

Mineral database			
Phase	Structural formula	Density	Prop. density
MOLAR WGHT			
Quartz	SiO <sub>2</sub>	2.65	
Albite	NaAlSi <sub>3</sub> O <sub>8</sub>	2.62	
Anorthite	CaAl <sub>2</sub> Si <sub>2</sub> O <sub>8</sub>	2.76	
Oligoclase An <sub>15</sub>	Na <sub>0.85</sub> Ca <sub>0.15</sub> Al <sub>1.15</sub> Si <sub>2.85</sub> O <sub>8</sub>	2.64	
Andesine An <sub>40</sub>	Na <sub>0.6</sub> Ca <sub>0.4</sub> Al <sub>1.4</sub> Si <sub>2.6</sub> O <sub>8</sub>	2.68	
Labradorite An <sub>60</sub>	Na <sub>0.4</sub> Ca <sub>0.6</sub> Al <sub>1.6</sub> Si <sub>2.4</sub> O <sub>8</sub>	2.70	
Bytownite An <sub>80</sub>	Na <sub>0.2</sub> Ca <sub>0.8</sub> Al <sub>1.8</sub> Si <sub>2.2</sub> O <sub>8</sub>	2.73	
Orthoclase	KAlSi <sub>3</sub> O <sub>8</sub>	2.56	
Perthite Or <sub>70</sub> Ab <sub>30</sub>	K <sub>0.7</sub> Na <sub>0.3</sub> AlSi <sub>3</sub> O <sub>8</sub>	2.57	
Mesoperthite Or <sub>50</sub> Ab <sub>50</sub>	K <sub>0.5</sub> Na <sub>0.5</sub> AlSi <sub>3</sub> O <sub>8</sub>	2.59	
Mesoperthite Or <sub>30</sub> Ab <sub>70</sub>	K <sub>0.3</sub> Na <sub>0.7</sub> AlSi <sub>3</sub> O <sub>8</sub>	2.60	
Annite	KFe <sup>2+</sup> <sub>3</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	3.36	
Phlogopite	KMg <sup>2+</sup> <sub>3</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	2.79	
Ann <sub>70</sub> Phl <sub>30</sub>	KMg <sub>0.9</sub> Fe <sup>2+</sup> <sub>2.1</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	3.19	
Ann <sub>50</sub> Phl <sub>50</sub>	KMg <sub>1.5</sub> Fe <sup>2+</sup> <sub>1.5</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	3.08	
Ann <sub>30</sub> Phl <sub>70</sub>	KMg <sub>2.1</sub> Fe <sup>2+</sup> <sub>0.9</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	2.96	
Muscovite	K(Si <sub>3</sub> Al <sub>3</sub> )O <sub>10</sub> (OH) <sub>2</sub>	2.83	
Talc	Mg <sub>3</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub>	2.78	
Serpentine	Mg <sub>3</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	2.57	
Kaolinite	Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	2.63	
Illite	KAl <sub>5</sub> Si <sub>7</sub> O <sub>20</sub> (OH) <sub>4</sub>	2.75	
Nepheline	Na <sub>3</sub> KS <sub>4</sub> Al <sub>4</sub> O <sub>16</sub>	2.64	
Leucite	KAlSi <sub>2</sub> O <sub>6</sub>	2.46	
Cordierite	Mg <sup>2+</sup> <sub>2</sub> (Si <sub>5</sub> Al <sub>4</sub> )O <sub>18</sub> (OH)	2.54	
Fe-Cordierite	Fe <sup>2+</sup> <sub>2</sub> (Si <sub>5</sub> Al <sub>4</sub> )O <sub>18</sub> (OH)	2.79	
Mg <sub>80</sub> Fe <sub>20</sub> Cordierite	Fe <sup>2+</sup> <sub>0.4</sub> Mg <sup>2+</sup> <sub>1.6</sub> (Si <sub>5</sub> Al <sub>4</sub> )O <sub>18</sub> (OH)	2.59	
Fe Staurolite	Fe <sup>2+</sup> <sub>2</sub> Al <sub>9</sub> Si <sub>4</sub> O <sub>20</sub> (OH) <sub>2</sub>	3.69	
Fe80Mg20 Staurolite	Fe <sup>2+</sup> <sub>1.6</sub> Mg <sub>0.4</sub> Al <sub>9</sub> Si <sub>4</sub> O <sub>20</sub> (OH) <sub>2</sub>	3.76	
Fe Chloritoid	Fe <sup>2+</sup> Al <sub>2</sub> OSi <sub>4</sub> O <sub>4</sub> (OH) <sub>2</sub>	3.80	
Mg Chloritoid	MgAl <sub>2</sub> OSi <sub>4</sub> O <sub>4</sub> (OH) <sub>2</sub>	3.46	
Fe <sub>80</sub> Mg <sub>20</sub> Chloritoid	Mg <sub>0.2</sub> Fe <sub>0.8</sub> Al <sub>2</sub> OSi <sub>4</sub> O <sub>4</sub> (OH) <sub>2</sub>	3.73	
Sillimanite	Al <sub>2</sub> SiO <sub>5</sub>	3.24	
Kyanite	Al <sub>2</sub> SiO <sub>5</sub>	3.67	
Andalusite	Al <sub>2</sub> SiO <sub>5</sub>	3.15	
Almandine	Fe <sup>2+</sup> <sub>3</sub> Al <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	4.31	
Pyrope	Mg <sup>2+</sup> <sub>3</sub> Al <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	3.56	
Grossular	Ca <sup>2+</sup> <sub>3</sub> Al <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	3.59	
Andradite	Ca <sub>3</sub> Fe <sup>3+</sup> <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	3.86	

