Supplementary File 6. Results of Rhyolite-MELTS modeling of the Bokan lamprophyres

The results presented in this file are the raw output data generated by Rhyolite-MELTS for fractional crystallization of a lamprophyric starting composition listed in Supplementary File 4. The relative oxidation state is fixed to the FMQ buffer, pressure of 1 kbar and initial water content of 3 wt%. The liquid compositions are the basis of the model curves presented in figure 9 of the text.

Model 828 Bokan

Temp (oC)	=	1080.47																	
Constraint	Flags:	fO2	path	=	QFM														
Liquid	mass	=	99.26	(gm)	density	=	2.38	(gm/cc)	viscosity	=	2.96	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1632850.7	(J)	H	=	-1256979.74	(J)	S	=	277.68	(J/K)	V	=	41.7	(cc)	Cp	=	143.94 (J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1
	53.61	0.58	19.47	1.24	0	5.9	0.22	2.61	0	0	8.78	3.13	1.22	0.21	3.02	0	0	0	0
feldspar	mass	=	0.09	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)							
	K0.00Na0.14Ca0.85Al1.85Si2.15O8																		
	G	=	-1488.62	(J)	H	=	-1214.04	(J)	S	=	0.2	(J/K)	V	=	0.03	(cc)	Cp	=	0.11 (J/K)
	albite	anorthite	sanidine																
	14.34	85.39	0.28																
Total	solids	mass	=	0.09	(gm)	density	=	2.69	(gm/cc)										
	G	=	-1488.62	(J)	H	=	-1214.04	(J)	S	=	0.2	(J/K)	V	=	0.03	(cc)	Cp	=	0.11 (J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	0	grams)										
Viscosity	of	the	System:	2.96	(log	10	poise)												
System	mass	=	99.35	(gm)	density	=	2.38	(gm/cc)											
	G	=	-1634339.32	(J)	H	=	-1258193.78	(J)	S	=	277.88	(J/K)	V	=	41.73	(cc)	Cp	=	144.05 (J/K)
Oxygen	delta	moles	=	-2.66E-07	delta	grams	=	-8.51E-06											
	G	=	0.08	(J)	H	=	-0.01	(J)	S	=	0	(J/K)	V	=	-0.03	(cc)	Cp	=	0 (J/K)

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Model 828 Bokan

Temp (oC)	=	1075.47	(C)																
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	98.01	(gm)	density	=	2.38	(gm/cc)	viscosity	=	2.97	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1610170.21	(J)	H	=	-1240697.08	(J)	S	=	273.96	(J/K)	V	=	41.19	(cc)	Cp	=	142.09 (J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1
	53.7	0.59	19.28	1.26	0	5.97	0.22	2.64	0	0	8.67	3.15	1.23	0.21	3.06	0	0	0	0
feldspar	mass	=	1.25	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)							
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																		
	G	=	-21346.6	(J)	H	=	-17427.67	(J)	S	=	2.91	(J/K)	V	=	0.46	(cc)	Cp	=	1.52 (J/K)
	albite	anorthite	sanidine																
	14.61	85.1	0.28																
Total	solids	mass	=	1.25	(gm)	density	=	2.69	(gm/cc)										
	G	=	-21346.6	(J)	H	=	-17427.67	(J)	S	=	2.91	(J/K)	V	=	0.46	(cc)	Cp	=	1.52 (J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	0.08	grams)										
feldspar	mass	=	0.08	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)							
	K0.00Na0.14Ca0.85Al1.85Si2.15O8																		
	G	=	-1440.49	(J)	H	=	-1176.1	(J)	S	=	0.2	(J/K)	V	=	0.03	(cc)	Cp	=	0.1 (J/K)
	albite	anorthite	sanidine																
	14.34	85.39	0.28																
Viscosity	of	the	System:	2.99	(log	10	poise)												
System	mass	=	99.35	(gm)	density	=	2.38	(gm/cc)											
	G	=	-1632957.3	(J)	H	=	-1259300.86	(J)	S	=	277.07	(J/K)	V	=	41.69	(cc)	Cp	=	143.71 (J/K)

Oxygen	delta	moles	=	9.63E-06	delta	grams	=	0.000308033											
	G	=	-2.96	(J)	H	=	0.34	(J)	S	=	0	(J/K)	V	=	1.08	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1070.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	96.8	(gm)	density	=	2.38	(gm/cc)	viscosity	=	2.98	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1588106.11	(J)	H	=	-1224862.98	(J)	S	=	270.35	(J/K)	V	=	40.7	(cc)	Cp	=	140.28	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	53.78	0.6	19.1	1.28	0	6.04	0.23	2.68	0	0	8.56	3.17	1.25	0.22	3.1	0	0	0	0	
feldspar	mass	=	1.22	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-20748.87	(J)	H	=	-16957.64	(J)	S	=	2.82	(J/K)	V	=	0.45	(cc)	Cp	=	1.48	(J/K)
	albite	anorthite	sanidine																	
	14.9	84.81	0.29																	
Total	solids	mass	=	1.22	(gm)	density	=	2.69	(gm/cc)											
	G	=	-20748.87	(J)	H	=	-16957.64	(J)	S	=	2.82	(J/K)	V	=	0.45	(cc)	Cp	=	1.48	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	1.33	grams)											
feldspar	mass	=	1.33	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-22724.52	(J)	H	=	-18573.41	(J)	S	=	3.09	(J/K)	V	=	0.49	(cc)	Cp	=	1.62	(J/K)
	albite	anorthite	sanidine																	
	14.6	85.12	0.28																	
Viscosity	of	the	System:	3.03	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.39	(gm/cc)												
	G	=	-1631579.5	(J)	H	=	-1260394.03	(J)	S	=	276.26	(J/K)	V	=	41.64	(cc)	Cp	=	143.38	(J/K)
Oxygen	delta	moles	=	1.98E-05	delta	grams	=	0.000633332											
	G	=	-6.07	(J)	H	=	0.69	(J)	S	=	0.01	(J/K)	V	=	2.21	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1065.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	95.62	(gm)	density	=	2.38	(gm/cc)	viscosity	=	3	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1566632.59	(J)	H	=	-1209458.57	(J)	S	=	266.82	(J/K)	V	=	40.22	(cc)	Cp	=	138.53	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	53.87	0.61	18.91	1.3	0	6.12	0.23	2.71	0	0	8.46	3.19	1.26	0.22	3.14	0	0	0	0	
feldspar	mass	=	1.18	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-20176.45	(J)	H	=	-16507.27	(J)	S	=	2.74	(J/K)	V	=	0.44	(cc)	Cp	=	1.44	(J/K)
	albite	anorthite	sanidine																	
	15.19	84.51	0.3																	
Total	solids	mass	=	1.18	(gm)	density	=	2.69	(gm/cc)											
	G	=	-20176.45	(J)	H	=	-16507.27	(J)	S	=	2.74	(J/K)	V	=	0.44	(cc)	Cp	=	1.44	(J/K)

Summary	of	all	fractionated	phases:	(total	mass	=	2.54	grams)											
feldspar	mass	=	2.54	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-43396.83	(J)	H	=	-35508.04	(J)	S	=	5.89	(J/K)	V	=	0.95	(cc)	Cp	=	3.09	(J/K)
	albite	anorthite	sanidine																	
	14.74	84.97	0.29																	
Viscosity	of	the	System:	3.06	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.39	(gm/cc)												
	G	=	-1630205.87	(J)	H	=	-1261473.89	(J)	S	=	275.46	(J/K)	V	=	41.6	(cc)	Cp	=	143.05	(J/K)
Oxygen	delta	moles	=	3.02E-05	delta	grams	=	0.000967535												
	G	=	-9.23	(J)	H	=	1.05	(J)	S	=	0.01	(J/K)	V	=	3.37	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1060.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	94.47	(gm)	density	=	2.38	(gm/cc)	viscosity	=	3.01	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1545725.24	(J)	H	=	-1194465.99	(J)	S	=	263.39	(J/K)	V	=	39.75	(cc)	Cp	=	136.82	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	53.95	0.61	18.73	1.32	0	6.19	0.23	2.74	0	0	8.35	3.2	1.28	0.22	3.18	0	0	0	0	
feldspar	mass	=	1.15	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.84Al1.84Si2.16O8																			
	G	=	-19627.99	(J)	H	=	-16075.52	(J)	S	=	2.66	(J/K)	V	=	0.43	(cc)	Cp	=	1.4	(J/K)
	albite	anorthite	sanidine																	
	15.49	84.2	0.31																	
Total	solids	mass	=	1.15	(gm)	density	=	2.69	(gm/cc)											
	G	=	-19627.99	(J)	H	=	-16075.52	(J)	S	=	2.66	(J/K)	V	=	0.43	(cc)	Cp	=	1.4	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	3.73	grams)											
feldspar	mass	=	3.73	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-63483.16	(J)	H	=	-51999.46	(J)	S	=	8.61	(J/K)	V	=	1.38	(cc)	Cp	=	4.52	(J/K)
	albite	anorthite	sanidine																	
	14.88	84.82	0.29																	
Viscosity	of	the	System:	3.09	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.39	(gm/cc)												
	G	=	-1628836.39	(J)	H	=	-1262540.97	(J)	S	=	274.66	(J/K)	V	=	41.56	(cc)	Cp	=	142.74	(J/K)
Oxygen	delta	moles	=	4.10E-05	delta	grams	=	0.00131079												
	G	=	-12.45	(J)	H	=	1.41	(J)	S	=	0.01	(J/K)	V	=	4.54	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1055.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	93.35	(gm)	density	=	2.38	(gm/cc)	viscosity	=	3.02	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1525360.9	(J)	H	=	-1179868.29	(J)	S	=	260.04	(J/K)	V	=	39.29	(cc)	Cp	=	135.15	(J/K)

	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.03	0.62	18.55	1.34	0	6.26	0.24	2.77	0	0	8.25	3.22	1.29	0.22	3.21	0	0	0	0	
feldspar	mass	=	1.12	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.16Ca0.84Al1.84Si2.16O8																			
	G	=	-19102.24	(J)	H	=	-15661.43	(J)	S	=	2.59	(J/K)	V	=	0.42	(cc)	Cp	=	1.36	(J/K)
	albite	anorthite	sanidine																	
	15.79	83.89	0.32																	
Total	solids	mass	=	1.12	(gm)	density	=	2.69	(gm/cc)											
	G	=	-19102.24	(J)	H	=	-15661.43	(J)	S	=	2.59	(J/K)	V	=	0.42	(cc)	Cp	=	1.36	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	4.87	grams)											
feldspar	mass	=	4.87	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-83007.88	(J)	H	=	-68066.07	(J)	S	=	11.25	(J/K)	V	=	1.81	(cc)	Cp	=	5.91	(J/K)
	albite	anorthite	sanidine																	
	15.03	84.68	0.3																	
Viscosity	of	the	System:	3.12	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.39	(gm/cc)												
	G	=	-1627471.02	(J)	H	=	-1263595.8	(J)	S	=	273.87	(J/K)	V	=	41.52	(cc)	Cp	=	142.43	(J/K)
Oxygen	delta	moles	=	5.20E-05	delta	grams	=	0.00166327												
	G	=	-15.73	(J)	H	=	1.79	(J)	S	=	0.01	(J/K)	V	=	5.74	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1050.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	92.26	(gm)	density	=	2.38	(gm/cc)	viscosity	=	3.03	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1505517.61	(J)	H	=	-1165649.42	(J)	S	=	256.77	(J/K)	V	=	38.84	(cc)	Cp	=	133.53	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.11	0.63	18.36	1.36	0	6.33	0.24	2.81	0	0	8.14	3.24	1.31	0.23	3.25	0	0	0	0	
feldspar	mass	=	1.09	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.16Ca0.84Al1.84Si2.16O8																			
	G	=	-18598.03	(J)	H	=	-15264.09	(J)	S	=	2.52	(J/K)	V	=	0.41	(cc)	Cp	=	1.33	(J/K)
	albite	anorthite	sanidine																	
	16.1	83.57	0.32																	
Total	solids	mass	=	1.09	(gm)	density	=	2.69	(gm/cc)											
	G	=	-18598.03	(J)	H	=	-15264.09	(J)	S	=	2.52	(J/K)	V	=	0.41	(cc)	Cp	=	1.33	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	5.99	grams)											
feldspar	mass	=	5.99	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.85Al1.85Si2.15O8																			
	G	=	-101994.1	(J)	H	=	-83725.36	(J)	S	=	13.8	(J/K)	V	=	2.23	(cc)	Cp	=	7.27	(J/K)
	albite	anorthite	sanidine																	
	15.17	84.53	0.3																	
Viscosity	of	the	System:	3.15	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.4	(gm/cc)												
	G	=	-1626109.74	(J)	H	=	-1264638.86	(J)	S	=	273.09	(J/K)	V	=	41.47	(cc)	Cp	=	142.12	(J/K)

Oxygen	delta	moles	=	6.33E-05	delta	grams	=	0.00202511											
	G	=	-19.07	(J)	H	=	2.16	(J)	S	=	0.02	(J/K)	V	=	6.96	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC) = 1045.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	91.01	(gm)	density	=	2.37	(gm/cc)	viscosity	=	3.05	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1483264.57	(J)	H	=	-1149513.41	(J)	S	=	253.11	(J/K)	V	=	38.34	(cc)	Cp	=	131.66	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.2	0.64	18.23	1.37	0	6.39	0.24	2.81	0	0	8.01	3.26	1.32	0.23	3.3	0	0	0	0	
cpx	mass	=	0.25	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.85Fe''0.21Mg0.77Fe'''0.06Ti0.02Al0.24Si1.84O6																		
	G	=	-3873.86	(J)	H	=	-3153.42	(J)	S	=	0.55	(J/K)	V	=	0.08	(cc)	Cp	=	0.29	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	47.89	13.46	21.11	10.38	-6.03	11.91	1.27													
feldspar	mass	=	1.01	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.16Ca0.83Al1.83Si2.17O8																			
	G	=	-17150.96	(J)	H	=	-14091.17	(J)	S	=	2.32	(J/K)	V	=	0.37	(cc)	Cp	=	1.22	(J/K)
	albite	anorthite	sanidine																	
	16.44	83.23	0.33																	
Total	solids	mass	=	1.26	(gm)	density	=	2.79	(gm/cc)											
	G	=	-21024.82	(J)	H	=	-17244.59	(J)	S	=	2.87	(J/K)	V	=	0.45	(cc)	Cp	=	1.51	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	7.08	grams)											
feldspar	mass	=	7.08	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.84Al1.84Si2.16O8																			
	G	=	-120463.74	(J)	H	=	-98993.88	(J)	S	=	16.28	(J/K)	V	=	2.63	(cc)	Cp	=	8.58	(J/K)
	albite	anorthite	sanidine																	
	15.31	84.38	0.3																	
Viscosity	of	the	System:	3.19	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.4	(gm/cc)												
	G	=	-1624753.13	(J)	H	=	-1265751.88	(J)	S	=	272.26	(J/K)	V	=	41.42	(cc)	Cp	=	141.75	(J/K)
Oxygen	delta	moles	=	7.59E-05	delta	grams	=	0.00242911											
	G	=	-22.78	(J)	H	=	2.58	(J)	S	=	0.02	(J/K)	V	=	8.32	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC) = 1040.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	89.27	(gm)	density	=	2.37	(gm/cc)	viscosity	=	3.07	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1453672.85	(J)	H	=	-1127592.1	(J)	S	=	248.23	(J/K)	V	=	37.67	(cc)	Cp	=	129.02	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.31	0.64	18.22	1.38	0	6.44	0.25	2.72	0	0	7.79	3.31	1.35	0.24	3.36	0	0	0	0	
cpx	mass	=	0.94	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.85Fe''0.22Mg0.77Fe'''0.06Ti0.02Al0.24Si1.84O6																		
	G	=	-14631.06	(J)	H	=	-11920.11	(J)	S	=	2.06	(J/K)	V	=	0.29	(cc)	Cp	=	1.08	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													

	46.86	13.72	21.66	10.48	-5.92	11.9	1.3													
feldspar	mass	=	0.81	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.17Ca0.83Al1.83Si2.17O8																			
	G	=	-13787.82	(J)	H	=	-11339.75	(J)	S	=	1.86	(J/K)	V	=	0.3	(cc)	Cp	=	0.98	(J/K)
	albite	anorthite	sanidine																	
	16.84	82.82	0.34																	
Total	solids	mass	=	1.75	(gm)	density	=	2.98	(gm/cc)											
	G	=	-28418.88	(J)	H	=	-23259.86	(J)	S	=	3.93	(J/K)	V	=	0.59	(cc)	Cp	=	2.07	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	8.33	grams)											
cpx	mass	=	0.24	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.85Fe''0.21Mg0.77Fe'''0.06Ti0.02Al0.24Si1.84O6																		
	G	=	-3836.16	(J)	H	=	-3126.35	(J)	S	=	0.54	(J/K)	V	=	0.07	(cc)	Cp	=	0.28	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	47.89	13.46	21.11	10.38	-6.03	11.91	1.27													
feldspar	mass	=	8.09	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.15Ca0.84Al1.84Si2.16O8																			
	G	=	-137474.96	(J)	H	=	-113095.55	(J)	S	=	18.56	(J/K)	V	=	3	(cc)	Cp	=	9.8	(J/K)
	albite	anorthite	sanidine																	
	15.45	84.24	0.31																	
Viscosity	of	the	System:	3.24	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.4	(gm/cc)												
	G	=	-1623402.85	(J)	H	=	-1267073.87	(J)	S	=	271.26	(J/K)	V	=	41.34	(cc)	Cp	=	141.17	(J/K)
Oxygen	delta	moles	=	9.15E-05	delta	grams	=	0.00292635												
	G	=	-27.33	(J)	H	=	3.09	(J)	S	=	0.02	(J/K)	V	=	9.99	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1035.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	87.61	(gm)	density	=	2.37	(gm/cc)	viscosity	=	3.09	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1425524.33	(J)	H	=	-1106764.91	(J)	S	=	243.58	(J/K)	V	=	37.04	(cc)	Cp	=	126.51	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.42	0.64	18.21	1.39	0	6.48	0.25	2.63	0	0	7.58	3.35	1.38	0.24	3.42	0	0	0	0	
cpx	mass	=	0.88	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.85Fe''0.22Mg0.76Fe'''0.06Ti0.02Al0.24Si1.83O6																		
	G	=	-13795.51	(J)	H	=	-11248.77	(J)	S	=	1.95	(J/K)	V	=	0.27	(cc)	Cp	=	1.02	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	45.79	13.99	22.22	10.59	-5.81	11.88	1.33													
feldspar	mass	=	0.78	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.17Ca0.82Al1.82Si2.18O8																			
	G	=	-13204.22	(J)	H	=	-10870.98	(J)	S	=	1.78	(J/K)	V	=	0.29	(cc)	Cp	=	0.94	(J/K)
	albite	anorthite	sanidine																	
	17.26	82.39	0.35																	
Total	solids	mass	=	1.66	(gm)	density	=	2.98	(gm/cc)											
	G	=	-26999.73	(J)	H	=	-22119.74	(J)	S	=	3.73	(J/K)	V	=	0.56	(cc)	Cp	=	1.96	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	10.08	grams)											

cpx	mass	=	1.18	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)										
	cpx	Na0.01Ca0.85Fe''0.22Mg0.77Fe'''0.06Ti0.02Al0.24Si1.84O6																				
	G	=	-18419.29	(J)	H	=	-15024.81	(J)	S	=	2.59	(J/K)	V	=	0.36	(cc)	Cp	=	1.36	(J/K)		
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	47.07	13.66	21.54	10.46	-5.94	11.9	1.3															
feldspar	mass	=	8.9	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)										
	K0.00Na0.16Ca0.84Al1.84Si2.16O8																					
	G	=	-151113.99	(J)	H	=	-124450.66	(J)	S	=	20.38	(J/K)	V	=	3.31	(cc)	Cp	=	10.77	(J/K)		
	albite	anorthite	sanidine																			
	15.58	84.11	0.31																			
Viscosity	of	the	System:	3.29	(log	10	poise)															
System	mass	=	99.35	(gm)	density	=	2.41	(gm/cc)														
	G	=	-1622057.34	(J)	H	=	-1268360.13	(J)	S	=	270.28	(J/K)	V	=	41.26	(cc)	Cp	=	140.61	(J/K)		
Oxygen	delta	moles	=	0.000106701	delta	grams	=	0.00341429														
	G	=	-31.75	(J)	H	=	3.59	(J)	S	=	0.03	(J/K)	V	=	11.61	(cc)	Cp	=	0	(J/K)		

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Model 828 Bokan

Temp (oC)	=	1030.47																				
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids															
Liquid	mass	=	86.04	(gm)	density	=	2.36	(gm/cc)	viscosity	=	3.11	(log	10	poise)	(analysis	in	wt	%)				
	G	=	-1398717.29	(J)	H	=	-1086954.66	(J)	S	=	239.15	(J/K)	V	=	36.43	(cc)	Cp	=	124.13	(J/K)		
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1			
	54.53	0.65	18.2	1.4	0	6.53	0.26	2.55	0	0	7.37	3.39	1.4	0.24	3.49	0	0	0	0			
cpx	mass	=	0.84	(gm)	density	=	3.29	(gm/cc)	(analysis	in	mole	%)										
	cpx	Na0.01Ca0.84Fe''0.23Mg0.76Fe'''0.06Ti0.02Al0.24Si1.83O6																				
	G	=	-13021.14	(J)	H	=	-10626.15	(J)	S	=	1.84	(J/K)	V	=	0.25	(cc)	Cp	=	0.97	(J/K)		
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	44.69	14.28	22.8	10.7	-5.7	11.87	1.36															
feldspar	mass	=	0.75	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)										
	K0.00Na0.18Ca0.82Al1.82Si2.18O8																					
	G	=	-12660.04	(J)	H	=	-10433.67	(J)	S	=	1.71	(J/K)	V	=	0.28	(cc)	Cp	=	0.9	(J/K)		
	albite	anorthite	sanidine																			
	17.69	81.95	0.36																			
Total	solids	mass	=	1.58	(gm)	density	=	2.97	(gm/cc)													
	G	=	-25681.17	(J)	H	=	-21059.82	(J)	S	=	3.55	(J/K)	V	=	0.53	(cc)	Cp	=	1.87	(J/K)		
Summary	of	all	fractionated	phases:	(total	mass	=	11.73	grams)													
cpx	mass	=	2.06	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)										
	cpx	Na0.01Ca0.85Fe''0.22Mg0.76Fe'''0.06Ti0.02Al0.24Si1.83O6																				
	G	=	-32157.24	(J)	H	=	-26257.04	(J)	S	=	4.53	(J/K)	V	=	0.63	(cc)	Cp	=	2.38	(J/K)		
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	46.53	13.8	21.83	10.52	-5.89	11.89	1.31															
feldspar	mass	=	9.67	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)										
	K0.00Na0.16Ca0.84Al1.84Si2.16O8																					
	G	=	-164160.8	(J)	H	=	-135341.64	(J)	S	=	22.11	(J/K)	V	=	3.59	(cc)	Cp	=	11.7	(J/K)		
	albite	anorthite	sanidine																			
	15.71	83.97	0.31																			
Viscosity	of	the	System:	3.34	(log	10	poise)															

