676016
Windy Craggy
114P/13

SAMPLE 9-CAD-83-1

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	49.000	49.420	46.773
AL2O3	14.600	14.725	16.424
FE2O3	2.280	2.300	1.638
FEO	6.610	6.667	5.276
CAO	8.740	8.815	8.938
MGO	8.320	8.391	11.837
NA2O	3.640	3.671	6.736
K2O	1.130	1.140	1.376
TIO2	1.250	1.261	.897
MNO	.130	.131	.105
H2O	3.450	.000	.000
TOTAL	99.150	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	6.88	31.68	20.78	.00	1.20
WEIGHT %	.00	.00	6.98	30.28	21.06	.00	1.03

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	19.13	.00
WEIGHT %	.00	.00	.00	.00	.00	19.52	.00

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	12.28	3.80	.00	2.46	.00	.00	1.79
WEIGHT %	10.49	4.71	.00	3.45	.00	.00	2.48

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	9.56	7.30	2.26	.00	.00	9.56	7.30	2.26	16.08
WT %	10.12	6.68	2.72	.00	.00	10.12	6.68	2.72	15.20

PYROXENE COMPONENTS NORMALIZED TO 100%
CLINOPX: WO 50.00, EN 38.18, FS 11.82 (CAT %); WO 51.85, EN 34.22, FS 13.92 (WT %)
TOT. PX: WO 50.00, EN 38.18, FS 11.82 (CAT %); WO 51.85, EN 34.22, FS 13.92 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 39.61 (CAT %); 41.02 (WT %)
AN/(AN+AB') = 38.16 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 54.91 OR 11.22 AN 33.88

Start.

12-CAD-83-1

to

78644

SAMPLE 9-CAD-83-1

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 39.46 (CAT %) 40.65 (WT %)

TOTAL FEMICS = 39.458 (CAT %) 40.651 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 39.76 (CATION) 38.29 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 21.93 F= 39.82 M= 38.25 (WT %)

FEO + 0.8998*FE2O3 = 8.736 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 31.1028

TOTAL NA2O + K2O (WT %) = 4.811

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4939 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 64.693 N= 26.943 K= 8.364
CATION %: C= 52.422 N= 39.508 K= 8.070

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .5166 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6320
AL2O3/(0.5*CAO + NA2O + K2O) = .9633

SAMPLE 12-CAD-83-1

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.600	51.750	49.137
AL203	14.600	14.642	16.385
FE203	1.890	1.895	1.354
FEO	4.800	4.814	3.822
CAO	11.000	11.032	11.222
MGO	5.650	5.666	8.019
NA20	4.530	4.543	8.363
K20	.590	.592	.717
TIO2	1.200	1.203	.859
MNO	.150	.150	.121
H20	3.700	.000	.000
TOTAL	99.710	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	3.58	36.88	18.26	.00	2.96
WEIGHT %	.00	.00	3.63	35.21	18.49	.00	2.55

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	30.28	.00
WEIGHT %	.00	.00	.00	.00	.00	30.85	.00

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.30	.99	.00	2.03	.00	.00	1.72
WEIGHT %	2.81	1.22	.00	2.85	.00	.00	2.37

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	15.14	11.64	3.49	.00	.00	15.14	11.64	3.49	4.28
WT %	16.01	10.64	4.20	.00	.00	16.01	10.64	4.20	4.04

PYROXENE COMPONENTS NORMALIZED TO 100%
CLINOPX: WO 50.00, EN 38.46, FS 11.54 (CAT %); WO 51.90, EN 34.50, FS 13.61 (WT %)
TOT. PX: WO 50.00, EN 38.46, FS 11.54 (CAT %); WO 51.90, EN 34.50, FS 13.61 (WT %)

NORMATIVE FELDSPAR RATIOS, AB' = AB+5/3NE
AN/(AN+AB) = 33.12 (CAT %); 34.44 (WT %)
AN/(AN+AB') = 30.40 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 65.68 OR 5.63 AN 28.69

SAMPLE 12-CAD-83-1

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 38.31 (CAT %) 40.11 (WT %)

TOTAL FEMICS = 38.313 (CAT %) 40.110 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 43.42 (CATION) 41.40 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 29.65 F= 37.64 M= 32.71 (WT %)

FEO + 0.8998*FE203 = 6.520 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 25.0221

TOTAL NA2O + K2O (WT %) = 5.135

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .5542 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 68.238 N= 28.102 K= 3.660
CATION %: C= 55.276 N= 41.194 K= 3.530

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .5421 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .5198
AL2O3/(0.5*CAO + NA2O + K2O) = .8071

SAMPLE 13A-CAD-83-1

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.100	51.926	48.921
AL2O3	16.300	16.563	18.390
FE2O3	2.990	3.038	2.154
FEO	5.290	5.375	4.235
CAO	8.300	8.434	8.513
MGO	5.040	5.121	7.192
NA2O	3.910	3.973	7.257
K2O	1.710	1.738	2.088
TIO2	1.580	1.606	1.137
MNO	.140	.142	.114
H2O	2.050	.000	.000
TOTAL	98.410	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	10.44	36.28	22.61	.00	.00
WEIGHT %	.00	.00	10.49	34.34	22.69	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	15.96	4.77
WEIGHT %	.00	.00	.00	.00	.00	16.11	4.63

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.41	1.01	.00	3.23	.00	.00	2.27
WEIGHT %	2.89	1.24	.00	4.50	.00	.00	3.11

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	7.98	9.83	2.92	3.68	1.09	7.98	6.15	1.83	4.43
WT %	8.36	8.90	3.47	3.33	1.30	8.36	5.57	2.17	4.13

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 77.12, FS 22.88 (CAT %); EN 71.94, FS 28.06 (WT %)
CLINOPX: WO 50.00, EN 38.56, FS 11.44 (CAT %); WO 51.91, EN 34.60, FS 13.49 (WT %)
TOT. PX: WO 38.50, EN 47.43, FS 14.07 (CAT %); WO 40.33, EN 42.93, FS 16.74 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 38.39 (CAT %); 39.79 (WT %)
AN/(AN+AB') = 38.39 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 52.33 OR 15.06 AN 32.61

SAMPLE 13A-CAD-83-1

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 30.66 (CAT %) 32.48 (WT %)

TOTAL FEMICS = 30.661 (CAT %) 32.483 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 46.73 (CATION) 44.82 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 30.15 F= 42.81 M= 27.04 (WT %)

FEO + 0.8998*FE2O3 = 8.109 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 20.5212

TOTAL NA2O + K2O (WT %) = 5.711

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .5082 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 59.626 N= 28.089 K= 12.284
CATION %: C= 47.669 N= 40.637 K= 11.693

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6216 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6974
AL2O3/(0.5*CAO + NA2O + K2O) = 1.0298

SAMPLE 20-CAD-83-1

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.700	51.415	48.868
AL203	15.900	16.124	18.061
FE203	2.210	2.241	1.603
FEO	7.070	7.170	5.698
CAO	6.280	6.369	6.485
MGO	5.990	6.074	8.605
NA20	3.520	3.570	6.578
K20	2.300	2.332	2.828
TIO2	1.600	1.623	1.160
MNO	.140	.142	.114
H20	2.900	.000	.000
TOTAL	98.610	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	14.14	32.89	21.64	.00	.00
WEIGHT %	.00	.00	14.20	31.12	21.72	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	8.63	10.13
WEIGHT %	.00	.00	.00	.00	.00	8.81	10.06

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	5.42	2.43	.00	2.40	.00	.00	2.32
WEIGHT %	4.59	2.98	.00	3.35	.00	.00	3.17

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	4.31	9.98	4.47	7.00	3.13	4.31	2.98	1.33	7.85
WT %	4.52	9.04	5.31	6.34	3.73	4.52	2.70	1.59	7.57

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 69.08, FS 30.92 (CAT %); EN 62.97, FS 37.03 (WT %)
CLINOPX: WO 50.00, EN 34.54, FS 15.46 (CAT %); WO 51.33, EN 30.65, FS 18.03 (WT %)
TOT. PX: WO 23.00, EN 53.19, FS 23.81 (CAT %); WO 23.95, EN 47.88, FS 28.16 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 39.69 (CAT %); 41.10 (WT %)
AN/(AN+AB') = 39.69 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 47.90 OR 20.59 AN 31.51

SAMPLE 20-CAD-83-1

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 31.33 (CAT %) 32.96 (WT %)

TOTAL FEMICS = 31.333 (CAT %) 32.961 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 47.03 (CATION) 45.32 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 27.89 F= 43.41 M= 28.70 (WT %)

FEO + 0.8998*FE2O3 = 9.186 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 22.2594

TOTAL NA2O + K2O (WT %) = 5.902

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .5208 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 51.901 N= 29.091 K= 19.008
CATION %: C= 40.810 N= 41.394 K= 17.796

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6077 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .8072
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1366

SAMPLE DY2725

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	56.500	58.110	54.166
AL203	13.000	13.370	14.688
FE203	1.880	1.934	1.356
FEO	5.990	6.161	4.802
CAO	6.480	6.665	6.655
MGO	4.840	4.978	6.916
NA20	5.760	5.924	10.706
K20	.060	.062	.073
TIO2	.750	.771	.541
MNO	.120	.123	.097
H20	1.850	.000	.000
TOTAL	97.230	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	2.62	.00	.37	53.53	9.77	.00	.00
WEIGHT %	2.87	.00	.37	51.10	9.89	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	18.80	11.79
WEIGHT %	.00	.00	.00	.00	.00	19.47	11.95

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	2.03	.00	.00	1.08
WEIGHT %	.00	.00	.00	2.86	.00	.00	1.49

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	9.40	13.83	7.36	7.70	4.10	9.40	6.14	3.27	.00
WT %	9.94	12.64	8.84	7.03	4.92	9.94	5.61	3.92	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 65.27, FS 34.73 (CAT %); EN 58.85, FS 41.15 (WT %)
CLINOPX: WO 50.00, EN 32.63, FS 17.37 (CAT %); WO 51.06, EN 28.80, FS 20.14 (WT %)
TOT. PX: WO 30.73, EN 45.21, FS 24.06 (CAT %); WO 31.64, EN 40.23, FS 28.13 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 15.44 (CAT %); 16.22 (WT %)
AN/(AN+AB') = 15.44 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 84.08 OR .58 AN 15.35

SAMPLE DY2725

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 33.71 (CAT %) 35.77 (WT %)

TOTAL FEMICS = 33.710 (CAT %) 35.768 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 56.52 (CATION) 54.34 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 31.73 F= 41.88 M= 26.39 (WT %)

FEO + 0.8998*FE2O3 = 7.900 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 19.8768

TOTAL NA2O + K2O (WT %) = 5.986

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .7339 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 52.683 N= 46.829 K= .488
CATION %: C= 38.174 N= 61.405 K= .421

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6192 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6097
AL2O3/(0.5*CAO + NA2O + K2O) = .8425

SAMPLE DY2735

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	53.300	53.172	50.042
AL203	14.900	14.864	16.486
FE203	2.010	2.005	1.420
FEO	7.500	7.482	5.888
CAO	5.710	5.696	5.743
MGO	7.790	7.771	10.901
NA2O	4.380	4.370	7.972
K2O	.890	.888	1.066
TIO2	.500	.499	.353
MNO	.160	.160	.127
H2O	3.100	.000	.000
TOTAL	100.240	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	5.33	39.86	18.62	.00	.00
WEIGHT %	.00	.00	5.41	38.15	18.90	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	8.08	18.09
WEIGHT %	.00	.00	.00	.00	.00	8.34	18.20

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	4.94	2.24	.00	2.13	.00	.00	.71
WEIGHT %	4.23	2.78	.00	3.00	.00	.00	.98

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	4.04	15.22	6.91	12.44	5.65	4.04	2.78	1.26	7.18
WT %	4.28	13.94	8.32	11.40	6.80	4.28	2.54	1.52	7.01

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 68.76, FS 31.24 (CAT %); EN 62.62, FS 37.38 (WT %)
CLINOPX: WO 50.00, EN 34.38, FS 15.62 (CAT %); WO 51.31, EN 30.49, FS 18.20 (WT %)
TOT. PX: WO 15.43, EN 58.15, FS 26.42 (CAT %); WO 16.13, EN 52.52, FS 31.35 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 31.84 (CAT %); 33.13 (WT %)
AN/(AN+AB') = 31.84 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 62.47 OR 8.35 AN 29.18

SAMPLE DY2735

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 36.19 (CAT %) 37.53 (WT %)

TOTAL FEMICS = 36.188 (CAT %) 37.531 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 45.19 (CATION) 43.57 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 23.56 F= 41.61 M= 34.83 (WT %)

FEO + 0.8998*FE203 = 9.286 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA2O+K2O) (WT %)= 27.9813

TOTAL NA2O + K2O (WT %) = 5.257

AGPAITIC INDEX (NA2O+K2O)/AL203 = .5482 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 52.004 N= 39.891 K= 8.106
CATION %: C= 38.855 N= 53.935 K= 7.211

(FEO+FE203)/(FEO+FE203+MGO) = .5497 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA2O + K2O) = .8032
AL203/(0.5*CAO + NA2O + K2O) = 1.1153

SAMPLE DY2749

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	52.200	53.517	50.424
AL203	16.100	16.506	18.328
FE203	1.650	1.692	1.199
FEO	4.770	4.890	3.853
CAO	4.430	4.542	4.584
MGO	6.600	6.766	9.502
NA2O	4.120	4.224	7.716
K2O	2.820	2.891	3.475
TIO2	1.130	1.158	.821
MNO	.120	.123	.098
H2O	3.600	.000	.000
TOTAL	97.540	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	17.37	38.58	17.84	.00	.00
WEIGHT %	.00	.00	17.74	37.11	18.21	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	4.06	8.70
WEIGHT %	.00	.00	.00	.00	.00	4.16	8.54