Spessartine	$\text{Mn}_3\text{Fe}^{3+}_2(\text{SiO}_4)_3$	4.18	
Alm <sub>80</sub> Pyp <sub>20</sub>	$\text{Fe}^{2+}_{2.4}\text{Mg}_{0.6}\text{Al}_2(\text{SiO}_4)_3$	4.16	
Alm <sub>70</sub> Pyp <sub>20</sub> Gross <sub>10</sub>	$\text{Fe}^{2+}_{2.1}\text{Mg}_{0.6}\text{Ca}_{0.3}\text{Al}_2(\text{SiO}_4)_3$	4.09	
Alm <sub>60</sub> Pyp <sub>20</sub> Spess <sub>10</sub> Gross <sub>10</sub>	$\text{Fe}^{2+}_{1.8}\text{Mg}_{0.6}\text{Ca}_{0.3}\text{Mn}_{0.3}\text{Al}_2(\text{SiO}_4)_3$	4.06	
Forsterite	$\text{Mg}_2\text{SiO}_4$	3.27	
Fayalite	$\text{Fe}_2\text{SiO}_4$	4.40	
Chrysolite Fa <sub>20</sub> Fo <sub>80</sub>	$\text{Fe}_{0.4}\text{Mg}_{1.6}\text{SiO}_4$	3.40	
Hortonolite Fa <sub>50</sub> Fo <sub>50</sub>	$\text{FeMgSiO}_4$	3.75	
Ferro-Hortonolite Fo <sub>20</sub> Fa <sub>80</sub>	$\text{Fe}_{1.6}\text{Mg}_{0.4}\text{SiO}_4$	4.10	
Enstatite	$\text{Mg}_2\text{Si}_2\text{O}_6$	3.19	
Ferrosilite	$\text{Fe}_2\text{Si}_2\text{O}_6$	3.87	
Hypersthene En <sub>50</sub> Fs <sub>50</sub>	$\text{FeMgSi}_2\text{O}_6$	3.59	
Diopside	$\text{CaMgSi}_2\text{O}_6$	3.28	
Hedenbergite	$\text{CaFeSi}_2\text{O}_6$	3.65	
Salite Di <sub>50</sub> Hed <sub>50</sub>	$\text{Ca}_2\text{FeMgSi}_4\text{O}_{12}$	3.44	
Wollastonite	$\text{Ca}_2\text{Si}_2\text{O}_6$	2.90	
Fe Chlorite (Chamosite)	$\text{Fe}^{2+}_{10}\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	3.13	
Mg Chlorite (Clinochlore)	$\text{Mg}_{10}\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	2.63	
Chlorite Fe <sub>20</sub> Mg <sub>80</sub>	$\text{Fe}^{2+}_2\text{Mg}_8\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	2.78	
Chlorite Fe <sub>50</sub> Mg <sub>50</sub>	$\text{Fe}^{2+}_5\text{Mg}_5\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	2.98	
Chlorite Fe <sub>80</sub> Mg <sub>20</sub>	$\text{Fe}^{2+}_8\text{Mg}_2\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	3.17	
Hornblende	$\text{Ca}_2\text{Fe}_2\text{Mg}_2\text{Al}_2\text{Si}_7\text{O}_{22}(\text{OH})_2$	3.00	
Glaucofane	$\text{Na}_2\text{Mg}_3\text{Al}_2\text{Si}_8\text{O}_{22}(\text{OH})_2$	3.13	
Tremolite	$\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	2.96	
Actinolite	$\text{Ca}_2\text{Fe}_2\text{Mg}_3\text{Si}_8\text{O}_{22}(\text{OH})_2$	3.07	
Ferro-Edenite	$\text{NaCa}_2\text{Mg}_2\text{Fe}_3\text{AlSi}_7\text{O}_{22}(\text{OH})_2$	3.40	
Tschermakite	$\text{Ca}_2\text{Mg}_3\text{Al}_4\text{Si}_6\text{O}_{22}(\text{OH})_2$	3.25	
Pargasite	$\text{NaCa}_2\text{Fe}_2\text{Mg}_2\text{Al}_3\text{Si}_6\text{O}_{22}(\text{OH})_2$	3.21	
Hastingsite	$\text{NaCa}_2\text{Fe}^{2+}_4\text{Fe}^{3+}\text{Al}_2\text{Si}_6\text{O}_{22}(\text{OH})_2$	3.42	
NaCa Scapolite (Mizzonite)	$\text{Na}_4\text{Ca}_4(\text{Al}_9\text{Si}_{15}\text{O}_{47.5})\text{CO}_3\text{SO}_4$	2.70	
Titanite	$\text{CaTiSiO}_5$	3.53	
Rutile	$\text{TiO}_2$	4.25	
Spinel	$\text{MgAl}_2\text{O}_4$	3.58	
Hercynite	$\text{Fe}^{2+}\text{Al}_2\text{O}_4$	4.26	
Chromite	$\text{Fe}^{2+}\text{Cr}_2\text{O}_4$	5.12	
Magnetite	$\text{Fe}_3\text{O}_4$	5.20	
Ilmenite	$\text{FeTiO}_3$	4.79	
Hematite	$\text{Fe}_2\text{O}_3$	5.26	
Gypsum	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$	2.31	
Baryte	$\text{BaSO}_4$	4.47	
Calcite	$\text{CaCO}_3$	2.71	