System	mass	=	99.35	(gm)	density	=	2.41	(gm/cc)											
	G	=	-1620716.51	(J)	H	=	-1269613.16	(J)	S	=	269.33	(J/K)	V	=	41.18	(cc)	Cp	=	140.08	(J/K)
Oxygen	delta	moles	=	0.00012169	delta	grams	=	0.00389394											
	G	=	-36.06	(J)	H	=	4.07	(J)	S	=	0.03	(J/K)	V	=	13.19	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1025.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	84.54	(gm)	density	=	2.36	(gm/cc)	viscosity	=	3.14	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1373158.59	(J)	H	=	-1068090.64	(J)	S	=	234.92	(J/K)	V	=	35.85	(cc)	Cp	=	121.85	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.64	0.65	18.19	1.41	0	6.57	0.26	2.47	0	0	7.16	3.43	1.42	0.25	3.55	0	0	0	0	
cpx	mass	=	0.79	(gm)	density	=	3.29	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.84Fe''0.23Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-12302.56	(J)	H	=	-10047.99	(J)	S	=	1.74	(J/K)	V	=	0.24	(cc)	Cp	=	0.91	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	43.55	14.58	23.4	10.81	-5.59	11.85	1.4													
feldspar	mass	=	0.72	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.18Ca0.81Al1.81Si2.19O8																			
	G	=	-12152.15	(J)	H	=	-10025.36	(J)	S	=	1.64	(J/K)	V	=	0.27	(cc)	Cp	=	0.87	(J/K)
	albite	anorthite	sanidine																	
	18.14	81.49	0.37																	
Total	solids	mass	=	1.51	(gm)	density	=	2.97	(gm/cc)											
	G	=	-24454.71	(J)	H	=	-20073.35	(J)	S	=	3.37	(J/K)	V	=	0.51	(cc)	Cp	=	1.78	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	13.31	grams)											
cpx	mass	=	2.89	(gm)	density	=	3.28	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.85Fe''0.22Mg0.76Fe'''0.06Ti0.02Al0.24Si1.83O6																		
	G	=	-45111.77	(J)	H	=	-36871.47	(J)	S	=	6.35	(J/K)	V	=	0.88	(cc)	Cp	=	3.35	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	46	13.94	22.11	10.57	-5.83	11.89	1.33													
feldspar	mass	=	10.42	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.16Ca0.84Al1.84Si2.16O8																			
	G	=	-176655.21	(J)	H	=	-145799.78	(J)	S	=	23.76	(J/K)	V	=	3.87	(cc)	Cp	=	12.6	(J/K)
	albite	anorthite	sanidine																	
	15.86	83.83	0.32																	
Viscosity	of	the	System:	3.39	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.42	(gm/cc)												
	G	=	-1619380.28	(J)	H	=	-1270835.24	(J)	S	=	268.4	(J/K)	V	=	41.11	(cc)	Cp	=	139.58	(J/K)
Oxygen	delta	moles	=	0.000136447	delta	grams	=	0.00436614												
	G	=	-40.26	(J)	H	=	4.54	(J)	S	=	0.03	(J/K)	V	=	14.73	(cc)	Cp	=	0	(J/K)

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Model 828 Bokan

Temp (oC)	=	1020.47					
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids

Liquid	mass	=	82.65	(gm)	density	=	2.36	(gm/cc)	viscosity	=	3.17	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1340896.2	(J)	H	=	-1044119.26	(J)	S	=	229.42	(J/K)	V	=	35.08	(cc)	Cp	=	118.96	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	54.81	0.65	18.14	1.43	0	6.63	0.27	2.39	0	0	6.91	3.48	1.46	0.25	3.58	0	0	0	0	
cpx	mass	=	0.83	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-12910.5	(J)	H	=	-10551.96	(J)	S	=	1.82	(J/K)	V	=	0.25	(cc)	Cp	=	0.96	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.99	15.15	24.23	10.84	-5.45	11.8	1.44													
feldspar	mass	=	1.01	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.19Ca0.81Al1.81Si2.19O8																			
	G	=	-17181.81	(J)	H	=	-14188.5	(J)	S	=	2.31	(J/K)	V	=	0.38	(cc)	Cp	=	1.23	(J/K)
	albite	anorthite	sanidine																	
	18.89	80.72	0.39																	
water	mass	=	0.04	(gm)	density	=	0.17	(gm/cc)												
	H2O																			
	G	=	-1086.59	(J)	H	=	-508.2	(J)	S	=	0.45	(J/K)	V	=	0.26	(cc)	Cp	=	0.14	(J/K)
Total	solids	mass	=	1.89	(gm)	density	=	2.13	(gm/cc)											
	G	=	-31178.9	(J)	H	=	-25248.67	(J)	S	=	4.58	(J/K)	V	=	0.89	(cc)	Cp	=	2.32	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	14.81	grams)											
cpx	mass	=	3.68	(gm)	density	=	3.29	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.85Fe''0.22Mg0.76Fe'''0.06Ti0.02Al0.24Si1.83O6																		
	G	=	-57339.2	(J)	H	=	-46912.31	(J)	S	=	8.06	(J/K)	V	=	1.12	(cc)	Cp	=	4.25	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	45.47	14.08	22.39	10.62	-5.78	11.88	1.34													
feldspar	mass	=	11.13	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.16Ca0.84Al1.84Si2.16O8																			
	G	=	-188633.86	(J)	H	=	-155853.87	(J)	S	=	25.34	(J/K)	V	=	4.13	(cc)	Cp	=	13.45	(J/K)
	albite	anorthite	sanidine																	
	16	83.68	0.32																	
Viscosity	of	the	System:	3.48	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.41	(gm/cc)												
	G	=	-1618048.17	(J)	H	=	-1272134.1	(J)	S	=	267.4	(J/K)	V	=	41.22	(cc)	Cp	=	138.99	(J/K)
Oxygen	delta	moles	=	0.000150021	delta	grams	=	0.0048005												
	G	=	-44.07	(J)	H	=	4.97	(J)	S	=	0.04	(J/K)	V	=	16.14	(cc)	Cp	=	0.01	(J/K)

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Model 828 Bokan

Temp (oC)	=	1015.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	80.7	(gm)	density	=	2.36	(gm/cc)	viscosity	=	3.22	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1307540.46	(J)	H	=	-1019310.06	(J)	S	=	223.67	(J/K)	V	=	34.26	(cc)	Cp	=	115.97	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	55	0.66	18.08	1.44	0	6.71	0.27	2.31	0	0	6.65	3.54	1.49	0.26	3.59	0	0	0	0	
cpx	mass	=	0.81	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.25Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-12466.54	(J)	H	=	-10195.64	(J)	S	=	1.76	(J/K)	V	=	0.24	(cc)	Cp	=	0.93	(J/K)

	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	40.17	15.9	25.19	10.83	-5.31	11.74	1.48													
feldspar	mass	=	1.09	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.20Ca0.80Al1.80Si2.20O8																			
	G	=	-18386.29	(J)	H	=	-15197.49	(J)	S	=	2.47	(J/K)	V	=	0.4	(cc)	Cp	=	1.32	(J/K)
	albite	anorthite	sanidine																	
	19.79	79.81	0.41																	
water	mass	=	0.1	(gm)	density	=	0.17	(gm/cc)												
	H2O																			
	G	=	-2530.61	(J)	H	=	-1187.6	(J)	S	=	1.04	(J/K)	V	=	0.6	(cc)	Cp	=	0.32	(J/K)
Total	solids	mass	=	1.99	(gm)	density	=	1.6	(gm/cc)											
	G	=	-33383.44	(J)	H	=	-26580.72	(J)	S	=	5.28	(J/K)	V	=	1.24	(cc)	Cp	=	2.56	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	16.65	grams)											
cpx	mass	=	4.51	(gm)	density	=	3.29	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.84Fe''0.23Mg0.76Fe'''0.06Ti0.02Al0.24Si1.83O6																		
	G	=	-70165.64	(J)	H	=	-57461.91	(J)	S	=	9.86	(J/K)	V	=	1.37	(cc)	Cp	=	5.21	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	44.83	14.28	22.73	10.66	-5.72	11.87	1.36													
feldspar	mass	=	12.14	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.16Ca0.83Al1.83Si2.17O8																			
	G	=	-205631.01	(J)	H	=	-170077.3	(J)	S	=	27.59	(J/K)	V	=	4.51	(cc)	Cp	=	14.69	(J/K)
	albite	anorthite	sanidine																	
	16.24	83.43	0.33																	
Viscosity	of	the	System:	3.58	(log	10	poise)													
System	mass	=	99.35	(gm)	density	=	2.4	(gm/cc)												
	G	=	-1616720.54	(J)	H	=	-1273430	(J)	S	=	266.4	(J/K)	V	=	41.39	(cc)	Cp	=	138.44	(J/K)
Oxygen	delta	moles	=	0.000162469	delta	grams	=	0.00519882												
	G	=	-47.52	(J)	H	=	5.35	(J)	S	=	0.04	(J/K)	V	=	17.41	(cc)	Cp	=	0.01	(J/K)

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Model 828 Bokan

Temp (oC)	=	1010.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	78.88	(gm)	density	=	2.35	(gm/cc)	viscosity	=	3.26	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1276243.14	(J)	H	=	-996061.23	(J)	S	=	218.27	(J/K)	V	=	33.5	(cc)	Cp	=	113.17	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	55.18	0.67	18.01	1.46	0	6.78	0.28	2.24	0	0	6.41	3.59	1.52	0.27	3.6	0	0	0	0	
cpx	mass	=	0.75	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.02Ca0.82Fe''0.26Mg0.75Fe'''0.07Ti0.03Al0.24Si1.83O6																		
	G	=	-11547.62	(J)	H	=	-9449.89	(J)	S	=	1.63	(J/K)	V	=	0.23	(cc)	Cp	=	0.86	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	38.2	16.75	26.21	10.81	-5.17	11.67	1.52													
feldspar	mass	=	1.03	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.21Ca0.79Al1.79Si2.21O8																			
	G	=	-17363.72	(J)	H	=	-14365.74	(J)	S	=	2.34	(J/K)	V	=	0.38	(cc)	Cp	=	1.24	(J/K)
	albite	anorthite	sanidine																	
	20.72	78.85	0.43																	

water	mass	=	0.16	(gm)	density	=	0.17	(gm/cc)											
	H2O																		
	G	=	-3882.74	(J)	H	=	-1828.34	(J)	S	=	1.6	(J/K)	V	=	0.91	(cc)	Cp	=	0.49	(J/K)
Total	solids	mass	=	1.93	(gm)	density	=	1.27	(gm/cc)										
	G	=	-32794.08	(J)	H	=	-25643.98	(J)	S	=	5.57	(J/K)	V	=	1.52	(cc)	Cp	=	2.59	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	18.54	grams)										
cpx	mass	=	5.32	(gm)	density	=	3.29	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.01Ca0.84Fe''0.23Mg0.76Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-82539.52	(J)	H	=	-67659.84	(J)	S	=	11.59	(J/K)	V	=	1.62	(cc)	Cp	=	6.13	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	44.13	14.52	23.1	10.69	-5.66	11.85	1.38												
feldspar	mass	=	13.22	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)							
	K0.00Na0.17Ca0.83Al1.83Si2.17O8																		
	G	=	-223820.69	(J)	H	=	-185316.23	(J)	S	=	30	(J/K)	V	=	4.91	(cc)	Cp	=	16	(J/K)
	albite	anorthite	sanidine																
	16.53	83.13	0.33																
Viscosity	of	the	System:	3.69	(log	10	poise)												
System	mass	=	99.35	(gm)	density	=	2.39	(gm/cc)											
	G	=	-1615397.42	(J)	H	=	-1274681.28	(J)	S	=	265.43	(J/K)	V	=	41.55	(cc)	Cp	=	137.9	(J/K)
Oxygen	delta	moles	=	0.000174078	delta	grams	=	0.00557029											
	G	=	-50.7	(J)	H	=	5.7	(J)	S	=	0.04	(J/K)	V	=	18.58	(cc)	Cp	=	0.01	(J/K)

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Model 828 Bokan

Temp (oC)	=	1005.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	76.82	(gm)	density	=	2.35	(gm/cc)	viscosity	=	3.32	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1242390.17	(J)	H	=	-970967.97	(J)	S	=	212.28	(J/K)	V	=	32.67	(cc)	Cp	=	110.04	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	55.5	0.65	17.95	1.46	0	6.74	0.29	2.17	0	0	6.16	3.64	1.56	0.27	3.62	0	0	0	0	
cpx	mass	=	0.7	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.02Ca0.81Fe''0.27Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-10814.74	(J)	H	=	-8856.01	(J)	S	=	1.53	(J/K)	V	=	0.21	(cc)	Cp	=	0.81	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	36.37	17.85	27.26	10.52	-5.1	11.55	1.56												
feldspar	mass	=	1.13	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)							
	K0.00Na0.22Ca0.78Al1.78Si2.22O8																		
	G	=	-19192.07	(J)	H	=	-15892.96	(J)	S	=	2.58	(J/K)	V	=	0.42	(cc)	Cp	=	1.37	(J/K)
	albite	anorthite	sanidine																
	21.8	77.75	0.45																
spinel	mass	=	0.17	(gm)	density	=	4.69	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.09Mg0.22Fe'''1.10Al0.27Cr0.00Ti0.32O4																		
	G	=	-1443.4	(J)	H	=	-989.99	(J)	S	=	0.35	(J/K)	V	=	0.04	(cc)	Cp	=	0.16	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-8.84	55.13	22.11	31.6														
water	mass	=	0.22	(gm)	density	=	0.17	(gm/cc)											
	H2O																		
	G	=	-5362.97	(J)	H	=	-2533.98	(J)	S	=	2.21	(J/K)	V	=	1.25	(cc)	Cp	=	0.68	(J/K)

Total	solids	mass	=	2.23	(gm)	density	=	1.16	(gm/cc)									
	G	=	-36813.18	(J)	H	=	-28272.94	(J)	S	=	6.68	(J/K)	V	=	1.93	(cc)	Cp	=	3.02	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	20.31	grams)									
cpx	mass	=	6.06	(gm)	density	=	3.29	(gm/cc)	(analysis	in	mole	%)						
	cpx	Na0.01Ca0.84Fe''0.23Mg0.76Fe'''0.06Ti0.03Al0.24Si1.83O6																
	G	=	-93986.56	(J)	H	=	-77116.31	(J)	S	=	13.19	(J/K)	V	=	1.84	(cc)	Cp	=	6.99	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite											
	43.4	14.79	23.48	10.7	-5.6	11.83	1.4											
feldspar	mass	=	14.25	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)						
	K0.00Na0.17Ca0.83Al1.83Si2.17O8																	
	G	=	-240976.56	(J)	H	=	-199729.57	(J)	S	=	32.26	(J/K)	V	=	5.29	(cc)	Cp	=	17.23	(J/K)
	albite	anorthite	sanidine															
	16.84	82.83	0.34															
Viscosity	of	the	System:	3.81	(log	10	poise)											
System	mass	=	99.36	(gm)	density	=	2.38	(gm/cc)										
	G	=	-1614166.46	(J)	H	=	-1276086.79	(J)	S	=	264.41	(J/K)	V	=	41.73	(cc)	Cp	=	137.29	(J/K)
Oxygen	delta	moles	=	0.000343466	delta	grams	=	0.0109905										
	G	=	-99.6	(J)	H	=	11.18	(J)	S	=	0.09	(J/K)	V	=	36.51	(cc)	Cp	=	0.01	(J/K)

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Model 828 Bokan

Temp (oC)	=	1000.47																
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids											
Liquid	mass	=	74.4	(gm)	density	=	2.34	(gm/cc)	viscosity	=	3.4	(log	10	poise)	(analysis	in	wt	%)
	G	=	-1204486.59	(J)	H	=	-942924.11	(J)	S	=	205.37	(J/K)	V	=	31.73	(cc)	Cp	=	106.42	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	56.02	0.6	17.88	1.42	0	6.53	0.3	2.1	0	0	5.92	3.71	1.61	0.28	3.64	0	0	0	0	
cpx	mass	=	0.65	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)						
	cpx	Na0.02Ca0.79Fe''0.28Mg0.76Fe'''0.06Ti0.02Al0.23Si1.84O6																
	G	=	-9964.87	(J)	H	=	-8166.1	(J)	S	=	1.41	(J/K)	V	=	0.2	(cc)	Cp	=	0.75	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite											
	34.69	19.35	28.3	9.88	-5.11	11.32	1.57											
feldspar	mass	=	1.31	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)						
	K0.00Na0.23Ca0.76Al1.76Si2.24O8																	
	G	=	-22090.61	(J)	H	=	-18309.4	(J)	S	=	2.97	(J/K)	V	=	0.49	(cc)	Cp	=	1.58	(J/K)
	albite	anorthite	sanidine															
	23.07	76.45	0.48															
spinel	mass	=	0.41	(gm)	density	=	4.7	(gm/cc)	(analysis	in	mole	%)						
	Fe''1.09Mg0.22Fe'''1.12Al0.26Cr0.00Ti0.31O4																	
	G	=	-3399.23	(J)	H	=	-2332.25	(J)	S	=	0.84	(J/K)	V	=	0.09	(cc)	Cp	=	0.38	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel													
	0	-8.32	56.12	21.52	30.68													
water	mass	=	0.29	(gm)	density	=	0.18	(gm/cc)										
	H2O																	
	G	=	-7055.97	(J)	H	=	-3345.28	(J)	S	=	2.91	(J/K)	V	=	1.64	(cc)	Cp	=	0.9	(J/K)
Total	solids	mass	=	2.66	(gm)	density	=	1.1	(gm/cc)									
	G	=	-42510.68	(J)	H	=	-32153.02	(J)	S	=	8.13	(J/K)	V	=	2.41	(cc)	Cp	=	3.61	(J/K)

Summary of all fractionated phases: (total mass = 22.32 grams)

cpx mass = 6.77 (gm) density = 3.3 (gm/cc) (analysis in mole %)
cpx Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6
G = -104693.31 (J) H = -85982.94 (J) S = 14.69 (J/K) V = 2.05 (cc) Cp = 7.79 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
42.68 15.11 23.87 10.68 -5.55 11.8 1.41

feldspar mass = 15.38 (gm) density = 2.69 (gm/cc) (analysis in mole %)
K0.00Na0.17Ca0.82Al1.82Si2.18O8
G = -259948.4 (J) H = -215676.9 (J) S = 34.76 (J/K) V = 5.71 (cc) Cp = 18.59 (J/K)
albite anorthite sanidine
17.2 82.45 0.35

spinel mass = 0.17 (gm) density = 4.69 (gm/cc) (analysis in mole %)
Fe''1.09Mg0.22Fe'''1.10Al0.27Cr0.00Ti0.32O4
G = -1423.89 (J) H = -978.61 (J) S = 0.35 (J/K) V = 0.04 (cc) Cp = 0.16 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -8.84 55.13 22.11 31.6

Viscosity of the System: 3.98 (log 10 poise)

System mass = 99.37 (gm) density = 2.37 (gm/cc)
G = -1613062.87 (J) H = -1277715.57 (J) S = 263.3 (J/K) V = 41.95 (cc) Cp = 136.57 (J/K)

Oxygen delta moles = 0.000733376 delta grams = 0.0234672
G = -211.74 (J) H = 23.75 (J) S = 0.18 (J/K) V = 77.66 (cc) Cp = 0.03 (J/K)

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Model 828 Bokan

Temp (oC) = 995.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid mass = 71.45 (gm) density = 2.34 (gm/cc) viscosity = 3.48 (log 10 poise) (analysis in wt %)
G = -1157669.69 (J) H = -907731.03 (J) S = 197.02 (J/K) V = 30.57 (cc) Cp = 102.01 (J/K)
SiO2 TiO2 Al2O3 Fe2O3 Cr2O3 FeO MnO MgO NiO CoO CaO Na2O K2O P2O5 H2O CO2 SO3 Cl2O-1 F2O-1
56.6 0.56 17.7 1.39 0 6.31 0.31 1.97 0 0 5.73 3.79 1.68 0.29 3.67 0 0 0 0

opx mass = 0.56 (gm) density = 3.37 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.07Fe''0.60Mg1.26Fe'''0.02Ti0.00Al0.11Si1.93O6
G = -8294 (J) H = -6714.11 (J) S = 1.25 (J/K) V = 0.17 (cc) Cp = 0.67 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-59.8 93 59.88 4.38 -3.98 6.4 0.13

cpx mass = 0.03 (gm) density = 3.31 (gm/cc) (analysis in mole %)
cpx Na0.02Ca0.79Fe''0.29Mg0.76Fe'''0.06Ti0.02Al0.22Si1.84O6
G = -439.31 (J) H = -360.32 (J) S = 0.06 (J/K) V = 0.01 (cc) Cp = 0.03 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
33.98 19.75 29.05 9.48 -5.01 11.14 1.61

feldspar mass = 1.89 (gm) density = 2.68 (gm/cc) (analysis in mole %)
K0.01Na0.24Ca0.75Al1.75Si2.25O8
G = -31936.47 (J) H = -26493.09 (J) S = 4.29 (J/K) V = 0.71 (cc) Cp = 2.29 (J/K)
albite anorthite sanidine
24.4 75.08 0.51

spinel mass = 0.39 (gm) density = 4.71 (gm/cc) (analysis in mole %)
Fe''1.10Mg0.21Fe'''1.14Al0.26Cr0.00Ti0.30O4
G = -3191.18 (J) H = -2188.6 (J) S = 0.79 (J/K) V = 0.08 (cc) Cp = 0.36 (J/K)

	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-7.76	57.03	20.59	30.13														
water	mass	=	0.38	(gm)	density	=	0.18	(gm/cc)											
	H2O																		
	G	=	-9255.04	(J)	H	=	-4402.85	(J)	S	=	3.82	(J/K)	V	=	2.15	(cc)	Cp	=	1.18	(J/K)
Total	solids	mass	=	3.25	(gm)	density	=	1.04	(gm/cc)										
	G	=	-53115.99	(J)	H	=	-40158.96	(J)	S	=	10.21	(J/K)	V	=	3.11	(cc)	Cp	=	4.54	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	24.68	grams)										
cpx	mass	=	7.41	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-114543.4	(J)	H	=	-94163.34	(J)	S	=	16.06	(J/K)	V	=	2.25	(cc)	Cp	=	8.53	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	41.98	15.48	24.26	10.61	-5.51	11.75	1.43												
feldspar	mass	=	16.68	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)							
	K0.00Na0.18Ca0.82Al1.82Si2.18O8																		
	G	=	-281804.54	(J)	H	=	-234048.46	(J)	S	=	37.64	(J/K)	V	=	6.2	(cc)	Cp	=	20.15	(J/K)
	albite	anorthite	sanidine																
	17.66	81.98	0.36																
spinel	mass	=	0.58	(gm)	density	=	4.69	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.09Mg0.22Fe'''1.12Al0.26Cr0.00Ti0.31O4																		
	G	=	-4799.52	(J)	H	=	-3301.42	(J)	S	=	1.18	(J/K)	V	=	0.12	(cc)	Cp	=	0.54	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-8.47	55.83	21.69	30.95														
Viscosity	of	the	System:	4.18	(log	10	poise)												
System	mass	=	99.38	(gm)	density	=	2.35	(gm/cc)											
	G	=	-1611933.14	(J)	H	=	-1279403.22	(J)	S	=	262.12	(J/K)	V	=	42.25	(cc)	Cp	=	135.78	(J/K)
Oxygen	delta	moles	=	0.0010658	delta	grams	=	0.0341042											
	G	=	-306.37	(J)	H	=	34.32	(J)	S	=	0.27	(J/K)	V	=	112.42	(cc)	Cp	=	0.04	(J/K)