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	7.90	2.10	.00	1.80	.00	.00	1.64
WEIGHT %	6.79	2.62	.00	2.55	.00	.00	2.28

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	2.03	8.47	2.26	6.87	1.83	2.03	1.60	.43	10.00
WT %	2.16	7.80	2.73	6.33	2.21	2.16	1.48	.52	9.41

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 78.97, FS 21.03 (CAT %); EN 74.08, FS 25.92 (WT %)
CLINOPX: WO 50.00, EN 39.48, FS 10.52 (CAT %); WO 52.05, EN 35.52, FS 12.43 (WT %)
TOT. PX: WO 15.91, EN 66.40, FS 17.68 (CAT %); WO 17.04, EN 61.45, FS 21.51 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 31.63 (CAT %); 32.91 (WT %)
AN/(AN+AB') = 31.63 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 52.28 OR 23.54 AN 24.18

SAMPLE DY2749

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 26.20 (CAT %) 26.94 (WT %)

TOTAL FEMICS = 26.204 (CAT %) 26.943 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 55.95 (CATION) 54.85 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 35.06 F= 31.60 M= 33.34 (WT %)

FEO + 0.8998*FE203 = 6.412 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 24.5353

TOTAL NA20 + K20 (WT %) = 7.115

AGPAITIC INDEX (NA20+K20)/AL203 = .6106 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 38.962 N= 36.236 K= 24.802
CATION %: C= 29.062 N= 48.911 K= 22.027

(FEO+FE203)/(FEO+FE203+MGO) = .4931 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .9002
AL203/(0.5*CAO + NA20 + K20) = 1.1619

SAMPLE DY2756

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.100	50.714	48.298
AL2O3	17.000	17.208	19.314
FE2O3	1.990	2.014	1.443
FEO	5.260	5.324	4.240
CAO	7.400	7.491	7.643
MGO	7.540	7.632	10.834
NA2O	3.020	3.057	5.644
K2O	1.610	1.630	1.980
TIO2	.720	.729	.522
MNO	.100	.101	.082
H2O	4.050	.000	.000
TOTAL	98.790	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	9.90	28.22	29.22	.00	.00
WEIGHT %	.00	.00	10.04	26.97	29.63	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	7.19	16.33
WEIGHT %	.00	.00	.00	.00	.00	7.32	15.98

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	4.61	1.31	.00	2.17	.00	.00	1.04
WEIGHT %	3.94	1.62	.00	3.05	.00	.00	1.44

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	3.60	15.52	4.41	12.72	3.61	3.60	2.80	.80	5.92
WT %	3.81	14.20	5.30	11.64	4.34	3.81	2.56	.96	5.56

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 77.87, FS 22.13 (CAT %); EN 72.81, FS 27.19 (WT %)
CLINOPX: WO 50.00, EN 38.94, FS 11.06 (CAT %); WO 51.97, EN 34.98, FS 13.06 (WT %)
TOT. PX: WO 15.28, EN 65.97, FS 18.74 (CAT %); WO 16.33, EN 60.92, FS 22.75 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 50.87 (CAT %); 52.34 (WT %)
AN/(AN+AB') = 50.87 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 41.91 OR 14.70 AN 43.40

SAMPLE DY2756

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 32.65 (CAT %) 33.36 (WT %)

TOTAL FEMICS = 32.655 (CAT %) 33.357 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 38.12 (CATION) 37.02 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 24.09 F= 36.68 M= 39.23 (WT %)

FEO + 0.8998*FE203 = 7.137 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 31.3514

TOTAL NA20 + K20 (WT %) = 4.687

AGPAITIC INDEX (NA20+K20)/AL203 = .3947 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 61.513 N= 25.104 K= 13.383
CATION %: C= 50.061 N= 36.971 K= 12.968

(FEO+FE203)/(FEO+FE203+MGO) = .4902 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .8431
AL203/(0.5*CAO + NA20 + K20) = 1.2651

SAMPLE DY2758

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	49.400	49.778	46.866
AL203	15.900	16.022	17.777
FE203	2.330	2.348	1.663
FEO	5.090	5.129	4.038
CAO	11.000	11.084	11.180
MGO	8.010	8.071	11.326
NA20	3.060	3.083	5.628
K20	.600	.605	.726
TIO2	.980	.988	.699
MNO	.120	.121	.096
H20	2.750	.000	.000
TOTAL	99.240	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	3.63	28.14	28.56	.00	.00
WEIGHT %	.00	.00	3.67	26.84	28.88	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	21.87	4.85
WEIGHT %	.00	.00	.00	.00	.00	22.12	4.69

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	7.36	1.69	.00	2.49	.00	.00	1.40
WEIGHT %	6.28	2.09	.00	3.50	.00	.00	1.93

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	10.94	12.84	2.95	3.94	.91	10.94	8.89	2.04	9.05
WT %	11.55	11.72	3.54	3.60	1.09	11.55	8.12	2.45	8.37

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 81.31, FS 18.69 (CAT %); EN 76.80, FS 23.20 (WT %)
CLINOPX: WO 50.00, EN 40.65, FS 9.35 (CAT %); WO 52.22, EN 36.70, FS 11.09 (WT %)
TOT. PX: WO 40.92, EN 48.03, FS 11.04 (CAT %); WO 43.09, EN 43.71, FS 13.20 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 50.37 (CAT %); 51.84 (WT %)
AN/(AN+AB') = 50.37 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 46.65 OR 6.02 AN 47.34

SAMPLE DY2758

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 39.67 (CAT %) 40.61 (WT %)

TOTAL FEMICS = 39.672 (CAT %) 40.606 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 31.77 (CATION) 30.51 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 19.41 F= 38.11 M= 42.48 (WT %)

FEO + 0.8998*FE203 = 7.242 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 35.2088

TOTAL NA20 + K20 (WT %) = 3.688

AGPAITIC INDEX (NA20+K20)/AL203 = .3574 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 75.034 N= 20.873 K= 4.093
CATION %: C= 63.761 N= 32.098 K= 4.141

(FEO+FE203)/(FEO+FE203+MGO) = .4809 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .6191
AL203/(0.5*CAO + NA20 + K20) = 1.0138

SAMPLE DY2762

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.500	50.566	48.169
AL203	15.900	15.921	17.873
FE203	2.110	2.113	1.514
FEO	5.400	5.407	4.307
CAO	10.800	10.814	11.036
MGO	6.100	6.108	8.672
NA2O	2.840	2.844	5.252
K2O	1.710	1.712	2.081
TIO2	1.370	1.372	.983
MNO	.140	.140	.113
H2O	3.000	.000	.000
TOTAL	99.870	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	10.40	26.26	26.35	.00	.00
WEIGHT %	.00	.00	10.43	24.81	26.41	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	23.06	5.23
WEIGHT %	.00	.00	.00	.00	.00	23.27	5.08

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.41	1.05	.00	2.27	.00	.00	1.97
WEIGHT %	2.88	1.29	.00	3.16	.00	.00	2.69

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	11.53	12.80	3.96	3.99	1.23	11.53	8.81	2.72	4.46
WT %	12.07	11.58	4.70	3.61	1.47	12.07	7.97	3.24	4.17

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 76.39, FS 23.61 (CAT %); EN 71.12, FS 28.88 (WT %)
CLINOPX: WO 50.00, EN 38.19, FS 11.81 (CAT %); WO 51.86, EN 34.24, FS 13.91 (WT %)
TOT. PX: WO 40.76, EN 45.25, FS 13.99 (CAT %); WO 42.57, EN 40.84, FS 16.59 (WT %)

NORMATIVE FELDSPAR RATIOS, AB' = AB+5/3NE
AN/(AN+AB) = 50.09 (CAT %); 51.56 (WT %)
AN/(AN+AB') = 50.09 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 41.67 OR 16.51 AN 41.82

SAMPLE DY2762

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 36.99 (CAT %) 38.35 (WT %)

TOTAL FEMICS = 36.986 (CAT %) 38.354 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 36.66 (CATION) 35.24 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 25.35 F= 40.66 M= 33.99 (WT %)

FEO + 0.8998*FE203 = 7.308 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 26.8604

TOTAL NA20 + K20 (WT %) = 4.556

AGPAITIC INDEX (NA20+K20)/AL203 = .4102 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 70.358 N= 18.502 K= 11.140
CATION %: C= 60.082 N= 28.591 K= 11.327

(FEO+FE203)/(FEO+FE203+MGO) = .5518 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .6078
AL203/(0.5*CAO + NA20 + K20) = .9730

SAMPLE DY2786

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	47.100	47.885	48.262
AL203	15.900	16.165	19.200
FE203	2.600	2.643	2.005
FEO	11.200	11.387	9.596
CAO	5.250	5.338	5.763
MGO	3.230	3.284	4.933
NA2O	3.860	3.924	7.668
K2O	1.140	1.159	1.490
TIO2	1.180	1.200	.909
MNO	.200	.203	.174
H2O	6.700	.000	.000
TOTAL	98.360	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	7.45	38.34	25.11	.00	.00
WEIGHT %	.00	.00	7.35	35.63	24.75	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	2.97	12.95
WEIGHT %	.00	.00	.00	.00	.00	3.10	13.74

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.23	5.14	.00	3.01	.00	.00	1.82
WEIGHT %	2.68	6.19	.00	4.11	.00	.00	2.44

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	1.48	5.57	8.87	4.99	7.95	1.48	.57	.91	8.36
WT %	1.53	4.95	10.36	4.44	9.30	1.53	.51	1.07	8.87

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 38.56, FS 61.44 (CAT %); EN 32.33, FS 67.67 (WT %)
CLINOPX: WO 50.00, EN 19.28, FS 30.72 (CAT %); WO 49.23, EN 16.41, FS 34.35 (WT %)
TOT. PX: WO 9.32, EN 34.97, FS 55.71 (CAT %); WO 9.07, EN 29.39, FS 61.54 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 39.57 (CAT %); 40.99 (WT %)
AN/(AN+AB') = 39.57 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 54.08 OR 10.51 AN 35.41

SAMPLE DY2786

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 29.10 (CAT %) 32.27 (WT %)

TOTAL FEMICS = 29.104 (CAT %) 32.267 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 45.79 (CATION) 42.98 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 22.97 F= 62.19 M= 14.84 (WT %)

FEO + 0.8998*FE2O3 = 13.765 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 11.9497

TOTAL NA2O + K2O (WT %) = 5.083

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4770 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 51.220 N= 37.659 K= 11.122
CATION %: C= 38.624 N= 51.390 K= 9.986

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .8103 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .9283
AL2O3/(0.5*CAO + NA2O + K2O) = 1.2868

SAMPLE 41919

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	42.000	41.929	44.910
AL203	14.700	14.675	18.524
FE203	2.240	2.236	1.802
FEO	6.840	6.828	6.116
CAO	13.100	13.078	15.007
MGO	2.650	2.646	4.223
NA2O	2.900	2.895	6.012
K2O	1.640	1.637	2.237
TIO2	.980	.978	.788
MNO	.420	.419	.380
H2O	12.700	.000	.000
TOTAL	100.170	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	11.18	7.53	25.69	.00	13.52
WEIGHT %	.00	.00	11.08	7.03	25.43	.00	11.39

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	1.68	36.12	.00
WEIGHT %	.00	.00	.00	.00	1.73	37.50	.00

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	2.70	.00	.00	1.58
WEIGHT %	.00	.00	.00	3.71	.00	.00	2.13

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	19.74	8.45	9.61	.00	.00	19.74	8.45	9.61	.00
WT %	20.40	7.55	11.29	.00	.00	20.40	7.55	11.29	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
CLINOPX: WO 52.22, EN 22.35, FS 25.44 (CAT %); WO 52.00, EN 19.23, FS 28.77 (WT %)
TOT. PX: WO 52.22, EN 22.35, FS 25.44 (CAT %); WO 52.00, EN 19.23, FS 28.77 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 77.33 (CAT %); 78.34 (WT %)
AN/(AN+AB') = 46.08 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 44.91 OR 16.71 AN 38.38

SAMPLE 41919

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 40.40 (CAT %) 43.34 (WT %)

TOTAL FEMICS = 42.078 (CAT %) 45.073 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 32.23 (CATION) 29.50 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 28.29 F= 55.19 M= 16.52 (WT %)

FEO + 0.8998*FE2O3 = 8.841 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 12.7343

TOTAL NA2O + K2O (WT %) = 4.532

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4453 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 74.263 N= 16.440 K= 9.297
CATION %: C= 64.530 N= 25.851 K= 9.619

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7741 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .4841
AL2O3/(0.5*CAO + NA2O + K2O) = .7966

SAMPLE 41920

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.900	50.895	48.503
AL2O3	16.800	16.798	18.866
FE2O3	2.390	2.390	1.714
FEO	6.390	6.389	5.092
CAO	11.600	11.599	11.842
MGO	6.400	6.399	9.090
NA2O	2.280	2.280	4.212
K2O	.190	.190	.231
TIO2	.450	.450	.322
MNO	.160	.160	.129
H2O	2.450	.000	.000
TOTAL	100.010	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	2.99	.00	1.15	21.06	36.06	.00	.00
WEIGHT %	3.22	.00	1.15	19.78	35.91	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	18.52	17.00
WEIGHT %	.00	.00	.00	.00	.00	18.76	16.76

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	2.57	.00	.00	.64
WEIGHT %	.00	.00	.00	3.55	.00	.00	.88