Dolomite	$\text{MgCa}(\text{CO}_3)_2$	2.88	
Magnesite	$\text{MgCO}_3$	3.01	
Siderite	$\text{FeCO}_3$	3.93	
Corundum	$\text{Al}_2\text{O}_3$	4.00	
Epidote	$\text{Ca}_2\text{Al}_2\text{Fe}^{3+}\text{Si}_3\text{O}_{12}(\text{OH})$	3.43	
Zoisite	$\text{Ca}_2\text{Al}_3\text{Si}_3\text{O}_{12}(\text{OH})$	3.35	
Apatite (Hydroxylapatite)	$\text{Ca}_5(\text{PO}_4)_3(\text{OH})$	3.16	
Tourmaline Drav <sub>50</sub> Schorl <sub>50</sub>	$\text{NaFe}^{2+}_{1.5}\text{Mg}_{1.5}\text{Al}_6(\text{BO}_3)_3\text{Si}_6\text{O}_{18}(\text{OH})_4$	3.10	
Bergen grt		3.80	
Bergen cpx		3.20	
Bergen hbl		3.20	
Bergen prg		3.10	
Bergen chl		2.65	
Bergen ep		3.45	
kfs (v antipertitu)		2.65	
pl (v antipertitu)		2.56	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
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New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	
New Phase		0.00	

**References for density values in column C:**

Black: Anthony et al. (2011)

Blue: Tröger (1982)

White: Deer et al. (1992)

Green: Winchell (1958)

Red: linear interpolation between end member densities (Anthony et al.)

Molar Proportions								
SiO2	Al2O3	MgO	FeO	Fe2O3	MnO	CaO	K2O	Na2O
60.0843	101.9613	40.3044	71.8464	159.6922	70.93745	56.0774	94.196	61.97894
1								
3	0.5							0.5
2	1					1		
2.85	0.575					0.15		0.425
2.6	0.7					0.4		0.3
2.4	0.8					0.6		0.2
2.2	0.9					0.8		0.1
3	0.5						0.5	
3	0.5						0.35	0.15
3	0.5						0.25	0.25
3	0.5						0.15	0.35
3	0.5		3				0.5	
3	0.5	3					0.5	
3	0.5	0.9	2.1				0.5	
3	0.5	1.5	1.5				0.5	
3	0.5	2.1	0.9				0.5	
3	1.5						0.5	
4		3						
2		3						
2	1							
7	2.5						0.5	
4	2						0.5	1.5
2	0.5						0.5	
5	2	2						
5	2		2					
5	2	1.6	0.4					
4	4.5		2					
4	4.5	0.4	1.6					
1	1		1					
1	1	1						
1	1	0.2	0.8					
1	1							
1	1							
1	1							
3	1		3					
3	1	3						
3	1					3		
3				1		3		



		1				1		
		1						
			1					
	1							
3	1			0.5		2		
3	1.5					2		
						5		
6	3	1.5	1.5					0.5
1								
1								
1								
1								
1								
1								
1								
1								
1								
1								
1								
1								
1								

et al., 2011) proportional to end member abundance.





































0.00	0.00	0.00	0.00	0.00	0.00	495.03
0.00	0.00	0.00	0.00	0.00	0.00	478.83
0.00	0.00	0.00	0.00	0.00	0.00	474.10
0.00	0.00	0.00	0.00	0.00	0.00	473.82
0.00	0.00	0.00	0.00	0.00	0.00	140.69
0.00	0.00	0.00	0.00	0.00	0.00	203.78
0.00	0.00	0.00	0.00	0.00	0.00	153.31
0.00	0.00	0.00	0.00	0.00	0.00	172.24
0.00	0.00	0.00	0.00	0.00	0.00	191.16
0.00	0.00	0.00	0.00	0.00	0.00	200.78
0.00	0.00	0.00	0.00	0.00	0.00	263.86
0.00	0.00	0.00	0.00	0.00	0.00	232.32
0.00	0.00	0.00	0.00	0.00	0.00	216.55
0.00	0.00	0.00	0.00	0.00	0.00	248.09
0.00	0.00	0.00	0.00	0.00	0.00	464.64
0.00	0.00	0.00	0.00	0.00	0.00	232.32
0.00	0.00	0.00	0.00	0.00	0.00	1427.01
0.00	0.00	0.00	0.00	0.00	0.00	1111.59
0.00	0.00	0.00	0.00	0.00	0.00	1174.68
0.00	0.00	0.00	0.00	0.00	0.00	1269.30
0.00	0.00	0.00	0.00	0.00	0.00	1363.93
0.00	0.00	0.00	0.00	0.00	0.00	877.02
0.00	0.00	0.00	0.00	0.00	0.00	783.54
0.00	0.00	0.00	0.00	0.00	0.00	812.37
0.00	0.00	0.00	0.00	0.00	0.00	875.45
0.00	0.00	0.00	0.00	0.00	0.00	928.88
0.00	0.00	0.00	0.00	0.00	0.00	815.51
0.00	0.00	0.00	0.00	0.00	0.00	898.91
0.00	0.00	0.00	0.00	0.00	0.00	1070.70
0.00	0.00	0.00	0.00	0.00	0.00	1832.43
0.00	0.00	0.00	0.00	0.00	0.00	196.04
0.00	0.00	0.00	0.00	0.00	0.00	79.88
0.00	0.00	0.00	0.00	0.00	0.00	142.27
0.00	0.00	0.00	0.00	0.00	0.00	173.81
0.00	0.00	0.00	0.00	0.00	0.00	223.84
0.00	0.00	0.00	0.00	0.00	0.00	231.54
0.00	0.00	0.00	0.00	0.00	0.00	151.73
0.00	0.00	0.00	0.00	0.00	0.00	159.69
0.00	0.00	0.00	0.00	0.00	0.00	172.17
0.00	0.00	0.00	0.00	0.00	0.00	233.39
0.00	0.00	0.00	0.00	0.00	0.00	100.09