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Model 828 Bokan

Temp (oC)	=	990.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	68.61	(gm)	density	=	2.33	(gm/cc)	viscosity	=	3.56	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-1112342.93	(J)	H	=	-873588.66	(J)	S	=	188.94	(J/K)	V	=	29.44	(cc)	Cp	=	97.75	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	57.17	0.53	17.52	1.36	0	6.09	0.32	1.84	0	0	5.56	3.87	1.74	0.31	3.69	0	0	0	0	
opx	mass	=	0.59	(gm)	density	=	3.37	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.07Fe''0.61Mg1.25Fe'''0.02Ti0.00Al0.11Si1.93O6																	
	G	=	-8662.63	(J)	H	=	-7017.19	(J)	S	=	1.3	(J/K)	V	=	0.17	(cc)	Cp	=	0.71	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-61.22	93.06	61.33	4.3	-3.92	6.33	0.13												
feldspar	mass	=	1.83	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)							
	K0.01Na0.26Ca0.74Al1.74Si2.26O8																		
	G	=	-30947.5	(J)	H	=	-25694.86	(J)	S	=	4.16	(J/K)	V	=	0.69	(cc)	Cp	=	2.22	(J/K)
	albite	anorthite	sanidine																
	25.81	73.64	0.55																

spinel mass = 0.35 (gm) density = 4.72 (gm/cc) (analysis in mole %)
Fe''1.10Mg0.20Fe'''1.16Al0.25Cr0.00Ti0.30O4
G = -2865.85 (J) H = -1964.58 (J) S = 0.71 (J/K) V = 0.07 (cc) Cp = 0.33 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -7.15 57.9 19.62 29.63

water mass = 0.47 (gm) density = 0.18 (gm/cc)
H2O
G = -11398.7 (J) H = -5441.15 (J) S = 4.71 (J/K) V = 2.63 (cc) Cp = 1.46 (J/K)

Total solids mass = 3.24 (gm) density = 0.91 (gm/cc)
G = -53874.67 (J) H = -40117.79 (J) S = 10.89 (J/K) V = 3.57 (cc) Cp = 4.71 (J/K)

Summary of all fractionated phases: (total mass = 27.54 grams)

opx mass = 0.56 (gm) density = 3.37 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.07Fe''0.60Mg1.26Fe'''0.02Ti0.00Al0.11Si1.93O6
G = -8255.12 (J) H = -6691 (J) S = 1.24 (J/K) V = 0.17 (cc) Cp = 0.67 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-59.8 93 59.88 4.38 -3.98 6.4 0.13

cpx mass = 7.44 (gm) density = 3.3 (gm/cc) (analysis in mole %)
cpx Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6
G = -114867.77 (J) H = -94538.24 (J) S = 16.09 (J/K) V = 2.26 (cc) Cp = 8.56 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
41.95 15.49 24.27 10.61 -5.51 11.75 1.43

feldspar mass = 18.57 (gm) density = 2.69 (gm/cc) (analysis in mole %)
K0.00Na0.18Ca0.81Al1.81Si2.19O8
G = -313485.87 (J) H = -260614.95 (J) S = 41.84 (J/K) V = 6.91 (cc) Cp = 22.43 (J/K)
albite anorthite sanidine
18.35 81.28 0.37

spinel mass = 0.97 (gm) density = 4.7 (gm/cc) (analysis in mole %)
Fe''1.09Mg0.21Fe'''1.13Al0.26Cr0.00Ti0.31O4
G = -7963.3 (J) H = -5482.46 (J) S = 1.96 (J/K) V = 0.21 (cc) Cp = 0.9 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -8.19 56.31 21.25 30.62

Viscosity of the System: 4.39 (log 10 poise)

System mass = 99.39 (gm) density = 2.34 (gm/cc)
G = -1610789.66 (J) H = -1281033.1 (J) S = 260.96 (J/K) V = 42.54 (cc) Cp = 135.02 (J/K)

Oxygen delta moles = 0.00136248 delta grams = 0.0435976
G = -389.94 (J) H = 43.63 (J) S = 0.34 (J/K) V = 143.14 (cc) Cp = 0.05 (J/K)

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Model 828 Bokan

Temp (oC) = 985.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid mass = 66.01 (gm) density = 2.32 (gm/cc) viscosity = 3.64 (log 10 poise) (analysis in wt %)
G = -1070915.5 (J) H = -842403.01 (J) S = 181.56 (J/K) V = 28.4 (cc) Cp = 93.86 (J/K)
SiO2 TiO2 Al2O3 Fe2O3 Cr2O3 FeO MnO MgO NiO CoO CaO Na2O K2O P2O5 H2O CO2 SO3 Cl2O-1 F2O-1
57.73 0.5 17.34 1.33 0 5.87 0.33 1.72 0 0 5.38 3.95 1.81 0.32 3.71 0 0 0 0

opx mass = 0.52 (gm) density = 3.38 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.07Fe''0.63Mg1.24Fe'''0.02Ti0.00Al0.11Si1.93O6
G = -7633.03 (J) H = -6187.31 (J) S = 1.15 (J/K) V = 0.15 (cc) Cp = 0.62 (J/K)

	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	-62.67	93.14	62.78	4.22	-3.88	6.28	0.13															
feldspar	mass	=	1.69	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)										
	K0.01Na0.27Ca0.72Al1.72Si2.28O8																					
	G	=	-28537.5	(J)	H	=	-23714.28	(J)	S	=	3.83	(J/K)	V	=	0.63	(cc)	Cp	=	2.05	(J/K)		
	albite	anorthite	sanidine																			
	27.25	72.15	0.59																			
spinel	mass	=	0.32	(gm)	density	=	4.73	(gm/cc)	(analysis	in	mole	%)										
e''1.10Mg0.19Fe'''1.18Al0.24Cr0.00Ti0.29O4																						
	G	=	-2565.35	(J)	H	=	-1758.04	(J)	S	=	0.64	(J/K)	V	=	0.07	(cc)	Cp	=	0.29	(J/K)		
	chromite	hercynite	magnetite	spinel	ulvospinel																	
	0	-6.58	58.76	18.71	29.12																	
water	mass	=	0.55	(gm)	density	=	0.18	(gm/cc)														
	H2O																					
	G	=	-13369.3	(J)	H	=	-6403.63	(J)	S	=	5.53	(J/K)	V	=	3.08	(cc)	Cp	=	1.72	(J/K)		
Total	solids	mass	=	3.08	(gm)	density	=	0.78	(gm/cc)													
	G	=	-52105.18	(J)	H	=	-38063.27	(J)	S	=	11.16	(J/K)	V	=	3.93	(cc)	Cp	=	4.68	(J/K)		
Summary	of	all	fractionated	phases:	(total	mass	=	30.31	grams)													
opx	mass	=	1.15	(gm)	density	=	3.37	(gm/cc)	(analysis	in	mole	%)										
	opx	Na0.00Ca0.07Fe''0.61Mg1.26Fe'''0.02Ti0.00Al0.11Si1.93O6																				
	G	=	-16872.47	(J)	H	=	-13688.64	(J)	S	=	2.53	(J/K)	V	=	0.34	(cc)	Cp	=	1.37	(J/K)		
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	-60.53	93.03	60.62	4.34	-3.95	6.36	0.13															
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)										
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																				
	G	=	-114787.41	(J)	H	=	-94581.04	(J)	S	=	16.05	(J/K)	V	=	2.26	(cc)	Cp	=	8.56	(J/K)		
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43															
feldspar	mass	=	20.4	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)										
	K0.00Na0.19Ca0.81Al1.81Si2.19O8																					
	G	=	-344158.1	(J)	H	=	-286394.19	(J)	S	=	45.89	(J/K)	V	=	7.59	(cc)	Cp	=	24.63	(J/K)		
	albite	anorthite	sanidine																			
	19.02	80.59	0.39																			
spinel	mass	=	1.32	(gm)	density	=	4.71	(gm/cc)	(analysis	in	mole	%)										
	Fe''1.10Mg0.21Fe'''1.13Al0.26Cr0.00Ti0.30O4																					
	G	=	-10798.34	(J)	H	=	-7441.17	(J)	S	=	2.67	(J/K)	V	=	0.28	(cc)	Cp	=	1.22	(J/K)		
	chromite	hercynite	magnetite	spinel	ulvospinel																	
	0	-7.91	56.73	20.82	30.36																	
Viscosity	of	the	System:	4.61	(log	10	poise)															
System	mass	=	99.4	(gm)	density	=	2.32	(gm/cc)														
	G	=	-1609637	(J)	H	=	-1282571.31	(J)	S	=	259.86	(J/K)	V	=	42.8	(cc)	Cp	=	134.33	(J/K)		
Oxygen	delta	moles	=	0.00163235	delta	grams	=	0.0522332														
	G	=	-465.12	(J)	H	=	51.98	(J)	S	=	0.41	(J/K)	V	=	170.82	(cc)	Cp	=	0.06	(J/K)		

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Model 828 Bokan

Temp (oC) = 980.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid	mass	=	63.62	(gm)	density	=	2.32	(gm/cc)	viscosity	=	3.72	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-1032814.47	(J)	H	=	-813736.05	(J)	S	=	174.76	(J/K)	V	=	27.45	(cc)	Cp	=	90.3	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	58.28	0.47	17.17	1.3	0	5.66	0.35	1.61	0	0	5.22	4.02	1.87	0.33	3.73	0	0	0	0	
opx	mass	=	0.47	(gm)	density	=	3.39	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.64Mg1.22Fe'''0.02Ti0.00Al0.11Si1.93O6																		
	G	=	-6775.82	(J)	H	=	-5496.17	(J)	S	=	1.02	(J/K)	V	=	0.14	(cc)	Cp	=	0.55	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-64.13	93.23	64.22	4.16	-3.84	6.23	0.13													
feldspar	mass	=	1.57	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.29Ca0.71Al1.71Si2.29O8																			
	G	=	-26492.74	(J)	H	=	-22033.96	(J)	S	=	3.56	(J/K)	V	=	0.59	(cc)	Cp	=	1.9	(J/K)
	albite	anorthite	sanidine																	
	28.74	70.62	0.64																	
spinel	mass	=	0.29	(gm)	density	=	4.74	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.18Fe'''1.19Al0.24Cr0.00Ti0.29O4																			
	G	=	-2308.39	(J)	H	=	-1581.67	(J)	S	=	0.58	(J/K)	V	=	0.06	(cc)	Cp	=	0.27	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-6.05	59.6	17.86	28.59															
water	mass	=	0.63	(gm)	density	=	0.18	(gm/cc)												
	H2O																			
	G	=	-15191.91	(J)	H	=	-7301.51	(J)	S	=	6.29	(J/K)	V	=	3.49	(cc)	Cp	=	1.96	(J/K)
Total	solids	mass	=	2.95	(gm)	density	=	0.69	(gm/cc)											
	G	=	-50768.86	(J)	H	=	-36413.31	(J)	S	=	11.45	(J/K)	V	=	4.27	(cc)	Cp	=	4.68	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	32.84	grams)											
opx	mass	=	1.67	(gm)	density	=	3.38	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.61Mg1.25Fe'''0.02Ti0.00Al0.11Si1.93O6																		
	G	=	-24454.62	(J)	H	=	-19859.53	(J)	S	=	3.67	(J/K)	V	=	0.49	(cc)	Cp	=	1.99	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-61.19	93.06	61.29	4.3	-3.93	6.34	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114707.23	(J)	H	=	-94623.81	(J)	S	=	16.02	(J/K)	V	=	2.26	(cc)	Cp	=	8.55	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	22.09	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.20Ca0.80Al1.80Si2.20O8																			
	G	=	-372401.85	(J)	H	=	-310202.97	(J)	S	=	49.62	(J/K)	V	=	8.22	(cc)	Cp	=	26.66	(J/K)
	albite	anorthite	sanidine																	
	19.65	79.94	0.4																	
spinel	mass	=	1.64	(gm)	density	=	4.71	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.20Fe'''1.14Al0.26Cr0.00Ti0.30O4																			
	G	=	-13329.81	(J)	H	=	-9194.87	(J)	S	=	3.3	(J/K)	V	=	0.35	(cc)	Cp	=	1.52	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-7.66	57.12	20.41	30.12															
Viscosity	of	the	System:	4.84	(log	10	poise)													
System	mass	=	99.41	(gm)	density	=	2.31	(gm/cc)												
	G	=	-1608476.84	(J)	H	=	-1284030.53	(J)	S	=	258.81	(J/K)	V	=	43.04	(cc)	Cp	=	133.7	(J/K)

Oxygen	delta	moles	=	0.00187889	delta	grams	=	0.0601223											
	G	=	-533.01	(J)	H	=	59.49	(J)	S	=	0.47	(J/K)	V	=	195.84	(cc)	Cp	=	0.07	(J/K)

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Model 828 Bokan

Temp (oC) = 975.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	61.42	(gm)	density	=	2.31	(gm/cc)	viscosity	=	3.8	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-997585.25	(J)	H	=	-787240.74	(J)	S	=	168.46	(J/K)	V	=	26.56	(cc)	Cp	=	87.01	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	58.81	0.44	16.99	1.27	0	5.46	0.36	1.51	0	0	5.05	4.08	1.94	0.34	3.75	0	0	0	0	
opx	mass	=	0.42	(gm)	density	=	3.39	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.66Mg1.21Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-6042.81	(J)	H	=	-4904.93	(J)	S	=	0.91	(J/K)	V	=	0.12	(cc)	Cp	=	0.49	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-65.62	93.34	65.67	4.09	-3.8	6.18	0.13													
feldspar	mass	=	1.47	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.30Ca0.69Al1.69Si2.31O8																			
	G	=	-24722.48	(J)	H	=	-20579.17	(J)	S	=	3.32	(J/K)	V	=	0.55	(cc)	Cp	=	1.78	(J/K)
	albite	anorthite	sanidine																	
	30.26	69.06	0.68																	
spinel	mass	=	0.26	(gm)	density	=	4.75	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.17Fe'''1.21Al0.23Cr0.00Ti0.28O4																			
	G	=	-2086.7	(J)	H	=	-1429.68	(J)	S	=	0.53	(J/K)	V	=	0.06	(cc)	Cp	=	0.24	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5.55	60.43	17.06	28.05															
water	mass	=	0.7	(gm)	density	=	0.18	(gm/cc)												
	H2O																			
	G	=	-16886.17	(J)	H	=	-8143.58	(J)	S	=	7	(J/K)	V	=	3.86	(cc)	Cp	=	2.19	(J/K)
Total	solids	mass	=	2.84	(gm)	density	=	0.62	(gm/cc)											
	G	=	-49738.16	(J)	H	=	-35057.36	(J)	S	=	11.76	(J/K)	V	=	4.59	(cc)	Cp	=	4.7	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	35.15	grams)											
opx	mass	=	2.13	(gm)	density	=	3.38	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.62Mg1.25Fe'''0.02Ti0.00Al0.11Si1.93O6																		
	G	=	-31174.6	(J)	H	=	-25342.07	(J)	S	=	4.67	(J/K)	V	=	0.63	(cc)	Cp	=	2.54	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-61.83	93.1	61.93	4.27	-3.91	6.31	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114627.21	(J)	H	=	-94666.57	(J)	S	=	15.99	(J/K)	V	=	2.25	(cc)	Cp	=	8.55	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	23.66	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.20Ca0.79Al1.79Si2.21O8																			
	G	=	-398583.78	(J)	H	=	-332340.81	(J)	S	=	53.05	(J/K)	V	=	8.81	(cc)	Cp	=	28.54	(J/K)
	albite	anorthite	sanidine																	
	20.26	79.32	0.42																	
spinel	mass	=	1.93	(gm)	density	=	4.72	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.20Fe'''1.15Al0.25Cr0.00Ti0.30O4																			

	G	=	-15601.59	(J)	H	=	-10773.57	(J)	S	=	3.87	(J/K)	V	=	0.41	(cc)	Cp	=	1.78	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-7.42	57.49	20.04	29.89															
Viscosity	of	the	System:	5.08	(log	10	poise)													
System	mass	=	99.42	(gm)	density	=	2.3	(gm/cc)												
	G	=	-1607310.58	(J)	H	=	-1285421.12	(J)	S	=	257.8	(J/K)	V	=	43.25	(cc)	Cp	=	133.12	(J/K)
Oxygen	delta	moles	=	0.00210503	delta	grams	=	0.0673583												
	G	=	-594.51	(J)	H	=	66.28	(J)	S	=	0.53	(J/K)	V	=	218.53	(cc)	Cp	=	0.08	(J/K)

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Model 828 Bokan

Temp (oC) = 970.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	59.37	(gm)	density	=	2.31	(gm/cc)	viscosity	=	3.88	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-964852.27	(J)	H	=	-762630.51	(J)	S	=	162.61	(J/K)	V	=	25.74	(cc)	Cp	=	83.96	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	59.33	0.41	16.82	1.24	0	5.27	0.37	1.41	0	0	4.9	4.13	2	0.35	3.77	0	0	0	0	
opx	mass	=	0.37	(gm)	density	=	3.4	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.67Mg1.20Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-5411.9	(J)	H	=	-4395.82	(J)	S	=	0.82	(J/K)	V	=	0.11	(cc)	Cp	=	0.44	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-67.12	93.46	67.11	4.04	-3.76	6.14	0.14													
feldspar	mass	=	1.38	(gm)	density	=	2.66	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.32Ca0.67Al1.67Si2.33O8																			
	G	=	-23179.44	(J)	H	=	-19311.15	(J)	S	=	3.11	(J/K)	V	=	0.52	(cc)	Cp	=	1.67	(J/K)
	albite	anorthite	sanidine																	
	31.81	67.46	0.73																	
spinel	mass	=	0.24	(gm)	density	=	4.76	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.22Al0.22Cr0.00Ti0.28O4																			
	G	=	-1894.02	(J)	H	=	-1297.74	(J)	S	=	0.48	(J/K)	V	=	0.05	(cc)	Cp	=	0.22	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5.07	61.24	16.32	27.51															
water	mass	=	0.76	(gm)	density	=	0.18	(gm/cc)												
	H2O																			
	G	=	-18468.4	(J)	H	=	-8937.14	(J)	S	=	7.66	(J/K)	V	=	4.21	(cc)	Cp	=	2.41	(J/K)
Total	solids	mass	=	2.76	(gm)	density	=	0.56	(gm/cc)											
	G	=	-48953.76	(J)	H	=	-33941.84	(J)	S	=	12.07	(J/K)	V	=	4.88	(cc)	Cp	=	4.74	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	37.3	grams)											
opx	mass	=	2.54	(gm)	density	=	3.38	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.63Mg1.24Fe'''0.02Ti0.00Al0.11Si1.93O6																		
	G	=	-37157.17	(J)	H	=	-30235.85	(J)	S	=	5.57	(J/K)	V	=	0.75	(cc)	Cp	=	3.03	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-62.44	93.14	62.53	4.24	-3.89	6.29	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114547.37	(J)	H	=	-94709.3	(J)	S	=	15.95	(J/K)	V	=	2.25	(cc)	Cp	=	8.54	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													

feldspar	mass	=	25.12	(gm)	density	=	2.69	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.21Ca0.79Al1.79Si2.21O8																			
	G	=	-422979.64	(J)	H	=	-353032.62	(J)	S	=	56.24	(J/K)	V	=	9.36	(cc)	Cp	=	30.29	(J/K)
	albite	anorthite	sanidine																	
	20.85	78.72	0.44																	
spinel	mass	=	2.19	(gm)	density	=	4.72	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.20Fe'''1.16Al0.25Cr0.00Ti0.30O4																			
	G	=	-17649.2	(J)	H	=	-12201.53	(J)	S	=	4.38	(J/K)	V	=	0.46	(cc)	Cp	=	2.02	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-7.2	57.84	19.68	29.68															
Viscosity	of	the	System:	5.34	(log	10	poise)													
System	mass	=	99.42	(gm)	density	=	2.29	(gm/cc)												
	G	=	-1606139.4	(J)	H	=	-1286751.65	(J)	S	=	256.82	(J/K)	V	=	43.45	(cc)	Cp	=	132.58	(J/K)
Oxygen	delta	moles	=	0.00231317	delta	grams	=	0.0740187												
	G	=	-650.39	(J)	H	=	72.42	(J)	S	=	0.58	(J/K)	V	=	239.18	(cc)	Cp	=	0.08	(J/K)

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Model 828 Bokan

Temp (oC)	=	965.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	57.46	(gm)	density	=	2.3	(gm/cc)	viscosity	=	3.95	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-934303.41	(J)	H	=	-739667.26	(J)	S	=	157.14	(J/K)	V	=	24.97	(cc)	Cp	=	81.12	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	59.83	0.39	16.65	1.21	0	5.08	0.38	1.32	0	0	4.75	4.19	2.07	0.37	3.78	0	0	0	0	
opx	mass	=	0.34	(gm)	density	=	3.41	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.69Mg1.19Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-4865.54	(J)	H	=	-3954.75	(J)	S	=	0.74	(J/K)	V	=	0.1	(cc)	Cp	=	0.4	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-68.64	93.58	68.57	3.99	-3.73	6.1	0.14													
feldspar	mass	=	1.3	(gm)	density	=	2.66	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.33Ca0.66Al1.66Si2.34O8																			
	G	=	-21825.48	(J)	H	=	-18198.59	(J)	S	=	2.93	(J/K)	V	=	0.49	(cc)	Cp	=	1.57	(J/K)
	albite	anorthite	sanidine																	
	33.38	65.83	0.78																	
spinel	mass	=	0.22	(gm)	density	=	4.77	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.24Al0.22Cr0.00Ti0.27O4																			
	G	=	-1725.41	(J)	H	=	-1182.37	(J)	S	=	0.44	(J/K)	V	=	0.05	(cc)	Cp	=	0.2	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.63	62.05	15.62	26.97															
water	mass	=	0.83	(gm)	density	=	0.18	(gm/cc)												
	H2O																			
	G	=	-19952.2	(J)	H	=	-9688.27	(J)	S	=	8.29	(J/K)	V	=	4.53	(cc)	Cp	=	2.61	(J/K)
Total	solids	mass	=	2.68	(gm)	density	=	0.52	(gm/cc)											
	G	=	-48368.63	(J)	H	=	-33023.98	(J)	S	=	12.39	(J/K)	V	=	5.16	(cc)	Cp	=	4.78	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	39.28	grams)											
opx	mass	=	2.92	(gm)	density	=	3.38	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.63Mg1.23Fe'''0.02Ti0.00Al0.11Si1.93O6																		

	G	=	-42504.91	(J)	H	=	-34622.76	(J)	S	=	6.36	(J/K)	V	=	0.86	(cc)	Cp	=	3.47	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-63.04	93.18	63.11	4.21	-3.87	6.27	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114467.69	(J)	H	=	-94752.01	(J)	S	=	15.92	(J/K)	V	=	2.25	(cc)	Cp	=	8.54	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	26.5	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.21Ca0.78Al1.78Si2.22O8																			
	G	=	-445817.73	(J)	H	=	-372464.58	(J)	S	=	59.22	(J/K)	V	=	9.87	(cc)	Cp	=	31.94	(J/K)
	albite	anorthite	sanidine																	
	21.42	78.13	0.45																	
spinel	mass	=	2.43	(gm)	density	=	4.73	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.19Fe'''1.16Al0.25Cr0.00Ti0.29O4																			
	G	=	-19501.9	(J)	H	=	-13498.7	(J)	S	=	4.85	(J/K)	V	=	0.51	(cc)	Cp	=	2.24	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-6.99	58.17	19.36	29.46															
Viscosity	of	the	System:	5.63	(log	10	poise)													
System	mass	=	99.43	(gm)	density	=	2.28	(gm/cc)												
	G	=	-1604964.27	(J)	H	=	-1288029.29	(J)	S	=	255.88	(J/K)	V	=	43.63	(cc)	Cp	=	132.08	(J/K)
Oxygen	delta	moles	=	0.00250535	delta	grams	=	0.0801681												
	G	=	-701.27	(J)	H	=	77.99	(J)	S	=	0.63	(J/K)	V	=	258.01	(cc)	Cp	=	0.09	(J/K)