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	9.26	18.18	8.08	11.77	5.23	9.26	6.41	2.85	.00
WT %	9.63	16.34	9.55	10.58	6.18	9.63	5.76	3.37	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 69.22, FS 30.78 (CAT %); EN 63.12, FS 36.88 (WT %)
CLINOPX: WO 50.00, EN 34.61, FS 15.39 (CAT %); WO 51.34, EN 30.71, FS 17.95 (WT %)
TOT. PX: WO 26.07, EN 51.18, FS 22.75 (CAT %); WO 27.12, EN 46.00, FS 26.88 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 63.13 (CAT %); 64.49 (WT %)
AN/(AN+AB') = 63.13 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 36.14 OR 1.98 AN 61.88

SAMPLE 41920

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 38.74 (CAT %) 39.95 (WT %)

TOTAL FEMICS = 38.738 (CAT %) 39.945 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 25.20 (CATION) 24.14 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 14.19 F= 49.05 M= 36.76 (WT %)

FEO + 0.8998*FE203 = 8.540 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 31.8091

TOTAL NA20 + K20 (WT %) = 2.470

AGPAITIC INDEX (NA20+K20)/AL203 = .2355 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 82.445 N= 16.205 K= 1.350
CATION %: C= 72.717 N= 25.864 K= 1.418

(FEO+FE203)/(FEO+FE203+MGO) = .5784 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .6708
AL203/(0.5*CAO + NA20 + K20) = 1.1585

SAMPLE 41921

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.300	49.422	50.254
AL203	15.300	15.655	18.760
FE203	2.250	2.302	1.761
FEO	5.490	5.618	4.776
CAO	7.130	7.296	7.948
MGO	4.080	4.175	6.327
NA20	3.340	3.418	6.737
K20	1.740	1.780	2.309
TIO2	1.080	1.105	.845
MNO	.320	.327	.282
H20	8.700	.000	.000
TOTAL	97.730	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.65	.00	11.55	33.69	24.29	.00	.00
WEIGHT %	.70	.00	11.55	31.74	24.27	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	12.36	13.14
WEIGHT %	.00	.00	.00	.00	.00	12.63	13.13

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	2.64	.00	.00	1.69
WEIGHT %	.00	.00	.00	3.66	.00	.00	2.30

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	6.18	12.65	6.67	8.61	4.53	6.18	4.05	2.13	.00
WT %	6.45	11.41	7.90	7.76	5.37	6.45	3.65	2.53	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 65.50, FS 34.50 (CAT %); EN 59.09, FS 40.91 (WT %)
CLINOPX: WO 50.00, EN 32.75, FS 17.25 (CAT %); WO 51.07, EN 28.91, FS 20.01 (WT %
TOT. PX: WO 24.24, EN 49.62, FS 26.14 (CAT %); WO 25.04, EN 44.30, FS 30.66 (WT %

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 41.89 (CAT %); 43.33 (WT %)
AN/(AN+AB') = 41.89 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 48.46 OR 16.61 AN 34.93

SAMPLE 41921

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 29.83 (CAT %) 31.73 (WT %)

TOTAL FEMICS = 29.833 (CAT %) 31.732 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 45.88 (CATION) 44.00 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 30.47 F= 45.07 M= 24.47 (WT %)

FEO + 0.8998*FE2O3 = 7.689 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 18.5623

TOTAL NA2O + K2O (WT %) = 5.198

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4822 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 58.395 N= 27.355 K= 14.251
CATION %: C= 46.767 N= 39.644 K= 13.589

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6548 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .7522
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1039

SAMPLE 41922

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.800	52.350	48.943
AL2O3	16.600	16.776	18.484
FE2O3	2.100	2.122	1.493
FEO	3.190	3.224	2.520
CAO	12.300	12.431	12.451
MGO	6.020	6.084	8.478
NA2O	3.680	3.719	6.741
K2O	.330	.334	.398
TIO2	.580	.586	.412
MNO	.100	.101	.080
H2O	2.250	.000	.000
TOTAL	98.950	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	1.99	33.70	28.36	.00	.00
WEIGHT %	.00	.00	2.02	32.20	28.74	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	27.11	4.22
WEIGHT %	.00	.00	.00	.00	.00	27.31	4.04

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	1.32	.22	.00	2.24	.00	.00	.82
WEIGHT %	1.13	.28	.00	3.15	.00	.00	1.14

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	13.56	15.19	2.58	3.61	.61	13.56	11.59	1.97	1.55
WT %	14.34	13.89	3.11	3.30	.74	14.34	10.59	2.37	1.41

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 85.46, FS 14.54 (CAT %); EN 81.73, FS 18.27 (WT %)
CLINOPX: WO 50.00, EN 42.73, FS 7.27 (CAT %); WO 52.53, EN 38.80, FS 8.67 (WT %)
TOT. PX: WO 43.26, EN 48.49, FS 8.25 (CAT %); WO 45.76, EN 44.33, FS 9.91 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 45.70 (CAT %); 47.16 (WT %)
AN/(AN+AB') = 45.70 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 52.62 OR 3.10 AN 44.28

SAMPLE 41922

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 35.94 (CAT %) 37.04 (WT %)

TOTAL FEMICS = 35.943 (CAT %) 37.038 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 35.69 (CATION) 34.22 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 26.54 F= 33.62 M= 39.84 (WT %)

FEO + 0.8998*FE2O3 = 5.133 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 31.1433

TOTAL NA2O + K2O (WT %) = 4.053

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .3862 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 75.414 N= 22.563 K= 2.023
CATION %: C= 63.558 N= 34.411 K= 2.030

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .4677 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .5769
AL2O3/(0.5*CAO + NA2O + K2O) = .9436

SAMPLE 41923

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.800	52.118	48.961
AL2O3	14.400	14.488	16.040
FE2O3	2.050	2.063	1.458
FEO	6.670	6.711	5.272
CAO	5.690	5.725	5.762
MGO	8.820	8.874	12.425
NA2O	4.600	4.628	8.429
K2O	.500	.503	.603
TIO2	1.320	1.328	.938
MNO	.140	.141	.112
H2O	3.400	.000	.000
TOTAL	99.390	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	3.01	42.15	17.52	.00	.00
WEIGHT %	.00	.00	3.08	40.55	17.88	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	9.03	13.60
WEIGHT %	.00	.00	.00	.00	.00	9.27	13.43

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	8.18	2.45	.00	2.19	.00	.00	1.88
WEIGHT %	7.04	3.05	.00	3.10	.00	.00	2.61

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	4.52	13.94	4.17	10.47	3.13	4.52	3.48	1.04	10.63
WT %	4.81	12.84	5.05	9.64	3.79	4.81	3.20	1.26	10.09

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 76.98, FS 23.02 (CAT %); EN 71.78, FS 28.22 (WT %)
CLINOPX: WO 50.00, EN 38.49, FS 11.51 (CAT %); WO 51.90, EN 34.53, FS 13.57 (WT %)
TOT. PX: WO 19.95, EN 61.61, FS 18.43 (CAT %); WO 21.20, EN 56.57, FS 22.24 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 29.36 (CAT %); 30.60 (WT %)
AN/(AN+AB') = 29.36 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 67.24 OR 4.81 AN 27.95

SAMPLE 41923

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 37.32 (CAT %) 38.49 (WT %)

TOTAL FEMICS = 37.319 (CAT %) 38.494 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 45.16 (CATION) 43.63 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 22.73 F= 37.95 M= 39.31 (WT %)

FEO + 0.8998*FE2O3 = 8.567 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 31.7952

TOTAL NA2O + K2O (WT %) = 5.131

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .5631 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 52.734 N= 42.632 K= 4.634
CATION %: C= 38.947 N= 56.978 K= 4.075

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .4971 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .7803
AL2O3/(0.5*CAO + NA2O + K2O) = 1.0843

SAMPLE 41924

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	53.300	53.525	50.725
AL203	14.600	14.662	16.375
FE203	1.320	1.326	.945
FEO	5.360	5.383	4.265
CAO	5.930	5.955	6.046
MGO	6.800	6.829	9.645
NA20	5.150	5.172	9.502
K20	1.370	1.376	1.663
TIO2	1.030	1.034	.737
MNO	.120	.121	.097
H20	4.600	.000	.000
TOTAL	99.580	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	8.32	47.51	13.02	.00	.00
WEIGHT %	.00	.00	8.52	45.88	13.34	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	13.76	1.84
WEIGHT %	.00	.00	.00	.00	.00	14.21	1.83

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	9.54	3.12	.00	1.42	.00	.00	1.47
WEIGHT %	8.24	3.90	.00	2.01	.00	.00	2.06

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	6.88	6.57	2.15	1.39	.45	6.88	5.19	1.70	12.66
WT %	7.36	6.07	2.61	1.28	.55	7.36	4.79	2.06	12.14

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 75.37, FS 24.63 (CAT %); EN 69.95, FS 30.05 (WT %)
CLINOPX: WO 50.00, EN 37.68, FS 12.32 (CAT %); WO 51.78, EN 33.73, FS 14.49 (WT %)
TOT. PX: WO 44.11, EN 42.12, FS 13.77 (CAT %); WO 45.88, EN 37.86, FS 16.26 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 21.52 (CAT %); 22.53 (WT %)
AN/(AN+AB') = 21.52 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 69.00 OR 12.08 AN 18.92

SAMPLE 41924

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 31.15 (CAT %) 32.26 (WT %)

TOTAL FEMICS = 31.151 (CAT %) 32.256 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 55.82 (CATION) 54.40 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 32.82 F= 32.96 M= 34.23 (WT %)

FEO + 0.8998*FE203 = 6.575 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 25.6410

TOTAL NA20 + K20 (WT %) = 6.547

AGPAITIC INDEX (NA20+K20)/AL203 = .6818 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 47.631 N= 41.365 K= 11.004
CATION %: C= 35.129 N= 55.208 K= 9.663

(FEO+FE203)/(FEO+FE203+MGO) = .4955 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .7041
AL203/(0.5*CAO + NA20 + K20) = .9514

SAMPLE 41925

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	49.800	50.197	47.768
AL203	15.100	15.220	17.069
FE203	2.710	2.732	1.956
FEO	4.830	4.868	3.874
CAO	12.200	12.297	12.537
MGO	4.960	4.999	7.091
NA2O	4.450	4.485	8.275
K2O	.440	.444	.538
TIO2	1.100	1.109	.793
MNO	.120	.121	.097
H2O	3.500	.000	.000
TOTAL	99.210	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	2.69	30.91	20.64	.00	6.28
WEIGHT %	.00	.00	2.72	29.39	20.81	.00	5.39

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	33.64	.00
WEIGHT %	.00	.00	.00	.00	.00	34.15	.00

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	1.01	.31	.00	2.93	.00	.00	1.59
WEIGHT %	.86	.39	.00	4.11	.00	.00	2.18

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	16.82	12.84	3.98	.00	.00	16.82	12.84	3.98	1.32
WT %	17.71	11.68	4.76	.00	.00	17.71	11.68	4.76	1.24

PYROXENE COMPONENTS NORMALIZED TO 100%
CLINOPX: WO 50.00, EN 38.16, FS 11.84 (CAT %); WO 51.85, EN 34.20, FS 13.95 (WT %)
TOT. PX: WO 50.00, EN 38.16, FS 11.84 (CAT %); WO 51.85, EN 34.20, FS 13.95 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 40.04 (CAT %); 41.46 (WT %)
AN/(AN+AB') = 33.28 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 63.94 OR 4.16 AN 31.90

SAMPLE 41925

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 39.48 (CAT %) 41.69 (WT %)

TOTAL FEMICS = 39.480 (CAT %) 41.687 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 39.88 (CATION) 37.50 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 28.57 F= 42.46 M= 28.97 (WT %)

FEO + 0.8998*FE203 = 7.326 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 22.2621

TOTAL NA20 + K20 (WT %) = 4.929

AGPAITIC INDEX (NA20+K20)/AL203 = .5163 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 71.387 N= 26.039 K= 2.575
CATION %: C= 58.720 N= 38.759 K= 2.522

(FEO+FE203)/(FEO+FE203+MGO) = .6032 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .5037
AL203/(0.5*CAO + NA20 + K20) = .7995

SAMPLE 41926

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	55.600	55.919	52.203
AL203	18.100	18.204	20.028
FE203	2.840	2.856	2.006
FEO	5.430	5.461	4.263
CAO	4.380	4.405	4.406
MGO	2.520	2.534	3.526
NA20	7.130	7.171	12.978
K20	.120	.121	.144
TIO2	.450	.453	.318
MNO	.160	.161	.127
H20	2.700	.000	.000
TOTAL	99.430	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.72	64.89	17.26	.00	.00
WEIGHT %	.00	.00	.73	62.37	17.60	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	3.81	4.82
WEIGHT %	.00	.00	.00	.00	.00	4.04	5.08

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	2.59	2.26	.00	3.01	.00	.00	.64
WEIGHT %	2.23	2.81	.00	4.26	.00	.00	.88

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.00	.00	.00
WEIGHT %	.00	.00	.00	.00	.00	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	1.91	3.59	3.13	2.57	2.24	1.91	1.02	.89	4.85
WT %	2.03	3.31	3.78	2.37	2.71	2.03	.94	1.07	5.04

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 53.46, FS 46.54 (CAT %); EN 46.65, FS 53.35 (WT %)
CLINOPX: WO 50.00, EN 26.73, FS 23.27 (CAT %); WO 50.24, EN 23.21, FS 26.55 (WT %)
TOT. PX: WO 22.09, EN 41.65, FS 36.26 (CAT %); WO 22.25, EN 36.27, FS 41.48 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 21.01 (CAT %); 22.01 (WT %)
AN/(AN+AB') = 21.01 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 78.30 OR .87 AN 20.83

SAMPLE 41926

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 17.13 (CAT %) 19.30 (WT %)

TOTAL FEMICS = 17.125 (CAT %) 19.298 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 65.61 (CATION) 63.10 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 40.83 F= 44.97 M= 14.19 (WT %)

