0.24	0.92	-0.5	-0.1
W (ppm)	0.05	0.08	0.11	-0.23	-0.2	-0.1	-0	0.16	0.23	0.12	-0.2	-0.04	-0.4	-0.02	-0.1	0.15
Tl (ppm)	0.25	0.18	0.28	-0.15	-0.4	-0.1	-0.2	0.31	0.36	-0.1	-0.1	-0.08	-0.32	0.08	-0.2	0.15
Pb (ppm)	0.6	0.59	0.59	0.335	-0.1	-0.2	-0.6	0.37	0.37	-0.3	0.12	0.18	0.36	0.62	-0.3	-0.3
Th (ppm)	0.92	0.95	0.97	0.262	-0.5	-0.5	-0.9	0.7	0.9	-0.3	0	0.18	-0.02	0.87	-0.6	-0
U (ppm)	0.01	-0.02	0.02	-0.24	-0.4	-0.2	0	0.01	0.23	0.41	-0.2	0.07	-0.42	-0.08	0.01	0.27

	Zr	Be	V	Co	Ni	Cu	Ga	Rb	Y	Nb	Mo	Sn	Cs	La	Ce	Pr	Nd
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Zr (ppm)	1																
Be (ppm)	0.46	1															
V (ppm)	-0	0.22	1														
Co (ppm)	0.49	0.73	-0.2	1													
Ni (ppm)	0.17	0.49	0.78	0.19	1												
Cu (ppm)	0.42	0.76	0.15	0.75	0.55	1											
Ga (ppm)	0.51	0.87	-0.1	0.86	0.22	0.73	1										
Rb (ppm)	0.37	0.82	-0.1	0.82	0.2	0.7	0.96	1									
Y (ppm)	0.2	0.13	0.15	-0.06	0.31	0.18	-0	-0	1								
Nb (ppm)	0.63	0.76	-0.2	0.83	0.11	0.67	0.95	0.89	-0.03	1							
Mo (ppm)	0.19	0.23	0.47	0.16	0.53	0.28	0.05	-0.1	0.1	0.01	1						