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Model 828 Bokan

Temp (oC)	=	960.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	55.68	(gm)	density	=	2.3	(gm/cc)	viscosity	=	4.03	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-905677.79	(J)	H	=	-718152.11	(J)	S	=	152.01	(J/K)	V	=	24.25	(cc)	Cp	=	78.46	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	60.32	0.37	16.47	1.18	0	4.9	0.4	1.24	0	0	4.6	4.23	2.13	0.38	3.79	0	0	0	0	
opx	mass	=	0.31	(gm)	density	=	3.41	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.70Mg1.17Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-4389.71	(J)	H	=	-3570.44	(J)	S	=	0.66	(J/K)	V	=	0.09	(cc)	Cp	=	0.36	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-70.18	93.72	70.02	3.94	-3.7	6.06	0.14													
feldspar	mass	=	1.23	(gm)	density	=	2.66	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.35Ca0.64Al1.64Si2.36O8																			
	G	=	-20629.6	(J)	H	=	-17216.03	(J)	S	=	2.77	(J/K)	V	=	0.46	(cc)	Cp	=	1.48	(J/K)
	albite	anorthite	sanidine																	
	34.97	64.19	0.84																	
spinel	mass	=	0.2	(gm)	density	=	4.78	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.15Fe'''1.26Al0.21Cr0.00Ti0.26O4																			
	G	=	-1576.91	(J)	H	=	-1080.85	(J)	S	=	0.4	(J/K)	V	=	0.04	(cc)	Cp	=	0.19	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.21	62.84	14.95	26.42															
water	mass	=	0.89	(gm)	density	=	0.18	(gm/cc)												
	H2O																			

	G	=	-21348.96	(J)	H	=	-10402.07	(J)	S	=	8.87	(J/K)	V	=	4.82	(cc)	Cp	=	2.8	(J/K)
Total	solids	mass	=	2.62	(gm)	density	=	0.48	(gm/cc)											
	G	=	-47945.17	(J)	H	=	-32269.39	(J)	S	=	12.71	(J/K)	V	=	5.42	(cc)	Cp	=	4.84	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	41.13	grams)											
opx	mass	=	3.25	(gm)	density	=	3.39	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.64Mg1.23Fe'''0.02Ti0.00Al0.11Si1.93O6																		
	G	=	-47302.79	(J)	H	=	-38570.62	(J)	S	=	7.08	(J/K)	V	=	0.96	(cc)	Cp	=	3.87	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-63.61	93.22	63.67	4.19	-3.86	6.25	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114388.19	(J)	H	=	-94794.7	(J)	S	=	15.88	(J/K)	V	=	2.25	(cc)	Cp	=	8.54	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	27.79	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.22Ca0.78Al1.78Si2.22O8																			
	G	=	-467288.07	(J)	H	=	-390791.69	(J)	S	=	62.01	(J/K)	V	=	10.36	(cc)	Cp	=	33.48	(J/K)
	albite	anorthite	sanidine																	
	21.98	77.55	0.47																	
spinel	mass	=	2.65	(gm)	density	=	4.73	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.19Fe'''1.17Al0.25Cr0.00Ti0.29O4																			
	G	=	-21183.96	(J)	H	=	-14681.55	(J)	S	=	5.27	(J/K)	V	=	0.56	(cc)	Cp	=	2.44	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-6.8	58.49	19.05	29.26															
Viscosity	of	the	System:	5.97	(log	10	poise)													
System	mass	=	99.43	(gm)	density	=	2.27	(gm/cc)												
	G	=	-1603785.98	(J)	H	=	-1289260.06	(J)	S	=	254.96	(J/K)	V	=	43.79	(cc)	Cp	=	131.62	(J/K)
Oxygen	delta	moles	=	0.00268325	delta	grams	=	0.0858609												
	G	=	-747.7	(J)	H	=	83.04	(J)	S	=	0.67	(J/K)	V	=	275.21	(cc)	Cp	=	0.1	(J/K)

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Model 828 Bokan

Temp (oC)	=	955.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	54.01	(gm)	density	=	2.29	(gm/cc)	viscosity	=	4.1	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-878756.31	(J)	H	=	-697918.11	(J)	S	=	147.19	(J/K)	V	=	23.56	(cc)	Cp	=	75.97	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	60.8	0.35	16.3	1.15	0	4.72	0.41	1.17	0	0	4.46	4.27	2.19	0.39	3.81	0	0	0	0	
opx	mass	=	0.28	(gm)	density	=	3.42	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.71Mg1.16Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-3973.1	(J)	H	=	-3233.81	(J)	S	=	0.6	(J/K)	V	=	0.08	(cc)	Cp	=	0.33	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-71.74	93.86	71.49	3.9	-3.67	6.03	0.14													
feldspar	mass	=	1.16	(gm)	density	=	2.66	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.37Ca0.63Al1.63Si2.37O8																			
	G	=	-19566.39	(J)	H	=	-16342.61	(J)	S	=	2.62	(J/K)	V	=	0.44	(cc)	Cp	=	1.41	(J/K)
	albite	anorthite	sanidine																	
	36.58	62.52	0.9																	

spinel mass = 0.19 (gm) density = 4.78 (gm/cc) (analysis in mole %)
Fe''1.12Mg0.14Fe'''1.27Al0.21Cr0.00Ti0.26O4
G = -1445.32 (J) H = -990.97 (J) S = 0.37 (J/K) V = 0.04 (cc) Cp = 0.17 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -3.82 63.62 14.33 25.87

water mass = 0.94 (gm) density = 0.18 (gm/cc)
H2O
G = -22668.26 (J) H = -11082.82 (J) S = 9.43 (J/K) V = 5.1 (cc) Cp = 2.99 (J/K)

Total solids mass = 2.57 (gm) density = 0.45 (gm/cc)
G = -47653.07 (J) H = -31650.21 (J) S = 13.03 (J/K) V = 5.66 (cc) Cp = 4.9 (J/K)

Summary of all fractionated phases: (total mass = 42.86 grams)

opx mass = 3.56 (gm) density = 3.39 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.07Fe''0.64Mg1.23Fe'''0.02Ti0.00Al0.11Si1.93O6
G = -51621.71 (J) H = -42135.99 (J) S = 7.72 (J/K) V = 1.05 (cc) Cp = 4.22 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-64.17 93.26 64.21 4.17 -3.84 6.24 0.13

cpx mass = 7.44 (gm) density = 3.3 (gm/cc) (analysis in mole %)
cpx Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6
G = -114308.86 (J) H = -94837.37 (J) S = 15.85 (J/K) V = 2.25 (cc) Cp = 8.53 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
41.95 15.49 24.27 10.61 -5.51 11.75 1.43

feldspar mass = 29.02 (gm) density = 2.68 (gm/cc) (analysis in mole %)
K0.00Na0.23Ca0.77Al1.77Si2.23O8
G = -487549.6 (J) H = -408143.51 (J) S = 64.63 (J/K) V = 10.82 (cc) Cp = 34.94 (J/K)
albite anorthite sanidine
22.53 76.99 0.48

spinel mass = 2.85 (gm) density = 4.73 (gm/cc) (analysis in mole %)
Fe''1.10Mg0.19Fe'''1.18Al0.24Cr0.00Ti0.29O4
G = -22715.67 (J) H = -15763.85 (J) S = 5.66 (J/K) V = 0.6 (cc) Cp = 2.62 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -6.62 58.79 18.76 29.06

Viscosity of the System: 6.38 (log 10 poise)

System mass = 99.44 (gm) density = 2.26 (gm/cc)
G = -1602605.22 (J) H = -1290449.03 (J) S = 254.07 (J/K) V = 43.94 (cc) Cp = 131.19 (J/K)

Oxygen delta moles = 0.00284833 delta grams = 0.0911432
G = -790.13 (J) H = 87.64 (J) S = 0.71 (J/K) V = 290.96 (cc) Cp = 0.1 (J/K)

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Model 828 Bokan

Temp (oC) = 950.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid mass = 52.43 (gm) density = 2.29 (gm/cc) viscosity = 4.17 (log 10 poise) (analysis in wt %)
G = -853354.04 (J) H = -678824.48 (J) S = 142.63 (J/K) V = 22.92 (cc) Cp = 73.63 (J/K)
SiO2 TiO2 Al2O3 Fe2O3 Cr2O3 FeO MnO MgO NiO CoO CaO Na2O K2O P2O5 H2O CO2 SO3 Cl2O-1 F2O-1
61.27 0.33 16.13 1.12 0 4.54 0.42 1.09 0 0 4.32 4.31 2.25 0.4 3.82 0 0 0 0

opx mass = 0.25 (gm) density = 3.42 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.06Fe''0.73Mg1.15Fe'''0.02Ti0.00Al0.10Si1.94O6

	G	=	-3606.55	(J)	H	=	-2937.49	(J)	S	=	0.55	(J/K)	V	=	0.07	(cc)	Cp	=	0.3	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-73.32	94.02	72.95	3.85	-3.65	6	0.14													
feldspar	mass	=	1.11	(gm)	density	=	2.65	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.38Ca0.61Al1.61Si2.39O8																			
	G	=	-18614.94	(J)	H	=	-15561.15	(J)	S	=	2.5	(J/K)	V	=	0.42	(cc)	Cp	=	1.34	(J/K)
	albite	anorthite	sanidine																	
	38.19	60.84	0.96																	
spinel	mass	=	0.17	(gm)	density	=	4.79	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.12Mg0.14Fe'''1.29Al0.21Cr0.00Ti0.25O4																			
	G	=	-1328.08	(J)	H	=	-910.93	(J)	S	=	0.34	(J/K)	V	=	0.04	(cc)	Cp	=	0.16	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-3.44	64.39	13.74	25.32															
water	mass	=	1	(gm)	density	=	0.19	(gm/cc)												
	H2O																			
	G	=	-23918.2	(J)	H	=	-11734.12	(J)	S	=	9.96	(J/K)	V	=	5.36	(cc)	Cp	=	3.17	(J/K)
Total	solids	mass	=	2.53	(gm)	density	=	0.43	(gm/cc)											
	G	=	-47467.76	(J)	H	=	-31143.69	(J)	S	=	13.34	(J/K)	V	=	5.89	(cc)	Cp	=	4.97	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	44.48	grams)											
opx	mass	=	3.83	(gm)	density	=	3.39	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.65Mg1.22Fe'''0.02Ti0.00Al0.11Si1.93O6																		
	G	=	-55521.21	(J)	H	=	-45366.38	(J)	S	=	8.3	(J/K)	V	=	1.13	(cc)	Cp	=	4.55	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-64.71	93.31	64.73	4.15	-3.83	6.22	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114229.71	(J)	H	=	-94880.02	(J)	S	=	15.81	(J/K)	V	=	2.25	(cc)	Cp	=	8.53	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	30.18	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.00Na0.23Ca0.76Al1.76Si2.24O8																			
	G	=	-506735.73	(J)	H	=	-424628.8	(J)	S	=	67.1	(J/K)	V	=	11.25	(cc)	Cp	=	36.33	(J/K)
	albite	anorthite	sanidine																	
	23.08	76.42	0.5																	
spinel	mass	=	3.03	(gm)	density	=	4.74	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.18Fe'''1.18Al0.24Cr0.00Ti0.29O4																			
	G	=	-24114.11	(J)	H	=	-16757.15	(J)	S	=	6.01	(J/K)	V	=	0.64	(cc)	Cp	=	2.79	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-6.45	59.08	18.49	28.87															
Viscosity	of	the	System:	6.97	(log	10	poise)													
System	mass	=	99.44	(gm)	density	=	2.26	(gm/cc)												
	G	=	-1601422.55	(J)	H	=	-1291600.52	(J)	S	=	253.2	(J/K)	V	=	44.08	(cc)	Cp	=	130.79	(J/K)
Oxygen	delta	moles	=	0.00300181	delta	grams	=	0.0960544												
	G	=	-828.94	(J)	H	=	91.83	(J)	S	=	0.75	(J/K)	V	=	305.39	(cc)	Cp	=	0.11	(J/K)

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Model 828 Bokan

Temp (oC) = 945.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	50.94	(gm)	density	=	2.28	(gm/cc)	viscosity	=	4.25	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-829314.25	(J)	H	=	-660752.01	(J)	S	=	138.32	(J/K)	V	=	22.31	(cc)	Cp	=	71.42	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	61.72	0.31	15.96	1.09	0	4.38	0.43	1.03	0	0	4.19	4.34	2.32	0.41	3.83	0	0	0	0	
opx	mass	=	0.23	(gm)	density	=	3.43	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.74Mg1.14Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-3282.55	(J)	H	=	-2675.44	(J)	S	=	0.5	(J/K)	V	=	0.07	(cc)	Cp	=	0.27	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-74.92	94.17	74.43	3.82	-3.62	5.98	0.14													
feldspar	mass	=	1.06	(gm)	density	=	2.65	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.40Ca0.59Al1.59Si2.41O8																			
	G	=	-17757.97	(J)	H	=	-14857.42	(J)	S	=	2.38	(J/K)	V	=	0.4	(cc)	Cp	=	1.28	(J/K)
	albite	anorthite	sanidine																	
	39.81	59.16	1.03																	
spinel	mass	=	0.16	(gm)	density	=	4.8	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.12Mg0.13Fe'''1.30Al0.20Cr0.00Ti0.25O4																			
	G	=	-1223.08	(J)	H	=	-839.29	(J)	S	=	0.31	(J/K)	V	=	0.03	(cc)	Cp	=	0.15	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-3.09	65.14	13.18	24.78															
water	mass	=	1.05	(gm)	density	=	0.19	(gm/cc)												
	H2O																			
	G	=	-25105.61	(J)	H	=	-12359.03	(J)	S	=	10.46	(J/K)	V	=	5.61	(cc)	Cp	=	3.34	(J/K)
Total	solids	mass	=	2.5	(gm)	density	=	0.41	(gm/cc)											
	G	=	-47369.21	(J)	H	=	-30731.18	(J)	S	=	13.65	(J/K)	V	=	6.11	(cc)	Cp	=	5.04	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	46.01	grams)											
opx	mass	=	4.08	(gm)	density	=	3.4	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.07Fe''0.65Mg1.22Fe'''0.02Ti0.00Al0.10Si1.93O6																		
	G	=	-59051.62	(J)	H	=	-48301.96	(J)	S	=	8.82	(J/K)	V	=	1.2	(cc)	Cp	=	4.84	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-65.24	93.35	65.23	4.13	-3.82	6.21	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114150.73	(J)	H	=	-94922.64	(J)	S	=	15.78	(J/K)	V	=	2.25	(cc)	Cp	=	8.52	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	31.28	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.24Ca0.76Al1.76Si2.24O8																			
	G	=	-524958.89	(J)	H	=	-440339.16	(J)	S	=	69.44	(J/K)	V	=	11.67	(cc)	Cp	=	37.64	(J/K)
	albite	anorthite	sanidine																	
	23.62	75.87	0.52																	
spinel	mass	=	3.2	(gm)	density	=	4.74	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.18Fe'''1.19Al0.24Cr0.00Ti0.29O4																			
	G	=	-25393.77	(J)	H	=	-17671.24	(J)	S	=	6.34	(J/K)	V	=	0.68	(cc)	Cp	=	2.94	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-6.29	59.36	18.24	28.68															
Viscosity	of	the	System:	8.32	(log	10	poise)													
System	mass	=	99.45	(gm)	density	=	2.25	(gm/cc)												
	G	=	-1600238.48	(J)	H	=	-1292718.2	(J)	S	=	252.35	(J/K)	V	=	44.21	(cc)	Cp	=	130.41	(J/K)

Oxygen	delta	moles	=	0.00314475	delta	grams	=	0.100628											
	G	=	-864.47	(J)	H	=	95.64	(J)	S	=	0.79	(J/K)	V	=	318.62	(cc)	Cp	=	0.11	(J/K)

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Model 828 Bokan

Temp (oC) = 940.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	49.52	(gm)	density	=	2.28	(gm/cc)	viscosity	=	4.32	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-806503.51	(J)	H	=	-643599.32	(J)	S	=	134.23	(J/K)	V	=	21.73	(cc)	Cp	=	69.32	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	62.17	0.29	15.79	1.06	0	4.21	0.44	0.96	0	0	4.06	4.37	2.38	0.42	3.84	0	0	0	0	
opx	mass	=	0.21	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.76Mg1.12Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-2994.96	(J)	H	=	-2442.73	(J)	S	=	0.46	(J/K)	V	=	0.06	(cc)	Cp	=	0.25	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-76.53	94.34	75.92	3.78	-3.6	5.95	0.14													
feldspar	mass	=	1.01	(gm)	density	=	2.65	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.41Ca0.57Al1.57Si2.43O8																			
	G	=	-16981.15	(J)	H	=	-14219.63	(J)	S	=	2.28	(J/K)	V	=	0.38	(cc)	Cp	=	1.23	(J/K)
	albite	anorthite	sanidine																	
	41.42	57.48	1.1																	
spinel	mass	=	0.15	(gm)	density	=	4.81	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.12Mg0.13Fe'''1.32Al0.20Cr0.00Ti0.24O4																			
	G	=	-1128.59	(J)	H	=	-774.85	(J)	S	=	0.29	(J/K)	V	=	0.03	(cc)	Cp	=	0.14	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-2.77	65.88	12.64	24.24															
water	mass	=	1.1	(gm)	density	=	0.19	(gm/cc)												
	H2O																			
	G	=	-26236.31	(J)	H	=	-12960.12	(J)	S	=	10.94	(J/K)	V	=	5.83	(cc)	Cp	=	3.51	(J/K)
Total	solids	mass	=	2.47	(gm)	density	=	0.39	(gm/cc)											
	G	=	-47341.01	(J)	H	=	-30397.33	(J)	S	=	13.96	(J/K)	V	=	6.31	(cc)	Cp	=	5.12	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	47.46	grams)											
opx	mass	=	4.31	(gm)	density	=	3.4	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.66Mg1.21Fe'''0.02Ti0.00Al0.10Si1.93O6																		
	G	=	-62255.75	(J)	H	=	-50976.87	(J)	S	=	9.29	(J/K)	V	=	1.27	(cc)	Cp	=	5.11	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-65.74	93.39	65.72	4.12	-3.81	6.2	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.3	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-114071.92	(J)	H	=	-94965.25	(J)	S	=	15.74	(J/K)	V	=	2.25	(cc)	Cp	=	8.52	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	32.34	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.24Ca0.75Al1.75Si2.25O8																			
	G	=	-542314.19	(J)	H	=	-455352.03	(J)	S	=	71.66	(J/K)	V	=	12.06	(cc)	Cp	=	38.89	(J/K)
	albite	anorthite	sanidine																	
	24.15	75.32	0.53																	
spinel	mass	=	3.36	(gm)	density	=	4.75	(gm/cc)	(analysis	in	mole	%)								

Fe''1.10Mg0.18Fe'''1.19Al0.24Cr0.00Ti0.28O4

	G	=	-26567.02	(J)	H	=	-18514.45	(J)	S	=	6.64	(J/K)	V	=	0.71	(cc)	Cp	=	3.09	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-6.14	59.63	18.01	28.5															

Viscosity of the System cannot be computed.

System	mass	=	99.45	(gm)	density	=	2.24	(gm/cc)												
	G	=	-1599053.4	(J)	H	=	-1293805.25	(J)	S	=	251.52	(J/K)	V	=	44.33	(cc)	Cp	=	130.05	(J/K)
Oxygen	delta	moles	=	0.00327805	delta	grams	=	0.104894												
	G	=	-897.01	(J)	H	=	99.11	(J)	S	=	0.82	(J/K)	V	=	330.77	(cc)	Cp	=	0.12	(J/K)

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Model 828 Bokan

Temp (oC) = 935.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid	mass	=	48.18	(gm)	density	=	2.28	(gm/cc)	viscosity	=	4.39	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-784807.69	(J)	H	=	-627279.81	(J)	S	=	130.34	(J/K)	V	=	21.17	(cc)	Cp	=	67.34	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	62.61	0.27	15.62	1.03	0	4.05	0.46	0.91	0	0	3.93	4.39	2.44	0.44	3.85	0	0	0	0	

opx	mass	=	0.2	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.05Fe''0.77Mg1.11Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-2738.67	(J)	H	=	-2235.25	(J)	S	=	0.42	(J/K)	V	=	0.06	(cc)	Cp	=	0.23	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-78.15	94.5	77.41	3.75	-3.58	5.93	0.14													

feldspar	mass	=	0.97	(gm)	density	=	2.64	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.43Ca0.56Al1.56Si2.44O8																			
	G	=	-16272.55	(J)	H	=	-13637.96	(J)	S	=	2.18	(J/K)	V	=	0.37	(cc)	Cp	=	1.18	(J/K)
	albite	anorthite	sanidine																	
	43.02	55.8	1.18																	

spinel	mass	=	0.14	(gm)	density	=	4.81	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.12Mg0.12Fe'''1.33Al0.19Cr0.00Ti0.24O4																			
	G	=	-1043.19	(J)	H	=	-716.64	(J)	S	=	0.27	(J/K)	V	=	0.03	(cc)	Cp	=	0.13	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-2.46	66.62	12.14	23.7															

water	mass	=	1.15	(gm)	density	=	0.19	(gm/cc)												
	H2O																			
	G	=	-27315.25	(J)	H	=	-13539.6	(J)	S	=	11.4	(J/K)	V	=	6.05	(cc)	Cp	=	3.67	(J/K)

Total	solids	mass	=	2.45	(gm)	density	=	0.38	(gm/cc)											
	G	=	-47369.67	(J)	H	=	-30129.44	(J)	S	=	14.26	(J/K)	V	=	6.5	(cc)	Cp	=	5.2	(J/K)

Summary of all fractionated phases: (total mass = 48.82 grams)

opx	mass	=	4.52	(gm)	density	=	3.4	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.66Mg1.21Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-65170.23	(J)	H	=	-53420.32	(J)	S	=	9.72	(J/K)	V	=	1.33	(cc)	Cp	=	5.35	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-66.24	93.44	66.18	4.1	-3.8	6.19	0.13													

cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113993.29	(J)	H	=	-95007.83	(J)	S	=	15.71	(J/K)	V	=	2.25	(cc)	Cp	=	8.51	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													

41.95 15.49 24.27 10.61 -5.51 11.75 1.43

feldspar mass = 33.35 (gm) density = 2.68 (gm/cc) (analysis in mole %)
K0.01Na0.25Ca0.75Al1.75Si2.25O8
G = -558882.32 (J) H = -469733.07 (J) S = 73.76 (J/K) V = 12.44 (cc) Cp = 40.09 (J/K)
albite anorthite sanidine
24.68 74.77 0.55

spinel mass = 3.51 (gm) density = 4.75 (gm/cc) (analysis in mole %)
Fe''1.11Mg0.18Fe'''1.20Al0.24Cr0.00Ti0.28O4
G = -27644.5 (J) H = -19293.93 (J) S = 6.91 (J/K) V = 0.74 (cc) Cp = 3.22 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -6 59.89 17.79 28.32

Viscosity of the System cannot be computed.