FEO + 0.8998*FE2O3 = 8.031 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 9.9644

TOTAL NA2O + K2O (WT %) = 7.292

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .6552 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 37.661 N= 61.307 K= 1.032
CATION %: C= 25.136 N= 74.044 K= .820

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7665 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .9131
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1426

SAMPLE 78614

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.000	50.822	47.974
AL203	14.100	14.051	15.631
FE203	2.900	2.890	2.053
FEO	8.380	8.351	6.591
CAO	11.300	11.261	11.388
MGO	7.400	7.374	10.375
NA2O	2.800	2.790	5.106
K2O	.100	.100	.120
TIO2	.500	.498	.354
P2O5	.210	.209	.167
MNO	.170	.169	.135
S	.060	.060	.106
H2O	1.430	.000	.000
TOTAL	100.350	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.31	.00	.60	25.53	26.01	.00	.00
WEIGHT %	.34	.00	.60	23.90	25.83	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	23.63	19.52
WEIGHT %	.00	.00	.00	.00	.00	23.96	19.35

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	3.08	.00	.00	.71
WEIGHT %	.00	.00	.00	4.24	.00	.00	.96

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.45	.16	.00
WEIGHT %	.00	.00	.00	.49	.34	.00

PYROXENE AND OLIVINE COMPOSITIONS, WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	11.81	20.75	10.59	12.93	6.60	11.81	7.82	3.99	.00
WT %	12.25	18.59	12.47	11.58	7.77	12.25	7.01	4.70	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 66.21, FS 33.79 (CAT %); EN 59.86, FS 40.14 (WT %)
CLINOPX: WO 50.00, EN 33.11, FS 16.89 (CAT %); WO 51.12, EN 29.26, FS 19.62 (WT %)
TOT. PX: WO 27.38, EN 48.09, FS 24.54 (CAT %); WO 28.28, EN 42.93, FS 28.79 (WT %)

NORMATIVE FELDSPAR RATIOS, AB' = AB+5/3NE
AN/(AN+AB) = 50.47 (CAT %); 51.94 (WT %)
AN/(AN+AB') = 50.47 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 48.96 OR 1.15 AN 49.89

SAMPLE 78614

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 46.94 (CAT %) 48.51 (WT %)

TOTAL FEMICS = 47.542 (CAT %) 49.339 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 26.45 (CATION) 24.83 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 13.62 F= 51.62 M= 34.76 (WT %)

FEO + 0.8998*FE203 = 10.951 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 30.2288

TOTAL NA20 + K20 (WT %) = 2.890

AGPAITIC INDEX (NA20+K20)/AL203 = .3344 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 79.577 N= 19.718 K= .704
CATION %: C= 68.543 N= 30.735 K= .722

(FEO+FE203)/(FEO+FE203+MGO) = .6039 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .5582
AL203/(0.5*CAO + NA20 + K20) = .9408

SAMPLE 78615

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	52.500	52.244	49.619
AL203	13.600	13.534	15.148
FE203	4.070	4.050	2.894
FEO	11.700	11.643	9.247
CAO	6.500	6.468	6.582
MGO	5.500	5.473	7.748
NA20	4.300	4.279	7.879
K20	.100	.100	.121
TIO2	.800	.796	.569
P205	.110	.109	.088
S	.060	.060	.106
H20	1.250	.000	.000
TOTAL	100.490	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.69	.00	.60	39.39	17.87	.00	.00
WEIGHT %	.73	.00	.59	36.59	17.60	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	11.44	24.13
WEIGHT %	.00	.00	.00	.00	.00	11.74	24.69

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	4.34	.00	.00	1.14
WEIGHT %	.00	.00	.00	5.93	.00	.00	1.53

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.23	.16	.00
WEIGHT %	.00	.00	.00	.26	.34	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	5.72	15.50	14.36	12.53	11.60	5.72	2.97	2.75	.00
WT %	5.88	13.77	16.77	11.13	13.56	5.88	2.64	3.21	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 51.91, FS 48.09 (CAT %); EN 45.10, FS 54.90 (WT %)
CLINOPX: WO 50.00, EN 25.95, FS 24.05 (CAT %); WO 50.13, EN 22.49, FS 27.38 (WT %)
TOT. PX: WO 16.08, EN 43.56, FS 40.36 (CAT %); WO 16.15, EN 37.81, FS 46.03 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 31.21 (CAT %); 32.49 (WT %)
AN/(AN+AB') = 31.21 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 68.08 OR 1.04 AN 30.88

SAMPLE 78615

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 41.05 (CAT %) 43.89 (WT %)

TOTAL FEMICS = 41.445 (CAT %) 44.485 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 40.68 (CATION) 37.91 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 17.42 F= 60.81 M= 21.77 (WT %)

FEO + 0.8998*FE203 = 15.287 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 18.2907

TOTAL NA20 + K20 (WT %) = 4.379

AGPAITIC INDEX (NA20+K20)/AL203 = .5281 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 59.633 N= 39.450 K= .917
CATION %: C= 45.138 N= 54.036 K= .827

(FEO+FE203)/(FEO+FE203+MGO) = .7414 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .7158
AL203/(0.5*CAO + NA20 + K20) = 1.0389

SAMPLE 78616

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.000	50.630	47.707
AL203	15.000	14.891	16.536
FE203	3.350	3.326	2.358
FEO	9.680	9.610	7.572
CAO	8.300	8.240	8.318
MGO	6.200	6.155	8.644
NA20	4.100	4.070	7.435
K20	.200	.199	.239
TIO2	.650	.645	.457
P205	.270	.268	.214
MNO	.170	.169	.135
S	.220	.218	.386
H20	1.590	.000	.000
TOTAL	100.730	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	1.19	37.18	22.16	.00	.00
WEIGHT %	.00	.00	1.18	34.72	21.95	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	14.12	13.07
WEIGHT %	.00	.00	.00	.00	.00	14.42	13.17

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.98	2.71	.00	3.54	.00	.00	.91
WEIGHT %	3.33	3.27	.00	4.86	.00	.00	1.24

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.57	.58	.00
WEIGHT %	.00	.00	.00	.63	1.24	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	7.06	11.98	8.15	7.78	5.29	7.06	4.20	2.86	6.69
WT %	7.30	10.71	9.57	6.95	6.21	7.30	3.76	3.36	6.60

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 59.53, FS 40.47 (CAT %); EN 52.81, FS 47.19 (WT %)
CLINOPX: WO 50.00, EN 29.76, FS 20.24 (CAT %); WO 50.65, EN 26.06, FS 23.29 (WT %)
TOT. PX: WO 25.97, EN 44.07, FS 29.96 (CAT %); WO 26.48, EN 38.83, FS 34.69 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 37.34 (CAT %); 38.73 (WT %)
AN/(AN+AB') = 37.34 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 61.42 OR 1.97 AN 36.60

SAMPLE 78616

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 38.33 (CAT %) 40.28 (WT %)

TOTAL FEMICS = 39.475 (CAT %) 42.146 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 38.37 (CATION) 35.91 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 18.54 F= 54.73 M= 26.73 (WT %)

FEO + 0.8998*FE2O3 = 12.602 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 22.2781

TOTAL NA2O + K2O (WT %) = 4.269

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4641 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 65.873 N= 32.540 K= 1.587
CATION %: C= 52.013 N= 46.495 K= 1.492

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6776 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6802
AL2O3/(0.5*CAO + NA2O + K2O) = 1.0340

SAMPLE 78617

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.500	51.552	48.540
AL203	13.300	13.313	14.773
FE203	3.250	3.253	2.305
FEO	9.370	9.379	7.385
CAO	9.700	9.710	9.795
MGO	7.000	7.007	9.833
NA2O	3.400	3.403	6.213
K2O	.200	.200	.240
TIO2	.650	.651	.461
P2O5	.160	.160	.128
MNO	.190	.190	.152
S	.100	.100	.177
H2O	1.080	.000	.000
TOTAL	99.900	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	1.20	31.06	20.80	.00	.00
WEIGHT %	.00	.00	1.19	29.01	20.60	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	21.69	19.57
WEIGHT %	.00	.00	.00	.00	.00	22.04	19.54

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.43	.26	.00	3.46	.00	.00	.92
WEIGHT %	.36	.31	.00	4.75	.00	.00	1.24

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.34	.26	.00
WEIGHT %	.00	.00	.00	.38	.57	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	10.84	19.09	11.33	12.28	7.29	10.84	6.81	4.04	.69
WT %	11.21	17.06	13.31	10.98	8.56	11.21	6.08	4.74	.67

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 62.76, FS 37.24 (CAT %); EN 56.19, FS 43.81 (WT %)
CLINOPX: WO 50.00, EN 31.38, FS 18.62 (CAT %); WO 50.88, EN 27.60, FS 21.52 (WT %)
TOT. PX: WO 26.28, EN 46.27, FS 27.45 (CAT %); WO 26.97, EN 41.03, FS 32.00 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 40.11 (CAT %); 41.53 (WT %)
AN/(AN+AB') = 40.11 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 58.54 OR 2.27 AN 39.20

SAMPLE 78617

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 46.33 (CAT %) 48.25 (WT %)

TOTAL FEMICS = 46.934 (CAT %) 49.196 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 32.27 (CATION) 30.20 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 15.72 F= 53.70 M= 30.58 (WT %)

FEO + 0.8998*FE2O3 = 12.307 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 26.0999

TOTAL NA2O + K2O (WT %) = 3.604

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4368 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 72.932 N= 25.564 K= 1.504
CATION %: C= 60.283 N= 38.237 K= 1.480

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6432 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .5673
AL2O3/(0.5*CAO + NA2O + K2O) = .9092

SAMPLE 78618

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.000	48.169	45.860
AL203	15.000	15.053	16.889
FE203	3.930	3.944	2.825
FEO	11.350	11.390	9.068
CAO	7.700	7.727	7.881
MGO	7.150	7.175	10.182
NA2O	3.600	3.613	6.668
K2O	.100	.100	.122
TIO2	.180	.181	.129
P2O5	.130	.130	.105
MNO	.180	.181	.146
S	.070	.070	.125
H2O	2.260	.000	.000
TOTAL	99.650	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.61	33.34	25.25	.00	.00
WEIGHT %	.00	.00	.61	31.20	25.06	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	10.63	10.04
WEIGHT %	.00	.00	.00	.00	.00	10.90	10.20

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	8.68	6.49	.00	4.24	.00	.00	.26
WEIGHT %	7.27	7.86	.00	5.84	.00	.00	.35

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.28	.19	.00
WEIGHT %	.00	.00	.00	.31	.40	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	5.31	8.79	6.57	5.75	4.30	5.31	3.04	2.27	15.17
WT %	5.51	7.87	7.73	5.15	5.06	5.51	2.72	2.67	15.13

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 57.23, FS 42.77 (CAT %); EN 50.45, FS 49.55 (WT %)
CLINOPX: WO 50.00, EN 28.62, FS 21.38 (CAT %); WO 50.49, EN 24.98, FS 24.53 (WT %)
TOT. PX: WO 25.71, EN 42.52, FS 31.77 (CAT %); WO 26.08, EN 37.29, FS 36.62 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 43.09 (CAT %); 44.54 (WT %)
AN/(AN+AB') = 43.09 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 56.32 OR 1.03 AN 42.65

SAMPLE 78618

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 40.33 (CAT %) 42.42 (WT %)

TOTAL FEMICS = 40.802 (CAT %) 43.135 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 33.95 (CATION) 31.81 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 14.38 F= 57.84 M= 27.78 (WT %)

FEO + 0.8998*FE203 = 14.939 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 23.9692

TOTAL NA2O + K2O (WT %) = 3.713

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4020 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 67.544 N= 31.579 K= .877
CATION %: C= 53.720 N= 45.450 K= .831

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6812 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .7489
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1512

SAMPLE 78619

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.000	47.445	45.585
AL2O3	14.400	14.233	16.117
FE2O3	4.830	4.774	3.451
FEO	13.900	13.739	11.038
CAO	5.100	5.041	5.189
MGO	7.000	6.919	9.908
NA2O	4.000	3.954	7.365
K2O	.100	.099	.121
TIO2	.800	.791	.571
P2O5	.090	.089	.072
MNO	.170	.168	.137
S	.250	.247	.445
H2O	2.530	.000	.000
TOTAL	101.170	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.61	36.82	21.58	.00	.00
WEIGHT %	.00	.00	.59	34.01	21.14	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	3.01	16.34
WEIGHT %	.00	.00	.00	.00	.00	3.07	16.56

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	7.72	6.74	.00	5.18	.00	.00	1.14
WEIGHT %	6.37	8.07	.00	7.04	.00	.00	1.53

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.19	.67	.00
WEIGHT %	.00	.00	.00	.21	1.41	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	1.51	9.53	8.32	8.72	7.62	1.51	.80	.70	14.46
WT %	1.54	8.42	9.67	7.71	8.85	1.54	.71	.82	14.44

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 53.37, FS 46.63 (CAT %); EN 46.56, FS 53.44 (WT %)
CLINOPX: WO 50.00, EN 26.69, FS 23.31 (CAT %); WO 50.23, EN 23.17, FS 26.60 (WT %)
TOT. PX: WO 7.78, EN 49.22, FS 43.00 (CAT %); WO 7.85, EN 42.90, FS 49.25 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 36.95 (CAT %); 38.33 (WT %)
AN/(AN+AB') = 36.95 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 62.41 OR 1.03 AN 36.57

SAMPLE 78619

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 40.13 (CAT %) 42.64 (WT %)

TOTAL FEMICS = 40.994 (CAT %) 44.256 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 37.43 (CATION) 34.61 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 13.97 F= 62.18 M= 23.85 (WT %)