Oxide wt%								
SiO2	Al2O3	MgO	FeO	Fe2O3	MnO	CaO	K2O	Na2O
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68.74	19.44	0.00	0.00	0.00	0.00	0.00	0.00	11.82
43.19	36.65	0.00	0.00	0.00	0.00	20.16	0.00	0.00
64.71	22.16	0.00	0.00	0.00	0.00	3.18	0.00	9.95
58.16	26.57	0.00	0.00	0.00	0.00	8.35	0.00	6.92
53.05	30.01	0.00	0.00	0.00	0.00	12.38	0.00	4.56
48.07	33.37	0.00	0.00	0.00	0.00	16.31	0.00	2.25
64.76	18.32	0.00	0.00	0.00	0.00	0.00	16.92	0.00
65.91	18.64	0.00	0.00	0.00	0.00	0.00	12.05	3.40
66.69	18.86	0.00	0.00	0.00	0.00	0.00	8.71	5.73
67.50	19.09	0.00	0.00	0.00	0.00	0.00	5.29	8.12
35.21	9.96	0.00	42.11	0.00	0.00	0.00	9.20	0.00
43.20	12.22	28.98	0.00	0.00	0.00	0.00	11.29	0.00
37.28	10.54	7.50	31.21	0.00	0.00	0.00	9.74	0.00
38.80	10.97	13.01	23.20	0.00	0.00	0.00	10.14	0.00
40.45	11.44	18.99	14.51	0.00	0.00	0.00	10.57	0.00
45.25	38.40	0.00	0.00	0.00	0.00	0.00	11.82	0.00
63.37	0.00	31.88	0.00	0.00	0.00	0.00	0.00	0.00
43.36	0.00	43.63	0.00	0.00	0.00	0.00	0.00	0.00
46.55	39.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55.44	33.60	0.00	0.00	0.00	0.00	0.00	6.21	0.00
41.13	34.90	0.00	0.00	0.00	0.00	0.00	8.06	15.91
55.06	23.36	0.00	0.00	0.00	0.00	0.00	21.58	0.00
50.58	34.33	13.57	0.00	0.00	0.00	0.00	0.00	0.00
45.72	31.04	0.00	21.87	0.00	0.00	0.00	0.00	0.00
49.53	33.62	10.63	4.74	0.00	0.00	0.00	0.00	0.00
27.92	53.30	0.00	16.69	0.00	0.00	0.00	0.00	0.00
28.33	54.09	1.90	13.55	0.00	0.00	0.00	0.00	0.00
23.85	40.48	0.00	28.52	0.00	0.00	0.00	0.00	0.00
27.27	46.27	18.29	0.00	0.00	0.00	0.00	0.00	0.00
24.46	41.52	3.28	23.40	0.00	0.00	0.00	0.00	0.00
37.08	62.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37.08	62.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37.08	62.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.21	20.48	0.00	43.30	0.00	0.00	0.00	0.00	0.00
44.71	25.29	29.99	0.00	0.00	0.00	0.00	0.00	0.00
40.02	22.64	0.00	0.00	0.00	0.00	37.35	0.00	0.00
35.47	0.00	0.00	0.00	31.42	0.00	33.11	0.00	0.00