System mass = 99.46 (gm) density = 2.24 (gm/cc)
G = -1597867.7 (J) H = -1294864.4 (J) S = 250.7 (J/K) V = 44.44 (cc) Cp = 129.71 (J/K)

Oxygen delta moles = 0.0034025 delta grams = 0.108876
G = -926.81 (J) H = 102.27 (J) S = 0.85 (J/K) V = 341.91 (cc) Cp = 0.12 (J/K)

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Model 828 Bokan

Temp (oC) = 930.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid mass = 46.91 (gm) density = 2.27 (gm/cc) viscosity = 4.46 (log 10 poise) (analysis in wt %)
G = -764128.78 (J) H = -611719.22 (J) S = 126.63 (J/K) V = 20.64 (cc) Cp = 65.45 (J/K)
SiO2 TiO2 Al2O3 Fe2O3 Cr2O3 FeO MnO MgO NiO CoO CaO Na2O K2O P2O5 H2O CO2 SO3 Cl2O-1 F2O-1
63.04 0.26 15.45 1 0 3.9 0.47 0.85 0 0 3.81 4.41 2.5 0.45 3.85 0 0 0 0

opx mass = 0.18 (gm) density = 3.45 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.05Fe''0.79Mg1.10Fe'''0.02Ti0.00Al0.10Si1.94O6
G = -2509.46 (J) H = -2049.59 (J) S = 0.38 (J/K) V = 0.05 (cc) Cp = 0.21 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-79.79 94.67 78.91 3.72 -3.56 5.91 0.14

feldspar mass = 0.93 (gm) density = 2.64 (gm/cc) (analysis in mole %)
K0.01Na0.45Ca0.54Al1.54Si2.46O8
G = -15622.25 (J) H = -13104.23 (J) S = 2.09 (J/K) V = 0.35 (cc) Cp = 1.13 (J/K)
albite anorthite sanidine
44.61 54.13 1.26

spinel mass = 0.13 (gm) density = 4.82 (gm/cc) (analysis in mole %)
Fe''1.12Mg0.12Fe'''1.35Al0.19Cr0.00Ti0.23O4
G = -965.71 (J) H = -663.83 (J) S = 0.25 (J/K) V = 0.03 (cc) Cp = 0.12 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -2.17 67.34 11.66 23.17

water mass = 1.19 (gm) density = 0.19 (gm/cc)
H2O
G = -28346.68 (J) H = -14099.32 (J) S = 11.84 (J/K) V = 6.25 (cc) Cp = 3.83 (J/K)

Total solids mass = 2.43 (gm) density = 0.36 (gm/cc)
G = -47444.1 (J) H = -29916.98 (J) S = 14.56 (J/K) V = 6.68 (cc) Cp = 5.28 (J/K)

Summary of all fractionated phases: (total mass = 50.12 grams)

opx mass = 4.72 (gm) density = 3.4 (gm/cc) (analysis in mole %)

opx Na0.00Ca0.06Fe''0.67Mg1.20Fe'''0.02Ti0.00Al0.10Si1.94O6

G	=	-67826.55	(J)	H	=	-55657.45	(J)	S	=	10.11	(J/K)	V	=	1.39	(cc)	Cp	=	5.57	(J/K)
diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
-66.72	93.48	66.64	4.09	-3.79	6.18	0.13													

cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)						
cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
G	=	-113914.84	(J)	H	=	-95050.39	(J)	S	=	15.67	(J/K)	V	=	2.25	(cc)	Cp	=	8.51	(J/K)
diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
41.95	15.49	24.27	10.61	-5.51	11.75	1.43													

feldspar	mass	=	34.32	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)						
K0.01Na0.25Ca0.74Al1.74Si2.26O8																		
G	=	-574732	(J)	H	=	-483538.13	(J)	S	=	75.77	(J/K)	V	=	12.81	(cc)	Cp	=	41.24	(J/K)
albite	anorthite	sanidine																	
25.2	74.23	0.57																	

spinel	mass	=	3.65	(gm)	density	=	4.75	(gm/cc)	(analysis	in	mole	%)						
Fe''1.11Mg0.18Fe'''1.20Al0.23Cr0.00Ti0.28O4																		
G	=	-28635.4	(J)	H	=	-20015.86	(J)	S	=	7.16	(J/K)	V	=	0.77	(cc)	Cp	=	3.34	(J/K)
chromite	hercynite	magnetite	spinel	ulvospinel															
0	-5.87	60.14	17.58	28.15															

Viscosity	of	the	System	cannot	be	computed.												

System	mass	=	99.46	(gm)	density	=	2.23	(gm/cc)										
G	=	-1596681.67	(J)	H	=	-1295898.03	(J)	S	=	249.9	(J/K)	V	=	44.54	(cc)	Cp	=	129.4	(J/K)

Oxygen	delta	moles	=	0.00351881	delta	grams	=	0.112598										
G	=	-954.09	(J)	H	=	105.14	(J)	S	=	0.88	(J/K)	V	=	352.14	(cc)	Cp	=	0.13	(J/K)

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Model 828 Bokan

Temp (oC)	=	925.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids											

Liquid	mass	=	45.69	(gm)	density	=	2.27	(gm/cc)	viscosity	=	4.53	(log	10	poise)	(analysis	in	wt	%)
G	=	-744382.21	(J)	H	=	-596853.57	(J)	S	=	123.08	(J/K)	V	=	20.14	(cc)	Cp	=	63.65	(J/K)
SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
63.46	0.24	15.28	0.98	0	3.75	0.48	0.8	0	0	3.7	4.43	2.57	0.46	3.86	0	0	0	0	

opx	mass	=	0.17	(gm)	density	=	3.46	(gm/cc)	(analysis	in	mole	%)						
opx	Na0.00Ca0.05Fe''0.80Mg1.08Fe'''0.02Ti0.00Al0.10Si1.94O6																	
G	=	-2303.77	(J)	H	=	-1882.9	(J)	S	=	0.35	(J/K)	V	=	0.05	(cc)	Cp	=	0.19	(J/K)
diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
-81.44	94.85	80.41	3.69	-3.54	5.89	0.14													

feldspar	mass	=	0.9	(gm)	density	=	2.64	(gm/cc)	(analysis	in	mole	%)						
K0.01Na0.46Ca0.52Al1.52Si2.48O8																		
G	=	-15021.98	(J)	H	=	-12611.64	(J)	S	=	2.01	(J/K)	V	=	0.34	(cc)	Cp	=	1.09	(J/K)
albite	anorthite	sanidine																	
46.18	52.48	1.34																	

spinel	mass	=	0.12	(gm)	density	=	4.83	(gm/cc)	(analysis	in	mole	%)						
Fe''1.11Mg0.11Fe'''1.36Al0.19Cr0.00Ti0.23O4																		
G	=	-895.14	(J)	H	=	-615.75	(J)	S	=	0.23	(J/K)	V	=	0.02	(cc)	Cp	=	0.11	(J/K)
chromite	hercynite	magnetite	spinel	ulvospinel															
0	-1.89	68.04	11.2	22.65															

water	mass	=	1.24	(gm)	density	=	0.19	(gm/cc)

	H2O																	
	G	=	-29334.22	(J)	H	=	-14640.9	(J)	S	=	12.26	(J/K)	V	=	6.44	(cc)	Cp	=	3.98	(J/K)
Total	solids	mass	=	2.42	(gm)	density	=	0.35	(gm/cc)											
	G	=	-47555.12	(J)	H	=	-29751.19	(J)	S	=	14.85	(J/K)	V	=	6.85	(cc)	Cp	=	5.37	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	51.36	grams)											
opx	mass	=	4.89	(gm)	density	=	3.41	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.67Mg1.20Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-70251.98	(J)	H	=	-57709.97	(J)	S	=	10.46	(J/K)	V	=	1.44	(cc)	Cp	=	5.78	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-67.19	93.52	67.07	4.07	-3.78	6.17	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113836.56	(J)	H	=	-95092.93	(J)	S	=	15.64	(J/K)	V	=	2.25	(cc)	Cp	=	8.51	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	35.25	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.26Ca0.74Al1.74Si2.26O8																			
	G	=	-589921.99	(J)	H	=	-496814.95	(J)	S	=	77.68	(J/K)	V	=	13.16	(cc)	Cp	=	42.34	(J/K)
	albite	anorthite	sanidine																	
	25.72	73.7	0.59																	
spinel	mass	=	3.77	(gm)	density	=	4.76	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.17Fe'''1.21Al0.23Cr0.00Ti0.28O4																			
	G	=	-29547.73	(J)	H	=	-20685.58	(J)	S	=	7.39	(J/K)	V	=	0.79	(cc)	Cp	=	3.46	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5.75	60.38	17.38	27.99															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.46	(gm)	density	=	2.23	(gm/cc)												
	G	=	-1595495.58	(J)	H	=	-1296908.19	(J)	S	=	249.11	(J/K)	V	=	44.63	(cc)	Cp	=	129.09	(J/K)
Oxygen	delta	moles	=	0.00362758	delta	grams	=	0.116078												
	G	=	-979.05	(J)	H	=	107.74	(J)	S	=	0.91	(J/K)	V	=	361.51	(cc)	Cp	=	0.13	(J/K)

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Model 828 Bokan

Temp (oC)	=	920.47																
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids											
Liquid	mass	=	44.52	(gm)	density	=	2.27	(gm/cc)	viscosity	=	4.6	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-725494.62	(J)	H	=	-582627.5	(J)	S	=	119.69	(J/K)	V	=	19.65	(cc)	Cp	=	61.93	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	63.87	0.23	15.11	0.95	0	3.61	0.49	0.75	0	0	3.59	4.43	2.63	0.47	3.87	0	0	0	0	
opx	mass	=	0.15	(gm)	density	=	3.46	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.05Fe''0.82Mg1.07Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-2118.62	(J)	H	=	-1732.78	(J)	S	=	0.32	(J/K)	V	=	0.04	(cc)	Cp	=	0.18	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-83.1	95.02	81.92	3.66	-3.52	5.88	0.14													
feldspar	mass	=	0.87	(gm)	density	=	2.64	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.48Ca0.51Al1.51Si2.49O8																			
	G	=	-14464.84	(J)	H	=	-12154.47	(J)	S	=	1.94	(J/K)	V	=	0.33	(cc)	Cp	=	1.05	(J/K)
	albite	anorthite	sanidine																	

	47.73	50.84	1.43																	
spinel	mass	=	0.11	(gm)	density	=	4.83	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.11Fe'''1.37Al0.18Cr0.00Ti0.22O4																			
	G	=	-830.68	(J)	H	=	-571.82	(J)	S	=	0.22	(J/K)	V	=	0.02	(cc)	Cp	=	0.1	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-1.64	68.74	10.76	22.14															
water	mass	=	1.28	(gm)	density	=	0.19	(gm/cc)												
	H2O																			
	G	=	-30281.02	(J)	H	=	-15165.69	(J)	S	=	12.66	(J/K)	V	=	6.62	(cc)	Cp	=	4.13	(J/K)
Total	solids	mass	=	2.41	(gm)	density	=	0.34	(gm/cc)											
	G	=	-47695.15	(J)	H	=	-29624.77	(J)	S	=	15.14	(J/K)	V	=	7.02	(cc)	Cp	=	5.46	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	52.53	grams)											
opx	mass	=	5.06	(gm)	density	=	3.41	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.67Mg1.20Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-72470.18	(J)	H	=	-59596.78	(J)	S	=	10.79	(J/K)	V	=	1.48	(cc)	Cp	=	5.96	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-67.64	93.56	67.5	4.06	-3.78	6.16	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113758.46	(J)	H	=	-95135.44	(J)	S	=	15.6	(J/K)	V	=	2.25	(cc)	Cp	=	8.5	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	36.14	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.26Ca0.73Al1.73Si2.27O8																			
	G	=	-604502.77	(J)	H	=	-509604.43	(J)	S	=	79.5	(J/K)	V	=	13.5	(cc)	Cp	=	43.39	(J/K)
	albite	anorthite	sanidine																	
	26.23	73.16	0.61																	
spinel	mass	=	3.89	(gm)	density	=	4.76	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.17Fe'''1.21Al0.23Cr0.00Ti0.28O4																			
	G	=	-30388.5	(J)	H	=	-21307.8	(J)	S	=	7.61	(J/K)	V	=	0.82	(cc)	Cp	=	3.56	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5.63	60.61	17.2	27.83															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.47	(gm)	density	=	2.22	(gm/cc)												
	G	=	-1594309.69	(J)	H	=	-1297896.73	(J)	S	=	248.33	(J/K)	V	=	44.72	(cc)	Cp	=	128.81	(J/K)
Oxygen	delta	moles	=	0.00372935	delta	grams	=	0.119335												
	G	=	-1001.85	(J)	H	=	110.1	(J)	S	=	0.93	(J/K)	V	=	370.11	(cc)	Cp	=	0.13	(J/K)

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Model 828 Bokan

Temp (oC)	=	915.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	43.41	(gm)	density	=	2.26	(gm/cc)	viscosity	=	4.67	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-707402.13	(J)	H	=	-568992.87	(J)	S	=	116.45	(J/K)	V	=	19.18	(cc)	Cp	=	60.29	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	64.28	0.22	14.94	0.92	0	3.47	0.51	0.71	0	0	3.48	4.44	2.69	0.48	3.87	0	0	0	0	
opx	mass	=	0.14	(gm)	density	=	3.47	(gm/cc)	(analysis	in	mole	%)								

opx Na0.00Ca0.05Fe''0.83Mg1.06Fe'''0.02Ti0.00Al0.10Si1.94O6
G = -1951.48 (J) H = -1597.2 (J) S = 0.3 (J/K) V = 0.04 (cc) Cp = 0.16 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-84.76 95.2 83.44 3.63 -3.51 5.86 0.14

feldspar mass = 0.83 (gm) density = 2.63 (gm/cc) (analysis in mole %)
K0.02Na0.49Ca0.49Al1.49Si2.51O8
G = -13945.06 (J) H = -11727.98 (J) S = 1.87 (J/K) V = 0.32 (cc) Cp = 1.01 (J/K)
albite anorthite sanidine
49.25 49.22 1.53

spinel mass = 0.1 (gm) density = 4.84 (gm/cc) (analysis in mole %)
Fe''1.11Mg0.10Fe'''1.39Al0.18Cr0.00Ti0.22O4
G = -771.6 (J) H = -531.58 (J) S = 0.2 (J/K) V = 0.02 (cc) Cp = 0.1 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -1.4 69.42 10.34 21.64

water mass = 1.32 (gm) density = 0.19 (gm/cc)
H2O
G = -31189.78 (J) H = -15674.88 (J) S = 13.05 (J/K) V = 6.79 (cc) Cp = 4.27 (J/K)

Total solids mass = 2.4 (gm) density = 0.33 (gm/cc)
G = -47857.93 (J) H = -29531.64 (J) S = 15.42 (J/K) V = 7.17 (cc) Cp = 5.54 (J/K)

Summary of all fractionated phases: (total mass = 53.66 grams)

opx mass = 5.21 (gm) density = 3.41 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.06Fe''0.68Mg1.19Fe'''0.02Ti0.00Al0.10Si1.94O6
G = -74501.85 (J) H = -61334.37 (J) S = 11.08 (J/K) V = 1.53 (cc) Cp = 6.13 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-68.08 93.6 67.91 4.05 -3.77 6.15 0.13

cpx mass = 7.44 (gm) density = 3.31 (gm/cc) (analysis in mole %)
cpx Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6
G = -113680.54 (J) H = -95177.94 (J) S = 15.57 (J/K) V = 2.25 (cc) Cp = 8.5 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
41.95 15.49 24.27 10.61 -5.51 11.75 1.43

feldspar mass = 37.01 (gm) density = 2.68 (gm/cc) (analysis in mole %)
K0.01Na0.27Ca0.73Al1.73Si2.27O8
G = -618517.87 (J) H = -521941.81 (J) S = 81.25 (J/K) V = 13.82 (cc) Cp = 44.41 (J/K)
albite anorthite sanidine
26.74 72.64 0.62

spinel mass = 4 (gm) density = 4.76 (gm/cc) (analysis in mole %)
Fe''1.11Mg0.17Fe'''1.22Al0.23Cr0.00Ti0.28O4
G = -31163.89 (J) H = -21886.63 (J) S = 7.81 (J/K) V = 0.84 (cc) Cp = 3.66 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -5.52 60.83 17.02 27.67

Viscosity of the System cannot be computed.

System mass = 99.47 (gm) density = 2.22 (gm/cc)
G = -1593124.2 (J) H = -1298865.24 (J) S = 247.56 (J/K) V = 44.79 (cc) Cp = 128.54 (J/K)

Oxygen delta moles = 0.00382461 delta grams = 0.122383
G = -1022.67 (J) H = 112.23 (J) S = 0.95 (J/K) V = 377.97 (cc) Cp = 0.14 (J/K)

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Model 828 Bokan

Temp (oC) = 910.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	42.35	(gm)	density	=	2.26	(gm/cc)	viscosity	=	4.73	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-690048.79	(J)	H	=	-555907.6	(J)	S	=	113.33	(J/K)	V	=	18.74	(cc)	Cp	=	58.72	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	64.67	0.21	14.77	0.9	0	3.33	0.52	0.67	0	0	3.38	4.44	2.75	0.5	3.87	0	0	0	0	
opx	mass	=	0.13	(gm)	density	=	3.48	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.04Fe''0.85Mg1.04Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-1800.21	(J)	H	=	-1474.43	(J)	S	=	0.28	(J/K)	V	=	0.04	(cc)	Cp	=	0.15	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-86.43	95.37	84.96	3.61	-3.49	5.84	0.14													
feldspar	mass	=	0.81	(gm)	density	=	2.63	(gm/cc)	(analysis	in	mole	%)								
	K0.02Na0.51Ca0.48Al1.48Si2.52O8																			
	G	=	-13457.8	(J)	H	=	-11328.16	(J)	S	=	1.8	(J/K)	V	=	0.31	(cc)	Cp	=	0.98	(J/K)
	albite	anorthite	sanidine																	
	50.75	47.63	1.63																	
spinel	mass	=	0.1	(gm)	density	=	4.85	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.10Fe'''1.40Al0.18Cr0.00Ti0.21O4																			
	G	=	-717.33	(J)	H	=	-494.61	(J)	S	=	0.19	(J/K)	V	=	0.02	(cc)	Cp	=	0.09	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-1.17	70.08	9.94	21.14															
water	mass	=	1.36	(gm)	density	=	0.2	(gm/cc)												
	H2O																			
	G	=	-32062.88	(J)	H	=	-16169.48	(J)	S	=	13.43	(J/K)	V	=	6.95	(cc)	Cp	=	4.42	(J/K)
Total	solids	mass	=	2.4	(gm)	density	=	0.33	(gm/cc)											
	G	=	-48038.22	(J)	H	=	-29466.67	(J)	S	=	15.69	(J/K)	V	=	7.31	(cc)	Cp	=	5.63	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	54.73	grams)											
opx	mass	=	5.35	(gm)	density	=	3.41	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.68Mg1.19Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-76365.13	(J)	H	=	-62937.21	(J)	S	=	11.34	(J/K)	V	=	1.57	(cc)	Cp	=	6.29	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-68.5	93.65	68.3	4.04	-3.76	6.14	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113602.8	(J)	H	=	-95220.41	(J)	S	=	15.53	(J/K)	V	=	2.25	(cc)	Cp	=	8.49	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	37.84	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.27Ca0.72Al1.72Si2.28O8																			
	G	=	-632005	(J)	H	=	-533857.57	(J)	S	=	82.92	(J/K)	V	=	14.14	(cc)	Cp	=	45.39	(J/K)
	albite	anorthite	sanidine																	
	27.24	72.12	0.64																	
spinel	mass	=	4.1	(gm)	density	=	4.76	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.17Fe'''1.22Al0.23Cr0.00Ti0.28O4																			
	G	=	-31879.37	(J)	H	=	-22425.7	(J)	S	=	7.99	(J/K)	V	=	0.86	(cc)	Cp	=	3.75	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5.42	61.04	16.86	27.53															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.47	(gm)	density	=	2.22	(gm/cc)												

	G	=	-1591939.3	(J)	H	=	-1299815.16	(J)	S	=	246.81	(J/K)	V	=	44.87	(cc)	Cp	=	128.28	(J/K)
Oxygen	delta	moles	=	0.0039138	delta	grams	=	0.125237												
	G	=	-1041.63	(J)	H	=	114.15	(J)	S	=	0.98	(J/K)	V	=	385.16	(cc)	Cp	=	0.14	(J/K)

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Model 828 Bokan

Temp (oC) = 905.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	41.33	(gm)	density	=	2.26	(gm/cc)	viscosity	=	4.8	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-673385.38	(J)	H	=	-543334.79	(J)	S	=	110.34	(J/K)	V	=	18.31	(cc)	Cp	=	57.21	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	65.06	0.19	14.6	0.87	0	3.2	0.53	0.63	0	0	3.28	4.44	2.81	0.51	3.88	0	0	0	0	
opx	mass	=	0.12	(gm)	density	=	3.48	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.04Fe''0.86Mg1.03Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-1662.96	(J)	H	=	-1362.98	(J)	S	=	0.25	(J/K)	V	=	0.03	(cc)	Cp	=	0.14	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-88.11	95.55	86.49	3.58	-3.47	5.83	0.14													
feldspar	mass	=	0.78	(gm)	density	=	2.63	(gm/cc)	(analysis	in	mole	%)								
	K0.02Na0.52Ca0.46Al1.46Si2.54O8																			
	G	=	-12999.01	(J)	H	=	-10951.67	(J)	S	=	1.74	(J/K)	V	=	0.3	(cc)	Cp	=	0.94	(J/K)
	albite	anorthite	sanidine																	
	52.21	46.06	1.73																	
spinel	mass	=	0.09	(gm)	density	=	4.85	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.10Fe'''1.41Al0.17Cr0.00Ti0.21O4																			
	G	=	-667.36	(J)	H	=	-460.56	(J)	S	=	0.18	(J/K)	V	=	0.02	(cc)	Cp	=	0.08	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-0.96	70.74	9.56	20.66															
water	mass	=	1.4	(gm)	density	=	0.2	(gm/cc)												
	H2O																			
	G	=	-32902.38	(J)	H	=	-16650.37	(J)	S	=	13.79	(J/K)	V	=	7.1	(cc)	Cp	=	4.55	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.32	(gm/cc)											
	G	=	-48231.71	(J)	H	=	-29425.58	(J)	S	=	15.96	(J/K)	V	=	7.45	(cc)	Cp	=	5.72	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	55.76	grams)											
opx	mass	=	5.48	(gm)	density	=	3.41	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.69Mg1.19Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-78075.99	(J)	H	=	-64418.04	(J)	S	=	11.59	(J/K)	V	=	1.6	(cc)	Cp	=	6.44	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-68.92	93.68	68.69	4.03	-3.76	6.14	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113525.23	(J)	H	=	-95262.86	(J)	S	=	15.49	(J/K)	V	=	2.25	(cc)	Cp	=	8.49	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	38.64	(gm)	density	=	2.68	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.28Ca0.72Al1.72Si2.28O8																			
	G	=	-644997.04	(J)	H	=	-545378.21	(J)	S	=	84.52	(J/K)	V	=	14.44	(cc)	Cp	=	46.33	(J/K)
	albite	anorthite	sanidine																	
	27.74	71.6	0.67																	

spinel	mass	=	4.2	(gm)	density	=	4.77	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.17Fe'''1.22Al0.23Cr0.00Ti0.27O4																			
	G	=	-32539.81	(J)	H	=	-22928.27	(J)	S	=	8.15	(J/K)	V	=	0.88	(cc)	Cp	=	3.84	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5.33	61.24	16.7	27.38															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.48	(gm)	density	=	2.21	(gm/cc)												
	G	=	-1590755.16	(J)	H	=	-1300747.75	(J)	S	=	246.06	(J/K)	V	=	44.93	(cc)	Cp	=	128.03	(J/K)
Oxygen	delta	moles	=	0.0039973	delta	grams	=	0.127909												
	G	=	-1058.87	(J)	H	=	115.87	(J)	S	=	1	(J/K)	V	=	391.71	(cc)	Cp	=	0.14	(J/K)