FEO + 0.8998*FE2O3 = 18.035 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 20.6307

TOTAL NA2O + K2O (WT %) = 4.053

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4645 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 55.435 N= 43.478 K= 1.087
CATION %: C= 40.939 N= 58.105 K= .956

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7279 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .9022
AL2O3/(0.5*CAO + NA2O + K2O) = 1.2716

SAMPLE 78620

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	44.500	43.864	43.516
AL203	14.400	14.194	16.595
FE203	6.050	5.964	4.451
FEO	17.400	17.151	14.228
CAO	2.200	2.169	2.305
MGO	7.600	7.491	11.077
NA20	3.300	3.253	6.256
K20	.100	.099	.125
TIO2	.700	.690	.515
P205	.160	.158	.132
MNO	.080	.079	.066
S	.400	.394	.733
H20	4.560	.000	.000
TOTAL	101.450	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	6.05	.62	31.28	10.42	.00	.00
WEIGHT %	.00	5.34	.60	28.41	10.04	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	36.29
WEIGHT %	.00	.00	.00	.00	.00	.00	36.53

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.07	3.10	.00	6.68	.00	.00	1.03
WEIGHT %	2.50	3.65	.00	8.92	.00	.00	1.35

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.35	1.10	.00
WEIGHT %	.00	.00	.00	.38	2.28	.00

PYROXENE AND OLIVINE COMPOSITIONS, WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	18.06	18.24	18.06	18.24	.00	.00	.00	6.18
WT %	.00	15.70	20.83	15.70	20.83	.00	.00	.00	6.15

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 49.75, FS 50.25 (CAT %); EN 42.97, FS 57.03 (WT %)
TOT. PX: WO .00, EN 49.75, FS 50.25 (CAT %); WO .00, EN 42.97, FS 57.03 (WT %)

NORMATIVE FELDSPAR RATIOS, AB' = AB+5/3NE
AN/(AN+AB) = 24.99 (CAT %); 26.11 (WT %)
AN/(AN+AB') = 24.99 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 73.91 OR 1.47 AN 24.62

SAMPLE 78620

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 50.18 (CAT %) 52.95 (WT %)

TOTAL FEMICS = 51.629 (CAT %) 55.615 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 31.90 (CATION) 29.01 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 10.05 F= 67.50 M= 22.46 (WT %)

FEO + 0.8998*FE203 = 22.517 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 20.0793

TOTAL NA20 + K20 (WT %) = 3.351

AGPAITIC INDEX (NA20+K20)/AL203 = .3845 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 39.286 N= 58.929 K= 1.786
CATION %: C= 26.535 N= 72.028 K= 1.436

(FEO+FE203)/(FEO+FE203+MGO) = .7552 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = 1.5099
AL203/(0.5*CAO + NA20 + K20) = 1.9106

SAMPLE 78621

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.000	49.910	47.935
AL2O3	15.500	15.472	17.512
FE2O3	4.200	4.192	3.030
FEO	12.100	12.078	9.700
CAO	3.050	3.045	3.133
MGO	6.500	6.488	9.288
NA2O	4.200	4.192	7.806
K2O	.300	.299	.367
TIO2	.650	.649	.469
P2O5	.250	.250	.203
MNO	.090	.090	.073
S	.270	.270	.485
H2O	3.070	.000	.000
TOTAL	100.180	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.99	3.75	1.83	39.03	13.97	.00	.00
WEIGHT %	1.06	3.39	1.81	36.24	13.76	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	33.67
WEIGHT %	.00	.00	.00	.00	.00	.00	34.14

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	4.54	.00	.00	.94
WEIGHT %	.00	.00	.00	6.21	.00	.00	1.26

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.54	.73	.00
WEIGHT %	.00	.00	.00	.59	1.55	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	18.58	15.09	18.58	15.09	.00	.00	.00	.00
WT %	.00	16.51	17.63	16.51	17.63	.00	.00	.00	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 55.17, FS 44.83 (CAT %); EN 48.36, FS 51.64 (WT %)
TOT. PX: WO .00, EN 55.17, FS 44.83 (CAT %); WO .00, EN 48.36, FS 51.64 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 26.36 (CAT %); 27.52 (WT %)
AN/(AN+AB') = 26.36 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 71.18 OR 3.35 AN 25.48

SAMPLE 78621

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 39.15 (CAT %) 41.61 (WT %)

TOTAL FEMICS = 40.420 (CAT %) 43.748 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 41.86 (CATION) 39.11 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 16.74 F= 59.08 M= 24.18 (WT %)

FEO + 0.8998*FE203 = 15.851 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 20.4403

TOTAL NA2O + K2O (WT %) = 4.492

AGPAITIC INDEX (NA2O+K2O)/AL203 = .4667 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 40.397 N= 55.629 K= 3.974
CATION %: C= 27.708 N= 69.047 K= 3.245

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7149 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA2O + K2O) = 1.2129
AL203/(0.5*CAO + NA2O + K2O) = 1.5490

SAMPLE 78622

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	45.500	44.965	44.794
AL2O3	13.300	13.144	15.431
FE2O3	5.650	5.584	4.185
FEO	16.300	16.108	13.418
CAO	3.700	3.656	3.902
MGO	7.800	7.708	11.445
NA2O	3.000	2.965	5.726
K2O	.100	.099	.126
TIO2	.800	.791	.592
P2O5	.200	.198	.167
MNO	.080	.079	.067
S	.080	.079	.148
H2O	4.680	.000	.000
TOTAL	101.190	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	2.33	.63	28.63	18.12	.00	.00
WEIGHT %	.00	2.08	.61	26.23	17.61	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	35.62
WEIGHT %	.00	.00	.00	.00	.00	.00	35.98

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.38	3.17	.00	6.28	.00	.00	1.18
WEIGHT %	2.77	3.76	.00	8.46	.00	.00	1.57

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.44	.22	.00
WEIGHT %	.00	.00	.00	.48	.46	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	18.39	17.23	18.39	17.23	.00	.00	.00	6.54
WT %	.00	16.12	19.86	16.12	19.86	.00	.00	.00	6.52

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 51.62, FS 48.38 (CAT %); EN 44.81, FS 55.19 (WT %)
TOT. PX: WO .00, EN 51.62, FS 48.38 (CAT %); WO .00, EN 44.81, FS 55.19 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 38.76 (CAT %); 40.17 (WT %)
AN/(AN+AB') = 38.76 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 60.42 OR 1.33 AN 38.25

SAMPLE 78622

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 49.62 (CAT %) 52.53 (WT %)

TOTAL FEMICS = 50.290 (CAT %) 53.480 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 29.26 (CATION) 26.84 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 9.60 F= 66.24 M= 24.16 (WT %)

FEO + 0.8998*FE2O3 = 21.132 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 21.6968

TOTAL NA2O + K2O (WT %) = 3.064

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .3792 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 54.412 N= 44.118 K= 1.471
CATION %: C= 40.009 N= 58.703 K= 1.287

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7378 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = 1.1300
AL2O3/(0.5*CAO + NA2O + K2O) = 1.5820

SAMPLE 78623

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	47.000	46.507	45.900
AL203	13.000	12.864	14.962
FE203	5.360	5.304	3.939
FEO	15.500	15.337	12.658
CAO	4.000	3.958	4.185
MGO	7.000	6.927	10.189
NA20	3.700	3.661	7.005
K20	.100	.099	.125
TIO2	.700	.693	.514
P205	.120	.119	.099
MNO	.070	.069	.058
S	.200	.198	.366
H20	4.310	.000	.000
TOTAL	101.060	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.62	35.03	19.58	.00	.00
WEIGHT %	.00	.00	.61	32.13	19.05	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.41	25.62
WEIGHT %	.00	.00	.00	.00	.00	.42	26.00

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	5.53	5.46	.00	5.91	.00	.00	1.03
WEIGHT %	4.54	6.48	.00	7.97	.00	.00	1.36

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.26	.55	.00
WEIGHT %	.00	.00	.00	.29	1.15	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.21	13.00	12.82	12.90	12.72	.21	.10	.10	10.99
WT %	.21	11.41	14.79	11.32	14.67	.21	.09	.12	11.02

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 50.35, FS 49.65 (CAT %); EN 43.55, FS 56.45 (WT %)
CLINOPX: WO 50.00, EN 25.17, FS 24.83 (CAT %); WO 50.02, EN 21.77, FS 28.21 (WT %)
TOT. PX: WO .80, EN 49.94, FS 49.26 (CAT %); WO .80, EN 43.21, FS 56.00 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 35.86 (CAT %); 37.22 (WT %)
AN/(AN+AB') = 35.86 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 63.42 OR 1.13 AN 35.45

SAMPLE 78623

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 43.96 (CAT %) 46.78 (WT %)

TOTAL FEMICS = 44.770 (CAT %) 48.217 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 35.65 (CATION) 32.73 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 12.21 F= 65.30 M= 22.49 (WT %)

FEO + 0.8998*FE203 = 20.110 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 19.7406

TOTAL NA20 + K20 (WT %) = 3.760

AGPAITIC INDEX (NA20+K20)/AL203 = .4765 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 51.282 N= 47.436 K= 1.282
CATION %: C= 36.987 N= 61.912 K= 1.101

(FEO+FE203)/(FEO+FE203+MGO) = .7487 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .9653
AL203/(0.5*CAO + NA20 + K20) = 1.3223

SAMPLE 78624

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.500	50.035	46.866
AL203	13.800	13.673	15.093
FE203	3.700	3.666	2.584
FEO	10.700	10.601	8.303
CAO	8.900	8.818	8.849
MGO	7.200	7.134	9.959
NA20	4.100	4.062	7.377
K20	.100	.099	.118
TIO2	.700	.694	.488
P205	.140	.139	.110
MNO	.190	.188	.149
S	.060	.059	.104
H20	.840	.000	.000
TOTAL	100.930	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.59	36.88	18.99	.00	.00
WEIGHT %	.00	.00	.59	34.59	18.89	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	19.47	4.78
WEIGHT %	.00	.00	.00	.00	.00	19.94	4.82

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	8.40	5.59	.00	3.88	.00	.00	.98
WEIGHT %	7.05	6.78	.00	5.35	.00	.00	1.33

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.29	.16	.00
WEIGHT %	.00	.00	.00	.33	.34	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	9.73	8.71	5.79	2.87	1.91	9.73	5.85	3.89	13.99
WT %	10.11	7.82	6.83	2.57	2.25	10.11	5.25	4.58	13.83

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 60.07, FS 39.93 (CAT %); EN 53.37, FS 46.63 (WT %)
CLINOPX: WO 50.00, EN 30.03, FS 19.97 (CAT %); WO 50.69, EN 26.32, FS 22.99 (WT %)
TOT. PX: WO 40.15, EN 35.95, FS 23.90 (CAT %); WO 40.82, EN 31.59, FS 27.59 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 33.99 (CAT %); 35.33 (WT %)
AN/(AN+AB') = 33.99 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 65.31 OR 1.05 AN 33.64

SAMPLE 78624

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 43.08 (CAT %) 45.27 (WT %)

TOTAL FEMICS = 43.530 (CAT %) 45.930 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 37.47 (CATION) 35.18 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 16.52 F= 55.17 M= 28.31 (WT %)

FEO + 0.8998*FE203 = 13.900 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 24.0000

TOTAL NA2O + K2O (WT %) = 4.161

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4966 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 67.939 N= 31.298 K= .763
CATION %: C= 54.141 N= 45.134 K= .724

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6667 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .5991
AL2O3/(0.5*CAO + NA2O + K2O) = .9235

SAMPLE 78625

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.500	50.698	47.598
AL203	14.200	14.256	15.773
FE203	3.410	3.423	2.418
FEO	9.830	9.868	7.747
CAO	6.600	6.626	6.664
MGO	7.950	7.981	11.168
NA20	4.200	4.216	7.675
K20	.100	.100	.120
TIO2	.650	.653	.461
P205	.190	.191	.152
MNO	.170	.171	.136
S	.050	.050	.088
H20	1.760	.000	.000
TOTAL	99.610	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.60	38.37	19.95	.00	.00
WEIGHT %	.00	.00	.60	36.25	19.99	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	9.69	15.73
WEIGHT %	.00	.00	.00	.00	.00	9.94	15.82

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	6.81	3.76	.00	3.63	.00	.00	.92
WEIGHT %	5.76	4.60	.00	5.04	.00	.00	1.26

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.40	.13	.00
WEIGHT %	.00	.00	.00	.45	.29	.00

PYROXENE AND OLIVINE COMPOSITIONS, WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	4.85	13.25	7.32	10.13	5.60	4.85	3.12	1.72	10.57
WT %	5.07	11.99	8.70	9.16	6.65	5.07	2.82	2.05	10.36

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 64.42, FS 35.58 (CAT %); EN 57.94, FS 42.06 (WT %)
CLINOPX: WO 50.00, EN 32.21, FS 17.79 (CAT %); WO 51.00, EN 28.39, FS 20.61 (WT %)
TOT. PX: WO 19.06, EN 52.14, FS 28.80 (CAT %); WO 19.68, EN 46.54, FS 33.78 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 34.20 (CAT %); 35.54 (WT %)
AN/(AN+AB') = 34.20 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 65.13 OR 1.02 AN 33.85

SAMPLE 78625

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 40.54 (CAT %) 42.42 (WT %)

TOTAL FEMICS = 41.081 (CAT %) 43.157 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 38.97 (CATION) 36.86 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 17.10 F= 51.29 M= 31.61 (WT %)

FEO + 0.8998*FE203 = 12.949 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 26.6868

TOTAL NA20 + K20 (WT %) = 4.317

AGPAITIC INDEX (NA20+K20)/AL203 = .4942 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 60.550 N= 38.532 K= .917
CATION %: C= 46.091 N= 53.077 K= .831

