

Table 1 (Continued)

No.	Mineral and formula	ρ , g/cm ³	M, g/mole	$\nu = \frac{M}{\rho}$, cm ³ /mole	$\bar{M} = \frac{M}{n}$, g	$\bar{\nu} = \frac{M}{\rho n}$, cm ³	v_0 , (Å) ³	$l = \frac{1}{v_0}$	b	$K \cdot 10^{-10}$, kg/cm ³	$\Phi = \frac{K}{\rho}$, (km/ρ) ² /sec ²	$d_0 = 0.1$, (Å) ⁻³	x
36	Pyrope Mg ₃ Al ₂ Si ₃ O ₁₂	3.58	403.19	112.5	20.1	5.62	11.5	8.7	4.2	~1	46	111	0.91
37	Almandine Fe ₃ Al ₂ Si ₃ O ₁₂	4.32	497.78	115.2	24.88	5.76	11.80	8.5	4.2	~16	37	107	0.88
38	Spessartine Mn ₃ Al ₂ Si ₃ O ₁₂	4.19	495.02	118.0	24.75	5.9	12.1	8.2	4.1	~15.5	37	102	0.86
39	Grossularite Ca ₃ Al ₂ Si ₃ O ₁₂	3.59	450.47	126.3	22.70	6.3	12.8	7.8	3.8	~15	42	90	0.81
40	Andradite Ca ₃ Fe ₂ Si ₃ O ₁₂	3.86	508.21	131.67	25.4	6.6	13.5	7.4	3.6	~15	39	81	0.77
41	Kyanite Al ₂ SiO ₅	3.66	162.05	44.1	20.2	5.52	10.8	9.3	4.1	19*	52*	125	0.97
42	Sillimanite Al ₂ SiO ₅	3.24	162.05	49.91	20.2	6.23	12.2	8.2	3.6	13*	40*	97	0.85
43	Andalusite Al ₂ SiO ₅	3.14	162.05	51.54	20.2	6.43	12.6	7.9	3.5	11*	35*	91	0.82
44	Staurolite Fe(OH) ₂ ·Al ₂ SiO ₅	3.65	413.8	114	21.8	6.0	—	—	—	12.8	34	—	0.52
45	Cordierite Mg ₂ Al ₃ [AlSi ₅ O ₁₈]	2.51	585	232.8	20.17	8.0	15.9	6.3	2.8	—	—	—	0.65
46	Enstatite MgSiO ₃	3.20	100.41	32.50	20.0	6.5	12.9	7.8	3.8	11	34	89	0.79
47	Enstatite-II MgSiO ₃	4.0*	100.41	25.0	20.0	5.0	10.0*	10	4.9*	32*	80*	147	1.02
48	Ferrosilite FeSiO ₃	3.99	131.94	33.07	26.4	6.6	13.5	7.4	3.7	10*	25*	82	0.77
49	Ferrosilite-II FeSiO ₃	5.10*	131.94	25.85	26.4	5.3	10.8*	9.3	4.6*	29.7*	58*	128	0.99
50	Hypersthene Mg, Fe)SiO ₃	3.5	116.0	33.0	34	6.8	13.2	7.6	3.7	9.6	28	84	0.77
51	Diopside CaMgSi ₂ O ₆	3.26	216.58	66.4	21.66	6.64	13.5	7.4	3.6	12	37	80	0.77
52	Jadeite NaAlSi ₃ O ₆	3.33	202.15	60.98	20.2	6.1	12.5	8.0	4.0	13.5	41	96	0.83
53	Hornblende Ca ₂ (Mg, Fe) ₂ X [Si ₄ O ₁₁] ₂ (OH) ₂	3.15	820	260	20.3	6.8	—	—	—	9.5	30	—	0.78
54	Orthoclase KAlSi ₃ O ₈	2.56	278.35	109	21.40	8.4	16.7	6.0	2.7	5.2	21.8	53	0.63
55	Albite NaAlSi ₃ O ₈	2.61	262.2	100.2	20.2	7.72	15.5	6.4	3.0	5.7	21.8	62	0.68
56	Anorthite CaAl ₂ Si ₂ O ₈	2.76	278.2	100.7	21.4	7.72	15.5	6.4	3.0	8.7	31.5	62	0.68

**n was deduced by an additivity calculation.

EFFECTS OF OXYGEN PACKING DENSITY ON PHYSICAL AND THERMODYNAMIC PARAMETERS

Figure 1 shows the bulk modulus K as a function of v_0 . The oxides and silicates form

two independent groups as parallel lines; the oxides having the higher K for a given v_0 . Quartz has a somewhat special position, since its K is too low for an oxide which is related to the lower K for silicates. There is no exact relation of K to ρ for oxides. For