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Model 828 Bokan

Temp (oC)	=	900.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	40.35	(gm)	density	=	2.26	(gm/cc)	viscosity	=	4.87	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-657368.36	(J)	H	=	-531241.87	(J)	S	=	107.47	(J/K)	V	=	17.89	(cc)	Cp	=	55.77	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	65.45	0.18	14.43	0.84	0	3.07	0.55	0.59	0	0	3.18	4.43	2.88	0.52	3.88	0	0	0	0	
opx	mass	=	0.11	(gm)	density	=	3.49	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.04Fe''0.88Mg1.02Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-1538.16	(J)	H	=	-1261.59	(J)	S	=	0.24	(J/K)	V	=	0.03	(cc)	Cp	=	0.13	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-89.78	95.72	88.01	3.56	-3.45	5.81	0.14													
feldspar	mass	=	0.75	(gm)	density	=	2.62	(gm/cc)	(analysis	in	mole	%)								
	K0.02Na0.54Ca0.45Al1.45Si2.55O8																			
	G	=	-12565.28	(J)	H	=	-10595.68	(J)	S	=	1.68	(J/K)	V	=	0.29	(cc)	Cp	=	0.91	(J/K)
	albite	anorthite	sanidine																	
	53.64	44.51	1.84																	
spinel	mass	=	0.09	(gm)	density	=	4.86	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.09Fe'''1.43Al0.17Cr0.00Ti0.20O4																			
	G	=	-621.25	(J)	H	=	-429.13	(J)	S	=	0.16	(J/K)	V	=	0.02	(cc)	Cp	=	0.08	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-0.77	71.37	9.2	20.19															
water	mass	=	1.44	(gm)	density	=	0.2	(gm/cc)												
	H2O																			
	G	=	-33710.08	(J)	H	=	-17118.34	(J)	S	=	14.14	(J/K)	V	=	7.24	(cc)	Cp	=	4.69	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.32	(gm/cc)											
	G	=	-48434.77	(J)	H	=	-29404.74	(J)	S	=	16.22	(J/K)	V	=	7.58	(cc)	Cp	=	5.81	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	56.74	grams)											
opx	mass	=	5.6	(gm)	density	=	3.42	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.69Mg1.18Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-79648.58	(J)	H	=	-65788.13	(J)	S	=	11.81	(J/K)	V	=	1.64	(cc)	Cp	=	6.57	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-69.32	93.72	69.06	4.02	-3.75	6.13	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113447.85	(J)	H	=	-95305.28	(J)	S	=	15.46	(J/K)	V	=	2.25	(cc)	Cp	=	8.48	(J/K)

	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43															
feldspar	mass	=	39.42	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)										
	K0.01Na0.28Ca0.71Al1.71Si2.29O8																					
	G	=	-657522.8	(J)	H	=	-556526.91	(J)	S	=	86.06	(J/K)	V	=	14.74	(cc)	Cp	=	47.24	(J/K)		
	albite	anorthite	sanidine																			
	28.22	71.09	0.69																			
spinel	mass	=	4.29	(gm)	density	=	4.77	(gm/cc)	(analysis	in	mole	%)										
	Fe''1.11Mg0.17Fe'''1.23Al0.23Cr0.00Ti0.27O4																					
	G	=	-33149.58	(J)	H	=	-23397.23	(J)	S	=	8.31	(J/K)	V	=	0.9	(cc)	Cp	=	3.92	(J/K)		
	chromite	hercynite	magnetite	spinel	ulvospinel																	
	0	-5.24	61.43	16.56	27.25																	
Viscosity	of	the	System	cannot	be	computed.																
System	mass	=	99.48	(gm)	density	=	2.21	(gm/cc)														
	G	=	-1589571.94	(J)	H	=	-1301664.17	(J)	S	=	245.32	(J/K)	V	=	44.99	(cc)	Cp	=	127.8	(J/K)		
Oxygen	delta	moles	=	0.00407547	delta	grams	=	0.13041														
	G	=	-1074.5	(J)	H	=	117.42	(J)	S	=	1.02	(J/K)	V	=	397.68	(cc)	Cp	=	0.14	(J/K)		
**********---------**********																						
Model 828 Bokan																						
Temp (oC)	=	895.47																				
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids															
Liquid	mass	=	39.4	(gm)	density	=	2.25	(gm/cc)	viscosity	=	4.94	(log	10	poise)	(analysis	in	wt	%)				
	G	=	-641959.08	(J)	H	=	-519599.99	(J)	S	=	104.7	(J/K)	V	=	17.49	(cc)	Cp	=	54.39	(J/K)		
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1			
	65.82	0.17	14.27	0.82	0	2.95	0.56	0.55	0	0	3.09	4.42	2.94	0.53	3.88	0	0	0	0			
opx	mass	=	0.11	(gm)	density	=	3.5	(gm/cc)	(analysis	in	mole	%)										
	opx	Na0.00Ca0.04Fe''0.90Mg1.00Fe'''0.02Ti0.00Al0.09Si1.94O6																				
	G	=	-1424.44	(J)	H	=	-1169.15	(J)	S	=	0.22	(J/K)	V	=	0.03	(cc)	Cp	=	0.12	(J/K)		
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite															
	-91.46	95.89	89.54	3.53	-3.44	5.8	0.14															
feldspar	mass	=	0.73	(gm)	density	=	2.62	(gm/cc)	(analysis	in	mole	%)										
	K0.02Na0.55Ca0.43Al1.43Si2.57O8																					
	G	=	-12153.71	(J)	H	=	-10257.82	(J)	S	=	1.62	(J/K)	V	=	0.28	(cc)	Cp	=	0.88	(J/K)		
	albite	anorthite	sanidine																			
	55.04	43	1.96																			
spinel	mass	=	0.08	(gm)	density	=	4.86	(gm/cc)	(analysis	in	mole	%)										
	Fe''1.11Mg0.09Fe'''1.44Al0.17Cr0.00Ti0.20O4																					
	G	=	-578.62	(J)	H	=	-400.08	(J)	S	=	0.15	(J/K)	V	=	0.02	(cc)	Cp	=	0.07	(J/K)		
	chromite	hercynite	magnetite	spinel	ulvospinel																	
	0	-0.59	72	8.85	19.74																	
water	mass	=	1.47	(gm)	density	=	0.2	(gm/cc)														
	H2O																					
	G	=	-34487.61	(J)	H	=	-17574.03	(J)	S	=	14.47	(J/K)	V	=	7.37	(cc)	Cp	=	4.83	(J/K)		
Total	solids	mass	=	2.39	(gm)	density	=	0.31	(gm/cc)													
	G	=	-48644.39	(J)	H	=	-29401.08	(J)	S	=	16.47	(J/K)	V	=	7.7	(cc)	Cp	=	5.9	(J/K)		
Summary	of	all	fractionated	phases:	(total	mass	=	57.69	grams)													

opx	mass	=	5.71	(gm)	density	=	3.42	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.06Fe''0.69Mg1.18Fe'''0.02Ti0.00Al0.10Si1.94O6																	
	G	=	-81095.43	(J)	H	=	-67057.5	(J)	S	=	12.01	(J/K)	V	=	1.67	(cc)	Cp	=	6.7	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-69.7	93.76	69.42	4.01	-3.74	6.12	0.13												
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-113370.65	(J)	H	=	-95347.69	(J)	S	=	15.42	(J/K)	V	=	2.25	(cc)	Cp	=	8.48	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43												
feldspar	mass	=	40.17	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)							
	K0.01Na0.29Ca0.71Al1.71Si2.29O8																		
	G	=	-669607.64	(J)	H	=	-567324.01	(J)	S	=	87.53	(J/K)	V	=	15.02	(cc)	Cp	=	48.12	(J/K)
	albite	anorthite	sanidine																
	28.71	70.58	0.71																
spinel	mass	=	4.37	(gm)	density	=	4.77	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.11Mg0.16Fe'''1.23Al0.23Cr0.00Ti0.27O4																		
	G	=	-33712.58	(J)	H	=	-23835.16	(J)	S	=	8.45	(J/K)	V	=	0.92	(cc)	Cp	=	3.99	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-5.15	61.62	16.42	27.11														
Viscosity	of	the	System	cannot	be	computed.													
System	mass	=	99.48	(gm)	density	=	2.21	(gm/cc)											
	G	=	-1588389.76	(J)	H	=	-1302565.43	(J)	S	=	244.58	(J/K)	V	=	45.04	(cc)	Cp	=	127.58	(J/K)
Oxygen	delta	moles	=	0.00414865	delta	grams	=	0.132752											
	G	=	-1088.63	(J)	H	=	118.79	(J)	S	=	1.03	(J/K)	V	=	403.09	(cc)	Cp	=	0.15	(J/K)

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Model 828 Bokan

Temp (oC)	=	890.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	38.5	(gm)	density	=	2.25	(gm/cc)	viscosity	=	5	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-627122.99	(J)	H	=	-508383.45	(J)	S	=	102.04	(J/K)	V	=	17.11	(cc)	Cp	=	53.05	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	66.19	0.17	14.1	0.79	0	2.83	0.57	0.52	0	0	3	4.41	3	0.55	3.88	0	0	0	0	
opx	mass	=	0.1	(gm)	density	=	3.5	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.04Fe''0.91Mg0.99Fe'''0.02Ti0.00Al0.09Si1.94O6																	
	G	=	-1320.62	(J)	H	=	-1084.71	(J)	S	=	0.2	(J/K)	V	=	0.03	(cc)	Cp	=	0.11	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-93.13	96.06	91.06	3.51	-3.42	5.78	0.14												
feldspar	mass	=	0.71	(gm)	density	=	2.62	(gm/cc)	(analysis	in	mole	%)							
	K0.02Na0.56Ca0.42Al1.42Si2.58O8																		
	G	=	-11761.88	(J)	H	=	-9936.06	(J)	S	=	1.57	(J/K)	V	=	0.27	(cc)	Cp	=	0.85	(J/K)
	albite	anorthite	sanidine																
	56.41	41.51	2.09																
spinel	mass	=	0.08	(gm)	density	=	4.87	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.11Mg0.09Fe'''1.45Al0.16Cr0.00Ti0.19O4																		
	G	=	-539.16	(J)	H	=	-373.17	(J)	S	=	0.14	(J/K)	V	=	0.02	(cc)	Cp	=	0.07	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-0.42	72.6	8.52	19.29														

water	mass	=	1.51	(gm)	density	=	0.2	(gm/cc)											
	H2O																		
	G	=	-35236.38	(J)	H	=	-18018.06	(J)	S	=	14.8	(J/K)	V	=	7.49	(cc)	Cp	=	4.96	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.31	(gm/cc)										
	G	=	-48858.04	(J)	H	=	-29412	(J)	S	=	16.71	(J/K)	V	=	7.81	(cc)	Cp	=	5.99	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	58.6	grams)										
opx	mass	=	5.81	(gm)	density	=	3.42	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.06Fe''0.70Mg1.18Fe'''0.02Ti0.00Al0.10Si1.94O6																	
	G	=	-82427.73	(J)	H	=	-68235.03	(J)	S	=	12.2	(J/K)	V	=	1.7	(cc)	Cp	=	6.81	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-70.08	93.8	69.76	4	-3.74	6.12	0.13												
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-113293.63	(J)	H	=	-95390.07	(J)	S	=	15.39	(J/K)	V	=	2.25	(cc)	Cp	=	8.47	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43												
feldspar	mass	=	40.9	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)							
	K0.01Na0.29Ca0.70Al1.70Si2.30O8																		
	G	=	-681274.02	(J)	H	=	-577787.5	(J)	S	=	88.93	(J/K)	V	=	15.3	(cc)	Cp	=	48.97	(J/K)
	albite	anorthite	sanidine																
	29.18	70.09	0.73																
spinel	mass	=	4.45	(gm)	density	=	4.77	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.11Mg0.16Fe'''1.24Al0.22Cr0.00Ti0.27O4																		
	G	=	-34232.37	(J)	H	=	-24244.43	(J)	S	=	8.58	(J/K)	V	=	0.93	(cc)	Cp	=	4.06	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-5.08	61.8	16.29	26.99														
Viscosity	of	the	System	cannot	be	computed.													
System	mass	=	99.48	(gm)	density	=	2.21	(gm/cc)											
	G	=	-1587208.77	(J)	H	=	-1303452.48	(J)	S	=	243.86	(J/K)	V	=	45.09	(cc)	Cp	=	127.36	(J/K)
Oxygen	delta	moles	=	0.00421714	delta	grams	=	0.134943											
	G	=	-1101.35	(J)	H	=	120	(J)	S	=	1.05	(J/K)	V	=	407.99	(cc)	Cp	=	0.15	(J/K)

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Model 828 Bokan

Temp (oC)	=	885.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	37.63	(gm)	density	=	2.25	(gm/cc)	viscosity	=	5.07	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-612829.15	(J)	H	=	-497569.29	(J)	S	=	99.48	(J/K)	V	=	16.73	(cc)	Cp	=	51.78	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	66.55	0.16	13.93	0.77	0	2.71	0.58	0.49	0	0	2.92	4.39	3.06	0.56	3.88	0	0	0	0	
opx	mass	=	0.09	(gm)	density	=	3.51	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.04Fe''0.93Mg0.98Fe'''0.02Ti0.00Al0.09Si1.94O6																	
	G	=	-1225.67	(J)	H	=	-1007.44	(J)	S	=	0.19	(J/K)	V	=	0.03	(cc)	Cp	=	0.1	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-94.8	96.23	92.58	3.49	-3.4	5.77	0.13												
feldspar	mass	=	0.68	(gm)	density	=	2.62	(gm/cc)	(analysis	in	mole	%)							
	K0.02Na0.58Ca0.40Al1.40Si2.60O8																		
	G	=	-11387.68	(J)	H	=	-9628.68	(J)	S	=	1.52	(J/K)	V	=	0.26	(cc)	Cp	=	0.83	(J/K)

	albite	anorthite	sanidine																	
	57.73	40.05	2.22																	
spinel	mass	=	0.07	(gm)	density	=	4.88	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.08Fe'''1.46Al0.16Cr0.00Ti0.19O4																			
	G	=	-502.57	(J)	H	=	-348.21	(J)	S	=	0.13	(J/K)	V	=	0.01	(cc)	Cp	=	0.06	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-0.26	73.2	8.2	18.87															
water	mass	=	1.54	(gm)	density	=	0.2	(gm/cc)												
	H2O																			
	G	=	-35957.67	(J)	H	=	-18450.94	(J)	S	=	15.11	(J/K)	V	=	7.61	(cc)	Cp	=	5.09	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.3	(gm/cc)											
	G	=	-49073.59	(J)	H	=	-29435.28	(J)	S	=	16.95	(J/K)	V	=	7.91	(cc)	Cp	=	6.08	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	59.47	grams)											
opx	mass	=	5.9	(gm)	density	=	3.42	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.70Mg1.17Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-83655.43	(J)	H	=	-69328.71	(J)	S	=	12.37	(J/K)	V	=	1.72	(cc)	Cp	=	6.92	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-70.44	93.83	70.1	3.99	-3.73	6.11	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113216.79	(J)	H	=	-95432.42	(J)	S	=	15.35	(J/K)	V	=	2.25	(cc)	Cp	=	8.47	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	41.6	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.30Ca0.70Al1.70Si2.30O8																			
	G	=	-692541.97	(J)	H	=	-587933.34	(J)	S	=	90.29	(J/K)	V	=	15.56	(cc)	Cp	=	49.79	(J/K)
	albite	anorthite	sanidine																	
	29.65	69.6	0.75																	
spinel	mass	=	4.52	(gm)	density	=	4.78	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.24Al0.22Cr0.00Ti0.27O4																			
	G	=	-34712.15	(J)	H	=	-24627.13	(J)	S	=	8.7	(J/K)	V	=	0.95	(cc)	Cp	=	4.13	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-5	61.97	16.17	26.87															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.48	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1586029.08	(J)	H	=	-1304326.17	(J)	S	=	243.14	(J/K)	V	=	45.13	(cc)	Cp	=	127.16	(J/K)
Oxygen	delta	moles	=	0.00428121	delta	grams	=	0.136993												
	G	=	-1112.75	(J)	H	=	121.06	(J)	S	=	1.06	(J/K)	V	=	412.41	(cc)	Cp	=	0.15	(J/K)

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Model 828 Bokan

Temp (oC)	=	880.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	36.79	(gm)	density	=	2.25	(gm/cc)	viscosity	=	5.13	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-599049.67	(J)	H	=	-487136.89	(J)	S	=	97.01	(J/K)	V	=	16.37	(cc)	Cp	=	50.54	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	66.9	0.15	13.77	0.75	0	2.6	0.6	0.46	0	0	2.84	4.36	3.13	0.57	3.88	0	0	0	0	

opx	mass	=	0.09	(gm)	density	=	3.52	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.03Fe''0.94Mg0.96Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-1138.67	(J)	H	=	-936.62	(J)	S	=	0.18	(J/K)	V	=	0.02	(cc)	Cp	=	0.1	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-96.45	96.39	94.1	3.46	-3.38	5.75	0.13													
feldspar	mass	=	0.66	(gm)	density	=	2.61	(gm/cc)	(analysis	in	mole	%)								
	K0.02Na0.59Ca0.39Al1.39Si2.61O8																			
	G	=	-11029.35	(J)	H	=	-9334.21	(J)	S	=	1.47	(J/K)	V	=	0.25	(cc)	Cp	=	0.8	(J/K)
	albite	anorthite	sanidine																	
	59.02	38.62	2.36																	
spinel	mass	=	0.07	(gm)	density	=	4.88	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.08Fe'''1.48Al0.16Cr0.00Ti0.18O4																			
	G	=	-468.61	(J)	H	=	-325.04	(J)	S	=	0.12	(J/K)	V	=	0.01	(cc)	Cp	=	0.06	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-0.12	73.77	7.89	18.45															
water	mass	=	1.57	(gm)	density	=	0.2	(gm/cc)												
	H2O																			
	G	=	-36652.62	(J)	H	=	-18873.13	(J)	S	=	15.41	(J/K)	V	=	7.72	(cc)	Cp	=	5.21	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.3	(gm/cc)											
	G	=	-49289.25	(J)	H	=	-29469	(J)	S	=	17.18	(J/K)	V	=	8.01	(cc)	Cp	=	6.17	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	60.31	grams)											
opx	mass	=	5.99	(gm)	density	=	3.42	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.70Mg1.17Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-84787.49	(J)	H	=	-70345.64	(J)	S	=	12.52	(J/K)	V	=	1.75	(cc)	Cp	=	7.01	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-70.79	93.87	70.42	3.99	-3.73	6.11	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113140.13	(J)	H	=	-95474.76	(J)	S	=	15.31	(J/K)	V	=	2.25	(cc)	Cp	=	8.46	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	42.28	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.30Ca0.69Al1.69Si2.31O8																			
	G	=	-703429.39	(J)	H	=	-597775.77	(J)	S	=	91.58	(J/K)	V	=	15.82	(cc)	Cp	=	50.59	(J/K)
	albite	anorthite	sanidine																	
	30.11	69.11	0.78																	
spinel	mass	=	4.59	(gm)	density	=	4.78	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.24Al0.22Cr0.00Ti0.27O4																			
	G	=	-35154.86	(J)	H	=	-24985.22	(J)	S	=	8.82	(J/K)	V	=	0.96	(cc)	Cp	=	4.19	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.93	62.13	16.05	26.75															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.49	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1584850.79	(J)	H	=	-1305187.27	(J)	S	=	242.42	(J/K)	V	=	45.17	(cc)	Cp	=	126.97	(J/K)
Oxygen	delta	moles	=	0.00434112	delta	grams	=	0.138911												
	G	=	-1122.93	(J)	H	=	121.99	(J)	S	=	1.08	(J/K)	V	=	416.38	(cc)	Cp	=	0.15	(J/K)

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Model 828 Bokan

Temp (oC)	=	875.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	35.98	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.2	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-585759.34	(J)	H	=	-477067.64	(J)	S	=	94.63	(J/K)	V	=	16.03	(cc)	Cp	=	49.36	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	67.25	0.14	13.6	0.72	0	2.49	0.61	0.43	0	0	2.76	4.34	3.19	0.58	3.87	0	0	0	0	
opx	mass	=	0.08	(gm)	density	=	3.52	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.03Fe''0.96Mg0.95Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-1058.85	(J)	H	=	-871.6	(J)	S	=	0.16	(J/K)	V	=	0.02	(cc)	Cp	=	0.09	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-98.1	96.55	95.62	3.44	-3.36	5.73	0.13													
feldspar	mass	=	0.64	(gm)	density	=	2.61	(gm/cc)	(analysis	in	mole	%)								
	K0.03Na0.60Ca0.37Al1.37Si2.63O8																			
	G	=	-10685.35	(J)	H	=	-9051.37	(J)	S	=	1.42	(J/K)	V	=	0.25	(cc)	Cp	=	0.78	(J/K)
	albite	anorthite	sanidine																	
	60.27	37.22	2.51																	
spinel	mass	=	0.06	(gm)	density	=	4.89	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.08Fe'''1.49Al0.15Cr0.00Ti0.18O4																			
	G	=	-437.05	(J)	H	=	-303.49	(J)	S	=	0.12	(J/K)	V	=	0.01	(cc)	Cp	=	0.06	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.02	74.33	7.6	18.05															
water	mass	=	1.61	(gm)	density	=	0.21	(gm/cc)												
	H2O																			
	G	=	-37322.25	(J)	H	=	-19285.05	(J)	S	=	15.7	(J/K)	V	=	7.82	(cc)	Cp	=	5.34	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.3	(gm/cc)											
	G	=	-49503.51	(J)	H	=	-29511.51	(J)	S	=	17.41	(J/K)	V	=	8.1	(cc)	Cp	=	6.26	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	61.12	grams)											
opx	mass	=	6.08	(gm)	density	=	3.43	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.71Mg1.17Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-85831.93	(J)	H	=	-71292.25	(J)	S	=	12.66	(J/K)	V	=	1.77	(cc)	Cp	=	7.1	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-71.13	93.9	70.74	3.98	-3.72	6.1	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-113063.66	(J)	H	=	-95517.07	(J)	S	=	15.28	(J/K)	V	=	2.25	(cc)	Cp	=	8.46	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	42.95	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.31Ca0.69Al1.69Si2.31O8																			
	G	=	-713952.4	(J)	H	=	-607327.58	(J)	S	=	92.83	(J/K)	V	=	16.07	(cc)	Cp	=	51.35	(J/K)
	albite	anorthite	sanidine																	
	30.56	68.63	0.8																	
spinel	mass	=	4.66	(gm)	density	=	4.78	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.25Al0.22Cr0.00Ti0.27O4																			
	G	=	-35563.15	(J)	H	=	-25320.44	(J)	S	=	8.92	(J/K)	V	=	0.97	(cc)	Cp	=	4.24	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.87	62.29	15.94	26.64															
Viscosity	of	the	System	cannot	be	computed.														