(FEO+FE203)/(FEO+FE203+MGO) = .6248 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .7467
AL203/(0.5*CAO + NA20 + K20) = 1.0909

SAMPLE 78626

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.000	50.070	47.495
AL203	13.500	13.519	15.113
FE203	3.700	3.705	2.644
FEO	10.700	10.715	8.499
CAO	9.500	9.513	9.668
MGO	7.200	7.210	10.194
NA20	3.000	3.004	5.525
K20	.100	.100	.121
TIO2	.600	.601	.429
P205	.090	.090	.072
MNO	.210	.210	.169
S	.040	.040	.071
H20	1.220	.000	.000
TOTAL	99.860	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.61	27.62	23.67	.00	.00
WEIGHT %	.00	.00	.60	25.70	23.35	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	19.25	21.33
WEIGHT %	.00	.00	.00	.00	.00	19.58	21.40

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	1.43	.97	.00	3.97	.00	.00	.86
WEIGHT %	1.19	1.16	.00	5.43	.00	.00	1.15

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.19	.11	.00
WEIGHT %	.00	.00	.00	.21	.23	.00

PYROXENE AND OLIVINE COMPOSITIONS, WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	9.63	18.48	12.48	12.73	8.60	9.63	5.75	3.88	2.39
WT %	9.92	16.46	14.60	11.34	10.06	9.92	5.12	4.54	2.35

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 59.70, FS 40.30 (CAT %); EN 52.99, FS 47.01 (WT %)
CLINOPX: WO 50.00, EN 29.85, FS 20.15 (CAT %); WO 50.67, EN 26.14, FS 23.19 (WT %)
TOT. PX: WO 23.72, EN 45.54, FS 30.74 (CAT %); WO 24.21, EN 40.16, FS 35.63 (WT %)

NORMATIVE FELDSPAR RATIOS, AB' = AB+5/3NE
AN/(AN+AB) = 46.14 (CAT %); 47.61 (WT %)
AN/(AN+AB') = 46.14 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 53.23 OR 1.17 AN 45.60

SAMPLE 78626

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 47.80 (CAT %) 49.91 (WT %)

TOTAL FEMICS = 48.103 (CAT %) 50.351 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 28.23 (CATION) 26.30 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 12.74 F= 57.66 M= 29.59 (WT %)

FEO + 0.8998*FE2O3 = 14.049 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 25.8993

TOTAL NA2O + K2O (WT %) = 3.104

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .3736 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 75.397 N= 23.810 K= .794
CATION %: C= 63.132 N= 36.077 K= .791

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6667 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6050
AL2O3/(0.5*CAO + NA2O + K2O) = .9869

SAMPLE 78627

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.500	50.204	48.764
AL2O3	13.300	13.222	15.135
FE2O3	4.590	4.563	3.335
FEO	13.300	13.222	10.739
CAO	3.900	3.877	4.035
MGO	5.600	5.567	8.060
NA2O	4.700	4.672	8.799
K2O	.100	.099	.123
TIO2	.950	.944	.690
P2O5	.180	.179	.147
MNO	.080	.080	.065
S	.060	.060	.109
H2O	3.330	.000	.000
TOTAL	100.590	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.62	43.99	15.53	.00	.00
WEIGHT %	.00	.00	.61	40.80	15.28	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	2.73	26.14
WEIGHT %	.00	.00	.00	.00	.00	2.81	26.92

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	1.98	2.07	.00	5.00	.00	.00	1.38
WEIGHT %	1.65	2.48	.00	6.83	.00	.00	1.85

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.39	.16	.00
WEIGHT %	.00	.00	.00	.43	.35	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	1.37	13.47	14.03	12.81	13.33	1.37	.67	.70	4.05
WT %	1.40	11.96	16.37	11.37	15.56	1.40	.59	.81	4.13

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 48.99, FS 51.01 (CAT %); EN 42.22, FS 57.78 (WT %)
CLINOPX: WO 50.00, EN 24.49, FS 25.51 (CAT %); WO 49.93, EN 21.14, FS 28.93 (WT %)
TOT. PX: WO 4.73, EN 46.67, FS 48.60 (CAT %); WO 4.72, EN 40.23, FS 55.05 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 26.10 (CAT %); 27.25 (WT %)
AN/(AN+AB') = 26.10 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 73.15 OR 1.02 AN 25.83

SAMPLE 78627

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 39.30 (CAT %) 42.54 (WT %)

TOTAL FEMICS = 39.857 (CAT %) 43.313 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 44.61 (CATION) 41.41 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 17.25 F= 62.63 M= 20.12 (WT %)

FEO + 0.8998*FE203 = 17.328 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 16.9235

TOTAL NA20 + K20 (WT %) = 4.772

AGPAITIC INDEX (NA20+K20)/AL203 = .5895 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 44.828 N= 54.023 K= 1.149
CATION %: C= 31.140 N= 67.910 K= .951

(FEO+FE203)/(FEO+FE203+MGO) = .7616 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .8908
AL203/(0.5*CAO + NA20 + K20) = 1.1682

SAMPLE 78628

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	45.500	44.850	45.188
AL2O3	14.200	13.997	16.620
FE2O3	5.910	5.826	4.416
FEO	17.100	16.856	14.201
CAO	1.100	1.084	1.170
MGO	5.700	5.619	8.437
NA2O	3.900	3.844	7.509
K2O	.100	.099	.127
TIO2	.650	.641	.485
P2O5	.080	.079	.067
MNO	.080	.079	.067
S	.920	.907	1.712
H2O	6.210	.000	.000
TOTAL	101.450	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	1.01	6.87	.63	37.55	5.29	.00	.00
WEIGHT %	1.03	5.96	.60	33.52	5.01	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	38.31
WEIGHT %	.00	.00	.00	.00	.00	.00	38.49

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	6.62	.00	.00	.97
WEIGHT %	.00	.00	.00	8.70	.00	.00	1.25

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.18	2.57	.00
WEIGHT %	.00	.00	.00	.19	5.25	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	16.87	21.44	16.87	21.44	.00	.00	.00	.00
WT %	.00	14.42	24.07	14.42	24.07	.00	.00	.00	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 44.05, FS 55.95 (CAT %); EN 37.46, FS 62.54 (WT %)
TOT. PX: WO .00, EN 44.05, FS 55.95 (CAT %); WO .00, EN 37.46, FS 62.54 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 12.35 (CAT %); 13.00 (WT %)
AN/(AN+AB') = 12.35 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 86.37 OR 1.46 AN 12.17

SAMPLE 78628

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 45.91 (CAT %) 48.45 (WT %)

TOTAL FEMICS = 48.654 (CAT %) 53.881 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 39.19 (CATION) 35.15 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 12.45 F= 69.80 M= 17.75 (WT %)

FEO + 0.8998*FE2O3 = 22.097 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 15.5271

TOTAL NA2O + K2O (WT %) = 3.943

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4594 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 21.569 N= 76.471 K= 1.961
CATION %: C= 13.291 N= 85.271 K= 1.439

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .8015 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = 1.6659
AL2O3/(0.5*CAO + NA2O + K2O) = 1.8873

SAMPLE 78629

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	45.500	44.863	44.578
AL203	11.800	11.635	13.625
FE203	6.940	6.843	5.116
FEO	20.000	19.720	16.385
CAO	1.850	1.824	1.942
MGO	5.100	5.029	7.447
NA20	3.600	3.550	6.838
K20	.400	.394	.500
TIO2	.700	.690	.516
P205	.170	.168	.141
MNO	.080	.079	.066
S	1.550	1.528	2.846
H20	3.730	.000	.000
TOTAL	101.420	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	2.87	2.50	34.19	8.53	.00	.00
WEIGHT %	.00	2.41	2.29	29.54	7.82	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	37.80
WEIGHT %	.00	.00	.00	.00	.00	.00	37.32

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.29	.46	.00	7.67	.00	.00	1.03
WEIGHT %	.22	.52	.00	9.76	.00	.00	1.29

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.38	4.27	.00
WEIGHT %	.00	.00	.00	.38	8.44	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	14.51	23.29	14.51	23.29	.00	.00	.00	.75
WT %	.00	12.00	25.32	12.00	25.32	.00	.00	.00	.74

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 38.38, FS 61.62 (CAT %); EN 32.16, FS 67.84 (WT %)
TOT. PX: WO .00, EN 38.38, FS 61.62 (CAT %); WO .00, EN 32.16, FS 67.84 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 19.97 (CAT %); 20.93 (WT %)
AN/(AN+AB') = 19.97 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 75.60 OR 5.53 AN 18.87

SAMPLE 78629

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 47.26 (CAT %) 49.11 (WT %)

TOTAL FEMICS = 51.904 (CAT %) 57.929 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 36.69 (CATION) 31.84 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 11.32 F= 74.25 M= 14.43 (WT %)

FEO + 0.8998*FE2O3 = 25.877 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 12.7373

TOTAL NA2O + K2O (WT %) = 3.944

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .5386 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 31.624 N= 61.538 K= 6.838
CATION %: C= 20.926 N= 73.687 K= 5.387

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .8408 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = 1.2142
AL2O3/(0.5*CAO + NA2O + K2O) = 1.4682

SAMPLE 78630

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	49.000	48.409	46.423
AL203	13.500	13.337	15.073
FE203	4.730	4.673	3.372
FEO	13.600	13.436	10.774
CAO	4.800	4.742	4.872
MGO	7.500	7.410	10.591
NA20	4.100	4.051	7.531
K20	.100	.099	.121
TIO2	.850	.840	.606
P205	.090	.089	.072
MNO	.130	.128	.104
S	.260	.257	.462
H20	2.560	.000	.000
TOTAL	101.220	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.60	37.65	18.55	.00	.00
WEIGHT %	.00	.00	.59	34.84	18.21	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	4.16	20.05
WEIGHT %	.00	.00	.00	.00	.00	4.23	20.22

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	6.61	5.21	.00	5.06	.00	.00	1.21
WEIGHT %	5.47	6.25	.00	6.89	.00	.00	1.62

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.19	.69	.00
WEIGHT %	.00	.00	.00	.21	1.47	.00

PYROXENE AND OLIVINE COMPOSITIONS, WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	2.08	12.37	9.76	11.21	8.84	2.08	1.16	.92	11.82
WT %	2.13	10.96	11.36	9.93	10.29	2.13	1.03	1.07	11.72

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 55.90, FS 44.10 (CAT %); EN 49.09, FS 50.91 (WT %)
CLINOPX: WO 50.00, EN 27.95, FS 22.05 (CAT %); WO 50.40, EN 24.35, FS 25.25 (WT %)
TOT. PX: WO 8.60, EN 51.09, FS 40.31 (CAT %); WO 8.72, EN 44.81, FS 46.46 (WT %)

NORMATIVE FELDSPAR RATIOS, AB' = AB+5/3NE
AN/(AN+AB) = 33.01 (CAT %); 34.32 (WT %)
AN/(AN+AB') = 33.01 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 66.28 OR 1.06 AN 32.66

SAMPLE 78630

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 42.30 (CAT %) 44.68 (WT %)

TOTAL FEMICS = 43.188 (CAT %) 46.354 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 38.26 (CATION) 35.44 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 14.21 F= 60.41 M= 25.38 (WT %)

FEO + 0.8998*FE203 = 17.641 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 21.9106

TOTAL NA20 + K20 (WT %) = 4.149

AGPAITIC INDEX (NA20+K20)/AL203 = .5076 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 53.333 N= 45.556 K= 1.111
CATION %: C= 38.903 N= 60.132 K= .965

(FEO+FE203)/(FEO+FE203+MGO) = .7096 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .8665
AL203/(0.5*CAO + NA20 + K20) = 1.2036

SAMPLE 78631

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	56.500	56.281	52.487
AL2O3	14.000	13.946	15.327
FE2O3	3.010	2.998	2.104
FEO	8.690	8.656	6.750
CAO	5.900	5.877	5.872
MGO	4.150	4.134	5.746
NA2O	5.800	5.777	10.446
K2O	.100	.100	.118
TIO2	.900	.897	.629
P2O5	.430	.428	.338
MNO	.100	.100	.079
S	.060	.060	.104
H2O	.750	.000	.000
TOTAL	100.390	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	2.26	.00	.59	52.23	11.91	.00	.00
WEIGHT %	2.44	.00	.59	49.15	11.88	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	11.71	15.83
WEIGHT %	.00	.00	.00	.00	.00	12.15	16.36

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	3.16	.00	.00	1.26
WEIGHT %	.00	.00	.00	4.37	.00	.00	1.71

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.90	.16	.00
WEIGHT %	.00	.00	.00	1.00	.34	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	5.85	11.49	10.19	8.39	7.44	5.85	3.10	2.75	.00
WT %	6.10	10.35	12.06	7.56	8.81	6.10	2.79	3.26	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 53.00, FS 47.00 (CAT %); EN 46.18, FS 53.82 (WT %)
CLINOPX: WO 50.00, EN 26.50, FS 23.50 (CAT %); WO 50.20, EN 23.00, FS 26.80 (WT %)
TOT. PX: WO 21.26, EN 41.73, FS 37.01 (CAT %); WO 21.39, EN 36.30, FS 42.31 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 18.57 (CAT %); 19.47 (WT %)
AN/(AN+AB') = 18.57 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 80.69 OR .92 AN 18.40

SAMPLE 78631

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 31.95 (CAT %) 34.60 (WT %)

TOTAL FEMICS = 33.010 (CAT %) 35.938 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 55.08 (CATION) 52.18 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 27.51 F= 53.14 M= 19.35 (WT %)

FEO + 0.8998*FE203 = 11.354 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 15.0090