36.41	20.60	0.00	0.00	0.00	42.99	0.00	0.00	0.00
37.64	21.29	5.05	36.01	0.00	0.00	0.00	0.00	0.00
38.02	21.51	5.10	31.82	0.00	0.00	3.55	0.00	0.00
38.04	21.52	5.10	27.29	0.00	4.49	3.55	0.00	0.00
42.71	0.00	57.29	0.00	0.00	0.00	0.00	0.00	0.00
29.49	0.00	0.00	70.51	0.00	0.00	0.00	0.00	0.00
39.19	0.00	42.06	18.75	0.00	0.00	0.00	0.00	0.00
34.89	0.00	23.40	41.71	0.00	0.00	0.00	0.00	0.00
31.43	0.00	8.43	60.13	0.00	0.00	0.00	0.00	0.00
59.85	0.00	40.15	0.00	0.00	0.00	0.00	0.00	0.00
45.54	0.00	0.00	54.46	0.00	0.00	0.00	0.00	0.00
51.73	0.00	17.35	30.93	0.00	0.00	0.00	0.00	0.00
55.49	0.00	18.61	0.00	0.00	0.00	25.90	0.00	0.00
48.44	0.00	0.00	28.96	0.00	0.00	22.60	0.00	0.00
51.73	0.00	8.67	15.46	0.00	0.00	24.14	0.00	0.00
51.72	0.00	0.00	0.00	0.00	0.00	48.28	0.00	0.00
25.26	14.29	0.00	50.35	0.00	0.00	0.00	0.00	0.00
32.43	18.35	36.26	0.00	0.00	0.00	0.00	0.00	0.00
30.69	17.36	27.45	12.23	0.00	0.00	0.00	0.00	0.00
28.40	16.07	15.88	28.30	0.00	0.00	0.00	0.00	0.00
26.43	14.95	5.91	42.14	0.00	0.00	0.00	0.00	0.00
47.96	11.63	9.19	16.38	0.00	0.00	12.79	0.00	0.00
61.35	13.01	15.43	0.00	0.00	0.00	0.00	0.00	7.91
59.17	0.00	24.81	0.00	0.00	0.00	13.81	0.00	0.00
54.91	0.00	13.81	16.41	0.00	0.00	12.81	0.00	0.00
45.28	5.49	8.68	23.20	0.00	0.00	12.07	0.00	3.34
44.21	25.01	14.83	0.00	0.00	0.00	13.75	0.00	0.00
40.10	17.01	8.97	15.99	0.00	0.00	12.48	0.00	3.45
33.67	9.52	0.00	26.84	14.91	0.00	10.47	0.00	2.89
49.18	25.04	0.00	0.00	0.00	0.00	12.24	0.00	6.76
30.65	0.00	0.00	0.00	0.00	0.00	28.61	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	71.67	28.33	0.00	0.00	0.00	0.00	0.00	0.00
0.00	58.66	0.00	41.34	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	32.10	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	31.03	68.97	0.00	0.00	0.00	0.00
0.00	0.00	0.00	47.35	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	32.57	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	56.03	0.00	0.00

















trace8	trace9	Total
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00
0.00	0.00	100.00





Phase	Structural formula	Mode	g of minera	
			Wt. %	
Total		100.00	265.00	100.00
Quartz	SiO <sub>2</sub>	100.00	265.00	100.00
Albite	NaAlSi <sub>3</sub> O <sub>8</sub>	0.00	0.00	0.00
Anorthite	CaAl <sub>2</sub> Si <sub>2</sub> O <sub>8</sub>	0.00	0.00	0.00
Oligoclase An <sub>15</sub>	Na <sub>0.85</sub> Ca <sub>0.15</sub> Al <sub>1.15</sub> Si <sub>2.85</sub> O <sub>8</sub>	0.00	0.00	0.00
Andesine An <sub>40</sub>	Na <sub>0.6</sub> Ca <sub>0.4</sub> Al <sub>1.4</sub> Si <sub>2.6</sub> O <sub>8</sub>	0.00	0.00	0.00
Labradorite An <sub>60</sub>	Na <sub>0.4</sub> Ca <sub>0.6</sub> Al <sub>1.6</sub> Si <sub>2.4</sub> O <sub>8</sub>	0.00	0.00	0.00
Bytownite An <sub>80</sub>	Na <sub>0.2</sub> Ca <sub>0.8</sub> Al <sub>1.8</sub> Si <sub>2.2</sub> O <sub>8</sub>	0.00	0.00	0.00
Orthoclase	KAlSi <sub>3</sub> O <sub>8</sub>	0.00	0.00	0.00
Perthite Or <sub>70</sub> Ab <sub>30</sub>	K <sub>0.7</sub> Na <sub>0.3</sub> AlSi <sub>3</sub> O <sub>8</sub>	0.00	0.00	0.00
Mesoperthite Or <sub>50</sub> Ab <sub>50</sub>	K <sub>0.5</sub> Na <sub>0.5</sub> AlSi <sub>3</sub> O <sub>8</sub>	0.00	0.00	0.00
Mesoperthite Or <sub>30</sub> Ab <sub>70</sub>	K <sub>0.3</sub> Na <sub>0.7</sub> AlSi <sub>3</sub> O <sub>8</sub>	0.00	0.00	0.00
Annite	KFe <sup>2+</sup> <sub>3</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Phlogopite	KMg <sup>2+</sup> <sub>3</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Ann <sub>70</sub> Ph <sub>30</sub>	KMg <sub>0.9</sub> Fe <sup>2+</sup> <sub>2.1</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Ann <sub>50</sub> Ph <sub>50</sub>	KMg <sub>1.5</sub> Fe <sup>2+</sup> <sub>1.5</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Ann <sub>30</sub> Ph <sub>70</sub>	KMg <sub>2.1</sub> Fe <sup>2+</sup> <sub>0.9</sub> (Si <sub>3</sub> Al)O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Muscovite	K(Si <sub>3</sub> Al <sub>3</sub> )O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Talc	Mg <sub>3</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Serpentine	Mg <sub>3</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	0.00	0.00	0.00
Kaolinite	Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub>	0.00	0.00	0.00
Illite	KAl <sub>5</sub> Si <sub>7</sub> O <sub>20</sub> (OH) <sub>4</sub>	0.00	0.00	0.00
Nepheline	Na <sub>3</sub> KSi <sub>4</sub> Al <sub>4</sub> O <sub>16</sub>	0.00	0.00	0.00
Leucite	KAlSi <sub>2</sub> O <sub>6</sub>	0.00	0.00	0.00
Cordierite	Mg <sup>2+</sup> <sub>2</sub> (Si <sub>5</sub> Al <sub>4</sub> )O <sub>18</sub> (OH)	0.00	0.00	0.00
Fe-Cordierite	Fe <sup>2+</sup> <sub>2</sub> (Si <sub>5</sub> Al <sub>4</sub> )O <sub>18</sub> (OH)	0.00	0.00	0.00
Mg <sub>80</sub> Fe <sub>20</sub> Cordierite	Fe <sup>2+</sup> <sub>0.4</sub> Mg <sup>2+</sup> <sub>1.6</sub> (Si <sub>5</sub> Al <sub>4</sub> )O <sub>18</sub> (OH)	0.00	0.00	0.00
Fe Staurolite	Fe <sup>2+</sup> <sub>2</sub> Al <sub>9</sub> Si <sub>4</sub> O <sub>20</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Fe80Mg20 Staurolite	Fe <sup>2+</sup> <sub>1.6</sub> Mg <sub>0.4</sub> Al <sub>9</sub> Si <sub>4</sub> O <sub>20</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Fe Chloritoid	Fe <sup>2+</sup> Al <sub>2</sub> OSiO <sub>4</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Mg Chloritoid	MgAl <sub>2</sub> OSiO <sub>4</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Fe <sub>80</sub> Mg <sub>20</sub> Chloritoid	Mg <sub>0.2</sub> Fe <sub>0.8</sub> Al <sub>2</sub> OSiO <sub>4</sub> (OH) <sub>2</sub>	0.00	0.00	0.00
Sillimanite	Al <sub>2</sub> SiO <sub>5</sub>	0.00	0.00	0.00
Kyanite	Al <sub>2</sub> SiO <sub>5</sub>	0.00	0.00	0.00
Andalusite	Al <sub>2</sub> SiO <sub>5</sub>	0.00	0.00	0.00
Almandine	Fe <sup>2+</sup> <sub>3</sub> Al <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	0.00	0.00	0.00
Pyrope	Mg <sup>2+</sup> <sub>3</sub> Al <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	0.00	0.00	0.00
Grossular	Ca <sup>2+</sup> <sub>3</sub> Al <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	0.00	0.00	0.00
Andradite	Ca <sub>3</sub> Fe <sup>3+</sup> <sub>2</sub> (SiO <sub>4</sub> ) <sub>3</sub>	0.00	0.00	0.00