System	mass	=	99.49	(gm)	density	=	2.2	(gm/cc)											
	G	=	-1583674	(J)	H	=	-1306036.49	(J)	S	=	241.71	(J/K)	V	=	45.2	(cc)	Cp	=	126.78	(J/K)
Oxygen	delta	moles	=	0.00439712	delta	grams	=	0.140702											
	G	=	-1131.95	(J)	H	=	122.78	(J)	S	=	1.09	(J/K)	V	=	419.92	(cc)	Cp	=	0.16	(J/K)

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Model 828 Bokan

Temp (oC)	=	870.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	35.2	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.26	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-572935.3	(J)	H	=	-467344.74	(J)	S	=	92.33	(J/K)	V	=	15.69	(cc)	Cp	=	48.22	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	67.59	0.13	13.44	0.7	0	2.39	0.62	0.41	0	0	2.69	4.31	3.25	0.6	3.87	0	0	0	0	
opx	mass	=	0.07	(gm)	density	=	3.53	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.03Fe''0.97Mg0.94Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-985.51	(J)	H	=	-811.82	(J)	S	=	0.15	(J/K)	V	=	0.02	(cc)	Cp	=	0.08	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-99.74	96.7	97.12	3.41	-3.34	5.71	0.13													
feldspar	mass	=	0.62	(gm)	density	=	2.61	(gm/cc)	(analysis	in	mole	%)								
	K0.03Na0.61Ca0.36Al1.36Si2.64O8																			
	G	=	-10354.35	(J)	H	=	-8779.08	(J)	S	=	1.38	(J/K)	V	=	0.24	(cc)	Cp	=	0.75	(J/K)
	albite	anorthite	sanidine																	
	61.48	35.86	2.66																	
spinel	mass	=	0.06	(gm)	density	=	4.89	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.07Fe'''1.50Al0.15Cr0.00Ti0.18O4																			
	G	=	-407.71	(J)	H	=	-283.44	(J)	S	=	0.11	(J/K)	V	=	0.01	(cc)	Cp	=	0.05	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.14	74.88	7.32	17.67															
water	mass	=	1.64	(gm)	density	=	0.21	(gm/cc)												
	H2O																			
	G	=	-37967.51	(J)	H	=	-19687.07	(J)	S	=	15.99	(J/K)	V	=	7.92	(cc)	Cp	=	5.46	(J/K)
Total	solids	mass	=	2.39	(gm)	density	=	0.29	(gm/cc)											
	G	=	-49715.08	(J)	H	=	-29561.41	(J)	S	=	17.62	(J/K)	V	=	8.19	(cc)	Cp	=	6.35	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	61.9	grams)											
opx	mass	=	6.15	(gm)	density	=	3.43	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.71Mg1.17Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-86796	(J)	H	=	-72174.3	(J)	S	=	12.79	(J/K)	V	=	1.79	(cc)	Cp	=	7.19	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-71.46	93.93	71.04	3.97	-3.72	6.1	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112987.37	(J)	H	=	-95559.35	(J)	S	=	15.24	(J/K)	V	=	2.25	(cc)	Cp	=	8.45	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	43.59	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.31Ca0.68Al1.68Si2.32O8																			
	G	=	-724125.59	(J)	H	=	-616600.28	(J)	S	=	94.02	(J/K)	V	=	16.32	(cc)	Cp	=	52.1	(J/K)
	albite	anorthite	sanidine																	
	31.01	68.16	0.83																	

spinel mass = 4.72 (gm) density = 4.78 (gm/cc) (analysis in mole %)
Fe''1.11Mg0.16Fe'''1.25Al0.22Cr0.00Ti0.27O4
G = -35939.48 (J) H = -25634.41 (J) S = 9.01 (J/K) V = 0.99 (cc) Cp = 4.29 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -4.81 62.44 15.84 26.53

Viscosity of the System cannot be computed.

System mass = 99.49 (gm) density = 2.2 (gm/cc)
G = -1582498.82 (J) H = -1306874.49 (J) S = 241.01 (J/K) V = 45.22 (cc) Cp = 126.61 (J/K)

Oxygen delta moles = 0.00444942 delta grams = 0.142376
G = -1139.89 (J) H = 123.45 (J) S = 1.1 (J/K) V = 423.07 (cc) Cp = 0.16 (J/K)

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Model 828 Bokan

Temp (oC) = 865.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid mass = 34.45 (gm) density = 2.24 (gm/cc) viscosity = 5.33 (log 10 poise) (analysis in wt %)
G = -560556.68 (J) H = -457952.9 (J) S = 90.11 (J/K) V = 15.37 (cc) Cp = 47.12 (J/K)
SiO2 TiO2 Al2O3 Fe2O3 Cr2O3 FeO MnO MgO NiO CoO CaO Na2O K2O P2O5 H2O CO2 SO3 Cl2O-1 F2O-1
67.93 0.13 13.28 0.68 0 2.28 0.64 0.38 0 0 2.62 4.28 3.31 0.61 3.87 0 0 0 0

opx mass = 0.07 (gm) density = 3.53 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.03Fe''0.99Mg0.92Fe'''0.02Ti0.00Al0.09Si1.94O6
G = -918.03 (J) H = -756.8 (J) S = 0.14 (J/K) V = 0.02 (cc) Cp = 0.08 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-101.36 96.85 98.62 3.38 -3.32 5.69 0.13

feldspar mass = 0.61 (gm) density = 2.61 (gm/cc) (analysis in mole %)
K0.03Na0.63Ca0.35Al1.35Si2.65O8
G = -10035.21 (J) H = -8516.37 (J) S = 1.33 (J/K) V = 0.23 (cc) Cp = 0.73 (J/K)
albite anorthite sanidine
62.65 34.52 2.83

spinel mass = 0.05 (gm) density = 4.9 (gm/cc) (analysis in mole %)
Fe''1.10Mg0.07Fe'''1.51Al0.15Cr0.00Ti0.17O4
G = -380.39 (J) H = -264.77 (J) S = 0.1 (J/K) V = 0.01 (cc) Cp = 0.05 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 0.25 75.41 7.05 17.3

water mass = 1.67 (gm) density = 0.21 (gm/cc)
H2O
G = -38589.25 (J) H = -20079.51 (J) S = 16.26 (J/K) V = 8.01 (cc) Cp = 5.59 (J/K)

Total solids mass = 2.4 (gm) density = 0.29 (gm/cc)
G = -49922.88 (J) H = -29617.44 (J) S = 17.83 (J/K) V = 8.27 (cc) Cp = 6.45 (J/K)

Summary of all fractionated phases: (total mass = 62.65 grams)

opx mass = 6.23 (gm) density = 3.43 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.06Fe''0.71Mg1.16Fe'''0.02Ti0.00Al0.10Si1.94O6
G = -87686.22 (J) H = -72997.01 (J) S = 12.9 (J/K) V = 1.81 (cc) Cp = 7.27 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-71.77 93.96 71.33 3.97 -3.72 6.09 0.13

cpx mass = 7.44 (gm) density = 3.31 (gm/cc) (analysis in mole %)
cpx Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6

	G	=	-112911.27	(J)	H	=	-95601.62	(J)	S	=	15.2	(J/K)	V	=	2.24	(cc)	Cp	=	8.45	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	44.21	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.31Ca0.68Al1.68Si2.32O8																			
	G	=	-733962.19	(J)	H	=	-625604.31	(J)	S	=	95.17	(J/K)	V	=	16.55	(cc)	Cp	=	52.82	(J/K)
	albite	anorthite	sanidine																	
	31.44	67.7	0.85																	
spinel	mass	=	4.77	(gm)	density	=	4.79	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.25Al0.22Cr0.00Ti0.26O4																			
	G	=	-36286.09	(J)	H	=	-25928.6	(J)	S	=	9.1	(J/K)	V	=	1	(cc)	Cp	=	4.34	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.75	62.58	15.74	26.43															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.49	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1581325.32	(J)	H	=	-1307701.87	(J)	S	=	240.31	(J/K)	V	=	45.25	(cc)	Cp	=	126.44	(J/K)
Oxygen	delta	moles	=	0.00449826	delta	grams	=	0.143939												
	G	=	-1146.82	(J)	H	=	124.01	(J)	S	=	1.12	(J/K)	V	=	425.84	(cc)	Cp	=	0.16	(J/K)

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Model 828 Bokan

Temp (oC)	=	860.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	33.73	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.39	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-548604.42	(J)	H	=	-448878.21	(J)	S	=	87.97	(J/K)	V	=	15.05	(cc)	Cp	=	46.06	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	68.26	0.12	13.11	0.66	0	2.19	0.65	0.36	0	0	2.55	4.24	3.38	0.62	3.86	0	0	0	0	
opx	mass	=	0.07	(gm)	density	=	3.54	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.03Fe''1.00Mg0.91Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-855.86	(J)	H	=	-706.08	(J)	S	=	0.13	(J/K)	V	=	0.02	(cc)	Cp	=	0.07	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-102.96	96.99	100.12	3.36	-3.29	5.67	0.13													
feldspar	mass	=	0.59	(gm)	density	=	2.61	(gm/cc)	(analysis	in	mole	%)								
	K0.03Na0.64Ca0.33Al1.33Si2.67O8																			
	G	=	-9726.92	(J)	H	=	-8262.42	(J)	S	=	1.29	(J/K)	V	=	0.23	(cc)	Cp	=	0.71	(J/K)
	albite	anorthite	sanidine																	
	63.78	33.22	3																	
spinel	mass	=	0.05	(gm)	density	=	4.9	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.07Fe'''1.52Al0.14Cr0.00Ti0.17O4																			
	G	=	-354.96	(J)	H	=	-247.37	(J)	S	=	0.09	(J/K)	V	=	0.01	(cc)	Cp	=	0.05	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.35	75.92	6.79	16.94															
water	mass	=	1.7	(gm)	density	=	0.21	(gm/cc)												
	H2O																			
	G	=	-39188.23	(J)	H	=	-20462.67	(J)	S	=	16.52	(J/K)	V	=	8.09	(cc)	Cp	=	5.71	(J/K)
Total	solids	mass	=	2.4	(gm)	density	=	0.29	(gm/cc)											
	G	=	-50125.97	(J)	H	=	-29678.54	(J)	S	=	18.04	(J/K)	V	=	8.34	(cc)	Cp	=	6.54	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	63.37	grams)											

opx	mass	=	6.29	(gm)	density	=	3.43	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.72Mg1.16Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-88508.5	(J)	H	=	-73765.09	(J)	S	=	13.01	(J/K)	V	=	1.83	(cc)	Cp	=	7.34	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-72.08	93.99	71.61	3.96	-3.71	6.09	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.31	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112835.35	(J)	H	=	-95643.86	(J)	S	=	15.17	(J/K)	V	=	2.24	(cc)	Cp	=	8.45	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	44.81	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.32Ca0.67Al1.67Si2.33O8																			
	G	=	-743474.3	(J)	H	=	-634349.12	(J)	S	=	96.26	(J/K)	V	=	16.78	(cc)	Cp	=	53.51	(J/K)
	albite	anorthite	sanidine																	
	31.87	67.25	0.88																	
spinel	mass	=	4.82	(gm)	density	=	4.79	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.16Fe'''1.25Al0.22Cr0.00Ti0.26O4																			
	G	=	-36605.05	(J)	H	=	-26204.38	(J)	S	=	9.17	(J/K)	V	=	1.01	(cc)	Cp	=	4.39	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.7	62.71	15.65	26.33															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.49	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1580153.59	(J)	H	=	-1308519.2	(J)	S	=	239.62	(J/K)	V	=	45.26	(cc)	Cp	=	126.28	(J/K)
Oxygen	delta	moles	=	0.00454381	delta	grams	=	0.145397												
	G	=	-1152.8	(J)	H	=	124.46	(J)	S	=	1.13	(J/K)	V	=	428.27	(cc)	Cp	=	0.16	(J/K)

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Model 828 Bokan

Temp (oC)	=	855.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	33.03	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.46	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-537061.05	(J)	H	=	-440107.93	(J)	S	=	85.9	(J/K)	V	=	14.75	(cc)	Cp	=	45.04	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	68.58	0.12	12.95	0.63	0	2.09	0.67	0.34	0	0	2.49	4.2	3.44	0.64	3.86	0	0	0	0	
opx	mass	=	0.06	(gm)	density	=	3.55	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.03Fe''1.02Mg0.90Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-798.53	(J)	H	=	-659.28	(J)	S	=	0.12	(J/K)	V	=	0.02	(cc)	Cp	=	0.07	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-104.56	97.12	101.6	3.33	-3.27	5.65	0.12													
feldspar	mass	=	0.57	(gm)	density	=	2.6	(gm/cc)	(analysis	in	mole	%)								
	K0.03Na0.65Ca0.32Al1.32Si2.68O8																			
	G	=	-9428.6	(J)	H	=	-8016.51	(J)	S	=	1.25	(J/K)	V	=	0.22	(cc)	Cp	=	0.69	(J/K)
	albite	anorthite	sanidine																	
	64.87	31.95	3.18																	
spinel	mass	=	0.05	(gm)	density	=	4.91	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.07Fe'''1.53Al0.14Cr0.00Ti0.17O4																			
	G	=	-331.26	(J)	H	=	-231.15	(J)	S	=	0.09	(J/K)	V	=	0.01	(cc)	Cp	=	0.04	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.45	76.41	6.54	16.61															

water	mass	=	1.73	(gm)	density	=	0.21	(gm/cc)											
	H2O																		
	G	=	-39765.18	(J)	H	=	-20836.82	(J)	S	=	16.77	(J/K)	V	=	8.16	(cc)	Cp	=	5.83	(J/K)
Total	solids	mass	=	2.4	(gm)	density	=	0.29	(gm/cc)										
	G	=	-50323.56	(J)	H	=	-29743.77	(J)	S	=	18.24	(J/K)	V	=	8.41	(cc)	Cp	=	6.63	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	64.06	grams)										
opx	mass	=	6.35	(gm)	density	=	3.43	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.06Fe''0.72Mg1.16Fe'''0.02Ti0.00Al0.10Si1.94O6																	
	G	=	-89268.22	(J)	H	=	-74482.83	(J)	S	=	13.1	(J/K)	V	=	1.85	(cc)	Cp	=	7.41	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-72.37	94.02	71.88	3.96	-3.71	6.09	0.13												
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-112759.61	(J)	H	=	-95686.07	(J)	S	=	15.13	(J/K)	V	=	2.24	(cc)	Cp	=	8.44	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43												
feldspar	mass	=	45.4	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)							
	K0.01Na0.32Ca0.67Al1.67Si2.33O8																		
	G	=	-752672.98	(J)	H	=	-642843.39	(J)	S	=	97.31	(J/K)	V	=	17.01	(cc)	Cp	=	54.19	(J/K)
	albite	anorthite	sanidine																
	32.29	66.8	0.91																
spinel	mass	=	4.87	(gm)	density	=	4.79	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.11Mg0.16Fe'''1.26Al0.22Cr0.00Ti0.26O4																		
	G	=	-36898.27	(J)	H	=	-26463	(J)	S	=	9.25	(J/K)	V	=	1.02	(cc)	Cp	=	4.43	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-4.65	62.84	15.56	26.24														
Viscosity	of	the	System	cannot	be	computed.													
System	mass	=	99.49	(gm)	density	=	2.2	(gm/cc)											
	G	=	-1578983.7	(J)	H	=	-1309326.99	(J)	S	=	238.93	(J/K)	V	=	45.28	(cc)	Cp	=	126.13	(J/K)
Oxygen	delta	moles	=	0.00458628	delta	grams	=	0.146755											
	G	=	-1157.89	(J)	H	=	124.82	(J)	S	=	1.14	(J/K)	V	=	430.36	(cc)	Cp	=	0.16	(J/K)

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Model 828 Bokan

Temp (oC)	=	850.47	

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids

Liquid	mass	=	32.35	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.52	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-525910.47	(J)	H	=	-431630.39	(J)	S	=	83.91	(J/K)	V	=	14.46	(cc)	Cp	=	44.05	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	68.89	0.11	12.79	0.61	0	2	0.68	0.32	0	0	2.43	4.16	3.5	0.65	3.85	0	0	0	0	
opx	mass	=	0.06	(gm)	density	=	3.55	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.03Fe''1.03Mg0.88Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-745.61	(J)	H	=	-616.05	(J)	S	=	0.12	(J/K)	V	=	0.02	(cc)	Cp	=	0.06	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-106.13	97.25	103.08	3.3	-3.24	5.62	0.12													
feldspar	mass	=	0.55	(gm)	density	=	2.6	(gm/cc)	(analysis	in	mole	%)								
	K0.03Na0.66Ca0.31Al1.31Si2.69O8																			

	G	=	-9139.49	(J)	H	=	-7778.01	(J)	S	=	1.21	(J/K)	V	=	0.21	(cc)	Cp	=	0.67	(J/K)
	albite	anorthite	sanidine																	
	65.91	30.71	3.38																	
spinel	mass	=	0.04	(gm)	density	=	4.91	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.06Fe'''1.54Al0.14Cr0.00Ti0.16O4																			
	G	=	-309.16	(J)	H	=	-216.01	(J)	S	=	0.08	(J/K)	V	=	0.01	(cc)	Cp	=	0.04	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.53	76.89	6.3	16.28															
water	mass	=	1.75	(gm)	density	=	0.21	(gm/cc)												
	H2O																			
	G	=	-40320.74	(J)	H	=	-21202.22	(J)	S	=	17.02	(J/K)	V	=	8.23	(cc)	Cp	=	5.94	(J/K)
Total	solids	mass	=	2.41	(gm)	density	=	0.28	(gm/cc)											
	G	=	-50515	(J)	H	=	-29812.29	(J)	S	=	18.43	(J/K)	V	=	8.47	(cc)	Cp	=	6.72	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	64.73	grams)											
opx	mass	=	6.41	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.72Mg1.16Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-89970.25	(J)	H	=	-75154.13	(J)	S	=	13.19	(J/K)	V	=	1.87	(cc)	Cp	=	7.47	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-72.66	94.05	72.14	3.95	-3.7	6.08	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112684.07	(J)	H	=	-95728.26	(J)	S	=	15.09	(J/K)	V	=	2.24	(cc)	Cp	=	8.44	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	45.96	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.33Ca0.66Al1.66Si2.34O8																			
	G	=	-761568.43	(J)	H	=	-651095.04	(J)	S	=	98.32	(J/K)	V	=	17.22	(cc)	Cp	=	54.84	(J/K)
	albite	anorthite	sanidine																	
	32.7	66.36	0.94																	
spinel	mass	=	4.92	(gm)	density	=	4.79	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.15Fe'''1.26Al0.22Cr0.00Ti0.26O4																			
	G	=	-37167.52	(J)	H	=	-26705.61	(J)	S	=	9.31	(J/K)	V	=	1.03	(cc)	Cp	=	4.47	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.6	62.97	15.48	26.16															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1577815.73	(J)	H	=	-1310125.72	(J)	S	=	238.24	(J/K)	V	=	45.28	(cc)	Cp	=	125.99	(J/K)
Oxygen	delta	moles	=	0.00462583	delta	grams	=	0.148021												
	G	=	-1162.14	(J)	H	=	125.08	(J)	S	=	1.15	(J/K)	V	=	432.15	(cc)	Cp	=	0.16	(J/K)

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Model 828 Bokan

Temp (oC)	=	845.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids

Liquid	mass	=	31.7	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.59	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-515137.79	(J)	H	=	-423434.83	(J)	S	=	81.98	(J/K)	V	=	14.17	(cc)	Cp	=	43.1	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	69.2	0.11	12.63	0.59	0	1.91	0.69	0.3	0	0	2.38	4.11	3.56	0.66	3.85	0	0	0	0	

opx	mass	=	0.05	(gm)	density	=	3.56	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.02Fe''1.05Mg0.87Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-696.7	(J)	H	=	-576.09	(J)	S	=	0.11	(J/K)	V	=	0.02	(cc)	Cp	=	0.06	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-107.69	97.38	104.55	3.26	-3.21	5.59	0.12													
feldspar	mass	=	0.54	(gm)	density	=	2.6	(gm/cc)	(analysis	in	mole	%)								
	K0.04Na0.67Ca0.30Al1.30Si2.70O8																			
	G	=	-8858.91	(J)	H	=	-7546.35	(J)	S	=	1.17	(J/K)	V	=	0.21	(cc)	Cp	=	0.65	(J/K)
	albite	anorthite	sanidine																	
	66.91	29.51	3.58																	
spinel	mass	=	0.04	(gm)	density	=	4.91	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.06Fe'''1.55Al0.13Cr0.00Ti0.16O4																			
	G	=	-288.56	(J)	H	=	-201.89	(J)	S	=	0.08	(J/K)	V	=	0.01	(cc)	Cp	=	0.04	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.61	77.35	6.07	15.98															
water	mass	=	1.78	(gm)	density	=	0.21	(gm/cc)												
	H2O																			
	G	=	-40855.54	(J)	H	=	-21559.08	(J)	S	=	17.25	(J/K)	V	=	8.3	(cc)	Cp	=	6.06	(J/K)
Total	solids	mass	=	2.41	(gm)	density	=	0.28	(gm/cc)											
	G	=	-50699.72	(J)	H	=	-29883.4	(J)	S	=	18.61	(J/K)	V	=	8.53	(cc)	Cp	=	6.81	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	65.38	grams)											
opx	mass	=	6.47	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.72Mg1.15Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-90619.05	(J)	H	=	-75782.53	(J)	S	=	13.26	(J/K)	V	=	1.88	(cc)	Cp	=	7.53	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-72.93	94.08	72.39	3.94	-3.7	6.08	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112608.71	(J)	H	=	-95770.43	(J)	S	=	15.05	(J/K)	V	=	2.24	(cc)	Cp	=	8.43	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	46.51	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.33Ca0.66Al1.66Si2.34O8																			
	G	=	-770170.05	(J)	H	=	-659111.36	(J)	S	=	99.28	(J/K)	V	=	17.43	(cc)	Cp	=	55.48	(J/K)
	albite	anorthite	sanidine																	
	33.1	65.93	0.97																	
spinel	mass	=	4.96	(gm)	density	=	4.79	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.15Fe'''1.26Al0.22Cr0.00Ti0.26O4																			
	G	=	-37414.43	(J)	H	=	-26933.3	(J)	S	=	9.37	(J/K)	V	=	1.03	(cc)	Cp	=	4.51	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.56	63.08	15.4	26.07															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1576649.75	(J)	H	=	-1310915.86	(J)	S	=	237.56	(J/K)	V	=	45.29	(cc)	Cp	=	125.85	(J/K)
Oxygen	delta	moles	=	0.00466264	delta	grams	=	0.149199												
	G	=	-1165.62	(J)	H	=	125.25	(J)	S	=	1.15	(J/K)	V	=	433.65	(cc)	Cp	=	0.16	(J/K)

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Model 828 Bokan

Temp (oC)	=	840.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	31.08	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.65	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-504729.23	(J)	H	=	-415511.32	(J)	S	=	80.12	(J/K)	V	=	13.9	(cc)	Cp	=	42.19	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	69.51	0.1	12.47	0.57	0	1.83	0.71	0.28	0	0	2.33	4.07	3.62	0.68	3.84	0	0	0	0	
opx	mass	=	0.05	(gm)	density	=	3.57	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.02Fe''1.06Mg0.86Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-651.49	(J)	H	=	-539.12	(J)	S	=	0.1	(J/K)	V	=	0.01	(cc)	Cp	=	0.06	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-109.23	97.5	106	3.23	-3.18	5.56	0.12													
feldspar	mass	=	0.52	(gm)	density	=	2.6	(gm/cc)	(analysis	in	mole	%)								
	K0.04Na0.68Ca0.28Al1.28Si2.72O8																			
	G	=	-8586.3	(J)	H	=	-7321.05	(J)	S	=	1.14	(J/K)	V	=	0.2	(cc)	Cp	=	0.63	(J/K)
	albite	anorthite	sanidine																	
	67.86	28.33	3.8																	
spinel	mass	=	0.04	(gm)	density	=	4.92	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.06Fe'''1.56Al0.13Cr0.00Ti0.16O4																			
	G	=	-269.34	(J)	H	=	-188.7	(J)	S	=	0.07	(J/K)	V	=	0.01	(cc)	Cp	=	0.04	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.67	77.79	5.84	15.69															
water	mass	=	1.81	(gm)	density	=	0.22	(gm/cc)												
	H2O																			
	G	=	-41370.14	(J)	H	=	-21907.6	(J)	S	=	17.48	(J/K)	V	=	8.35	(cc)	Cp	=	6.18	(J/K)
Total	solids	mass	=	2.42	(gm)	density	=	0.28	(gm/cc)											
	G	=	-50877.26	(J)	H	=	-29956.47	(J)	S	=	18.79	(J/K)	V	=	8.58	(cc)	Cp	=	6.9	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	66.01	grams)											
opx	mass	=	6.52	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.73Mg1.15Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-91218.67	(J)	H	=	-76371.28	(J)	S	=	13.33	(J/K)	V	=	1.9	(cc)	Cp	=	7.58	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-73.19	94.1	72.64	3.94	-3.7	6.07	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112533.54	(J)	H	=	-95812.57	(J)	S	=	15.01	(J/K)	V	=	2.24	(cc)	Cp	=	8.43	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	47.05	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.33Ca0.66Al1.66Si2.34O8																			
	G	=	-778486.6	(J)	H	=	-666899.12	(J)	S	=	100.2	(J/K)	V	=	17.63	(cc)	Cp	=	56.09	(J/K)
	albite	anorthite	sanidine																	
	33.49	65.51	1																	
spinel	mass	=	5	(gm)	density	=	4.8	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.15Fe'''1.26Al0.22Cr0.00Ti0.26O4																			
	G	=	-37640.52	(J)	H	=	-27147.06	(J)	S	=	9.42	(J/K)	V	=	1.04	(cc)	Cp	=	4.54	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.52	63.19	15.33	26															
Viscosity	of	the	System	cannot	be	computed.														