Sn (ppm)	0.47	0.48	-0.1	0.54	0.05	0.45	0.64	0.58	0.05	0.7	0.01	1						
Cs (ppm)	0.12	0.67	-0	0.69	0.17	0.6	0.8	0.93	-0.06	0.7	-0.1	0.4	1					
La (ppm)	0.3	0.39	-0.1	0.27	0.14	0.35	0.35	0.34	0.79	0.32	-0	0.27	0.3	1				
Ce (ppm)	0.4	0.48	-0.2	0.5	-0.01	0.39	0.56	0.51	0.52	0.54	-0	0.41	0.42	0.89	1			
Pr (ppm)	0.32	0.35	-0.1	0.28	0.07	0.29	0.34	0.31	0.73	0.32	-0	0.27	0.24	0.95	0.94	1		
Nd (ppm)	0.3	0.3	-0.1	0.24	0.07	0.25	0.29	0.25	0.75	0.27	0	0.23	0.19	0.91	0.92	0.99	1	
Sm (ppm)	0.3	0.28	-0.1	0.22	0.07	0.22	0.27	0.22	0.74	0.26	0.02	0.22	0.15	0.85	0.88	0.96	0.99	
Eu (ppm)	0.23	0.21	-0.1	0.16	0.05	0.17	0.2	0.17	0.75	0.18	-0	0.17	0.13	0.8	0.8	0.91	0.94	
Gd (ppm)	0.28	0.26	-0.1	0.19	0.08	0.22	0.24	0.21	0.81	0.23	-0	0.2	0.16	0.89	0.86	0.96	0.98	
Tb (ppm)	0.33	0.29	-0.1	0.23	0.1	0.25	0.28	0.25	0.82	0.28	-0	0.24	0.18	0.88	0.86	0.95	0.97	
Dy (ppm)	0.37	0.31	-0	0.23	0.16	0.29	0.29	0.25	0.87	0.29	0.03	0.26	0.16	0.88	0.83	0.93	0.95	
Ho (ppm)	0.39	0.32	0.03	0.21	0.23	0.31	0.27	0.23	0.92	0.27	0.07	0.24	0.14	0.89	0.78	0.9	0.91	
Er (ppm)	0.44	0.37	0.04	0.25	0.27	0.37	0.32	0.28	0.92	0.33	0.07	0.29	0.18	0.89	0.75	0.87	0.87	
Tm (ppm)	0.54	0.48	0.03	0.36	0.3	0.47	0.46	0.41	0.84	0.47	0.06	0.39	0.29	0.86	0.75	0.82	0.81	
Yb (ppm)	0.65	0.57	0.05	0.46	0.36	0.56	0.55	0.48	0.77	0.57	0.13	0.44	0.32	0.81	0.73	0.76	0.74	
Lu (ppm)	0.69	0.61	0.09	0.49	0.4	0.6	0.58	0.5	0.72	0.6	0.17	0.47	0.33	0.75	0.66	0.69	0.66	
Hf (ppm)	0.99	0.49	-0	0.52	0.18	0.45	0.55	0.39	0.16	0.66	0.22	0.5	0.13	0.29	0.41	0.31	0.29	
Ta (ppm)	0.53	0.7	-0.2	0.8	0.04	0.62	0.92	0.92	-0.04	0.95	-0.1	0.63	0.78	0.32	0.53	0.31	0.26	
W (ppm)	0.27	0.15	0.2	0.06	0.25	0.12	0.1	0.03	0.23	0.08	0.3	0.16	-0.04	0.15	0.09	0.12	0.13	
Tl (ppm)	0.48	0.28	0.2	0.44	0.44	0.4	0.2	0.12	0.06	0.25	0.46	0.18	-0.01	0.04	0.09	0.06	0.06	
Pb (ppm)	0.24	0.32	-0.3	0.5	-0.19	0.3	0.54	0.59	-0.11	0.63	-0.3	0.69	0.54	0.27	0.44	0.27	0.22	
Th (ppm)	0.7	0.81	-0.1	0.84	0.2	0.71	0.95	0.89	0.09	0.95	0.07	0.66	0.72	0.43	0.63	0.44	0.39	
U (ppm)	0.25	0.2	0.37	0.14	0.52	0.36	0.02	-0	0.58	-0.04	0.65	0.05	-0.07	0.39	0.2	0.32	0.33	

	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)	Hf (ppm)	Ta (ppm)	W (ppm)	Tl (ppm)	Pb (ppm)	Th (ppm)	U (ppm)
Sm (ppm)	1																
Eu (ppm)	0.96	1															
Gd (ppm)	0.99	0.96	1														
Tb (ppm)	0.98	0.95	0.99	1													
Dy (ppm)	0.95	0.93	0.98	0.99	1												
Ho (ppm)	0.91	0.88	0.95	0.96	0.99	1											
Er (ppm)	0.85	0.83	0.9	0.93	0.96	0.99	1										
Tm (ppm)	0.79	0.75	0.83	0.87	0.91	0.95	0.98	1									
Yb (ppm)	0.72	0.67	0.76	0.8	0.85	0.89	0.93	0.98	1								
Lu (ppm)	0.64	0.59	0.67	0.72	0.78	0.83	0.89	0.95	0.98	1							
Hf (ppm)	0.29	0.22	0.27	0.31	0.35	0.37	0.43	0.52	0.64	0.69	1						
Ta (ppm)	0.23	0.17	0.22	0.27	0.27	0.25	0.31	0.45	0.52	0.54	0.55	1					
W (ppm)	0.13	0.1	0.12	0.13	0.17	0.22	0.22	0.23	0.26	0.26	0.28	-0	1				
Tl (ppm)	0.08	0.04	0.05	0.08	0.1	0.12	0.16	0.19	0.27	0.31	0.5	0.15	0.14	1			
Pb (ppm)	0.19	0.15	0.17	0.18	0.16	0.11	0.13	0.22	0.24	0.23	0.25	0.65	-0.15	0.03	1		
Th (ppm)	0.36	0.28	0.34	0.38	0.39	0.38	0.44	0.57	0.67	0.69	0.73	0.92	0.15	0.29	0.56	1	
U (ppm)	0.33	0.31	0.36	0.37	0.43	0.49	0.51	0.46	0.49	0.5	0.25	-0.1	0.36	0.37	-0.3	0.1	1