Spessartine	$\text{Mn}_3\text{Fe}^{3+}_2(\text{SiO}_4)_3$	0.00	0.00	0.00
Alm <sub>80</sub> Pyp <sub>20</sub>	$\text{Fe}^{2+}_{2.4}\text{Mg}_{0.6}\text{Al}_2(\text{SiO}_4)_3$	0.00	0.00	0.00
Alm <sub>70</sub> Pyp <sub>20</sub> Gross <sub>10</sub>	$\text{Fe}^{2+}_{2.1}\text{Mg}_{0.6}\text{Ca}_{0.3}\text{Al}_2(\text{SiO}_4)_3$	0.00	0.00	0.00
Alm <sub>60</sub> Pyp <sub>20</sub> Spess <sub>10</sub> Gross <sub>10</sub>	$\text{Fe}^{2+}_{1.8}\text{Mg}_{0.6}\text{Ca}_{0.3}\text{Mn}_{0.3}\text{Al}_2(\text{SiO}_4)_3$	0.00	0.00	0.00
Forsterite	$\text{Mg}_2\text{SiO}_4$	0.00	0.00	0.00
Fayalite	$\text{Fe}_2\text{SiO}_4$	0.00	0.00	0.00
Chrysolite Fa <sub>20</sub> Fo <sub>80</sub>	$\text{Fe}_{0.4}\text{Mg}_{1.6}\text{SiO}_4$	0.00	0.00	0.00
Hortonolite Fa <sub>50</sub> Fo <sub>50</sub>	$\text{FeMgSiO}_4$	0.00	0.00	0.00
Ferro-Hortonolite Fo <sub>20</sub> Fa <sub>80</sub>	$\text{Fe}_{1.6}\text{Mg}_{0.4}\text{SiO}_4$	0.00	0.00	0.00
Enstatite	$\text{Mg}_2\text{Si}_2\text{O}_6$	0.00	0.00	0.00
Ferrosilite	$\text{Fe}_2\text{Si}_2\text{O}_6$	0.00	0.00	0.00
Hypersthene En <sub>50</sub> Fs <sub>50</sub>	$\text{FeMgSi}_2\text{O}_6$	0.00	0.00	0.00
Diopside	$\text{CaMgSi}_2\text{O}_6$	0.00	0.00	0.00
Hedenbergite	$\text{CaFeSi}_2\text{O}_6$	0.00	0.00	0.00
Salite Di <sub>50</sub> Hed <sub>50</sub>	$\text{Ca}_2\text{FeMgSi}_4\text{O}_{12}$	0.00	0.00	0.00
Wollastonite	$\text{Ca}_2\text{Si}_2\text{O}_6$	0.00	0.00	0.00
Fe Chlorite (Chamosite)	$\text{Fe}^{2+}_{10}\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	0.00	0.00	0.00
Mg Chlorite (Clinochlore)	$\text{Mg}_{10}\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	0.00	0.00	0.00
Chlorite Fe <sub>20</sub> Mg <sub>80</sub>	$\text{Fe}^{2+}_2\text{Mg}_8\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	0.00	0.00	0.00
Chlorite Fe <sub>50</sub> Mg <sub>50</sub>	$\text{Fe}^{2+}_5\text{Mg}_5\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	0.00	0.00	0.00
Chlorite Fe <sub>80</sub> Mg <sub>20</sub>	$\text{Fe}^{2+}_8\text{Mg}_2\text{Al}_4\text{Si}_6\text{O}_{20}(\text{OH})_{16}$	0.00	0.00	0.00
Hornblende	$\text{Ca}_2\text{Fe}_2\text{Mg}_2\text{Al}_2\text{Si}_7\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Glaucofane	$\text{Na}_2\text{Mg}_3\text{Al}_2\text{Si}_8\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Tremolite	$\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Actinolite	$\text{Ca}_2\text{Fe}_2\text{Mg}_3\text{Si}_8\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Ferro-Edenite	$\text{NaCa}_2\text{Mg}_2\text{Fe}_3\text{AlSi}_7\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Tschermakite	$\text{Ca}_2\text{Mg}_3\text{Al}_4\text{Si}_6\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Pargasite	$\text{NaCa}_2\text{Fe}_2\text{Mg}_2\text{Al}_3\text{Si}_6\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
Hastingsite	$\text{NaCa}_2\text{Fe}^{2+}_4\text{Fe}^{3+}\text{Al}_2\text{Si}_6\text{O}_{22}(\text{OH})_2$	0.00	0.00	0.00
NaCa Scapolite (Mizzonite)	$\text{Na}_4\text{Ca}_4(\text{Al}_9\text{Si}_{15}\text{O}_{47.5})\text{CO}_3\text{SO}_4$	0.00	0.00	0.00
Titanite	$\text{CaTiSiO}_5$	0.00	0.00	0.00
Rutile	$\text{TiO}_2$	0.00	0.00	0.00
Spinel	$\text{MgAl}_2\text{O}_4$	0.00	0.00	0.00
Hercynite	$\text{Fe}^{2+}\text{Al}_2\text{O}_4$	0.00	0.00	0.00
Chromite	$\text{Fe}^{2+}\text{Cr}_2\text{O}_4$	0.00	0.00	0.00
Magnetite	$\text{Fe}_3\text{O}_4$	0.00	0.00	0.00
Ilmenite	$\text{FeTiO}_3$	0.00	0.00	0.00
Hematite	$\text{Fe}_2\text{O}_3$	0.00	0.00	0.00
Gypsum	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$	0.00	0.00	0.00
Baryte	$\text{BaSO}_4$	0.00	0.00	0.00
Calcite	$\text{CaCO}_3$	0.00	0.00	0.00