System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)											
	G	=	-1575485.82	(J)	H	=	-1311697.81	(J)	S	=	236.88	(J/K)	V	=	45.29	(cc)	Cp	=	125.72	(J/K)
Oxygen	delta	moles	=	0.00469686	delta	grams	=	0.150294											
	G	=	-1168.36	(J)	H	=	125.34	(J)	S	=	1.16	(J/K)	V	=	434.88	(cc)	Cp	=	0.17	(J/K)

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Model 828 Bokan

Temp (oC) = 835.47

Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	30.47	(gm)	density	=	2.24	(gm/cc)	viscosity	=	5.71	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-494671.93	(J)	H	=	-407850.6	(J)	S	=	78.31	(J/K)	V	=	13.63	(cc)	Cp	=	41.3	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	69.81	0.1	12.31	0.55	0	1.74	0.72	0.27	0	0	2.28	4.01	3.68	0.69	3.83	0	0	0	0	
opx	mass	=	0.05	(gm)	density	=	3.57	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.02Fe''1.07Mg0.84Fe'''0.02Ti0.00Al0.09Si1.94O6																	
	G	=	-609.64	(J)	H	=	-504.88	(J)	S	=	0.09	(J/K)	V	=	0.01	(cc)	Cp	=	0.05	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-110.75	97.61	107.45	3.19	-3.15	5.52	0.12												
feldspar	mass	=	0.5	(gm)	density	=	2.6	(gm/cc)	(analysis	in	mole	%)							
	K0.04Na0.69Ca0.27Al1.27Si2.73O8																		
	G	=	-8321.13	(J)	H	=	-7101.72	(J)	S	=	1.1	(J/K)	V	=	0.19	(cc)	Cp	=	0.61	(J/K)
	albite	anorthite	sanidine																
	68.78	27.19	4.03																
spinel	mass	=	0.04	(gm)	density	=	4.92	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.10Mg0.06Fe'''1.56Al0.13Cr0.00Ti0.15O4																		
	G	=	-251.4	(J)	H	=	-176.38	(J)	S	=	0.07	(J/K)	V	=	0.01	(cc)	Cp	=	0.03	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	0.73	78.22	5.63	15.41														
water	mass	=	1.83	(gm)	density	=	0.22	(gm/cc)											
	H2O																		
	G	=	-41865.08	(J)	H	=	-22247.99	(J)	S	=	17.7	(J/K)	V	=	8.41	(cc)	Cp	=	6.29	(J/K)
Total	solids	mass	=	2.42	(gm)	density	=	0.28	(gm/cc)										
	G	=	-51047.25	(J)	H	=	-30030.97	(J)	S	=	18.96	(J/K)	V	=	8.62	(cc)	Cp	=	6.99	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	66.61	grams)										
opx	mass	=	6.57	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.06Fe''0.73Mg1.15Fe'''0.02Ti0.00Al0.10Si1.94O6																	
	G	=	-91772.83	(J)	H	=	-76923.34	(J)	S	=	13.39	(J/K)	V	=	1.91	(cc)	Cp	=	7.63	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-73.44	94.12	72.87	3.93	-3.69	6.07	0.13												
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)							
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-112458.56	(J)	H	=	-95854.69	(J)	S	=	14.98	(J/K)	V	=	2.24	(cc)	Cp	=	8.42	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43												
feldspar	mass	=	47.56	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)							
	K0.01Na0.34Ca0.65Al1.65Si2.35O8																		
	G	=	-786526.22	(J)	H	=	-674464.58	(J)	S	=	101.08	(J/K)	V	=	17.83	(cc)	Cp	=	56.68	(J/K)
	albite	anorthite	sanidine																

	33.87	65.1	1.03																	
spinel	mass	=	5.04	(gm)	density	=	4.8	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.15Fe'''1.27Al0.22Cr0.00Ti0.26O4																			
	G	=	-37847.2	(J)	H	=	-27347.81	(J)	S	=	9.47	(J/K)	V	=	1.05	(cc)	Cp	=	4.57	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.48	63.3	15.26	25.92															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1574323.99	(J)	H	=	-1312471.99	(J)	S	=	236.2	(J/K)	V	=	45.28	(cc)	Cp	=	125.6	(J/K)
Oxygen	delta	moles	=	0.00472865	delta	grams	=	0.151311												
	G	=	-1170.42	(J)	H	=	125.35	(J)	S	=	1.17	(J/K)	V	=	435.86	(cc)	Cp	=	0.17	(J/K)

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Model 828 Bokan

Temp (oC)	=	830.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	29.88	(gm)	density	=	2.23	(gm/cc)	viscosity	=	5.78	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-484953.88	(J)	H	=	-400444.08	(J)	S	=	76.58	(J/K)	V	=	13.37	(cc)	Cp	=	40.45	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	70.1	0.09	12.16	0.53	0	1.67	0.74	0.25	0	0	2.23	3.96	3.74	0.7	3.82	0	0	0	0	
opx	mass	=	0.04	(gm)	density	=	3.58	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.02Fe''1.09Mg0.83Fe'''0.02Ti0.00Al0.09Si1.94O6																		
	G	=	-570.9	(J)	H	=	-473.17	(J)	S	=	0.09	(J/K)	V	=	0.01	(cc)	Cp	=	0.05	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-112.25	97.71	108.9	3.15	-3.11	5.48	0.12													
feldspar	mass	=	0.49	(gm)	density	=	2.59	(gm/cc)	(analysis	in	mole	%)								
	K0.04Na0.70Ca0.26Al1.26Si2.74O8																			
	G	=	-8062.99	(J)	H	=	-6887.98	(J)	S	=	1.06	(J/K)	V	=	0.19	(cc)	Cp	=	0.59	(J/K)
	albite	anorthite	sanidine																	
	69.64	26.09	4.27																	
spinel	mass	=	0.03	(gm)	density	=	4.93	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.10Mg0.05Fe'''1.57Al0.12Cr0.00Ti0.15O4																			
	G	=	-234.66	(J)	H	=	-164.87	(J)	S	=	0.06	(J/K)	V	=	0.01	(cc)	Cp	=	0.03	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.79	78.63	5.42	15.16															
water	mass	=	1.86	(gm)	density	=	0.22	(gm/cc)												
	H2O																			
	G	=	-42340.85	(J)	H	=	-22580.41	(J)	S	=	17.91	(J/K)	V	=	8.45	(cc)	Cp	=	6.41	(J/K)
Total	solids	mass	=	2.43	(gm)	density	=	0.28	(gm/cc)											
	G	=	-51209.4	(J)	H	=	-30106.44	(J)	S	=	19.12	(J/K)	V	=	8.66	(cc)	Cp	=	7.08	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	67.19	grams)											
opx	mass	=	6.61	(gm)	density	=	3.44	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.73Mg1.15Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-92284.94	(J)	H	=	-77441.45	(J)	S	=	13.45	(J/K)	V	=	1.92	(cc)	Cp	=	7.67	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-73.69	94.15	73.1	3.93	-3.69	6.07	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)								

	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																	
	G	=	-112383.77	(J)	H	=	-95896.78	(J)	S	=	14.94	(J/K)	V	=	2.24	(cc)	Cp	=	8.42	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43												
feldspar	mass	=	48.07	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)							
	K0.01Na0.34Ca0.65Al1.65Si2.35O8																		
	G	=	-794296.57	(J)	H	=	-681813.6	(J)	S	=	101.92	(J/K)	V	=	18.02	(cc)	Cp	=	57.26	(J/K)
	albite	anorthite	sanidine																
	34.25	64.69	1.06																
spinel	mass	=	5.07	(gm)	density	=	4.8	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.11Mg0.15Fe'''1.27Al0.22Cr0.00Ti0.26O4																		
	G	=	-38035.77	(J)	H	=	-27536.41	(J)	S	=	9.51	(J/K)	V	=	1.06	(cc)	Cp	=	4.6	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	-4.45	63.4	15.2	25.85														
Viscosity	of	the	System	cannot	be	computed.													
System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)											
	G	=	-1573164.33	(J)	H	=	-1313238.76	(J)	S	=	235.52	(J/K)	V	=	45.28	(cc)	Cp	=	125.48	(J/K)
Oxygen	delta	moles	=	0.00475814	delta	grams	=	0.152255											
	G	=	-1171.84	(J)	H	=	125.29	(J)	S	=	1.18	(J/K)	V	=	436.6	(cc)	Cp	=	0.17	(J/K)
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Model 828 Bokan																			
Temp (oC)	=	825.47																	
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids												
Liquid	mass	=	29.32	(gm)	density	=	2.23	(gm/cc)	viscosity	=	5.84	(log	10	poise)	(analysis	in	wt	%)	
	G	=	-475563.78	(J)	H	=	-393283.67	(J)	S	=	74.89	(J/K)	V	=	13.12	(cc)	Cp	=	39.62	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	70.39	0.09	12	0.51	0	1.59	0.75	0.24	0	0	2.19	3.91	3.8	0.72	3.82	0	0	0	0	
opx	mass	=	0.04	(gm)	density	=	3.58	(gm/cc)	(analysis	in	mole	%)							
	opx	Na0.00Ca0.02Fe''1.10Mg0.82Fe'''0.02Ti0.00Al0.09Si1.95O6																	
	G	=	-535.01	(J)	H	=	-443.77	(J)	S	=	0.08	(J/K)	V	=	0.01	(cc)	Cp	=	0.05	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite												
	-113.74	97.81	110.33	3.11	-3.07	5.44	0.11												
feldspar	mass	=	0.47	(gm)	density	=	2.59	(gm/cc)	(analysis	in	mole	%)							
	K0.05Na0.70Ca0.25Al1.25Si2.75O8																		
	G	=	-7811.53	(J)	H	=	-6679.57	(J)	S	=	1.03	(J/K)	V	=	0.18	(cc)	Cp	=	0.57	(J/K)
	albite	anorthite	sanidine																
	70.46	25.01	4.53																
spinel	mass	=	0.03	(gm)	density	=	4.93	(gm/cc)	(analysis	in	mole	%)							
	Fe''1.10Mg0.05Fe'''1.58Al0.12Cr0.00Ti0.15O4																		
	G	=	-219.04	(J)	H	=	-154.12	(J)	S	=	0.06	(J/K)	V	=	0.01	(cc)	Cp	=	0.03	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel														
	0	0.83	79.03	5.23	14.92														
water	mass	=	1.88	(gm)	density	=	0.22	(gm/cc)											
	H2O																		
	G	=	-42797.94	(J)	H	=	-22905.04	(J)	S	=	18.11	(J/K)	V	=	8.49	(cc)	Cp	=	6.52	(J/K)
Total	solids	mass	=	2.43	(gm)	density	=	0.28	(gm/cc)										
	G	=	-51363.51	(J)	H	=	-30182.5	(J)	S	=	19.28	(J/K)	V	=	8.7	(cc)	Cp	=	7.17	(J/K)

Summary of all fractionated phases: (total mass = 67.75 grams)

opx mass = 6.65 (gm) density = 3.44 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.06Fe''0.73Mg1.15Fe'''0.02Ti0.00Al0.10Si1.94O6
G = -92758.13 (J) H = -77928.1 (J) S = 13.5 (J/K) V = 1.93 (cc) Cp = 7.72 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-73.92 94.17 73.31 3.93 -3.69 6.06 0.13

cpx mass = 7.44 (gm) density = 3.32 (gm/cc) (analysis in mole %)
cpx Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6
G = -112309.17 (J) H = -95938.85 (J) S = 14.9 (J/K) V = 2.24 (cc) Cp = 8.41 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
41.95 15.49 24.27 10.61 -5.51 11.75 1.43

feldspar mass = 48.55 (gm) density = 2.67 (gm/cc) (analysis in mole %)
K0.01Na0.35Ca0.64Al1.64Si2.36O8
G = -801804.84 (J) H = -688951.7 (J) S = 102.72 (J/K) V = 18.21 (cc) Cp = 57.82 (J/K)
albite anorthite sanidine
34.61 64.3 1.09

spinel mass = 5.1 (gm) density = 4.8 (gm/cc) (analysis in mole %)
Fe''1.11Mg0.15Fe'''1.27Al0.21Cr0.00Ti0.26O4
G = -38207.46 (J) H = -27713.66 (J) S = 9.55 (J/K) V = 1.06 (cc) Cp = 4.63 (J/K)
chromite hercynite magnetite spinel ulvospinel
0 -4.42 63.49 15.14 25.79

Viscosity of the System cannot be computed.

System mass = 99.5 (gm) density = 2.2 (gm/cc)
G = -1572006.9 (J) H = -1313998.47 (J) S = 234.85 (J/K) V = 45.26 (cc) Cp = 125.37 (J/K)

Oxygen delta moles = 0.00478547 delta grams = 0.153129
G = -1172.67 (J) H = 125.17 (J) S = 1.18 (J/K) V = 437.12 (cc) Cp = 0.17 (J/K)

**********_________**********
Model 828 Bokan

Temp (oC) = 820.47

Constraint Flags: fO2 path = QFM Fractionate Solids

Liquid mass = 28.78 (gm) density = 2.23 (gm/cc) viscosity = 5.9 (log 10 poise) (analysis in wt %)
G = -466490.91 (J) H = -386361.72 (J) S = 73.27 (J/K) V = 12.88 (cc) Cp = 38.83 (J/K)
SiO2 TiO2 Al2O3 Fe2O3 Cr2O3 FeO MnO MgO NiO CoO CaO Na2O K2O P2O5 H2O CO2 SO3 Cl2O-1 F2O-1
70.67 0.09 11.85 0.5 0 1.52 0.76 0.22 0 0 2.15 3.85 3.86 0.73 3.81 0 0 0 0

opx mass = 0.04 (gm) density = 3.59 (gm/cc) (analysis in mole %)
opx Na0.00Ca0.02Fe''1.12Mg0.81Fe'''0.02Ti0.00Al0.09Si1.95O6
G = -501.75 (J) H = -416.52 (J) S = 0.08 (J/K) V = 0.01 (cc) Cp = 0.04 (J/K)
diopside clinoenstatit hedenbergite alumino-buffo buffonite essenite jadeite
-115.22 97.91 111.76 3.07 -3.03 5.4 0.11

feldspar mass = 0.46 (gm) density = 2.59 (gm/cc) (analysis in mole %)
K0.05Na0.71Ca0.24Al1.24Si2.76O8
G = -7566.45 (J) H = -6476.23 (J) S = 1 (J/K) V = 0.18 (cc) Cp = 0.56 (J/K)
albite anorthite sanidine
71.23 23.97 4.8

spinel mass = 0.03 (gm) density = 4.93 (gm/cc) (analysis in mole %)
Fe''1.10Mg0.05Fe'''1.59Al0.12Cr0.00Ti0.15O4
G = -204.45 (J) H = -144.08 (J) S = 0.06 (J/K) V = 0.01 (cc) Cp = 0.03 (J/K)
chromite hercynite magnetite spinel ulvospinel

	0	0.87	79.4	5.03	14.69															
water	mass	=	1.9	(gm)	density	=	0.22	(gm/cc)												
	H2O																			
	G	=	-43236.81	(J)	H	=	-23222.03	(J)	S	=	18.3	(J/K)	V	=	8.53	(cc)	Cp	=	6.64	(J/K)
Total	solids	mass	=	2.43	(gm)	density	=	0.28	(gm/cc)											
	G	=	-51509.46	(J)	H	=	-30258.85	(J)	S	=	19.43	(J/K)	V	=	8.72	(cc)	Cp	=	7.26	(J/K)
Summary	of	all	fractionated	phases:	(total	mass	=	68.29	grams)											
opx	mass	=	6.69	(gm)	density	=	3.45	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.74Mg1.14Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-93195.29	(J)	H	=	-78385.59	(J)	S	=	13.54	(J/K)	V	=	1.94	(cc)	Cp	=	7.76	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-74.14	94.19	73.52	3.92	-3.68	6.06	0.13													
cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112234.76	(J)	H	=	-95980.89	(J)	S	=	14.86	(J/K)	V	=	2.24	(cc)	Cp	=	8.41	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													
feldspar	mass	=	49.02	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								
	K0.01Na0.35Ca0.64Al1.64Si2.36O8																			
	G	=	-809057.9	(J)	H	=	-695884.11	(J)	S	=	103.49	(J/K)	V	=	18.39	(cc)	Cp	=	58.36	(J/K)
	albite	anorthite	sanidine																	
	34.96	63.91	1.13																	
spinel	mass	=	5.13	(gm)	density	=	4.8	(gm/cc)	(analysis	in	mole	%)								
	Fe''1.11Mg0.15Fe'''1.27Al0.21Cr0.00Ti0.26O4																			
	G	=	-38363.41	(J)	H	=	-27880.3	(J)	S	=	9.59	(J/K)	V	=	1.07	(cc)	Cp	=	4.65	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.39	63.58	15.08	25.72															
Viscosity	of	the	System	cannot	be	computed.														
System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1570851.74	(J)	H	=	-1314751.46	(J)	S	=	234.18	(J/K)	V	=	45.25	(cc)	Cp	=	125.27	(J/K)
Oxygen	delta	moles	=	0.00481077	delta	grams	=	0.153939												
	G	=	-1172.93	(J)	H	=	124.98	(J)	S	=	1.19	(J/K)	V	=	437.43	(cc)	Cp	=	0.17	(J/K)

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Model 828 Bokan

Temp (oC)	=	815.47																		
Constraint	Flags:	fO2	path	=	QFM	Fractionate	Solids													
Liquid	mass	=	28.25	(gm)	density	=	2.23	(gm/cc)	viscosity	=	5.97	(log	10	poise)	(analysis	in	wt	%)		
	G	=	-457725.11	(J)	H	=	-379670.97	(J)	S	=	71.7	(J/K)	V	=	12.65	(cc)	Cp	=	38.06	(J/K)
	SiO2	TiO2	Al2O3	Fe2O3	Cr2O3	FeO	MnO	MgO	NiO	CoO	CaO	Na2O	K2O	P2O5	H2O	CO2	SO3	Cl2O-1	F2O-1	
	70.95	0.08	11.69	0.48	0	1.45	0.78	0.21	0	0	2.12	3.79	3.92	0.74	3.8	0	0	0	0	
opx	mass	=	0.04	(gm)	density	=	3.6	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.02Fe''1.13Mg0.79Fe'''0.02Ti0.00Al0.08Si1.95O6																		
	G	=	-470.91	(J)	H	=	-391.23	(J)	S	=	0.07	(J/K)	V	=	0.01	(cc)	Cp	=	0.04	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-116.68	97.99	113.18	3.02	-2.99	5.35	0.11													
feldspar	mass	=	0.45	(gm)	density	=	2.59	(gm/cc)	(analysis	in	mole	%)								

K0.05Na0.72Ca0.23Al1.23Si2.77O8

	G	=	-7327.54	(J)	H	=	-6277.8	(J)	S	=	0.96	(J/K)	V	=	0.17	(cc)	Cp	=	0.54	(J/K)
	albite	anorthite	sanidine																	
	71.95	22.96	5.09																	

spinel	mass	=	0.03	(gm)	density	=	4.94	(gm/cc)	(analysis	in	mole	%)								

Fe''1.10Mg0.05Fe'''1.60Al0.12Cr0.00Ti0.14O4

	G	=	-190.84	(J)	H	=	-134.69	(J)	S	=	0.05	(J/K)	V	=	0.01	(cc)	Cp	=	0.03	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	0.91	79.76	4.85	14.48															

water	mass	=	1.93	(gm)	density	=	0.23	(gm/cc)												
	H2O																			
	G	=	-43657.9	(J)	H	=	-23531.55	(J)	S	=	18.49	(J/K)	V	=	8.56	(cc)	Cp	=	6.75	(J/K)

Total	solids	mass	=	2.44	(gm)	density	=	0.28	(gm/cc)											
	G	=	-51647.19	(J)	H	=	-30335.27	(J)	S	=	19.58	(J/K)	V	=	8.75	(cc)	Cp	=	7.35	(J/K)

Summary	of	all	fractionated	phases:	(total	mass	=	68.82	grams)											

opx	mass	=	6.73	(gm)	density	=	3.45	(gm/cc)	(analysis	in	mole	%)								
	opx	Na0.00Ca0.06Fe''0.74Mg1.14Fe'''0.02Ti0.00Al0.10Si1.94O6																		
	G	=	-93599.06	(J)	H	=	-78816.05	(J)	S	=	13.58	(J/K)	V	=	1.95	(cc)	Cp	=	7.79	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	-74.36	94.21	73.72	3.92	-3.68	6.06	0.13													

cpx	mass	=	7.44	(gm)	density	=	3.32	(gm/cc)	(analysis	in	mole	%)								
	cpx	Na0.01Ca0.83Fe''0.24Mg0.75Fe'''0.06Ti0.03Al0.24Si1.83O6																		
	G	=	-112160.55	(J)	H	=	-96022.91	(J)	S	=	14.82	(J/K)	V	=	2.24	(cc)	Cp	=	8.4	(J/K)
	diopside	clinoenstatit	hedenbergite	alumino-buffo	buffonite	essenite	jadeite													
	41.95	15.49	24.27	10.61	-5.51	11.75	1.43													

feldspar	mass	=	49.48	(gm)	density	=	2.67	(gm/cc)	(analysis	in	mole	%)								

K0.01Na0.35Ca0.64Al1.64Si2.36O8

	G	=	-816062.32	(J)	H	=	-702615.82	(J)	S	=	104.21	(J/K)	V	=	18.56	(cc)	Cp	=	58.88	(J/K)
	albite	anorthite	sanidine																	
	35.3	63.54	1.16																	

spinel	mass	=	5.16	(gm)	density	=	4.8	(gm/cc)	(analysis	in	mole	%)								

Fe''1.11Mg0.15Fe'''1.27Al0.21Cr0.00Ti0.26O4

	G	=	-38504.66	(J)	H	=	-28037.04	(J)	S	=	9.62	(J/K)	V	=	1.07	(cc)	Cp	=	4.68	(J/K)
	chromite	hercynite	magnetite	spinel	ulvospinel															
	0	-4.36	63.66	15.03	25.67															

Viscosity	of	the	System	cannot	be	computed.														

System	mass	=	99.5	(gm)	density	=	2.2	(gm/cc)												
	G	=	-1569698.89	(J)	H	=	-1315498.05	(J)	S	=	233.51	(J/K)	V	=	45.23	(cc)	Cp	=	125.17	(J/K)

Oxygen	delta	moles	=	0.00483415	delta	grams	=	0.154687												
	G	=	-1172.67	(J)	H	=	124.74	(J)	S	=	1.19	(J/K)	V	=	437.54	(cc)	Cp	=	0.17	(J/K)

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