TOTAL NA20 + K20 (WT %) = 5.877

AGPAITIC INDEX (NA20+K20)/AL203 = .6893 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 50.000 N= 49.153 K= .847
CATION %: C= 35.725 N= 63.554 K= .721

(FEO+FE203)/(FEO+FE203+MGO) = .7382 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .6871
AL203/(0.5*CAO + NA20 + K20) = .9325

SAMPLE 78632

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.000	48.014	45.796
AL2O3	14.100	14.104	15.854
FE2O3	4.330	4.331	3.108
FEO	12.500	12.504	9.972
CAO	5.800	5.802	5.928
MGO	7.750	7.752	11.021
NA2O	4.000	4.001	7.399
K2O	.100	.100	.122
TIO2	.700	.700	.502
P2O5	.110	.110	.089
MNO	.170	.170	.137
S	.040	.040	.072
H2O	2.370	.000	.000
TOTAL	99.970	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.61	36.99	20.83	.00	.00
WEIGHT %	.00	.00	.60	34.63	20.68	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	6.45	11.85
WEIGHT %	.00	.00	.00	.00	.00	6.62	12.02

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	9.99	7.27	.00	4.66	.00	.00	1.00
WEIGHT %	8.36	8.81	.00	6.42	.00	.00	1.36

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.24	.11	.00
WEIGHT %	.00	.00	.00	.26	.23	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	3.23	8.73	6.35	6.86	4.99	3.23	1.87	1.36	17.25
WT %	3.35	7.82	7.47	6.14	5.87	3.35	1.67	1.60	17.17

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 57.89, FS 42.11 (CAT %); EN 51.12, FS 48.88 (WT %)
CLINOPX: WO 50.00, EN 28.94, FS 21.06 (CAT %); WO 50.54, EN 25.29, FS 24.17 (WT %)
TOT. PX: WO 17.63, EN 47.68, FS 34.69 (CAT %); WO 17.95, EN 41.95, FS 40.10 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 36.03 (CAT %); 37.39 (WT %)
AN/(AN+AB') = 36.03 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 63.31 OR 1.04 AN 35.65

SAMPLE 78632

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 41.22 (CAT %) 43.59 (WT %)

TOTAL FEMICS = 41.564 (CAT %) 44.082 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 37.60 (CATION) 35.23 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 14.52 F= 58.05 M= 27.44 (WT %)

FEO + 0.8998*FE2O3 = 16.401 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 23.6425

TOTAL NA2O + K2O (WT %) = 4.101

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4744 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 58.586 N= 40.404 K= 1.010
CATION %: C= 44.081 N= 55.014 K= .905

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6847 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .8182
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1788

SAMPLE 78633

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	51.000	50.550	47.916
AL203	13.500	13.381	14.948
FE203	4.200	4.163	2.969
FEO	12.100	11.993	9.506
CAO	7.300	7.236	7.348
MGO	5.900	5.848	8.262
NA20	4.300	4.262	7.832
K20	.100	.099	.120
TIO2	.950	.942	.671
P205	.160	.159	.127
MNO	.180	.178	.143
S	.090	.089	.158
H20	1.110	.000	.000
TOTAL	100.890	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.60	39.16	17.49	.00	.00
WEIGHT %	.00	.00	.59	36.35	17.22	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	14.55	15.08
WEIGHT %	.00	.00	.00	.00	.00	14.90	15.38

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.56	3.19	.00	4.45	.00	.00	1.34
WEIGHT %	2.95	3.84	.00	6.08	.00	.00	1.80

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.34	.24	.00
WEIGHT %	.00	.00	.00	.37	.50	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	7.28	11.78	10.57	7.95	7.13	7.28	3.83	3.44	6.75
WT %	7.48	10.47	12.34	7.06	8.33	7.48	3.41	4.02	6.79

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 52.70, FS 47.30 (CAT %); EN 45.89, FS 54.11 (WT %)
CLINOPX: WO 50.00, EN 26.35, FS 23.65 (CAT %); WO 50.18, EN 22.86, FS 26.96 (WT %)
TOT. PX: WO 24.56, EN 39.76, FS 35.68 (CAT %); WO 24.69, EN 34.56, FS 40.75 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 30.87 (CAT %); 32.14 (WT %)
AN/(AN+AB') = 30.87 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 68.40 OR 1.05 AN 30.55

SAMPLE 78633

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 42.17 (CAT %) 44.97 (WT %)

TOTAL FEMICS = 42.751 (CAT %) 45.842 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 39.76 (CATION) 36.94 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 16.81 F= 60.66 M= 22.54 (WT %)

FEO + 0.8998*FE203 = 15.739 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 19.0323

TOTAL NA20 + K20 (WT %) = 4.361

AGPAITIC INDEX (NA20+K20)/AL203 = .5320 (CAT %)

CA0, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 62.393 N= 36.752 K= .855
CATION %: C= 48.025 N= 51.192 K= .783

(FEO+FE203)/(FEO+FE203+MGO) = .7342 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CA0 + NA20 + K20) = .6600
AL203/(0.5*CA0 + NA20 + K20) = .9770

SAMPLE 78634

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.500	50.672	49.168
AL2O3	14.800	14.850	16.982
FE2O3	2.220	2.228	1.626
FEO	6.400	6.422	5.210
CAO	6.800	6.823	7.093
MGO	5.450	5.469	7.909
NA2O	5.400	5.418	10.193
K2O	.100	.100	.124
TIO2	1.050	1.054	.769
P2O5	.980	.983	.808
MNO	.100	.100	.082
S	.020	.020	.036
H2O	5.840	.000	.000
TOTAL	99.660	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.62	50.96	16.66	.00	.00
WEIGHT %	.00	.00	.63	48.66	16.87	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	9.66	8.52
WEIGHT %	.00	.00	.00	.00	.00	9.96	8.57

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	5.04	2.35	.00	2.44	.00	.00	1.54
WEIGHT %	4.30	2.91	.00	3.43	.00	.00	2.12

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	2.15	.05	.00
WEIGHT %	.00	.00	.00	2.43	.12	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	4.83	9.10	4.25	5.81	2.71	4.83	3.29	1.54	7.39
WT %	5.11	8.32	5.10	5.31	3.26	5.11	3.01	1.85	7.21

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 68.17, FS 31.83 (CAT %); EN 61.97, FS 38.03 (WT %)
CLINOPX: WO 50.00, EN 34.08, FS 15.92 (CAT %); WO 51.26, EN 30.20, FS 18.53 (WT %)
TOT. PX: WO 26.56, EN 50.06, FS 23.38 (CAT %); WO 27.56, EN 44.89, FS 27.55 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 24.64 (CAT %); 25.75 (WT %)
AN/(AN+AB') = 24.64 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 74.68 OR .91 AN 24.41

SAMPLE 78634

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 29.54 (CAT %) 31.29 (WT %)

TOTAL FEMICS = 31.753 (CAT %) 33.839 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 51.58 (CATION) 49.29 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 28.43 F= 43.40 M= 28.17 (WT %)

FEO + 0.8998*FE2O3 = 8.426 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 21.7391

TOTAL NA2O + K2O (WT %) = 5.519

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .6075 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 55.285 N= 43.902 K= .813
CATION %: C= 40.741 N= 58.546 K= .713

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6127 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6931
AL2O3/(0.5*CAO + NA2O + K2O) = .9754

SAMPLE 78635

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	44.500	44.055	43.313
AL203	14.500	14.355	16.633
FE203	5.600	5.544	4.101
FEO	16.200	16.038	13.185
CAO	3.850	3.812	4.015
MGO	7.600	7.524	11.025
NA20	3.300	3.267	6.227
K20	.100	.099	.124
TIO2	.700	.693	.512
P205	.130	.129	.107
MNO	.100	.099	.082
S	.370	.366	.675
H20	4.060	.000	.000
TOTAL	101.010	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	2.61	.62	31.14	19.18	.00	.00
WEIGHT %	.00	2.32	.60	28.42	18.57	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	23.57
WEIGHT %	.00	.00	.00	.00	.00	.00	23.72

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	7.43	6.99	.00	6.15	.00	.00	1.02
WEIGHT %	6.07	8.26	.00	8.26	.00	.00	1.35

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.29	1.01	.00
WEIGHT %	.00	.00	.00	.31	2.11	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	12.15	11.42	12.15	11.42	.00	.00	.00	14.41
WT %	.00	10.61	13.11	10.61	13.11	.00	.00	.00	14.32

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 51.54, FS 48.46 (CAT %); EN 44.73, FS 55.27 (WT %)
TOT. PX: WO .00, EN 51.54, FS 48.46 (CAT %); WO .00, EN 44.73, FS 55.27 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 38.12 (CAT %); 39.52 (WT %)
AN/(AN+AB') = 38.12 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 61.13 OR 1.22 AN 37.66

SAMPLE 78635

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 45.16 (CAT %) 47.67 (WT %)

TOTAL FEMICS = 46.454 (CAT %) 50.090 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 31.76 (CATION) 29.02 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 10.55 F= 65.88 M= 23.57 (WT %)

FEO + 0.8998*FE2O3 = 21.027 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 20.9945

TOTAL NA2O + K2O (WT %) = 3.366

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .3819 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 53.103 N= 45.517 K= 1.379
CATION %: C= 38.729 N= 60.073 K= 1.198

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7415 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = 1.1566
AL2O3/(0.5*CAO + NA2O + K2O) = 1.6046

SAMPLE 78636

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	47.000	47.061	44.932
AL203	17.800	17.823	20.054
FE203	2.750	2.754	1.978
FEO	7.920	7.930	6.331
CAO	11.500	11.515	11.778
MGO	5.800	5.808	8.264
NA2O	2.700	2.704	5.004
K2O	.700	.701	.854
TIO2	.500	.501	.359
P2O5	.350	.350	.283
MNO	.110	.110	.089
S	.040	.040	.072
H2O	2.700	.000	.000
TOTAL	99.870	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	4.27	25.02	35.49	.00	.00
WEIGHT %	.00	.00	4.25	23.48	35.32	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	16.83	.80
WEIGHT %	.00	.00	.00	.00	.00	17.20	.81

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	8.10	4.94	.00	2.97	.00	.00	.72
WEIGHT %	6.80	6.00	.00	4.10	.00	.00	.98

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.76	.11	.00
WEIGHT %	.00	.00	.00	.84	.23	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	8.42	5.73	3.49	.50	.30	8.42	5.23	3.19	13.04
WT %	8.75	5.14	4.12	.45	.36	8.75	4.70	3.76	12.80

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 62.14, FS 37.86 (CAT %); EN 55.53, FS 44.47 (WT %)
CLINOPX: WO 50.00, EN 31.07, FS 18.93 (CAT %); WO 50.84, EN 27.30, FS 21.86 (WT %)
TOT. PX: WO 47.73, EN 32.48, FS 19.79 (CAT %); WO 48.56, EN 28.56, FS 22.87 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 58.65 (CAT %); 60.07 (WT %)
AN/(AN+AB') = 58.65 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 38.62 OR 6.59 AN 54.79

SAMPLE 78636

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 34.36 (CAT %) 35.88 (WT %)

TOTAL FEMICS = 35.219 (CAT %) 36.948 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 29.29 (CATION) 27.73 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 17.35 F= 53.05 M= 29.60 (WT %)

FEO + 0.8998*FE203 = 10.408 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 24.9248

TOTAL NA20 + K20 (WT %) = 3.404

AGPAITIC INDEX (NA20+K20)/AL203 = .2921 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 77.181 N= 18.121 K= 4.698
CATION %: C= 66.785 N= 28.375 K= 4.840

(FEO+FE203)/(FEO+FE203+MGO) = .6478 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .6818
AL203/(0.5*CAO + NA20 + K20) = 1.1371

SAMPLE 78637

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	50.000	50.005	47.298
AL2O3	14.400	14.401	16.053
FE2O3	3.430	3.430	2.441
FEO	9.910	9.911	7.839
CAO	8.600	8.601	8.715
MGO	7.000	7.001	9.869
NA2O	3.800	3.800	6.969
K2O	.100	.100	.121
TIO2	.600	.600	.427
P2O5	.140	.140	.112
MNO	.150	.150	.120
S	.020	.020	.035
H2O	1.840	.000	.000
TOTAL	99.990	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.60	34.84	22.41	.00	.00
WEIGHT %	.00	.00	.60	32.74	22.33	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	16.19	11.66
WEIGHT %	.00	.00	.00	.00	.00	16.59	11.76

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	5.76	3.67	.00	3.66	.00	.00	.85
WEIGHT %	4.84	4.47	.00	5.06	.00	.00	1.16

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.30	.05	.00
WEIGHT %	.00	.00	.00	.33	.11	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	8.09	12.06	7.69	7.12	4.54	8.09	4.94	3.15	9.43
WT %	8.42	10.84	9.09	6.40	5.36	8.42	4.44	3.72	9.31

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 61.06, FS 38.94 (CAT %); EN 54.41, FS 45.59 (WT %)
CLINOPX: WO 50.00, EN 30.53, FS 19.47 (CAT %); WO 50.76, EN 26.79, FS 22.45 (WT %)
TOT. PX: WO 29.07, EN 43.31, FS 27.62 (CAT %); WO 29.70, EN 38.25, FS 32.05 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 39.14 (CAT %); 40.55 (WT %)
AN/(AN+AB') = 39.14 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 60.22 OR 1.04 AN 38.73

SAMPLE 78637

ORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 41.79 (CAT %) 43.88 (WT %)

OTAL FEMICS = 42.143 (CAT %) 44.331 (WT %)

IFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 35.45 (CATION) 33.34 (WEIGHT)

UANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 16.32 F= 54.39 M= 29.29 (WT %)

FEO + 0.8998*FE203 = 12.998 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE203+NA20+K20) (WT %)= 24.8756