Dolomite	$\text{MgCa}(\text{CO}_3)_2$	0.00	0.00	0.00
Magnesite	$\text{MgCO}_3$	0.00	0.00	0.00
Siderite	$\text{FeCO}_3$	0.00	0.00	0.00
Corundum	$\text{Al}_2\text{O}_3$	0.00	0.00	0.00
Epidote	$\text{Ca}_2\text{Al}_2\text{Fe}^{3+}\text{Si}_3\text{O}_{12}(\text{OH})$	0.00	0.00	0.00
Zoisite	$\text{Ca}_2\text{Al}_3\text{Si}_3\text{O}_{12}(\text{OH})$	0.00	0.00	0.00
Apatite (Hydroxylapatite)	$\text{Ca}_5(\text{PO}_4)_3(\text{OH})$	0.00	0.00	0.00
Tourmaline Drav <sub>50</sub> Schorl <sub>50</sub>	$\text{NaFe}^{2+}_{1.5}\text{Mg}_{1.5}\text{Al}_6(\text{BO}_3)_3\text{Si}_6\text{O}_{18}(\text{OH})_4$	0.00	0.00	0.00
Bergen grt		0.00	0.00	0.00
Bergen cpx		0.00	0.00	0.00
Bergen hbl		0.00	0.00	0.00
Bergen prg		0.00	0.00	0.00
Bergen chl		0.00	0.00	0.00
Bergen ep		0.00	0.00	0.00
kfs (v antipertitu)		0.00	0.00	0.00
pl (v antipertitu)		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
New Phase		0.00	0.00	0.00
Total		100.00	265.00	100.00

**References for density values in column C:**

Black: Anthony et al. (2011)

Blue: Tröger (1982)

White: Deer et al. (1992)

Green: Winchell (1958)

Red: linear interpolation between end member densities (Anthony et al., 2

Whole rock composition

	diff	ρ	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	MgO	FeO	Fe <sub>2</sub> O <sub>3</sub>	MnO
		2.65	100.00	0.00	0.00	0.00	0.00	0.00

