

Table 24. *Electron microprobe analyses of amphiboles from selected wet runs on the high-alumina quartz tholeiite composition*

Conditions of run	10 kb 920° C 7½ hrs Wet	10 kb 960° C 4 hrs Wet	9 kb 1,040° C 4 hrs Wet	9 kb 1,040° C 4 hrs Wet	10 kb 960° C 4 hrs Wet	10 kb 920° C 7½ hrs Wet	10 kb 940° C 6 hrs Wet	10 kb 920° C 5½ hrs Wet
	Runs conducted in platinum capsules			Analyses adjusted for iron loss to platinum capsules			Runs conducted in graphite capsules	
Co-existing phases	cpx ^a , opx, plag ^a	cpx ^a , opx	cpx ^a , opx ^a	cpx ^a , opx ^a	cpx ^a , opx	cpx ^a , opx, plag ^a	cpx ^a , opx, mt	cpx ^a , opx, mt
SiO ₂	40.5	40.8	39.8	39.3	40.2	39.9	40.0	40.2
TiO ₂	2.9	2.8	3.9	3.8	2.8	2.9	3.0	3.1
Al ₂ O ₃	15.8	14.4	15.8	15.6	14.2	15.6	14.8	15.4
FeO	10.0	8.2	7.6	9.8	10.6	12.6	9.4	9.8
MgO	13.1	14.9	14.9	13.7	13.6	11.6	12.9	12.1
CaO	12.4	11.7	12.0	11.8	11.5	12.2	11.6	11.8
Na ₂ O	2.5	2.7	2.9	2.9	2.7	2.5	2.0	1.8
K ₂ O	0.4	0.4	0.2	0.2	0.4	0.4	0.3	0.3
100 Mg Mg + Fe	97.6 70.3	95.9 76.4	97.1 77.8	97.1 71.4	96.0 69.6	97.7 62.1	94.0 71.0	94.5 68.8

Structural Formulae-calculated on "dry" basis of 23 [O] since H₂O content could not be determined

z	{ Si	5.932	6.025	5.802	5.790	6.002	5.909	6.288	6.039
	{ Al	2.068	1.975	2.198	2.210	1.998	2.091	1.712	1.961
y	{ Al	0.659	0.531	0.516	0.498	0.500	0.631	1.029	0.766
	{ Ti	0.320	0.311	0.427	0.422	0.314	0.323	0.354	0.350
	{ Fe	1.209	1.013	0.927	1.208	1.324	1.561	1.236	1.231
	{ Mg	2.862	3.281	3.239	3.011	3.029	2.561	3.024	2.710
x	{ Ca	1.945	1.851	1.874	1.862	1.840	1.936	1.954	1.899
	{ Na	0.709	0.861	0.820	0.829	0.781	0.717	0.610	0.524
	{ K	0.074	0.075	0.037	0.037	0.075	0.075	0.060	0.058
z		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
y		5.05	5.14	5.11	5.14	5.17	5.08	5.64	5.06
x		2.73	2.79	2.73	2.73	2.70	2.79	2.62	2.48

^a Denotes co-existing phase analyzed.

Marked iron enrichment is prevented by the large degree of crystallization of amphibole with a relatively high Fe/Mg ratio, counteracting the effects of crystallization of pyroxenes with low Fe/Mg ratios. With increasing crystallization of plagioclase in extreme cases of fractionation the K/Na ratio of the fractionating liquids will increase.

The results obtained for the fractional crystallization at moderate pressure of high-alumina quartz tholeiite, basaltic andesite, andesite and rhyodacite under wet conditions are directly applicable to fractional crystallization of a hyyrous