TOTAL NA20 + K20 (WT %) = 3.900

AGPAITIC INDEX (NA20+K20)/AL203 = .4416 (CAT %)

CAO, K20, NA20 NORMALIZED TO 100%
WEIGHT %: C= 68.800 N= 30.400 K= .800
CATION %: C= 55.144 N= 44.093 K= .763

(FEO+FE203)/(FEO+FE203+MGO) = .6559 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL203/(CAO + NA20 + K20) = .6547
AL203/(0.5*CAO + NA20 + K20) = 1.0157

SAMPLE 78638

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.000	48.019	45.635
AL203	14.800	14.806	16.583
FE203	3.140	3.141	2.246
FEO	9.070	9.074	7.211
CAO	10.700	10.704	10.898
MGO	9.000	9.004	12.753
NA2O	2.100	2.101	3.871
K2O	.100	.100	.121
TIO2	.600	.600	.429
P2O5	.120	.120	.097
MNO	.150	.150	.121
S	.020	.020	.036
H2O	2.160	.000	.000
TOTAL	99.960	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.61	19.35	31.48	.00	.00
WEIGHT %	.00	.00	.60	18.16	31.32	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	17.77	20.59
WEIGHT %	.00	.00	.00	.00	.00	17.99	20.30

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	3.90	1.76	.00	3.37	.00	.00	.86
WEIGHT %	3.27	2.14	.00	4.65	.00	.00	1.16

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.26	.05	.00
WEIGHT %	.00	.00	.00	.29	.11	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	8.88	20.30	9.17	14.18	6.41	8.88	6.12	2.76	5.66
WT %	9.23	18.23	10.82	12.74	7.56	9.23	5.50	3.26	5.42

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 68.88, FS 31.12 (CAT %); EN 62.75, FS 37.25 (WT %)
CLINOPX: WO 50.00, EN 34.44, FS 15.56 (CAT %); WO 51.31, EN 30.55, FS 18.14 (WT %)
TOT. PX: WO 23.16, EN 52.93, FS 23.91 (CAT %); WO 24.11, EN 47.62, FS 28.27 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 61.93 (CAT %); 63.30 (WT %)
AN/(AN+AB') = 61.93 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 37.63 OR 1.18 AN 61.20

SAMPLE 78638

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 48.25 (CAT %) 49.52 (WT %)

TOTAL FEMICS = 48.564 (CAT %) 49.919 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 19.96 (CATION) 18.76 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 9.53 F= 51.51 M= 38.97 (WT %)

FEO + 0.8998*FE2O3 = 11.900 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 35.1425

TOTAL NA2O + K2O (WT %) = 2.201

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .2407 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 82.946 N= 16.279 K= .775
CATION %: C= 73.191 N= 25.994 K= .814

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .5757 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6430
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1136

SAMPLE 78639

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.500	48.524	46.769
AL2O3	10.900	10.905	12.387
FE2O3	4.280	4.282	3.105
FEO	12.300	12.306	9.918
CAO	12.100	12.106	12.500
MGO	5.400	5.403	7.761
NA2O	2.700	2.701	5.048
K2O	.100	.100	.123
TIO2	.450	.450	.326
P2O5	1.550	1.551	1.265
MNO	.180	.180	.147
S	.360	.360	.651
H2O	1.130	.000	.000
TOTAL	99.950	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	1.64	.00	.62	25.24	18.04	.00	.00
WEIGHT %	1.69	.00	.59	22.82	17.30	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	27.13	17.68
WEIGHT %	.00	.00	.00	.00	.00	27.19	17.72

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	4.66	.00	.00	.65
WEIGHT %	.00	.00	.00	6.20	.00	.00	.85

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	3.37	.98	.00
WEIGHT %	.00	.00	.00	3.61	2.02	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	13.57	15.52	15.72	8.78	8.89	13.57	6.74	6.83	.00
WT %	13.59	13.44	17.88	7.60	10.12	13.59	5.83	7.76	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 49.68, FS 50.32 (CAT %); EN 42.90, FS 57.10 (WT %)
CLINOPX: WO 50.00, EN 24.84, FS 25.16 (CAT %); WO 49.98, EN 21.46, FS 28.56 (WT %)
TOT. PX: WO 30.28, EN 34.64, FS 35.08 (CAT %); WO 30.26, EN 29.92, FS 39.82 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 41.69 (CAT %); 43.12 (WT %)
AN/(AN+AB') = 41.69 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 57.50 OR 1.40 AN 41.10

SAMPLE 78639

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 50.12 (CAT %) 51.96 (WT %)

TOTAL FEMICS = 54.470 (CAT %) 57.587 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 27.49 (CATION) 25.11 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 11.50 F= 66.33 M= 22.18 (WT %)

FEO + 0.8998*FE2O3 = 16.159 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 19.5794

TOTAL NA2O + K2O (WT %) = 2.801

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4174 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 81.208 N= 18.121 K= .671
CATION %: C= 70.739 N= 28.564 K= .696

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7543 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .4106
AL2O3/(0.5*CAO + NA2O + K2O) = .7010

SAMPLE 78640

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.500	49.606	48.371
AL2O3	14.000	14.319	16.455
FE2O3	4.140	4.234	3.107
FEO	11.700	11.967	9.757
CAO	4.650	4.756	4.968
MGO	7.200	7.364	10.703
NA2O	3.000	3.068	5.801
K2O	.100	.102	.127
TIO2	.500	.511	.375
P2O5	.180	.184	.152
MNO	.130	.133	.110
S	.040	.041	.075
H2O	3.630	.000	.000
TOTAL	97.770	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	2.55	1.10	.64	29.00	23.58	.00	.00
WEIGHT %	2.72	.99	.63	26.92	23.21	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	.00	37.21
WEIGHT %	.00	.00	.00	.00	.00	.00	37.47

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	.00	.00	.00	4.66	.00	.00	.75
WEIGHT %	.00	.00	.00	6.37	.00	.00	1.01

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.41	.11	.00
WEIGHT %	.00	.00	.00	.45	.24	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	.00	21.41	15.80	21.41	15.80	.00	.00	.00	.00
WT %	.00	19.02	18.45	19.02	18.45	.00	.00	.00	.00

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 57.53, FS 42.47 (CAT %); EN 50.76, FS 49.24 (WT %)
TOT. PX: WO .00, EN 57.53, FS 42.47 (CAT %); WO .00, EN 50.76, FS 49.24 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 44.84 (CAT %); 46.30 (WT %)
AN/(AN+AB') = 44.84 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 54.50 OR 1.20 AN 44.30

SAMPLE 78640

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 42.62 (CAT %) 44.85 (WT %)

TOTAL FEMICS = 43.135 (CAT %) 45.530 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 32.19 (CATION) 30.27 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 12.05 F= 59.96 M= 27.99 (WT %)

FEO + 0.8998*FE2O3 = 15.777 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 24.6238

TOTAL NA2O + K2O (WT %) = 3.171

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .3602 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 60.000 N= 38.710 K= 1.290
CATION %: C= 45.598 N= 53.235 K= 1.168

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6875 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = 1.0372
AL2O3/(0.5*CAO + NA2O + K2O) = 1.5102

SAMPLE 78643

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	44.000	44.075	42.827
AL2O3	15.000	15.026	17.206
FE2O3	4.200	4.207	3.076
FEO	12.100	12.121	9.848
CAO	8.400	8.414	8.759
MGO	8.050	8.064	11.678
NA2O	2.900	2.905	5.472
K2O	.100	.100	.124
TIO2	.750	.751	.549
P2O5	.120	.120	.099
MNO	.150	.150	.124
S	.130	.130	.237
H2O	3.930	.000	.000
TOTAL	99.830	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.62	27.36	29.02	.00	.00
WEIGHT %	.00	.00	.61	25.47	28.65	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	11.16	2.08
WEIGHT %	.00	.00	.00	.00	.00	11.34	2.09

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	14.07	9.35	.00	4.61	.00	.00	1.10
WEIGHT %	11.71	11.28	.00	6.32	.00	.00	1.48

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.26	.36	.00
WEIGHT %	.00	.00	.00	.29	.76	.00

PYROXENE AND OLIVINE COMPOSITIONS, WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	5.58	4.60	3.06	1.25	.83	5.58	3.35	2.23	23.42
WT %	5.75	4.10	3.58	1.12	.97	5.75	2.99	2.61	22.98

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 60.06, FS 39.94 (CAT %); EN 53.36, FS 46.64 (WT %)
CLINOPX: WO 50.00, EN 30.03, FS 19.97 (CAT %); WO 50.69, EN 26.31, FS 23.00 (WT %)
TOT. PX: WO 42.13, EN 34.76, FS 23.11 (CAT %); WO 42.80, EN 30.52, FS 26.67 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 51.47 (CAT %); 52.94 (WT %)
AN/(AN+AB') = 51.47 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 48.00 OR 1.09 AN 50.91

SAMPLE 78643

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 42.37 (CAT %) 44.22 (WT %)

TOTAL FEMICS = 42.993 (CAT %) 45.266 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 27.98 (CATION) 26.08 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 11.14 F= 58.97 M= 29.89 (WT %)

FEO + 0.8998*FE2O3 = 15.906 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 26.5239

TOTAL NA2O + K2O (WT %) = 3.005

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .3253 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 73.684 N= 25.439 K= .877
CATION %: C= 61.016 N= 38.119 K= .865

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .6694 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .7444
AL2O3/(0.5*CAO + NA2O + K2O) = 1.1986

SAMPLE 78644

OXIDE	WEIGHT %	NORMALIZED	CATION %
SIO2	48.000	48.091	45.618
AL203	14.900	14.928	16.688
FE203	3.880	3.887	2.774
FEO	11.200	11.221	8.901
CAO	8.800	8.817	8.960
MGO	6.300	6.312	8.924
NA2O	3.800	3.807	7.001
K2O	.100	.100	.121
TIO2	.700	.701	.500
P2O5	.180	.180	.145
MNO	.190	.190	.153
S	.120	.120	.214
H2O	1.640	.000	.000
TOTAL	99.810	100	100

NORMS (MOLECULAR AND WEIGHT PERCENT)

MINERAL	Q	C	OR	AB	AN	LC	NE
CAT EQUIV	.00	.00	.61	35.01	23.91	.00	.00
WEIGHT %	.00	.00	.60	32.61	23.63	.00	.00

MINERAL	KP	AC	NS	KS	WO	CPX	OPX
CAT EQUIV	.00	.00	.00	.00	.00	15.74	3.16
WEIGHT %	.00	.00	.00	.00	.00	16.11	3.21

MINERAL	FO	FA	CS	MT	CM	HM	IL
CAT EQUIV	8.77	6.94	.00	4.16	.00	.00	1.00
WEIGHT %	7.30	8.37	.00	5.71	.00	.00	1.35

MINERAL	SP	PF	RU	AP	PR	CC
CAT EQUIV	.00	.00	.00	.39	.32	.00
WEIGHT %	.00	.00	.00	.43	.68	.00

PYROXENE AND OLIVINE COMPOSITIONS. WO GROUPED WITH CPX.

	TOTAL PX			OPX		CLINOPYROXENE			OLIVINE
	WO	EN	FS	EN	FS	WO	EN	FS	
CAT %	7.87	6.16	4.87	1.76	1.39	7.87	4.39	3.48	15.70
WT %	8.12	5.49	5.71	1.57	1.63	8.12	3.92	4.07	15.67

PYROXENE COMPONENTS NORMALIZED TO 100%
ORTHOPX: EN 55.83, FS 44.17 (CAT %); EN 49.03, FS 50.97 (WT %)
CLINOPX: WO 50.00, EN 27.92, FS 22.08 (CAT %); WO 50.40, EN 24.32, FS 25.28 (WT %)
TOT. PX: WO 41.65, EN 32.58, FS 25.77 (CAT %); WO 42.03, EN 28.42, FS 29.54 (WT %)

NORMATIVE FELDSPAR RATIOS. AB' = AB+5/3NE
AN/(AN+AB) = 40.59 (CAT %); 42.01 (WT %)
AN/(AN+AB') = 40.59 CAT %
NORMALIZED TOTAL FELDSPAR (CATION %): AB' 58.81 OR 1.02 AN 40.17

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SAMPLE 78644

NORMATIVE COLOUR INDEX (NCI) = OL+CPX+OPX+AC+MT+IL+HM+CM
NCI = 39.77 (CAT %) 42.05 (WT %)

TOTAL FEMICS = 40.472 (CAT %) 43.157 (WT %)

DIFFERENTIATION INDEX (DI) = QU+OR+AB+NE+LC+KP CORRECTED FOR NS,KS
DI = 35.61 (CATION) 33.21 (WEIGHT)

QUANTITIES BELOW ARE CALCULATED FROM NORMALIZED DATA, AFTER ANY FE MODIFICATION

A-F-M COMPONENTS: A= 15.67 F= 59.02 M= 25.31 (WT %)

FEO + 0.8998*FE2O3 = 14.719 (WT %)

SOLIDIFICATION INDEX = MGO/(MGO+FEO+FE2O3+NA2O+K2O) (WT %)= 21.5901

TOTAL NA2O + K2O (WT %) = 3.907

AGPAITIC INDEX (NA2O+K2O)/AL2O3 = .4268 (CAT %)

CAO, K2O, NA2O NORMALIZED TO 100%
WEIGHT %: C= 69.291 N= 29.921 K= .787
CATION %: C= 55.712 N= 43.535 K= .754

(FEO+FE2O3)/(FEO+FE2O3+MGO) = .7053 (WT %)

SHAND'S ALUMINA SATURATION INDEX (FROM MOLECULAR PROPORTIONS):
AL2O3/(CAO + NA2O + K2O) = .6664
AL2O3/(0.5*CAO + NA2O + K2O) = 1.0377