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Fetot

0.00





















trace5	trace6	trace7	trace8	trace9
0.00	0.00	0.00	0.00	0.00











	weight of particular component associated with particular mineral					
	SiO2	Al2O3	MgO	FeO	Fe2O3	MnO
Quartz	100.00	0.00	0.00	0.00	0.00	0.00
Albite	0.00	0.00	0.00	0.00	0.00	0.00
Anorthite	0.00	0.00	0.00	0.00	0.00	0.00
Oligoclase An <sub>15</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Andesine An <sub>40</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Labradorite An <sub>60</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Bytownite An <sub>80</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Orthoclase	0.00	0.00	0.00	0.00	0.00	0.00
Perthite Or <sub>70</sub> Ab <sub>30</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Mesoperthite Or <sub>50</sub> Ab <sub>50</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Mesoperthite Or <sub>30</sub> Ab <sub>70</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Annite	0.00	0.00	0.00	0.00	0.00	0.00
Phlogopite	0.00	0.00	0.00	0.00	0.00	0.00
Ann <sub>70</sub> Phl <sub>30</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Ann <sub>50</sub> Phl <sub>50</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Ann <sub>30</sub> Phl <sub>70</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Muscovite	0.00	0.00	0.00	0.00	0.00	0.00
Talc	0.00	0.00	0.00	0.00	0.00	0.00
Serpentine	0.00	0.00	0.00	0.00	0.00	0.00
Kaolinite	0.00	0.00	0.00	0.00	0.00	0.00
Illite	0.00	0.00	0.00	0.00	0.00	0.00
Nepheline	0.00	0.00	0.00	0.00	0.00	0.00
Leucite	0.00	0.00	0.00	0.00	0.00	0.00
Cordierite	0.00	0.00	0.00	0.00	0.00	0.00
Fe-Cordierite	0.00	0.00	0.00	0.00	0.00	0.00
Mg <sub>80</sub> Fe <sub>20</sub> Cordierite	0.00	0.00	0.00	0.00	0.00	0.00
Fe Staurolite	0.00	0.00	0.00	0.00	0.00	0.00
Fe80Mg20 Staurolite	0.00	0.00	0.00	0.00	0.00	0.00
Fe Chloritoid	0.00	0.00	0.00	0.00	0.00	0.00
Mg Chloritoid	0.00	0.00	0.00	0.00	0.00	0.00
Fe <sub>80</sub> Mg <sub>20</sub> Chloritoid	0.00	0.00	0.00	0.00	0.00	0.00
Sillimanite	0.00	0.00	0.00	0.00	0.00	0.00
Kyanite	0.00	0.00	0.00	0.00	0.00	0.00
Andalusite	0.00	0.00	0.00	0.00	0.00	0.00
Almandine	0.00	0.00	0.00	0.00	0.00	0.00
Pyrope	0.00	0.00	0.00	0.00	0.00	0.00
Grossular	0.00	0.00	0.00	0.00	0.00	0.00
Andradite	0.00	0.00	0.00	0.00	0.00	0.00

Spessartine	0.00	0.00	0.00	0.00	0.00	0.00
Alm <sub>80</sub> Pyp <sub>20</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Alm <sub>70</sub> Pyp <sub>20</sub> Gross <sub>10</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Alm <sub>60</sub> Pyp <sub>20</sub> Spess <sub>10</sub> Gross <sub>10</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Forsterite	0.00	0.00	0.00	0.00	0.00	0.00
Fayalite	0.00	0.00	0.00	0.00	0.00	0.00
Chrysolite Fa <sub>20</sub> Fo <sub>80</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Hortonolite Fa <sub>50</sub> Fo <sub>50</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Ferro-Hortonolite Fo <sub>20</sub> Fa <sub>80</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Enstatite	0.00	0.00	0.00	0.00	0.00	0.00
Ferrosilite	0.00	0.00	0.00	0.00	0.00	0.00
Hypersthene En <sub>50</sub> Fs <sub>50</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Diopside	0.00	0.00	0.00	0.00	0.00	0.00
Hedenbergite	0.00	0.00	0.00	0.00	0.00	0.00
Salite Di <sub>50</sub> Hed <sub>50</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Wollastonite	0.00	0.00	0.00	0.00	0.00	0.00
Fe Chlorite (Chamosite)	0.00	0.00	0.00	0.00	0.00	0.00
Mg Chlorite (Clinochlore)	0.00	0.00	0.00	0.00	0.00	0.00
Chlorite Fe <sub>20</sub> Mg <sub>80</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Chlorite Fe <sub>50</sub> Mg <sub>50</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Chlorite Fe <sub>80</sub> Mg <sub>20</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Hornblende	0.00	0.00	0.00	0.00	0.00	0.00
Glaucophane	0.00	0.00	0.00	0.00	0.00	0.00
Tremolite	0.00	0.00	0.00	0.00	0.00	0.00
Actinolite	0.00	0.00	0.00	0.00	0.00	0.00
Ferro-Edenite	0.00	0.00	0.00	0.00	0.00	0.00
Tschermakite	0.00	0.00	0.00	0.00	0.00	0.00
Pargasite	0.00	0.00	0.00	0.00	0.00	0.00
Hastingsite	0.00	0.00	0.00	0.00	0.00	0.00
NaCa Scapolite (Mizzonite)	0.00	0.00	0.00	0.00	0.00	0.00
Titanite	0.00	0.00	0.00	0.00	0.00	0.00
Rutile	0.00	0.00	0.00	0.00	0.00	0.00
Spinel	0.00	0.00	0.00	0.00	0.00	0.00
Hercynite	0.00	0.00	0.00	0.00	0.00	0.00
Chromite	0.00	0.00	0.00	0.00	0.00	0.00
Magnetite	0.00	0.00	0.00	0.00	0.00	0.00
Ilmenite	0.00	0.00	0.00	0.00	0.00	0.00
Hematite	0.00	0.00	0.00	0.00	0.00	0.00
Gypsum	0.00	0.00	0.00	0.00	0.00	0.00
Baryte	0.00	0.00	0.00	0.00	0.00	0.00
Calcite	0.00	0.00	0.00	0.00	0.00	0.00























